

# **CHAPTER-1**

## **INTRODUCTION**

### **1.1 General Background**

The development and expansion of financial markets are essential for the economic growth of any country. "In an efficient market, security price fully reflect available information. In this situation, at every moment in time, the actual price of the security represents best estimate of its intrinsic value" (Fama, 1965: 40).

There are two theories to explain share price fluctuations: the technical analysis theory; and the fundamental analysis theory. Briefly, the technical analysis theory suggests that by plotting the market price of shares, over the period of time, on a chart one can perceive certain patterns which tend to repeat themselves. The technicians believe that knowledge of a share's past behavior can help to predict its probable future behavior. The fundamental analysis theory claims that at any point of time an individual stock has an intrinsic value, which is equal to the present value of the future cash flows from the security discounted at an appropriate risk adjusted discount rate. The theory holds that the market value of a share is based on certain intrinsic factors such as the earnings, dividends, growth potential, debt-equity mix etc. which do not change from day to day. But changes in the market price of share take place several times. The job of fundamentalists is to estimate the value of securities and compare with the market price (Francis, 1980:287-316).

Technical and fundamental analysts sell their services as security analysts to investors. A completely efficient market would mean that a technical or fundamental analysts' advice would be valueless.

The Random Walk Hypothesis (RWH) emerged from empirical tests of changes in stock prices dates back to 1900 (Sprecher, C Ronald, 1975:53). Random Walk Theory describes whether past prices can predict future prices or not.

According to Fama (1965:34), Random Walk Theory implies the future path of the price level of a security is no more predictable than the path of a series of cumulated random numbers. The series of price changes has no memory; that is, the past can't be used to predict the future in any meaningful way. It means that current size and direction of price changes is independent and unbiased outcome of previous price changes.

The Nepalese stock market is just coming of age. The government has established Securities Board, Nepal (SEBO/N) as an apex regulatory body to facilitate the orderly development of a dynamic and competitive stock market and maintains its credibility, fairness, efficiency, transparency and responsiveness. Nepal Stock Exchange Limited (NEPSE) has established as a place to exchange securities, to formulate new policies, rules and regulations for the smooth operations of the market. NEPSE has opened its trading floor on 13<sup>th</sup> Jan.1994 through licensed members. Nepal Government, Nepal Rastra Bank, Nepal Industrial Development Corporation and Licensed members are the shareholders of the NEPSE.

The concept of stock market in Nepal is very new. Nepalese stock market is relatively small and underdeveloped to compare with developed markets. So, it may not be efficient to some extent. This study simply attempts to apply the most widely accepted analytical approach, the Efficient Market Hypothesis (EMH), to investigate the price behavior. The present study represents an effort to improve on shortcomings of past studies in the hope that the behavior of share prices of Nepal can be better understood.

## **1.2 Origin & Development of Commercial Bank**

### **1.2.1 Origin of Commercial Bank**

It is said that the word bank is derived from the Italian word 'Banko' which means that place where people come together for different transaction. The ancient Rome of the 15<sup>th</sup> Century we can find some history about the practice of various banking functions like money changing, transfer of funds, issue of loans etc, which are similar to those of modern banking system. The modern banking started from the 1401 in Barcelona of the Spain. In 1600 the bank of Amsterdam (Holland), Bank of Hamburg (Germany) and Bank of England (U.K.) were established.

### **1.2.2 Development of Commercial Banks in Nepal**

The modern banking business is not old in context to Nepal. But it is supposed that in ancient time there was a lending business. During those days people use to borrow money from money lenders paying some interest. In this regard Prof. L.C. Ojha explain it is impossible to give correct chronological history in view of the fact that no authentic historical records are available in respect to banking. It can be inferred from the history of Nepal regarding the rebuilding of Kathmandu in 723 A.D. by Gunakama Dev, the king of Kathmandu and that of Shankhdar's action of introducing Nepal Sambat some fifty seven years there after to make lending has been prevalent long before that.

During the period of Rana Prime Minister Ranodip Singh a government institution called 'Tejarath' was established. The Tejarath served the public by supplying easy and cheap credit at 5% interest on the security of gold and silver ornaments. Tejarath could not fulfill the credit needs of the whole society. It was for a government official only. So, the general people had to depend on money-lenders. The money lenders

exploited the rural people in different way. On the other hand, there was need to trade and industry development programs. To make free the rural people from the grips of lenders and to develop trade and industry in the country the need for the commercial bank was realized in the country.

Nepal's banking history had begun with the establishment of Nepal Bank Ltd. in 1994. At that time this bank has authorized capital of Rs. 10 million & paid up capital of Rs. 842 thousand. Nepal Bank Ltd. was the first commercial bank with 51% government ownership.

In 1980, the governments introduce, “financial sector reforms”. Nepal allowed the entry of foreign banks as joint venture bank was Nepal Arab Bank Ltd.(Now NABIL Bank). It was established in 1984. Later on the following joint venture banks were established as commercial banks in the country.

- ) Nepal Investment Bank Ltd in 1986 (former name Nepal Indo-Suez Bank Ltd.)
- ) Nepal Standard Chartered Bank in 1987 (Formal Nepal Grindlays Bank Ltd.)
- ) Everest Bank Ltd. In 1991.
- ) Himalayan Bank Ltd. & Nepal SBI Bank Ltd in 1993.
- ) Bank of Kathmandu Ltd. in 1995.
- ) Nepal Bank of Celon in 1996.
- ) Lumbini Bank Ltd. in 1998.
- ) Nepal Industrial and Commercial Bank in 1998.
- ) Kumari Bank Ltd, 1999.
- ) Machhapurchhre Bank Ltd. in 2000 and
- ) Laxmi Bank Ltd. in 2001 and so others .

Instead of these commercial banks, financial companies have been established in large number which counted more than 79 up to last of Ashad 2064.

### **1.3 General History of NEPSE**

Government of Nepal, under a programme initiated to reform capital markets converted Securities Exchange Center into Nepal Stock Exchange in 1993. Nepal Stock Exchange, in short NEPSE, is a non-profit organization, operating under Securities Exchange Act, 1983.

The basic objective of NEPSE is to impart free marketability and liquidity to the government and corporate securities by facilitating transactions in its trading floor through member, market intermediaries, such as broker, market makers etc. Government of Nepal, Nepal Rastra Bank, Nepal Industrial Development Corporation and members are the shareholders of the NEPSE.

NEPSE has adopted an "Open Out-Cry" system. It means transactions of securities are conducted on the open auction principle on the trading floor. The buying broker with the highest bid will post the price and his code number on the buying column, while the selling broker with the lowest offer will post the price and code number on the selling column on the quotation board.

Presently in Nepal, NEPSE is the only secondary market (organized stock exchange) of the country for the security transaction. Other forms of secondary market is Over-the-Counter (OTC) market, the third and the fourth market are not yet initiated till date. NEPSE has appointed five market maker and twenty five brokers for smooth daily transaction of trading i.e. buying and selling of securities under its restrictive programme in 1993. NEPSE opened its trading floor on 13th January 1994.

### **1.4 Focus of the Study**

The study focuses on the stock price behavior of the commercial banks in Nepal and its NEPSE index. Investing in stock is highly risky as being ownership capital. It represents only a final claim while in liquidation. Stock

price determined by a number of factors. As a secondary market NEPSE has played a vital role in trading stocks. Although small investors can invest their money by purchasing shares of companies in primary market (initial public offering) or in the secondary market. The determination of the price of stock is the function of several factors. Therefore this study focuses to the sensitivity of stock price behavior on NEPSE with special focus to the sector of Commercial Banks .

## **1.5 Statement of the Problem**

Stock market provides good investment opportunity with fair return and instant liquidity with minimum risk of loss. Regarding the share price movement in the market, one approach assumes that market is inefficient in pricing shares. One of which, the technical analysis theory holds that the historical behavior of a security's price is rich in information and hence can be used to predict future behavior. The technical analysts (Chartist) almost totally focused their attention on chart of share prices and assumed that one can discern certain patterns which tend to repeat themselves.

Another approach argues that market is efficient in pricing the shares. In that condition, investment decision becomes simple. "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 optimum portfolio." (Fama, 1965:40). Therefore, this study tries to find out whether the price fluctuations are significantly correlated with past price movement or not and whether the price movement contains some occasional trends or patterns or not.

There are voluminous studies on the stock market efficiency or price behavior in the national and international areas. However, the question exists as to what extent these findings are still relevant in the present context. This study

is a part of the same effort. However, it deviates significantly from the past studies both with respect to the use of information and choice of interval.

The study mainly deals with the following issues:

- ) What is the daily stock price behavior of the commercial banks in Nepal ?
- ) What is the behavior of commercial banks index and NEPSE . index ?
- ) Is the Nepalese stock market efficient in pricing shares?
- ) Is there any existence of RWH in any of its weak or other forms ?

## **1.6 Objectives of the Study**

The major objective of the study is to assess equity share price behavior in Nepal. Nevertheless, the objectives of the study are:

- ) To study the behavior of listed commercial banks in NEPSE.
- ) To analyze commercial bank's securities' price and volume.
- ) To study and analyze investor's view regarding the decision on securities investment.
- ) To suggest the findings of the study to the interested parties related to securities investment.
- ) To pinpoint the real problems regarding the stock behavior of commercial banks.

## **1.7 Scope and Significance of the Study**

The scope of the study is limited to analyze the daily stock price behavior of commercial banks in Nepal for one year from July 16, 2005 to July 16, 2006.

The study is confined to test whether the successive price changes of the individual securities are independent or dependent. In the situation of

independent behavior of successive price changes, general or institutional investors can easily drop their technical analysis functions and shift their effort into fundamental analysis. The proposed study has tried to help for this analysis.

The main reason behind this research work is to analyze the daily stock price behavior of the commercial banks in Nepal. This will benefit for the prospective investors to gain the information regarding the stocks of commercial banks and to make the better investment decisions. As well as, investors can obtain the information about the position of Nepalese stock market during the study period. Besides, this study will contribute to the concerned authorities and the market makers. Further, it will add little worth to those who want to conduct a research work in related topic.

## **1.8 Organization of the Study**

The study will be organized in five different chapters each devoted to some aspects of the study on share price behavior of commercial banks in Nepal. The chapters one to five will consist of:

1. Introduction
2. Review of Literature
3. Research Methodology
4. Data Presentation and Analysis
5. Summary, Conclusion and Recommendations

The first chapter, Introduction, includes general background, Statement of the Problem, Focus of the study, Development of commercial Bank, Objectives, Scope and Significance, the organization of the study and it ends with the Limitations of the study.

The second chapter, Literature Review, covers the theoretical aspect of

the study. It tries to define security markets, its classification and other theoretical notions including the Nepalese securities market. Further, it explains the research reviews related to international journals, Master's dissertations and Nepalese Journals.

The third chapter, Research Methodology, presents the research design, population and sample, sources of data, data collection techniques, analyzing tools and limitation of the methodology.

The fourth chapter, Data Presentation and Analysis, presents the graphical and statistical analysis of stock price behavior. It also includes analysis of NEPSE and commercial bank indices behavior. At the end of the chapter, it covers the major findings of the study.

The last chapter Summary, Conclusions and Recommendation, includes, summary of the study, conclusions drawn from the findings and the recommendations to the concerned authorities, companies, investors and forthcoming researchers.

## **1.9 Limitation of the Study**

This study is conducted within some limitation and constraints. Being an academic research, this research has been done under time and financial constraints.

1. Findings are based on secondary data mainly the data provided by NEPSE and SEBO/N. Therefore the reality of the study is fully depending on secondary source of data.
2. To analyze the pattern of volume of stock traded, time periods are taken from fiscal year 20002/03 to 2006/07.
3. Meantime, only the companies listed in NEPSE from fiscal year

2002/03 to 2006/07 are considered as new companies to analyze the newly listing rate.

4. The data problem is high in Nepal. Even the financial statements of public enterprises published in the "Annual Report of the Auditor General" are not readily available since they are treated as confidential .The study period was chosen for the five years.
5. However, due to the lack of proper information (data), it couldn't be held perfectly. Nepal stock exchange Ltd. is also unable to provide the required data of all the listed companies from the year of listing. Therefore the study is based on limited observations.
6. It is an academic research and could be completed within limited time period. So due to the time bounding and the lack of financing ,in-depth study can not be carried out.

During the primary data collection, concerned parties were unwilling to response the researcher. Despite number of difficulties, effort is made for proper research. For the financial status analysis, the study does not applied sampling procedures but accepted as sample size to all the enterprises those provided usable data on needy financial indicators to SEBO.

## **CHAPTER - 2**

### **REVIEW OF LITERATURE**

Review of literature is an essential part of all studies. It is a way to discover what other research in the area of our problems has uncovered.

Every study is very much based on past knowledge, study and experiences. The past knowledge of the previous studies should not be ignored as it provides foundation to the present study.

In this chapter some of the basic literature which is available in the topic is reviewed. Specially, it covers those studies which are conducted with in and outside the country by academicians and scholars are also reviewed.

#### **2.1 Conceptual Framework**

There are different kinds of factors which cause the stock price fluctuation. They are economic, non-economic and other factors. The prices of securities are typically sensitive, responsive to all the events both real and imagined that cast light into the Muncie future, (Cootner, 1964:1).

There are two theories of price behavior i.e. classical approach and efficient market theory approach. Classical or conventional approach includes Fundamental Analysis theory and Technical analysis theory. Under efficient market theories, there are three forms of efficient market hypotheses.

##### **2.1.1 Classical Approach**

The classical approach includes fundamental analysis and technical analysis. Fundamental approach forecast stock price on the basis of earning and dividend of the company. The fundamental analysis theory holds that the market value

of a share is based on certain intrinsic or fundamental factors such as the earnings, dividends, growth potential, debt equity mix etc. where as technical analysis forecast stock price of the based on past price behavior of the company. Technical analysis theory suggests that by plotting the market of shares, over a period of time which tends to repeat themselves.

#### **2.1.1.1 Technical Analysis**

In its simplest form, 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 movement for a particular stock.

Technical analysis is based on the widely accepted premise that security prices are determined by the supply of and the demand for securities. The tools of technical analysis are therefore designed to measure certain aspects of supply and demand, (Francis, 1991: 521-522).

Technicians seek to forecast security prices rather that security value especially trends in the price changes. Price and volume are the primary tools of the technical analysts. Technicians believe that the forces of supply and demand show up in patterns of price and 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 the stock prices but volume activity does not keep pace, technical analyst would be skeptical about the upward trend. A down wise movement from some pattern or holding point accomplished by heavy volume

would be taken as a bearish sign.

The technical analyst usually attempts to predict short term price movement and thus makes recommendations concerning the timing of purchase and sales of either specific stock or group of stock (such as industries) or stock in general. It is sometimes said that fundamental analysis is designed to answer the question "What" and technical analyst seems to trying to forecast "When", (Gordon, 2000: 844).

The technical analyst tries to forecast short run shifts in supply and demand that will affect the market prices of one or more securities.

Typically, technical analyst records 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 movement of market index and still other are used to predict the action of both individual assets and the market, (Francis, 2000: 522).

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. Post phenomena of purchase, then, if the technical analysis is correct, will raise the forecast holding period yield (HPY) conversely, a sale order might be postponed because the charts reveal a raise in the price of the security in question. (Fisher & Jordon, 1995: 510).

The basic assumption of technical analysis is as follows:

1. Market value is determined by 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 trend are caused by the shifts in supply and demand.
5. Shifts in supply and demands no matter why they occur, can be detected sooner or later in charts of market transactions.

Thus the technical analysts believe in the changes in the pattern or trend of security price take place on account of changes in the demand and supply of the securities, and the crucial insights into these patterns can be obtained by keeping track of price chart. The technical analyst can tell whether the price of a share is on upswing or on the downswing in future. Technical analysis involves the examination of past market data, such as prices and the volume of trading, which lead to an estimate of future price trends and therefore, an investment decision. Where as fundamental analysts use economic data that are usually separate from the stock or bond market, the technical analyst believes that using data from market itself is a good idea because "the market is its own best predictors". Technical analysts base trading decisions on examination of prior price and volume data to determine past market trends from which they predict future behavior for the market as a whole and for individual security.

### **2.1.1.2 Fundamental Analysis**

Fundamental analysis theory claims that at any point of time an individual stock has an intrinsic value, which is equal to present value of future cash flows from security discounted at appropriate risk, adjusted discount rate. "The value of common stock is simply the present value of all future income which the owner of share will receive", (Francis, 1991:398). And the actual price should reflect the intrinsic value of the stock i.e. good anticipation of cash flows and capitalization rates corresponding to future time period. But in

practice first it is not known in advance to what a stock's income will be in the future period, and second, it is not clear what the appropriate discount rate should be for a particular stock. So fundamental attempt to reach best estimate of the intrinsic value of share by studying company's sales, profit, dividends, management competency and numerous other economic and industrial factors which determine its future income and prospect of business opportunities. "Fundamental analysis delves into companies, earnings, petition, market conditions and many other factors", (Francis, 1991: 425).

Since in world of uncertainty, the anticipation of values cannot be known exactly, there will be disagreement on the option about the estimation among the market participations. Then actual prices fluctuate closely around the economic value of share, because too far than true value is profitable for the participants and they do not miss to exploit situation. Over the time, with continuous generation of new information related to company's coming prospect, the instructive value of changes. As a result, price stocks just to intrinsic value.

The actual of securities therefore is considered to be function of a set of anticipation. Price changes as anticipation change which in turn charge as a result of new information, (Bhalla, 1997: 283). Whenever the stocks are priced over or under the true value of stock, the recommendation of sales or purchase is called for "After extensive analysis, the investors derive an estimate of the intrinsic value of security, which is then compared to its market price. If the value exceeds the market price, the security should be acquired and vice versa, (Reilly, 2000: 347).

The fundamental approach is based on rational scientific analysis of data, but the market is rarely rational.

1. The information and analysis may itself be incorrect.

2. Many companies with the help of creative and innovative accounting and accounting cosmetics disguise the real earnings.
3. The fundamentalist's estimate of intrinsic value by may be incorrect this is not only possible but also portable that he often forecast growth, profit and other factors without grasping all the facts.
4. The fundamental life 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 change overtime. Ideally, revision in analysis should occur whenever new information affecting the future benefits to security holders becomes available.

### **2.1.2 Efficient Market Theories**

Market efficiency may be defined in the context of number of areas for instance organizational efficiency, investment efficiency and so on. The word "efficiency" as applied to securities market has unfortunately been used to represent a variety of logically distinct concept. In particular, it may mean as follows:

- a) Exchange efficiency
- b) Production efficiency
- c) Information efficiency

However in this study it is concerned only with informational efficiency in pricing of stocks efficient market theory contends that in free and perfect competitive market, stock price always reflects all available information and adjust instantaneously every influx of new information in an efficient markets,

security prices "fully reflect" available information, (Fama, 1977: 133).

