

CHAPTER - I

INTRODUCTION

1.1 General Background of the Study

Finance mostly deals on the monetary risk and return, which is the most affecting subject matter for an individual to large corporations. Return is the main objective of investment and a certain degree of risk is also associated with it. It is the income received in investment. People invest their belongings with an expectation of getting some reward for leaving its liquidity. They only invest in those opportunities where they can get higher return. Hence, investor wants favorable return from their investment and goes for those, which yield more.

Risk is the fact of life, which is a product of uncertainty and its magnitude depends upon the degree of variability in uncertain cash flows. In fact, risk is an indication of opportunity of losing investment value. Different people define risk in different ways.

To some, it is simply a lack of definite outcome, which can be any unknown unfavorable events. It is a chance of happening some unfavorable event or danger of losing some material value. What is risk? It is difficult to define the term risk. "Risk is the pornography. It is hard to define, but you know it when you see it" (*Van Horne and Wachowicz; 1995: 20*).

A stock reflects the uncertainty about future return, such that the actual return may be less than expected return. The main source of uncertainty is the price at which the stock will be sold. Dividends tend to be much more than stock prices which contribute to the return immediately received by the firm, which limits its potential growth. And the stock prices can be inflation and the strength of the dollar. They

also can be affected by micro economic factors such as interest such as specific policies enacted by the particular firm that will affect future earnings. The risk of stock can be measured by its price volatility.

Generally, investors are risk averse. They always seek higher return for more risk as risk premium. So the primary problem in investment is to identify the security, which has low risk and high return. Although, return cannot be increased substantially, risk can be reduced by diversification of funds in different stocks making a portfolio. Well diversification can eliminate the unsystematic risk, which is not explained by general market movement, i.e. systematic risk is associated with change in return on the market as a whole, cannot be avoided by diversification.

Investors have varying perceptions towards risk and enterprising ability. Investors will want their investment to yield favorable return and they invest in those opportunities, which have greater expected return. Investors sacrifice their current cash in securities in anticipation of higher future benefits than in risk free sectors. An investor seeking common stock investment usually pays the price for stock based on his estimation about future dividends and growth in stock price. Although in case of imperfect capital market, so many financial and non- financial factors plays a great role in price determination.

“Stock market is a financial market which probably has the greatest glamour and is perhaps the least understood. Some observers consider it as a legalized heaven for gambling and many investors stock market investing as a game in which the sole purpose is picking winners” (*Lorie and Dood; 1985: 52*). Capital Market is the part of financial market. A financial market is the market in which financial assets (securities) such as stocks and bonds can be purchasing financial assets previously held by another party. Financial market facilities financing and

investing by households, firms and governments agencies. The main objective of market is to create opportunity for maximum number of people to get the benefit from the return obtained by directing the economy towards the productive sectors by mobilizing the long term capital. The objective can be fulfilled only by the rational and accountable behavior relating to the three factors of the capital market such as institution, mediator and investor. Emergence, growth and popularity of corporate securities, including common stock are accompanied by the development of capital market.

Financial market comprises of money market and capital market. Money Market for debt security that payoff in the short term i.e. less than one year like government treasury bills of 90 days. Capital market refers to the market for long term debt and equity shares. These can be further divided into primary market and secondary market. Primary market is the market, where the shares are offered to general public for the first time and in the secondary market the securities that have already been purchased by the general public in primary market are traded again and again. Securities with maturity of one year or less are called money market securities, where as the securities with a maturity of more than one year are called capital market securities. Money market securities generally have a higher degree of liquidity. However, capital market securities are typically expected to generate a higher annualized return to investors.

In Nepalese contest, the institutional setup of securities market began along with the “Security Exchange Center” (Now Nepal Stock Exchange Limited) in 1976 A.D. Through after considerable developments, there still exists some problem in the development of stock markets in Nepal. Most of the shareholders and investors are least familiar with risk and return. “Most of the Nepalese investors are found to invest in single security” (*Bhatta; 1996: 82*). Due to the lack of information and poor knowledge, market intermediaries exploit investor. So many investors

are afraid to invest in stocks. People's participation in security investment and its dynamic trading play a vital role in overall economic development. For this purpose potential investors must be able to analyze risk and return of individual stock and portfolio as well. Which will increase market efficiency, consequently speed up the economic development.

“Listing is primarily determined by the wishes of the economy, the size of the company and the trading activity of the stock” (*Edwin and Martin; 1996: 31*). And “Stock exchange means any body of individuals, whether incorporated or not, constituted for the purpose of regulating or controlling the business of buying , selling or dealing in securities” (*Bhalla; 1997: 196*).

“Security markets exists in order to bring together buyers and sellers or securities meaning their mechanism is created to facilitate the exchange of financial assets” (*Sharpe, Alexander and Bailey; 1995: 18*).

There are different types of securities as treasury bills, long term government bonds, long term corporate bonds, common stocks etc. Among these securities this study concerns with common stocks. “Common stock represents a commitment on the part of a corporation to pay periodically what ever its board of directors deems appropriate as a cash dividend” (*Sharpe, Alexander and Bailey; 1995: 20*). Common stock is known as a risky security.

Common stock holders of a company are its ultimate owners. Collectively they own the company assuming that ultimate risk is associated with ownership. Investors invest in common stock expecting higher return. But their expected return may or may not change into realities. This uncertainty is a major risk to investors in stock market investment.

Banking sector is the most dynamic part of economy, which collects unused funds and mobilizes it in needs sectors. It is heart of trade, commerce and industry. In Nepalese context, commercial banks have comparatively good performance among the public limited companies.

In Nepal foreign joints venture banks perform better than Nepalese ones because of their higher management efficiency and capacity of proper risk management.

Specially, Nepalese banks have a high degree of internal (firm-specific) risk. On the other hand, they have to bear more social obligation and government intervention than foreign banks. However Nepalese banks have high potentialities to increase their risk attitude and improving their internal management.

The concept of banking system was introduced in Nepal with the establishment of Nepal Bank Ltd. in 1937. Later in 1955, the first central bank, named as Nepal Rastra Bank was established with an objective of supervising, protecting and directing the functions of commercial banking activities. Rastriya Banijya Bank, the commercial bank fully owned by Nepal Government was established in 1966. The financial scenario has changed with the introduction of joint ventures banks in 1984. The numbers of commercial banks has been increasing so the investment volume and opportunity in various sectors such as agriculture, industry, commercial and social sectors are also increasing gradually. Among all the banks, 11 commercial banks are listed in Nepal Stock Exchange which claims the highest contribution on the market capitalization as compared to other sectors. And these also are found better in terms of earning per share. As financial intermediary, the commercial banks also play an important role as fiscal policy implementing body for central bank. The monetary structure involves analysis of the behavior of banking system. The variation in the size and composition of back assets play important role in transmitting the influence the monetary policy to the economy.

Trade is one of the major aspects of the national economy of any country. The efficient administration of the trade is one primary responsibility of the national government. As trade sector involves import and export, both aspects assume importance for the economic development of the country. Import helps the domestic needs for machinery and equipment, industrial raw material and consumer goods, which cannot be produced within the country or which are not available adequately within the country. On the other hand, export is the best channel for disposing off surplus domestic production for the purpose of earning the much needed foreign exchange. Naturally a developed country like Nepal would need the presence of several agencies both in the public and private sector to coordinate the above activities and manage its trade efficiently.

1.2 Statement of the Problem

Due to the lack of information and poor knowledge, individual investors may be manipulated or exploited by the financial institutions or other market intermediaries to such an extent that investing in common stock is intolerably hazardous. Investor's attitude and perception plays a vital role in national decision, which is influenced by the knowledge and access to the data required for analysis. Most of Nepalese investors invest their fund in single security because of less knowledge about risk return behavior of the securities. So, main problem is the lack of information to analyze the risk and return on common stock investment. People feel more risk in stock investment than as its real risk. Not only general public, but also the university graduates and post graduates cannot analyze risk and return while making stock investment decision.

A corporate firm overcomes the limitation of unlimited liabilities and limited capital as in sole- proprietorship and partnership firms. A corporate firm is a business entity established under company act. Consisting of billions of rupees of capital dividend into millions of ownership and debt certificates of the small

denomination, and the ownership certificate of common stock are compulsory to begin a corporate firm.

Investors are the main bases for any company, they are the source of revenue as a customer for the stockbrokers and financial institution and ultimately they are the backbone of economic development of country. But nobody has any effective programme to investor's knowledge. Similarly there are no any separate institutions, which provide information required to make rational decision that can accelerate the stock investment and market efficiency.

Further theory says that the stock price in market is guided by the intrinsic value which is calculated by aid of company's result of financial performance such as dividend, required rate of return and growth. In an efficient market condition stock price is equal to the intrinsic value since the buyer and the seller are fully aware of the facts and figure of the company. Hence one can say that market price and financial performance are positively correlated.

It is assumed that all stock prices remain in Security Market Line (SML) and if the case is not so, they strive towards this line. If the required rate of return and expected rate of return are not equal then the intrinsic value and market value of stock will not be equal. Hence the location of expected rate of return above and under the SML is due to the stock being under and over priced.

Common stocks are firstly marketed by the capital raising companies in the primary capital market and later on, these stocks are negotiable in secondary capital market. Common stock does not guarantee for annual returns nor does it ensure for the return of price of stock thus is considerably risky. Hence it needs courage and at the same time faith to invest in common stock. In most of the time which can be generated through proper evaluation with giving view to the

prevailing market atmosphere. How can one rely on these stocks? What are the criteria for evaluation that the stock they are holding will give them a favorable return? What should be the compensation they have to receive for bearing a certain degree of risk? How they know the magnitude of risk? How can one make higher return assuming lower risk?

These are the burning issues that has influenced researcher to carry out this study.

1.3 Objectives of the Study

The general objective of this study is to assess the risk and return on common stock investment of the listed commercial banks and trading companies. The specific objectives of this study are as follows:

- a. To identify, the general investors views and awareness towards risk and return on securities.
- b. To understand, which type of securities investors prefer to invest and why.
- c. To evaluate common stock of listed commercial banks and trading companies in terms of risk and return and to perform sector wise comparison on the basis of market capitalization.
- d. To determine whether the share of commercial banks and trading companies in Nepal are overpriced or under priced by analyzing the risk and return.
- e. To construct the portfolio to reduce the unsystematic risk of the commercial banks and trading companies.
- f. To make relevant suggestion and practical ideas and recommendation on the basis of analysis.

1.4 Significance of the Study

In the context of Nepal, the capital market is growing very slowly. The market is not efficient, there are few magazines or articles related to capital market and very

few studies are made on the topics. “Risk and Return” .Because of all things some of investors are investing on the capital market without any proper knowledge and information.

This study will give information about Nepalese Capital Market by analyzing risk and return and will definitely contribute to increase the analytical power of the investors in capital market. The study will be beneficial for all the persons who are directly or indirectly related to the Nepalese Capital Market.

Investor understanding a risk and return is on the surface level only. They feel more risk than that exist. As a result, there are fair of laps of investment in common stock. So, the study will be more significant for exploring and increasing stock investment. It will also provide little contribution to Nepalese stock market development.

This study is not only to fulfill MBS Level course of T.U., but also to provide some knowledge about the Nepalese stock market developments along with providing ideas to minimize the risk on stock investment.

To analyze the risk and return is a significant managerial decision from the viewpoint of investors. It influences the shareholders risk and return. Consequently the risk and return analysis influences the market price of the stock, by making it at an appropriate level. Apart from this, study will be a matter of interest for academicians, students, researchers, teachers or person practicing in the field of finance.

1.5 Limitation of the Study

As every research has its own limitation, this study is not free from it. Basically, this study is done for the partial fulfillment of MBS Level. So it has some limitations which are as follows:

- a. The study covers the relevant data and information only for six years i.e. fiscal year 2002/03 to 2007/08.
- b. Variation in data published from different sources e.g. figure published by NEPSE and company differ to some degree.
- c. Analysis is mostly based on the tools developed in the context of an efficient market condition.
- d. The study is based on three listed commercial banks and three listed trading companies only.

1.6 Organization of the Study

This research has been organized in five chapters. The titles of these chapters are listed below:

Chapter-I: Introduction

This chapter is introductory and deals with subject matter of the study including general background of the study, statement of the problem, objectives of the study, significance of the study, limitation of the study, organizing of the study etc.

Chapter- II: Review of Literature

This chapter contains the profound review of available literature related to the area of this study. It is directed towards the review of conceptual framework and review of major related studies. Risk and return, its relationship, determinants, measuring techniques and methods etc. are reviewed from the various available literatures.

Chapter-III: Research Methodology

This unit presents research methodology used in the study which includes various tools and techniques of data. It consists of research method as library research and field research, sources of data, population and sample, research design, methods of data analysis etc.

Chapter- IV: Data Presentation and Analysis

This chapter presents the analysis and presentation of data by using various methods of statistical and financial tools. Tables, figures and pie charts, etc. will be used accordingly.

Chapter-V: Summary, Conclusion and Recommendations

This chapter is for summary of main findings conclusion, recommendation and suggestions for further important.

CHAPTER - II

REVIEW OF LITERATURE

Review of literature is the chapter where researcher reviews the books, journals, magazines or any other types of studies, which are related to this field of the study. Research is the continuous process, it never ends. The procedures and finding may change but research continues. The purpose of reviewing the literature is to develop some expertise in one's area, to see what new contribution can be made, and to receive some idea for developing a research design.

The concern of the study primarily is to focus on the risk and return. Theoretical aspects of the topic on risk and return on common stock investment are explored on this chapter in more detail and descriptive manner. Topics from basic academic courses books and different studies published in magazines, thesis of seniors and journal related to the studies are reviewed. Since there are very limited study material related to this topics has published in Nepal, this study has to refer almost all the books related to this has published in foreign countries. On the other hand our market is also in emerging states. Some master degree theses are available in Tribhuvan University which is related to some extend with this topic "Risk and Return" has been reviewed. In addition independent studies carried out by well known expert and others are also taken into consideration.

2.1 Conceptual Review

Different books dealing with theoretical aspects of risk and return are taken into consideration. Major focus of finance is trade off between risk and return. Here main focus is its implication in the investment on the common stock.

2.1.1 Common Stock

"Common stock holders of a corporation are its residual owners, their claim to income and asset comes after creditors and preference shareholders have paid in

full. As a result, a stockholder's return on investment is less certain than the return to lender or to a preferred stock holder. On the other hand, the share of the common stock can be authorized either with or without par value. The par value of the stock is merely a stated figure in the corporate chapter and is of little economic significance. A company should not issue stock at a price less than par value because stockholder who bought stock for less than par value would be liable to creditors for the difference between the below par price they paid and the par value”(*Van Horne;1997:98*).

But in Nepal, as per the provision of Nepal Company Act 2057, no common stocks are allowed to issue without par value. Its par value must be either Rs 10 or Rs 100.

“Common stocks have one important investment characteristics and are important speculative characteristics. Their investment value and aggregate market price tend to increase regularly but persistently over the decades as their net worth builds through the reinvestment of undistributed earnings. However, most of the time common stocks are subject to irrational and excessive price fluctuation in both directions, as most people to speculate or gamble i.e. to give way to hope fear and greed”(*Van Horne; 1997:98*).

“The study is focus on the common stock investment that's why light is thrown on it. Common stock represents ownership position in a corporation. It has a residual claim, in the sense that creditors and preference shareholders can receive payment only after the payment of all other claims. In bankruptcy, common stockholders are in principal, entitled to assets remaining after all prior claimants have been satisfied. The risk is highest with common stock investment. When investors buy common stock they receive certificate of ownership as a proof of there being part

of the company. The certificate states the number of shares purchased and their par value” (Bhalla; 2000:196).

2.1.2 The Expected Rate of Return on Common Stock

The expected rate of return is the income received on an investment plus any change in market price, usually expressed as a percent of beginning price of the investment. It is the increase in the expected after tax value of the initial investment over the holding period. The overall rate of return can be decomposed into two parts as capital appreciation and dividend. Capital appreciation is the difference between ending value and beginning value of an investment. Returns are defined as the dividend yield plus the capital gain or loss. The relation between the different levels of return on their relative frequencies is called a probability distribution. We could formulate a probability distribution for the relative frequency of a firm’s annual return by analyzing its historical return over the previous period. But we know that history never repeats itself exactly. Hence we can form a probability distribution based on historical data plus our analysis for the outlook for the economy, the outlook for the industry, the outlook for the firm in its industry and another factors.

Return is the main attraction for investors to invest in a risky security as stock accepting a various degree of loss tolerance. “The return from holding an investment over some period says a year is simply any cash payments received due to ownership plus the change in market price dividend by the beginning price. Thus the return comes from to sources, income and price appreciation.

From common stock, we can define single period return as:

$$R = \frac{(P_t - P_{t-1}) + D_t}{P_{t-1}}$$

Where,

- R = Expected return.
- t = Particular time period in future.
- P_t = Stock's price at the time period t.
- P_{t-1} = Stock's price at the time period t-1.
- D_t = Cash dividend at the end of time period t.

This formula can be used to determine both actual one period return (when based on historical figure), as well as expected one period return (when based on expected dividends and price). Also note that the term in parenthesis in the number of the above equation represents the capital gain or loss during the period" (*Van Horne and Wachowicz; 2000:90*).

"Annualized rate of returns over several periods can be calculated in two ways. The first one is simply to take the arithmetic average of the annual holding period returns (HPR) over the given period and the second one, which also take into account the compounding effects of cash receipts over different time intervals, is the geometric mean rate of return.

- The simple arithmetic mean:

$$\overline{HPR} = \sum_{t=1}^n \frac{HPR_t}{n}$$

- The Geometric mean,

$$\overline{HPR} = \prod_{t=1}^n (1 + HPR_t)^{\frac{1}{n}} - 1$$

Where,

HPR = Holding Period Return,

n = No. of period

HPR_g = Geometric Mean Holding Period Returns

(Cheney and Moses; 1992:34).

2.1.3 Risk on Common Stocks

Risk is defined in Webster's Dictionary as a 'hazard: a peril: exposure to loss or injury': thus for most, risk refers to the change that some unfavorable event will occur. If you invest in speculative stocks (or, really, any stock) you are taking a risk in the hope of making an appreciable return.

Risk is unlooked for the unwanted event in the future; it is said to be the sugar and salt of the life. "Risk, defined most generally, is the probability of the occurrence of unfavorable outcomes. But risk has different meanings in different contexts. In our context two measures developed from the probability distribution have been used as initial measures of return and risk. They are the mean and standard deviation of the probability distribution."

"Risk, defined most generally, is the probability of the occurrence of unfavorable outcomes. But risk has different meaning in different context. In our context two measures developed from the probability distribution have been used as initial measures of return and risk. There are the mean and the standard division of the probability distribution" (*Weston and Brigham; 1996:182-183*).

"Instead of measuring risk the probability of a number of different possible outcomes, the measure of risk should some how estimate the extent to which the actual outcome is likely to diverge from the expected outcome. Standard deviation is a measure that does this since it is an estimate of the likely divergence of actual return from an expected return" (*Sharp, Alexander and Bailey; 1995:8-9*).

Risk is complicated subject and needs to be properly analyzed. The relationship between risk and return is described by investor's perceptions about risk and their

demand for compensation. No, investor will like to invest in risky assets unless he is assured of adequate compensation for the assumption of risk. Therefore, it is the investor required risk premium that established a link between risk and return. In a market dominated by rational investors higher risk will command by rational premium and the trade off between the two assumes a linear relationship between risk and risk premium.

2.1.4 The Range

“The range is one of the traditional methods of measuring risk, which simply communicates the difference between the best possible returns and the worst possible return; it does not provide information about the distribution of the rates of return between the extremes.”

The Ranges = Best Possible Rates of Return – Worst Possible Rate of Returns

The degree of risk of an underlying security is reflected in the magnitude of the differences. The smaller the difference the lower will be the degree of risk (*Poudyal; 2002*).

2.1.5 Standard Deviation

Standard deviation means a measure of the tightness, or variability of a set of outcomes. In other words Standard Deviation measures the magnitude of the difference between best possible return. Thus it measures the degree of risk of common stock. Because we have defined risk as the variability of returns, we can measure risky by examining the tightness of the probability distribution associated with the possible outcomes. In general, the width of a probability distribution indicates the amount of scatter or variability of the possible outcomes. Therefore, the tighter the probability distribution of expected returns, the less its variability – thus the smaller the risk associated with the investment, “The measure we

probability use most often is the standard deviation. The symbol for which is σ (pronounced as 'sigma').

$$\sigma = \sqrt{\sum_{i=1}^n (R_i - \bar{R}_i)^2 \cdot P_i}$$

Where,

\bar{R}_i = Expected rate of return

R_i = Return for 'i' outcome or events

n = No. of outcomes or events

P_i = Probability of each outcome or occurrence of 'i' events.

Operationally we generally first calculate distribution variance or the weighted average of square deviation of possible occurrence from the mean value of the distribution, with the weight being the probability of occurrence. The square root of the figure will provide the standard deviation.

S.D.(Standard Deviation) is the weighted average deviation from the expected value, and it gives an idea of how far above or below expected value and the actual value is likely to be" (*Weston, Besley and Brigham;1996: 182-183*).

"A standard deviation can some times be misleading in comparing the risk or uncertainty surrounding alternatives if they differ in size. To adjust for the size or scale, problem, the standard deviation can be divided by the expected return to compute the coefficient of variation (C.V).

$$\text{Coefficient of variation (C.V)} = \frac{\sigma}{R}$$

Thus the coefficient of variation is the measure of relative dispersion (risk) - a measure of risk per unit of expected return. The larger the C.V. the larger the relative risk of the investment.” (*Van Horne and Wachowicz; 2000:94*).

C.V. is the ratio of the standard deviation of a distribution to the mean of that distribution which is measure of the relative risk.

2.1.6 Portfolio

Portfolio means allocating and investing the investable fund into different securities. So, as to reduce the risk and increase profit, investment in two or more than two or more than two assets is normally called portfolio. A portfolio is the combination of investment assets. Portfolio is the holding of securities and investment in financial assets like bond, stock etc. Portfolio management is related to the efficient portfolio investment in financial assets. Investors really place their entire wealth into a single assets or investment rather they construct a portfolio or group of investments. Therefore it is needed to extend analysis of risk and return to include portfolio- a combination of two or more securities or assets is portfolio. There are two types of objectives.

- Primary objectives:
 - To minimize risk
 - To maximize return

- Secondary objectives:
 - Regular return
 - Stable income
 - Safety of investment
 - Appreciation of capital
 - Easy market ability

- Ever liquidity
- Tax benefits

The expected return of portfolio is the weighted average rate of return of individual securities. The weights are the proportion of fund investment in each security.

