CHAPTER I
INTRODUCTION

1.1 BACKGROUND OF THE STUDY

Changing nature of competition and increasing pressure of globalization on today's business world, investment management has become the most critical determinant of the economy. The continuous change in political, economical, social and technological dimensions is the most fact of international business operation. External changes are beyond the control of international business concern. In recent years international investors are attracted towards the financial markets of developing countries like Nepal. As a result many joint ventures and multinational companies are being established in Nepal. Most of commercial banks doing well are also joint venture banks.

"A financial institution that offers a full range of financial services to individuals, businesses and government agencies is commercial bank" [Kapoor, et al, 2002].

Commercial banks are essential part of the business activities which are established to safeguard people's money and there by using the money in making loans and investments. There are many commercial banks which invest their money in some profitable financial sectors which may result in profitable business in long run. Human nature does not satisfy for whatever s/he has at present. S/He tends to have more than whatever s/he has at present. So, expecting the additional return s/he tends to sacrifice the current resources. Whatever we talk about the return, risk too must not be avoided, because in every type of return, risk is involved. "Every investment entails some degree of risk, i.e. requires at present certain sacrifice for a future uncertain benefits" [Francies et al, 2000].

"Risk refers a set of unique outcomes for a given event which can be assigned

probabilities, while uncertainty refers to the outcomes of a given event which are unsure to be assigned" [Khan et al, 2000].

"As we will see, diversification has a profound effect on portfolio risk and return. The role impacts of diversification were first formally explained in the early 1950s by financial pioneer Harry Markowitz who shared the 1986 Nobel prize in Economics for his insights" [Corrado et al, 2002].

"A portfolio that offers the highest return for its level of risk is efficient portfolio spreading an investment across a number of assets will eliminate some, but not all of the risk. is the principle of diversification" [Corrado et al, 2002].

"Prospective investors are consumers shopping. They are influenced by advertising by the company' image and predominantly, by price. Investors usually do not fill their shopping bags with only one investment opportunity and they try to be sophisticated shoppers when they selected portfolio securities" [Van Horne, 2000].

Financial market facilitates the flow of funds from surplus to deficit units. The Financial markets that facilitate the flow of short term funds (i.e. less than one year) are known as money market, while the markets that facilitate the flow of long term funds (i.e. more than one year) are known as capital markets. Therefore, there are two types of market securities. The securities having life less than one year are called money market securities where as the securities having life more than one year are called capital market securities. Money market securities have higher liquidity where as capital market securities are used to generate a higher annual return to investors.

The well functioning stock market allows stockholders to achieve efficient diversification, which reduces risk, which in turn, lowers the risk premium component in the cost of capital. Stock markets lower the cost of capital by

liquidating investors' investment. It encourages investors to retain their earning and convert it into cash by selling shares in the stock market. The stock market provides an opportunity to the portfolio managers and public for direct participating and sharing the gain of economic progress.

"Two key observations emerge from a study of financial market history. First, there is a reward for bearing risk, and, at least on overage, that reward has been substantial. That's the good news. The bad news is that greater rewards are accompanied by greater risks. The fact that risk and return go together is probably the single most important fact to understand about investments, and it is a point to which we will return many time" [Corrado et al, 2002].

The growth of an individual's or firm's resources is not possible until and unless we invest it in some profitable sector. Private domestic investment can be the contribution to economic growth and employment generation in the developing country. For the economic development of any country, public participation plays a vital role. If the people are rich, the country will be rich and people will have enough to invest on development of the country. An investment is any funds made to have some positive rate of return. Nobody is ready to bear risk without any return but to have returned one must be ready to face some risk. To minimize the risk at the given rate of return the concept of portfolio diversification is necessary. Portfolio is simply a collection of securities gathered to achieve certain investment goals. Usually investors diversify their portfolios to have minimum risk and maximum profit. Most investors hope that if they hold several securities then even one goes bad, the others will provide some protection from an external loss.

"A systematic investment process, one should be followed to win the stock market. Investment process describes how an investor should go about making decisions with regard to what marketable to invest in, how extensive the investment should be and when the investment should be made. A five step procedure for making these

decisions forms the basis of the investment process.

- Set investment policy
- Perform security analysis
- Construct a portfolio.
- Revise the portfolio
- Evaluate the performance of the portfolio" [Sharpe et al, 1995].

In Nepalese contest the concept of security market began with the set up of “Nepal Stock Exchange” 1993 former known as “Securities Exchange Center" in 1976. This is the only stock market in Nepal. In spite of considerable development of stock market, there is a lot more to be done for the development of stock market in Nepal. Many investors are still afraid to invest in securities because of inadequate knowledge in this field and most investors are exploited from market intermediaries. For this purpose potential investors must be able to analyze risk and return of individual stock to increase market efficiency and consequently speed up the economic development.

The concept of banking system was introduced in Nepal with the establishment of Nepal Bank Ltd. in 1937 A.D. But the financial scenario of Nepal changed with the establishment of joint venture banks in 1984 A.D. Nabil Bank Ltd. is the first joint venture bank introduced in Nepal. Since the joint ventures commercial banks introduced in Nepal, the set up of joint ventures banks are increasing day by day and domestic banks like Nepal Bank Ltd. and Rastriya Banijya Bank no longer been able to enjoy monopoly. There is cut throat competition among these banks, which is healthy sign for the economic development of the country. Among the established commercial banks twenty-one are listed in NEPSE and for this research purpose only five joint venture commercial banks are taken as sample. There always exists perceptible difference among investors in terms of risk and return and more than often, every investors have their own unique way of response pattern while making investment decision. Generally, investors invest their current cash only to those

areas where there is high return and low risk. An investor looking for the common stock investment usually pays the price for stock based on his estimation about future dividends and growth in stock price. Investors can earn in the form of dividend income and the appreciation in the price of the stock hold in stock market investment. So common stock represents a commitment on the part of a corporation to pay periodically whatever, its board of directors determine to assign as a cash dividend.

This study occupies an important role in the development of stock market. In the market, stock price can be affected by interest rate, inflation and strengths of the dollar. The risk of stock investment can be measured by its price volatility and its beta coefficient. Banking sector is the most dynamic part of economy, which collects unused funds and mobilizes it in needed sectors. It is the heart of trade, commerce and industry. In Nepal, foreign joint venture commercial banks perform better than other Nepalese commercial banks because of their higher management efficiency and capacity of proper risk management. Nowadays, there are number of commercial banks growing in the country and numbers of joint ventures among them are also significant. Besides commercial bank, development banks are investing their performance in Nepalese banking sector.

This study of risk and return is basically focused on listed commercial banks of Nepal and this study analyze the risk and return associated with investment among these banks on the basis of market price of stock and dividend.

1.2 FOCUS OF STUDY:

The main focus of this study is the risk and return analysis of the common stock investment of the listed commercial banks of Nepal. Common stock is comparatively risky assets than other security in the capital market. The main purpose of the study is to analyze how one can get sustainable profit by minimizing

the risk. For this purpose, market return, expected return, total risk, systematic risk and unsystematic risk are analyzed to give an idea to get sustainable profit by diversifying the risk to avoid future loss of the common stock investment.

1.3 STATEMENT OF PROBLEMS:

Lack of information and lean knowledge is chief problem faced by individual investor who are manipulated and exploited by the financial institutions and their market intermediaries. The attitude and perception of investors play vital role in making investment decisions which are influenced by the information and access to the data required for analysis. Investors invest their wealth on the basis of guess and hunches because they do not have sufficient information about the financial assets and they also lack the idea to reach to ideal investment decision. Investors purchase stocks merely looking past trend of stock prices and sometimes they have to bear heavy loss due to inadequate knowledge and information related to the stock investment.

Capital market of Nepal is still in infancy stage so that most people do not know about shares, bond, debenture and other securities. On other hand, there are no strong commitment towards increasing public investment in policy makers and government. Stock brokers and financial institutions have no effective programs to develop investor's knowledge. So that people are unfamiliar with the stock investment. They would rather prefer to invest in land, buildings, gold and other unproductive assets. "Therefore, it is obvious that inadequate capital market people in undeveloped countries have tendency to invest in non productive assets such as land and other physical properties, jewelers, hoarding cashes etc. Nepalese people also have similar tendency in investment process" [Shrestha et al, 1993].

In an efficient market condition, stock price is equal to the intrinsic value of stock. When required rate of return and expected rate of return are not equal, then intrinsic

value and market value of stock will not be equal. It is also assumed that all stock remains in security market line, and if the case is not so, they strive towards this line. But theoretical and practical knowledge may not always match each other.

Therefore, it needs courage and at the some time faith to invest in common stock. In most of the time which can be generated through proper evaluation with giving due attention towards prevailing market atmosphere. What are the criteria for evaluating the stocks performance? What should be the compensation investors have to receive for bearing risk? How can investors make higher return through lower risk? are the major concerns of today's capital market. Some researches problems specially focused on this study are

1. To what extent, the investors should be compensated for taking a certain degree of risk?
2. How do they know the scale and intensity of risk?
3. What are the criteria for evaluating investment performance?
4. How can one make higher return assuming lower risk?

1.4 OBJECTIVES OF STUDY

The main objective of this study is to assess the risk associated with return on common stock investment of the listed commercial banks on the basis of selective financial tools and techniques. Some specific objectives of this study are as follows:

- To evaluate risk and return on common stock investment of commercial banks.
- To see the trend of rate of return of commercial banks.
- To analyze the correlation among the returns of commercial banks.
- To analyze comparative risk and return position of this sector.

1.5 SIGNIFICANCE OF THE STUDY:

Analysis of the risk and return is a significant in investment decision as well as managerial decision. It influences risk and return of the shareholders. Consequently the risk and return analysis influences the market price of the stock. So before making an investment decision, a person must analyze the risk and return from particular stock as well as they can make a good risk minimizing portfolio between their investments in the stock.

In the context of Nepal, there lacks wider investment opportunities, which provides good rate of return. So there must have been huge amount of unutilized saving funds with general public. In the security market, MPS of joint venture commercial bank has higher than others so it attracts the investor. Therefore they are investing their saving funds in common stock of public companies with the good expectation of higher capital gain in future. But, there seems least consciousness about the real financial conditions of the companies and degree of risk involved in their investments.

This research not only fulfils the requirement of MBS from T.U, but also provides some Important knowledge about Nepalese stock market development along with providing ideas to minimize the risk on stock investment. The measuring in stock investment is essential for achieving growth of an economy. This study will be helpful for other researcher in the area of investment as it provides suggestion to some extent.

1.6 LIMITATION OF STUDY:

This study is to fulfill the requirement of Master Degree in Business Studies. It cannot cover all the dimensions of the subject matter and resources. The major limitations of the study are as follows.

1) This research concerns only risks and returns of common stocks of the selected Joint Venture Commercial Banks.
2) The accuracy of data depends upon the data collected and provided by the organizations.
3) Data from part time frame (i.e. latter five years are used.)
4) The research is concerned with certain listed commercial banks only.
5) Time and financial constraints are also major limitations of this study.
6) The portfolio analysis has been conducted between two sets of commercial banks having highest positive correlation and lowest positive correlation because negative correlation is not obtained by calculation.

1.7 STRUCTURE OF THE STUDY:

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

Chapter-One: Introduction

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

Chapter-Two: 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-Three: Research Methodology

This unit presents research methodology used in the study which includes various

tools and techniques of data. It consists of research method sources of data, population and sample, research design, methods of data analysis etc.

Chapter-Four: Presentation and Data Analysis

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

Chapter-Five: Conclusion and Recommendation

This chapter is the summary of this study. It presents main findings conclusion, recommendation and suggestions of this study.

CHAPTER TWO

REVIEW OF LITERATURE

It is very important to study the materials on the topic of research and that is called review of literatures. Review of literature deals with the theoretical aspect of the topic on risk and return on common stock investment in more detail and descriptive manner. This chapter helps to take adequate feedback to broaden the information base and inputs to study. This chapter reviews same basic academic courses books, journals and others related studies.

2.1 CONCEPTUAL FRAMEWORK

Various books are reviewed which are related with topic, which may helpful to understand clearly about risk and return. The objective of this section is to know how various writers have described about risk and return.

This study is focused on the common stock investment. It is defined as a share in the ownership of the firm. Common stockholders are real owner of business firm Common stocks are more risky than both preferred stocks and bonds but it has also benefit like voting right, right in participation in profit. Common stock can be purchased and sold immediately on demand.

"Common stock represents ownership status in a firm. It has a residual claim, in the sense that shareholders can receive earnings only after the payment of all others claims of securities. But it has also an unlimited potential for dividend payment through increasing earnings and for capital gains through raising prices. The risk is highest with common stock investment. Common stock holders usually have voting rights in the management of the corporation board of directors and usually holders of preferred stock have no voting rights. Since the value of common stock depends

largely on its earning, it is often issued on par value. In the case of bankruptcy common stock holders are entitled only to assets remaining after all claimants have been satisfied. 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].

Common stock holders are the owner of the corporation. As owners, common stock holder have certain rights, the most important are the right to participate in profit distribution, the right to vote etc. From the corporation viewpoint, common stock represents a fund raising device. From the investors' viewpoint, stock ownership gives the stockholders an opportunity to share in the profit when declared as dividend, an opportunity to make money on appreciation in the value of the securities and the opportunity to vote for directors of the corporation.

The firm's common shareholders are right to receive dividends, if and when they are declared by board of directors. Dividends are the share of profits (earnings) which are distributed among all the outstanding shares of common stock. The common stockholders also have the right to elect the members of the board of director, the right to inspect the firm's books and the right to obtain a list of the names and address of other shareholders.

Return is reward received from investment for sacrifice of present certain amount of assets. Return is the motivational factor, encourages investors to sacrifices some certain amount of assets for uncertain benefit in future.

"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 of stock, derived by the beginning price" [Van Horn, James and Wachowicz, 1995].

Return is the income received on investment plus any change in market price

usually expressed as a percent of beginning price of the investment "Although a return on investment is not necessarily guaranteed, it is expected return that motivates people to invest. Every investment doesn't guarantee a return. The return on investment may be made up of more than one source of income. There are two kinds of return that investor receives from common stock.

i. Current income: It is received periodically in the form of dividends from stock.
ii. Capital gain: The second dimension of return is concerned with change, if any in the market value of a stock. Investors pay a certain amount for stock from which they expect to receive not only current income, but also the return of the invested funds sometimes in the future.

Return is the key variable in the investment decision because this measure allows us to compare the amount of actual or expected gain provided by various investments.