About the assumption of the efficient market theory. Fama asserts that first it is easy to determine sufficient conditions for the capital market efficiency. For example, consider a market which

1. There is no transaction cost in trading securities.
2. All information are cost less available to an market participants, and
3. All agree on the implications of current information for the current prices of each security.

In such a market the current price of a security obviously" Fully reflects" all available information. Similarly according to Rubinstein "In a perfect and competitive economy composed of rational individual with homogeneous beliefs about future prices, by any meaningful definition present security prices must fully reflects all available information about future prices, (Fama, 1975: 812).

The subject to market efficiency has been much concerned are of the study for the academicians and researchers in recent items. An initial and very important premise for the efficient market is that there are large numbers of knowledgeable and profit maximizing independent buyers and sellers as such new information is generated randomly and investors adjust the information rapidly, (Reilly, 1986: 166).

An efficient market is concerned with the price mechanism of securities market, it has two dimension of price adjustment one is the type of information reacting to and another is the speed and quality of security to the information instantaneously and correctly adjusted in prices there will be no subsequent dependencies or lags that are profitable. Pricing not only should be instantaneous but should discount accuracy of information so that the price

fluctuate closing around its intrinsic value. So Keany rightly pointed out "it would be clearly an odd interpretation of efficiency if a doubling in the price of share were regarded as an efficient reaction to new information, simply because the movement was instantaneous, if the information in fact warranted a substantial reduction in the price.

Agreeing with the view of Keany, Francis and Taylor noted "Market efficiency refers to the ability of financial assets to quickly adjust and reflect all the information that is relevant to value in its price", (Francis and Taylor, 1986: 12).

The efficient market theory being extreme hypothesis i.e. prices fully reflected all the information, cannot be tested in the empirical data in its precise form. However, postulating pricing mechanism with the types of information yet being impounded in the stock market. It can be done. There are three forms of market hypothesis depending upon types of information set impounded into the prices. If the pricing in the stock market has absorbed, all the information will be available in the stock market. It is considered as weakly efficient and participation of the technical analysis approach in the market becomes fertile. In this market past information has already been discounted in price, so excess profit cannot be derived from the investment strategy based on past information.

If current prices of the stocks reflect all the publicly available information i.e. past price and volume data and all the published accounting information, the market is semi strongly efficient. In that market, even fundamental analysis of the published accounting information has no value, because it would have been discounted by participants accurately and instantaneously when are disclosed. When stock prices fully reflected all the relevant information i.e. published and unpublished that have impact on the future prices, the strongly efficient market hypothesis is hold. In this market,

insider information can not beat the market because no single participant has monopolistic access to that kind of information.

These three levels of efficiency described above are not indifference each other but they are serially higher in degree of market efficiency. If the market is semi-strongly efficient, it must be efficient in the weak sense also because the past prices data is one form of published information, which must have been important for the price. If the market is not efficient in weak sense, past price information could be used to predict the future prices to exploit abnormal profit. It implies that information contained in past price has not been reflected fully into the current prices. Similarly, for the market to be strongly efficient it must also be efficient at the semi-strong and weak levels, otherwise prices are not reflecting all relevant information. These literatures are the brief description about the theories of stock market prices. In the following section, detail explanation of weakly efficient market or random walk theory will be explained, testing of which the prime objective of this study is so that it makes clear about the study traced in the succeeding chapters.

#### **2.1.2.1 Theory of Weakly Efficient Market or Random Walk Hypothesis (RWH)**

The weak form of efficient market hypothesis (EMH) states that current prices fully reflected in information contained in the historical price movements according to Kean." The market is efficient in the weak sense if share price fully reflect the information implied by all prior price movement in effects are totally independent of previous movement implying the absence of any price patterns with prophetic significance", (Kean, 1983: 10). So the past price has no meaningful information to predict future course of price fluctuations, which can be used to earn above average return. The movement of future prices is independent from previous price or the series of price changes are random phenomenon. Actually, the weak form of Erim is referred to as

random walk theory of share price behavior. "Weak form efficient market hypothesis is popularly known as the random walk theory", (Fisher and Jordon, 2000: 540).

Random walk theory implies the future path of price level of a security is no more predictable than the path of a series of cumulated random numbers. The series of price margins has no memory, that is past can't be used to predict the future in any meaningful way. It means that current size and direction of price changes is independent and unbiased outcome of previous price changes. The random walk model in pristine form in tow main hypothesis states that (1) Successive Price (2) The price change conform some probability distribution, (Fama, 1965: 35).

Statistically independence means the probability of distribution for the price change during the time period's is independent from the sequence of price changes during previous time periods mathematically,

$$\Pr [X_t = X | X_{t-1}, X_{t-2} \dots] = \Pr (X_t = X)$$

In above equation, the term on the left side of equation is the conditional probability that price change during the time will take the value X, conditional on the knowledge, the previous price change too the values  $X_{t-1}$ ,  $x_{t-2}$  etc. But the term on the right of the equality is the unconditional probability that the price change during t will take the value x. The expression means the distribution of independent random variables are identical, (Gupta, 1981: 31).

Out of two hypothesis of random walk theory, independence of successive price changes is strong and most important one to make theory valid. The second one is price change. Conforms to some probability but its shape or form of distribution need not to be specified i.e. any distribution is consistent with theory as long as it correctly characterized the process generating the price changes, (Fama, 1965: 35-41). However the parameter of

the distribution should be stationary but not strongly imposed if independence hypothesis is holding true. However, still the form of distribution if price changes are important from investment decision, academic and research point view, (Gupta, 1981: 41).

Proponents of random walk recognize that in general, perfect independence assumption doesn't exist in real world. So they argue that for practical purposes small degree of dependence does not isolate random walk hypothesis as long as it cannot be used to forecast future to earn more than average market return. Random walk mode is valid as long as knowledge of the past behavior of the series of price changes cannot be used to increase expected gains, (Fama, 1965: 35).

For practical purpose, independence hypothesis is accepted as long as the degree of dependence considered in the series of price changes is not sufficient to forecast the future from the historical price movement in a way it makes higher profit than they would be under the naive buy-and hold policy.

Actually market mechanism establishes the existence of random walk theory that the successive price charges to be independent. The stock market poses steady inflow information that influences the set of anticipation of the individuals. There are some information that have an effect on industry wide impact such as charge in monetary and fiscal policy on security prices and information have an effect on industry wide impact such as change in governments tax policy on specific industry.

There is information such as announcement of earnings and dividend that affect price of the particular security. The change in the set of anticipation resulted from either of the above information is unique to each individual and other factors. Which impinge them to bid on prices of the securities in the market? There are others groups of participants who estimate the intrinsic value

of individual securities from the received information. As Fama; advocates," the existence of intrinsic value for individual securities is not consistent with random walk hypothesis", (Fama, 1965: 36).

The intrinsic value of given securities depends on earning prospects of the company which in turn are related to economic political, industrial and company specific factors. At many point of time, there exist implicitly an intrinsic value of each share but in the world of uncertainty the intrinsic value are not known exactly.

Therefore, there can be disagreement among the participants about the estimated intrinsic value of the share and actual price differ from its intrinsic values over the time, the intrinsic value itself change, as new information appears that affects the prospects of company. New information may be about deregulation in the quota system on the efficiency licensing, a charge in management, success in research and development and tariff imposed on the raw materials etc. it steady inflow of various types of information (i.e. pessimistic, optimistic and so on) arise independently across the time and participants do not show dependent tendency about intrinsic value, the subsequent price in stocks will be independent. However, in the real world, these conditions always do not hold true. True may be dependencies in the reaction of participants toward the estimation of new intrinsic value or whimsical tendency. For exchange certain individuals are institutions action on new anticipation of value may induce many other people. This behavior leads to deviate the anticipation value for below and above from the true values which results unhindered dependencies in subsequent price charges. In this situation, we can assume that there exist many sophisticated traders of two types.

) Traders having much better capacity to predict the appearance of new information and estimation of its effects on intrinsic value than others

generally named superior intrinsic - value analysis.

- J) Trader having much better skill at doing statistical analysis of price behavior named technical analysis.

The sophisticated traders can recognize the situation where the price of stock is beginning to run up or down from its intrinsic value because of inappropriately under or over discounting of information and its adjustment in the securities prices. This situation provides them incentive for speculation in the market because the price is expected to move eventually to its intrinsic value. Thus, the existence of profit maximization strategy of these sophisticated traders lead to neutralize the dependence in the price changes and the price change follow to independence of successive price change.

Of course in the uncertain world, sophisticated traders cannot always estimate intrinsic value exactly and their efforts towards erasing the dependencies may not be sufficient. In this case sophisticated characteristics can reinforce the neutralizing mechanism, because as long as there are important dependencies they can easily discern the 'trends' and 'patterns' and initiate value maximization strategy over the time the infusion of the new information in the market may move dependently which will tend to create dependence in the successive price changes of the security. For example, optimistic information tends to follow more often by optimistic information and pessimistic news tends to be more often followed by pessimistic news than good news. In this case also the sophisticated traders eventually learn it is profitable for them to estimate price changes of current new information and subsequent dependence of the same information and through their active speculation dependence in price series and establish independence assumption of the random walk theory of stock market price behavior.

## **2.2 Review of Related Studies**

Generally random walk literature is the corner store for weekly efficient market hypothesis. The development of efficient market hypothesis could also be traced back from the random walk theory of stock market price behaviors. In the beginning, the stock price changes showed random phenomenon. Although mathematically the empirical result was predictable, it lacked economic explanations. Then attempts were made to clothe the empirical market theories. The empirical evidence in the random walk literature existed before the theory was established, (Fisher, 1995:539). 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 generally called the random walk theory. (Fisher, 1995: 539).

### **2.2.1 A Review of Foreign Studies**

In 1927, Slutsky proved that the randomly generated price changes look like stock price changes and they appear to exhibit cycles and other patterns, (Gupta, 1989:33). Alfred Cowles in 1933 found little evidence that stock market analysis could predict future price. Halbrook working 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 changes between successive items tend to be largely random', (Halbrook, 1934: 11-24).

Louis Bachelier first tested the random walk model in 1900. He tested model in the commodity prices and found that those prices followed a random

walk. He presented the evidence that the commodity speculation in France was a 'Fair game' model. He also concluded that the current price of the commodity was an unbiased estimate of its future price. Unfortunately his insights were so far ahead time that was largely unnoticed. For a long period until his paper was rediscovered and eventually translated into English and was printed in 1964.

Alfred Cowles and Herbert E. Jones in 1937 reported that stock prices moved with predictable trends. They gave a controversy to the random walk model as a valid share price behaviors model in USA. This finding remained a challenge against the random walk hypothesis more than two decades. After the working in 1960 had pointed out an error in their analysis and they withdrew their previous conclusion in 1960. Actually the error occurred because, where each unit of a time series even where the original series is an average of points within the unit, the effect of such averaging will be to introduce positive first differences of such a series even where the original series a random series. "In the study of serial correlation in price series it is important to bar in mind that the use of the averages can introduce correlations not present in the original series".

In 1953, Kendall examined the behavior of weekly changes in 19 indices of British industrial share price and in spot prices for cotton (New York) and wheat (Chicago). He found no relationship between share price changes in the current week and 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 of drew a random number. From a population of fixed dispersion and added into the current price to determine the next week's price", (Kendall, 1953:11-25).

H.V. Roberts carried his next study in 1959. He conducted simulation tests by comparing the cumulating of random numbers and the Dow Johns Industrial Average Index (DJIAI) for about a year starting 30 Dec. 1955 to 28

Dec. 1956. He further observed that the first difference of these two series produce the same pattern. His work was significant in that he gave a number of methodical suggestions. For testing what he calls the chance model. In particular, he suggested run analysis for testing independence of price changes. Another study conducted by Osborne, one of the distinguished physicists, ignorant about the stock market at that time watched the number 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 .

Alexander (1961) tested the filter rule technique on the closing prices of two indices, the Dow Jones Industrials from 1897-1959 and Standard & Poor's Industrials from 1929-1959 and reported that in general, filters of all different sizes and all different period yield substantial profits, significantly greater than that of simply buy and hold policy. Finally he concluded that the independence assumption is not validated as a description of reality by his data. But later in 1964, he corrected the shortcomings on his previous study were cost rather than benefit. Alexander found that his filter rules produced very large rates of return, particularly of small filters. However when transaction cost are considered, the abnormal returns disappear for all filter rules (Alexander).

In another study carried out by Granger and Morgenstern (1962) applied special method of analysis to the weekly, monthly and volume series from the New York stock market which involved of DOW-Jones, Standard and Poor and various indices as well as price series of individual stocks.

The result confirmed the random walk hypothesis for weekly and monthly

price data from New York stock market. Again, GodFrey, Granger and Morgenstern tested the same method broadly and found that random walk model a reasonable one.

In 1962, A. B. Moore examined changes of 29 randomly selected stocks for 195/-58 and found that average serial correlation co-efficient of - 0.60. This value is extremely low, indication that data on weekly changes are valueless in predicting future changes. This interpretation of his test is that a low co-efficient estimate suggests that previous price changes do not provide any reliable information in estimating future. Price changes Cootner (1964) tested the randomness of the series by using serial correlation on the logarithms of daily price changes of 45 companies stock from New York Exchange. In this study he found low correlation coefficient of -0.046, which are insufficient to predict the future price changes.

In 1965, Samulson though lacked theoretical discussions in his paper, but his findings support the independence hypothesis of random walk theory in stock price. He concluded that if market has zero transaction costs if all available information are free to all interested parties and if all market particularities either potential and existing have the save time horizons and expectations about the prices, the market will be efficient and prices will fluctuate randomly.

King in 1966 investigated on the monthly price change from 1927 to 1960 of 63 stocks and authenticated, the random walk model. The estimated average serial correlation co-efficient was + 0.018, which is close to zero.

In 1966, Fama & Blume used the filter technique to overcome the short comings of Alexander's mechanical rules. They tested the profitability of 24 filters ranging from 0.9% to 50% to buy and hold return of each of the stock of the Dow Jones. Ignoring the transaction costs, only two out of thirty were

superior to buy and hold policy, when commissions were taken into consideration only four out of thirty have positive returns and not comparable with buy and hold return, (Fama, 1964, Cambridge MIT press). Therefore, according to their demonstration, it seems that filter technique can not provide returns larger than those under a naive buy and hold policy.

Brealy (1970) examined the various stocks using similar methodology to that used by Fama in 1965 also supported that random walk model and concluded that successive price changes in the stock market are independent, (Brealy, 1970).

Dryden (1970) concluded that the share price movements were random. However in his later study, he used serial correlation and runs analysis to examine the daily closing prices of 14 individual stocks of U.K. market and supported the independence hypothesis of successive price change, (Dryden, 1970, p 369-389). Similarly, Kemp and Remp's study (1971) was also against the random walk theory. They derived the conclusion, that the share price movements were conspicuously nonrandom over the period considered, (Alexander, 1971: 51).

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

Sweeny (1988) developed a filter rule that was able to earn modest profits. He replicated Fama and Blume's results in the short position usually generated the trading losses. In contrast, Sweeny found that the long position were often profitable. So he used an X% filter rule. If the price of a security rises at least 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 trough and then rises X%. Sweeny also tended to be fairly and consistently profitable in some stocks while being fairly consistently unprofitable year after year in other stocks. This filter rule could mechanically trade some stocks and earn a statistically 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, (Sweeny, 1988: 285-300).

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 that researchers were attributing to stock splits might be better attributed to these other phenomenon, (Fama, 1969: 1-21).

### **2.2.2 Review of Major Nepalese Studies**

The stock markets in Nepal have been less subjected to investment research than their counterparts elsewhere. Most of the researchers that are concerned with the investigation of effect of certain financial variables on the equity share prices. For instance, (Pradhan, 1994, Financial Practice in Nepal, p 63) studies stock market behavior in Nepal which conclude that the positive relationship between the 'ratio of dividend per share to market price per share and interest coverage.

In another study, (Shrestha, 1999, Stock Price Behavior in Nepal: 1-84) who examined daily closing price of 20 stocks during the period from 13 Jan, 1994 to mid-July 1998 by means of serial correlation and runs tests found that the successive price changes are dependent. He also concluded that the

Nepalese stock market is not efficient in pricing shares even in its weak form. However, since their studies did not adjust information in the price series, their findings should be used with caution.

(Mahapatra, 1995, Relative Strength in Performance of share Price in India: A Walk From test of Capital Market Efficiency: 177-190) tested the WEMH using rank correlation analysis based on relative strength. His sample consisted of month-end closing prices, of 26 stocks from Bobbay Stock Exchange during the period January 1989 to December 1992. He argued that the Indian stock market is less efficient in the short run, but more efficient in the long run.

(Gupta, 1985:54) analyzed the equity share price behavior in India during the period January 1971 to March 1976 and extensively tested the RWH using daily and weekly prices of 39 individual shares and two indices. He employed the serial correlation analysis and runs test and found evidence in support of RWH. He also concludes that the random walk model appeared to be an appropriate model even for the less developed country like India to describe share price behavior.

Since the above mentioned studies on Nepalese stock market offer limited findings, more extensive testing measures, time periods and adjustment of necessary variables are needed in order to be more conclusive about the efficiency of the Nepalese stock market.

Studies on share price behavior conducted in the context of Nepal are based on secondary sources of information only. No study has been conducted on price behavior related to stock market efficiency by using primary sources of information. There is a need to conduct a survey of financial executive in order to find out more subjective facts on share price behavior which cannot be determined through the use of secondary sources of information.

Thus on the basis of the reviews done above of the previous research

work it may be concluded the stock market prices show a random movement and the security prices appear to be serially independent. So, the investors can not develop any profitable trading strategy using the information of past series. Chartists claim that the statistical tests do not prove practically that more complex strategies can not be formulated through the past price data to earn an abnormal rate of return. Similarly, some advocates of technical analysis contended that these tests were too narrow and unsophisticated to pick up the complicated patterns in stock prices, (Fama, 1969: 57).

### **2.3 A Review of Thesis**

It is found that numerous studies have been conducted pertaining to the stock market or stock prices behavior. In Nepali context, there are few studies on the stock market prices. Some of them have been reviewed here in brief.

Pradhan (1992) conducted his study by collecting the data of 17 enterprises from 1956 to 1990. The objectives of his study were to assess the stock market behavior in Nepal, to examine the relationship of market equity. Market value to book value, price earning and dividend with liquidity, profitability and leverage assets turnover and interest coverage. The major findings of his study were: the higher the earning of the stocks, the larger the ratio of dividend per share to market price per share, stocks with larger ratio to DPS to MPPS have lower coverage ratios, positive relationship existed between dividend payout and turnover ratio; positive relationship between dividend payout and liquidity; positive relationship between dividend payout interest coverage and DPS and MPPS are positively correlated, (Pradhan, 1992, MBS Thesis).