The formula is as follows:

$$\bar{R}_p = \sum_{i=1}^n \bar{r}_i \cdot w_i$$

Where,

\bar{R}_p = Expected return on portfolio.

n = No. of securities in portfolio.

\bar{r}_i = Expected return in i securities.

w_i = Proportion or weight of fund invested in i securities.

While the portfolio expected return is a straightforward weighted average of return on the individual security, where as portfolio standard deviation is not the weighted average of the individual security standard deviation. To take a weighted average of individual security standard deviations would be to ignore the relationship or correlation between the returns of two securities.

“The standard deviation of probability distribution of possible portfolio return σ_p is,

$$\sigma_p = \sqrt{\sum_{j=1}^m \sum_{k=1}^m w_j w_k \text{COV}_{j,k}}$$

Where,

n = Total no of different securities in the portfolio

W_j = Proportion of total funds invested in security j

W_k = Proportion of total funds invested in security k

$COV_{j,k}$ = Covariance between the possible return of securities j and k

The covariance of the possible returns of two securities is a measure of the extent to which they are expected to vary together rather than independently of each other. The covariance term in the above formula can be written as,

$$COV_{jk} = \dots_{jk} \sigma_j \sigma_k$$

Where,

\dots_{jk} = The correlation coefficient between possible return for security j and k

σ_j = S.D. of the security j

σ_k = S.D. of the security k

When $j = k$, the correlation coefficient is 1 as variable movements correlate perfectly with itself.

“The correlation coefficient which is significant in portfolio construction is standardized statistical measure of the linear relationship between two variables. Its range from -1 (Perfect negative correlation) to +1 (Perfect positive correlation) lesser the correlation higher the reduction in portfolio risks” (*Van Horne and Wachowicz; 2000:97*).

The positive correlation coefficient shows that the returns from two securities generally moves in the same direction , while negative correlation coefficient shows that they move in opposite direction and zero correlation shows that the returns from two securities are un-correlated. They show no tendency to vary together in either a positive or negative in linear function.

2.1.7 Systematic and Unsystematic Risk

Systematic and unsystematic risk is the terms frequently used in the portfolio context. Combining securities that are not perfect positively correlated helps to reduce the risk of the portfolio to some extend.

Systematic risk has its source factors that effects all the marketable assets and thus cannot be diversified way. Systematic risk is due to the risk factor that affects the overall market such as changes in national economy, tax reform by the government or changes in the world energy situation. The source of systematic risk is market perspective. The measure of systematic risk permits an investor to evaluate an assets required rate of return relative to systematic risk of the stock. Unsystematic risk is risk unique to a particular company or industry. It is independent of economic, political and other factor that affects all securities in systematic manner. A wild cat risk may affects only one company a new competitor may begin to produce essentially the same product.

“For most stocks, unsystematic risk accounts for between 60 to 70 percent of stocks total risk or standard deviation” (*Van Horne and Wachowicz; 2000:98*).

This kind of risk can be reduced by diversification and even eliminated if diversification is efficient. Hence not all the risk involved in holding stock is relevant since part of this risk can be diversified way. The relationship among systematic risk and unsystematic risk are shown below.

Total risk (σ_I) = Systematic risk + Unsystematic risk.

Where,

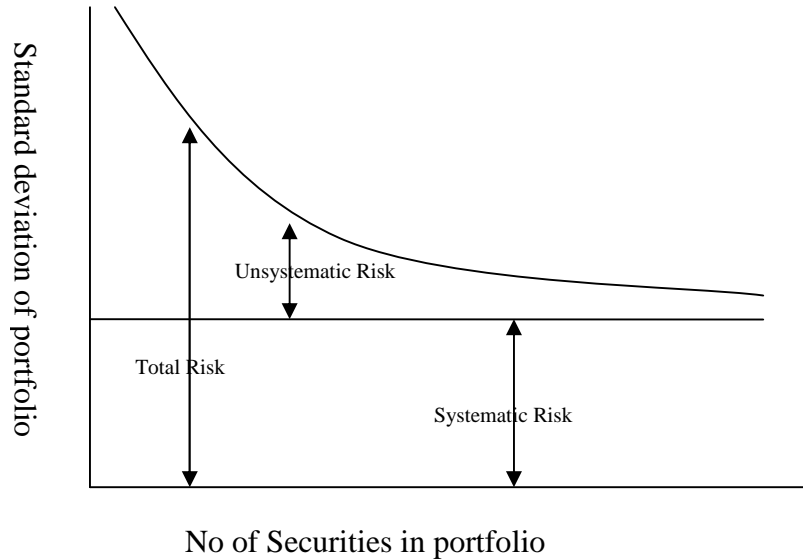
Systematic risk= $\sigma_I \dots \sigma_{im}$

Unsystematic risk = $\sigma_i (1 - \rho_{im})$

Here, ρ_{im} is the correlation between the return of given stock (i) and the return on market portfolio.

Figure 2.1

Total Risk, Systematic Risk and Unsystematic Risk



(Source: Van Horne and Wachowicz; 2000: 98)

2.1.8 Capital Asset Pricing Model (CAPM)

“CAPM is a model that describes the relationship between risk and expected return. In this model, a security’s expected return is the risk free rate plus a premium based on the systematic risk of the security. The SML equation as suggested for the computation of expected rate of return on common stock.

This model is as under:

$$K_i = R_f + [E(R_m) - R_f] S_i$$

Where,

K_i = Required Rate of Return or Equilibrium rate of return for stock i.

R_f = Risk Free Rate of Return

$E(R_m)$ = Expected Return for the Market Portfolio

S_i = An index of systematic risk of stock i

It means the sensitivity of a stock's returns. It changes in returns on the market portfolio. The Beta of portfolio is simply a weighted average of the individual stock beta in the portfolio" (*Van Horne; 2000:100*).

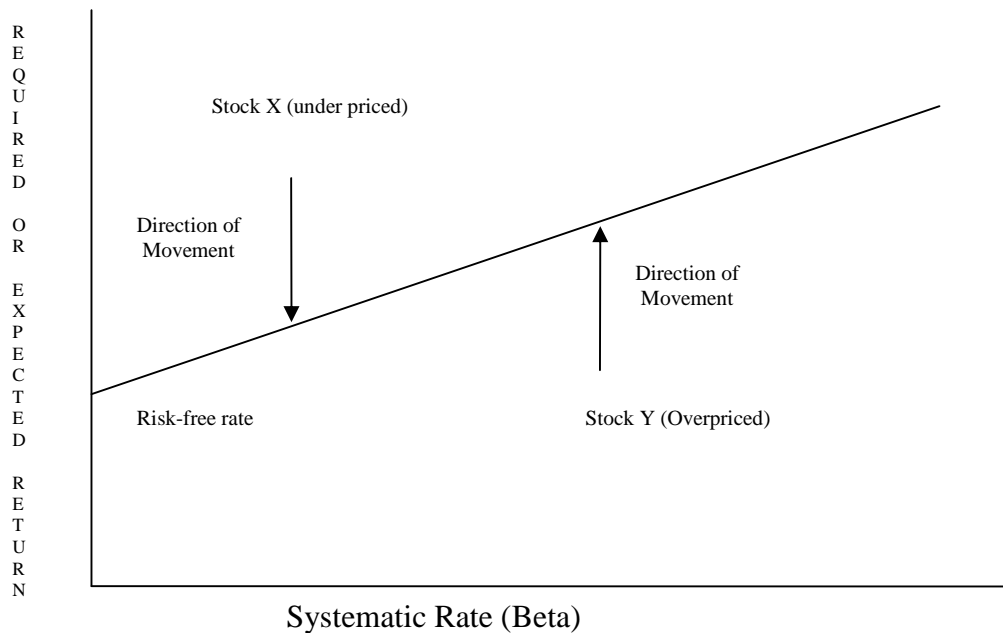
If beta is 1 then the required return is simply the average return for all situation, that is the return on market portfolio; otherwise, the higher the beta, higher the risk premium and the total return required. A relatively high beta does not however, guarantee a relatively high return. The actual return depends partly on the behavior of the market, which acts as a proxy for general economic factors.

Premium is the amount of return that investors demand for holding a risky security such as stock. A financial economist, William Sharp is one of the creators of the "Capital Asset Pricing Model", a theory which began a quest to identify the tendency portfolio. In fact of the CAPM as it called is the predominant model used for estimating equity risk and return. CAPM is very useful tool. It has been taken as a prescription for the investment portfolio, as well as a tool for estimating as expected rate of return. Comparison between the expected rate of return and required rate of return can analyze the stock to be under priced or overpriced. And when these two returns are equal then it is said to be the market equilibrium i.e. all stocks lie on the security market line (SML). "The graphical version of CAPM is called the security market line which shows the relation between risk and the required rate of return" (*Chandra; 1993:85*).

The security market line clearly shows that return is the increasing function, in fact a linearly increasing function of risk. Furthermore, it is only market risk that affects return. The investor receives no added return for bearing diversifiable risk.

Stocks that are overpriced lie below the SML and if the stocks are under priced then it lays above the SML. The following diagram shows the security market line with overpriced and under priced stocks.

Figure 2.2
Capital Assets Pricing Model (CAPM)



(Source: Van Horne and Wachowicz; 2000: 107)

Above diagram clarifies that stock X being under priced, its expected rate of return is greater than required of expected rate of return. And stock Y is expected to provide lower return than the required of expected rate to compensate the systematic risk. Investors seek the opportunity to invest in stock X for superior return.

“Investing in stock X should rush to buy it. This action could drive the price up and the expected return down. How long would this continue? It would continue until the market price was seemed that the expected would now like on the security market line. In the case of stock Y; investors holding this stock would sell it, recognizing that they could obtain a higher return for the same amount of

systematic risk with other stocks. This selling pressure would drive Y's market price down and its expected return up until the expected return was on the SML"(Van Horne and Wachowicz; 2000:107).

Few people quarrel with the idea that investors require some extra return for taking risk. That is why common stocks require higher return than government Treasury bill (which is assumed to be risk free, because of taxing power that government enjoy). No one would want to invest in risky common stock if they offered only the same expected return as bills.

Investors do appear to be concerned principally with the risk that they cannot eliminate by diversification. If this were not so, we find that stock prices increases whenever two companies merge to spread their risk, we should find that investment companies which invest in shares of other firm are more highly valued than the shares they hold. But we don't observe either phenomenon. Merges undertaken just to spread risk don't increase stock price and investment companies are no more highly valued than the stock held.

The Capital Assets Pricing Model captures these ideas in a simple way. That is why many financial managers find it the most convenient to for coming to the decision with the slippery motion of risk. And it is why economists often use the CAPM to demonstrate important ideas in finance ever when there are otherwise to prove these ideas. But this does not mean that the CAPM is ultimate truth.

2.2 Review of Independent Studies in Nepal

Very few independent studies can be found in the topics of finance. Specifically, it is rare in the case of this research topic, risk and return analysis. However, the available independent studies which are related to the Nepalese stock market and about shareholders democracy are reviewed here.

Pradhan, Radhe Shyam (1993) carried out a study in the topics of “*Stock Market Behavior on a Small Capital Market: a Case in Nepal*”. The study was based on the data collected for seventeen enterprises from 1986 to 1990.

One of the major objectives which are related to this study was “To assess the stock Market behavior in Nepal.”

Pradhan has summarized the finding as follows:

- Dividend per share and market price per share was positively correlated.
- There are positively relationship between dividend payout and liquidity.
- Higher the earning on stocks, larger the ratio of dividends per share to market price per share.

Writer has found the overall shareholders democracy in terms of the projection of their interest, is basically focused on the payment of satisfactory dividend and maximization of the shareholders wealth by appreciating the value of share they hold.

“In many cases the existing authoritarian mentality of management seems to have not considered the shareholder in deciding the managerial plans and policies. Top level decision often by pass the interest of shareholders. As the management lacks the serious concern about the protection of shareholders rights and expectations. The annual general meeting has become the platform for shareholder to express their opinions and grievance in front of the management and board of directors. Many general meeting feedback reveal no serious response to the feelings of shareholders. Thus, it reflects unwillingness of the management and board of directors to change their traditionally held activities towards shareholders.”

Poudel, Narayan Prasad (2001) also carried out a study in “*Investing in Shares of Return and Risk Elements*”. This study was based on the data collected for eight banks from mid July 2001. The main objectives of the study was to determine whether the shares of commercial banks in Nepal are over or under priced by analyzing risk and return characteristics of the individual shares.

Poudel summarized the following findings:

- Most of the individual share’s appeared to be defensive as beta coefficients were less than one. Low beta shares were less volatile than the market as a whole. Only the return of shares of band of Kathmandu had beta coefficient of greater than one, indicating that the share was more risky than the market.
- Nepal Arab Bank Ltd., Nepal Indosuez Bank Ltd., Himalayan Bank Ltd., had higher expected equilibrium return than expected rate of return. And Standard Charter Bank Ltd., Nepal SBI Bank Ltd., NB Bank Ltd., Bank of Kathmandu had lower equilibrium return than expected rate of return.
- From this study we get Nepal Arab Bank Ltd. Nepal Indosuez Bank Ltd. and Himalayan Bank Ltd. were over priced and others were under priced.

2.3 Reviews from Thesis

Regarding various unpublished dissertation which where prepared for the partial fulfillment of MBS and other faculties this study is mainly concerned with Common stock, stock market and risk and return.

Bhatta, Gopal (1996) has conducted his Master’s thesis on “*Assessment of the Performance of the Listed Companies in Nepal*” based on 10 listed companies’ data from 1990 to 1995. One of the major objective is that is concerned with this study is to analyze the performance of listed companies in terms of risk and return, systematic risk and diversification of risk through portfolio context which is relevant of our study.

Bhatta analyzed that the investors in Nepal have not yet practiced to invest in portfolio of securities. An analysis of two securities portfolio shows that the risk can be totally minimized if the correlation is perfectly negative. In this situation, the risk can totally be diversified, but when there is perfectly positive correlation between the return of two securities, the risk is not diversifiable. The analysis shows that the negative correlation and some has positive correlation. Negative correlation between securities return is preferred for diversification of risk.

Bhatta mentioned the following findings risk behavior from the analysis of different stocks. “A highly significant positive correlation-ship has been addressed between risk and return character of the company”. Investors expect higher return from those stocks which associates higher risk. Nepalese capital market is not efficient one. So the stock price does not contain all the information relating to market and company itself. Neither investor analyze overall relevant information of the stocks member of stock exchange tries to disseminate the information. So the market return and risk both may not show high priced stocks such as NIB, NIC has higher risk than others. This company thus required higher return to satisfy the investors for their risk premium. On the basis of findings, Bhatta concluded that the analysis of risk and return shows many companies with higher unsystematic risk or specific risk. He has realized the need of expert institution to provide consultancy services to the investors to maximize their wealth through rational investment decision. Mr. Bhatta study is mainly focused on companies and stock market rather than investor. However this study was helpful for the research of our topics.

Adhikari, Deepak (2002) has conducted his Master’s thesis on “*Risk and Return on Common Stock Investment*’. Mr. Adhikari analyzed nine years (i.e. F/Y 1992 to 2001 AD) data of eight listed commercial banks and primary data from two

hundred fifty people through questionnaire. The major objective of the study was to access the risk and return on common stock investment of the listed commercial banks on the basis of financial tools. The other major objective was to identify the correlation between returns of commercial banks.

On the analysis of primary data, most of the investors invest only keeping the return in mind but they are found unable to calculate the risk of the security. They are found having lack of the knowledge of the CV. One hundred ninety people are found choosing higher market price of security is appropriate for the investment, thirty are found choosing the market price as well as the popularity. Remaining is found to consider other factors, i.e. CV, beta, correlation between returns and CAPM etc.

The major finding of the study were Expected return of Bank of Kathmandu is maximum (i.e.112.67%) and is least in Himalayan Bank (13.3%), which is also less than market return. According to CV, the Standard Chartered Bank has the best common stock, which has 0.9689 risk per 1% return, where as Himalayan Bank has the highest risk per 1% of return i.e. CV of it is 2.9261. According to the result of beta, Bank of Kathmandu is most volatile and Standard Chartered Bank is less volatile (i.e. 0.2218, 1.9656). All bank's common stock move positively with market as their beta is positive. Standard Chartered Bank and Nepal SBI Bank have negative correlation between their returns, which is favorable with the view point of diversification. At the end, he concluded that the investors investing more than one security are not found to analyze the portfolio before investment.

Tamang, Buddhi Raj (2003) has conducted his Master's thesis entitled, "*Risk and Return of Commercial Banks in Nepal*" which is related in our research. Among different objectives of his study, one is to analyze whether the common stock of commercial banks are currently priced or not by analyzing the required

rate of return by using the CAPM and it also aims to measure systematic and unsystematic risk of the commercial Banks.

Tamang has analyzed the risk and return of the Commercial Banks with considering risk. The tools of analysis are MPS, Dividends, Expected Return, S.D., C.V., and Beta etc. It is based on hypothetical data and more analytical and empirical types of research rather than descriptive.

From his findings, Nepal Bangladesh Bank has the highest return and Arab Bank has the lowest return whereas unsystematic risk of Arab Bank is highest and that of bank of Kathmandu is lowest. Correlation coefficient of Arab bank shoes that the return on bank goes down when market return goes up. Though the shares of banking sector are one of the heavily traded shares in Nepal none of the companies' shares are correctly priced. From his study, the shares of commercial banks in Nepal are heavily traded in NEPSE; none of the share prices us correctly priced.

Pandey, Lila Nath (2003), in his Master's thesis entitled, "*A study on Risk and Return Analysis of Common Stock Investment*" had the main objective to analyze the risk and return of common stock investment, with special reference to six finance companies in Nepal. He has taken seven years data for the analysis.

He analyzed that investors' attitude, perception and risk handling capacity also plays a vital role in rational investment decision. He also added that stock market is undoubtedly risk in short run and it is necessary to prepare the investors for it.

According to his findings, the Coefficient of Variation (C.V.), Finance and insurance sector is the best one for investment whereas from the view point of expected return, banking sector is the best sector for investment. Among the selected finance companies, Kathmandu Finance Company (KAFAL) is best for

investment due to high expected return with low C.V. and HISEF Finance Company is most risky. He had concluded that without proper analysis of individual security, Industry and overall market, it is almost all impossible to beat the stock market.

Tuladhar, Pramila (2002), in her Master's thesis entitled "*A study on Risk and Return Analysis of Common Stock*" which is also relevant to this study. The main objective of her study is to analyze risk and return of the common stock and their portfolio as well as to access the past and present state of investment of common stock. She has included 11 companies in her study out of 115 listed companies in NEPSE. She has selected 2 companies from banking sector, 2 from Manufacturing and Processing, 2 companies from Hotels, 2 from Trading, 2 from Insurance and Finance, and 1 from others.

Tuladhar has analyzed the common stock of Banks, Manufacturing and Processing, Hotels, Trading, Insurance and Finance and Others sectors by considering risk. Without considering the financial risk and return, only market return could not help to make optimal investment decision. She has analyzed that portfolio can be totally minimize if the correlation is perfectly negative, in this situation the risk can be totally diversified, but when the risk perfectly positive correlation between the return of two securities, the risk is not diversified.

She has found out that return of Bangladesh Bank is highest whereas that of Bishal Bazar Company is lowest. Return is high in the beginning years but it is declining in recent years. Nepal Lever Limited is most risky and Bishal Bazar Company is least risky. Nepal Bangladesh Bank is best for investment as it has low CV whereas Yak and Yeti Hotel Ltd has highest CV and Hotel sector is highest CV. In her finding, among 11 selected companies the expected return of bank sector is highest and trading sector is lowest.

Sapkota, Jeet Bahadur (2000), in his Master's thesis entitled "*Analysis of Risk and Return of Securities of Listed Commercial Banks of Nepal*" whose main objective is to make aware to the potential investor who wants to invest in security but repel by imaginary and an unreal risk. So, the study was supposed to be more significant for exploring and increasing stock investment. "The basic objective of this study is to describe risk, return, volatility of stock and some relevant and irrelevant factors, which are very important to make decision in stock investment. It also observes the unseen problems facing by individual investors".

Risk and return analysis is an important concept of investment decision process. It helps to make a good investment opportunity in stock market as well as new issue market. Basically, this study analyses risk and return of commercial banks of Nepal, which are listed and traded in NEPSE. The study period was 2049/50 to 2055/56. And data were collected from secondary sources like banks officials, SEBO/N, NEPSE, Brokers etc.

The tools of analysis are market price of stocks, dividends and expected return, standard deviation, covariance, coefficient of variance, and beta etc. It is based on hypothetical data and more analytical and empirical types of research rather than descriptive. Although this study helps to analyze risk and return concept with considering risk. However, it ignores financial risk and return of related banks. Without considering financial risk and return, only market return could not help to make optimal investment decision.

This paper also does not appropriately observe the unseen problems facing by individual investors. Regarding various problems in stock investment in security market, the study is able to conclude following findings. It enables the investors to put the return as they can expect and the risk they take into better

prospective. Nepalese economy is in emerging stage but due to the lack of appropriate information and other knowledge, Nepalese private investors cannot analyze the securities as well as its market property. Banking industry is the biggest one in terms of market capitalization; turnover and return for common stock of commercial banking sectors are more parallel with market return. This study has also found risky and higher return projects by analyzing coefficient of variance, beta (i.e. less volatile and higher volatile market). The portfolio approach on investment is better way the stock market investment.

2.4 Research Gap

There have been many national and international studies in the field of risk and return to date. All the concepts and practices of foreign author's model about risk and return practices are not in used in our Nepalese risk and return analysis. The Nepalese capital market is in the early stage of development, the conclusion made by the international studies may not be relevant in the Nepalese contest. So, it is recommended to devote some effort and think how to use those foreign model risk and return.

So far the Nepalese studies are concerned, there are some studies done, like Poudel, Shrestha and Manandhar which can be considered to be landmark in the field of risk and return analysis. But many more changes have taken place in the Nepalese capital market in last few years, and the validity of the past results is doubtful in the present context. Besides this some researchers have taken different firms of different sectors. So, the result drawn from those studies may not be accurate to represent the present practice and effort made in the Nepalese capital market. So, it is necessary to carry out a fresh study related to risk and return pattern of Nepalese banks and Trading Companies.