Historical performance: Most people agree that past data often provide a meaningful basis for formulation of future expectation. A common practice in the investment world is to look closely at the historical performance if a given investment when formulating expectation about its future performance.

Expected return: It also can be used in investment decision process rather than historical behaviors. It is what you think the stock and a bond will earn in the future (in terms of dividend/interest plus capital gain) that determines what an investor should be willing to pay for a security.

Return on common stock also known as single period rate of return. It is cash received as dividend plus changes in price of stock. We can calculate actual return of common stock with the help of cash dividend and stock price of previous year and current year. The rate of return can be restated in a form appropriate for almost any investment.

Single Period rate of return (R_t)

$$= \frac{Ending\ \ price\ \ - Beginning\ \ price\ \ + Dividend}{Beginning\ \ \Pr ice}$$

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

Where,

P_t = Stock price at the end of period t.

P_{t-1} = Stock price at the end of period t-1.

D_t = Cash dividend received during the t th period.

This formula can be used to calculate both actual single period return (base on historical data) as well as expected single period return (based on expected dividend and price).

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

The Simple arithmetic mean $E(r_t) = \frac{\sum_{t=1}^{n} r_t}{n}$

Where,

$E(r_t)$ = Arithmetic mean of return

n = Number of year

r_t = Single period rate of return

For investors, return is considered as the main attraction to invest in a risky security as a stock accepting a varying degree of risk tolerance

"Risk and return are the determinant for the valuation of securities. However risks means that we do not know what is going to happen even through we occasionally have a good idea of the range of possibilities that we face. Therefore, risk may be defined as the like-hood that the actual return from an investment will be less than the forecast return. Started differently, it is the variability of return from an investment" [Hampton, 1996].

"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. These are the mean and the standard deviation of the probability distribution" [Weston and Brigham, 1995].

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. Risk, in fact is an indication of chance of loosing investment value. Different people interpret risk in different ways. To some it is simply a lack of definite outcome, which can be any unknown event, which may be unfavorable. It is a chance of happening some unfavorable event or danger of losing some material value.

Risk, as defined above, is the deviation between actual return and expected return. Various factor play important role to bring such deviation or variability. Such variability statistically is measured by standard deviation. The degree of risk of common stock is measured by the standard deviation. We can measure risk by examining the tightness of the probability distribution associated with the possible outcomes. It is widely used to measure risk form holding a single assets. Greater the standard deviation represents a high dispersion of return and is a greater the risk.

On the other hand smaller deviations are a low dispersion and represent smaller risk. Standard deviation is donated by the 'σ' (sigma) symbol. It can be expressed

mathematically as:

$$\pm = \sqrt{\frac{\sum_{t=1}^{n}[r_t - E(r)]^2}{n}}$$

where,

σ = Standard deviation

r_t = Return for t^{th} possibility

E(r) = Expected rate of return

n = Number of years.

"Financial analysts and statisticians prefer to use a quantitative risk surrogate called the variance of returns, denoted by var (r). The variance is well known among statisticians, several hand calculators and computers are programmed to calculate it. The variance of an asset's rate of return equals the sum of the products of the required deviations of each possible rate of return from the expected rate of return multiplied by the probability that the rate of return occurs.

$$Var(r) = \frac{\sum_{t=1}^{n}[r_t - E(r)]^2}{n}$$

The square root of the variance of the rates of returns is called the standard deviation (σ) of the rate of return.

$$\pm = \sqrt{Var(r)}$$

"The standard deviation and the variance are equally acceptable and conceptually equivalent quantitative measures of an asset's total risk" [Francis, Jack Clark, 1991].

"The standard deviation can sometimes be misleading in comparing the risk or uncertainly 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.)

$$\text{Coefficient of Variation (C.V.)} = \frac{\pm}{E(r)}$$

Where,

σ = Standard deviation

E(r) = Expected rate of return.

The coefficient of variation is 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 Wachowich; 1995)

C.V is the ratio of the standard deviation of a distribution to the mean of that distribution which is the measure of the relative risk. Total risk of stock is measure by the standard deviation and total risk is composition of systematic risk and unsystematic risk.

The systematic risk is also known as the undiversifiable risk. It can not be diversified. This risk is that portion of total variability in return caused by market factor than simultaneously affect the prices of all securities. Systematic risk is due to that factor, which affect the overall market such as changes in the macro economic factors like, interest rate, inflation, expectations of investors, gross domestic product, tax reform by the government etc. Moreover, it is the cause of external environment of the firm. Unsystematic risk can be reduced through diversification. This type of risk is unique to an organization and can be largely eliminated by holding a diversified portfolio of investment. Diversifiable risk creates through the

events like, labour strikes, management errors, inventions, advertising campaigns, availability of raw materials etc. The relation among total risk, systematic risk and unsystematic risk are shown below.

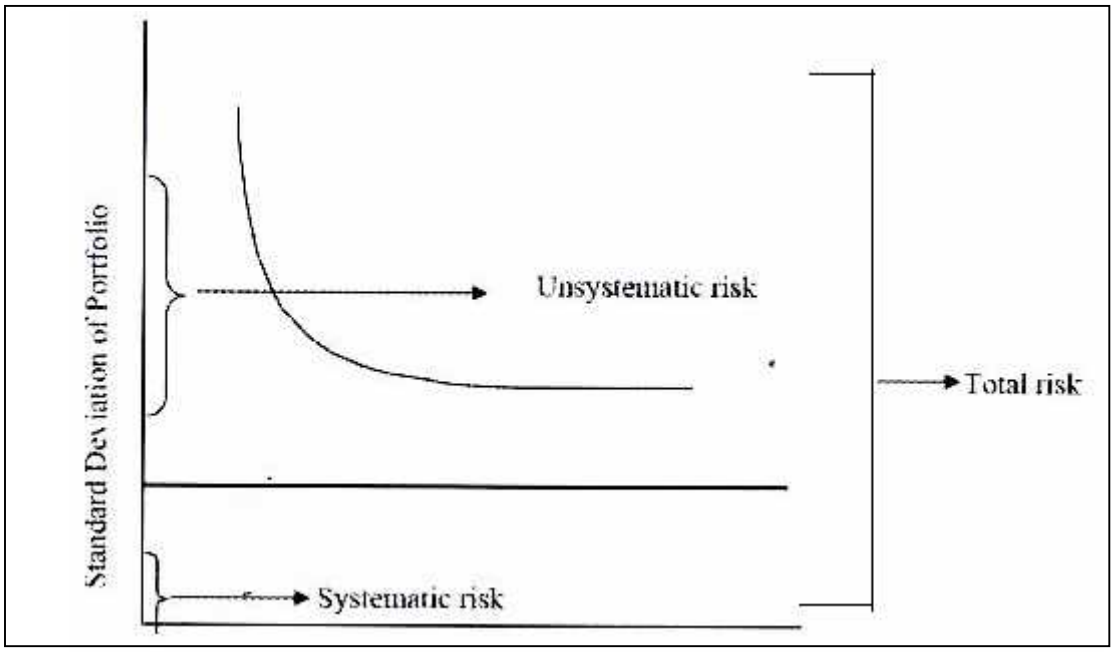
Total risk = systematic risk + unsystematic risk

Systematic risk = $\beta^2 \times \sigma_m^2$

Unsystematic risk = $\sigma j^2 - \beta^2 \times \sigma_m^2$

Diagram No. 2.1

Total Risk, Systematic Risk and Unsystematic Risk



"For most stocks, unsystematic risk accounts for between 60 to 70 percent of stocks total risk or standard deviation" [Horn and Wachowich, 1995].

Investor invest in only one in the stocks of company is exposed total risk that includes both systematic and unsystematic risk the proportion of unsystematic risk can be avoid by diversification of investment in many companies. If the number of security in the portfolio increases, the total risk curve will be decrease and finally reaches to the level of systematic risk. A portfolio containing all the repeatable stocks is completely diversified and its total risk is equal to the market average risk.

Portfolio is combination of individual or a group of assets. Portfolio is the holding of securities and investment in financial assets like, common stock, preferred stock, bound, debenture etc. Investors have different types of investment opportunity but they have limited resource for investment so that investors have to select that investment, which maximizes return for a given level of risk. Therefore it is needed to extent analysis of risk and return to include portfolio. There are two types of objectives, primary objective and secondary objective. The primary objective of portfolio are to maximize return and to minimize risk and secondary objectives are regular and stable return, safety of investment, appreciation of capital, tax benefits etc.

The expected return on a portfolio is simply the weighted average expected returns on the individual assets in the portfolio with weights being the fraction of the total amount invested in each asset.

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CAPM is a model that describes the relationship between risk and expected return. It explains the behavior of security price. It also describes how the price and interest rate on risky financial assets are determined in the capital market. In this model, a security's expected return is the risk free rate plus a premium based on the systematic risk of the security, where risk is measured by the beta coefficient.

"CAPM provides a measure of risk and method of estimating the market's risk return line. The market or systematic risk of security is measured in terms of its sensitivity to the market movement. This sensitivity is referred to the security's beta. Investors can eliminate unsystematic risk when they invest their wealth in a well diversified market portfolio" [Pandy, 1995].

Harry M. Markowitz laid down the foundation of modern portfolio theory in 1952. Capital assets are the long term financial as well as real assets and CAPM is based on the pricing of assets. Modern portfolio theory of Markowitz suggests that the

investment decision should base on the total risk and price of assets should also be determined on the basis of total risk. But the CAPM suggests that, any investor can create a portfolio of assets that will eliminate virtually all diversifiable risk, the only relevant risk is non diversifiable risk, therefore, the investment decision and pricing of assets should be based on the un-diversifiable risk. This is the primary importance of selecting assets with the most desired risk return characteristics. The CAPM further suggest that the price of capital assets should determine in a way that to compensate the systematic risk.

"The major implication of the CAPM is that the expected return of an asset will be related to measure of risk for that asset known as beta (ß). The model provides the intellectual basis for a number of the current practices in the investment industry" [Sharpe et al, 2000].

'Based on the behavior of risk averter investors, there is an implied equilibrium relationship between risk and expected return for each security. In market equilibrium a security is supposed it provide an expected return commensurate with its systematic risk of a security. Greater the systematic risk greater the return that investors will expect from the security. The relationship between expected return and systematic risk and the valuation of securities that follow, is the essence of Noble laureate William Shaper's capital assets pricing model (CAPM)" [Horne and Wachowitz, 1996].

"The graphical version of CAPM is called the security market line which shows the relation between risk and the required rate of return" [Chandra, 1994]
The security market line clearly shows that return is the increasing function. The SML equation as suggested for the computation of expected rate of return on common stock. The model is,

$E(r_j) = r_f + [E(r_m) - r_f] ß_j$

where,

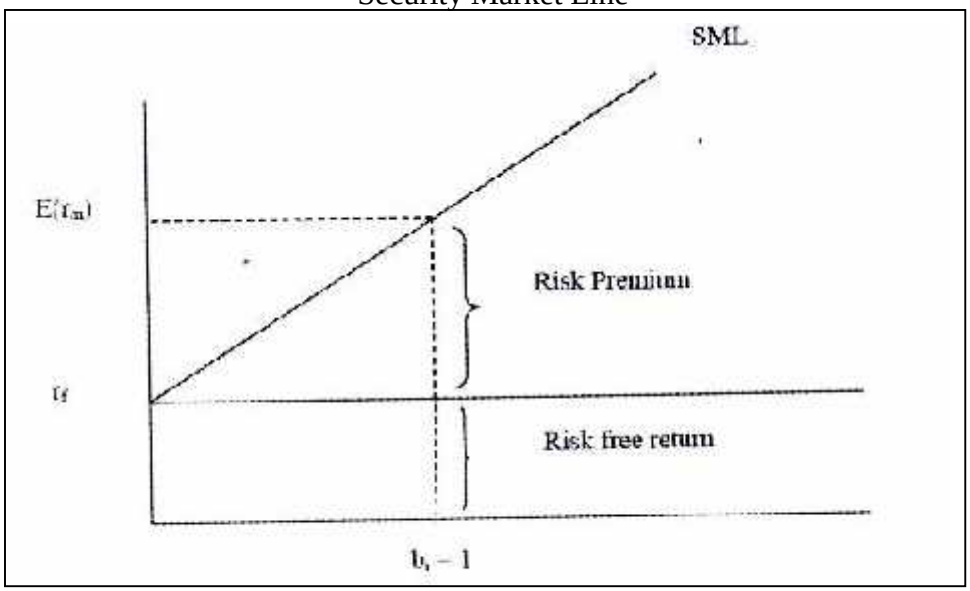
$E(r_j)$ = Expected return on security j.

r_f = Risk free rate.

$E(r_m)$ = The expected market return.

$ß_j$ =Assets beta Diagram 2.2

Security Market Line

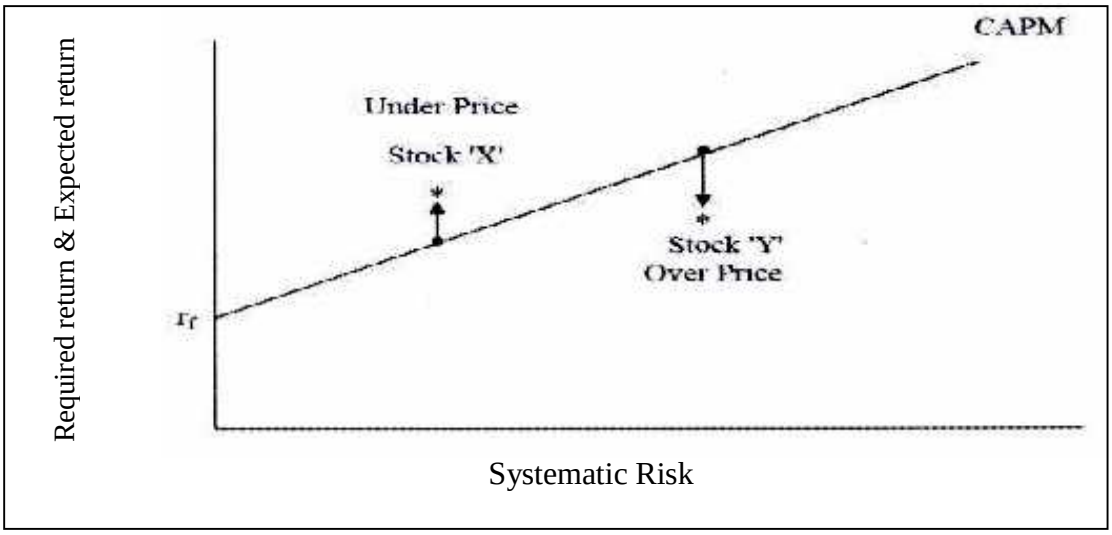


(Source: Van Horne and wachowitz; 1996)

"In market equilibrium the required rate of return on stock equals its expected return. That is all stocks will be on the security market line, what happens when this is not so? The primary concern of portfolio management is to identify the overpriced and under priced of security. Overpriced and under priced securities are identified either comparison of their value with market price or compassion of required rate of return and expected return.