Aryal (1995) has studied behavior of stock market prices with the objective to discuss the movement of stock market prices and to develop the

empirical profitability distribution of successive price change of an individual common stock market as a whole. This study was based on secondary information obtained from Nepal Stock Exchange. This study covers almost 8 months period and the sample was 21 listed stocks. He applied serial correlation and runs test as statistical tool to analyses the data. The dependence nature of price series produces by general market fluctuation statistically implied; today's change in positively depending upon yesterday's price changes. This implied that there is a sufficient lack of financial and market analysts who are sophisticated and superior in analyzing the general market fluctuations, predicting the occurrence of future potential and economic events that their eventual effects on price series, Aryal (1995).

Mr. Bhatta (1997) has also conducted research on the topic "Dynamics of stock market in Nepal". The objectives of the research were as follows:

1. To analyze the trend of the Nepalese stock market.
2. To diagnose and compare sectoral financial status of the stocks in Nepalese stock market.
3. To analyze the market share price of the Nepalese stock market.
4. To find out the impact of the secondary on primary market and vice versa.

He has conducted in his research as follows. The stock market and economic activities move in the similar direction. They influence each other. The development of the former is reflected in the latter. The stock market raises and mobilizes the inevitable resources to finance the long term large projects in the economy. The stock market therefore can be regarded as a heart of economy.

The investors are interested to invest their resources in the shares of

corporate sector through the stock market in the Nepalese economy. It is necessary to develop the entrepreneurship and encourage the entrepreneurs to start the productive venture as soon as possible. Management capability of the entrepreneurs, which may contribute to raise the return from the investment.

Development of manufacturing sector is the backbone of an economy, which in turn, assists to foster banking, finance and insurance sectors. Unfortunately, the manufacturing sector doesn't have a good performance in Nepalese economy. Almost all firms in this sector have a sustained loss. Although it has become late to take steps to overcome such problems of the Nepalese stock market in order to make it active and supportive, the stock market has good prospect for the resource mobilization to finance the productive enterprises in Nepalese economy.

Shrestha (1999) has conducted research on stock price behavior in Nepal with the objectives to examine the efficiency of stock market of Nepal, to examine the serial correlation successive daily price changes of the individual stocks, to determine whether the sequence of price changes are consistent with changes of the series of random number expected under the independent Bernoulli process, to determine the efficiency of the stock market through the theoretical model of efficient market hypothesis in the stock market. The finding of the study are when the log days increase, the mean value of serial correlation of coefficient is lower, that indicates that the past price changes may have low price to predict the future price changes in the long run. There exist no profitable trading rules to make greater profit that they would make under the naive buy and hold strategy in their speculation through the information of past price changes and Nepal stock market is not efficient in pricing shares, (Shrestha ,1999).

Paudel (2001) had undertake his study on the share price movement of the joint venture commercial banks in Nepal by using financial and statistical tools (Standard deviation, correlation, beta, t-test etc.) The major objectives of

the study are to examine Nepal stock exchange and to judge whether the market shares of different banking indicators (book value per share and major financial ratio) explain the scenario why the shares of selected banks emerge as blue chips to the potential investors and to make a conclusion on the basis of financial ratios analysis. The finding of his study were market prices move randomly, the market value per share does not accommodate all the available historical information. The beta coefficient, which measures the risk ness 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, Paudel (2001).

Mainali (2003) undertook his study on the share price behavior of listed commercial banks with the major objectives as: to analyze the share price behavior of the commercial banks listed with NEPSE and to examine the risk involved in the common stock investment of the sampled commercial banks. His findings were that the past and present price changes can screen out some valuable information in forecasting future price changes and there exist a significant differences in the actual and expected numbers of runs for the series of daily closing price changes of the sampled commercial banks and today's price charge is dependent upon the information of yesterday's price changes, Mainali (2003).

Paudel (2003) conducted his study on stock price movement of joint venture commercial banks with the use of financial and statistical tools. The major objectives of his study were: to examine the movements of stock price in relation to Nepal joint ventures commercial banks are either dependent or independent to historical prices of the stocks, to evaluate the risk and return proportion of investments on stock. The major findings of the study revealed that Nepalese stock market if not efficient but it builds hard to categories into the forms of efficient market hypothesis and stock of the sampled banks were under priced and these are suggested to buy and hold stocks of joint venture commercial banks, Paudel (2003).

Various studies have been taken in the field of share price behavior. The significance of this study is to find out whether the successive daily price changes of all listed commercial banks are independent or not. The risk and return of the sampled commercial banks are examined to know the individual return pattern and risk involved.

## **2.4 Research Gap**

In order to find out the research gap in the area of stock market efficiency and stock price behavior in Nepal, this research has reviewed other relevant studies and concluded that till date there are only very few research of this nature. Among them too, majority are concerned on stock price behavior. Efficiency of stock market is one of the most important matters in recent time.

This has not been incorporated by previous studies. therefore, this research focuses heavily on analyzing the efficiency of the stock market in pricing shares. Further, it tries to find out whether the successive price changes of all listed commercial banks in Nepal are independent or not. At the same time, risk-return and volatility of stock prices of the sampled commercial banks are also examined to analyze the individual return patterns and risks involved. Because the research gap is identified, the researcher has been fully assured that this is one of the most demanding and most valuable researches related to the financial sector of Nepal.

# **CHAPTER - 3**

## **RESEARCH METHODOLOGY**

### **3.1 Introduction**

Research methodology is a systematic way for solving any research problem. It is a science of study how research is done scientifically. It is an essential aspect of research that a researcher should know not only the research techniques but also the research methodology. In order to achieve the objectives of the study following research methodology has been applied. This chapter deals with the research methods by the help of which the collected data are analyzed to achieve the result. It includes research design, population and sample, sources of data, data collection techniques, data analysis tools and limitation of the methodology.

### **3.2 Research Design**

A research design is a plan of the proposed research work. A research design represents a compromise dictated by mainly practical considerations. It is a catalogue of the various phases and facts relating to the formulation of research efforts.

Research design is a plan or blue print of study for the collection and analysis of data that present a series of guideposts to enable the researcher to progress in the right direction in order to achieve the goal. (Joshi, 2001:12).

Research Design is the conceptual structure within which the research is conducted. The research design adopted for the purpose of the study is both descriptive and analytical. All the data used in the study are of secondary form.

### **3.3 Population and Sample**

All the companies listed in the stock exchange were considered as the total population. The companies were categorized into eight groups as done by

the NEPSE. A total of 135 companies were listed in NEPSE. Out of them, the companies that were in existence and doing share transaction in NEPSE Ltd. Among them there are 14 commercial banks are listed and are doing share transactions are considered to be the population of the study. The study is tried to explore the objectives set and it is expected that the study will help in analyzing the stock market scenario. The following listed 5 Commercial Banks are taken as sample to fulfill the purpose of this study:

- ❖ Nabil Bank Limited
- ❖ Standard Chartered Bank Nepal
- ❖ Himalayan Bank Limited
- ❖ Everest Bank Limited
- ❖ Nepal Investment Bank Limited

### **3.3 Source of Data**

The required data for study are collected from the secondary sources and primary sources. Most of required data are composed by the NEPSE Ltd for the study. The sources of secondary data are previous studies and reports, published and unpublished official reports of the concerned banks and NEPSE. The data used in the study consist of daily closing price of the listed commercial banks in NEPSE. The price series data of the study are taken from daily newspapers and NEPSE. The required data and concerned documents for this study are prepared on basis of reports of SEBO/N and NEPSE.

### **3.5 Data Processing Procedure and Methods of Analysis**

Some data are compared based on the percentage and some were statistically tested. The daily price of each stock price has been selected for analysis of share price behavior. The actual tests are not carried out on the daily

prices themselves but in the first difference of their natural logarithms. The basic random variable of this study is:

$$U_{jt} = \text{Ln} [P_{jt} / P_{j(t-1)}]$$

Or

$$U_{jt} = \text{Ln} (P_{jt}) - \text{Ln} P_{j(t-1)} \dots\dots\dots (1)$$

Where,

$U_{jt}$  = the price changes in natural logarithms of stock j.

$P_{jt}$  = the price of security j, observed at the end of day t.

$P_j (t - 1)$  = the price of security j, observed at the end of day t-1.

j = 1,2,3..... n

t = 1,2,3 .....n

Ln = natural log

It is preferable to analysis the data on the difference of log prices rather than the raw prices. Because the changes in the log price is the yield with continuous compounding from holding the security the day t and the variability of the simple price change for given stock is probably the function of the price level.

Special circumstances arise such as issues of bonus share or stock dividends, cash dividends, issue of right shares, which should be adjusted to reflect the reality in the long run. If any commercial bank stock split 2 for 1 at the end of the day t, its actual closing price of the day is doubled or divided by 1/2 the ratio of old shares to new. When company distribute dividend to the shareholders, other things remaining constant, the value of the share should fall

by about the amount of the dividend. To adjust it, the first difference between ex-dividend day and preceding day is given by:

$$U_{jt} = \ln ( P_{jt+d} ) - \ln P_{j(t-1)} \dots\dots\dots (2)$$

Where,

d = the dividend per share

In case of right issue, the value of share should fall by the amount of theoretical value or right on ex-right date. In practice of right issue on day t, adjustments are made as follows:

$$U_{jt} = \ln ( P_{jt} + R ) - \ln P_{j(t-1)} \dots\dots\dots (3)$$

Where,

R = the theoretical value of right

In this study all necessary adjustments have been made in the data series of the entire related sample.

### **3.6 Data Analysis Tool**

Analysis of data involves a number of closely interrelated operations that are performed to get answer to the researcher questions. Processing of data implies editing, coding, classification and tabulating of collected data.

#### **3.6.1 Serial Correlation Analysis**

Serial correlation coefficient provides a measure of relationship between the value of a random variable in time (t) and its value of the (k) period earlier. It indicates whether the price a change at time (t) is influenced by the priced changes occurring (k) period earlier. For given time series  $U_t$ , defined as the change in log price of a given security from the end of day t-1 to the end of the

day t, the serial correlation coefficient for lag k is

$$r_k = \frac{\text{Covariance}(U_t, U_{t-1})}{\text{Variance}U_t} \dots\dots\dots(4)$$

Where,

$r_k$  = Serial Correlation Coefficient

$U_t$  = the price changes in natural logarithms of stock

$k$  = lagged variables (1, 2, 3 ... n)

$t$  = time interval (1, 2, 3..... ..n)

The result of serial correlation always range from +1 to - 1. If the compared coefficient of serial correlation is near to zero, then it is an indication of independence, i.e. today's price change is an unbiased outcome of yesterday's price changes. But if this value departs significantly from zero, in either direction causes dependence among the time series data accordingly either positive or negative.

If the distribution of U, has finite variance, then in very large samples the standard error of  $r_k$  is given by:

$$S.E. (r_k) = 1 / (N-K) \dots\dots\dots (5)$$

Where,

$N$  = Sample size.

$K$  = Lag period

The control limit can be computed by the given formula:

$$r_1 \pm 2\sigma (r_1) = 0 \pm 2 / (N-1) \dots\dots\dots(6)$$

### 3.6.2 Mean

Mean of a set of observation is the sum of all the observations divided by the number of observations.

$$\bar{x} = \frac{\sum x}{n} \dots\dots\dots(7)$$

### 3.6.3 Standard Deviation

Standard deviation measures the dispersion of the outcomes from the expected value. It is quantitative measure of the total risk of assets. It provides more information about the risk of the assets. It is a measure of total risk of the assets. It measures the dispersion of returns around the mean. Its advantage is the uncertainty of returns can be summarized into a single easily calculated number. The standard deviation of a distribution is the square root of the variance of returns around the mean.

$$\sigma_j = \sqrt{\frac{\sum [r_j - E(r_j)]^2}{n}} \dots\dots\dots(8)$$

Where,

$\sigma_j$  = standard deviation of stock<sub>j</sub>

$r_j$  = returns on assets j.

$E(r_j)$  = expected returns on assets j.

$n$  = number of observation in the sample

### 3.6.4 Coefficient of Variation

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

$$C.V. = \frac{\Xi}{\bar{X}} \dots\dots\dots(9)$$

Where,

C.V = Coefficient of Variation.

$\Xi$  = standard deviation

### 3.6.5 Beta Coefficient

Beta coefficient is an index of systematic risk. It may be used for ranking the systematic risk of different assets. If beta is greater than 1, then the asset is more volatile than the market and is called aggressive asset. If the beta is less than 1, then the asset is considered defensive asset as its price fluctuations are less than the market. On the other hand, if the beta is equal to 1, then the asset is said to be average as its price moves proportionately with the market changes.

$$\beta = \frac{\text{Covariance } (R_j, R_m)}{\Xi_m^2} \dots\dots\dots(10)$$

Where,

$\beta$  = beta coefficient of stock j.

Variance  $(R_j, R_m)$  = Covariance of the return of stock j and market.

$\Xi_m^2$  = variance of the market.

### 3.6.6 Run Test Analysis

Statistical test based on the theory of runs ignore absolute values in a time series and observe only their signs. For the present purpose, a run can be defined as a sequence of price changes of the same sign preceded and followed by price changes of different sign. In a given share price series, there are three types of price changes in a series i.e., positive, negative and no-change, thus implying three types of runs. A run test is performed by comparing the actual number of runs with the expected number of runs on the assumption that price changes are independent. If the actual (observed) runs are not significantly different from the expected no of runs then it is concluded that successive price changes are independent. On the contrary, if these differences are significant, the price changes would be dependent. Runs test is nonparametric test that ignores the magnitude of price changes and observes only direction of change in a given time series. The difference between expected and actual number of runs will be analyzed by the total number of runs. A runs test can detect the kinds of patterns in output quality that are associated with systematic variation.

To derive the mean of the sampling the r statistic following formula is used distribution of mean of the sampling distribution of the r statistic.

$$\hat{\mu}_r = \frac{2n_1n_2}{n_1+n_2} \dots\dots\dots (11)$$

The S.E. of the r statistic is computed as follows: S.E. of the r statistic.

$$\exists r = \sqrt{\frac{2n_1n_2(2n_1n_2 - Z_{n_1} - Z_{n_2})}{(n_1 - Z_{n_1})^2 + (n_2 - Z_{n_2})^2}} \dots\dots\dots(12)$$

$n_1$  = number of occurrences of outcome 1

$n_2$  = number of occurrences of outcome 2

If either  $n_1$  or  $n_2$  is greater than 20, the theoretical sampling distribution of  $r$  is approximately normal and,

$$z = \frac{r - \hat{r}}{\sqrt{\hat{r}}}$$

The run test is always being two tails. When both  $n_1$  and  $n_2$  are equals to or less than 20, special table are needed to interpret the sample results.

$$k = \frac{r - \hat{r}}{\sqrt{\hat{r}}} \text{ is employed.}$$

## **CHAPTER - 4**

### **DATA PRESENTATION AND ANALYSIS**

This chapter is for number of closely related operations which have been performed with the purpose of summarizing and organizing data in such a manner that they answer the research questions. This is the main body of the study for presentation and analysis of the collected data. The first section deals with the general overview of the Nepal Stock Exchange. The second section deals whether the consecutive daily log price are independent or not with the serial correlation analysis. The representation about the risk, return and market sensitivity of the sampled stock are briefly highlighted in the second section. The last section highlights the empirical findings of this analysis.

#### **4.1 General Overview of Nepal Stock Exchange**

The history of securities market began with the flotation of share by Biratnagar Juit Mills Ltd. and Nepal Bank Ltd. in 1937. Introduction of the Company Act in 1964, the first insurance of Government Bond in 1964 and the establishment of securities Exchange Center Ltd. in 1976 were other significant development relating to capital market.

Securities Exchange Center was established with an objective of facilitating and promoting the growth of capital markets. Before conversion into stock exchange it was the only capital markets institution undertaking the job of brokering, underwriting, managing public issue, market making for government bonds and other financial services.

Government of Nepal, under a programmed initiated to reform capital markets converted Securities Exchange Center into Nepal Stock Exchange in 1993. Nepal Stock Exchange, in short NEPSE, is a non-profit organization, operating under Securities Exchange Act, 1983.

The basic objective of NEPSE is to impart free marketability and

liquidity to the government and corporate securities by facilitating transactions in its trading floor through member, market intermediaries, such as broker, market makers etc. Government of Nepal, Nepal Rastra Bank, Nepal Industrial Development Corporation and members are the shareholders of the NEPSE. ([www.nepalstock.com](http://www.nepalstock.com))

NEPSE has adopted an "Open Out-Cry" system. It means transactions of securities are conducted on the open auction principle on the trading floor. The buying broker with the highest bid will post the price and his code number on the buying column, while the selling broker with the lowest offer will post the price and code number on the selling column on the quotation board. The market maker quotes their bid and offer price on their own board before the floor starts. Once the bid and offer price match, contracts between the buying and selling brokers or between the brokers and market makers are concluded on the floor.

Presently in Nepal, NEPSE is the only secondary market (organized stock exchange) of the country for the security transaction. Other forms of secondary market is Over-the-Counter (OTC) market, the third and the fourth market are not yet initiated till date. NEPSE has appointed five market maker and twenty five brokers for smooth daily transaction of trading i.e. buying and selling of securities under its restrictive programmed in 1993. NEPSE opened its trading floor on 13th January 1994.

The authorized capital of NEPSE is Rs 50 million out of which the issued capital is Rs 34.91 million. The issued capital is subscribed by Government of Nepal. Nepal Rastra Bank, Nepal Industrial Development Corporation and Licensed Members.

NEPSE has experienced many rise and fall of stock market since its origination. At one time, raising capital by floating shares to the public increased due to investor's optimism over the performance of the companies. Brokers were busy trading shares for good income and as well for investor's

favor. But as time passed by, the stock market began to be inactive and slack due to several reasons. The reasons among them being the listed companies could not match the performance in accordance to the commitments made in the prospectus. The political instability due to frequent change in government also has affect to some extent. The trend of movement of price of the stock shows that the market is largely rumour oriented because when the earning is not satisfactory the prices of some securities goes very high than book value resulting in over valuation and under valuation of the stock prices. Issuance of right share and bonus shares also has affected the prices of the stocks.

**Table:4.1**

**Ownership Structure of NEPSE**

S.N.	Shareholders	Rs. In Million	Percentage (%)
1	N/G	20.48	58.67.
2	NRB	12.08	34.60
3	NIDC	2.14	6.13
4	Members	0.21	0.60
	Total	34.91	100

Source: [www.nepalstock.com](http://www.nepalstock.com).

## **4.2 General Overview of Stock Market Trading**

The organized stock market is the recent phenomenon in Nepal. In the banging of organized "open cry-out system", there was rapid increase in the stock market activities. Share price increased tremendously and the turnover volume was also very high. But the increased share price could not last for long and the price of the stock also began to fall. The main purpose of this section or the chapter is to provide a general overview and behavior of the stock market of Nepal and its functioning.

### **4.2.1 Behavior of NEPSE index**

The market index plays a great importance in the security analysis and

portfolio management. The index is used a yard-stick by the individual and institutional investors to evaluate the performance of their personal or institutional portfolio. Market indices are used to determine the relationship between the historical price movement and economic variables and to determine the systematic risk for individual securities and portfolios. The index can also be used as measuring tool whether the performance of stock market is efficient or not. This clearly focuses on the price of stocks is increasing or decreasing in the market. Higher index indicates better performance of the stock market and vice versa.