The present researcher has attempted to make a distinct study in terms of sample size, nature of the sample firms and methodology used. The study has covered three commercial banks and three trading companies. Latest six years data has been analyzed with due consideration High MPS, Low MPS, Closing MPS, Stock Dividend. Taking in mind for more elaborate and extensive analysis, company wise analysis has also been made. In order to assess the impact of risk and return on market price of share, available information from concerned banks are reviewed and analyzed. Risk and return are also compared with other sectors. Overpriced & under priced of each bank and trading company are analyzed. Finally, testing of hypothesis has been done. So, it has been believed that this study will be different from earlier one.

CHAPTER - III

RESEARCH METHODOLOGY

The research methodology is the systematic way of solving the problems. This chapter refers to the overall approach to the research process, which researcher conduct during his or her study. It includes all the procedures from theoretical foundation to the collection and analysis of data. As most of the data are quantitative the research is based on scientific methods. It is composed of both technical aspects and logical aspects. On the basis of historical data, using both financial and statistical tools performs detail analysis of different variables.

3.1 Research Design

The research is based on recent historical data. It covers the data from the fiscal year 2002/03 to 2007/08. It deals with the common stocks of commercial banks and trading companies on the basis of available information. For the portfolio analysis, other companies' common stock is also taken into consideration. As the title of the study suggests, it is more analytical and empirical. Outcomes are presented in simple way. In this study, the research design, data collection procedure and analysis are described serially.

3.2 Population and Sample

The population of study is all the listed companies in NEPSE index. Till now total numbers of listed companies are 134. Hence, total population is 134. This study is concentrated in listed commercial banks and trading companies only. The numbers of listed commercial banks are fifteen and three trading companies. For our study

total numbers of selected companies are six. They are common stocks of three listed commercial banks and three trading companies.

3.3 Data Collection Procedure

The data necessary for the research is collected from the primary as well as the secondary sources. However, during the study, informal opinion survey has also been taken with the individual investors, bank officials, company officials, security board of Nepal, Nepal stock exchange ltd. staffs and other related personalities. Data related to the market price of the stocks, market capitalization, movement of NEPSE index etc, is taken from the trading report published by NEPSE. Financial statement of commercial banks and their annual reports are also collected.

The collection procedure is summarized below:

- Financial document provided by the companies.
- Trading report published by Nepal Stock Exchange Limited.
- Materials published in papers and magazine.
- Related websites.
- Other related books and booklets.

3.4 Data Analysis Tools

For the analysis of data all the tools taken are as appropriate as possible. The related tools and terms are described below.

3.4.1 Market Price of Stock (P)

One of the major data of this study is market price per stock. There are three types of records available; high low and closing. Among high low and closing price, each year closing price has been taken as the market price of the stock which has specific time span of one year and the study is focus on the annual basis. To get

the real average, volume and price of each transaction in the whole year are essential. This is tedious and impossible too, considering the data availability and maintenance. Hence, the closing price is used as the market price of stock, which has a specific time span of one year and the study is focused in annual basis.

3.4.2 Dividend (D)

If the company declares only the cash dividend, there are no problems to take the dividend amount. But if the company declares the stock dividend (Bonus share), it is difficult to obtain the amount that really shareholders has gained. In this case, they get extra numbers of shares as dividend and simultaneously price of the stock declines as a result of increased number of stocks. To get a real amount of dividend there are no any model (formula). So, the model has been developed considering practical and theoretical aspects.

The Model is:

In case of Stock Dividend,

Total Dividend Amount=Cash Dividend+Stock Dividend%×Next Year MPS

Where,

MPS = Market Price per Share

3.4.3 Return on Common Stock Investment (R)

Return is the income received in an investment plus any change in market price, usually expressed as a percent of the beginning market price of the investment.

Symbolically,

$$R = \frac{D_t + (P_t - p_{t-1})}{p_{t-1}}$$

Where,

R = Actual rate of return on common stock at time t .

D_t = Cash dividend received at time t .

P_t = Price of stock at time t .

P_{t-1} = Price of stock at time $(t-1)$.

3.4.4 Expected Rate of Return on Common Stock (R_j)

One of the main aims of the study is to determine the expected return on the investment in common stock. Generally, this rate is obtain by the arithmetic mean of the past years return.

Symbolically,

$$\overline{R}_j = E(R_j) = \frac{\sum R_j}{n}$$

Where,

$\overline{R}_j = E(R_j)$ = Expected rate of return on stock j .

n = Number of years that the return is taken.

\sum = Sign of summation.

3.4.5 Standard Deviation (S.D)

It is a statistical measure of the variability of a distribution of return around its mean. It is the square root of the variances of the returns. S.D is the measure of the total risk of the assets i.e. it means the dispersion of returns around the mean return. S.D can be calculated using following formula,

When time series data is given,

$$\dagger_j = \sqrt{\frac{\sum (R_j - \bar{R}_j)^2}{n}}$$

Where,

\dagger = S.D of returns on stock j during the time period n.

When the probability distribution is given,

$$\text{S.D} (\dagger_j) = \sqrt{\sum_{j=1}^n P_j (R_j - \bar{R}_j)^2}$$

Where,

P_j = probability distribution of the observation (returns)

R_j = Holding period return on stock j.

\bar{R}_j = Expected return on stock j.

3.4.6 Coefficient of Variation (C.V)

It is applicable to calculate the risk per unit of the expected return. “It is the ratio of standard of returns to the mean of that distribution. It is the measure of relative risk”. (*Van Horne and Wachowicz;1995:94*). The formula to calculate coefficient of variation is,

$$\text{C.V.} = \frac{\dagger_j}{R_j}$$

Where,

C.V. = Coefficient of variation of stock.

C.V. is the unitary risk measure. It gives the result regarding the unit of risk to bear for earning one unit of return.

3.4.7 Beta Coefficient ()

Market sensitivity of stock is explained in terms of beta coefficient. Higher the beta, greater the sensitivity and reaction to the market movement. Logically, the systematic risk is the covariance between the return of an individual asset or portfolio. The measure of systematic risk is represented by beta. It is an index of systematic risk, which cannot be eliminated through the means of diversification. Beta measures the sensitivity of stock's return on market portfolio.

The formula for the calculation of beta is given by,

$$S_j = \frac{COV(R_j, R_m)}{\sigma_m^2}$$

Where,

S_j = Beta coefficient of stock j.

$COV(R_j, R_m)$ = Covariance between return on stock j and stock m.

(i.e. (R_j) and return of market i.e. (R_m) and is calculated as,

$$COV(R_j, R_m) = \frac{\sum_{j=1}^n (R_j - \bar{R}_j)(R_m - \bar{R}_m)}{n - 1}$$

σ_m^2 = Variance of Market Return

Market beta serves as a benchmark or a measuring scale for the evaluation of risk of individual stock. For an individual stock, the beta could be less than, equal to or more than 1 depending upon the volatility of that stocks return relative to market returns.

An assets or portfolio with a beta greater than 1 is considered to be aggressive (more risky than the market). An asset or portfolio with the beta less than 1 is

considered to be defensive (less risky than the market). Beta coefficient of market is always equal to 1.

3.4.8 Correlation Coefficient (ρ_{ij})

The correlation is also the measure of the relationship between two assets. The correlation coefficient can be taken on a value from -1 to +1. Correlation coefficient and covariance are related by the following equation,

$$COV_{ij} = \sigma_i \sigma_j \rho_{ij}$$

$$\rho_{ij} = \frac{COV_{ij}}{\sigma_i \sigma_j}$$

Where,

σ_i and σ_j are the standard deviations of returns for assets i and j and ρ_{ij} is the correlation coefficient for assets i and j.

There are various cases of correlation and risk condition which are presented below:

1. Perfectly Positive Correlation ($\rho_{ij} = +1$)

Return on two perfectly positive correlated stocks would move up and down together and a portfolio consisting of two such stocks would be exactly as risky as the individual stocks. Thus diversification cannot reduce risk if the portfolio consists of perfectly positively correlated stock.

2. Perfectly Negative Correlation ($\rho_{ij} = -1$)

Returns of two perfectly negative correlated stocks would move perfectly together but in exactly opposite in direction. In this condition, risk can be completely eliminated. Perfect negative correlation almost never found in the real world.

3. No Relation between Returns (... $\rho_{ij} = 0$)

When the relation between two stocks is exactly zero there is no relationship between the returns they are independent of each other. In this condition, some risk can be reduced.

4. Intermediate risk (... $\rho_{ij} = + 0.5$)

Most of the stocks are positively correlated but not perfectly. On average the returns on two stocks would lie on the range of +0.4 and +0.75 under this condition combining stocks into portfolios reduces risk but not eliminate it properly.

3.4.9 Portfolio Risk and Return

A portfolio is the collection of investment securities. Portfolio theory deals with the selection of optimum portfolios, i.e. portfolios that provides the highest portfolio return for any specified degree of risk or the lowest possible risk for any specified rate of return. Calculating and analyzing portfolio risk is not straight forward as calculating portfolio expected return. We have to follow the long process for its calculation and analysis.

Portfolio Risk

It is the measure of combined standard deviation of stocks held in the portfolio, with reference to the individual stocks corresponding correlation contribution. The formula for the calculation of portfolio risk for two assets case is given by:

$$\sigma_p = \sqrt{w_A^2 \sigma_A^2 + w_B^2 \sigma_B^2 + 2w_A w_B \rho_{AB} \sigma_A \sigma_B}$$

Where,

σ_p^2 = Standard deviation of portfolio A and B.

σ_A^2 = Variance of asset A, i.e. risk of asset A.

σ_B^2 = Variance of asset B, i.e. risk of asset B.

W_A = Weight of asset A.

W_B = Weight of asset B.

$\text{COV}(A,B)$ = Covariance between the returns of assets A and B.

The formula for n-asset case is given by,

$$\sigma_p^2 = \sum_{i=1}^n \sum_{j=1}^n W_i W_j \sigma_{ij}$$

Portfolio Return

“While the portfolio expected return is straightforward weighted average of returns on the individual securities, the portfolio standard deviation is not the weighted average of the individual security’s standard deviations. To take a weighted average of individual security standard deviation would be ignore the relationship or correlation between the returns of the two securities. This correlation however has no effect on the portfolios expected returns. Correlation between securities returns complicates our calculation of portfolio standard deviation by forcing it to calculate the covariance between returns for every possible pair wise combination of securities in the portfolio. But this dark cloud of mathematical complications contains a silver lining- correlation between securities provides for the possibilities of eliminating some risk without reducing potential return”(Van Horne; 1997:97).

Portfolio is the combination of two or more securities or asset and portfolio return is simply a weighted average of individual stock returns. The return on the portfolio, in case of only two assets portfolio is given by:

$$\overline{R_p} = W_A \overline{R_A} + W_B \overline{R_B}$$

Where,

$\overline{R_p}$ = Expected return on portfolio of stocks A and B.

W_A = Weight of investment on stock A.

W_B = Weight of investment on stock B.

$W_A + W_B = 1$ or 100% always.

3.4.10 Risk Minimizing Portfolio

It is the proportion of stock that minimizes the possible (unsystematic) risk.

Symbolically,

$$W_A = \frac{\sigma_B^2 - COV(R_A R_B)}{\sigma_A^2 + \sigma_B^2 - 2COV(R_A R_B)}$$

Where,

W_A = Weight of stock A that minimize the portfolio risk of stock A and B.

σ_A = Standard deviation of stock A.

σ_B = Standard deviation of stock B.

$COV(R_A R_B)$ = Covariance of returns between stocks A & B.

3.4.11 Market Returns (R_m)

Market return is the returns in overall market portfolio, which can be obtain by taking differences between the market indexes (i.e. NEPSE index). Here market dividend is ignored.

$$R_m = \frac{NI_t - NI_{t-1}}{NI_{t-1}}$$

Where,

NI_t = NEPSE index at time t

NI_{t-1} = NEPSE index at time t-1

R_m = Return on Market

3.5 Method of Analysis and Presentation

Various applied methods of analysis are as simple as possible. Financial and statistical tools are used and results are presented in tables and also shown in diagram too. Detailed calculations, which cannot be shown in the main body part of research report, are presented in Appendix tables at the end of the research report. Charts, diagram, and graphs have been used for making report simpler and easier to understand.

CHAPTER - IV

DATA PRESENTATION AND ANALYSIS

This chapter includes analysis of data collection and presentation. In this chapter the effort has been made to analyze “risk and return on common stock investments of commercial banks and trading companies.” Detail data of MPS and dividend of each bank and NEPSE Index of each sector and market is presented and their interpretation and analysis is done. With reference to the various reading and literature review in the preceding chapter, effort is made to analyze and diagnose the recent Nepalese stock market movement, with a special reference to the listed commercial banks and trading companies. The analysis of data consists of organizing, tabulating and assessing financial and statistical results. Different tables and figure are drawn to make the result more simple and understandable.

4.1 Analysis of Individual Commercial Bank and Trading Company

As the study has taken a special reference to listed commercial banks and trading companies, common stock of listed commercial bank and trading company is analyzed here separately. There are seventeen commercial banks and five trading companies are in operation up to 2007-2008. But only fifteen banks and three trading companies are listed in NEPSE. Among them the study has focused on the three commercial banks and three trading companies. Although the data coverage for some of banks and trading companies is less than five years, each bank and trading company is introduced and their common stocks risk and return are analyzed here.

4.1.1 Nepal Arab Bank Limited (NABIL)

4.1.1.1 Introduction

Nepal Arab Bank Limited is the first joint venture commercial bank established in 1984 AD (2041B.S.) in Nepal and listed in NEPSE in the year 1986 AD (08/09/2042 B.S.). Initially, Dubai Bank Limited (DBL) invested 50% of equity share in NABIL. The shares owned by DBL were transferred to Emirates Bank International Limited (EBIL), Dubai, later on EBIL sold its entire 50% equity holding to National Bank Limited, Bangladesh (NBLB). NBLB is managing the bank in accordance with the technical services agreement signed between both banks on June 1995. Seventeen branches of bank are in operation around the country. Authorized Capital, Issued capital and paid up capital of the bank are Rs. 500,000,000, Rs. 491654, 000 and Rs. 491,654,400. Par value per share is Rs. 100 and no. of shareholder is 5076. Market capitalization is Rs. 7389.47 million.

4.1.1.2 Data

Market price and dividend records of common stock of NABIL are shown in table 4.1. Year-end price movement is shown in the figure 4.1.

Table 4.1
MPS and Dividend Data of NABIL

F/Y	High MPS	Low MPS	Closing MPS	DPS	Stock Dividend	Total Dividend
2002/2003	875	700	735	50	1:4	300
2003/2004	1005	705	1000	50	-	50
2004/2005	1515	1000	1505	65	-	65
2005/2006	2300	1500	2240	70	-	70
2006/2007	5050	2025	5050	100	2:5	2210
2007/2008	6700	3410	5275	100	-	100

Data Source: www.nepalstock .com

Model for the total dividend calculation is mentioned in the research methodology section:

$$50 + 0.25 \times 1000 = 300$$

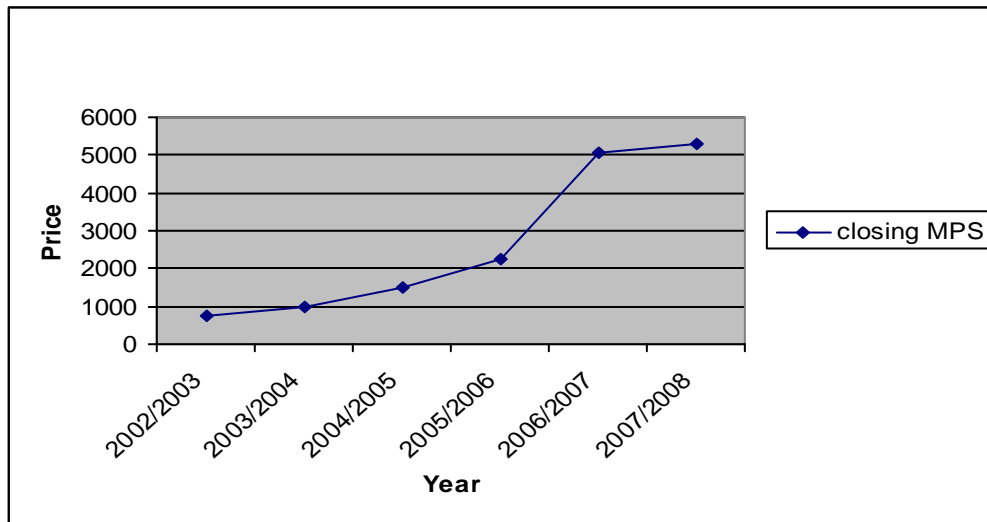
$$50 + 0 \times 1505 = 50$$

$$65 + 0 \times 2240 = 65$$

$$70 + 0 \times 5050 = 70$$

$$100 + .4 \times 5275 = 2210$$

Figure 4.1
Year end Price Movement of NABIL



The price is maximum in the year 2007/2008 and lowest in the year 2002/2003 and 2003/2004. Issue of bonus share of 1:4 has contributed to the decrease in share price.

4.1.1.3 Realized Returns (R), Standard Deviation () Expected Return (\bar{R})

Year end price and dividend amounts are used to calculate realized rate of returns for each. Table 4.2 shows the calculation of yearly–realized return, expected return and standard deviation of return.

Table 4.2

Realized Rate of Returns, Expected Returns and S.D. of the C.S. of NABIL

Year	Year end Price(P)	Total Dividend(D)	$R = \frac{D_t + (P_t - P_{t-1})}{P_{t-1}}$	$(R - \bar{R}_j)$	$(R - \bar{R}_j)^2$
------	-------------------	-------------------	---	-------------------	---------------------

2002/2003	735	50	-	-	-
2003/2004	1000	65	0.4286	-0.2344	0.0549
2004/2005	1505	70	0.5700	-0.0930	0.0086
2005/2006	2240	100	0.5349	-0.1281	0.0164
2006/2007	5050	2210	1.2991	0.6361	0.4046
2007/2008	5275	100	0.4288	-0.1808	0.0327
Total			3.3148		0.5172

We have,

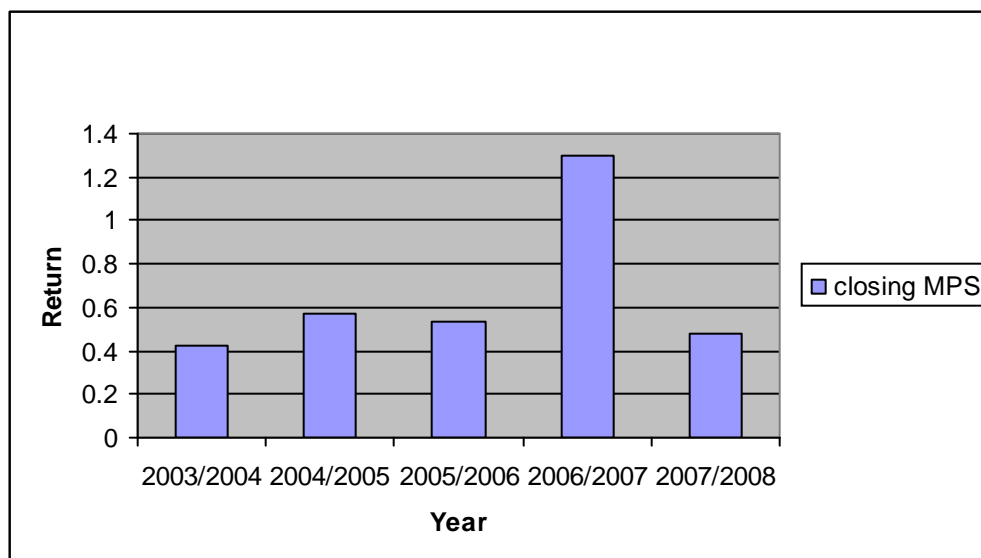
$$\text{Expected Return } (\bar{R}_j) = \frac{\sum R_j}{n} = \frac{3.3148}{5} = 0.6630 \text{ or } 66.30\%$$

$$\text{Standard Deviation } (\dagger) = \sqrt{\frac{\sum (R - \bar{R}_j)^2}{n-1}} = \sqrt{\frac{0.5172}{4}} = \sqrt{0.1293} = 0.3596$$

$$\text{C.V.} = \frac{\dagger}{\bar{R}_j} = \frac{0.3596}{0.6630} = 0.5424$$

Hence, the expected return of C.S of NABIL is 66.30%, standard deviation is 35.96% and coefficient of variation is 0.5424. Therefore, the annual rate of return is shown in the figure 4.2.

Figure 4.2
Annual Rate of Return of Common Stock of NABIL



4.1.2 Nepal Investment Bank Ltd. (NIBL)

4.1.2.1 Introduction

Nepal Investment Bank Ltd.(Previous Nepal Indosuez Bank Ltd.) was established on 21 January 1986 as a third joint venture bank under the Company Act -1964. The bank is managed by Banque Indosuez, Paris in according with joint- venture and technical services agreement signed between it and Nepalese promoters. Now, this bank is operating under the full ownership of Nepalese promoters and shareholders. Authorized capital of this bank is Rs. 27,00,00,000, Issued capital is Rs. 16,99,84,500 and paid up capital is Rs. 16,99,84,500. Par value per share is Rs. 100 and number of shareholders is 2780.Bank was listed in NEPSE at B.S.05-08-2044. The central office of this origination is in King’s Way, Kathmandu.

4.1.2.2 Data

Market price and dividend records of common stock of NIBL are shown in table 4.3. Year-end price movement is shown in the figure 4.3.