Diagram 2.3

Under Price and Over-Priced Stock During Temporary Market Disequilibrium



As a result, stock 'X' is expected to provide a rate of return grater than the required, base on its systematic risk. Stock 'Y' is expected to provide a lower return than required to compensate for its systematic risk. Investors seeing the opportunity for superior returns by investing in stock 'X', should rush to buy it. In the case of stock 'Y', investors holding this stock would sell it, recognizing than they could obtain a higher return for the same amount of systematic risk with other stocks" [Clark, 1987]

The CAPM is based on the efficient market hypothesis and provides a basis to measure the systematic risk in terms of covariance of its return with the market return.

2.2 REVIEWS FROM RELATED STUDIES

In this section of review various studies are reviewed related with the topic. The objective of this section is to show how the relation between risk and return is defined, described and measured by different studies. It also helps us to understand more about risk and return.

2.2.1 REVIEW FROM JOURNALS

Enally and Ravenscraft (1999, June) in *"The Performance of Hedge Funds: Risk Return, and Incentives"* journal of finance, have examined "Hedge funds may be enhancing returns by taking on extra risk. Many hedge funds use tools designed to reduce systematic rather than total risk. Though this is obviously true for short sellers and market neutral funds techniques such as short sales are employed by most hedge funds. Combination of incentives alignment and investment flexibility gives hedge funds a clear performance advantage over funds. Incentive funds are the most important and significant determinants of risk adjusted return. Using 2,4,6 and 8 year sample all ending in December 1995 with 547, 272, 150 and 79 hedge fund observations, main findings of this study are the average hedge fund sharp ratio is higher than comparable mutual fund sharp ratio and this performance advantage increases when we match fund by reign Hedge funds achieve this sharp ratio superiority despite their higher total risk. In this study, the average total risk is higher for hedge funds. Thus, some of the characteristics that enhance hedge fund performance may not be appropriate for mutual funds that attract undiversified, risk-averse clients.

This hedge fund concluded that the Flexible investment options employed by hedge funds make it difficult to classify hedge funds, identify the correct benchmark, and thus measure relative performance. Standard deviation of returns measure of total risk may not fully capture the complex risk taking from hedge funds dynamic, highly levered strategies. Monthly incentive fees, therefore, contain an unknown reporting bias that may be as important as depreciation rates, common cost allocation, and transfer pricing issues in accounting profits.

Bowman (1988, Feb) in *"The Theoretical Relationship between Systematic Risk and Financial Variables"* examined the relationship between risk and financial variables. Systematic risk of livered firm is equals to the systematic risk of the same firm

without leverage. There is no direct relationship between earning variability and market risk. Systematic risk is directly related to the accounting beta. There is no theoretical basis for relationship of dividend payout and beta. There is not only theoretical relationship between dividends and systematic risk but also size and growth of the firm and systematic risk.

This study shows that there is a theoretical relationship between systematic risk and firms accounting beta and systematic function are not a function of earning variability, dividends policies and size and growth of firm."

Mitchell and Pulvion (1987, Aug) in *"Characteristics of Risk and Return in Risk Arbitrage"*. Journal of finance had to determine whether the returns to risk arbitrage reflect market inefficiencies or rewards for bearing rare-event risk over the 1963 to 1986 time period.

"Using a comprehensive sample of cash and stock-for-stock mergers, we examine returns generated from risk arbitrage. For constraints merger an investment in any merger cannot exceed 10 percent of total capital, sizes are limited by the liquidity of the under lying securities. The index fund must have an adequate amount of cash reserves to undertake the investment.

In most market environments, risk arbitrage returns are uncorrelated with market returns however, during market downturns, the correlation between market returns and risk arbitrage returns increases dramatically. From this study suggest that risk arbitrage returns are similar to those obtained from writing uncovered index put options. Risk arbitrage may be better evaluated using a contingent claims analysis rather than a liner asset pricing model such as CAPM. However, this analysis shows that when measuring excess returns, the error associated with CAPM is significant only when the nonlinearity in returns is severe. This tends to be the case in time periods when cash, rather than stocks, is the predominant from merger

consideration. Although linear assets pricing models mark the true risk in risk arbitrage, they do not result in large errors when measuring excess returns".

2.2.2 REVIEW FROM NEPALESE STUDIES

In the topic of finance very few independent studies can be found. However, the available independent studies which are related to the Nepalese stock market and about shareholders democracy, views expressed by different person in their articles regarding risk and return of common stock of commercial banks are presented or reviewed here in the topic.

Pradhan and. Balampaki(2004) conducted a study on *"Fundamental of Stocks Return in Nepal"* based on pooled cross sectional data of 40 listed companies in NEPSE Ltd and traded in the stock market. The study examines if dividend yield, capital gain yield and total yield are related to earning yield, book to market ratio and cash flow yield. Pradhan and Balampaki have summarized the following results.

- Earnings yield and cash flow yield have significant positive impact on dividend yield, and an insignificant impact on book to market value, whereas, size has negative impact on dividend yield. In the case of earnings yield and cash flow yield, cash flow yield has been found to be more informative than earnings yield.
- Capital gain yield is positive influenced by earnings yield and size, whereas, the same is negatively influenced by book to market value and cash flow yield. Book to market value has been found to be statistically strong in predicting capital gain yield.
- Similarly, total yield is positively determined by earnings yield and size, where as, the same is negatively determined by book to market value has been found to be more informative than other variables.
- The positive relationship exists among earnings yield, book to market value and cash flow yield. However, the size is negatively related to these three

variables."

Sherestha, (1992). *"Shareholders Democracy and Annual General Meeting Feed Back."* critically analyzed the situation of common stock investors and the situation that is not improving till date.

Mr. Shrestha's study has been divided into two parts. The first part includes view on the rights of the shareholders regarding how they can exercise then in democratic perspective and second part consists of feedback and the issues raised by shareholders at different annual general meeting of Public Limited Companies and financial institutions.

"In this study, he mentions that government is not interested in formulating separate act to protect the right of shareholders, although the size of shareholders population in Nepal has been growing constantly and, he has viewed the need of separate act regarding the protection of shareholders right. Company and others acts relating to financial and industrial sector has provisioned rights of the shareholders as:

i. Voting right
ii. Participation in general meeting
iii. Right of getting information
iv. Electing as a board of director
v. Participation in the profit and loss of the company
vi. Transferring shares
vii. Proxy representation

The collective rights of the shareholders are:

i. Amend the internal by laws
ii. Authorize the sale of assets
iii. Inter into merger

iv. Change amount of authorize capital

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

Similarly mini research paper conducted by Khagendre Prasad Ojha (2000) on *"Financial Performance and Common Stock Pricing"* concluded that: An investment in common stock of a corporate firm neither ensures annual return nor ensure the return of principal. Therefore, investment in common stock is very sensitive on the ground of the risk. Dividend to common stockholders is paid only of the firm marker on operating profit after tax and performance dividend. The company can return the principal in case of its liquidation only to extent of the residual assets after satisfying to all of its creditors and preferential shareholders. Besides this, investors have to sacrifice the return on their investment in common stock, which could be earned investing fund elsewhere in the next best opportunity.

The Study focused on the financial performance where financial activities involve decision regarding

- Forecasting and planning of financial requirement.
- Investment decision.
- Financial decision

Further, Ojha added that the stock price in Nepal is determined more by other

factors rather than the financial performance of the concerned company.

2.2.3 REVIEW FROM THESIS

Review of thesis is a section of review of literature where various theses are reviewed which are related its topic and which may be helpful for this study. In this section some thesis are reviewed which have done on risk and return topic and the objective of this section is to know how the relation between risk and return is described and measured by different thesis. Bhatta (1995) has conducted his master's thesis on *"Assessment of the Performance of Listed Companies in Nepal"*, He has taken 10 listed companies' data from 1990 to 1995.

Mr. Bhatta's research objectives are to analysis the performance of listed companies in terms of risk and return i.e. expected rate of return and company specific risk, required rate of return and internal rate of return, systematic risk and diversification of risk through portfolio context.

Mr. Bhatta made financial and statistical analysis which include MPS, ERR, SD, CV,
T-test, Z-test and correlation.

Mr. Bhatta has addressed the following finding from his studies.

A highly significant positive correlation has been address between risk and return character of the company Investors expect higher risk Nepalese capital market is not efficient one so the price does contain all the information relating to market and company itself. Neither investor analyses the overall relevant information of the stocks nor does the member of stock exchange try to disseminate the information. So, the market return and risk both may not show high priced stocks.

Investors of Nepal have not yet practiced to invest in portfolio of securities. An analysis of the two securities portfolio shows that the risk can be totally minimizes if the correction is perfectly negative. In this situation, the risk can totally be diversified, but when there is perfectly positive correlationship between the returns of the two securities, the risk is not diversified.

On the basis of his findings concluded:

"An analysis of risk and return show that many companies have higher unsystematic or specified risk. There is a need of expert institution which will provide consultancy services to the investors to maximize their wealth through rational investment decision".

Lastly, Mr. Bhatta recommended the following points to improve the market efficiency.

- Developed institutions to consult investors for risk minimization.
- Establish an information channel in Nepal stock exchange and
- Make proper amendment on trading rules.

Pandey (2000) in the title of "*Risk and Return Analysis of Common Stock Investment*" In her study, she has taken 7 listed insurance companies data from 2049 to 2056. She focused on following objectives: -

- To understanding and identify problems faced by an individual investor and insurance company.
- To calculate the risk and return of the common stocks and their portfolio.
- To analyze the volatility of different stock of insurance companies and other variables that should be considered while deciding investment in stocks.

Mrs. Pandey has used following methodology

- Study design.
- Population & Sample
- Secondary data collection techniques.

Data Analysis tool included:- MPS, DPS, Expected return and Hypothesis testing

Mrs. Pandey obtained following findings from the study in terms of risk and return is as follows: -

Although overall objective of her study is about investment in common stock, it is mainly concentrated on the risk and return trade off economically Nepal is backward; it's economic performance is not satisfactory. Generally Public are rest understood about the stock market and have fake conceptual thoughts about its risk. Poor education and lack of adequate Source of information are the major Constraints for the development of stock market of Nepal

Based on market capitalization, size of NIC is the biggest one. Expected return on the common stock of NLGI is maximum (i.e. 65.39%). This high rate of return is due to unrealistic annual return in 2050\51. Expected return on common stock of HGI and EIC is lowest with negative value. In overall industrial sector, expected return of finance and industrial sector is highest. . Overall, market expected return is 50%. Annualized return is unexpectedly high in FY 2050\51 and then declines in the preceding years. This is all about return.

When risk and return compared to different industries, finance and insurance is best as per highest expected return with higher degree of risk whereas trading industry has minimum return and risk.

In Nepal, however, in terms of the volume of transaction the situation of the capital market, according to NEPSE sources has remained quite optimistic, in aggregate,

commercial banks occupy large percentage of traded amount whereas insurance sector is being low responsive towards its trading Though it is difficult to estimate the exact volume of business potential in insurance, one can have a rough idea by looking at the insurance depth compared to the potentials in the business, the figure is too low, which is also agreed by both the insurance board and insurance companies they accuse government for not doing enough to realize the potentials. Premium collection per capital of population is quite less not even a dollar.

Mrs. Pandey has recommended which are related to the study are as follows:

One of the study most important things to consider when choosing an investment strategy is the balance between risk and return that you are comfortable with.

Having all of your eggs in one basket can be a risky proposition. It is better to invest in mutual funds; however having all investment in on type of mutual fund still exposes investors to the risk of that asset class. The best way to diversity against market risk is to hold different asset classes in your portfolio that may have highly negative correlation. The institution is that an asset with a low correlation to the tangency portfolio is desirable.

Stock market investment is a risky job. To win the stock market, investors should always be clear to his own –strengths, weaknesses, needs desires risk taking capabilities and how to react on different and ever changing market conditions This is one game where self Knowledge, superior forecasting ability, sound understanding on the information of stock market can give a winning edge to the investor.

In most countries, an organization publishes updated information periodically informing the public about its economic condition in Nepal, it is lacking.
There should be an institution to analyze the information provided by the

companies' send to process them to make them understandable by general investors. There is complete absence of sensitive index of stock prices and government is not much concerned to conduct a survey of investors in Nepal.

Whatever be the drawbacks, stock market investment is important to improve the lives of people and to push the economic state of the country. So, we along with government, regulating authority, the stock exchange listed companies etc should understand their perspective roles and should give proper attention to play their roles with sincerity

Sapkota (2001) in " *Risk and Return Analysis in Common Stock Investment* " had the main objective to analyze the risk and return of the common stock in Nepalese stock market. This study is focused on the common stock of commercial banks. Mr. Sapkota found that the banking sector is the biggest one in terms of market capitalization and turnovers. Expected return on the common stock of Nepal Bank Ltd is maximum (i.e. 66.99%) and common stock of Nepal SBI Bank Ltd. is found minimum. Common stock of NBL is the most risky and common stock of Nepal SBI is the least risky. Mr. Sapkota has concluded that common stock of Nepal Bangladesh Bank is the best one for investment. On the other hand, portfolio return between the common stock of Nepal Grindlays Bank and Nepal SBL is 26.66 percent but portfolio standard deviation is only 14.97 percent, which is less than single stocks standard deviation.

Mr. Sapkota has recommended reducing the risk; investors should diversity this fund proper construction of portfolio never creates any considerable less. Private investors should try and work out their attitude towards the risk of various investment and Government of Nepal needs to manage the trading of government securities in NEPSE."

Upadhaya (2001) " *Risk and Return on Common Stock Investment of Commercial*

Bank in Nepal " With the objectives to evaluate the common stock of the listed commercial banks in terms of risk and return and to perform sector wise comparison on the basis of market capitalization from study. Mr. Upadhaya found the common stock of Nepal Grindlays Bank (Now Standard Chartered Bank) bears the maximum rate of return (127.84%) and Nepal SBI Bank has minimum (7.77%) rate of return. In the context of industries or other sectors, expected return of other sector is highest and manufacturing and production sector is found least performer.