From the table below, it is evident that at the end of the fiscal year, NEPSE index increased by 86.78 points close at 386.83 points. The NEPSE index at the last fiscal year was close at 286.67 points and increase by 45.16 points. During this fiscal year the highest point of NEPSE index was recorded is 386.83 points and it was for the month of June/July 2006. The lowest point was 293.35 point and was recorded for the month of Aug/Sep 2006.

The monthly closing figure is presented in the table below and the monthly trend of NEPSE Index is present in trend in the following chart.

**Table 4.2**  
**Monthly Closing NEPSE Index (Fiscal Year 2006/2007)**

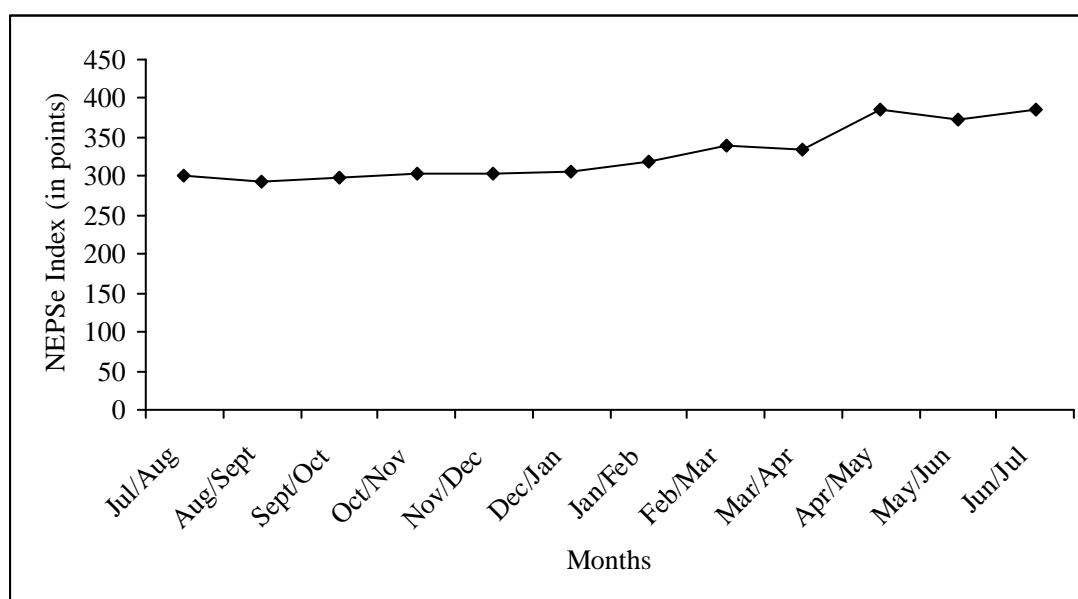
Month	NEPSE Index (Closing Total)
Jul/Aug	300.05
Aug/Sept	293.35
Sept/Oct	297.34
Oct/Nov	302.39
Nov/Dec	303.12
Dec/Jan	305.50
Jan/Feb	317.69
Feb/Mar	339.79
Mar/Apr	334.77

Apr/May	385.89
May/Jun	372.01
Jun/Jul	386.83

(Source: NEPSE: Annual Trading Report, 2006/2007, www.nepalstock.com)

**Figure 1**

**Monthly NEPSE Index (Closing) for Fiscal Year 2006/07**



**4.2.2 Number of Listed Companies**

Table 4.3 shows the number of listed companies from 1996/97 to 2006/07. The rate of listing for the companies for the fiscal year 2003/04 is 12.5 which is highest increase rate. There were 108 companies listed in 2003/04 as compared to 96 listed companies in the fiscal year 2002/03. The highest number of companies listed was 135 companies were seen in the fiscal year 2006/07. A decrease of 16.52% among the listed companies was recorded in 2002/03 with 19 companies less than that of previous year. This was mainly due to the delisting of the companies by NEPSE in accordance with the provision mentioned in the Stock Exchange Act.

**Table 4.3**

Listing Rate of Companies in NEPSE for Different Fiscal Years

Year	No. of listed companies	Percentage Change
1997/98	95	-
1998/99	101	6.32
1999/00	107	5.94
2000/01	110	2.8
2001/02	115	4.55
2002/03	96	-16.52
2003/04	108	12.5
2004/05	114	5.56
2005/06	125	9.65
2006/07	135	8

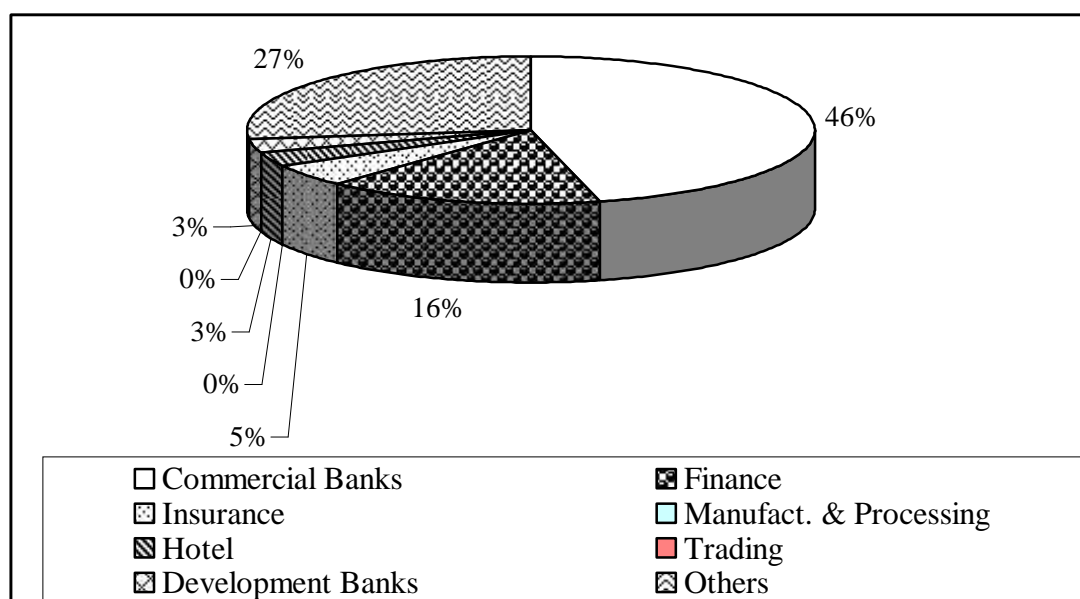
(Source: NEPSE: Annual Trading Report, 2006/2007, [www.nepalstock.com](http://www.nepalstock.com))

### 4.2.3 Group-Wise Monthly Turnover

The table in Appendix-3 exhibits the yearlong stock market performance from the view of turnover in terms of share units and traded amount of all the companies whose shares were traded on the floor of NEPSE. The market shows mixed results with increasing and decreasing trends in the overall trends. The first month's trading turnover is 887.09 thousand shares which were exchanged equivalent to the amount of Rs.289.46 Million where as the highest trading turnover figure for the month of May/June 2007 in which 3973.71 thousand shares were traded for the equivalent amount of Rs618.25 Million. During the period of 2006/07 the lowest turnover occurred during the month of October/November 2006 where 476.63 thousands shares were traded for Rs.175.59 million.

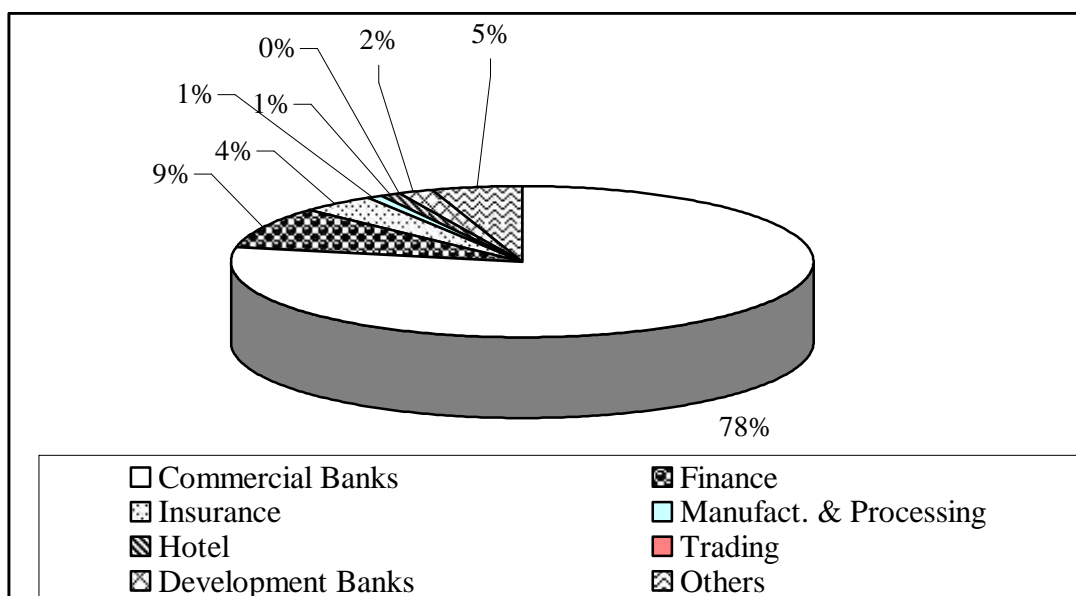
Among the various industries, commercial banks are dominant than other industries both in terms of volume traded amount overall. The total number of traded shares for the commercial banks 5535.21 thousand (i.e. 45.28 %) out of 12223.15 thousand shares of total shares traded and the traded amount is Rs.2696.61 million (i.e. 78.10 %) out of 345289 million total traded amount. The other industries such as manufacturing and processing hotel, insurance, finance, trading, development banks and other recorded 59.8 thousand shares, 392.2 thousand shares,574.97 thousand shares, 1957.55 thousand shares, 15.22 thousand shares, 386.8 thousand shares and 3301.4 thousand shares respectively out the total 12223.15 thousand shares traded for the period. Likewise, the traded amount for those industries is Rs 17.17 million, Rs 19.73 million , Rs 129.87 million, Rs. 305.93 million, Rs. 15.81 million, Rs. 83.2 million and Rs. 184.57 million respectively out of the total trading amount of Rs. 345289 million. The higher number of share indicates the higher liquidity and higher amount of turnover implies attractive stocks. This also gives the indication that the stocks of the commercial banks are blue chip stock.

**Figure 2**  
**Group-wise Turnover (in %) Fiscal Year 2006/07**



Source: Worked out from Appendix-3.

**Figure 3**  
**Group-wise Turnover Summary (in %) Fiscal Year 2006/07**



Source: Worked out from Appendix-3.

#### 4.2.4 Paid-up Value and Market Capitalization

Paid-up value indicates the actual amount of the investment in assets whereas market capitalization indicates the present value of the investment. It means the value of market capitalization is related to paid up value but differs from it because the value market capitalization is related the market price of share. The value of market capitalization changes due to the changing sentiments of capital market. If the market condition is favorable then the market value of assets increase substantially the value of the company is also increased and vice versa. The increased market value further suggests that the good performance of the concerned companies and likewise investors are highly interested in such companies.

Table of Appendix 4 presents a group wise monthly paid-up and market capitalization of the listed companies for the fiscal year 2006/07. The

percentage of paid value for the commercial banks on total paid up values of the listed companies is highest among the eight groups. The share of the commercial banks is the paid-up value lines in between 50.52% to 62.10% for the period of 2006/07. The lowest value is recorded during the month of May/June and the highest value is observed during the period of August/September. The proportion of the paid-up value of the trading group is the least. The commercial banks also dominant the proportion of the market capitalization. The monthly proportion of the market capitalization of this group is more then 70%. The proportion of the market capitalization of hotel and finance group is relatively lower than their paid-up value indicating the performance of the commercial banks are the best among all the industries listed in NEPSE.

#### **4.2.5 Trading Performance of the Population Banks**

The table in Appendix 5 presents different quantitative information about the stock market functioning during the fiscal year 2006/07 for each commercial bank taken as sample.

In the first column of the table, the number of outstanding shares has been taken, in second column, closing prices of the securities are given. Third, Fourth, Fifth and Sixth column contains the paid-up value, number of transactions, shares traded in units and traded amount are given respectively. The Seventh column represents the total paid-up values of the common stocks. Every entry is derived by multiplying the outstanding equity with paid-up values. Column Eight contains the total market value, which is derived by multiplying the outstanding equity with the closing price of the respective sample. Within the samples, the highest number of transaction has been secured by Bank of Kathmandu Limited with 3705 transaction along with the highest number of shares traded of 928.70 thousand shares. But Himalayan Bank Limited secures the highest traded amount among the samples. The

highest paid up capital is Rs.772.50 million for Himalayan Bank Limited and the lowest value belongs to Standard Chartered Bank Limited with Rs.374.64 million. The highest total market value is Rs.14142.68 million which is of Standard Chartered Bank Limited and the lowest total market value is Rs.658 million is observed for NCC Bank Limited.

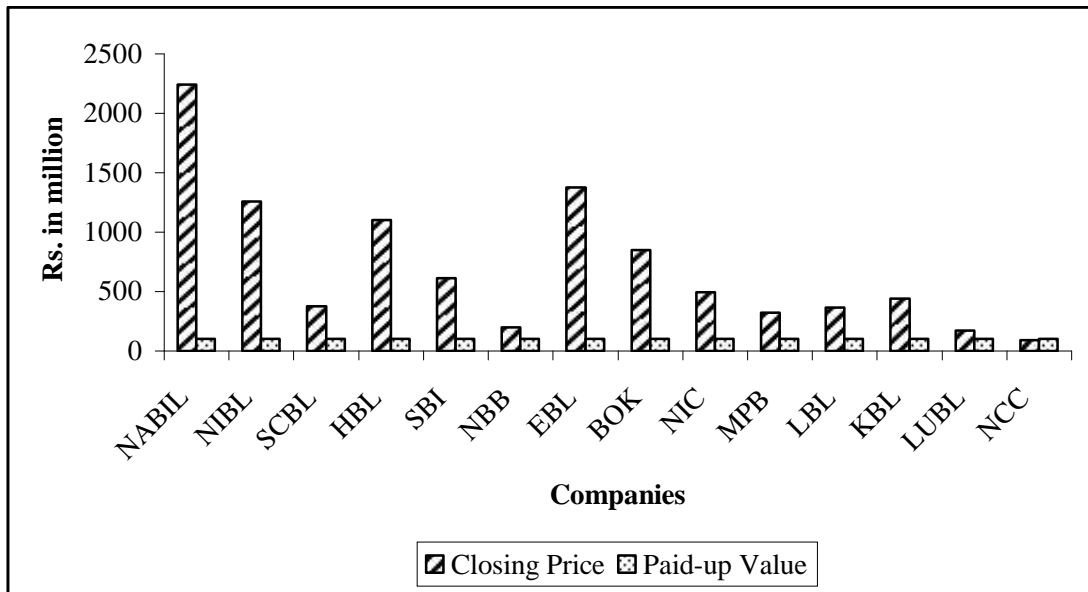
**Table 4.4**  
**Trading Performance of Population Banks**  
**(For Fiscal Year 2006/07)**

Name of the Bank	Outstanding Equity	Closing Price	Paid-up Value	Trading Amount (Rs. in million)	Trading Paid Value (Rs. in million)	Total Market Value (Rs. in million)
NABIL	4909950	2240	100	165.21	491.00	10998.29
NIBL	5905860	1260	100	334.44	590.59	7441.38
SCBL	3745404	3775	100	218.26	374.64	14142.68
HBL	7722000	1100	100	109.08	772.20	8494.20
SBI	6478032	612	100	147.76	647.80	3964.56
NBB	7199260	199	100	63.12	719.93	1432.65
EBL	3780000	1379	100	129.13	378.00	5212.62
BOK	4635809	850	100	562.21	463.58	3940.44
NIC	6000000	496	100	275.81	600.00	2976.00
MPB	5500000	320	100	144.90	550.00	1760.00
LBL	6100000	368	100	99.41	610.00	2244.80
KBL	6250000	443	100	220.51	625.00	2768.75
LUBL	5000000	172	100	122.43	500.00	860.00
NCC	7000000	94	100	22.27	700.00	658.00
Total	80227315			2514.54	8022.74	66894.37

(Source: NEPSE: Annual Trading Report, 2006/2007, [www.nepalstock.com](http://www.nepalstock.com)).

**Figure 4**

**Trading Performance of Population Banks (For Fiscal Year 2006/07)**



**4.3 Serial Correlation Tests**

One of the most basis tests of the market efficiency is the test of serial correlation. When computed, serial correlation of any series of data ranges from +1 to -1. serial correlation of +1 represent perfect positive correlation and a value of -1 represent perfect negative correlation. This value can be useful for computing for security analysis.

Serial correlation coefficients for five sampled stocks are computed to determine if any significant correlation on successive changes in log price exists for different lags. If the larger, the size of the coefficient is departed from zero the greater will be the dependence in the series of price changes. Larger coefficient implies that the changes in the past and present prices have significant influence on the changes in the future prices. If the coefficients are found to be zero or close to be zero, it can be concluded that the market is efficient in pricing the shares. It signifies that the independence of the successive changes in the prices. Thus, it supports the RWH. If the coefficients

are significantly departed from zero, it will indicate that the successive price changes are dependent. This will reject the Null Hypotheses.

The statistical software called SPSS computed the serial correlation coefficient and their standard error. (S.E.) for five stocks by using the equation 4, 5 and 6 maintain in the chapter Research Methodology.

**Table: 4.5**  
**Serial Correlation Coefficient of the Stocks**

S.N.	Stock of Respective Bank/Lag Days	1	2	3	4	5	6	7	8	9	10
1	NABIL Bank	0.0262	0.2448	-0.2851	-0.0431	-0.0035	-0.0348	-0.0473	-0.0238	0.0182	-0.0386
2	Standard Chartered Bank	0.0598	0.0614	0.0994	0.0139	-0.062	-0.069	-0.0293	0.0085	-0.0905	-0.0533
3	Himalayan Bank	-0.0667	-0.0303	-0.1056	-0.1222	0.0862	0.0245	0.1637	-0.0538	-0.2594	-0.0139
4	Everest Bank	0.148	0.0395	-0.2503	-0.2425	-0.0182	-0.1823	0.1052	0.029	0.0373	-0.0409
5	Nepal Investment Bank	0.0848	0.0126	0.1536	0.0146	0.0337	0.0232	-0.0765	-0.2925	-0.2651	0.0075
	Average	0.0504	0.0656	-0.0776	-0.0758	0.0072	-0.0477	0.0232	-0.0665	-0.1119	-0.0278

Source: work out from Appendix-10

Table 4.5 exhibits the computed serial correlation coefficients of the companies with respect to the number of lags. The fifth lag exhibited predominance of negative sign. Similarly, third to ninth lags exhibited the pre dominance of negative sign but less than tenth lag. Positive sign has dominated on first lag and second lag. Coefficients have shown sometimes successive positive and sometime successive negative signs.