Table 4.3

MPS and Dividend Data of NIBL

F/Y	High	Low	Closing	DPS	Stock	Total
-----	------	-----	---------	-----	-------	-------

	MPS	MPS	MPS		Dividend	Dividend
2002/2003	890	575	795	20	1:1	960
2003/2004	942	635	940	20	-	20
2004/2005	1430	745	800	25	-	20
2005/2006	1265	760	1260	12.5	1:1	1741.5
2006/2007	1729	1000	1729	5	1:4	617.5
2007/2008	3101	1305	2450	5	1:4	617.5

Data Source: www.nepalstock .com

Model for the total dividend calculation is mentioned in the research methodology section:

$$20 + 1 \times 940 = 960$$

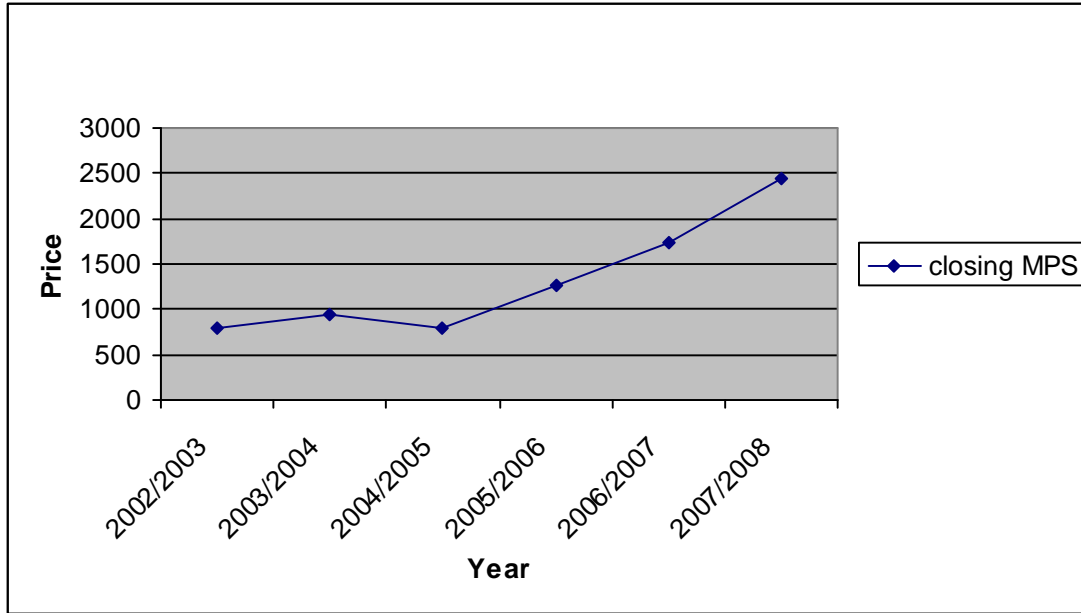
$$20 + 0 \times 800 = 20$$

$$25 + 0 \times 1260 = 25$$

$$12.5 + 1 \times 1729 = 1741.5$$

$$5 + .25 \times 2450 = 617.5$$

Figure 4.3
Year end Price Movement of NIBL



The price is maximum in the year 2007/2008 and lowest in the year 2002/2003 and 2003/4. Issue of bonus share of 1:1 has contributed to the decrease in share price.

4.1.2.3 Realized Returns (R), Standard Deviation () Expected Return (\bar{R})

Year end price and dividend amounts are used to calculate realized rate of returns for each. Table 4.4 shows the calculation of yearly–realized return, expected return and standard deviation of return.

Table 4.4

Realized Rate of Returns, Expected Returns and S.D. of the C.S. of NIBL

Year	Year end Price(P)	Total Dividend(D)	$R = \frac{D_t + (P_t - P_{t-1})}{P_{t-1}}$	$(R - \bar{R}_j)$	$(R - \bar{R}_j)^2$
2002/2003	795	960	-	-	-
2003/2004	940	20	1.3899	0.5104	0.2605
2004/2005	800	25	-0.1277	-1.0072	1.0145
2005/2006	1260	1741.5	0.6063	-0.2732	0.0746
2006/2007	1729	617.5	1.7548	0.8753	0.7662
2007/2008	2450	617.5	0.7744	-0.1051	0.0110
Total			4.3977		2.1268

We have,

$$\text{Expected Return } (\bar{R}_j) = \frac{\sum R_j}{n} = \frac{4.3977}{5} = 0.8795 \text{ or } 87.95\%$$

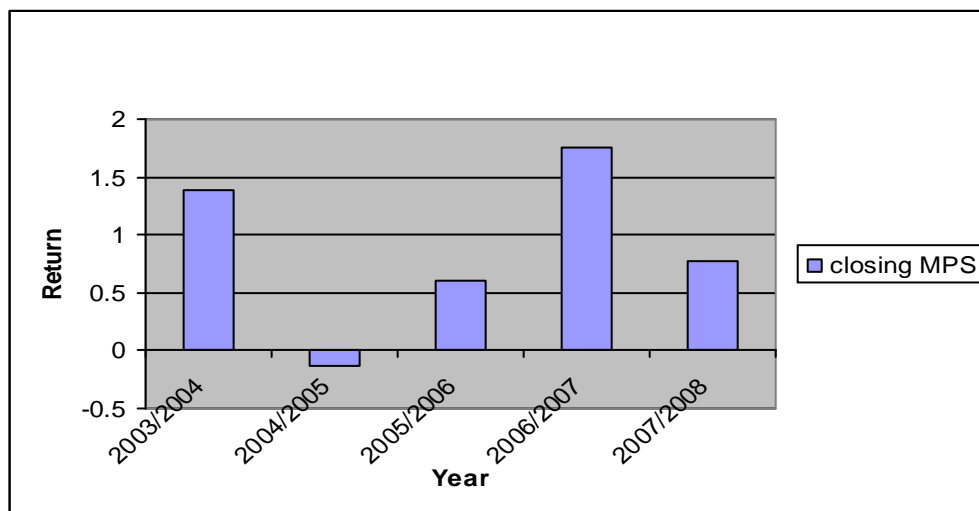
$$\text{Standard Deviation } (\dagger) = \sqrt{\frac{\sum (R - \bar{R}_j)^2}{n-1}} = \sqrt{\frac{2.1268}{4}} = \sqrt{0.5317} = 0.7292$$

$$\text{C.V.} = \frac{\dagger}{\bar{R}_j} = \frac{0.7292}{0.8795} = 0.8291$$

Hence, the expected return of C.S of NIBL is 87.95%, standard deviation is 72.92% and coefficient of variation is 0.8291. Therefore, the annual rate of return is shown in the figure 4.4.

Figure 4.4

Annual Rate of Return of the Common Stock of NIBL



4.1.3 Standard Chartered Bank Nepal Ltd. (SCBNL)

4.1.3.1 Introduction

Standard Chartered Bank Limited was established in 1985 as a second joint venture bank under the Company Act-1964. Standard chartered Bank England is managing the Bank under joint venture and technical services agreement signed between bank and Nepalese promoters. The Authorized capital of this Bank is Rs. 33,95,48,800, Issued capital is Rs. 33,95,48,800 and paid up capital is Rs. 33,95,48,800. The par value per share is Rs. 100 and total no of shareholders are 5037. This bank was listed in NEPSE in 21-03-045 B.S. Its central office is at New Baneshwor, Kathmandu.

4.1.3.2 Data

Market price and dividend records of common stock of SCBNL are shown in the table 4.5. Year- end price movement is shown in the Figure 4.5.

Table 4.5

MPS and Dividend Data of SCBNL

F/Y	High MPS	Low MPS	Closing MPS	DPS	Stock Dividend	Total Dividend
2002/2003	1760	1380	1640	110	-	110
2003/2004	1800	1520	1745	110	1:10	344.5

2004/2005	2350	1553	2345	110	-	110
2005/2006	3775	2200	3775	120	-	120
2006/2007	5900	3058	5900	80	-	80
2007/2008	9025	4505	6830	80	1:2	3495

Data Source: www.nepalstock.com

Model for the total dividend calculation is mentioned in the research methodology section.

$$110 + 0 \times 1745 = 110$$

$$110 + 0.10 \times 2345 = 344.5$$

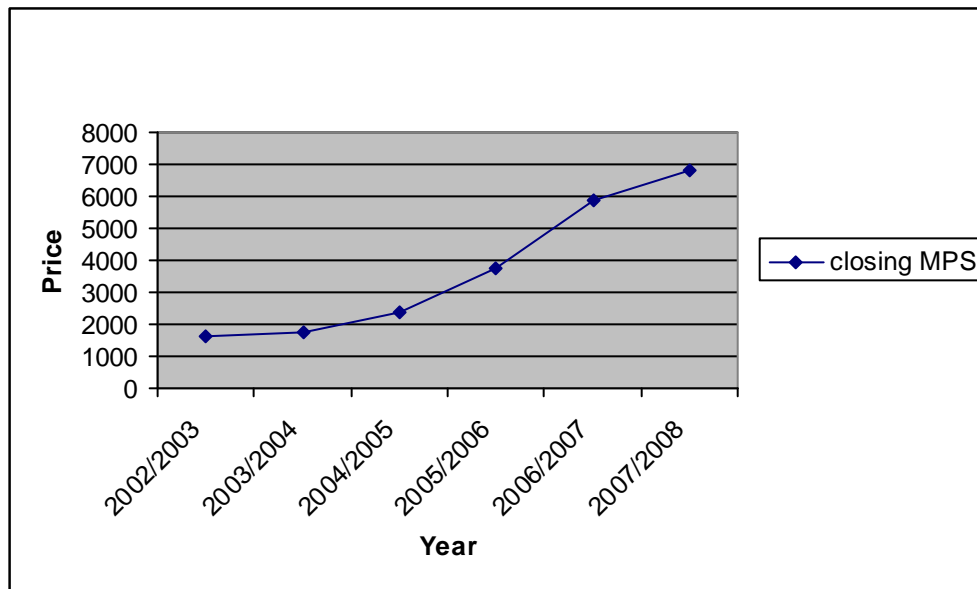
$$110 + 0 \times 3775 = 110$$

$$120 + 0 \times 5900 = 120$$

$$80 \cdot 50 \times 6830 = 3495$$

Figure 4.5

Year End Price Movement of the Common Stock of SCBNL



The price is maximum in the year 2007/08 and lowest in the year 2002/03. Issue of bonus share of 1:10 in the year 2003/04.

4.1.3.3 Realized Returns (R), Standard Deviation () Expected Return (\bar{R})

Year end price and dividend amounts are used to calculate realized rate of returns for each. Table 4.6 shows the calculation of yearly–realized return, expected return and standard deviation of return.

Table 4.6

Realized Rate of Returns, Expected Returns and S.D. of the C.S. of SCBNL

Year	Year end Price(P)	Total Dividend(D)	$R = \frac{D_t + (P_t - P_{t-1})}{P_{t-1}}$	$(R - \bar{R}_j)$	$(R - \bar{R}_j)^2$
2002/2003	1640	110	-	-	-
2003/2004	1745	344.5	0.1311	-0.2879	0.0829
2004/2005	2345	110	0.5415	0.1225	0.0150
2005/2006	3775	120	0.6567	0.2377	0.0565
2006/2007	5900	80	0.5947	0.1757	0.0309
2007/2008	6830	3495	0.1712	-0.2478	0.0614
Total			2.0952		0.2467

We have,

$$\text{Expected Return } (\bar{R}_j) = \frac{\sum R_j}{n} = \frac{2.0952}{5} = 0.4190 \text{ or } 41.90\%$$

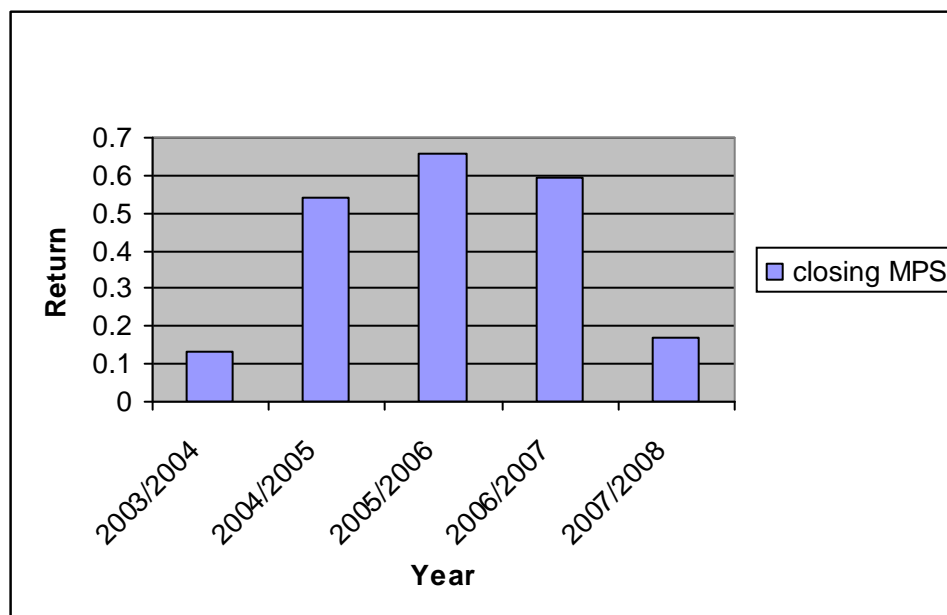
$$\text{Standard Deviation } (\dagger) = \sqrt{\frac{\sum (R_j - \bar{R}_j)^2}{n-1}} = \sqrt{\frac{0.2467}{4}} = \sqrt{0.0617} = 0.2484$$

$$\text{C.V.} = \frac{\dagger}{\bar{R}_j} = \frac{0.2484}{0.4190} = 0.5928$$

Hence, the expected return of C.S. of SCBNL is 41.90%, standard deviation is 24.84% and coefficient of variation is 0.5928. Therefore, the annual rate of return is shown in the figure 4.6.

Figure 4.6

Annual Rate of Return of the Common Stock of SCBNL



4.1.4 Salt Trading Corporation Limited (STCL)

4.1.4.1 Introduction

Salt Trading Corporation Ltd. was established on 2020 B.S. under the collaboration of GON, National Trading Limited and share of common people. This organization is located at Kalimati, Kathmandu. The main objective was to fulfill the requirement of common people and to help the requirement of common people and to help them by selling its product in a reasonable price. It was listed in NEPSE in 1984 A.D. Its authorized capital is Rs. 10 crores, issued capital is Rs. 50,000,000 and paid up capital is Rs. 24,777,700.

4.1.4.2 Data

Market price and dividend records of common stock of STCL are shown in the table 4.7. Year- end price movement is shown in the figure 4.7.

Table 4.7
MPS and Dividend Data of STCL

F/Y	High	Low	Closing	DPS	Stock	Total
-----	------	-----	---------	-----	-------	-------

	MPS	MPS	MPS		Dividend	Dividend
2002/2003	315	300	315	20	-	20
2003/2004	315	315	315	10	-	10
2004/2005	316	315	316	20	-	20
2005/2006	315	315	315	20	-	20
2006/2007	325	316	320	20	-	20
2007/2008	331	331	331	0	-	0

Data Source: www.nepalstock .com

Model for the total dividend calculation is mentioned in the research methodology section.

$$20 + 0 \times 315 = 20$$

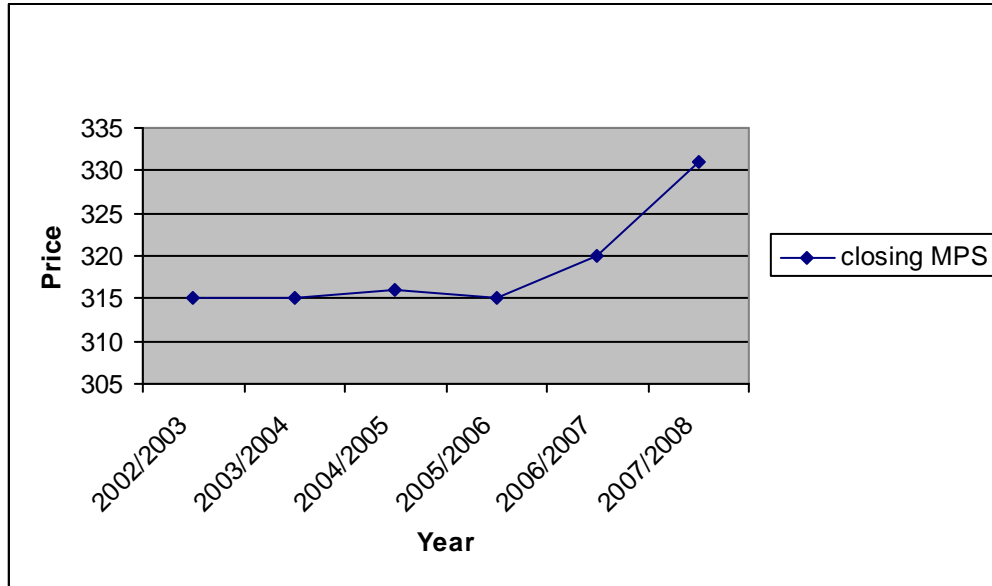
$$10 + 0 \times 316 = 10$$

$$20 + 0 \times 315 = 20$$

$$20 + 0 \times 320 = 20$$

$$20 + 0 \times 331 = 20$$

Figure 4.7
Year End Price Movement of the Common Stock of STCL



The price is maximum in the year 2007/2008 and lowest in the year 2002/03.

The price was increasing after 2006/2007.

4.1.4.3 Realized Returns (R), Standard Deviation () Expected Return (\bar{R})

Year end price and dividend amounts are used to calculate realized rate of returns for each. Table 4.8 shows the calculation of yearly–realized return, expected return and standard deviation of return.

Table 4.8

Realized Rate of Returns, Expected Returns and S.D. of the C.S. of STCL

Year	Year end price(P)	Total Dividend(D)	$R = \frac{D_t + (P_t - P_{t-1})}{P_{t-1}}$	$(R - \bar{R}_j)$	$(R - \bar{R}_j)^2$
2002/2003	315	20	-	-	-
2003/2004	315	10	.0635	-0.0039	0.0000
2004/2005	316	20	.0349	-0.032	0.0010
2005/2006	315	20	.0601	-0.0068	0.0000
2006/2007	320	20	.0794	0.0125	0.0002
2007/2008	331	0	.0969	0.0300	0.0009
Total			0.3348		0.0021

We have,

$$\text{Expected Return } (\bar{R}_j) = \frac{\sum R_j}{n} = \frac{0.3348}{5} = 0.06696 \text{ or } 6.69\%$$

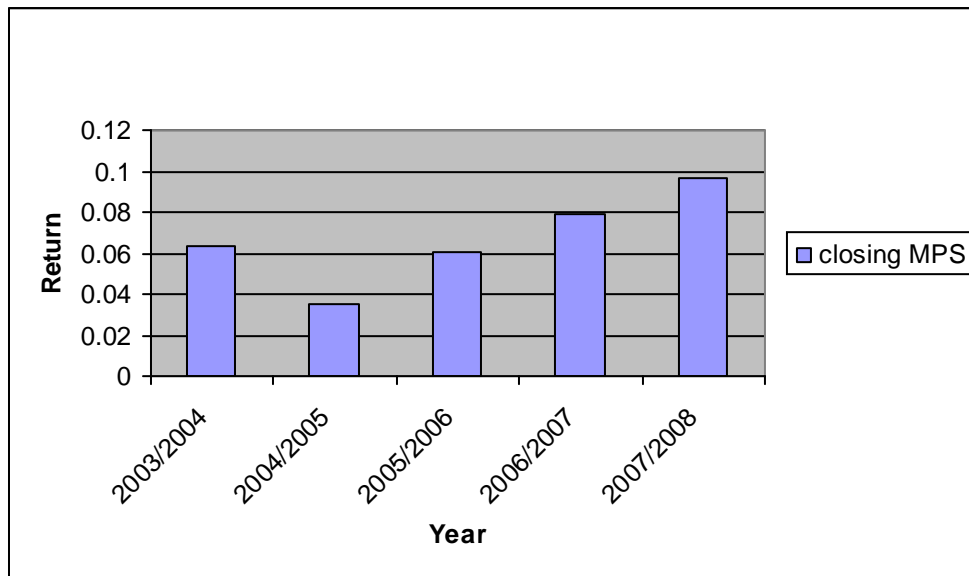
$$\text{Standard Deviation } (\dagger) = \sqrt{\frac{\sum (R_j - \bar{R}_j)^2}{n-1}} = \sqrt{\frac{0.0021}{4}} = \sqrt{0.000525} = 0.0229$$

$$\text{C.V.} = \frac{\dagger}{\bar{R}_j} = \frac{0.0229}{0.0669} = 0.3423$$

Hence, the expected return of the C.S of STCL is 6.69%, standard deviation is 2.29% and coefficient of variation is 0.3423. Therefore the annual rate of return is shown in the figure 4.8.

Figure 4.8

Annual Rate of Return of the Common Stock of STCL



4.1.5 Bishal Bazaar Company Limited (BBCL)

4.1.5.1 Introduction

Bishal Bazaar Company is a trading company established in 2026 BS (1970 AD). This organization is located at New Road, Kathmandu. The main objective of the company is to provide different types of consumable goods to the general public.

The company was listed in NEPSE index in 1984 AD (2041 -07-23 BS). Its authorized capital is Rs. 5 millions, issued capital is Rs. 5 millions and paid up capital is Rs. 27,300,000. Par value per share is Rs. 100 and paid up value is also same. The number of share holders is 447.

4.1.5.2 Data

Market price and dividend records of common stock of BBCL are shown in the table 4.9. Year- end price movement is shown in the figure 4.9.

Table 4.9

MPS and Dividend Data of BBCL

F/Y	High MPS	Low MPS	Closing MPS	DPS	Stock Dividend	Total Dividend
2002/2003	1575	1400	1400	80	-	80
2003/2004	1942	1400	1930	75	-	75
2004/2005	2400	2000	2400	85	-	85
2005/2006	2200	1470	2150	90	-	90
2006/2007	2575	2400	2575	90	-	90
2007/2008	2754	2000	2201	90	-	90

Data Source: www.nepalstock .com

Model for the total dividend calculation is mentioned in the research methodology section.

$$80 + 0 \times 1930 = 80$$

$$75 + 0 \times 2400 = 75$$

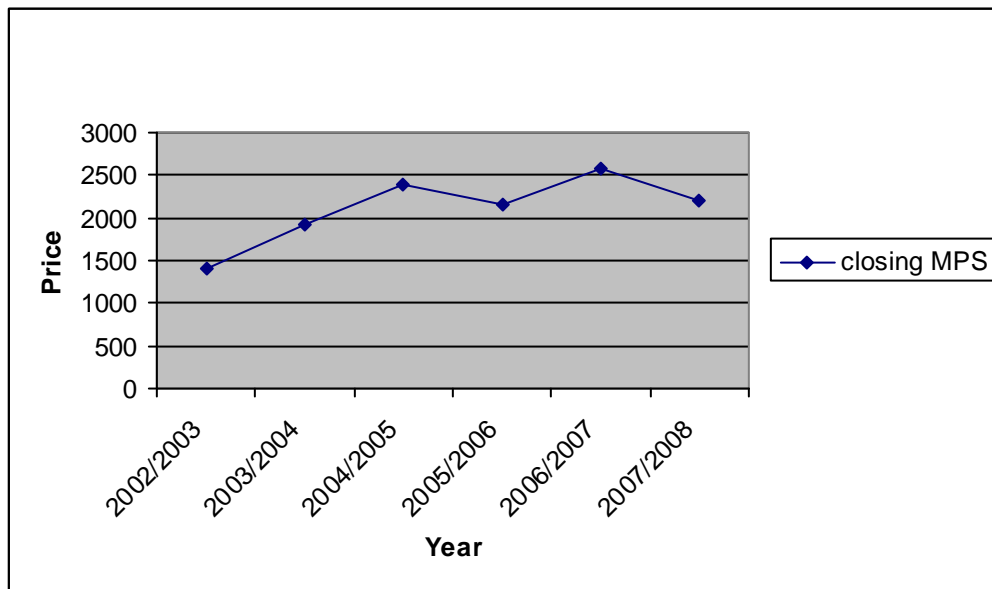
$$85 + 0 \times 2150 = 85$$

$$90 + 0 \times 2575 = 90$$

$$90 + 0 \times 2201 = 90$$

Figure 4.9

Year End Price Movement of the Common Stock of BBCL



The price is maximum in the year 2006/07 and lowest in the year 2002/03

4.1.5.3 Realized Returns (R), Standard Deviation () Expected Return (\bar{R}):

Year end price and dividend amounts are used to calculate realized rate of returns for each. Table 4.10 shows the calculation of yearly-realized return, expected return and standard deviation of return.