This study had analyzed that "High Risk High Return" because in this study it has found common stock of NGBL is most risky and Nepal SBI is least risky. Common stock of Everest Bank is most volatile, common stock of Nepal Indosuez Bank is the least volatile and common stock of all the commercial banks is overpriced. Mr. Upadhya has recommended for the portfolio construction, to select the stock that have higher return with not correlated or negatively correlated stocks otherwise stock can not be diversity risk properly."

Shakya (2001) has conducted her master's thesis in "*Risk and Return Analysis on Common Stock Investment* " with the specific objectives of study are to asses the general investors perception, attitude and awareness towards risk associated with return, to calculate risk and return of selected securities and there portfolio and to analyze the volatility of common stocks and other valuates. The Researchers' result reveals that 58.3 percent investor considers return, and 33.3 percent investor consider risk before investing: To invest in common stock 50 percent prefer primary market, 21.7 percent prefer secondary and 28.3 percent of total investor prefer bath market. 71.7 percent of total investors give first preference to the banking sector. 46.7 percent investors have knowledge about correlation coefficient, 48.3 percent of total investors prefer C.V and 36.7 percent prefer S.D. for measuring risk.

Miss Shaky recommended that, if negatively correlated assets are combined in portfolio, them risk can be minimized to some extent only negatively correlated

assets which is favorable with view paint of diversification.

Mr. Kansakar (2004) on his thesis, "*A Case Study on Risk and Return Analysis of Common Stock Investment* " with the view to evaluate the common stock of the listed commercial banks in terms of risk and return obtained the following conclusion.

Mr. Kansakar has used following methodology

- Study design.
- Population & Sample
- Primary data collection technique: - Questionnaires and interview.

Secondary data collection techniques.- NEPSE, www.nepalstock.com , Company annual report.

Data Analysis tool included: - MPS, DPS, Expected return and inter companies comparisons, market capitalization, analysis of market sensitivity, required rate of return, ki-square, t-test.

Mr. Kansakar obtained following finding from the study in term of risk & return is as follows:

Return is an income received by the investor for bearing a risk within the stock. Expected return on the common stock of Nepal Lever Limited has the highest with 0.5214 i.e.52.14%. Similarly, expected rate of return of the common stock of Bottlers Nepal (Terai) has second highest expected rate of return with 0.5161 i.e.51.61%. Other common stock having expected rate of return is common stock and of Bottlers Nepal (Balaju) and Nepal Lube Oil Limited with 0.2008 i.e. 20.80% and 0.1078 i.e. 10.78% respectively. But Arun Vanaspati Udhyog has negative expected rate of return because market price of the common stock of Arun

Vanaspati Udhyog is downward from fiscal Year 1997/97 to 2001/02 gradually. In the context of sector wise comparison, Banking sector has the highest expected rate of return with 0.1323 i.e. 13.23% and then after Finance and Manufacturing and Processing sector has expected rate of return with 0.12.90 i.e. 12.90% and 0.0698 i.e. 6.98% respectively. Hotel, Trading and Others sectors' expected rate of return are in negative value. Variability in returns is called risk is called risk is measured in terms of standard deviation of returns. From this point of view, Nepal Lever Limited is the most risky assets with 0.9983 and Bottlers Nepal (Balaju) is the least risky assets with 0.2857. Actual least risky asset is Arun Vanaspati Udhyog with 0.0702, but it has negative expected return. So, Bottlers Nepal (Balaju) is taken as least risky asset. Due to the highest expected rate of return and standard deviation, Nepal Lever Limited proverb "High risk –High return". A comparison to expected return, common stock of Bottlers Nepal (Balaju) has low standard deviation too. CV is also known as relative tools for measurement of risk in terms of coefficient of variation; Bottlers Nepal (Balaju) has lowest CV with 1.4226. Hence, having low CV, common stock of Bottlers Nepal (Balaju) is the best one for investment from both points i.e. risk and return. In the context of inter sector comparison, Banking sector has the highest expected rate of return with 0.1323 i.e. 13.23% and then after Finance and Manufacturing and Processing sector have the expected rate of return with 0.1290 i.e. 12.90% and 0.0698 and i.e. 6.98% respectively. Expected rate of return of remaining sector have negative value. Others sector has the highest standard deviation with 0.4927 and trading sector has the lowest standard deviation with 0.1000.Among expected rate of return having positive value, Banking sector has the highest standard deviation with 0.4388 and Manufacturing & Processing sector has the lowest standard deviation with 0.2537. In terms of CV, finance sector has the lowest CV with 1.9674, Manufacturing and processing sector has 3.6346 and the remaining sectors have negative value.

The higher risk of common stock may have greater possible return.

The Hypothesis Testing–T is based on the test of significance difference of mean of Manufacturing and Processing Industries' Return and Market Return. It has been executed to test whether overall return on common stocks of Manufacturing and processing industries is equal to the market or not. Hence, over the study period, it was found that the null Hypothesis has been accepted i.e. overall returns on common stock of Manufacturing and processing industries is equal to the overall market.

Standard deviation is a tool for measuring an unsystematic risk, which can be eliminated. But systematic risk is that which cannot be eliminated, is defined by market and measured by beta coefficient (*ß)* . Beta shows the sensitivity or volatility of the stock with the market. Higher the beta greater the volatility. In our research, BNT's common stock is the most volatile with beta =1.80139 i.e. highest beta coefficient and common stock of BNL is the least volatile with beta =0.4121 i.e. Lowest beat coefficient. Others have in between 1.8039 and 0.4121except common stock of AVU has negative beta coefficient with –0.0769.

With the help of comparison between RRR and ERR, it can be identify whether the stock is over-priced or under –priced .If ERR is greater than RRR, a stock is known as under-priced and investor tends to buy this stock .If RRR is greater than ERR, a stock is known as over –priced and investor tends to sell this type of stock .In market equilibrium, ERR and RRR are equal. The study shows that all the stocks of manufacturing industries are under-priced except AVU which is over-priced.

Mr. Kansakar has recommended the followings:

- A common stock investment is a risky job. It does not guarantee return and principal both. Hence, it is undoubtedly risky in the short term and investor needs to be prepared for it. Investors should be acquainted with the associated risk and work out their attitude towards the risk of various investment strategies.
- The tools used in the study could not be appropriate for our economy i.e. .due to differences in prevailing condition with the western market. Alternatively, it

may not exactly perform, as it should be in condition like ours. Various sectors could be beneficial from different point of view e. g. Coefficient of variation (C.V.) suggests that the finance sector is the best for an investment. However, banking sector may be the best, if other subjective analyses are considered .Its CV is also not so higher than Manufacturing and processing and overall market. Similarly, while analyzing individual security, BNL is the best in terms of CV and Beta having lowest among reviewed industries.

- Investors need to diversify their wealth to reduce risk. Proper way of construction of portfolio is a dynamic job .it is changed according to change in environment of the country or market movement .For optimum portfolio, select a stock having high return with not correlated i.e. negatively correlated stocks A correlated stock cannot diversify risk properly.
- Investment clubs are effective way to exchange investment ideas. There is no any such type of club in Nepal. Collective investment e.g. mutual fund is worthwhile for a people with little interest in investment. Mutual fund is in emerging stage in Nepal. It allows investors to obtain reasonable diversification from limited wealth. Hence, this recommendation is given to the concerned bodies for entering the mutual fund business in the market for the well diversification of portfolio in national and global levels. Hence, sharing experience, ideas and consulting with an expert will be fruitful.
- Assessment of personal risk attitude, needs and requirements will be an added advantage before making an investment decision in stock market. Making an investment decision in stock market with the help of reliable information rather than rumors and imagination will ultimately favour the investor. Investor's investment decision should be based on financial parameters of the company. This is the age of digital technology. NEPSE is still following "Open cry systems" for trading while world is using a sophisticated technology in the field of stock market it needs to develop efficient and effective information channel and to provide up-to-date data.
- The corporate should provide reliable financial statements. Value of assets and

liabilities should not be manipulated for under or over profitability. The decisions, taken by the corporation should be headed towards maximize the value of the firm and value per share.

- Government should amend the rules and regulations regarding stock market frequently that ensures the protection of an individual investor's right. Such amendment is essential to make the act effectiveness with the pace of time. And also needs to follow the implementation and supervision of rules and regulation to make sure the objectives are achieved.
- All the reviewed stock of Manufacturing and processing industries are under –valued except common stock of AVU is over –valued Investors should invest their wealth on under valued stock and sell over –valued stock.
- It will be fruitful to buy going up stock and sell going down stock. In addition, adding more good stocks will make it better and adding more bad stock will make it worst
- A risk and return analysis is completely a new area for the country which strongly suggested that further study should be conducted on this topic and also would like to suggest including maximum number of samples. Hence, it is recommended to carry out further more researches on common stock investment to enhance growth and development of the capital market in the country.

2.3 Research Gap

All above researches are based on very old data before 2005 and not an above single research is belongs to the joint ventures commercial bank common stock study. To fulfill the time period gap and find out the risk and return associated with purely joint venture commercial bank I realize the need of a new research based on recent data. Hence I have done this study using new data of five joint venture banks from 2003/04 to 2008/09. This study uses recent data from five commercial bank and attempt to diagnose risk return position of investors investing on common stock of commercial bank of Nepal.

CHAPTER III
RESEARCH METHODOLOGY

The research methodology is the systematic way of solving research problems. This chapter refers to the overall research processes, which is a researcher conducts during his/her study. It includes research design, sources of data, analytical tools, and procedures of collection and analysis of data. Research is systematic and organizational effort to investigate a specific problem that needs a solution. This process of investigation involves a series of well though out activities of gathering, recording, analyzing and interpreting the data with the purpose of finding answer to the problems. This research is on the basis of historical data using both financial and a statistical tools performs detail analysis of different variables. Results are presented in simple way. Detail research methods are described in following headings.

3.1 RESEARCH DESIGN

This research is belongs to risk and return analysis so that this research is based on recent historical data, which covers the five years period data from the FY 2003/04 to FY 2008/09. It deals with the common stocks of joint venture commercial banks on the basis of available information. As the title of the study suggests, it is more analytical and empirical but less descriptive.

3.2 SOURCES OF DATA

The data required for the research is collected from the secondary as well as primary sources. During the study, informal opinion survey has also been taken with the individuals, bank officials. Security board of Nepal, staff of Nepal stock exchange and stockbrokers. Data related to the market prices of stocks, capitalization, movement of NEPSE index etc. It is taken from the trading report published by

NEPSE and the website of Nepal Stock Exchange (i.e. www.nepalstock.com). Annual report of commercial banks and their financial statement are also collected from the respective sample banks. NEPSE periodicals, articles and previous research report etc. has also been considered.

3.3 POPULATION AND SAMPLES

The population of the study is all the listed commercial banks in NEPSE index. This study is concentrated in listed commercial banks only. Total listed commercial banks are 21 as follows.

S.No.	Name of Bank	Abbreviation
1	Nabil Bank Ltd.	NABIL
2	Nepal Investment Bank Ltd.	NIB
3	Standard Chartered Bank Ltd.	SCB
4	Himalayan Bank Ltd.	HBL
5	Nepal SBI Bank Limited	SBI
6	Nepal Bangladesh Bank Ltd.	NBB
7	Everest Bank Ltd	EBL
8	Bank of Kathmandu	BOK
9	Nepal Industrial & Co.Bank	NICB
10	Machhachapuchhre Bank Ltd	MBL
11	Laxmi Bank Limited	LBL
12	Kumari Bank Ltd	KBL
13	Lumbini Bank Ltd.	LUBL
14	Nepal Credit & Com. Bank	NCCB
15	Siddhartha Bank Limited	SBL
16	NMB Bank Ltd.	NMBF
17	DCBL Bank Ltd.	DCBL
18	Global Bank Limited	GBL
19	KIST Bank Limited	KMBF
20	Citizens Bank International Ltd.	CZBIL
21	Bank of Asia Nepal Ltd	BOAN

Source : Annual Trading Report of NEPSE

For this study five joint venture commercial banks are taken as sample. They are as

follows.

1) Nepal Investment Bank Ltd. (NIBL)
2) Himalayan Bank Ltd. (HBL)
3) Everest Bank Ltd. (EBL)
4) Nabil Bank Ltd. (NABIL)
5) Standard Chartered Bank Ltd. (SCBNL)

3.4 DATA ANALYSIS TOOLS:

To achieve the objectives of research, this study has used various financial and statistical tools that are necessary to find out results. The following tools shall analyze the data presented in the study.

3.4.1 Market price of Stock (P)

Market price of stock is one of the major data of this study. These are three prices high, low and closing price of each year are available. We can use average price (of high and low) or closing price of the stock. Closing price or average price represents the price of whole year. But, to get the real average volume and price of each transaction in the stock and duration of time of each transaction in the whole year are essential. It is very difficult to obtain and include these all information and average of high and low price is not reliable and representative information. Hence the closing price of stock is used as market price of stock.

3.4.2 Dividend (D)

Dividend is relevant during the computation of rate of return, which is a return to the shareholders for the investment. If company declares only cash dividend there is no problem while taking exact amount of dividend. But if company declares bonus share, shareholder will receive extra number of shares consequently price of the

stock declines. So, here stock dividend is ignored and cash dividend is taken only under consideration. At this condition,

Total dividend amount = Cash dividend only

3.4.3 Return on Common Stock (R)

It is known as realized rate of return or single period rate of return. It is cash received plus price changes in period of stock (capital gain/loss). It is calculated in the form of percentage. It is calculated by adding change in market price with total dividend and than dividing by market price of previous year.

Symbolically

$$R_j = \frac{(P_1 - P_{t-1}) + D_1}{P_{t-1}}$$

Where,

R = annual rate of return

D_t = Cash dividend received at time t.

P_t = Price of a stock at time t.

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

3.4.4 Expected Rate of Return on Common Stock E(R)

One of the major aims of the study is to determine the expected return on the investment in common stock. Generally, this rate is obtained by the arithmetic mean of the part year returns.

Symbolically,

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

Where,

$E(R_j)$ = Expected rate of return on Stock j.

R_j = Return on stock j.

n = number of years that the return is taken.

$\sum$ = Sign of summation.

3.4.5 Return on market

It is the percentage increase in NEPSE index. Market return is the average return of the market as a whole. It is calculated as.

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

Where,

R = Return on Market

NI = NEPSE index at time t

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

3.4.6 Expected return on market, $E(R_m)$

It is average return of future expectation. It is calculated by summing up the past return and dividing by number of samples period.

$$E(R_m) = \frac{\sum R_m}{n}$$

Where,

$E(R_m)$ = Expected return on market.