Some of the computed serial correlations coefficients are close to zero. As a whole, negative sign has dominated the computed correlation coefficients. It means that the serial correlation coefficients are significantly departed from zero. Conclusion drawn is that the successive price changes are depended and the stock market is inefficient in pricing the shares.

We could not bring a close decision only from the computed serial correlation coefficient regarding the dependency of the successive price changes. Therefore, to come into a meaningful conclusion, the computed coefficients are compared with the computed standard error.

**Table: 4.6**  
**Series Having Significant Values of First to Tenth Order Serial**  
**Correlation Coefficients**

Lags	Series Having Coefficient $\leq 2$ S.E.	Series Having Coefficient $> 2$ S.E. $< 3$ S.E.	Series Having Coefficient $\geq 3$ S.E.	Series
1	1, 2, 3, 4 and 5	0	0	5
2	2, 3, 4 and 5	1	0	5
3	2, 3 and 5	1 and 4	0	5
4	1, 2, 3 and 5	4	0	5
5	1, 2, 3 and 5	4	0	5
6	1, 2, 3 and 5	4	0	5
7	1, 2, 3, 9 and 5	0	0	5
8	1, 2, 3 and 4	5	0	5
9	1, 2 and 4	3 and 5	0	5
10	1, 2, 3, 4 and 5	0	0	5
Total	41	9	0	50

Source: Worked out from Appendix- 9 and 10.

The first column of table 4.6 exhibits the lag periods. The second column shows the number of series having the coefficient less than or equal to two times of its S.E. Similarly, the third column shows the series having coefficient greater than two but less than three times of its S.E. Fourth column shows the number of series having coefficient equal to three or greater than three times of its S.E. respectively.

Out of the fifty computed serial correlation coefficients, only nine coefficients are under the category of greater than two times but less than three times of its S.E. Similarly, there is not any coefficients are equal to three or

greater than the three times of its S.E. However, the large number of coefficient falls in the category of less than or equals to two times of S.E. These coefficients are significantly deviated from zero and not statistically significant. It implies that the successive price changes are dependent. Thus Null Hypothesis of the study has been rejected. This result corroborate with the previous findings from the studies entitles "Share Price Behavior of Listed Companies" and "The Efficient Market Hypothesis and the Behavior of Share Prices in Nepal" by Resham Lal Poudel & Radhe S Pradhan and B D Uppadhya respectively.

#### **4.4 Standard Deviation**

Standard deviation is quantitative measure of the total risk of assets. It is a strong device of statistics to measure the involvement of-total risk in a common stock which consists of market risk as well as diversifiable risk. This means that less standard deviation indicates less risk and vice versa. Moreover it denotes the volatility of the expected rate of return. The following table presents the calculated value of expected realized return and standard deviation.

**Table 4.7**  
**Standard Deviation of Sample Commercial Banks**

Stocks	Expected Realized Return (%)	Standard Deviation (%)	Ranking of riskiness based on Standard Deviation
Nabil Bank Limited	23	40.25	1
Standard Chartered Bank Nepal	31.2	28.28	3
Himalayan Bank Limited	7.6	19.59	5
Everest Bank Limited	25.16	34.15	2
Nepal Investment Bank Ltd.	12.68	28.91	4

Source: Worked out from Appendix-8.

Based on the implicit assumption of the standard deviation investment in the common stock of Nabil Bank Limited are more risky followed by Everest Bank Limited. the stock of Himalayan Bank Limited could be consider less risky as its standard deviation are lower than that of other banks though its realized rate of return is very less. The common stock of the Nabil Bank Limited has the highest risk with 40.25% which indicates that the expected return can be deviated by 40.25% in case of common stock investment. Referring to Annex -6, in five years study, there is 6.63% of the average market return. The standard deviation is 31.51% which indicates that the market rate of 6.63% can deviate by 31.51 %. This percentage is low if it is compared to that of standard deviation of individual company. Hence, there exists less volatility or risk level in the market return than in the individual common stock investment.

## 4.5 Coefficient of Variation

The coefficient of variation is the ratio of the Standard Deviation of a distribution to the mean of that distribution. It is a measure of relative risk. It is more appropriate basis than the standard deviation basis because it considers both return and standard deviation. The standard deviation may not be the appropriate measure of risk when the realized rates of return are not same for all companies taken under consideration. Therefore it is better to use the coefficients of variation to measures 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 sample are shown in the following.

**Table 4.8**  
**Coefficient of Variation of Sample Commercial Banks**

Stocks	Coefficient of Variation
Nabil Bank Limited (NABIL)	1.75
Standard Chartered Bank Nepal (SCBL)	0.91
Himalayan Bank Limited (HBL)	2.58
Everest Bank Limited (EBL)	1.36
Nepal Investment Bank--Ltd. (NIB)	2.28

Source: Worked out from Appendix-8.

On the basis of the basis coefficient of variation common stock of Himalayan Bank Limited seems to be most risky where as the common stock of Standard Chartered Bank Limited seems to be less risky. As the realized rate of return is not negative among above sample banks so that there is no negative coefficient of variation is recorded.

## 4.6 Beta Coefficient

The beta coefficient is an idea of systematic risk. It may be used for ranking the systematic risk of different assets. Standard Deviation measures the total risk of an investment and the coefficients of variation measures the risk per unit of return. Beta is the measurement of systematic risk, which cannot be diversified and directly associated with the market phenomenon. Beta coefficient measures the market sensitivity or market risk of an investment. Systematic risk is that portion of risk which is directly associated with market phenomenon and cannot be reduced by diversification. Analysis of market sensitivity means analysis of beta coefficient, which gives us the useful insights in the analysis and the selection procedure of the common stock in the secondary market. In this context, beta coefficient of individual is computed and compared with average market as a whole and the similar companies of the same industry. An average stock is defined as one that tends to move up and down in step with general market as measured to some index, which is only available by NEPSE index in Nepalese context.

Here, NEPSE index is taken into consideration to measure the movements of the general market regarding the stock of listed commercial banks. Higher beta indicates the greater reaction by individual common stock with the given movement in the market status. If the beta is larger than 1, then the assets are more volatile than the market, which is called an aggressive asset. If beta is less than 1, the assets are considered as defensive assets as its price fluctuations are less volatile than market. On the other hand, if the beta is equal to 1 then the assets is said to be average as its price move proportional to the market changes. The table below shows the degree of risk of each stock of the entire sample in relation to the general market.

**Table: 4.9**

**Beta Coefficient of Sample Commercial Banks**

Stocks	Beta Coefficients	Ranking of Risk Based on Beta Coefficient
Nabil Bank Limited	0.1033	1
Standard Chartered Bank Nepal	0.0354	5
Himalayan Bank Limited	0.0473	4
Everest Bank Limited	0.0885	2
Nepal Investment Bank Ltd.	0.0735	3

Source: Worked out from Appendix-8.

According to the table above, it is observed that the beta coefficient are 0.1033, 0.0354, 0.0473, 0.0885 and 0.0735 of the sample banks Nabil Bank Limited, Standard Chartered Bank Limited, Himalayan Bank Limited, Everest Bank Limited and Nepal Investment Bank Limited respectively. From these result the range of beta is 0.1033 to 0.0354 that conclude that the banks that have been established in early period have less stable beta coefficients.

#### **4.7 Run Test Analysis**

Run test is the one of the non parametric test. It determines whether the series of price changes is random or not. It tests the randomness of the successive price changes in the price index. This is a simple analysis method consistent runs test result support the serial correlation results. This may be positive, negative, or zero run. Positive run occurs when price increases, when this decreases negative run occurs and no change in price result in zero run.

**Table 4.10****Yearly NEPSE Index of NABIL Bank Limited**

Year	Closing NEPSE Index	Status of Price Changes	Number and Type of Runs
2001/02	1500	-	-
2002/03	735	Change 1: 765 price fall	Run 1 is negative run
2003/04	735	Change 2: no change	Run 2 is zero run
2004/05	1000	Change 3: 265 price rise	Run 3 is positive run
2005/06	1505	Change 4: 505 price rise	
2006/ 07	2240	Change 5: 735 price rise	

Source: Worked out from Appendix- 11.

Observing the table 4.10 above one can see that there are total of 3 runs of which 1 run is negative, 1 run is zero and 1 run is positive respectively. Each of these runs occurs serially that is negative, zero and positive runs. This indicates cyclical variation in stock price over the six year periods. It is perhaps due to the inconsistency price movement in Nepalese stock market. Observing the pattern of variation the price for closing date of coming year may happen to be positive if the same trend continues.

**Table 4.11****Yearly NEPSE Index of Standard Chartered Bank Limited**

Year	Closing NEPSE Index	Status of Price Changes	Number and Type of Runs
2001/02	2144	-	-
2002/03	1550	Change 1: 594 price fall	Run 1 is negative run
2003/04	1640	Change 2: 90 price rise	Run 2 is positive run
2004/05	1745	Change 3: 105 price rise	
2005/06	2345	Change 4: 600 price rise	
2006/ 07	3775	Change 5: 1430 price rise	

Source: Worked out from Appendix- 11.

Table 4.11 shows the run of the yearly NEPSE index of Standard chartered Bank Limited. From the table it is clear that the pattern of price change is little bit different then the table 4.10 above. In this case too the run occurs alternatively that is positive, negative but we don't found there a zero run. There are only two runs consisting one positive and one negative runs. This analysis further confirms the results that there are not so wider fluctuations of average stock price in stock market.

**Table 4.12**  
**Yearly NEPSE Index of Himalayan Bank Limited**

Year	Closing NEPSE Index	Status of Price Changes	Number and Type of Runs
2001/02	1500	-	-
2002/03	1000	Change 1: 500 price fall	Run 1 is negative run
2003/04	836	Change 2: 164 price rise	Run 2 is positive run
2004/05	840	Change 3: 4 price rise	
2005/06	920	Change 4: 80 price rise	
2006/ 07	1100	Change 5: 180 price rise	

Source: Worked out from Appendix- 11.

This table 4.12 presents the yearly NEPSE index of Himalayan Bank Limited. It has the same case with table 4.11. There are only two runs consisting one positive and one negative runs. This indicates cyclical variation in stock price over the six year periods.

**Table 4.13****Yearly NEPSE Index of Everest Bank Limited**

Year	Closing NEPSE Index	Status of Price Changes	Number and Type of Runs
2001/02	750	-	-
2002/03	430	Change 1:320 price fall	Run 1 is negative run
2003/04	445	Change 2: 15 price rise	Run 2 is positive run
2004/05	680	Change 3:235 price rise	
2005/06	870	Change 4: 190 price rise	
2006/07	1379	Change 5: 509 price rise	

Source: Worked out from Appendix- 11.

Table 4.13 shows the yearly NEPSE index of Everest Bank Limited in this case too the run occurs alternatively that is positive, negative but we don't found there a zero run. There are only two runs consisting one Positive and one negative runs. Observing the pattern of variation the price for closing date of coming year may happen to be positive if the same trend continues.

**Table 4.14****Yearly NEPSE Index of Nepal Investment Bank Limited**

Year	Closing NEPSE Index	Status of Price Changes	Number and Type of Runs
2001/02	1150	-	-
2002/03	760	Change 1: 390 Price fall	Run 1 is negative
2003/04	795	Change 2: 35 Price rise	Run 2 is Positive run
2004/05	940	Change 2: 145 Price rise,	
2005/06	800	Change 3:140 Price fall	Run 3 in negative run
2006/07	1260	Change 5:460 Price rise	Run 4 Positive run

Source: Worked out from Appendix - 11.

Run test is a technique to study the stock price behaviour. Analyzing the Table 4.14 above we can see that there are 4 runs of which 2 runs are negative while other 2 are positive. There is no zero runs. Each of these runs occurs alternatiely that is negative, positive and negative and then again positive. This also indicates cyclical variation in stock price over 6 years periods.

In conclude that it is perhaps, due to the inconsistent price movement in Nepalese stock market. Observing the pattern of variation the price for closing date of coming year for all samples banks may happen to be positive if the same trend continuous. It implies that the RWH does not exist in the Nepalese stock market. This evidence too, corroborates with the previous results from the studies entitled "Share Price of Listed companies" and "Efficient Market Hypothesis and the Behaviour of share Price in Nepal", by Rehsam Lal Poudel & Radhe Shyam Pradhan and B.D. Upadhya respectively.

## **4.8 Opinion Survey Report**

The investigation deals with the study of the opinions of respondents with respect to the major aspects of share price behavior in Nepal. The study is based on questionnaire survey of the opinions of different investors and share brokers. The performed of structured questionnaire is presented in appendix 1.

### **Major Aspects of Shares Price Behavior**

#### **1) Usefulness of Current Market Price of Shares**

Regarding the usefulness of current market price of shares in Nepal, almost respondent gave the first priority to 'to make buy or sell decision', the second priority to 'to Predict future average return', the third priority to 'to predict future prices', and the forth priority to 'to differentiate good and bad shares.' The other usefulness of current market price of shares in Nepal as

pointed out by the respondents are, price speculation and profitability analysis.

## **2) Factors Affecting Share Prices**

With respect to the factors mainly affecting share prices, almost gave the first priority to 'dividends' and the second priority to 'retained earnings'. The other factors affecting the share prices in Nepal as pointed out by the respondents are bonus share, right issue, government policy, growth trend, management, promoter's creditability, the prevailing Whims, human resource management and capital appreciation.

## **3) Volatility of Share Prices**

With respect to the volatility of share prices, around seventy five percent of the respondents felt that the share prices are more volatile than expected dividends. Only around fifteen percent respondents stated that prices aren't more volatile than expected dividends. The other ten percent respondents opined that they have no any idea about it.

## **4) a. Makings or Non-makings of Information**

Nepalese investors aren't really indifferent towards makings or non-makings of information public. More than half of the respondents felt that they are not indifferent. Around forty percent respondents felt that they are indifferent in this aspect. And the remaining stated that they have no idea about it.

### **b. Prediction of Future Price Changes**

With respect to prediction of future price changes from past price changes, the majority of the respondents feel that the future price changes can't be predicted from past price changes. About forty percent of the respondents

feel that future price changes can be predicted from historical price changes. Thus, changes can be predicted from historical price changes. Thus the majority of the respondents accepted the weak form efficient market hypothesis or random walk hypothesis.

### **c. Usefulness of Inside Information**

Regarding the usefulness of inside information, the majority of the respondents (around seventy percent) are of the view that the inside information can be used to beat the market in Nepalese enterprises. In this connection, fifteen percent of the respondents opined that they are indeterminate with respect to inside information, -while remaining opined that the inside information cannot be used to beat the market in Nepalese information.

## **5. Reasons on Non-Random Price Changes Phenomenon**

Regarding the reasons of non-random Phenomenon of share price changes, almost of the respondents gave the first priority to 'excessively speculation behavior of the investors'. 'Stock market is in early stage of development' got the second priority and the third priority for poor performance of market intermediaries. The other causes of non-random phenomenon of share price changes in Nepal as pointed out by the respondents are unidentical information dissemination, lack of knowledge, very shallow market and poor performance of concerned authorities.

## **6. Causes of Deficiency in the Stock Market**

In their overall ranks for the causes of deficiency in the development of stock market in Nepal, majority respondents gave the first priority to 'Company information' and the second priority to "Lack of profitability of company."

They gave the third priority to 'Market operation system' and fourth for 'Government policy regarding investment. The other causes of deficiency in the development of stock market in Nepal is pointed out by the respondents are lack of sufficient monitoring over the activities of the public limited companies by concerned authorities, lack of awareness about the stock market and low purchasing power of buyers.

#### **4.9 Major Findings**

Finding of present analysis are very important for the academician and researcher. The study addresses the "Stock Price Behaviour of Commercial Banks in NEPSE". The overall of this chapter can briefly be noted out as follows:

- ) Large number of serial correlation of the daily log price change of fourteen commercial banks' stocks for the sample period is significantly departed from Zero. This depicts that past and present price changes can screen out some values information in forecasting future price changes. Thus, there exists sufficient opportunity for the sophisticated investors.
- ) Because of the persistence in the stock price movements, professional traders either individual or institutional can beat the market. Therefore to make more profit, acute fundamental and other analysis are required which accurately predicts the appearance of the new information in the market, which has impact on the prices than the native buy and hold strategy.
- ) Common stock of SCBL yields the highest realized rate of return of 31.2% whereas it is negative in case of NBL and NIB stocks. Regarding the total risk, NABIL is the riskiest among all stocks as it consists of

highest 40.25% of the total risk, whereas HBL is recorded as least risky as it contains only 19.59% of the total risk. Similarly, the stocks of EBL and NIB fall into the second and third position in terms of standard deviation.

- ) Through the coefficient of variation analysis, it is found that there is highest percent of per unit risk for the stocks of HBL. Due to negative realized returns, NIB and NBL have negative coefficient of variation. Stocks of NABIL are more aggressive to market changes as revealed by the highest beta coefficient of 3.93. Similarly, stocks of the other banks excluding EBL and NIB are also aggressive as their respective beta coefficients are higher than that of the average stock.
- ) Run test results have revealed that there is a significant difference between the observed and actual number of runs in the series of price changes. It is obvious that the successive price changes are not random. This implies that the RWH does not exist in the Nepalese stock market during the study period. Thus, conclusion from the serial correlation test and run test have corroborated with the previous related studies regarding the independence and the randomness of the successive stock price changes.

## **CHAPTER-5**

### **SUMMARY, CONCLUSION AND RECOMMENDATION**

This chapter attempts to summarize the whole study about the study of stock price behavior of commercial banks in NEPSE. After that, a conclusion and suggestion framework is built. The conclusion and suggestion would be of great help for the concerned parties.

Banking sector is the most dynamic part of the economy, which collects unused funds and mobilizes it in needed sectors. It is the heart of trade, commerce and industry. In Nepal, joint venture bank and private sector bank has performed better than Nepalese government sectors bank because of high skill management. Because of the least development country, Nepal started its economic development plans more than four decades before and has recently adopted economic development plans through liberalization.

The subject matter of economic development has been limited due to variety of geographical, structural and economic constraints. At this moment, the role of financial institutions has not been undermined in the growth of the economic development. It should also be known here that the financial institutions should only operate in the sound financial market. Financial market concerns the trading of financial instrument, which transfer the funds from savers to those who need the fund. Therefore the financial market is a medium through which corporate sector mobilizes funds to finance productive projects by issuing shares in the market. In this regard, the stock market has been an important and popular source of financing that fosters the productive activities in the economy. So the Study regarding the stock market has become an essential subject matter in the study of finance.

Even though Nepal's economic development strategies planning has already spent more than four decades of its balanced development of the

country, the country is still considered as the world's least developed country. A large amount of investment required for the quick pace of economic growth is far from the access in the country.