Table 4.10

Realized Rate of Returns, Expected Returns and S.D. of the C.S. of BBCL

Year	Year end Price(P)	Total Dividend(D)	$R = \frac{D_t + (P_t - P_{t-1})}{P_{t-1}}$	$(R - \bar{R}_j)$	$(R - \bar{R}_j)^2$
2002/2003	1400	80	-	-	-
2003/2004	1930	75	0.4357	0.2525	0.0638
2004/2005	2400	85	0.2824	0.0992	0.0098
2005/2006	2150	90	0.0688	-0.1144	0.0131
2006/2007	2575	90	0.2395	0.0563	0.0032
2007/2008	2201	90	-0.1103	-0.2935	0.0861
Total			0.9161		0.176

We have,

$$\text{Expected Return } (\overline{R_j}) = \frac{\sum R_j}{n} = \frac{0.9161}{5} = 0.1832 \text{ or } 18.32\%$$

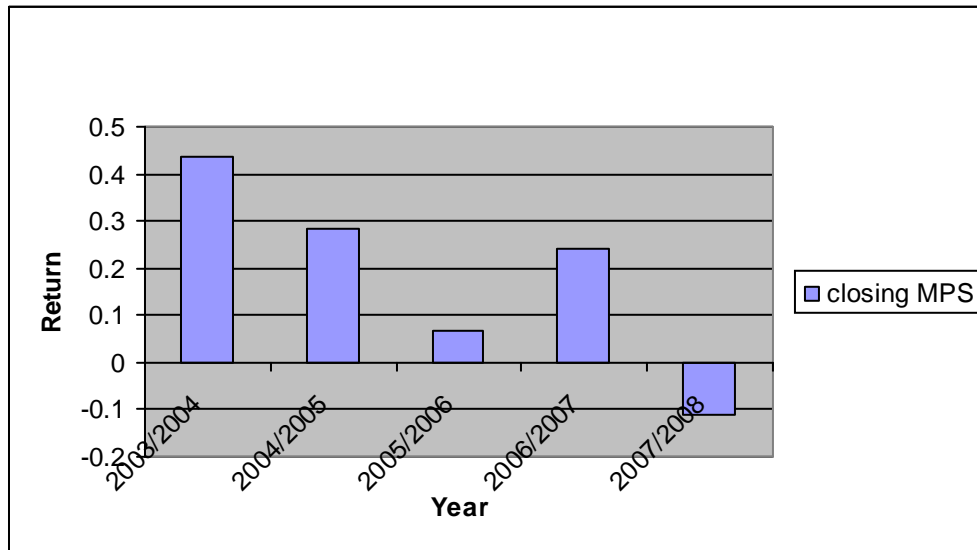
$$\text{Standard Deviation } (\dagger) = \sqrt{\frac{\sum (R_j - \overline{R_j})^2}{n-1}} = \sqrt{\frac{0.176}{4}} = \sqrt{0.044} = 0.2098$$

$$\text{C.V.} = \frac{\dagger}{\overline{R_j}} = \frac{0.2098}{0.1832} = 1.1452$$

Hence, the expected return of C.S. of BBCL is 18.32%, standard deviation is 20.98% and coefficient of variation is 1.1452. Therefore, the annual rate of return is shown in the figure 4.10.

Figure 4.10

Annual Rate of Return of the Common Stock of BBCL



4.1.6 Nepal Welfare Company Ltd. (NWCL)

4.1.6.1 Introduction

Nepal Welfare Company Limited is a trading company established on 2046 B.S. This organization is located at Maitidevi, Kathmandu. The main objective of the company is to provide electrical goods to the general public. This company was listed in NEPSE in 2051-09-26 B.S. Its authorized capital is Rs. 1,00,00,000, issued capital is Rs. 41,00,000 and paid up capital is Rs. 30,75,000. The par value per share is Rs. 100.

4.1.6.2 Data

Market price and dividend records of common stock of NWCL are shown in the table 4.11. Year- end price movement is shown in the figure 4.11.

Table 4.11

MPS and Dividend Data of NWCL

F/Y	High MPS	Low MPS	Closing MPS	DPS	Stock Dividend	Total Dividend
2002/2003	95	80	95	5	-	5
2003/2004	80	80	80	10	-	10
2004/2005	100	84	100	15	-	15
2005/2006	100	95	95	0	-	0
2006/2007	100	100	100	0	-	0
2007/2008	95	95	95	20	-	20

Data Source: www.nepalstock.com

Model for the total dividend calculation is mentioned in the research methodology section.

$$5 + 0 \times 80 = 5$$

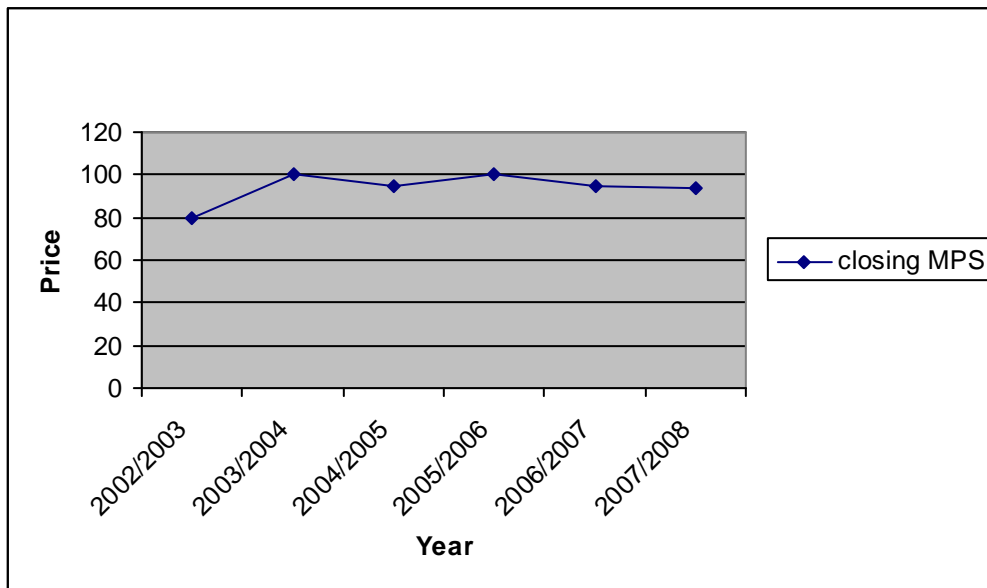
$$10 + 0 \times 100 = 10$$

$$15 + 0 \times 95 = 15$$

$$0 + 0 \times 100 = 0$$

$$0 + 0 \times 95 = 0$$

Figure 4.11
Year End Price Movement of the Common Stock of NWCL



The price is maximum in the year 2005/2006 and lowest in the year 2002/2003.

4.1.6.3 Realized returns (R), Standard deviation () Expected return (\bar{R}):

Year end price and dividend amounts are used to calculate realized rate of returns for each. Table 4.12 shows the calculation of yearly–realized return, expected return and standard deviation of return.

Table 4.12

Realized Rate of Returns, Expected Returns and S.D. of the C.S. of NWCL

Year	Year end Price(P)	Total Dividend(D)	$R = \frac{D_t + (P_t - P_{t-1})}{P_{t-1}}$	$(R - \bar{R}_j)$	$(R - \bar{R}_j)^2$
2002/2003	80	5	-	-	-
2003/2004	100	10	0.3125	0.1686	0.0284
2004/2005	95	15	0.0500	-0.0757	0.0057
2005/2006	100	0	0.2105	0.0848	0.0072
2006/2007	95	0	-0.0500	-0.1757	0.0309
2007/2008	94	20	0.1053	-0.0204	0.0004
Total			0.6283		0.0726

We have,

$$\text{Expected Return } (\bar{R}_j) = \frac{\sum R_j}{n} = \frac{0.6283}{5} = 0.1257 \text{ or } 12.57\%$$

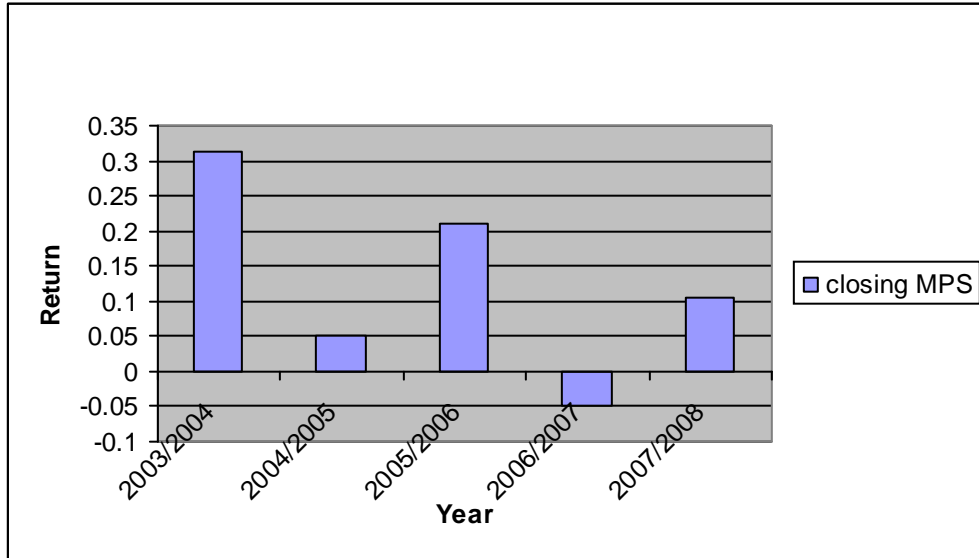
$$\text{Standard Deviation } (\dagger) = \sqrt{\frac{\sum (R_j - \bar{R}_j)^2}{n-1}} = \sqrt{\frac{0.0726}{4}} = \sqrt{0.1815} = 0.4260$$

$$\text{C.V.} = \frac{\dagger}{\bar{R}_j} = \frac{0.4260}{0.1257} = 3.3890$$

Hence, the expected return of C.S of NWCL is 12.57%, standard deviation is 42.60% and coefficient of variation is 3.3890. Therefore, the annual rate of return is shown in the figure 4.12.

Figure 4.12

Annual Rate of Return of the Common Stock of NWCL



4.2 Comparison between Commercial Banks and Trading Companies

According from the result from the section 4.1, a comparative analysis of risk and return performed here. Expected return, S.D. of return, C.V. of each bank and trading company for the year 2002/03 to 2007/08 are given in the table 4.13.

Table 4.13

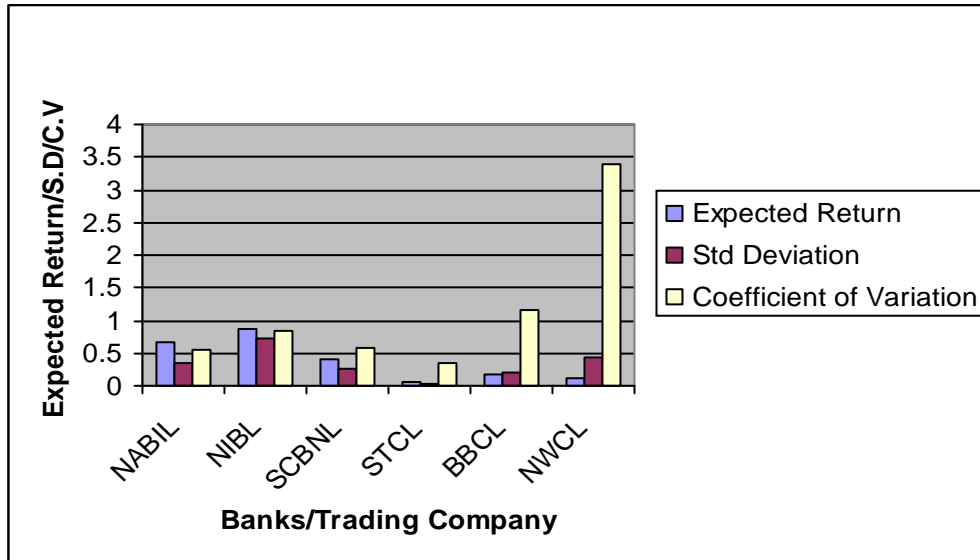
Expected Return, S.D. and Coefficient of Variation of each bank and Trading Company

Banks	Expected Return	Standard Deviation	Coefficient of Variation	Remarks
NABIL	0.6630	0.3596	0.5424	
NIBL	0.8795	0.7292	0.8291	Highest Return
SCBNL	0.4190	0.2484	0.5928	
STCL	0.0669	0.0229	0.3423	Lowest C.V and S.D.
BBCL	0.1832	0.2098	1.1452	
NWCL	0.1257	0.4260	3.3890	Highest C.V.

Investor can get the highest return from investment in the C.S. of NIBL and lowest return from the investment in the C.S. of STCL. NIBL has the highest standard deviation on the basis of risk per unit return. NWCL has the highest coefficient of variation and STCL has the lowest C.V. NABIL is the best bank among the banks on the basis of C.V. whereas STCL is the best trading company among the companies on the basis of C.V. To make the comparison easy understandable figure 4.13 is presented below.

Figure 4.13

Expected Return, S.D. and C.V. of each Commercial Bank and Trading Co.



On the basis of the market capitalization at the end of 2007/08, sizes of each bank and trading company are presented in the table 4.14 and table 4.15. Market Capitalization is the total market value at specific time period of the company, industry and market as a whole. SCBNL has highest market capitalization among listed bank at 15th July 2007 to 15th July 2008 (Fiscal Year 2064/2065).

Table 4.14

Market Capitalization of Listed Banks at July 15th 2007 to July 15th 2008

Banks	Market capitalization (in millions)	Percentage (%)
Nepal Arab Bank Ltd.	36259.98	35.15
Nepal Investment Bank Ltd.	24564.54	23.81
Standard Chartered Bank Nepal Ltd.	42337.95	41.04
Total	103162.47	100

Figure 4.14

Market Capitalization of Listed Banks at July 15th, 2007 - July 15th 2008

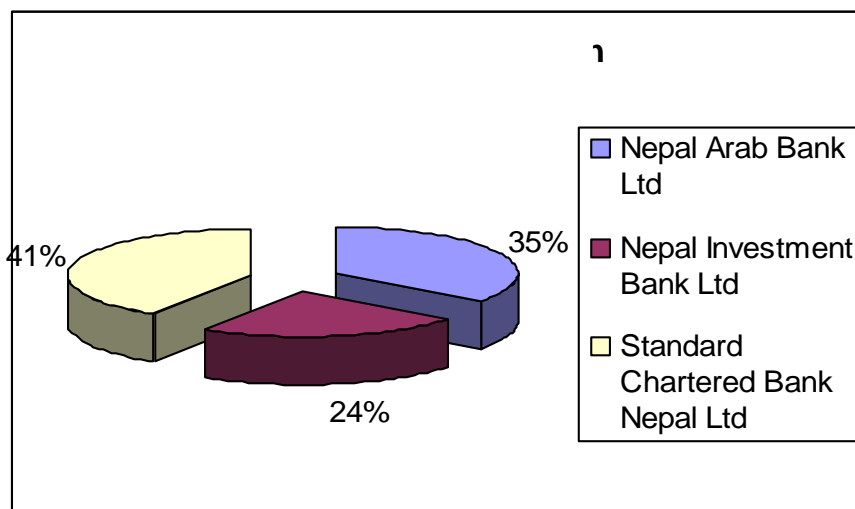


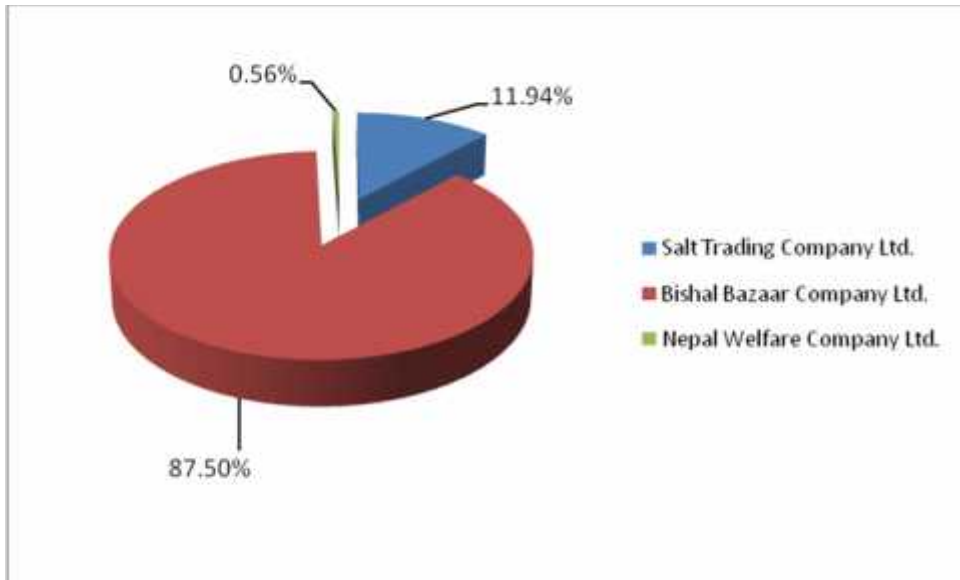
Table 4.15

Market Capitalization of Listed Trading Companies at July 15th 2007 to July 15th 2008

Trading Company	Market capitalization (in millions)	Percentage (%)
Salt Trading Company Ltd.	82.01	11.94
Bishal Bazaar Company Ltd.	600.87	87.50
Nepal Welfare Company Ltd.	3.85	0.56
Total	686.73	100

Figure 4.15

Market Capitalization of Listed Trading Companies at July 15th, 2007 - July 15th 2008



Similarly, a comparison is made on the movement of market capitalization. Here, three banks and three trading companies are taken into consideration and their data covers the entire study period.

Table 4.16

Year-Wise Comparative Movement of Market Capitalization

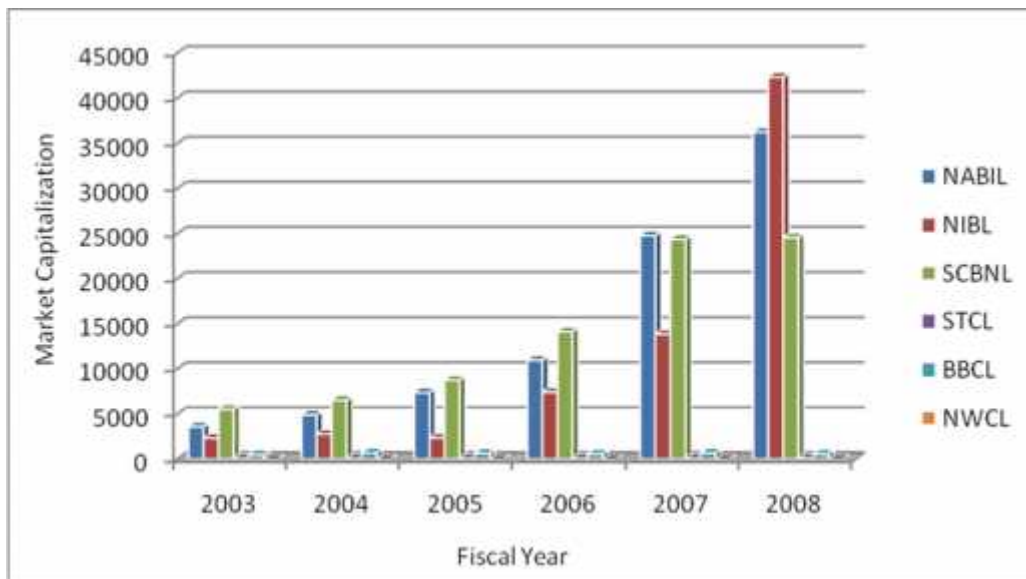
(In Millions)

Bank and Trading Company\year	15 th July 2003	15 th July 2004	15 th July 2005	15 th July 2006	15 th July 2007	15 th July 2008
NABIL	3613.63	4909.95	7389.47	10998.29	24795.25	36259.98
NIBL	2347.56	2775.75	2362.34	7441.38	13855.39	42337.95
SCBNL	5568.62	6537.47	8785.32	14142.68	24382.03	24564.54
STCL	78.05	78.05	78.30	78.05	80.53	82.01
BBCL	522.20	719.89	655.20	586.95	702.98	600.87
NWCL	3.28	4.10	3.90	4.10	3.90	3.85

Data Source: www.nepalstock.com

Figure 4.16

Year-Wise Comparative Movement of Market Capitalization of Banks and Trading Companies



4.3 Inter-Industry Comparison

To compare the size of industries, table no 4.17 and figure no 4.17 is presented below. We can observe that the banking industry has majority value of total

market share i.e. 80% as compared to the other sectors while Trading Company has 0.3% total market share as compared to other sectors.