$\sum R_m$ = Summation of market return.

N = Number of samples period.

3.4.7 Standard Deviation (S.D)

It is a statistical measure of the variability of a set of observations. The symbol is called sigma (σ). It measured the total risk on stock investment. Standard deviation can be calculated using following formula,

If data given as time series

$$\pm_j = \sqrt{\frac{\sum [R_j - E(R_j)]^2}{n-1}}$$

If data is probability distribution

$$\pm j = \sqrt{\sum_{t=1}^{n} [R_j - E(R_j)]^2 \, p}$$

Where,

σ_j = Standard Deviation on of return sock j during the time period n.

P_j = Probability distribution of the observation.

R_j = Single period rate of return on stock j.

$E(R_j)$ = Expected rate of return on stock j.

n = Number of years that the returns are taken.

Particularly, in this study data collected from NEPSE are in the farm of time series so first relation well cover into effect.

3.4.8 Coefficient of Variation (C.V.)

It is the relative measurement of risk with return. It measures the risk per unit of

return. It provides a more meaningful basis for comparison when the expected returns on two alternatives are not the same. The higher coefficient of variation, higher the risk. It is calculated as

$$C.V. = \frac{\pm_j}{E(R_j)}$$

Where,

C.V. = Coefficient of variation of stock.

σ_j = Standard deviation of return on stock j.

$E(R_j)$ = Expected rate of return on stock j.

3.4.9 Beta Coefficient ( )

Beta coefficient shows the market sensitivity of stock. Higher the beta, greater the sensitivity and reaction to the market movement. Beta coefficient of a particular stock will be less equal or more than 1, but the beta for market will be always 1.

$$_j = \frac{Cov_{jm}}{\pm_m^2}$$

Where,

$ß_j$ = Beta coefficient of stock j .

Cov_{jm} = Covariance between return on stock j and return on market.

$$\frac{\sum\left[R_j - E(R_j)\right]\ \left[R_m - E(R_m)\right]}{n-1}$$

σ^2_m = Variance of market return.

3.4.10 Correlation Coefficient (°)

Two variables are correlated when they are related that the change in the value of one variable is accompanied by change in the value of other. Correlation may be

positive or negative. If return on two securities is negatively correlated which combined in portfolio reduces the risk. If securities are positively correlated risk cannot be reduced. Correlation coefficient is negative or positive which ranges from +1 to -1. It can be calculated as.

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

where,

ρ_{ij} = Correlation coefficient for securities i and j.

Cov_{ij} = Covariance between securities i and j.

σ_i σ_j = Standard deviation of returns for securities i and j.

3.4.11 Portfolio Risk and Return

Portfolio is combination of individual or a group of assets. Investors have different types of investment opportunity but they have limited resource for investment so that investors have to choose that investment opportunity which maximizes return for a given level of risk or minimize risk for a given level of return. Thus the combination of this investment is called portfolio.

Portfolio Return, $E(R_p)$

The expected return on a portfolio is simply the weighted average of expected returns on the individual assets in the portfolio with weights being the fraction of the total portfolio invested in each asset.

Symbolically,

$E(R_p) = W_i \ E(R_i) + W_j \ E(R_j)$

Where,

$E(R_p)$ = Expected return on portfolio

W_i = Proportion of wealth invested in i asset.

W_j = Proportion of wealth invested in j asset.

$E(R_i)$ = Expected return on i asset.

$E(R_j)$ = Expected return on j asset.

Portfolio Risk,

It is the combined standard deviation of individual stock return. It is the risk of individual securities plus covariance between the securities. The formula for the calculation of portfolio risk for two assets case is given by

$$\pm_p = \sqrt{\pm_i^2 w_i^2 + \pm_j^2 w_j^2 + 2 w_i w_j \quad \text{cov}_{ij}}$$

Where,

σ_p = Standard deviation of stock i & j.

σ_i^2 = Variance of assets i.

w_i = proportion of assets i.

σ_j^2 = Variance of assets j.

w_j = Proportion of assets j.

Cov_{ij}) = Covariance between the return of assets i & j.

3.4.12 Risk Minimizing Portfolio

It is the portfolio with lowest level of risk in the efficient frontier. In other word it is the proportion of stock that minimizes the risk. In two stock portfolio the optimal weight to invest in stock i and j are calculated as follows

$$w_i = \frac{\pm_j^2 - Cov_{ij}}{\pm_i^2 + \pm_j^2 - 2Cov_{ij}}$$

Where,

w_i = optimal weight to invest in stock i.

w_j = optimal weight to invest in stock j.

σ_j^2 = Variance of stock j.

σ_i^2 = Variance of stock i.

$Cov_{i\,j}$) = Covariance of returns between stock i and j.

3.4.13 Partitioning of Total Risk

$$Systematic\quad risk\quad proporation(°^2) = \frac{^2_j \pm ^2_m}{\pm^2_j}$$

$$unsystematic\quad risk\quad proporation(1 - °^2) = \frac{Var(e)}{\pm^2_j}$$

σ_j^2 = Variance of stock j.

$ß_j^2$ = Square beta of stock j.

σ_m^2 = variance of market return. 2

Var (e) = residual variance.

3.5 METHOD OF ANALYSIS AND PRESENTATION

Results are presented in tabular form and clear interpretation on it is given simultaneously. All the methods of analysis and presentation are applied as simple as possible. Detail calculations are presented in appendices at the end of report. To make report simple and easily understandable charts, diagrams and graphs have been used. Summary conclusion and recommendations are presented finally at fifth chapter of this study.

CHAPTER IV
DATA PRESENTATION AND ANALYSIS

This chapter is the main part of study. In this chapter the effort has been made to analyze risk and return on common stock investment, which includes, detail data of market price of share and dividend of each selected commercial banks, their interpretation and analysis. With reference to the various readings and literature reviews in the preceding chapter effort is made to analyze the recent Nepalese stock market movement to the listed commercial banks. The analysis of data consists of organizing, tabulating and assessing financial and statistical result. Different table and diagrams are used to make the result easily understandable.

4.1 ANALYSIS OF INDIVIDUAL COMMERCIAL BANKS

Five commercial banks are taken as sample for study. There are 21 listed commercial banks listed in NEPSE. Every bank's common stock risk and return are analyzed properly.

Risk and return is considered to be one of the best ways to analysis the behavior of changing market price of common stock. In this analysis, it is attempted to find out periodical realized returns to the investors, its expected return or average rate of return, standard deviation, co-efficient of variation. In the following paragraph each banks are introduced and their common stock's risk and return are analyzed here.

4.1.1 Standard Chartered Bank Nepal Limited (SCBNL)

This bank which was formerly Nepal Grindlays Bank was established in 1985 as a foreign joint venture bank under the company act 1964. In 2000 the Nepal Grindlays Bank was amalgamate in standard chartered banking group and the 50 percent share of former was transferred to the latter by the virtue of amalgamation 33.34 percent

of equity share capital is held by Nepal Bank Limited and remaining 16.66 percent share capital is held by general public investors. The bank has been providing various banking services to its customers through branches national wide. The bank listed in the NEPSE in 2045 B.S. Its central office is at New Baneshwor, Kathmandu and it has 14 branches in different cities. And Bank's authorized capital, issued capital and paid up capital are Rs. 2,00,00,00,000, Rs. 1,39,84,83,600 and Rs. 1,39,84,83,600 respectively.

Following table 4.1 represents the market price and dividend per share of SCBNL for the purpose of risk and return analysis.

Table 4.1

MPS and DPS Data of Standard Charter Bank Ltd.

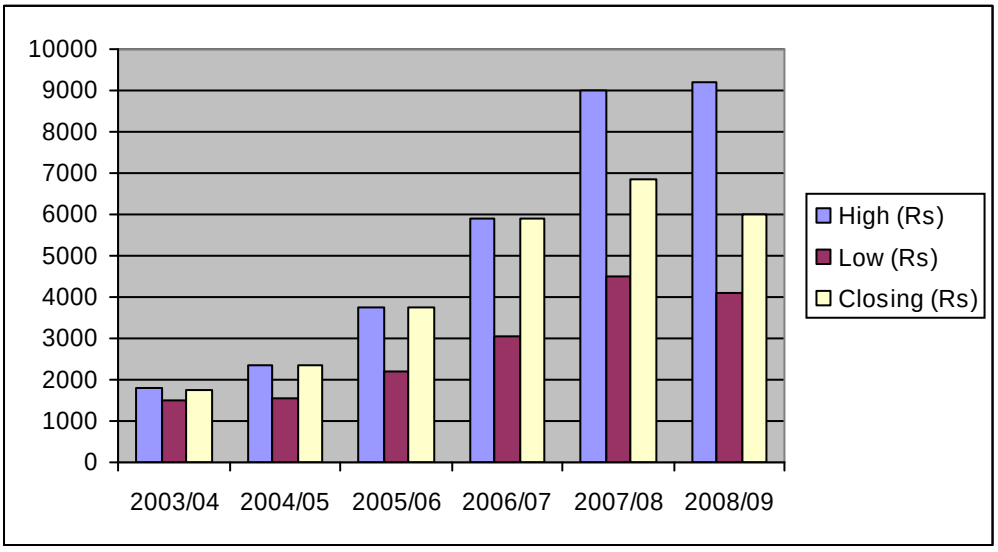
Fiscal Year	Market Price Per Share			Cash Dividend Per Share (Rs)
	High (Rs)	Low (Rs)	Closing (Rs)	
2060/61 (2003/04)	1800/-	1520/-	1745/-	-
2061/62 (2004/05)	2350/-	1553/-	2345/-	120/-
2062/63 (2005/06)	3775/-	2200/-	3775/-	130/-
2063/64 (2006/07)	5900/-	3050/-	5900/-	80/-
2064/65 (2007/08)	9025/-	4505/-	6830/-	80/-
2065/66 (2008/09)	9200/-	4100/-	6010/-	50/-

Data Source: Annual Trade Report of NEPSE

Closing price is maximum in Fiscal year 2064/65 (2007/08) and minimum in Fiscal year 2060/61 (2003/04) and dividend means cash dividend only ignoring bonus share & right share.

Diagram 4.1

Market Price of Share and Dividend Per Share of SCBNL



Closing price is maximum in Fiscal year 2064/65 (2007/08) and minimum in Fiscal year 2060/61 (2003/04)

- **Rate of Return, Expected Rate of Return, Standard Deviation, Coefficient of Variation and Trend Line of Rate of Return of SCBNL**

Closing price and cash dividend amounts are used to calculate realized rate of return for each year. Table 4.2 shows the calculation of yearly-realized return, expected return, standard deviation and coefficient of variation of returns.

Table No. 4.2

Rate of Returns, Expected Return, SD and C.V. of the

Common Stock of SCBNL

FY	Closing Price (P)	Dividend (D)	$R = \frac{D_t + (Pt - p_{t-1})}{P_{t-1}}$	[R-E(R)]	$[R-E(R)]^2$
2060/61 (2003/04)	1745	-	-	-	-
2061/62 (2004/05)	2345	120	0.4126	0.0685	0.0047
2062/63 (2005/06)	3775	130	0.6652	0.3211	0.1030
2063/64 (2006/07)	5900	80	0.5841	0.2400	0.0576
2064/65 (2007/08)	6830	80	0.1712	-0.1729	0.0299
2065/66 (2008/09)	6010	50	-0.1127	-0.4568	0.2087
Total			**1.7204**		**0.4040**

We have,

Expected Return, $E(r) = \frac{\sum R}{n} = \frac{1.7204}{5} = 0.3441 = 34.41\%$

Standard Deviation $(\sigma) = \sqrt{\frac{\sum [R - E(r)^2}{n-1}} = \sqrt{\frac{0.4040}{5-1}} = \sqrt{0.1010} = 0.3178$

Coefficient of Various (C.V) = $\frac{\pm}{E(r)} = \frac{0.3178}{0.3441} = 0.9236$

Expected rate of return (Trend Value) for each year are calculate on the base of rate of return on common stock of SCBNL respective year by using least square method as follows.

Table No. 4.3

Year Wise Expected Rate of Return of SCBNL

FY	Rate of Return (Y)	Deviation from (FY 2006/07 (X)	XY	X^2	Trend Value (Yc)
2061/62 (2004/05)	0.4126	-2	-0.8252	4	0.6531
2062/63 (2005/06)	0.6652	-1	-0.6652	1	0.4986
2063/64 (2006/07)	0.5841	0	0	0	0.3441
2064/65 (2007/08)	0.1712	1	0.1712	1	0.1896
2065/66 (2008/09)	-0.1127	2	-0.2254	4	0.0351
2066/67 (2009/10)					-0.1194
2067/68 (2010/11)					-0.2739
2068/69 (2011/12)					-0.4284
	∑y=1.7204	∑x =0	∑XY =-1.5446	$\sum X^2$=10	

We have,

The equation of trend line is $Y_c = a + bx$

As, Σx = 0, $a = \frac{\sum y}{n} = \frac{1.7204}{5} = 0.3441$

$b = \frac{\sum xy}{\sum x^2} = \frac{-1.5446}{10} = -0.1545$

Here,

Trend line Yc = 0.3441 + (-0.1545) x

When, x = -2, Yc = 0.3441 + (-0.1545) × (-2) = 0.6531

When, x = -1, Yc = 0.3441 + (-0.1545) × (-1) = 0.4986

When, x = 0, Yc = 0.3441 + (-0.1545) × 0 = 0.3441

When, x = 1, Yc = 0.3441 + (-0.1545) × 1 = 0.1896

When, x = 2, Yc = 0.3441 + (-0.1545) × 2 = 0.0351

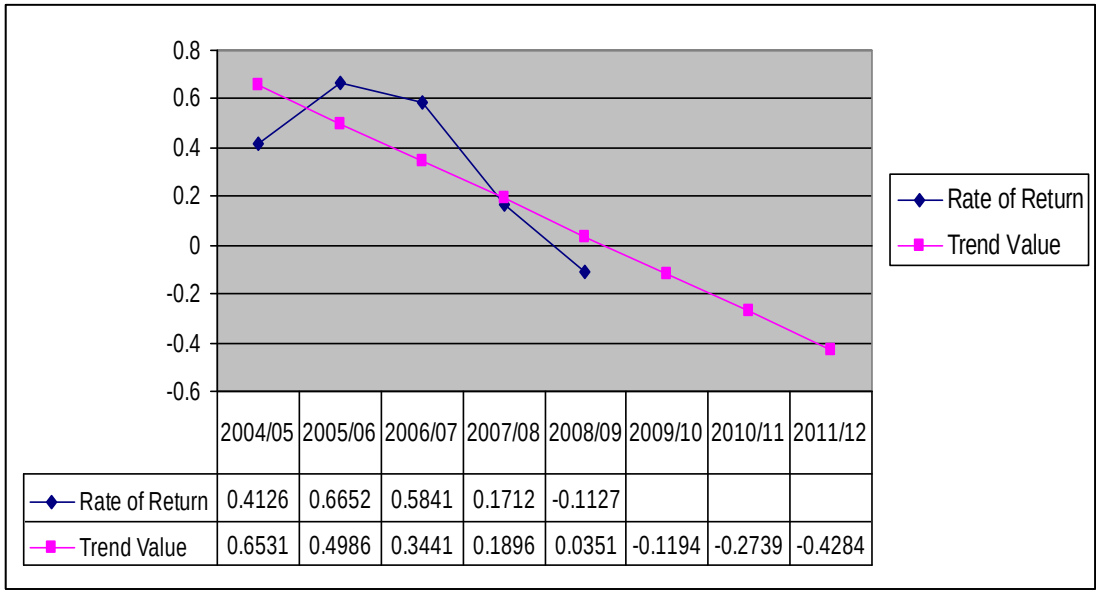
When, x =3, Yc = 0.3441 + (-0.1545) × 3 = -0.1194