Despite being a new phenomenon in Nepalese context, stock market flourished just a half decade ago. However, it hasn't reached the expected heights in last few years. Nepalese stock market is facing a worse time in its history. The effects of mobilization and globalization could be observed in Nepalese capital market too. Market price of the stock varies everyday in the Nepalese securities market. To find the answer of the questions like: what factors affects the market price of stock, how the investors of Nepalese stock market make investment decision, what is the financial performance of listed companies and purpose of holding shares, this study has been done. Since number of researches that have been done is very few in this subject, this study is expected to be very useful to university students as well as other scholars.

The study was conducted with the main objective to analyses the stock price behavior of the listed commercial banks. It is mainly focused to develop the model accordingly and its empirical tests in the previous chapters. Though the model consists of two assumptions: the study is concentrated on the independent assumption of the successive price changes in the natural logarithms of the common stock of the fourteen commercial banks but is calculated five banks as a sample because of the unavailability of required data. The study period for this purpose covers from 15 July 2006 to 15 July 2007 consisting of 762 observations. The serial correlation along with standard deviations, coefficient of variations, beta coefficients and non parametric test (run test) to explore the randomness of stock return are adopted as test methodology.

Before analyzing the results of the tests, the overview of the Nepali stock market has been sketched. The recent position and performance of the stock

market of Nepal has not developed remarkably in the economy because of the various market imperfections like limited number of buyers and sellers, stringent government policies, negligible development of the corporate sectors.

To test the independence assumption, the serial correlation coefficients were estimated for different lags. The results of the estimated serial correlation were found to have deviated significantly from the expected zero value i.e. serially correlated. So, that the results obtained from the serial correlation tests tend to invalidate the hypothesis of independence. Besides the serial correlation tests, other statistical tools such as standard deviation, coefficient of variation and beta coefficient are also calculated to examine the risk involved in the common stocks of the commercial banks. Though most of the commercial bank's common stock seems to be riskier than that of average stock, lot of investors are attracted in trading these stocks. This is due to the good track record of the financial position, market penetration and continuous declaration of dividends, which encourage the potential investors to buy the shares of the commercial banks.

This chapter is divided into two sections, the first section draws the conclusions of the study and the final and second section proposes recommendations to deal with the problem observed on the basis of the findings, which are as follows.

## **5.1 Conclusion**

Nepal is still a least developed country, despite completion of five decades of implementation of planned development strategies. Efficient and effective capital market development is essential to every nation for economic strength. The organized stock market is a recent phenomenon in Nepal; it was about to flourish just half decade back. However, it could not sustain for long period because of frequent change in government, political insurgency, poor performance of companies, unfair share market practices and loss of investors'

confidence in share market.

In most of cases, all companies were experiencing downward trend in the volume and price of the traded stock and market capitalization. But, in last period of study it has little hope of improvements. The random walk hypothesis or weakly efficient market hypothesis of share price behavior has been tested to determine whether the successive daily price changes of five commercial banks are independent or not.

The independence hypothesis of the study has been examined by the serial correlation. The serial correlation coefficients of the daily price changes lead to the conclusion that weakly efficient market hypothesis does not offer a satisfactory explanation to these speculative price series. The dependence in the series of the price changes observed implies that the price changes in the future market will not be independent from the price changes of the previous days. It brings about that the information of the past price changes is helping in predicting future price changes.

Therefore, sufficient opportunities are available to institutional and individual investors to make higher expected profit in future based on those historical price series. In the mean while the statistical analysis regarding the risk and return of the sampled stocks show that most of these stocks seem to be risky than the average stock. But as most of the banks are offering cash dividends every year, which may not be applicable in other types of non-banking industries, there is race of investors towards the stocks of banking sector.

Run test result shows that the percentage of deviation is significant between the observed and actual number of runs in the series of price changes. It is obvious that the successive price changes are not random. Conclusion is that RWH does not exist in Nepal Stock Market during the research period.

Conclusions from the Serial Correlation Test and Run Test have corroborated with the previous related studies.

## **5.2 Recommendation**

The system of compiling and publishing stock price data on a regular basis yet to be systematized in Nepalese Stock Market. Lack of data base makes it difficult to carry on any research. The NEPSE itself is not providing general awareness about investment and investment procedure and movement of stock trend of different periods for general public and investors. 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 the 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 collecting the data. To control such erratic price fluctuations the regulatory body should impose effective provisions to the exchange members.
- ) Most of the stocks in the sample are undervalued. So the stock market investors are recommended to buy and hold the stock of the commercial banks.
- ) The public investors should not direct their savings in shares haphazardly. They should at least analyze or get suggestions from experts about financial position and the level of risk prior to taking an investment decisions.

- ) NEPSE and SEBO/N should establish the system for regular monitoring and analyze the strengths and weakness of the public companies, which could disclose valuable information and suggestions to the investors in order to minimize the level of risk.
- ) The concerned body should organize programs, seminars from time to time to create awareness among the investors on the stock market and to enhance the investor's confidence and to develop hospitable environment
- ) It is also recommended to the concerned body to carry out or assist to carry out further research on stock market behaviors for the efficient functioning and betterment of the stock market of Nepal.



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**APPENDIX -1**

**Proforma of Structural Questionnaire: Opinion Questionnaire**

**A Survey of Share Price Behavior in Nepal**

Name (optional).....

Address.....

1. In Nepal, current market price of shares can be used: (please rank 1 to most important one and so on)
  - a. To predict future prices ( )
  - b. To predict future average return ( )
  - c. To differentiate good or bad shares ( )
  - d. To make buy or sell decision ( )
  - e. Others (please specify) ( )
  
2. Which of the following factors, do you think, mainly affect share prices? (Please rank)
  - a. Dividends ( )
  - b. Retained earnings ( )
  - c. Increase in capital ( )
  - d. Broker's advice ( )
  - e. Others ( )
  
3. Do you think that share prices are more volatile than expected dividends?
  - a. Yes .....
  - b. No .....
  - c. Doesn't know.....
  
4. Do you agree with the following statements?
  - a. Nepalese investors are indifferent whether the company makes or don't make information public.
    - a. Yes .....
    - b. No .....
  - b. Future price changes of a given share can be predicted from historical price changes.
    - a. Yes .....
    - b. No .....
    - c. Don't know
  - c. Inside information can be used to beat the market in Nepalese enterprises.
    - a. Yes
    - b. No
    - c. Don't know
  
5. In Nepal, share price change is not a random phenomenon. What do you think are the reasons? (Please rank)

- a. Stock market is in early stage of development
  - b. Excessively speculative behaviour of the investors
  - c. Hidden information
  - d. Lack of Professionalism
  - e. Others (please specify)
6. In your opinion, which factor is more responsible for the deficiency in the development of stock market? (Please rank)
- a. Company information
  - b. Market operation system
  - c. Government policy regarding investment
  - d. Lack of profitability of company
  - e. Lack of buying and selling habit of investors
  - f. Others (please specify)

## Appendix-2

### Names of the Common Stocks Used in the Study Population for the study

S.No.	Name of Banks
1	Nabil Bank Limited
2	Nepal Investment Bank Limited
3	Standard Chartered Bank Nepal Limited
4	Himalayan Bank Limited
5	Nepal SBI Bank Limited
6	Nepal Bangladesh Bank Limited
7	Everest Bank Limited
8	Bank of KathmandU Limited
9	Nepal Industrial and Commercial Bank Limited
10	Machha Puchchhre Bank Limited
11	Laxrni Bank Limited
12	Lumbli Bank Limited
13	NCC Bank Limited
14	Kumari Bank Limited

### Sample for the Study

S.No.	Name of Banks	No. of Observation
1	Nabil Bank Limited	156
2	Nepal Investment Bank Ltd.(NIB)	132
3	Standard Chartered Bank Nepal (SCBL)	154
4	Himalayan Bank Limited (HBL)	141
5	Everest Bank Limited (EBL)	179
	Total	762

**Appendix-3**  
**Group-Wise Monthly Turnover**  
**(Fiscal Year 2006/07)**

I

Description	Jul/Aug		Aug/Sept.		Sept/Oct		Oct/Nov		Nov/Dec		Dec/Jan		Jan/Feb	
	Share Units ('000)	Traded Amt (Rs in million)	Share Units ('000)	Traded Amt (Rs in million)	Share Units ('000)	Traded Amt (Rs in million)	Share Units ('000)	Traded Amt (Rs in million)	Share Units ('000)	Traded Amt (Rs in million)	Share Units ('000)	Traded Amt (Rs in million)	Share Units ('000)	Traded Amt (Rs in million)
Commercial Bank	624.1	245.67	394.62	146.71	177.08	77.30	328.51	140.91	532.19	239.52	288.94	143.73	468.98	177.12
Finance	16.74	25.32	216.26	29.74	121.58	2261	132.42	31.28	285.36	40.60	213.80	30.61	98.08	13.32
Insurance	69.27	12.74	54.10	13.96	21.11	4.04	9.62	2.18	71.37	12.71	18.42	4.10	25.23	7.96
Manufacture & Processing	0.33	0.33	1.80	3.26	0.65	0.03	0.71	0.30	1.67	0.35	3.29	2.65	3.98	0.30
Hotel	7.43	0.35	6.39	0.31	13.42	0.57	1.09	0.04	320.56	16.28	21.85	1.13	4.18	0.22
Trading	0.22	0.28	0.35	0.73	6.88	2.94	0.01	0.02	0.81	1.49	0.31	0.65	0.87	2.05
Development Banks	17	4	19	3	1.62	0.33	3.82	0.65	14222	15.64	2.78	0.67	66.70	19.10
Others	2	0.77	5.63	0.78	55.15	0.79	0.45	0.21	0.68	0.30	0.83	0.38	5.29	2.30
Total	887.09	289.46	698.15	198.49	397.49	108.61	476.63	175.59	1354.86	326.89	550.22	183.92	673.31	222.37

(Source: NEPSE: Annual Trading Report 2006/2007, [www.nepalstock.com](http://www.nepalstock.com))

II

Description	Jul/Aug		Aug/Sept.		Sept/Oct		Oct/Nov		Nov/Dec		Dec/Jan		Jan/Feb	
	Share Units ('000)	Traded Amt (Rs in million)	Share Units ('000)	Traded Amt (Rs in million)	Share Units ('000)	Traded Amt (Rs in million)	Share Units ('000)	Traded Amt (Rs in million)	Share Units ('000)	Traded Amt (Rs in million)	Share Units ('000)	Traded Amt (Rs in million)	Share Units ('000)	Traded Amt (Rs in million)
Commercial Bank	506	274.42	453.19	231	669.43	357.76	649.72	417.97	442.45	244.50	5535.21	2696.61	42.28	78.10
Finance	161.05	21.62	162.67	25.63	92.54	12.76	207.15	33.63	99.90	18.81	1957.55	305.93	16.01	8.836
Insurance	17.86	4.82	45.09	15.78	40.62	13.06	53.71	20.16	148.57	18.36	574.97	129.87	4.70	3.76
Manufacture & Procening	24.59	5.33	20.18	1.07	0.63	1.32	1.40	1.05	0.57	1.18	59.8	17.17	0.49	0.50
Hotel	3.13	0.17	3.17	0.16	4.13	0.19	3.08	0.15	3.77	0.16	392.2	19.73	3.21	0.57
Trading	1.35	1	2.29	1.63	0.04	0.10	2.06	4.8	0.03	0.07	15.22	15.81	0.12	0.46
Development Banks	54.69	20.41	18.59	5.93	1031	3.89	10.64	3.51	39.43	6.07	386.8	83.2	3.16	2.41
Others	3.78	1.26	78.86	1.32	1.17	0.76	3045.95	136.93	101.61	38.77	3301.4	184.57	27.03	5.34
Total	772.45	329.03	487.04	282.52	818.87	389.84	3973.71	618.25	836.33	327.92	12223.15	3452.89	100	100

(Source: NEPSE: Annual Trading Report 2006/2007, [www.nepalstock.com](http://www.nepalstock.com))

**Appendix-4**  
**Paid-up Value and Market Capitalization**  
**(Fiscal Year 2006/07)**

I

Description	July/Aug				Aug/Sept				Sept/Oct				Oct/Nov			
	Paid-up Value	%	Market Capitalization	%	Paid-up Value	%	Market Capitalization	%	Paid-up Value	%	Market Capitalization	%	Paid-up Value	%	Market Capitalization	%
Commercial Bank	7026.04	52.49	428831	74.16	7602.73	62.10	45368.04	76.12	7602.73	56.19	46446.09	77.49	7644.73	54.37	47594.68	76.39
Finance	1890.7	14.12	3517.02	6.08	1706.70	13.94	3173.61	5.33	1858.6	13.74	3440.20	5.74	1649.86	11.73	3133.65	5.03
Insurance	1078	8.05	3844.67	6.65	1078	8.8	3773.24	6.33	1098	8.12	3816.73	6.37	1178	8.38	3961.85	6.36
Manufacture & Procusing	624.13	4.66	2027.46	3.51	108.57	0.89	2033.13	3.41	304.01	2.25	191.92	0.32	959.42	6.83	1370.29	2.20
Hotel	1324.99	9.91	608.94	1.05	500	4.08	245	0.41	1411.96	10.44	1014.85	1.69	1411.96	10.04	1064.85	1.71
Trading	52.08	0.39	324.05	0.56	27.30	0.23	587.50	0.99	54.13	0.40	669.10	1.12	27.30	0.19	586.95	0.94
Development Banks	361.6	2.7	629.25	1.09	371.60	3.03	635.24	1.06	350	2.59	572.80	0.95	350	2.49	602.20	0.97
Others	1028.26	7.68	3993	6.90	849.06	6.93	3785.76	6.35	849.06	6.27	3785.76	6.32	839.06	5.97	3985.52	6.40
Total	13385.8	100	57827.49	100	12243.96	100	59601.52	100	13528.53	100	59937.45	100	14060.33	100	62299.99	100

(Source: NEPSE: Annual Trading Report 2006/2007, [www.nepalstock.com](http://www.nepalstock.com))

Description	Nov/Dec				Dec/Jan				Jan/Feb				Feb/Mar			
	Paid-up Value	%	Market Capitalization	%	Paid-up Value	%	Market Capitalization	%	Paid-up Value	%	Market Capitalization	%	Paid-up Value	%	Market Capitalization	%
Commercial Bank	7644.73	54.84	48059.74	75.49	7665.73	57.59	48532.39	72.48	7707.73	52.48	51403.11	75.43	8307.73	55.93	57468.02	75.25
Finance	1897.39	13.61	353823	5.56	1917.39	14.40	3697.83	5.51	1863.42	12.69	3419.24	5.02	2033.37	13.69	3843.36	5.03
Insurance	1128	8.09	3945.40	6.20	1049	7.89	3662.43	5.47	1101.70	7.50	4040.28	5.93	1156.70	7.79	4214.59	5.52
Manufacture & Procesing	561.64	4.04	1943.31	3.05	491.91	3.70	334077	4.98	621.11	4.23	1979.76	2.91	762.92	5.14	3752.90	4.91
Hotel	1411.96	10.13	1013.55	1.59	887.89	6.67	2049.78	3.05	1411.96	9.61	1057.04	1.55	586.97	3.95	756.83	0.99
Trading	52.08	0.37	665	1.04	29.35	0.22	632.07	0.94	27.30	0.18	655.20	0.96	52.08	0.35	700.49	0.92
Development Banks	360	2.58	620.80	0.98	430	3.23	844.60	1.31	445	3.03	933.60	1.37	445	2.99	1081.60	1.42
Others	883.72	6.34	3877.53	6.09	839.06	6.30	4195.29	6.26	1509.72	10.28	4658.25	6.83	1509.72	10.16	4548.17	5.90
Total	13939.52	100	63663.56	100	13310.33	100	66955.16	100	14687.94	100	68146.48	100	14854.49	100	76368.96	100

(Source: NEPSE: Annual Trading Report 2006/2007, [www.nepalstock.com](http://www.nepalstock.com))

Description	Mar/Apr				Apr/May				May/Jun				Jun/Jul			
	Paid-up Value	%	Market Capitalization	%	Paid-up Value	%	Market Capitalization	%	Paid-up Value	%	Market Capitalization	%	Paid-up Value	%	Market Capitalization	%
Commercial Bank	8265.73	55.29	56273.51	74.96	8522.73	57.67	70000.14	80.03	8564.73	50.52	65898.30	74.49	8522.73	51.83	68694.36	75.27
Finance	1844.81	12.34	3508.31	4.67	1755.21	11.88	3532.47	4.04	2346.56	13.84	4614.52	5.22	2102.44	12.78	4212.91	4.62
Insurance	1196.70	8.00	4306.96	5.74	1036.70	7.02	3990.36	4.56	1106.70	6.53	4446.73	5.03	1206.70	7.34	4801.19	5.26
Manufacture & Procesing	965.92	6.46	3792.53	5.05	122.46	0.76	2142.95	2.45	773.49	4.56	3169.44	3.58	505.07	3.07	2689.97	2.95
Hotel	666.97	4.46	760.13	1.01	1331.96	9.01	993.73	1.14	1411.96	8.33	1020.69	1.15	1331.96	8.10	1036.08	1.13
Trading	54.13	0.36	702.18	0.94	27.30	0.18	650.83	0.74	52.08	0.30	733.50	0.83	27.30	0.17	655.20	0.72
Development Banks	446.60	2.99	1041	1.39	447.43	303	114.43	1.27	459.03	2.71	1095.19	1.24	509.03	3.09	1217.49	1.33
Others	1509.72	10.10	4690.55	6.24	1544.38	10.45	5043.38	5.77	2239.32	13.21	7489.86	8.46	2239.32	13.62	7955.81	8.72
Total	14950.68	100	75075.17	100	14778.17	100	87468.29	100	16953.87	100	88468.23	100	16444.55	100	91263.01	100

(Source: NEPSE: Annual Trading Report 2006/2007, [www.nepalstock.com](http://www.nepalstock.com))

**Appendix - 5**

**Trading Performance of Population Banks  
(For Fiscal Year 2006/07)**

Name of the Banks	Outstanding Equity (A)	Closing Price (B)	Paid-up Value (C)	No. of Transaction (D)	Traded Shares in units ('000) (E)	Traded Amount (Rs. in million) (F)	Traded Paid Value (Rs in million) G = (A) × (C)	Total Market Value (Rs in million) h = (A) × (B)
NABIL	4909950	2240	100	1126	86.11	165.21	491.00	10998.29
NIBL	5905860	1260	100	1886	235.90	234.44	590.59	7441.38
SCBL	3746404	3775	100	1169	73.09	218.26	374.64	14142.68
HBL	7722000	1100	100	1574	103.40	109.08	772.20	8494.20
SBI	64738032	612	100	1941	307.70	147.76	647.8	3964.56
NBBL	7199260	199	100	1820	274.80	63.12	719.93	1432.65
EBL	3780000	1379	100	2138	117.10	129.13	378.00	5212.62
BOK	4635809	850	100	3705	928.70	562.21	463.58	3940.44
NIC	6000000	496	100	2556	651.00	275.81	600.00	2976.00
MPB	5500000	320	100	1941	431.50	144.90	550.00	1760.00
LBL	6100000	368	100	1480	307.90	99.41	610.00	2244.80
KBL	6250000	443	100	5014	557.30	220.51	625.00	2768.75
LBL	5000000	172	100	7660	701.80	122.43	500.00	860.00
NCC	7000000	94	100	1405	203.10	22.27	700.00	658.00
Total	80227315			35415	4979.4	2514.54	8022.74	66894.37

(Source: NEPSE: Annual Trading Report, 2006/2007).