Table 4.17

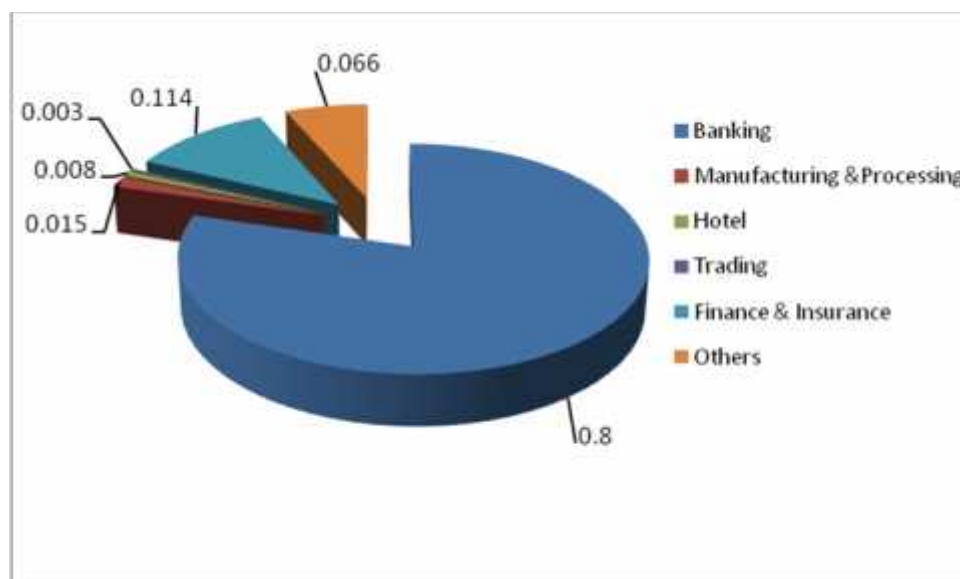
Market Capitalization of each industry at July 2008

Industry	Market Capitalization(in million)	Percentage
Banking	199214.22	0.800
Manufacturing &Processing	3774.87	0.015
Hotel	1935.59	0.008
Trading	846.71	0.003
Finance & Insurance	28660.37	0.114
Others	16503.02	0.066
Total	250934.78	100

Data Source: www.nepalstock.com

Figure 4.17

Market Capitalization at each Industry at July 15,2008



Industry wise market capitalization is presented in table 4.18 and figure 4.18.

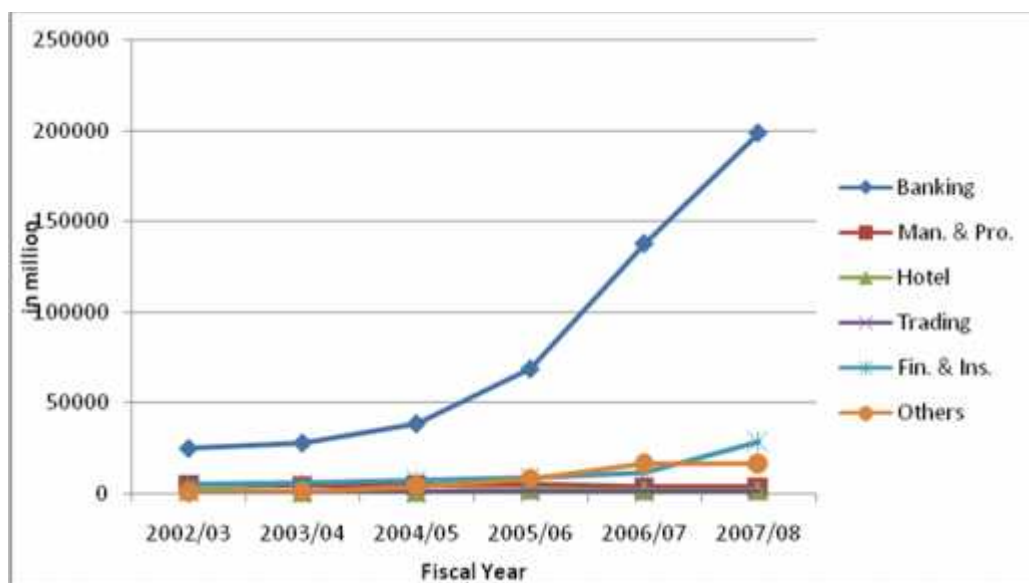
Table 4.18
Industry- Wise Market Capitalization

(In Millions)

Industry	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08
Banking	24931.35	27958.88	38547.0	68841.24	138086.43	199214.22
Man. & Pro.	4869.61	4472.75	4585.66	4619.20	3760.28	3774.87
Hotel	2391.32	1065.86	1016.45	2393.61	1935.59	1935.59
Trading	487.20	603.53	802.04	737.39	787.40	846.71
Fin. & Ins.	4963.91	5491.57	7131.36	8590.49	11491.40	28660.37
Others	485.01	862.20	4187.73	8012.20	16503.02	16503.02

Data Source: www.nepalstock.com

Figure 4.18
Industry-Wise Movement of Market Capitalization



Industry wise NEPSE index at closing date of fiscal year is presented on table 4.19.

Table 4.19**Industry wise NEPSE Index at Closing Date of F/Y**

Industry	Banking	Man. & Pro.	Hotel	Trading	Fin. & Ins.	Others	Market
Year							
2002/03	200.67	251.22	197.07	94.56	449.11	47.91	223.76
2003/04	231.97	255.58	197.07	95.01	237.62	142.65	205.46
2004/05	304.64	276.50	178.00	123.20	237.86	347.65	222.04
2005/06	325.35	291.68	186.11	126.91	229.69	335.09	286.67
2006/07	789.21	348.63	251.47	155.37	612.46	818.12	386.83
2007/08	986.47	418.82	380.66	213.40	841.59	417.47	657.47

Data Source: www.nepalstock.com

Table 4.20**Industry Wise Expected Return, S.D. and Coefficient of Variation**

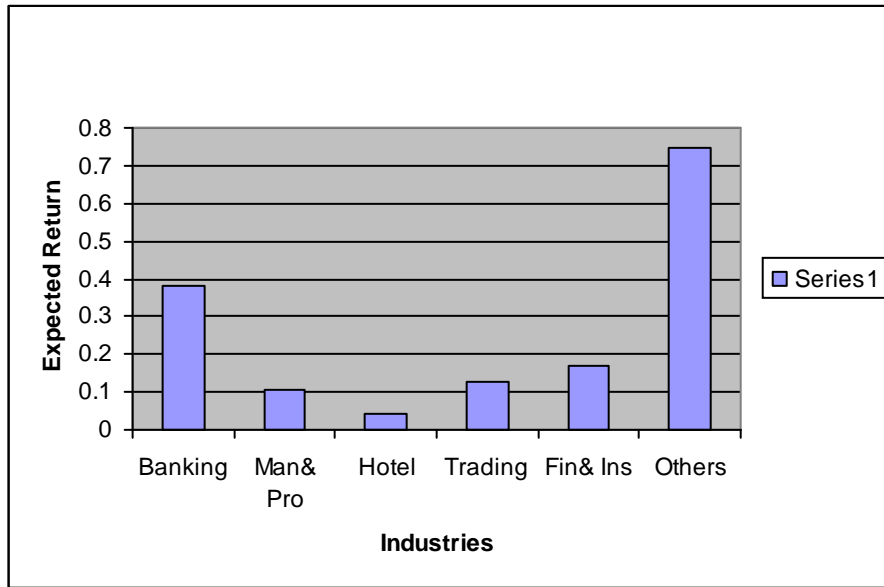
Industry	Expected Return	S.D.	C.V.	Remarks
Banking	0.3789	0.6214	1.6400	
Man & Proc	0.1038	0.5219	5.0280	
Hotel	0.0418	0.2437	5.8301	
Trading	0.1254	0.1407	1.1220	Best as per c.v.
Fin. Ins.	0.1711	0.7124	4.1636	
Others	0.7472	1.2021	1.6088	.

Source: Appendix A₂- A₆

The main focus of our study is risk and return. Industry wise comparison of risk and return is made here on the basis of year end NEPSE index. Year end industry wise NEPSE index is given in table no 4.19. Similarly, table 4.20 shows the variables of each industry. Detail of calculation of each variables of each industry is presented in appendices table no. A₁ to A₆.

From the above table 4.20, we found that C.V. of trading industry is 1.1220, which is minimum as compared to other sectors. Therefore it is most suitable for the investment.

Figure 4.19
Industry Wise Expected Return for the year



4.4 Comparison With Market

4.4.1 Market Risk and Return

In Nepal there is only one stock market, NEPSE. Over all market movement is represented by market index (i.e. NEPSE Index). The market return, its S.D. and C.V. is calculated below.

Table 4.21
Calculation of Market Returns, S.D. and C.V.

Year	NEPSE Index (NI)	$\bar{R}_m = \frac{NI_t - NI_{t-1}}{NI_{t-1}}$	$(R_m - \bar{R}_m)$	$(R_m - \bar{R}_m)^2$
2002/03	223.76	-	-	-
2003/04	205.46	-0.0818	-0.3496	0.1222
2004/05	222.04	0.0807	-0.1871	0.0350
2005/06	286.67	0.2911	0.0233	0.0005

2006/07	386.83	0.3494	0.0816	0.0067
2007/08	657.47	0.6996	0.4318	0.1865
Total		1.339		0.3509

We have,

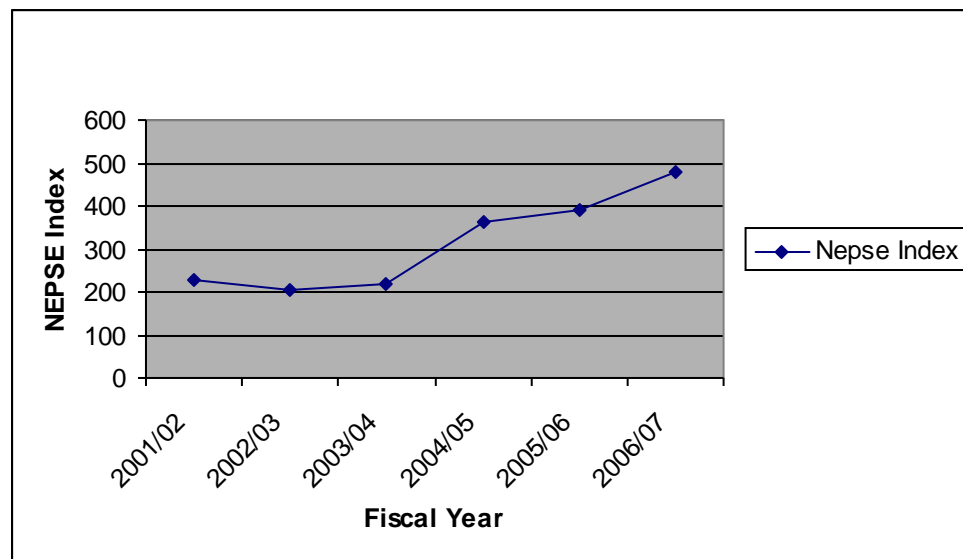
$$\text{Expected Return } (\overline{R}_m) = \frac{\sum R_m}{n} = \frac{1.339}{5} = 0.2678 \text{ or } 26.78\%$$

$$\text{Standard Deviation } (\dagger_m) = \sqrt{\frac{\sum (R_m - \overline{R}_m)^2}{n-1}} = \sqrt{\frac{0.3509}{4}} = \sqrt{0.0876} = 0.2961$$

$$\text{C.V.} = \frac{\dagger_m}{\overline{R}_m} = \frac{0.2961}{0.2678} = 1.1057$$

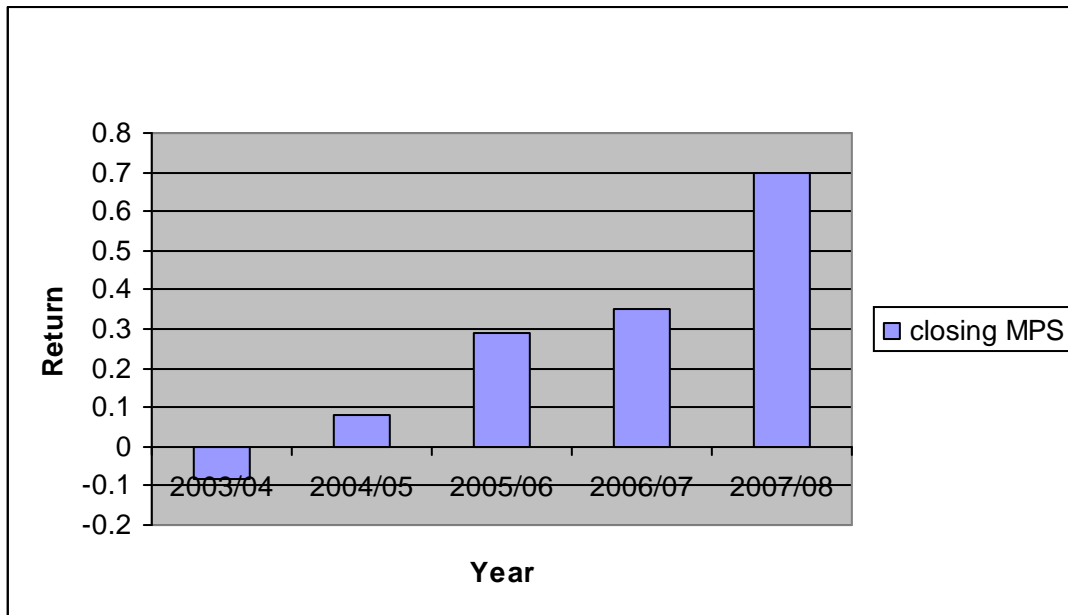
Here, the market return is 26.78%, Risk is 29.61% and C.V. is 1.1057

Figure 4.20
NEPSE Index Movement



The above figure shows that the movement of NEPSE index is in increasing from 2003/04. The movement of NEPSE index is highly increased during the fiscal year 2006/07.

Figure 4.21
Market Returns Movement



The above figure shows that the market return is negative in the fiscal year, 2003/04, then after it started to increase and maximum positive is in the 2007/08.

In comparison with market return 26.78%, banking industry 37.89% and others industry sectors 74.72% have higher expected return. Trading industry 12.54%, Finance & Institution sectors 17.11%, manufacturing and processing industry 10.38%, and Hotel industry have 4.18% which is lower expected return.

In comparison with market 29.61%, others industry 120.21%, Banking industry 62.14%, Finance and institution 71.24%, and Man & Processing 52.19% have higher risk than market. Hotel industry 24.37% and Trading industry 14.07% have lower risk than market risk.

4.4.2 Analysis of Market Sensitivity

Market sensitivity is explained by its beta coefficient. Beta is known as systematic risk measure. The beta of market is always equal to 1. So, beta of stock less than 1 is known as less risky or defensive investment.

We have,

$$S_i = \frac{\text{cov}(R_i - R_m)}{\uparrow_m^2} = \frac{\uparrow_i \uparrow_m \dots_{im}}{\uparrow_m^2} = \frac{\uparrow_i \dots_m}{\uparrow_m}$$

Where,

\dots_m = Correlation between market return and stock i return.

Here,

$$S_m = \frac{\text{cov}(R_m - R_m)}{\uparrow_m^2} = \frac{\uparrow_m \uparrow_m \dots_{mm}}{\uparrow_m^2} = \dots_{mm} = 1$$

Hence, beta coefficient of market is always 1.

Table 4.22

Calculation of Beta Coefficient of the C.S. of NABIL

Year	$(R_j - \bar{R}_j)$	$(R_m - \bar{R}_m)$	$(R_j - \bar{R}_j)(R_m - \bar{R}_m)$
2003/04	-0.2344	-0.3496	0.0819
2004/05	-0.0930	-0.1871	0.0174
2005/06	-0.1281	0.0233	-0.0030
2006/07	0.6361	0.0816	0.0519
2007/08	-0.1808	0.4318	0.2317
Total			0.3797

We have,

$$\text{COV}(R_j - R_m) = \frac{\sum (R_j - \bar{R}_j)(R_m - \bar{R}_m)}{n-1} = \frac{0.3797}{5-1} = 0.0950$$

$$S_i = \frac{\text{COV}(R_i - R_m)}{\uparrow_m^2} = \frac{0.0950}{0.2961^2} = \frac{0.0950}{0.0877} = 1.0832$$

Where,

n = Number of observation = 5

$\uparrow m^2$ = Variance of market return

R_j = Return of stock of NABIL

Since beta coefficient of NABIL is more than 1, it is risky than market.

Table 4.23

Showing the Beta Coefficient of each Bank and Trading Company

S.N.	Bank/Trading Company	Beta Coefficient	Remarks
1	NABIL	1.0832	Most aggressive
2	NIBL	0.3632	
3	SCBNL	0.4892	
4	STCL	0.0604	
5	BBCL	0.0627	
6	NWCL	-0.1881	Least aggressive

Source: Appendix A₇ - A₁₂

Since, the NABIL have higher beta coefficient than market, the stock of these banks are aggressive whereas SCBNL, NIBL, STCL, BBCL and NWCL have lower beta coefficient than market, so the stock of these company and banks are least aggressive.

4.4.3 Required Rate of Return [E(R)], Expected Rate of Return (\bar{R}) and Price

Evaluation Analysis

Comparison of required rate of return and expected rate of return gives the result, whether the stock is under priced or overpriced. If the required rate of return is less than expected rate of return, the stock is said to be under priced and investors tend to buy this type of stock and vice versa. For this analysis risk free rate of return is needed, which is taken from the interest rate of Treasury bill issued by Nepal Rastra Bank. NRB issue Treasury bills of 91 days and 365days duration. As

suggested by the Treasury bill section of NRB, the interest rate of T-Bill i.e. of 364 durations is taken as risk free rate, which is approximately 5.25%.

Hence,

$$R_f = \text{Risk free rate of return} = 5.25\% = 0.0525$$

$$R_m = \text{Market rate of return} = 26.78\% = 0.2678$$

Table 4.24

Required Rate of Return, Expected Return and Price Evaluation

Banks/Trading Company	Beta	$E(R_i) = R_f + (R_m - R_f)S_i$	Expected Rate of Return	Price Evaluation
NABIL	1.0832	0.2857	0.6630	Under priced
NIBL	0.3632	0.1307	0.8795	Under priced
SCBNL	0.4892	0.4575	0.4190	Over priced
STCL	0.0604	0.0655	0.0699	Under priced
BBCL	0.0627	0.1874	0.1832	Over priced
NWCL	-0.1881	0.0120	0.1257	Under priced

The stocks of NABIL, NIBL, NWCL and STCL are under priced. So, the stocks of NABIL, NIBL, and STCL have good investment opportunity. These stocks are in demand. Their stocks value will be increased in future providing the investors highest return. Since these stocks are under priced, investors can gain from buying those stocks. These stocks are recommended to buy. But, SCBNL and BBCL are overpriced. Investors get loss from buying this stock. This stock is recommended to sell.

4.5 Portfolio Analysis

Portfolio theory was proposed by Harry M. Markowitz which gives the concept of diversification of risk by investing total funds in more than a single asset or single stock. Markowitz diversification helps the investor to attain a higher level of expected utility than with any other risk reduction technique. In a very simple way

we can understand is as not keeping all eggs in a single basket. By diversifying total fund in different securities the risk of individual securities can be reduced without losing considerable return. The main objective of portfolio is reduction of unsystematic risk, from which investors can take more benefit by making efficient portfolio. Therefore, a brief analysis of risk and return is extended in portfolio context. The portfolio expected return is straightforward weighted average of returns on the individual securities. The weight is equal to the proportions of the total fund invested in each security (the weight must sum to 100%).

4.5.1 Analysis or Risk Diversification

The analysis is based on the two assets portfolio and the tools for analysis are presented in the third chapter (research methodology). Here, the portfolio of the common stock of NABIL (say stock A) and common stock of STCL (say stock B) is analyzed. Table 4.25 shows the calculation of covariance of the returns of given two stocks $COV(R_A R_B)$ and the proportion of stock A (W_A) minimizes the risk.

We have,

$$W_A = \frac{\sigma_B^2 - COV(R_A R_B)}{\sigma_A^2 + \sigma_B^2 - 2COV(R_A R_B)}$$

Where,

W_A = Proportion of the C.S. of NABIL

W_B = Proportion of the C.S. of STCL

σ_A = Standard deviation of C.S. of NABIL

σ_B = Standard deviation of C.S. STCL

$COV(R_A R_B)$ = Covariance of returns between C.S of NABIL and STCL

Table 4.25

Covariance ($R_A - R_B$) and W_A of Stock A and W_B of Stock B

Year	$R_A - R_A$	$R_B - R_B$	$(R_A - R_A)(R_B - R_B)$	Remarks
2003/04	-0.2344	-0.0039	0.0009	$(R_A - R_A)$ from

2004/05	-0.0930	-0.032	0.0030	table 4.2 and ($R_B - \bar{R}_B$) from table 4.8.
2005/06	-0.1281	-0.0068	0.0009	
2006/07	0.6361	0.0125	0.0080	
2007/08	0.1808	0.0300	0.0054	
Total			0.0182	

We have,

$$COV(R_A R_B) = \frac{\sum_{j=1}^n (R_{A_j} - \bar{R}_A)(R_{B_j} - \bar{R}_B)}{n-1} = \frac{0.0182}{5-1} = 0.0046$$

And to minimize the risk the proportion of stock A in a portfolio is given as

$$\begin{aligned} W_A &= \frac{\sigma_B^2 - COV(R_A R_B)}{\sigma_A^2 + \sigma_B^2 - 2COV(R_A R_B)} \\ &= \frac{0.0229^2 - 0.0046}{0.3596^2 + 0.0229^2 - 2 \times 0.0046} \\ &= \frac{-0.0041}{0.1206} = -0.0340 \text{ i.e. } -3.40\% \end{aligned}$$

$$\begin{aligned} W_B &= 1 - W_A \\ &= 1 - (-0.0340) \\ &= 1.034 \end{aligned}$$

If the portfolio is constructed with -0.0340% of NABIL common stock and 1.340% of STCL common stock, constructed portfolio will minimize risk and will be ideal proportion.

And portfolio return will be,

$$\begin{aligned} \bar{R}_P &= W_A \bar{R}_A + W_B \bar{R}_B \\ &= -0.340 \times 0.6630 + 1.340 \times 0.0669 \end{aligned}$$

$$= 4.67\%$$

Where,

The portfolio risk is given as,

$$\begin{aligned} \sigma_p &= \sqrt{w_A^2 \sigma_A^2 + w_B^2 \sigma_B^2 + 2w_A w_B \text{COV}(A, B)} \\ &= \sqrt{(0.3596)^2 \times (-0.0340)^2 + (0.0229)^2 \times (1.0340)^2 + 2 \times -0.0340 \times 1.0340 \times 0.0046} \\ &= \sqrt{0.00038} = 0.0195 = 1.95\% \end{aligned}$$

Using the diversification, we can reduce the risk. Standard deviation of NABIL and STCL was 35.96% and 2.29% respectively before the diversification. But after portfolio construction, portfolio standard deviation is 1.95%, which is lower than NABIL and STCL the risk before diversification.