When, x =4, Yc = 0.3441 + (-0.1545) × 4 = -0.2739

When, x =5, Yc = 0.3441 + (-0.1545) × 5 = -0.4284

Diagram : 4.2

Movement of Stocks Rate of Return and Trend Line of SCBNL



	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Rate of Return	0.4126	0.6652	0.5841	0.1712	-0.1127			
Trend Value	0.6531	0.4986	0.3441	0.1896	0.0351	-0.1194	-0.2739	-0.4284

The above diagram shows the movement of common stock of SCBNL in rate of return (R) and trend line. In the beginning (FY 2004/05) Rate of Return is 0.4126, then it increases at high rate and reaches to the highest point in FY 2005/06 (i.e. 0.6652) after that it started to move down slowly. But after FY 2007/08 it falls very fast and reaches to the negative return (i.e. -0.1127) in FY 2008/09. Similarly the trend value is high in FY 2004/05 (i.e. 0.6531) and goes downward movement and reaches to the lowest point in FY 2011/12. (i.e. -0.4284)

4.1.2 Nepal Arab Bank Ltd (NABIL)

Nepal Arab bank Ltd (NABIL) is the first joint venture commercial bank in Nepal. This is the joint venture of Nepali promoters and Emirates Bank International (Dubai) in 1984 under the company Act 1996. Now its 50 percent equity share hold by Emirates Bank International 20 percent equity share hold by Nepali promoters and financial institutions and remaining 30 percent were issued general public of Nepal. It has 19 branches operating different parts of the country. Authorized capital, issued capital and paid up capital of the bank are Rs. 3,50,00,00,000

Rs. 2,02,97,69,000 and Rs. 2,02,97,69,000 respectively with par value per share Rs. 100.

Following table 4.4 represents the market price and dividend per share of NABIL bank for the purpose of risk and return analysis.

Table No. 4.4

Market Price Per Share and Dividend Per share Data of NABIL

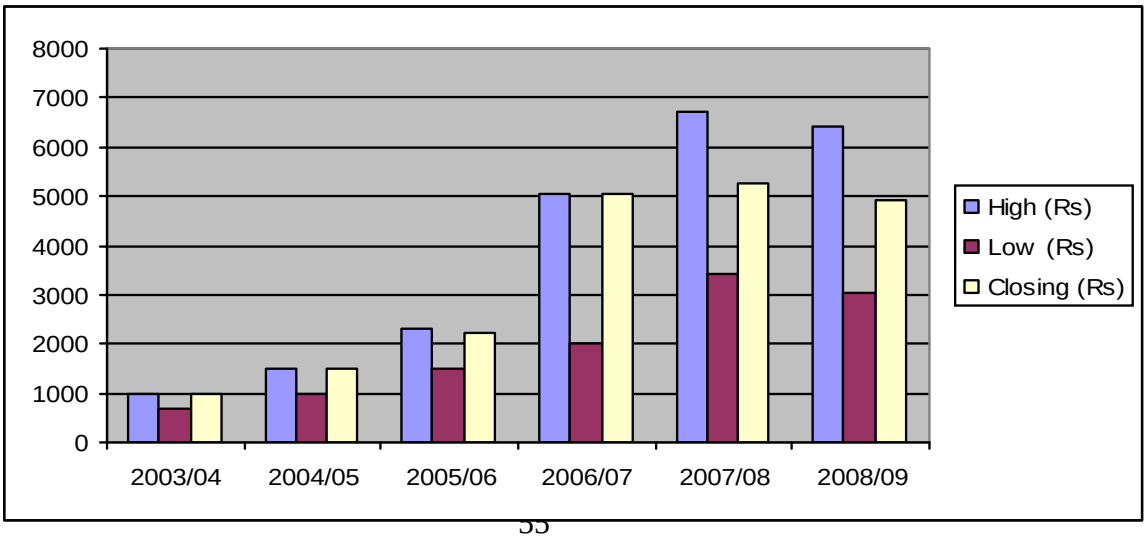
Fiscal Year	Market Price Per Share			Cash Dividend Per Share (Rs)
	High (Rs)	Low (Rs)	Closing (Rs)	
2060/61 (2003/04)	1005/-	705/-	1000/-	-
2061/62 (2004/05)	1515/-	1000/-	1505/-	70/-
2062/63 (2005/06)	2300/-	1500/-	2240/-	85/-
2063/64 (2006/07)	5050/-	2025/-	5050/-	100/-
2064/65 (2007/08)	6700/-	3410/-	5275/-	60/-
2065/66 (2008/09)	6400/-	3050/-	4899/-	0/-

Data Source: Annual Trade Report of NEPSE

Closing Price is maximum in FY 2007/08 and minimum in FY 2003/04 and dividend means cash dividend only ignoring bonus share & right share.

Diagram 4.3

Market price of Share and Dividend per Share of NABIL



Closing price is maximum in Fiscal year 2064/65 (2007/08) and minimum in Fiscal year 2060/61 (2003/04)

- **Rate of Return, Expected Return, Standard Deviation, Coefficient of Variation and Trend Line of Rate of Returns of NABIL.**

Rate of return for each year are calculated for the basis of closing price of common stock and cash dividend amounts of respective year. Table 4.5 shows the calculation of year wise rate of return, expected rate of return, standard deviation and coefficient of variation of return.

Table No. 4.5

Rate of Return, Expected Rate of Return, S.D., CV, of the Common Stock of NABIL Bank

FY	Closing Price (P)	Dividend (D)	$R = \frac{D_t + (P_t - p_{t-1})}{P_{t-1}}$	[R-E(R)]	$[R-E(R)]^2$
2060/61 (2003/04)	1000	0	-	-	-
2061/62 (2004/05)	1505	70	0.5750	0.0942	0.0089
2062/63 (2005/06)	2240	85	0.5449	0.0641	0.0041
2063/64 (2006/07)	5050	100	1.2991	0.8183	0.6696
2064/65 (2007/08)	5275	60	0.0564	-0.4244	0.1801
2065/66 (2008/09)	4899	0	-0.0713	-0.5521	0.3048
Total			2.4041		1.1675

We have,

Expected Return, $E(r) = \frac{\sum R}{n} = \frac{2.4041}{5} = 0.4808 = 48.08\%$

Standard Deviation (σ) = $\sqrt{\frac{\sum [R - E(r)]^2}{n-1}} = \sqrt{\frac{1.1675}{5-1}} = \sqrt{0.2919} = 0.5403$

Coefficient of Variation (C.V) = $\frac{\pm}{E(r)} = \frac{0.5403}{0.4808} = 1.1238$

Rate of returns (Trend Value) for each year are calculated on the base of rate of return on common stock of NABIL respective year by using least square method as follows.

Table No. 4.6

Year Wise Expected Rate of Returns Data of NABIL

FY	Rate of Return (Y)	Deviation from (FY 2006/07 (X)	XY	X^2	Trend Value (Y_c)
2061/62 (2004/05)	0.5750	-2	-1.1500	4	0.8378
2062/63 (2005/06)	0.5449	-1	-0.5449	1	0.6593
2063/64 (2006/07)	1.2991	0	0	0	0.4808
2064/65 (2007/08)	0.0564	1	0.0564	1	0.3023
2065/66 (2008/09)	-0.0731	2	-0.1462	4	0.1238
2066/67 (2009/10)	-				-0.0547
2067/68 (2010/11)	-				-0.2332
2068/69 (2011/12)	-				-0.4117
	$\sum y$=2.4041	$\sum x$ =0	$\sum XY$ = -1.7847	$\sum X^2$=10	

We have,

The equation of trend line is $Y_c = a + bx$

As, $\Sigma x = 0$, $a = \frac{\sum y}{n} = \frac{2.4041}{5} = 0.4808$

$b = \frac{\sum xy}{\sum x^2} = \frac{-1.7847}{10} = -0.1785$

Here,

Trend line Yc = 0.4808 + (-0.1785) x

When, x = -2, Yc = 0.4808+ (-0.1785) x (-2) = 0.8378

When, x = -1, Yc = 0.4808+ (-0.1785) x (-1) = 0.6593

When, x = 0, Yc = 0.4808+ (-0.1785) x 0 = 0.4808

When, x = 1, Yc = 0.4808+ (-0.1785) x 1 = 0.3023

When, x = 2, Yc = 0.4808+ (-0.1785) x 2 = 0.1238

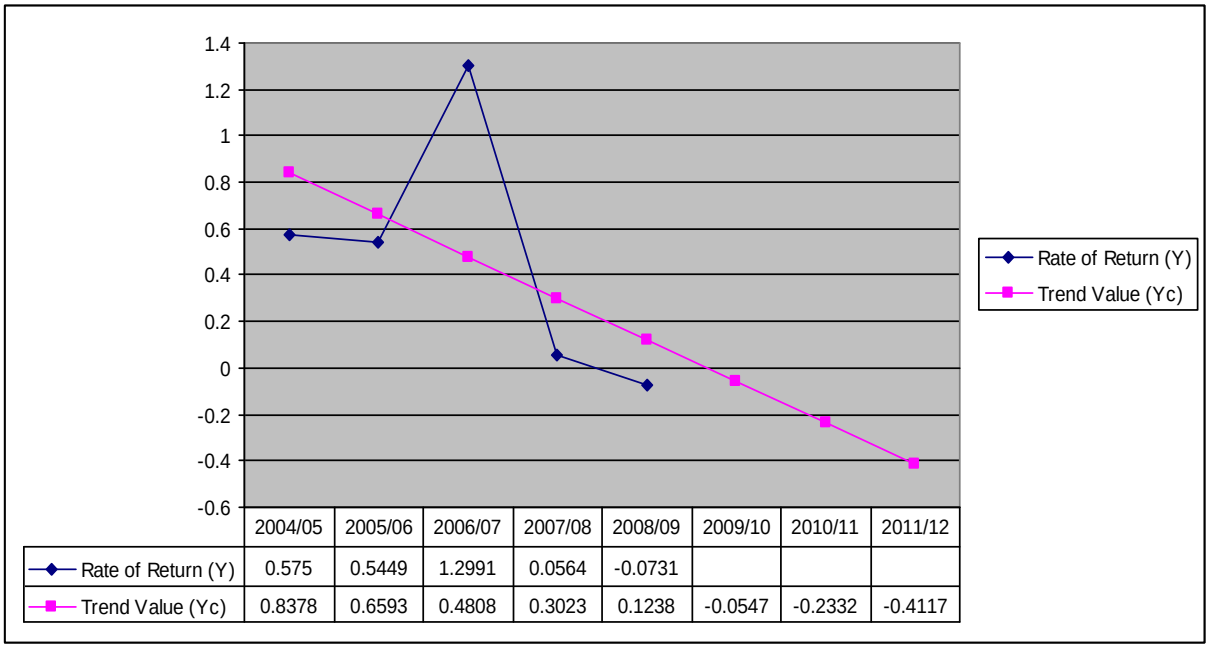
When, x = 3, Yc = 0.4808+ (-0.1785) x 3 = - 0.0547

When, x = 4, Yc = 0.4808+ (-0.1785) x 4 = - 0.2332

When, x = 5, Yc = 0.4808+ (-0.1785) x 5 = - 0.4117

Diagram 4.4

Movement of Stocks Rate of return and Trend Line of NABIL



	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Rate of Return (Y)	0.575	0.5449	1.2991	0.0564	-0.0731			
Trend Value (Yc)	0.8378	0.6593	0.4808	0.3023	0.1238	-0.0547	-0.2332	-0.4117

Above diagram shows the movement of common stock of NABIL's rate of return (R) and Trend line (Yc). In the beginning Rate of Return is moderate in FY 2004/05 (i.e. 0.5750) and decreases slowly in FY 2005/06 and reaches to 0.5449 and increases in great speed to 1.2991 in FY 2006/07. After that it falls down and attains negative return in FY 2008/09 (i.e.-0.0731). Similarly the trend value is high in FY 2004/05 (i.e. 0.8378) and goes downward movement and reaches to the lowest point in FY 2011/12. (i.e. -0.4117).

4.1.3 Himalayan Bank Limited (HBL)

Himalayan Bank Ltd is a joint venture bank with Habib bank Ltd. of Pakisthan was established in 1992 under the company Act. 1964. This is first joint venture bank managed by Nepali chief executive. The operation of the bank started from February 1993. Bank's authorized capital, issued capital and paid up capital up to FY 2008/09 is Rs, 2,00,00,00,000, Rs. 1,60,00,00,000 and Rs. 1,60,00,00,000 respectively. The main objectives of the bank is to provide modern banking facilities to the businessman, industrialists, other professional and to provide loans on agriculture and industrial sectors. Now its 20 percent equity share hold by Habib Bank and 80 percent equity hold by Nepali Promotes, Financial institutions, General public and others. It has 35 branches in different parts of the country. Following table 4.7 represents the market price and dividend of HBL for the purpose of risk and return analysis.

Table No. 4.7

Market Price Per Share and Dividend Per share Data of Himalayan Bank Ltd.