**APPENDIX - 6****Historical Return and Average Annual Return of NABIL Bank**

Fiscal Year	Closing Price (Rs)	Dividend Per Share	$R_j = \frac{P_t - P_{t-1} + \text{Div}}{P_{t-1}}$
2001/02	1500	40	-----
2002/03	735	20	-0.49
2003/04	735	50	0.07
2004/05	1000	65	0.48
2005/06	1505	70	0.57
2006/07	2240	85	0.55
		Total	$\bar{R}_j = 1.15$

**Historical Return and Average Annual Return of  
Standard Chartered Bank Ltd.**

Fiscal Year	Closing Price (Rs)	Dividend Per Share	$R_j = \frac{P_t - P_{t-1} + \text{Div}}{P_{t-1}}$
2001/02	2144	100	-----
2002/03	1550	100	-0.23
2003/04	1640	100	0.12
2004/05	1745	110	0.13
2005/06	2345	110	0.41
2006/07	3775	120	1.13
		Total	$\bar{R}_j = 1.56$

**Historical Return and Average Annual Return of  
Himalayan Bank Ltd.**

Fiscal Year	Closing Price (Rs)	Dividend Per Share	$R_j = \frac{P_t - P_{t-1} + \text{Div}}{P_{t-1}}$
2001/02	1500	475.5	-----
2002/03	1000	125	-0.25
2003/04	836	210.32	005
2004/05	840	30	0.04
2005/06	920	199.58	0.33
2006/07	1100	11.5	0.21
		Total	$\bar{R}_j = 0.38$

**Historical Return and Average Annual Return of  
Everest Bank Ltd.**

Fiscal Year	Closing Price (Rs)	Dividend Per Share	$R_j = \frac{P_t - P_{t-1} + \text{Div}}{P_{t-1}}$
2001/02	750	-----	-----
2002/03	430	86	-0.312
2003/04	445	20	0.08
2004/05	680	20	0.57
2005/06	870	20	0.31
2006/07	1379	20	0.61
		Total	$\bar{R}_j = 1.258$

**Historical Return and Average Annual Return of  
Investment Bank Ltd.**

Fiscal Year	Closing Price (Rs)	Dividend Per Share	$R_j = \frac{P_t - P_{t-1} + \text{Div}}{P_{t-1}}$
2001/02	1150	-----	-----
2002/03	760	228	-0.14
2003/04	795	20	0.07
2004/05	940	15	0.20
2005/06	800	12.5	-0.14
2006/07	1260	55.46	0.644
		Total	$\bar{R}_j = 0.634$

### Appendix - 7

#### Risk and Return of Market Index

Year	Market Index	Realized Rate of Return (Rm)	$R_m - \overline{R_m}$	$[R_m - \overline{R_m}]^2$
2001/02	348.43	-	-	-
2002/03	227.54	-0.3469	-0.4132	0.1707
2003/04	204.86	-0.0997	-0.166	0.275
2004/05	207.92	0.0149	-0.0952	0.0026
2005/06	241.51	0.1615	0.0952	0.0091
2006/07	386.83	0.6017	0.5354	0.2866
		0.3315		0.4965

$$\overline{R_m} = \sum R_m / n = 0.3315 / 5 = 0.0663$$

$$\sigma_m = \sqrt{\frac{\sum (R_m - \overline{R_m})^2}{n}} = \sqrt{\frac{0.4965}{5}} = 0.3151$$

$$\sigma_m^2 = \frac{\sum (R_m - \overline{R_m})^2}{n} = \frac{0.4965}{5} = 0.0993$$

$$C.V. = \frac{\sigma_m}{\overline{R_m}} = \frac{0.3151}{0.0663} = 4.7526$$

### Appendix - 8

#### Calculation of Standard Deviation, Coefficient of Variation, Variance, Covariance and Beta Coefficient of NABIL Bank

Fiscal Year	Rj	$(R_j - \overline{R_j})$	$(R_j - \overline{R_j})^2$	$(R_j - \overline{R_j}) \times (R_m - \overline{R_m})$	$(R_m - \overline{R_m})$
2001/02	---	---	---	---	---
2002/03	-0.49	-0.72	0.52	0.297504	-0.4132
2003/04	0.07	-0.16	0.02	0.026556	-0.166
2004/05	0.45	0.22	0.05	-0.011308	-0.0514
2005/06	0.57	0.34	0.12	0.032368	0.0952
2006/07	0.55	0.32	0.10	0.171328	0.5354
Total	1.15			0.516452	

#### Calculation of Standard Deviation, Coefficient of Variation, Variance, Covariance and

**beta Coefficient of Standard Chartered Bank**

Fiscal Year	R <sub>j</sub>	(R <sub>j</sub> - $\bar{R}_j$ )	(R <sub>j</sub> - $\bar{R}_j$ ) <sup>2</sup>	(R <sub>j</sub> - $\bar{R}_j$ ) × ( $\bar{R}_m - \bar{R}_m$ )	(R <sub>m</sub> - $\bar{R}_m$ )
2001/02	---	---	---	---	---
2002/03	-0.23	-0.542	0.29	0.2239544	-0.4132
2003/04	0.12	-0.142	0.04	0.031872	-0.166
2004/05	0.13	-0.182	0.03	0.0093548	-0.0514
2005/06	0.41	0.098	0.01	0.0093296	0.0952
2006/07	0.13	-0.182	0.03	-0.0974428	0.5354
Total	1.56			0.1771344	

**Calculation of Standard Deviation, Coefficient of Variation, Variance, Covariance and  
beta Coefficient of Himalayan Bank**

Fiscal Year	R <sub>j</sub>	(R <sub>j</sub> - $\bar{R}_j$ )	(R <sub>j</sub> - $\bar{R}_j$ ) <sup>2</sup>	(R <sub>j</sub> - $\bar{R}_j$ ) × ( $\bar{R}_m - \bar{R}_m$ )	(R <sub>m</sub> - $\bar{R}_m$ )
2001/02	---	---	---	---	---
2002/03	-0.25	-0.326	0.11	0.1347032	-0.4132
2003/04	0.05	-0.026	0.001	0.004316	-0.166
2004/05	0.04	-0.036	0.001	0.0018504	-0.0514
2005/06	0.33	0.254	0.06	0.02413	0.0950
2006/07	0.21	0.134	0.02	0.717436	0.5354
Total	0.38			0.2367432	

**Calculation of Standard Deviation, Coefficient of Variation, Variance, Covariance and  
beta Coefficient of Everest Bank**

Fiscal Year	R <sub>j</sub>	(R <sub>j</sub> - $\bar{R}_j$ )	(R <sub>j</sub> - $\bar{R}_j$ ) <sup>2</sup>	(R <sub>j</sub> - $\bar{R}_j$ ) × (R <sub>m</sub> - $\bar{R}_m$ )	(R <sub>m</sub> - $\bar{R}_m$ )
2001/02	---	---	---	---	---
2002/03	-0.312	-0.5636	0.32	0.23287952	-0.4132
2003/04	0.08	-0.1716	0.03	0.0284856	-0.166
2004/05	0.57	0.3184	0.10	-0.01636576	-0.0514
2005/06	0.31	0.0584	0.003	0.00555968	0.0952
2006/07	0.61	0.3584	0.13	0.19188736	0.5354
Total	1.258			0.4424464	

**Calculation of Standard Deviation, Coefficient of Variation, Variance, Covariance and  
beta Coefficient of Nepal Investment Bank**

Fiscal Year	$R_j$	$(R_j - \bar{R}_j)$	$(R_j - \bar{R}_j)^2$	$(R_j - \bar{R}_j) \times (R_m - \bar{R}_m)$	$(R_m - \bar{R}_m)$
2001/02	---	---	---	---	---
2002/03	-0.14	-0.2668	0.07	0.11024176	-0.4132
2003/04	0.07	-0.0568	0.003	0.0094288	-0.166
2004/05	0.20	0.0732	0.005	-0.00376248	-0.0514
2005/06	-0.14	-0.2668	0.07	-0.02539936	0.0952
2006/07	0.644	0.5172	0.27	0.27690888	0.5354
Total	0.634			0.3674176	

**Calculated Expected Return, Standard Deviation, Coefficient of Variation and Beta  
Coefficient of Sample Banks**

Description	Expected Return (%)	Standard Deviation (%)	Coefficient of Variation	Beta Coefficient
NABIL	23	40.25	1.75	0.1033
SCBL	31.2	28.28	0.91	0.0354
HBL	7.6	19.59	2.58	0.0473
EBL	25.16	34.15	1.36	0.0885
NIB	12.68	28.91	2.28	0.0735

**Appendix-9**

**Computed Standard Error from Lag 1 to 10**

S.N.	Stock of Respective Bank/Lag Days	1	2	3	4	5	6	7	8	9	10
1	NABIL Bank	0.083	0.0805	0.0808	0.0811	0.0813	0.0816	0.0819	0.0822	0.0824	0.0827
2	Standard Chartered Bank	0.0808	0.0811	0.0813	0.0816	0.0819	0.0822	0.0824	0.0827	0.083	0.0833
3	Himalyan Bank	0.0845	0.0848	0.0851	0.0854	0.0857	0.086	0.0864	0.0867	0.087	0.0873
4	Everst Bank	0.0749	0.0751	0.0753	0.0756	0.0758	0.076	0.0762	0.0764	0.0767	0.0769
5	Nepal Investment Bank	0.0873	0.0877	0.088	0.0883	0.0887	0.089	0.0894	0.0899	0.0901	0.0905
	Average	0.0821	0.0661	0.0821	0.0824	0.0827	0.0830	0.0834	0.0836	0.0838	0.0841

**Appendix-10**

**Serial Correlation between Daily Price Changes and Lagged Price Changes from Lag 1 to Lag 10**

S.N.	Stock of Respective Bank/Lag Days	1	2	3	4	5	6	7	8	9	10
1	NABIL Bank	0.0262	0.2448	-0.2851	-0.0431	-0.0035	-0.0348	-0.0473	-0.0238	0.0182	-0.0386
2	Standard Chartered Bank	0.598	-0.0303	0.0994	0.0139	-0.062	-0.069	-0.0293	0.0085	-0.0905	-0.0533
3	Himalyan Bank	-0.0667	-0.0395	-0.1056	-0.1222	0.0862	0.0245	0.1637	-0.0538	-0.2594	-0.0139
4	Everst Bank	0.148	0.0395	-0.2503	-0.2425	-0.0182	-0.1823	0.1052	0.029	0.0373	-0.0409
5	Nepal Investment Bank	0.0848	0.0126	0.1536	0.0146	0.0337	0.0232	-0.0765	-0.2925	-0.2651	0.0075
	Average	0.0504	0.0656	-0.0776	-0.0758	0.0072	-0.0477	0.0232	-0.665	-0.1119	-0.0278

### Appendix-11

#### Distribution of Signs of Coefficients

Lag	No. of + Sign	No. of -Sign	Total
1	4	1	5
2	4	1	5
3	2	3	5
4	2	3	5
5	2	3	5
6	2	3	5
7	2	3	5
8	2	3	5
9	2	3	5
10	1	4	5
Total	23	27	50

### Appendix - 12

#### Showing Closing Price of Sample Banks

Year/Sample Banks	NABIL	SCBL	HBL	EBL	NIB
2001/02	1500	2144	1500	750	1150
2002/03	735	1550	1000	430	760
2003/04	735	1640	836	445	795
2004/05	1000	1745	840	680	940
2005/06	1505	2345	920	870	800
2006/07	2240	3775	1100	1379	1260

**APPENDIX -1**

**Proforma of Structural Questionnaire: Opinion Questionnaire**

**A Survey of Share Price Behavior in Nepal**

Name (optional).....

Address.....

1. In Nepal, current market price of shares can be used: (please rank 1 to most important one and so on)

- a. To predict future prices ( )
- b. To predict future average return ( )
- c. To differentiate good or bad shares ( )
- d. To make buy or sell decision ( )
- e. Others (please specify) ( )

2. Which of the following factors, do you think, mainly affect share prices? (Please rank)

- a. Dividends ( )
- b. Retained earnings ( )
- c. Increase in capital ( )
- d. Broker's advice ( )
- e. Others ( )

3. Do you think that share prices are more volatile than expected dividends?

- a. Yes .....
- b. No .....
- c. Doesn't know.....

4. Do you agree with the following statements?

a. Nepalese investors are indifferent whether the company makes or don't make information public.

- a. Yes .....
- b. No .....

b. Future price changes of a given share can be predicted from historical price changes.

- a. Yes .....
- b. No .....

c. Don't know

c. Inside information can be used to beat the market in Nepalese enterprises.

- a. Yes
- b. No
- c. Don't know

5. In Nepal, share price change is not a random phenomenon. What do you think are the reasons? (Please rank)

- a. Stock market is in early stage of development
- b. Excessively speculative behaviour of the investors
- c. Hidden information
- d. Lack of Professionalism
- e. Others (please specify)

6. In your opinion, which factor is more responsible for the deficiency in the development of stock market? (Please rank)

- a. Company information
- b. Market operation system
- c. Government policy regarding investment
- d. Lack of profitability of company
- e. Lack of buying and selling habit of investors
- f. Others (please specify)

## Appendix-2

### Names of the Common Stocks Used in the Study Population for the study

S.No.	Name of Banks
1	Nabil Bank Limited
2	Nepal Investment Bank Limited
3	Standard Chartered Bank Nepal Limited
4	Himalayan Bank Limited
5	Nepal SBI Bank Limited
6	Nepal Bangladesh Bank Limited
7	Everest Bank Limited
8	Bank of KathmandU Limited
9	Nepal Industrial and Commercial Bank Limited
10	Machha Puchchhre Bank Limited
11	Laxrni Bank Limited
12	Lumbli Bank Limited
13	NCC Bank Limited
14	Kumari Bank Limited

### Sample for the Study

S.No.	Name of Banks	No. of Observation
1	Nabil Bank Limited	156
2	Nepal Investment Bank Ltd.(NIB)	132
3	Standard Chartered Bank Nepal (SCBL)	154
4	Himalayan Bank Limited (HBL)	141
5	Everest Bank Limited (EBL)	179
	Total	762

**Appendix-3**  
**Group-Wise Monthly Turnover**  
**(Fiscal Year 2006/07)**

I

Description	Jul/Aug		Aug/Sept.		Sept/Oct		Oct/Nov		Nov/Dec		Dec/Jan		Jan/Feb	
	Share Units ('000)	Traded Amt (Rs in million)	Share Units ('000)	Traded Amt (Rs in million)	Share Units ('000)	Traded Amt (Rs in million)	Share Units ('000)	Traded Amt (Rs in million)	Share Units ('000)	Traded Amt (Rs in million)	Share Units ('000)	Traded Amt (Rs in million)	Share Units ('000)	Traded Amt (Rs in million)
Commercial Bank	624.1	245.67	394.62	146.71	177.08	77.30	328.51	140.91	532.19	239.52	288.94	143.73	468.98	177.12
Finance	16.74	25.32	216.26	29.74	121.58	2261	132.42	31.28	285.36	40.60	213.80	30.61	98.08	13.32
Insurance	69.27	12.74	54.10	13.96	21.11	4.04	9.62	2.18	71.37	12.71	18.42	4.10	25.23	7.96
Manufacture & Procusing	0.33	0.33	1.80	3.26	0.65	0.03	0.71	0.30	1.67	0.35	3.29	2.65	3.98	0.30
Hotel	7.43	0.35	6.39	0.31	13.42	0.57	1.09	0.04	320.56	16.28	21.85	1.13	4.18	0.22
Trading	0.22	0.28	0.35	0.73	6.88	2.94	0.01	0.02	0.81	1.49	0.31	0.65	0.87	2.05
Development Banks	17	4	19	3	1.62	0.33	3.82	0.65	14222	15.64	2.78	0.67	66.70	19.10
Others	2	0.77	5.63	0.78	55.15	0.79	0.45	0.21	0.68	0.30	0.83	0.38	5.29	2.30
Total	887.09	289.46	698.15	198.49	397.49	108.61	476.63	175.59	1354.86	326.89	550.22	183.92	673.31	222.37

(Source: NEPSE: Annual Trading Report 2006/2007, [www.nepalstock.com](http://www.nepalstock.com))

II

Description	Jul/Aug		Aug/Sept.		Sept/Oct		Oct/Nov		Nov/Dec		Dec/Jan		Jan/Feb	
	Share Units ('000)	Traded Amt (Rs in million)	Share Units ('000)	Traded Amt (Rs in million)	Share Units ('000)	Traded Amt (Rs in million)	Share Units ('000)	Traded Amt (Rs in million)	Share Units ('000)	Traded Amt (Rs in million)	Share Units ('000)	Traded Amt (Rs in million)	Share Units ('000)	Traded Amt (Rs in million)
Commercial Bank	506	274.42	453.19	231	669.43	357.76	649.72	417.97	442.45	244.50	5535.21	2696.61	42.28	78.10
Finance	161.05	21.62	162.67	25.63	92.54	12.76	207.15	33.63	99.90	18.81	1957.55	305.93	16.01	8.836
Insurance	17.86	4.82	45.09	15.78	40.62	13.06	53.71	20.16	148.57	18.36	574.97	129.87	4.70	3.76
Manufacture & Processing	24.59	5.33	20.18	1.07	0.63	1.32	1.40	1.05	0.57	1.18	59.8	17.17	0.49	0.50
Hotel	3.13	0.17	3.17	0.16	4.13	0.19	3.08	0.15	3.77	0.16	392.2	19.73	3.21	0.57
Trading	1.35	1	2.29	1.63	0.04	0.10	2.06	4.8	0.03	0.07	15.22	15.81	0.12	0.46
Development Banks	54.69	20.41	18.59	5.93	1031	3.89	10.64	3.51	39.43	6.07	386.8	83.2	3.16	2.41
Others	3.78	1.26	78.86	1.32	1.17	0.76	3045.95	136.93	101.61	38.77	3301.4	184.57	27.03	5.34
Total	772.45	329.03	487.04	282.52	818.87	389.84	3973.71	618.25	836.33	327.92	12223.15	3452.89	100	100

(Source: NEPSE: Annual Trading Report 2006/2007, [www.nepalstock.com](http://www.nepalstock.com))