4.6 Correlation Between Banks and Trading Companies

Most of the stocks are positively correlated, not perfectly. In this condition, some risk can be reduced. Correlation between the returns of the two securities plays a significant role in risk reduction, by portfolio construction. Here, correlation between each banks are presented below.

Correlation between NABIL and STCL (ρ_{AB}):-

We have,

$$\begin{aligned} \rho_{AB} &= \frac{\text{COV}_{AB}}{\sigma_A \sigma_B} \\ &= \frac{0.0046}{0.3596 \times 0.0229} = \frac{0.0046}{0.0082} = 0.5610 \end{aligned}$$

Where,

ρ_{AB} = Correlation of returns between NABIL and STCL

$\text{COV}(R_A R_B)$ = Covariance between NABIL and STCL

\dagger_A = Standard Deviation of NABIL

\dagger_B = Standard Deviation of STCL

Table 4.26

Correlations between each Bank and Trading Company

BANKS	NABIL	NIBL	SCBNL	STCL	BBCL	NWCL
NABIL	1	0.59	-0.15	0.23	0.12	-0.27
NIBL		1	-0.04	0.54	0.38	-0.09
SCBNL			1	-0.42	-0.02	-0.11
STCL				1	0.38	-0.04
BBCL					1	0.06
NWCL						1

Source: Appendix A₁₃ to A₂₇

There is perfectly correlation besides correlation between NABIL and STCL. There is some perfectly positive correlation. In positive correlation, some risk can be, reduced but in perfectly positive correlation (*i.e...._{ij} = +1*), any part of risk can be reduced by diversification. On the other hand, if the correlation is perfect negative (*i.e...._{ij} = -1*), then the proper combination of two securities can reduces all the risk. So, as long as correlation between securities return is negative, construction of portfolio is advisable.

4.7 Testing of Hypothesis

The hypothesis is based on the test of significance for difference of mean (t-test). For this expected returns of selected banks and trading companies are calculated in following table.

Table 4.27

Calculation of Expected Return, S.D. and C.V. of Selected Banks

Banks	R_j	$(R_j - \bar{R}_j)$	$(R_j - \bar{R}_j)^2$
NABIL	0.6630	0.0092	0.0000
NIBL	0.8795	0.2257	0.0509
SCBNL	0.4190	-0.2348	0.0551
Total	1.9615		0.106

We have,

$$\text{Expected Return } (\bar{R}_j) = \frac{\sum R_j}{n} = \frac{1.9615}{3} = \text{i.e. } 65.38\%$$

$$\text{Standard Deviation } (\dagger) = \sqrt{\frac{\sum (R_j - \bar{R}_j)^2}{n-1}} = \sqrt{\frac{0.106}{2}} = 0.2302$$

$$\text{C.V.} = \frac{\dagger_j}{R_j} = \frac{0.2302}{0.6538} = 0.3521$$

Null Hypothesis (H₀)

$\bar{R}_j = \bar{R}_m$, there is no significant difference between the average return of selected Banks and overall market return.

Alternative Hypothesis (H₁)

$\bar{R}_j \neq \bar{R}_m$, i.e. there is significance difference between the average return of selected Banks and overall market return.

Under the H₀, the test statistics (t) is $t = \frac{\bar{R}_j - \bar{R}_m}{\sqrt{S^2 \left(\frac{1}{n_1} + \frac{1}{n_2} \right)}}$

Where,

\bar{R}_j = Average return of the portfolio of C.S of selected Banks = 0.6538

\bar{R}_m = Average return of the market = 0.2678

$n_1 = n_2 =$ number of observation = 3

S^2 = Estimated standard Deviation of population and

$$S^2 = \frac{n_1 s_1^2 + n_2 s_2^2}{n_1 + n_2 - 2} = \frac{3 \times 0.2302 + 3 \times 0.2961}{3 + 3 - 2} = \frac{1.5789}{4} = 0.3947$$

S_1 = S.D. of returns of C.S. of selected banks = 0.2302

S_2 = S.D. of returns of C.S. of Market returns = 0.2961

Hence,

$$t = \frac{0.6538 - 0.2678}{\sqrt{0.3947 \left(\frac{1}{3} + \frac{1}{3} \right)}} = \frac{0.3860}{0.5127} = 0.7528$$

The tabulated value of t-statistics at $(n-1) = (3-1) = 2$ of freedom at 5% level of significance is 4.303.

Decision: Since the calculated value of t is less than the tabulated value, the null Hypothesis is accepted at 5% level of significance. In other words average return of C.S. of selected Banks and overall market is similar.

Table 4.28

Calculation of Expected Return, S.D. and C.V. of Selected Trading Co.

Trading Companies	R_j	$(R_j - \bar{R}_j)$	$(R_j - \bar{R}_j)^2$
STCL	0.0669	-0.0591	0.0034
BBCL	0.1853	0.0593	0.0035
NWCL	0.1257	-0.0003	0.0000
Total	0.3779		0.0069

We have,

$$\text{Expected Return } (\bar{R}_j) = \frac{\sum R_j}{n} = \frac{0.3779}{3} = 0.1260 \text{ or } 12.60\%$$

$$\text{Standard Deviation } (\dagger) = \sqrt{\frac{\sum (R_j - \bar{R}_j)^2}{n-1}} = \sqrt{\frac{0.0069}{2}} = 0.0587$$

$$\text{C.V.} = \frac{\dagger_j}{\bar{R}_j} = \frac{0.0587}{0.1260} = 0.4659$$

Null Hypothesis (H₀)

$\bar{R}_j = \bar{R}_m$, there is no significant difference between the average return of selected trading companies and overall market return.

Alternative Hypothesis (H₁)

$\bar{R}_j \neq \bar{R}_m$, i.e. there is significance difference between the average return of selected trading companies and overall market return.

Under the H₀, the test statistics (t) is $t = \frac{\bar{R}_j - \bar{R}_m}{\sqrt{S^2 \left(\frac{1}{n_1} + \frac{1}{n_2} \right)}}$

Where,

\bar{R}_j = Average return of the portfolio of C.S of selected Trading companies = 0.1260

\bar{R}_m = Average return of the market = 0.2678

$n_1 = n_2$ = number of observation = 3

S^2 = Estimated standard Deviation of population and

$$S^2 = \frac{n_1 s_1 + n_2 s_2}{n_1 + n_2 - 2} = \frac{3 \times 0.0587 + 3 \times 0.2961}{3 + 3 - 2} = \frac{1.0644}{4} = 0.2661$$

S_1 = S.D. of returns of C.S. of selected Trading companies = 0.0587

S_2 = S.D. of returns of C.S. of Market returns = 0.2961

Hence,

$$t = \frac{0.1260 - 0.2678}{\sqrt{0.2661 \left(\frac{1}{3} + \frac{1}{3} \right)}} = \frac{-0.1418}{0.4210} = -0.3368$$

Hence, $|t| = 0.3368$

The tabulated value of t-statistics at $(n-1) = (3-1) = 2$ of freedom at 5% level of significance is 4.303.

Decision: Since the calculated value of t is less than the tabulated value, the null Hypothesis is accepted at 5% level of significance. In other words, average return of C.S. of selected Trading companies and overall market is similar.

On the other hand, we compared the C.V of selected banks and trading companies and found that C.V of selected banks is less than trading companies. Therefore, the investment in banks is more consistent than in trading companies.

4.8 Analysis of Investors' Opinion

There are total 20 respondents who seem satisfied with their investment. Most of the Nepalese investors are least familiar with risk and return. They are found to invest in single security due to lack of information, poor knowledge and market intermediaries. So many investors are afraid to invest in stocks but there are few investors who are really concerned in stock market. Therefore, the opinion taken from these respondents are as follows.

Opinion from Respondents

1. Which sector of industry you prefer to invest and why?
 - A. Banking
 - B. Insurance and finance
 - C. Manufacturing and Processing

Questionnaire numbers	Number of Respondents		
	A	B	C
1	12	7	1

From the above table it is clear that the few investors are being quite concerned about their investment nowadays. Here the investors want to invest in banking industry (12), insurance and finance (7), and manufacturing and processing (1). Hence according to them, banking industry is most profitable and secured sector. They want to invest their savings to get higher return in future. Nowadays, some investors are slowly attracted towards insurance and finance also but almost none of the investors want to invest in manufacturing and processing. Therefore, they blamed the political situation of the country for this.

2. Which factor of company attracts you to invest in it and why?

- A. Net profit
- B. Earning per share
- C. Net Worth

Questionnaire numbers	Number of Respondents		
	A	B	C
2	7	5	8

In question number 2, we found that some investors invest in the company because of net profit (7), earning per share (5) and net worth (8). According to most of the investors, one should always invest in that security where there is less risk and higher return. Therefore, he/she should invest in such a company having positive net worth i.e. financially healthy. Net profit and earning per share also plays the great role to become the company healthy.

3. Which type of securities do you prefer to invest and why?

- A. Equity shares
- B. Preference shares
- C. Debentures

Questionnaire numbers	Number of Respondents		
	A	B	C
3	10	5	5

Among the 20 investors, 10 of them invested in equity shares, 5 in preference shares and 5 in debentures. The reason is most of the investors want to bear higher risk and gain higher return. Therefore, invested in equity shares. Rush in primary market during the primary issue is one of the example. Those investors who do not want to bear risk and gain higher return invested in preference share and debenture by having fixed rate of interest.

4. For what purpose do you think investors own the share of the company?
- A. Capital gain
 - B. Social status
 - C. Dividend

Questionnaire numbers	Number of Respondents		
	A	B	C
4	2	6	12

The last question says that the most of the investors buy the securities for the purpose of capital gain (12), social status (6), and dividend (2). This implies that most of the investors like to invest for capital gain. They invest only keeping the return in mind but they are found unable to calculate the risk factor of security. It seems that very few investors have the knowledge of risk diversification by using portfolio of their investment.

4.9 Major Findings

The section includes the key findings of the study obtained from the analysis of data. Conclusions derived from the findings are presented in the next chapter.

- Expected return on the common stock (C.S.) of NABIL is maximum (66.30% which is high rate of return). In reality this rate exists only due to the effect of unrealistic annual return because of the issue of the bonus share and increase in share price. Whereas expected return of the C.S. of STCL is found minimum i.e. 6.69%
- Risk is the variability of returns which is measured in terms of Standard Deviation (S.D). On the basis of S.D, C.S of NIBL is more risky and C.S of STCL is less risky because of its lowest S.D. On the other hand, we know that Coefficient of Variation (C.V) is more rational basis of investment decision, which measures the risk per unit of return. On the basis of C.V, common stock of STCL is the best among the banks and trading companies. STCL has 0.3423 unit of risk per 1 unit of return. But C.S. of NWCL has highest risk per 1 unit of return i.e 3.3890.
- Beta coefficient explains the sensitivity or volatility of the stock with market. Higher the beta, greater the volatility. In this context, Common stock of NABIL is most volatile i.e. 1.0832 and, and common stock of NWCL is least volatile (i.e. = -0.1881). The stock having the beta more than beta coefficient of market i.e. more than 1 is aggressive type of common stock and less than 1 is defensive stock.
- Among the banks, the market capitalization of SCBNL is in the highest position i.e. 42337.95 millions and NIBL is in lowest position i.e.24564.54 millions. Whereas, among the trading companies, the market capitalization of BBCL is in the highest position i.e. 600.87 millions and NWCL is in the lowest position i.e. 3.85 millions. The inter industry comparison has placed

the banking industry in the top position i.e. Rs 199214.22 millions and the trading industry in the bottom position i.e. 846.71

- The study of commercial banks and trading companies show that NIBL, SCBNL, STCL, and NWCL are under priced. This means that the stock value will be increased in future. All stocks are in demand. So, investor can buy the common stock of these companies. But the common stock of NABIL and BBCL is overpriced. This means that the value will be decreased in future. So, the investors can sell the common stocks of NABIL and BBCL.
- In the study, the correlation between NABIL and SCBNL, NABIL and NWCL, NIBL and SCBNL, NIBL and NWCL, SCBNL and STCL, SCBNL and BBCL, SCBNL and NWCL, STCL and NWCL is negative. It means that if the investors invest in these securities, the risk can be reduced totally whereas the correlation between the other industries is positive. Hence, the risk reduction is not so significant.
- From the analysis of primary data, among 20 people, 12 are found investing in stock for the capital gain, 6 for social status and 2 for dividend. Most of the investors invest only keeping the return in mind but they are found unable to calculate the risk factor of the security. Most of the Nepalese private investors invest in single security. Some of the investors use their fund in two or more securities. But, it is found that they don't make any analysis of portfolio before selecting security. It seems that they don't have knowledge of the risk diversification by using portfolio of their investment.

CHAPTER - V

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

Risk and Return is getting considerable attention in financial management. The relationship between risk and return is described by investor's perception about risk and their demand of compensation. No investors will like to invest in risky and their demand for compensation. No investors will like to invest in risky assets unless he/she is assured of adequate compensation for the acceptance of risk. Hence, risk plays a central role in the analysis of investment.

Common stock is the most risky security and life blood of stock market. Because of higher expected return an investment in common stock of a corporate firm neither ensures an annual return nor ensures the return of principal. Therefore investment in the common stock is very sensitive on the ground of risk. Common Stock has attracted more investors in Nepal. Rush in the primary market during the primary issue is one of the examples.

The main objective of the study is to analyze the risk and return in common stock investment of Nepalese stock market. The study is focused on the common stock of listed Commercial Banks and Trading Companies. Tables, graphs and diagrams are used to present the data and results more clearly. Both quantitative and qualitative analyses have performed by using statistical tools as well as personal judgement. Secondary data are collected from the NEPSE, NRB, SEBO/N and related banks and trading companies. Other subjective types of information are collected through personal interview with 20 people from private investors, financial executives of companies and official of NRB, SEBO/N and NEPSE. Findings of analysis are summarized and conclusions are drawn as follows.

5.2 Conclusion

This study enables investors to put the returns they can expect and the risks they may take into better perspective. We know that Nepalese stock market is in effect of openness and liberalization in national economy. But, Nepalese individual investors cannot analyze the securities as well as market properly because of the lack of information and poor knowledge about the analysis of securities for investment.

- Expected return on the common stock (C.S.) of NABIL is maximum. This rate exists only due to the effect of unrealistic annual return because of the issue of the bonus share and increase in share price. Whereas expected return of the C.S. of STCL is found minimum .
- Common stock of NIBL is more risky and common stock of STCL is less risky because of its lowest S.D. On the other hand, common stock of STCL is the best among the banks and trading companies. STCL has 0.3423 unit of risk per 1 unit of return. But C.S. of NWCL has highest risk per 1 unit of return i.e 3.3890.
- Beta coefficient explains the sensitivity or volatility of the stock with market.Hence, higher the beta, greater the volatility.
- The inter industry comparison has placed the banking industry in the top position and the trading industry in the bottom position .
- The study of commercial banks and trading companies show that NIBL, SCBNL, STCL, and NWCL are in demand. So, investor can buy the common stock of these companies. But the common stock of NABIL and BBCL is

overpriced. So, the investors can sell the common stocks of NABIL and BBCL.

- The investors investing in negative securities, reduced the risk totally whereas the risk reduction is not so significant between the positive securities .
- Most of the Nepalese private investors invest in single security. Some of the investors use their fund in two or more securities. But, it is found that they don't make any analysis of portfolio before selecting security. It seems that they don't have knowledge of the risk diversification by using portfolio of their investment.

5.3 Recommendations

Mainly this study is focused on individual investors. Other related components of stock market are also taken into account to some extent. The following recommendations and suggestions are prescribed on the basis of data analysis and major findings of this research.

- Here, the common stock of NIBL, SCBNL and STCL are under priced. So, these stocks have good investment opportunity. This stock value will be increased in future providing the investor highest return. So this stock is recommended to buy. But NABIL and BBCL are overpriced; investors get loss from buying this stock. This stock is recommended to sell. To win the market, sell share when the market is rising and buy share when the market is falling and hold share, which will perform better than market.
- Different financial and statistical tools are considered to analyze the data in this study. Coefficient of Variation (C.V.) suggests the industry for the best

to invest. Similarly, while analyzing individual security STCL seems to undoubtedly the best for the investment with considering the full time horizon of the study.

- Common Stock of NIBL, STCL, BBCL and NWCL may be the best investment opportunity for the investors. Whose beta is also lower than the beta coefficient of market (i.e. 1). So, it is less risky or defensive type of stock. Hence, it is prescribed to select the Common Stock of these industries for individual stock investment.
- Investors need to diversify their fund to reduce risk. From the portfolio construction, if we select the stocks that have higher return will not correlate stock or negatively correlate stock. properly. So, the construction of portfolio between the common stock of NABIL and STCL is recommended.
- Investors should make several discussions with stock broker before reaching at the decision. Investors should make their decision on the basis of reliable information rather than the imaginations and rumors.
- Investment clubs are good way to exchange and share investment ideas. In Nepal, there are no any such types of club. Mutual fund is worthwhile for people with little interest in investment. So, sharing experience, ideas and taking view of expert will be of great help.
- NEPSE needs to initiate to develop different programs for private investors such as investors meeting and seminars in different subject matters like “Trading Rules and Regulations” etc. On the other hand, NEPSE is following “open cry system” of trading even in the age of digital technology. It should be modernized. It needs to develop efficient and effective information channel and to provide up to date data.

- Government needs to amend the rules and regulations regarding stock market in time to time and to make the policy that protect the individual investor's right. On that regard, Nepal Government needs to monitor and to make active all the components of stock market properly other wise it will be meaning less. The political problem of the country is another burning issue, which affect the economy of the nation adversely.
- The corporate firm should communicate and disclose the real financial statements. Value of assets and liabilities should not be manipulated to report the under and over profitability. Every decision of the corporation should be made to maximize the value of the firm and value per share.

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QUESTIONNAIRE

Specimen of Questionnaire Distributed to Investors and Financial Executives

Name of the Respondent:

- 1. Which sector of industry you prefer to invest and why?**
 - a. Banking
 - b. Insurance and finance
 - c. Production and manufacturing

- 2. Which factor of company attracts you to invest in it and why?**
 - a. Net profit
 - b. Earning per share
 - c. Net worth

- 3. Which type of securities do you prefer to invest and why?**
 - a. Equity share
 - b. Preference share
 - c. Debenture

- 4. For what purpose do you think investors own the shares of the company?**
 - a. Dividend
 - b. Social status
 - c. Capital gain

Annex - 1

Calculation of Return, S.D., Expected Return and C.V. of Banking Industry

Year	NEPSE Index (NI)	$R_b = \frac{NI_t - NI_{t-1}}{NI_{t-1}}$	$R_m - \overline{R_m}$	$(R_m - \overline{R_m})^2$
2002/03	200.67	-	-	-
2003/04	231.97	-0.1560	-0.5349	0.2861
2004/05	304.64	0.3133	-0.0656	0.0043
2005/06	325.35	0.0680	-0.3109	0.0967
2006/07	789.21	0.2257	-0.1532	0.0235
2007/08	986.47	1.4438	1.0649	1.1340
TOTAL		1.8948		1.5446

We have,

$$\text{Expected Return } (\overline{R_m}) = \frac{\sum R_m}{n} = \frac{1.8948}{5} = 0.3789 \text{ i.e. } 37.89\%$$

$$\text{Standard Deviation } (\dagger_m) = \sqrt{\frac{\sum (R_m - \overline{R_m})^2}{n-1}} = \sqrt{\frac{1.5446}{4}} = \sqrt{0.3862} = 0.6214$$

$$\text{C.V.} = \frac{\dagger_m}{\overline{R_m}} = \frac{0.6214}{0.3789} = 1.6400$$

Annex - 2

Calculation of Return, S.D., Expected Return and C.V. of Mfg. & Proc. Industry

Year	NEPSE Index (NI)	$R_m = \frac{NI_t - NI_{t-1}}{NI_{t-1}}$	$R_m - \overline{R_m}$	$(R_m - \overline{R_m})^2$
2002/03	251.22	-	-	-
2003/04	255.58	0.1474	1.0436	1.0891
2004/05	276.50	0.0889	-0.0149	0.0002
2005/06	291.68	0.0856	-0.0182	0.0003
2006/07	348.63	0.0957	-0.0081	0.0000
2007/08	418.82	0.1015	-0.0023	0.0000
TOTAL		0.5191		1.0896

We have,

$$\text{Expected Return } (\overline{R_m}) = \frac{\sum R_m}{n} = \frac{0.5191}{5} = 0.10381 \text{ i.e. } 10.38\%$$

$$\text{Standard Deviation } (t_m) = \sqrt{\frac{\sum (R_m - \overline{R_m})^2}{n-1}} = \sqrt{\frac{1.0896}{4}} = \sqrt{0.2724} = 0.5219$$

$$\text{C.V.} = \frac{t_m}{\overline{R_m}} = \frac{0.5219}{0.1038} = 5.028$$

Annex - 3

Calculation of Return, S.D., Expected Return and C.V. of Hotel Industry

Year	NEPSE Index (NI)	$R_m = \frac{NI_t - NI_{t-1}}{NI_{t-1}}$	$R_m - \overline{R_m}$	$(R_m - \overline{R_m})^2$
2002/03	197.07	-	-	-
2003/04	197.07	0.0000	-0.0418	0.0017
2004/05	178.00	-0.0968	-0.1386	0.0192
2005/06	186.10	-0.0457	-0.0075	0.0000
2006/07	251.47	0.1512	0.1094	0.0120
2007/08	380.66	0.2201	0.1783	0.0318
TOTAL		0.2088		0.2375

We have,

$$\text{Expected Return } (\overline{R_m}) = \frac{\sum R_m}{n} = \frac{0.2088}{5} = 0.0418$$

$$\text{Standard Deviation } (t_m) = \sqrt{\frac{\sum (R_m - \overline{R_m})^2}{n-1}} = \sqrt{\frac{0.2375}{4}} = \sqrt{0.0594} = 0.2437$$

$$\text{C.V.} = \frac{t_m}{\overline{R_m}} = \frac{0.2437}{0.0418} = 5.8301$$

Annex - 4

Calculation of Return, S.D., Expected Return and C.V. of Trading Industry

Year	NEPSE Index (NI)	$R_m = \frac{NI_t - NI_{t-1}}{NI_{t-1}}$	$R_m - \overline{R_m}$	$(R_m - \overline{R_m})^2$
2002/03	94.56	-	-	-
2003/04	95.01	0.0048	-0.1206	0.0145
2004/05	123.20	0.2967	0.1713	0.0293
2005/06	126.91	-0.0301	-0.1555	0.0242
2006/07	155.37	0.1243	-0.0011	0.0000
2007/08	213.40	0.2314	0.1060	0.0112
TOTAL		0.6271		0.0792