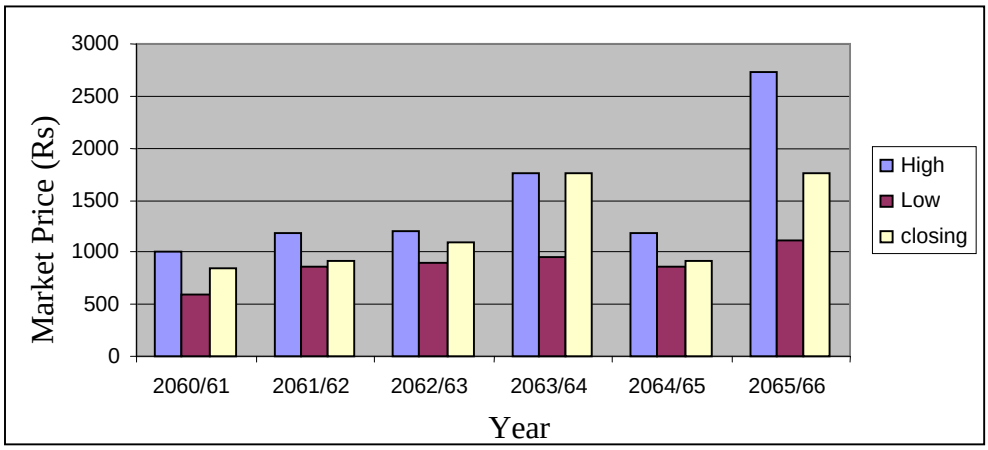
Fiscal Year	Market Price Per Share			Cash Dividend Per Share (Rs)
	High (Rs)	Low (Rs)	Closing (Rs)	
2060/61 (2003/04)	1010/-	600/-	840/-	-
2061/62 (2004/05)	1181/-	855/-	920/-	11.58
2062/63 (2005/06)	1200/-	900/-	1100/-	30
2063/64 (2006/07)	1760/-	950/-	1760/-	15
2064/65 (2007/08)	1181/-	855/-	920/-	25
2065/66 (2008/09)	2730/-	1119/-	1760/-	12

Data Source: Annual Trade Report of NEPSE

Closing Price is maximum in FY 2007/08 and minimum in FY 2003/04 and dividend means cash dividend only ignoring bonus share & right share.

Diagram 4.5

Market price of Share and Dividend Per Share of HBL



Closing price is maximum in Fiscal year 2064/65 (2007/08) and minimum in Fiscal year 2060/61 (2003/04)

- **Rate of Return, Expected Return, Standard Deviation, Coefficient of Variation and Trend Line of Rate of Returns of HBL.**

Rate of return for each year are calculated for the basis of closing price of common stock and cash dividend amounts of respective year. Table 4.8 shown the calculation of year wise

rate of return, expected rate of return, standard deviation and coefficient of variation of return.

Table No. 4.8

Rate of Return, Expected Rate of Return, S.D., CV, of the Common Stock of HBL

FY	Closing Price (P) (Rs)	Dividend (D) (Rs)	$R = \frac{D_t + (P_t - p_{t-1})}{P_{t-1}}$	[R-E(R)]	$[R-E(R)]^2$
2060/61 (2003/04)	840	-	-	-	-
2061/62 (2004/05)	920	11.58	0.1090	-0.1738	0.0302
2062/63 (2005/06)	1100	30	0.2283	-0.0545	0.0030
2063/64 (2006/07)	1760	15	0.6136	0.3308	0.1094
2064/65 (2007/08)	920	25	-0.4631	-0.7459	0.5564
2065/66 (2008/09)	1760	12	0.9261	0.6433	0.4138

Total			1.4139		1.1128

We have,

Expected Return, E(R) = $\frac{\sum R}{n} = \frac{1.4139}{5} = 0.2828 = 28.28\%$

Standard Deviation (σ) = $\sqrt{\frac{\sum [R - E(R)]^2}{n-1}} = \sqrt{\frac{1.1128}{5-1}} = \sqrt{0.2782} = 0.5274$

Coefficient of Variation (C.V) = $\frac{\pm}{E(R)} = \frac{0.5274}{0.2828} = 1.8651$

Rate of returns (Trend Value) for each year are calculated on the base of rate of return on common stock of HBL respective year by using least square method as follows. Table 4.9 shows the calculation of year wise realized rate of returns or trend value.

Table No. 4.9

Year Wise Expected Rate of Returns Data of HBL

FY	**Rate of Return (Y)**	**Deviation from (FY 2006/07 (X)**	**XY**	**X^2**	**Trend Value (Y_c)**
2061/62 (2004/05)	0.1090	-2	-0.2180	4	0.0942
2062/63 (2005/06)	0.2283	-1	-0.2283	1	0.1885
2063/64 (2006/07)	0.6136	0	0	0	0.282
2064/65 (2007/08)	-0.4631	1	-0.4631	1	0.3771
2065/66 (2008/09)	0.9261	2	1.8522	4	0.4714
2066/67 (2009/10)					0.5657
2067/68 (2010/11)					0.6600
2068/69 (2011/12)					0.7543
	∑y=1.4139		∑XY = -0.9428	10	

We have,

The equation of trend line is Yc = a + bx

As, Σx = 0, $a = \frac{\sum y}{n} = \frac{1.4139}{5} = 0.2828$

$b = \frac{\sum xy}{\sum x^2} = \frac{0.9428}{10} = -0.0943$

Here,

Trend line Yc = a + bx

= 0.2828+ (0.0943) × x

When, x = -2, Yc = 0.2828+ (0.0943) × (-2) = 0.0942

When, x = -1, Yc = 0.2828+ (0.0943) × (-1) = 0.1885

When, x = 0, Yc = 0.2828+ (0.0943) × 0 = 0.2828

When, x = 1, Yc = 0.2828+ (0.0943) × 1 = 0.3771

When, x = 2, Yc = 0.2828+ (0.0943) × 2 = 0.4714

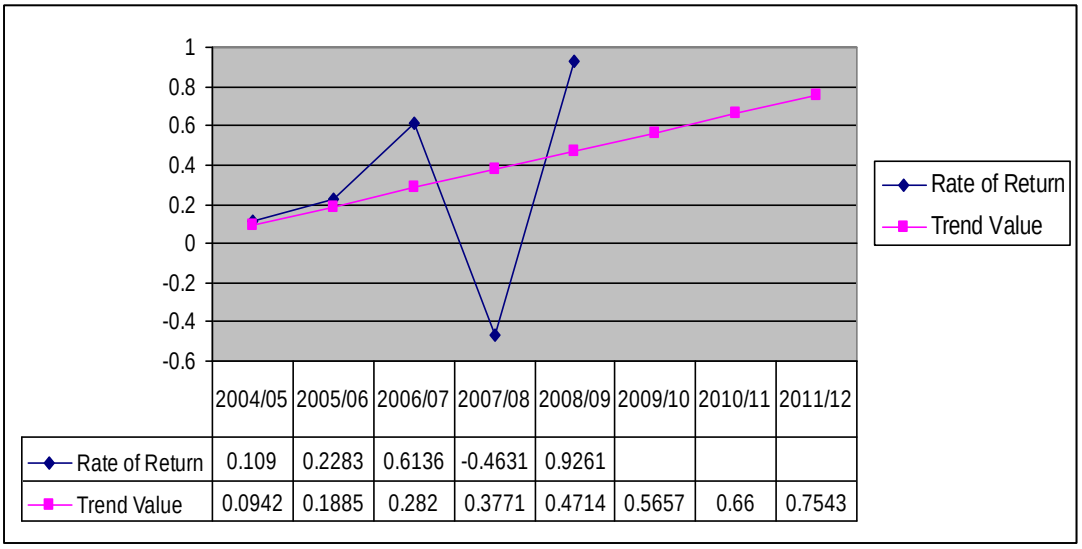
When, x = 3, Yc = 0.2828+ (0.0943) × 3 = 0.5657

When, x = 4, Yc = 0.2828+ (0.0943) × 4 = 0.6600

When, x = 4, Yc = 0.2828+ (0.0943) × 4 = 0.7543

Diagram 4.6

Movement of Stocks Rate of return and Trend Line of HBL



	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Rate of Return	0.109	0.2283	0.6136	-0.4631	0.9261			
Trend Value	0.0942	0.1885	0.282	0.3771	0.4714	0.5657	0.66	0.7543

Above diagram shows the movement of common stock of HBL's rate of return (R) and Trend line (Yc). In the beginning Rate of Return is low in FY 2004/05 (i.e. 0.1090) and increase slowly in FY 2005/06 and decrease in the high rate in the fiscal year 2007/08 and reaches to the negative return (i.e. -0.4631) and in FY 2008/09 it

increases at the high rate and reaches to the maximum point (i.e. 0.9261). Then Similarly the trend value is low in FY 2004/05 (i.e. 0.0942) and goes upward movement and reaches to the highest point in FY 2011/12. (i.e.0.7543).

4.1.4 Everest Bank Ltd (EBL)

Everest Bank Ltd. was established in 1992 under the company act 1964 under the company Act 1964 with an objective of carrying out commercial banking activities under the commercial bank Act. 1974. United Bank of India Ltd under technical services agreement signed between it and Nepali Promoter was managing the bank till November 1996. Later on it handed over the management to the Panjab National Bank Ltd, India which holds 20 percent equity on the bank's shares capital, 50 percent equity hold, by Nepali promoter and 30 percent hold by the general public investors. There are 15 branches of EBL in operation in the country. Authorized capital, issued capital and paid up capital are Rs. 1,50,00,00,000, Rs. 1,27,96,07,000 and Rs. 1,27,96,07,000 respectively.

Following Table 4.10 represents the market price and dividend per share of EBL for the purpose of risk and return analysis.

Table No. 4.10

Market Price Per Share and Dividend Per share Data of Everest Bank Ltd.

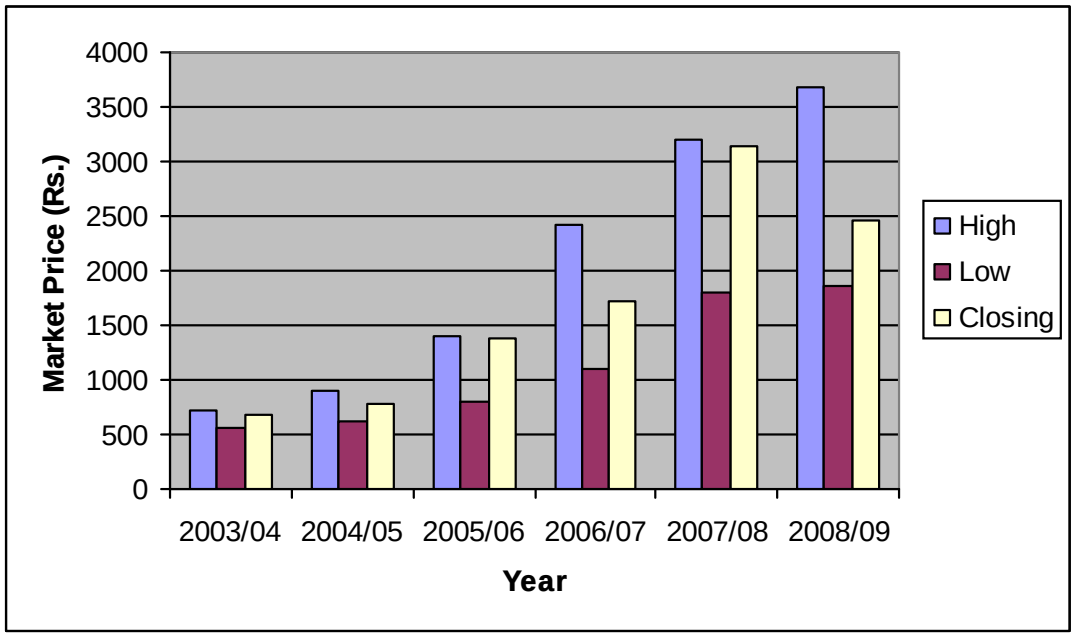
Fiscal Year	Market Price Per Share			Dividend Per Share (Rs)
	High (Rs)	Low (Rs)	Closing (Rs)	
2060/61 (2003/04)	723/-	560/-	680/-	-
2061/62 (2004/05)	905/-	625/-	780/-	12.5
2062/63 (2005/06)	1410/-	800/-	1379/-	25
2063/64 (2006/07)	2430/-	1100/-	1729/-	10
2064/65 (2007/08)	3195/-	1804/-	3132/-	20
2065/66 (2008/09)	3672/-	1855/-	2455/-	30

Data Source: Annual Trade Report of NEPSE

Closing Price is maximum in FY 2007/08 and minimum in FY 2003/04 and dividend means cash dividend only ignoring bonus share & right share.

Diagram 4.7

Market price of Share and Dividend per Share of EBL



Closing price is maximum in Fiscal year 2064/65 (2007/08) and minimum in Fiscal year 2060/61 (2003/04)

- **Rate of Return, Expected Return, Standard Deviation, Coefficient of Variation and Trend Line of Rate of Return of EBL.**

Rate of return for each year are calculated on the basis of closing price of common stock and cash dividend amounts of respective year. Table 4.11 shown the calculation of year wise rate of return, expected rate of return, standard deviation and coefficient of variation of return.

Table No. 4.11

Rate of Return, Expected Rate of Return, S.D., CV, of the Common STOCK OF EBL

FY	Closing Price (P) (Rs)	Dividend (D) (Rs)	$R = \frac{D_t + (P_t - p_{t-1})}{P_{t-1}}$	[R-E(R)]	$[R-E(R)]^2$
2060/61 (2003/04)	680	-	-	-	-
2061/62 (2004/05)	780	12.5	0.1654	-0.2032	0.0413
2062/63 (2005/06)	1379	25	0.8000	0.4314	0.1861
2063/64 (2006/07)	1729	10	0.2611	-0.1075	0.0116
2064/65 (2007/08)	3132	20	0.8230	0.4544	0.2065
2065/66 (2008/09)	2455	30	-0.2066	-0.5752	0.3309
Total			1.8429		0.7764

We have,

Expected Return, E(R) = $\frac{\sum R}{n} = \frac{1.8429}{5} = 0.3686 = 36.86\%$

Standard Deviation (σ) = $\sqrt{\frac{\sum [R - E(R)]^2}{n-1}} = \sqrt{\frac{0.7764}{5-1}} = \sqrt{0.1941} = 0.4406$

Coefficient of Variation (C.V) = $\frac{\pm}{E(R)} = \frac{0.4406}{0.3686} = 1.1952$

Rate of returns (Trend Value) for each year are calculated on the basis of rate of return on common stock of EBL respective year by using least square method as follows. Table 4.12 shows the calculation of year wise realized rate of returns or trend value.