**Appendix-4**  
**Paid-up Value and Market Capitalization**  
**(Fiscal Year 2006/07)**

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Description	July/Aug				Aug/Sept				Sept/Oct				Oct/Nov			
	Paid-up Value	%	Market Capitalization	%	Paid-up Value	%	Market Capitalization	%	Paid-up Value	%	Market Capitalization	%	Paid-up Value	%	Market Capitalization	%
Commercial Bank	7026.04	52.49	428831	74.16	7602.73	62.10	45368.04	76.12	7602.73	56.19	46446.09	77.49	7644.73	54.37	47594.68	76.39
Finance	1890.7	14.12	3517.02	6.08	1706.70	13.94	3173.61	5.33	1858.6	13.74	3440.20	5.74	1649.86	11.73	3133.65	5.03
Insurance	1078	8.05	3844.67	6.65	1078	8.8	3773.24	6.33	1098	8.12	3816.73	6.37	1178	8.38	3961.85	6.36
Manufacture & Procusing	624.13	4.66	2027.46	3.51	108.57	0.89	2033.13	3.41	304.01	2.25	191.92	0.32	959.42	6.83	1370.29	2.20
Hotel	1324.99	9.91	608.94	1.05	500	4.08	245	0.41	1411.96	10.44	1014.85	1.69	1411.96	10.04	1064.85	1.71
Trading	52.08	0.39	324.05	0.56	27.30	0.23	587.50	0.99	54.13	0.40	669.10	1.12	27.30	0.19	586.95	0.94
Development Banks	361.6	2.7	629.25	1.09	371.60	3.03	635.24	1.06	350	2.59	572.80	0.95	350	2.49	602.20	0.97
Others	1028.26	7.68	3993	6.90	849.06	6.93	3785.76	6.35	849.06	6.27	3785.76	6.32	839.06	5.97	3985.52	6.40
Total	13385.8	100	57827.49	100	12243.96	100	59601.52	100	13528.53	100	59937.45	100	14060.33	100	62299.99	100

(Source: NEPSE: Annual Trading Report 2006/2007, [www.nepalstock.com](http://www.nepalstock.com))

Description	Nov/Dec				Dec/Jan				Jan/Feb				Feb/Mar			
	Paid-up Value	%	Market Capitalization	%	Paid-up Value	%	Market Capitalization	%	Paid-up Value	%	Market Capitalization	%	Paid-up Value	%	Market Capitalization	%
Commercial Bank	7644.73	54.84	48059.74	75.49	7665.73	57.59	48532.39	72.48	7707.73	52.48	51403.11	75.43	8307.73	55.93	57468.02	75.25
Finance	1897.39	13.61	353823	5.56	1917.39	14.40	3697.83	5.51	1863.42	12.69	3419.24	5.02	2033.37	13.69	3843.36	5.03
Insurance	1128	8.09	3945.40	6.20	1049	7.89	3662.43	5.47	1101.70	7.50	4040.28	5.93	1156.70	7.79	4214.59	5.52
Manufacture & Procesing	561.64	4.04	1943.31	3.05	491.91	3.70	334077	4.98	621.11	4.23	1979.76	2.91	762.92	5.14	3752.90	4.91
Hotel	1411.96	10.13	1013.55	1.59	887.89	6.67	2049.78	3.05	1411.96	9.61	1057.04	1.55	586.97	3.95	756.83	0.99
Trading	52.08	0.37	665	1.04	29.35	0.22	632.07	0.94	27.30	0.18	655.20	0.96	52.08	0.35	700.49	0.92
Development Banks	360	2.58	620.80	0.98	430	3.23	844.60	1.31	445	3.03	933.60	1.37	445	2.99	1081.60	1.42
Others	883.72	6.34	3877.53	6.09	839.06	6.30	4195.29	6.26	1509.72	10.28	4658.25	6.83	1509.72	10.16	4548.17	5.90
Total	13939.52	100	63663.56	100	13310.33	100	66955.16	100	14687.94	100	68146.48	100	14854.49	100	76368.96	100

(Source: NEPSE: Annual Trading Report 2006/2007, [www.nepalstock.com](http://www.nepalstock.com))

Description	Mar/Apr				Apr/May				May/Jun				Jun/Jul			
	Paid-up Value	%	Market Capitalization	%	Paid-up Value	%	Market Capitalization	%	Paid-up Value	%	Market Capitalization	%	Paid-up Value	%	Market Capitalization	%
Commercial Bank	8265.73	55.29	56273.51	74.96	8522.73	57.67	70000.14	80.03	8564.73	50.52	65898.30	74.49	8522.73	51.83	68694.36	75.27
Finance	1844.81	12.34	3508.31	4.67	1755.21	11.88	3532.47	4.04	2346.56	13.84	4614.52	5.22	2102.44	12.78	4212.91	4.62
Insurance	1196.70	8.00	4306.96	5.74	1036.70	7.02	3990.36	4.56	1106.70	6.53	4446.73	5.03	1206.70	7.34	4801.19	5.26
Manufacture & Procesing	965.92	6.46	3792.53	5.05	122.46	0.76	2142.95	2.45	773.49	4.56	3169.44	3.58	505.07	3.07	2689.97	2.95
Hotel	666.97	4.46	760.13	1.01	1331.96	9.01	993.73	1.14	1411.96	8.33	1020.69	1.15	1331.96	8.10	1036.08	1.13
Trading	54.13	0.36	702.18	0.94	27.30	0.18	650.83	0.74	52.08	0.30	733.50	0.83	27.30	0.17	655.20	0.72
Development Banks	446.60	2.99	1041	1.39	447.43	303	114.43	1.27	459.03	2.71	1095.19	1.24	509.03	3.09	1217.49	1.33
Others	1509.72	10.10	4690.55	6.24	1544.38	10.45	5043.38	5.77	2239.32	13.21	7489.86	8.46	2239.32	13.62	7955.81	8.72
Total	14950.68	100	75075.17	100	14778.17	100	87468.29	100	16953.87	100	88468.23	100	16444.55	100	91263.01	100

(Source: NEPSE: Annual Trading Report 2006/2007, [www.nepalstock.com](http://www.nepalstock.com))

**Appendix - 5**

**Trading Performance of Population Banks  
(For Fiscal Year 2006/07)**

Name of the Banks	Outstanding Equity (A)	Closing Price (B)	Paid-up Value (C)	No. of Transaction (D)	Traded Shares in units ('000) (E)	Traded Amount (Rs. in million) (F)	Traded Paid Value (Rs in million) G = (A) × (C)	Total Market Value (Rs in million) h = (A) × (B)
NABIL	4909950	2240	100	1126	86.11	165.21	491.00	10998.29
NIBL	5905860	1260	100	1886	235.90	234.44	590.59	7441.38
SCBL	3746404	3775	100	1169	73.09	218.26	374.64	14142.68
HBL	7722000	1100	100	1574	103.40	109.08	772.20	8494.20
SBI	64738032	612	100	1941	307.70	147.76	647.8	3964.56
NBBL	7199260	199	100	1820	274.80	63.12	719.93	1432.65
EBL	3780000	1379	100	2138	117.10	129.13	378.00	5212.62
BOK	4635809	850	100	3705	928.70	562.21	463.58	3940.44
NIC	6000000	496	100	2556	651.00	275.81	600.00	2976.00
MPB	5500000	320	100	1941	431.50	144.90	550.00	1760.00
LBL	6100000	368	100	1480	307.90	99.41	610.00	2244.80
KBL	6250000	443	100	5014	557.30	220.51	625.00	2768.75
LBL	5000000	172	100	7660	701.80	122.43	500.00	860.00
NCC	7000000	94	100	1405	203.10	22.27	700.00	658.00
Total	80227315			35415	4979.4	2514.54	8022.74	66894.37

(Source: NEPSE: Annual Trading Report, 2006/2007).

**APPENDIX - 6****Historical Return and Average Annual Return of NABIL Bank**

Fiscal Year	Closing Price (Rs)	Dividend Per Share	$R_j = \frac{P_t - P_{t-1} + \text{Div}}{P_{t-1}}$
2001/02	1500	40	-----
2002/03	735	20	-0.49
2003/04	735	50	0.07
2004/05	1000	65	0.48
2005/06	1505	70	0.57
2006/07	2240	85	0.55
		Total	$\bar{R}_j = 1.15$

**Historical Return and Average Annual Return of  
Standard Chartered Bank Ltd.**

Fiscal Year	Closing Price (Rs)	Dividend Per Share	$R_j = \frac{P_t - P_{t-1} + \text{Div}}{P_{t-1}}$
2001/02	2144	100	-----
2002/03	1550	100	-0.23
2003/04	1640	100	0.12
2004/05	1745	110	0.13
2005/06	2345	110	0.41
2006/07	3775	120	1.13
		Total	$\bar{R}_j = 1.56$

**Historical Return and Average Annual Return of  
Himalayan Bank Ltd.**

Fiscal Year	Closing Price (Rs)	Dividend Per Share	$R_j = \frac{P_t - P_{t-1} + Div}{P_{t-1}}$
2001/02	1500	475.5	-----
2002/03	1000	125	-0.25
2003/04	836	210.32	005
2004/05	840	30	0.04
2005/06	920	199.58	0.33
2006/07	1100	11.5	0.21
		Total	$\bar{R}_j = 0.38$

**Historical Return and Average Annual Return of  
Everest Bank Ltd.**

Fiscal Year	Closing Price (Rs)	Dividend Per Share	$R_j = \frac{P_t - P_{t-1} + Div}{P_{t-1}}$
2001/02	750	-----	-----
2002/03	430	86	-0.312
2003/04	445	20	0.08
2004/05	680	20	0.57
2005/06	870	20	0.31
2006/07	1379	20	0.61
		Total	$\bar{R}_j = 1.258$

**Historical Return and Average Annual Return of  
Investment Bank Ltd.**

Fiscal Year	Closing Price (Rs)	Dividend Per Share	$R_j = \frac{P_t - P_{t-1} + Div}{P_{t-1}}$
2001/02	1150	-----	-----
2002/03	760	228	-0.14
2003/04	795	20	0.07
2004/05	940	15	0.20
2005/06	800	12.5	-0.14
2006/07	1260	55.46	0.644
		Total	$\bar{R}_j = 0.634$

### Appendix - 7

#### Risk and Return of Market Index

Year	Market Index	Realized Rate of Return (R <sub>m</sub> )	R <sub>m</sub> - $\bar{R}_m$	[R <sub>m</sub> - $\bar{R}_m$ ] <sup>2</sup>
2001/02	348.43	-	-	-
2002/03	227.54	-0.3469	-0.4132	0.1707
2003/04	204.86	-0.0997	-0.166	0.275
2004/05	207.92	0.0149	-0.0952	0.0026
2005/06	241.51	0.1615	0.0952	0.0091
2006/07	386.83	0.6017	0.5354	0.2866
		0.3315		0.4965

$$\bar{R}_m = \sum R_m / n = 0.3315 / 5 = 0.0663$$

$$\sigma_m = \sqrt{\frac{\sum (R_m - \bar{R}_m)^2}{n}} = \sqrt{\frac{0.4965}{5}} = 0.3151$$

$$\sigma_m^2 = \frac{\sum (R_m - \bar{R}_m)^2}{n} = \frac{0.4965}{5} = 0.0993$$

$$C.V. = \frac{\sigma_m}{\bar{R}_m} = \frac{0.3151}{0.0663} = 4.7526$$

### Appendix - 8

#### Calculation of Standard Deviation, Coefficient of Variation, Variance, Covariance and Beta Coefficient of NABIL Bank

Fiscal Year	R <sub>j</sub>	(R <sub>j</sub> - $\bar{R}_j$ )	(R <sub>j</sub> - $\bar{R}_j$ ) <sup>2</sup>	(R <sub>j</sub> - $\bar{R}_j$ ) × (R <sub>m</sub> - $\bar{R}_m$ )	(R <sub>m</sub> - $\bar{R}_m$ )
2001/02	---	---	---	---	---
2002/03	-0.49	-0.72	0.52	0.297504	-0.4132
2003/04	0.07	-0.16	0.02	0.026556	-0.166
2004/05	0.45	0.22	0.05	-0.011308	-0.0514
2005/06	0.57	0.34	0.12	0.032368	0.0952
2006/07	0.55	0.32	0.10	0.171328	0.5354
Total	1.15			0.516452	

**Calculation of Standard Deviation, Coefficient of Variation, Variance, Covariance and  
beta Coefficient of Standard Chartered Bank**

Fiscal Year	R <sub>j</sub>	$(R_j - \bar{R}_j)$	$(R_j - \bar{R}_j)^2$	$(R_j - \bar{R}_j) \times$ $(R_m - \bar{R}_m)$	$(R_m - \bar{R}_m)$
2001/02	---	---	---	---	---
2002/03	-0.23	-0.542	0.29	0.2239544	-0.4132
2003/04	0.12	-0.142	0.04	0.031872	-0.166
2004/05	0.13	-0.182	0.03	0.0093548	-0.0514
2005/06	0.41	0.098	0.01	0.0093296	0.0952
2006/07	0.13	-0.182	0.03	-0.0974428	0.5354
Total	1.56			0.1771344	

**Calculation of Standard Deviation, Coefficient of Variation, Variance, Covariance and  
beta Coefficient of Himalayan Bank**

Fiscal Year	R <sub>j</sub>	$(R_j - \bar{R}_j)$	$(R_j - \bar{R}_j)^2$	$(R_j - \bar{R}_j) \times$ $(R_m - \bar{R}_m)$	$(R_m - \bar{R}_m)$
2001/02	---	---	---	---	---
2002/03	-0.25	-0.326	0.11	0.1347032	-0.4132
2003/04	0.05	-0.026	0.001	0.004316	-0.166
2004/05	0.04	-0.036	0.001	0.0018504	-0.0514
2005/06	0.33	0.254	0.06	0.02413	0.0950
2006/07	0.21	0.134	0.02	0.717436	0.5354
Total	0.38			0.2367432	

**Calculation of Standard Deviation, Coefficient of Variation, Variance, Covariance and  
beta Coefficient of Everest Bank**

Fiscal Year	R <sub>j</sub>	$(R_j - \bar{R}_j)$	$(R_j - \bar{R}_j)^2$	$(R_j - \bar{R}_j) \times (R_m -$ $\bar{R}_m)$	$(R_m - \bar{R}_m)$
2001/02	---	---	---	---	---
2002/03	-0.312	-0.5636	0.32	0.23287952	-0.4132
2003/04	0.08	-0.1716	0.03	0.0284856	-0.166
2004/05	0.57	0.3184	0.10	-0.01636576	-0.0514
2005/06	0.31	0.0584	0.003	0.00555968	0.0952
2006/07	0.61	0.3584	0.13	0.19188736	0.5354

Total	1.258			0.4424464	
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**Calculation of Standard Deviation, Coefficient of Variation, Variance, Covariance and beta Coefficient of Nepal Investment Bank**

Fiscal Year	$R_j$	$(R_j - \bar{R}_j)$	$(R_j - \bar{R}_j)^2$	$(R_j - \bar{R}_j) \times (R_m - \bar{R}_m)$	$(R_m - \bar{R}_m)$
2001/02	---	---	---	---	---
2002/03	-0.14	-0.2668	0.07	0.11024176	-0.4132
2003/04	0.07	-0.0568	0.003	0.0094288	-0.166
2004/05	0.20	0.0732	0.005	-0.00376248	-0.0514
2005/06	-0.14	-0.2668	0.07	-0.02539936	0.0952
2006/07	0.644	0.5172	0.27	0.27690888	0.5354
Total	0.634			0.3674176	

**Calculated Expected Return, Standard Deviation, Coefficient of Variation and Beta Coefficient of Sample Banks**

Description	Expected Return (%)	Standard Deviation (%)	Coefficient of Variation	Beta Coefficient
NABIL	23	40.25	1.75	0.1033
SCBL	31.2	28.28	0.91	0.0354
HBL	7.6	19.59	2.58	0.0473
EBL	25.16	34.15	1.36	0.0885
NIB	12.68	28.91	2.28	0.0735

**Appendix-9**

S.N.	Stock of Respective Bank/Lag Days	1	2	3	4	5	6	7	8	9	10
1	NABIL Bank	0.083	0.0805	0.0808	0.0811	0.0813	0.0816	0.0819	0.0822	0.0824	0.0827
2	Standard Chartered Bank	0.0808	0.0811	0.0813	0.0816	0.0819	0.0822	0.0824	0.0827	0.083	0.0833
3	Himalyan Bank	0.0845	0.0848	0.0851	0.0854	0.0857	0.086	0.0864	0.0867	0.087	0.0873
4	Everst Bank	0.0749	0.0751	0.0753	0.0756	0.0758	0.076	0.0762	0.0764	0.0767	0.0769
5	Nepal Investment Bank	0.0873	0.00877	0.088	0.0883	0.0887	0.089	0.0894	0.0989	0.0901	0.0905
	Average	0.0821	0.0661	0.0821	0.0824	0.0827	0.0830	0.0834	0.0836	0.0838	0.0841

**Computed  
Standard Error  
from Lag 1 to  
10  
Appendix-10  
Serial  
Correlation**

**between Daily Price Changes and Lagged Price Changes from Lag 1 to Lag 10**

S.N.	Stock of Respective Bank/Lag Days	1	2	3	4	5	6	7	8	9	10
1	NABIL Bank	0.0262	0.2448	-0.2851	-0.0431	-0.0035	-0.0348	-0.0473	-0.0238	0.0182	-0.0386
2	Standard Chartered Bank	0.598	-0.0303	0.0994	0.0139	-0.062	-0.069	-0.0293	0.0085	-.0905	-0.0533
3	Himalyan Bank	-0.0667	-0.0395	-0.1056	-0.1222	0.0862	0.0245	0.1637	-0.0538	-0.2594	-0.0139
4	Everst Bank	0.148	0.0395	-0.2503	-0.2425	-0.0182	-0.1823	0.1052	0.029	0.0373	-0.0409
5	Nepal Investment Bank	0.0848	0.0126	0.1536	0.0146	0.0337	0.0232	-0.0765	-0.2925	-0.2651	0.0075
	Average	0.0504	0.0656	-0.0776	-0.0758	0.0072	-0.0477	0.0232	-0.665	-0.1119	-0.0278

### Appendix-11

#### Distribution of Signs of Coefficients

Lag	No. of + Sign	No. of -Sign	Total
1	4	1	5
2	4	1	5
3	2	3	5
4	2	3	5
5	2	3	5
6	2	3	5
7	2	3	5
8	2	3	5
9	2	3	5
10	1	4	5
Total	23	27	50

### Appendix - 12

#### Showing Closing Price of Sample Banks

Year/Sample Banks	NABIL	SCBL	HBL	EBL	NIB
2001/02	1500	2144	1500	750	1150
2002/03	735	1550	1000	430	760
2003/04	735	1640	836	445	795
2004/05	1000	1745	840	680	940
2005/06	1505	2345	920	870	800
2006/07	2240	3775	1100	1379	1260