We have,

$$\text{Expected Return } (\overline{R_m}) = \frac{\sum R_m}{n} = \frac{0.6271}{5} = 0.1254$$

$$\text{Standard Deviation } (\dagger_m) = \sqrt{\frac{\sum (R_m - \overline{R_m})^2}{n-1}} = \sqrt{\frac{0.0792}{4}} = \sqrt{0.0198} = 0.1407$$

$$\text{C.V.} = \frac{\dagger_m}{\overline{R_m}} = \frac{0.1407}{0.1254} = 1.1220$$

Annex - 5

Calculation of Return, S.D., Expected Return and C.V. of Fin & Ins. Industry

Year	NEPSE Index (NI)	$R_m = \frac{NI_t - NI_{t-1}}{NI_{t-1}}$	$R_m - \overline{R_m}$	$(R_m - \overline{R_m})^2$
2002/03	449.11	-	-	-
2003/04	237.62	-0.2709	-0.4420	0.1954
2004/05	237.86	0.0010	-0.1701	0.0289
2005/06	229.69	-0.0334	-0.2045	0.0418
2006/07	612.46	-0.2663	-0.4374	0.1913
2007/08	841.59	1.4251	1.2540	1.5725
TOTAL		0.8555		2.0299

We have,

$$\text{Expected Return } (\overline{R_m}) = \frac{\sum R_m}{n} = \frac{0.8555}{5} = 0.1711$$

$$\text{Standard Deviation } (\dagger_m) = \sqrt{\frac{\sum (R_m - \overline{R_m})^2}{n-1}} = \sqrt{\frac{2.0299}{4}} = \sqrt{0.5075} = 0.7124$$

$$\text{C.V.} = \frac{\dagger_m}{\overline{R_m}} = \frac{0.7124}{0.1711} = 4.1636$$

Annex - 6

Calculation of Return, S.D., Expected Return and C.V. of Others Industry

Year	NEPSE Index (NI)	$R_m = \frac{NI_t - NI_{t-1}}{NI_{T-1}}$	$R_m - \overline{R_m}$	$(R_m - \overline{R_m})^2$
2002/03	47.91	-	-	-
2003/04	142.65	-0.9775	-1.7247	2.9746
2004/05	347.65	1.4371	0.6899	0.4760
2005/06	335.09	-0.0461	-0.7933	0.6293
2006/07	818.12	1.5415	0.7943	0.6309
2007/08	417.47	1.7812	1.0340	1.0692
TOTAL		3.7362		5.7800

We have,

$$\text{Expected Return } (\overline{R_m}) = \frac{\sum R_m}{n} = \frac{3.7362}{5} = 0.7472$$

$$\text{Standard Deviation } (\dagger_m) = \sqrt{\frac{\sum (R_m - \overline{R_m})^2}{n-1}} = \sqrt{\frac{5.7800}{4}} = \sqrt{1.4450} = 1.2021$$

$$\text{C.V.} = \frac{\dagger_m}{\overline{R_m}} = \frac{1.2021}{0.7472} = 1.6088$$

Annex - 7

Calculation of Beta Coefficient of the C.S. of NABIL

Year	($R_j - \bar{R}_j$)	($R_m - \bar{R}_m$)	($R_j - \bar{R}_j$)($R_m - \bar{R}_m$)
2003/04	-0.2344	-0.3496	0.0819
2004/05	-0.0930	-0.1871	0.0174
2005/06	0.1281	0.0233	-0.0030
2006/07	0.6361	0.0816	0.0519
2007/08	-0.1808	0.4318	-0.2317
Total			0.3797

We have,

$$COV(R_j - R_m) = \frac{\sum (R_j - \bar{R}_j)(R_m - \bar{R}_m)}{n - 1}$$

$$= \frac{0.3797}{5 - 1} = 0.0950$$

$$S_i = \frac{COV(R_i - R_m)}{\uparrow m^2} = \frac{0.0950}{0.2961^2} = \frac{0.0950}{0.0877} = 1.0832$$

Annex - 8

Calculation of Beta Coefficient of the C.S. of NIBL

Year	($R_j - \bar{R}_j$)	($R_m - \bar{R}_m$)	($R_j - \bar{R}_j$)($R_m - \bar{R}_m$)
2003/04	0.5104	-0.3496	-0.1784
2004/05	-1.0072	-0.1871	0.1884
2005/06	-0.2732	0.0233	-0.0064
2006/07	0.8753	0.0816	0.0714
2007/08	-0.1051	0.4318	-0.0454
Total			0.1274

We have,

$$COV(R_j - R_m) = \frac{\sum (R_j - \bar{R}_j)(R_m - \bar{R}_m)}{n - 1}$$

$$= \frac{0.1274}{5 - 1} = 0.0319$$

$$S_i = \frac{COV(R_i - R_m)}{\sigma_m^2} = \frac{0.0319}{0.2961^2} = \frac{0.0319}{0.0877} = 0.3632$$

Annex - 9

Calculation of Beta Coefficient of the C.S. of SCBNL

Year	($R_j - \bar{R}_j$)	($R_m - \bar{R}_m$)	($R_j - \bar{R}_j$)($R_m - \bar{R}_m$)
2003/04	-0.2879	-0.3496	0.1006
2004/05	0.1225	-0.1871	-0.0229
2005/06	0.2377	0.0233	0.0055
2006/07	0.1757	0.0816	0.0143
2007/08	0.1712	0.4318	0.0739
Total			0.1714

We have,

$$COV(R_j - R_m) = \frac{\sum (R_j - \bar{R}_j)(R_m - \bar{R}_m)}{n - 1}$$

$$= \frac{0.1714}{5 - 1} = 0.0429$$

$$S_i = \frac{COV(R_i - R_m)}{\sigma_m^2} = \frac{0.0429}{0.2961^2} = \frac{0.0429}{0.0877} = 0.4892$$

Annex - 10

Calculation of Beta Coefficient of the C.S. of STCL

Year	($R_j - \bar{R}_j$)	($R_m - \bar{R}_m$)	($R_j - \bar{R}_j$)($R_m - \bar{R}_m$)
2003/04	-0.0039	-0.3496	0.0014
2004/05	-0.0320	-0.1871	0.0060
2005/06	-0.0068	0.0233	-0.0002
2006/07	0.0125	0.0816	0.0010
2007/08	0.0300	0.4318	0.0130
Total			0.0212

We have,

$$COV(R_j - R_m) = \frac{\sum (R_j - \bar{R}_j)(R_m - \bar{R}_m)}{n - 1}$$

$$= \frac{0.0212}{5 - 1} = 0.0053$$

$$S_i = \frac{COV(R_i - R_m)}{\sigma_m^2} = \frac{0.0053}{0.2916^2} = \frac{0.0053}{0.0877} = 0.0604$$

Annex - 11

Calculation of Beta Coefficient of the C.S. of BBCL

Year	($R_j - \bar{R}_j$)	($R_m - \bar{R}_m$)	($R_j - \bar{R}_j$)($R_m - \bar{R}_m$)
2003/04	0.2525	-0.3496	-0.0833
2004/05	0.0992	-0.1871	-0.0186
2005/06	-0.1144	0.0233	-0.0026
2006/07	0.0563	0.0816	0.00460
2007/08	0.2935	0.4318	-0.1267
Total			-0.0218

We have,

$$COV(R_j - R_m) = \frac{\sum (R_j - \bar{R}_j)(R_m - \bar{R}_m)}{n-1}$$

$$= \frac{0.0218}{5-1} = 0.0055$$

$$S_i = \frac{COV(R_i - R_m)}{\sigma_m^2} = \frac{0.0055}{0.2916^2} = \frac{0.0055}{0.0877} = 0.0627$$

Annex - 12

Calculation of Beta Coefficient of the C.S. of NWCL

Year	($R_j - \bar{R}_j$)	($R_m - \bar{R}_m$)	($R_j - \bar{R}_j$)($R_m - \bar{R}_m$)
2003/04	0.1686	-0.3496	-0.0589
2004/05	-0.0757	-0.1871	0.0142
2005/06	0.0848	0.0233	0.0020
2006/07	-0.1757	0.0816	-0.0143
2007/08	-0.0204	0.4318	-0.0083
Total			-0.0658

We have,

$$COV(R_j - R_m) = \frac{\sum (R_j - \bar{R}_j)(R_m - \bar{R}_m)}{n-1}$$

$$= \frac{-0.0658}{5-1} = -0.0165$$

$$S_i = \frac{COV(R_i - R_m)}{\sigma_m^2} = \frac{-0.0165}{0.2916^2} = \frac{-0.0165}{0.0877} = -0.1881$$

Annex - 13

Calculation of Correlation between NABIL and NIBL

Year	($R_A - \bar{R}_A$)	($R_B - \bar{R}_B$)	($R_A - \bar{R}_A$)($R_B - \bar{R}_B$)
2003/04	-0.2344	0.5104	-0.1196
2004/05	-0.0930	-1.0072	0.0937
2005/06	-0.1281	0.2732	0.0768
2006/07	0.6361	0.8753	0.5568
2007/08	-0.1808	-0.1051	0.0190
Total			0.6267

We have,

$$COV(R_A - R_B) = \frac{\sum (R_A - \bar{R}_A)(R_B - \bar{R}_B)}{n-1} = \frac{0.6267}{5-1} = \frac{0.6267}{4} = 0.1567$$

$$\dots_{AB} = \frac{COV(R_A - R_B)}{\uparrow_A \uparrow_B} = \frac{0.1567}{0.4573 \times 1.1439} = 0.59$$

Annex - 14

Calculation of Correlation between NABIL and SCBNL

Year	($R_A - \bar{R}_A$)	($R_B - \bar{R}_B$)	($R_A - \bar{R}_A$)($R_B - \bar{R}_B$)
2003/04	-0.2344	-0.2879	-0.0675
2004/05	-0.0930	0.1225	-0.0114
2005/06	-0.1281	0.2377	-0.0304
2006/07	0.6361	0.1757	0.0112
2007/08	-0.1808	-0.2478	0.0448
Total			-0.0533

We have,

$$COV(R_A - R_B) = \frac{\sum(R_A - \bar{R}_A)(R_B - \bar{R}_B)}{n-1} = \frac{-0.0533}{5-1} = \frac{-0.0533}{4} = -0.0133$$

$$\dots_{AB} = \frac{COV(R_A - R_B)}{\uparrow_A \uparrow_B} = \frac{-0.0133}{0.4573 \times 0.1253} = -0.15$$

Annex - 15

Calculation of Correlation between NABIL and STCL

Year	($R_A - \bar{R}_A$)	($R_B - \bar{R}_B$)	($R_A - \bar{R}_A$)($R_B - \bar{R}_B$)
2003/04	-0.2344	-0.0039	0.0009
2004/05	-0.0930	-0.032	0.0030
2005/06	-0.1281	-0.0068	0.0009
2006/07	0.6361	0.0125	0.0080
2007/08	-0.1808	0.0300	-0.0054
Total			0.0074

We have,

$$COV(R_A - R_B) = \frac{\sum (R_A - \bar{R}_A)(R_B - \bar{R}_B)}{n - 1} = \frac{0.0074}{5 - 1} = \frac{0.0074}{4} = 0.0019$$

$$\dots_{AB} = \frac{COV(R_A - R_B)}{\uparrow_A \uparrow_B} = \frac{0.0019}{0.4573 \times 0.0206} = 0.23$$

Annex - 16

Calculation of Correlation between NABIL and BBCL

Year	($R_A - \bar{R}_A$)	($R_B - \bar{R}_B$)	($R_A - \bar{R}_A$)($R_B - \bar{R}_B$)
2003/04	-0.2344	0.2525	-0.0592
2004/05	-0.0930	0.0992	-0.0092
2005/06	-0.1281	-0.1144	0.0147
2006/07	0.6361	0.0563	0.0358
2007/08	-0.1808	-0.2935	0.0531
Total			0.0352

We have,

$$COV(R_A - R_B) = \frac{\sum(R_A - \bar{R}_A)(R_B - \bar{R}_B)}{n - 1} = \frac{0.0352}{4} = 0.0088$$

$$\dots_{AB} = \frac{COV(R_A - R_B)}{\uparrow_A \uparrow_B} = \frac{0.0088}{0.4573 \times 0.2253} = 0.12$$

Annex - 17

Calculation of Correlation between NABIL and NWCL

Year	($R_A - \bar{R}_A$)	($R_B - \bar{R}_B$)	($R_A - \bar{R}_A$)($R_B - \bar{R}_B$)
2003/04	-0.2344	0.1686	-0.0395
2004/05	-0.0930	0.0757	-0.0070
2005/06	-0.1281	0.0848	-0.0109
2006/07	0.6361	-0.1757	-0.1118
2007/08	-0.1808	-0.0204	0.0037
Total			-0.1655

We have,

$$COV(R_A - R_B) = \frac{\sum (R_A - \bar{R}_A)(R_B - \bar{R}_B)}{n - 1} = \frac{-0.1665}{5 - 1} = \frac{-0.1665}{4} = -0.0414$$

$$\dots_{AB} = \frac{COV(R_A - R_B)}{\uparrow_A \uparrow_B} = \frac{-0.0414}{0.4573 \times 0.2025} = -0.27$$

Annex - 18

Calculation of Correlation between NIBL and SCBNL

Year	($R_A - \bar{R}_A$)	($R_B - \bar{R}_B$)	($R_A - \bar{R}_A$)($R_B - \bar{R}_B$)
2003/04	0.5104	-0.2879	-0.1470
2004/05	-1.0072	0.1225	-0.1234
2005/06	0.2732	0.2377	0.0650
2006/07	0.8753	0.1757	0.1538
2007/08	-0.1051	-0.2478	0.0260
Total			-0.0256

We have,

$$COV(R_A - R_B) = \frac{\sum(R_A - \bar{R}_A)(R_B - \bar{R}_B)}{n - 1} = \frac{-0.0256}{5 - 1} = \frac{-0.0256}{4} = -0.0064$$

$$\dots_{AB} = \frac{COV(R_A - R_B)}{\uparrow_A \uparrow_B} = \frac{-0.0064}{0.7292 \times 0.2484} = -0.04$$

Annex - 19

Calculation of Correlation between NIBL and STCL

Year	$(R_A - \bar{R}_A)$	$(R_B - \bar{R}_B)$	$(R_A - \bar{R}_A)(R_B - \bar{R}_B)$
2003/04	0.5104	-0.0039	-0.0019
2004/05	-1.0072	-0.032	0.0322
2005/06	0.2732	-0.0068	-0.0019
2006/07	0.8753	0.0125	0.0109
2007/08	-0.1051	0.0300	-0.0032
Total			0.0361

We have,

$$COV(R_A - R_B) = \frac{\sum (R_A - \bar{R}_A)(R_B - \bar{R}_B)}{n - 1} = \frac{0.0361}{5 - 1} = \frac{0.0361}{4} = 0.0090$$

$$\dots_{AB} = \frac{COV(R_A - R_B)}{\uparrow_A \uparrow_B} = \frac{0.0090}{0.7292 \times 0.0229} = 0.54$$

Annex - 20

Calculation of Correlation between NIBL and BBCL

Year	($R_A - \bar{R}_A$)	($R_B - \bar{R}_B$)	($R_A - \bar{R}_A$)($R_B - \bar{R}_B$)
2003/04	0.5104	0.2525	0.1289
2004/05	-1.0072	0.0992	-0.0100
2005/06	0.2732	-0.1144	0.0313
2006/07	0.8753	0.0563	0.0493
2007/08	-0.1051	-0.2935	0.0308
Total			0.2303

We have,

$$COV(R_A - R_B) = \frac{\sum(R_A - \bar{R}_A)(R_B - \bar{R}_B)}{n-1} = \frac{0.2303}{5-1} = \frac{0.2303}{4} = 0.0576$$

$$\dots_{AB} = \frac{COV(R_A - R_B)}{\uparrow_A \uparrow_B} = \frac{0.0576}{0.7292 \times 0.2098} = 0.38$$

Annex - 21

Calculation of Correlation between NIBL and NWCL

Year	($R_A - \bar{R}_A$)	($R_B - \bar{R}_B$)	($R_A - \bar{R}_A$)($R_B - \bar{R}_B$)
2003/04	0.5104	0.1686	0.0861
2004/05	-1.0072	0.0757	-0.0762
2005/06	0.2732	0.0848	0.0232
2006/07	0.8753	-0.1757	-0.1538
2007/08	-0.1051	-0.0204	0.0021
Total			-0.1186

We have,

$$COV(R_A - R_B) = \frac{\sum(R_A - \bar{R}_A)(R_B - \bar{R}_B)}{n - 1} = \frac{-0.1186}{5 - 1} = \frac{-0.1186}{4} = -0.0297$$

$$\dots_{AB} = \frac{COV(R_A - R_B)}{\uparrow_A \uparrow_B} = \frac{-0.0297}{0.7292 \times 0.4260} = -0.09$$

Annex - 22

Calculation of Correlation between SCBNL and STCL

Year	($R_A - \bar{R}_A$)	($R_B - \bar{R}_B$)	($R_A - \bar{R}_A$)($R_B - \bar{R}_B$)
2003/04	-0.2879	-0.0039	0.0011
2004/05	0.1225	-0.032	-0.0040
2005/06	0.2377	-0.0068	-0.0016
2006/07	0.1757	0.0125	0.0022
2007/08	-0.2478	0.0300	-0.0074
Total			-0.0097

We have,

$$COV(R_A - R_B) = \frac{\sum(R_A - \bar{R}_A)(R_B - \bar{R}_B)}{n - 1} = \frac{-0.0097}{5 - 1} = \frac{-0.0097}{4} = -0.0024$$

$$\dots_{AB} = \frac{COV(R_A - R_B)}{\dagger_A \dagger_B} = \frac{-0.0024}{0.2484 \times 0.0229} = -0.42$$

Annex - 23

Calculation of Correlation between SCBNL and BBCL

Year	($R_A - \bar{R}_A$)	($R_B - \bar{R}_B$)	($R_A - \bar{R}_A$)($R_B - \bar{R}_B$)
2003/04	-0.2879	0.2525	-0.0727
2004/05	0.1225	0.0992	0.0122
2005/06	0.2377	-0.1144	-0.0272
2006/07	0.1757	0.0563	0.0099
2007/08	-0.2478	-0.2935	0.0727
Total			-0.0051

We have,

$$COV(R_A - R_B) = \frac{\sum(R_A - \bar{R}_A)(R_B - \bar{R}_B)}{n - 1} = \frac{-0.0051}{5 - 1} = \frac{-0.0051}{4} = -0.0013$$

$$\dots_{AB} = \frac{COV(R_A - R_B)}{\uparrow_A \uparrow_B} = \frac{-0.0013}{0.2484 \times 0.2098} = -0.02$$

Annex - 24

Calculation of Correlation between SCBNL and NWCL

Year	($R_A - \bar{R}_A$)	($R_B - \bar{R}_B$)	($R_A - \bar{R}_A$)($R_B - \bar{R}_B$)
2003/04	-0.2879	0.1686	-0.0485
2004/05	0.1225	0.0757	0.0093
2005/06	0.2377	0.0848	0.0202
2006/07	0.1757	-0.1757	-0.0309
2007/08	-0.2478	-0.0204	0.0051
Total			-0.0448

We have,

$$COV(R_A - R_B) = \frac{\sum (R_A - \bar{R}_A)(R_B - \bar{R}_B)}{n - 1} = \frac{-0.0448}{5 - 1} = \frac{-0.0448}{4} = -0.0112$$

$$\dots_{AB} = \frac{COV(R_A - R_B)}{\uparrow_A \uparrow_B} = \frac{-0.0112}{0.2484 \times 0.4260} = -0.11$$

Annex - 25

Calculation of Correlation between STCL and BBCL

Year	$(R_A - \bar{R}_A)$	$(R_B - \bar{R}_B)$	$(R_A - \bar{R}_A)(R_B - \bar{R}_B)$
2003/04	-0.0039	0.2525	-0.0001
2004/05	-0.032	0.0992	-0.0032
2005/06	-0.0068	-0.1144	0.0008
2006/07	0.0125	0.0563	0.0007
2007/08	0.0300	-0.2935	0.0088
Total			0.0070

We have,

$$COV(R_A - R_B) = \frac{\sum(R_A - \bar{R}_A)(R_B - \bar{R}_B)}{n-1} = \frac{0.0070}{5-1} = \frac{0.0070}{4} = 0.0018$$

$$\dots_{AB} = \frac{COV(R_A - R_B)}{\uparrow_A \uparrow_B} = \frac{0.0018}{0.0229 \times 0.2098} = 0.38$$

Annex - 26

Calculation of Correlation between STCL and NWCL

Year	$(R_A - \bar{R}_A)$	$(R_B - \bar{R}_B)$	$(R_A - \bar{R}_A)(R_B - \bar{R}_B)$
2003/04	-0.0039	0.1686	-0.0007
2004/05	-0.032	0.0757	0.0024
2005/06	-0.0068	0.0848	-0.0006
2006/07	0.0125	-0.1757	-0.0022
2007/08	0.0300	-0.0204	-0.0006
Total			-0.0017

We have,

$$COV(R_A - R_B) = \frac{\sum (R_A - \bar{R}_A)(R_B - \bar{R}_B)}{n-1} = \frac{-0.0017}{5-1} = \frac{-0.0017}{4} = -0.0004$$

$$\dots_{AB} = \frac{COV(R_A - R_B)}{\uparrow_A \uparrow_B} = \frac{-0.0004}{0.0229 \times 0.4260} = -0.04$$

Annex - 27

Calculation of Correlation between BBCL and NWCL

Year	$(R_A - \bar{R}_A)$	$(R_B - \bar{R}_B)$	$(R_A - \bar{R}_A)(R_B - \bar{R}_B)$
2003/04	0.2525	0.1686	0.0426
2004/05	0.0992	0.0757	-0.0075
2005/06	-0.1144	0.0848	-0.0097
2006/07	0.0563	-0.1757	-0.0099
2007/08	-0.2935	-0.0204	0.0060
Total			0.0215

We have,

$$COV(R_A - R_B) = \frac{\sum(R_A - \bar{R}_A)(R_B - \bar{R}_B)}{n-1} = \frac{0.0215}{5-1} = \frac{0.0215}{4} = 0.0054$$

$$\dots_{AB} = \frac{COV(R_A - R_B)}{\dagger_A \dagger_B} = \frac{0.0054}{0.2098 \times 0.4260} = 0.06$$