Table No. 4.12

Year Wise Expected Rate of Returns Data of EBL

FY	Rate of Return (Y)	Deviation from (FY 2006/07 (X)	XY	X^2	Trend Value (Y_c)
2061/62 (2004/05)	0.1654	-2	-0.3308	4	0.5128
2062/63 (2005/06)	0.8000	-1	-0.8000	1	0.4407
2063/64 (2006/07)	0.2611	0	0	0	0.3686
2064/65 (2007/08)	0.8230	1	0.8230	1	0.2965
2065/66 (2008/09)	-0.2066	2	-0.4132	4	0.2244
2066/67 (2009/10)	-				0.1523
2067/68 (2010/11)	-				0.0802
2068/69 (2011/12)	-				0.0081
	$\sum y$=1.8429	$\sum X$=0	$\sum XY$ = -0.7210	$\sum X^2$=10	

We have,

The equation of trend line is Yc = a + bx

As, Σx = 0, $a = \frac{\sum y}{n} = \frac{1.8429}{5} = 0.3686$

$$b = \frac{\sum xy}{\sum x^2} = \frac{-0.7210}{10} = -0.0721$$

Here,

Trend line Yc = a + b

= 0.3686 + (-0.0721) × x

When, x = -2, Yc = 0.3686 + (-0.0721) × (-2) = 0.5128

When, x = -1, Yc = 0.3686 + (-0.0721) × (-1) = 0.4407

When, x = 0, Yc = 0.3686 + (-0.0721) × 0 = 0.3686

When, x = 1, Yc = 0.3686 + (-0.0721) × 1 = 0.2965

When, x = 2, Yc = 0.3686 + (-0.0721) × 2 = 0.2244

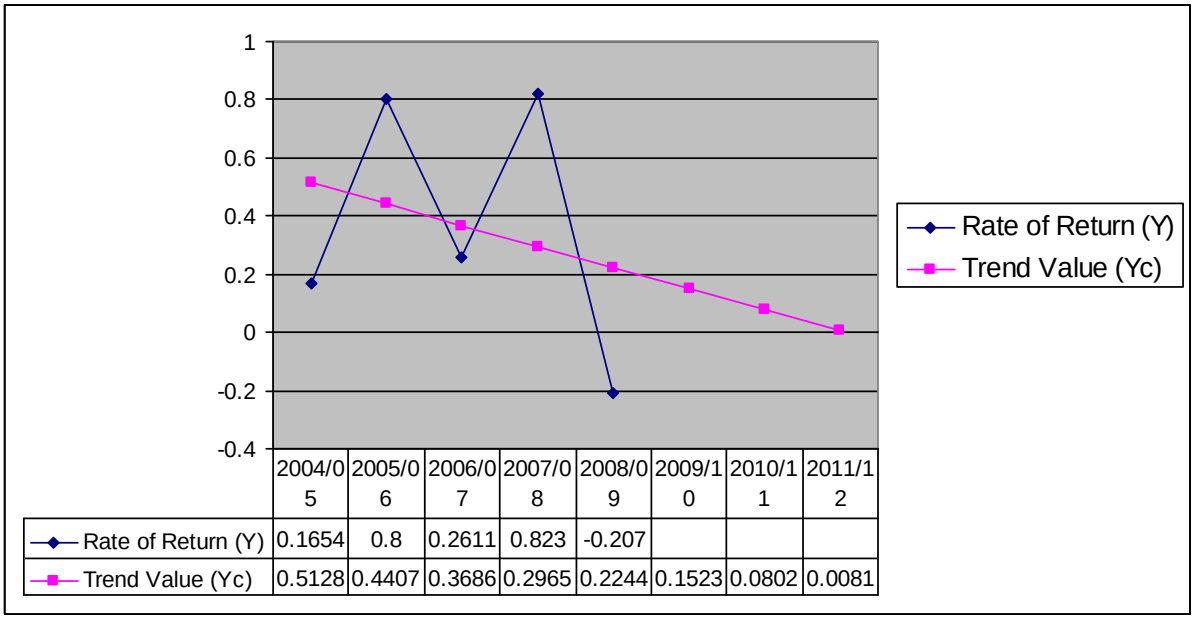
When, x = 3, Yc = 0.3686 + (-0.0721) × 3 = 0.1523

When, x = 4, Yc = 0.3686 + (-0.0721) × 4 = 0.0802

When, x = 5, Yc = 0.3686 + (-0.0721) × 5 = 0.0081

Diagram 4.8

Movement of Stocks Rate of Return and Trend Line of EBL



	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Rate of Return (Y)	0.1654	0.8	0.2611	0.823	-0.207			
Trend Value (Yc)	0.5128	0.4407	0.3686	0.2965	0.2244	0.1523	0.0802	0.0081

The above diagram 4.8 shows the movement of common stock of EBL's rate of return (R) and trend line (Y_C). Here, in the beginning Rate of Return is low in FY 2004/05 (i.e. 0.1654) and increases in FY 2005/06 (i.e. 0.8000) and then fall in FY 2006/07 (i.e. 0.2611) then again increases in FY 2007/08 (i.e. 0.8230). After that it falls in high speed in FY 2008/09 and reaches to negative value (i.e. -0.2066). Similarly the trend value is high in FY 2004/05 (i.e. 0.5128) and goes downward movement and reaches to the lowest point in FY 2011/12. (i.e 0.0081).

4.1.5 Nepal Investment Bank Ltd. (NIB)

Previous Nepal Indosuez Bank Ltd. in known as Nepal Investment Bank now. It is another joint venture bank which was established on 21 January 1986 under the

company Act 1964. The bank is managed by Banque Indosuez, Paris in accordance 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. It has 14 branches in different places of the country. Authorized capital, issued capital and paid up capital of this bank is Rs. 59,00,00,000, Rs. 29,52,93,000 and Rs. 29,52,93,000 respectively.

The following table 4.13 represents the market price and dividend per share of NIB for the purpose of risk and return analysis.

Table No. 4.13

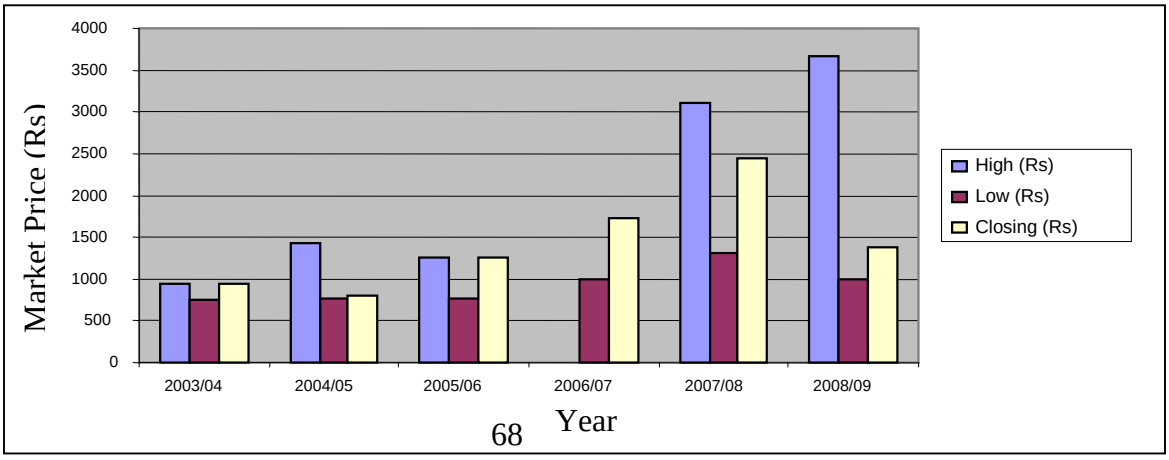
Market Price per Share and Dividend per share Data of NIB

Fiscal Year	Market Price Per Share			Cash Dividend Per Share
	High (Rs)	Low (Rs)	Closing (Rs)	
2060/61 (2003/04)	942/-	745/-	940/-	-
2061/62 (2004/05)	1430/-	760/-	800/-	12.5
2062/63 (2005/06)	1265/-	762/-	1260/-	20
2063/64 (2006/07)	1729/-	1000/-	1729/-	5
2064/65 (2007/08)	3101/-	1305/-	2450/-	7.5
2065/66 (2008/09)	3670/-	990/-	1388/-	20

Closing Price is maximum in FY 2007/08 and minimum in FY 2004/05 and dividend means cash dividend only ignoring bonus share & right share.

Diagram 4.9

Market price of Share and Dividend per Share of NIB



Closing price is maximum in Fiscal year 2064/65 (2007/08) and minimum in Fiscal year 2060/61 (2004/05)

- **Rate of Return, Expected Return, Standard Deviation, Coefficient of Variation and Trend Line of Rate of Returns of NIB**

Rate of return for each year are calculated on the basis of closing price of common stock and cash dividend amounts of respective year. Table 4.14 shows the calculation of year wise rate of return, expected rate of return, standard deviation and coefficient of variation of return.

Table No. 4.14

Rate of Return , Expected Rate of Return, S.D., CV, of the Common Stock of NIB

FY	Closing Price (P) (Rs.)	Dividend (D) (Rs.)	$R = \frac{D_t + (P_t - p_{t-1})}{P_{t-1}}$	[R-E(R)]	$[R-E(R)]^2$
2060/61 (2003/04)	940	-	-	-	-
2061/62 (2004/05)	800	12.5	-0.1356	-0.3029	0.0917
2062/63 (2005/06)	1260	20	0.6000	0.4327	0.1872
2063/64 (2006/07)	1729	5	0.3762	0.2089	0.0436
2064/65 (2007/08)	2450	7.5	0.4213	0.2540	0.0645
2065/66 (2008/09)	1388	20	-0.4253	-0.5926	0.3512
Total			0.8366		0.7382

We have,

Expected Return, $E(r) = \frac{\sum R}{n} = \frac{0.8366}{5} = 0.1673$

Standard Deviation (σ) = $\sqrt{\frac{\sum[R-E(R)]^2}{n-1}} = \sqrt{\frac{0.7382}{5-1}} = \sqrt{0.1846} = 0.4296$

Coefficient of Variation (C.V) = $\frac{\pm}{E(R)} = \frac{0.4296}{0.1673} = 2.5678$

Rate of returns (Trend Value) for each year are calculated on the base of rate of return on common stock of NIB respective year by using least square method as follows. Table 4.15 shows the calculation of year wise realized rate of returns or trend value.

Table No. 4.15

Year Wise Expected Rate of Returns Data of Nepal Investment Bank Ltd.

FY	Rate of Return (Y)	Deviation from (FY 2006/07) (X)	XY	X^2	Trend Value (Y_c)
2061/62 (2004/05)	-0.1356	-2	0.2712	4	0.3189
2062/63 (2005/06)	0.6000	-1	-0.6000	1	0.2431
2063/64 (2006/07)	0.3762	0	0	0	0.1673
2064/65 (2007/08)	0.4213	1	0.4213	1	0.0915
2065/66 (2008/09)	-0.4253	2	-0.8506	4	0.0157
2066/67 (2009/10)					-0.0601
2067/68 (2010/11)					-0.1359
2068/69 (2011/12)					-0.2117
	$\sum y$=0.8366		$\sum xy$ =-0.7581	$\sum X^2$=10	

We have,

The equation of trend line is Yc = a + bx

As, $\Sigma x = 0$, a = $\frac{\sum y}{n} = \frac{0.8366}{5} = 0.1673$

$$b = \frac{\sum xy}{\sum x^2} = \frac{-0.7581}{10} = -0.0758$$

Here,

Trend line Yc = a + bx

= 0.1673 + (-0.0758) × x

When, x = -2, Yc = 0.1673 + (-0.0758) × (-2) = 0.3189

When, x = -1, Yc = 0.1673 + (-0.0758) × (-1) = 0.2431

When, x = 0, Yc = 0.1673 + (-0.0758) × 0 = 0.1673

When, x = 1, Yc = 0.1673 + (-0.0758) ×1 = 0.0915

When, x = 2, Yc = 0.1673 + (-0.0758) × 2 = 0.0157

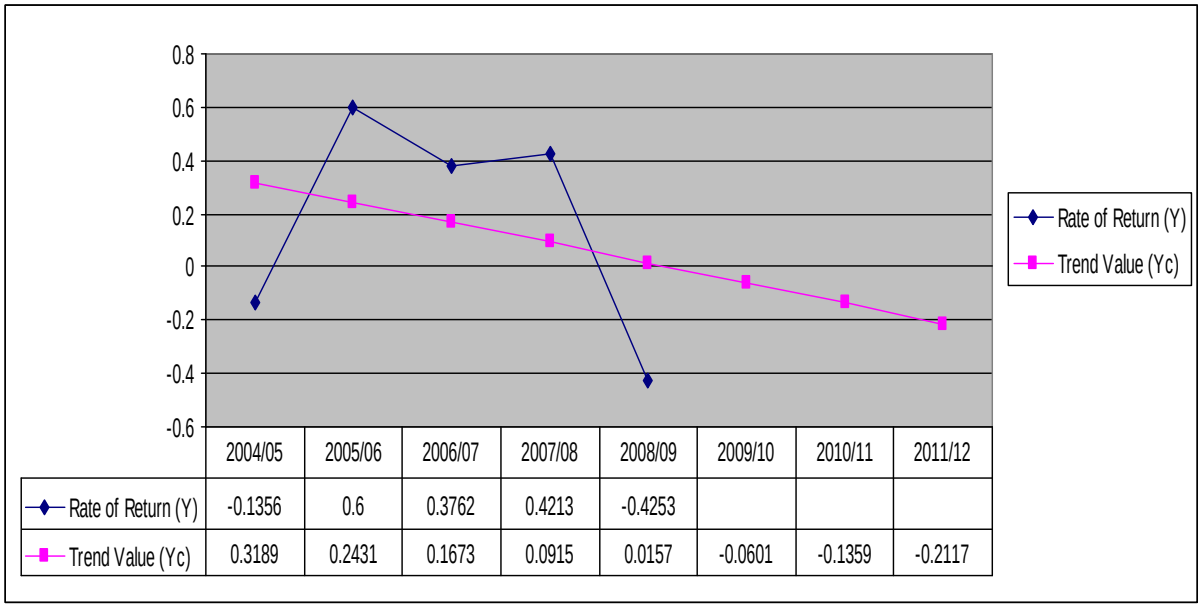
When, x = 3, Yc = 0.1673 + (-0.0758) ×3 = -0.0601

When, x = 4, Yc = 0.1673 + (-0.0758) ×4) = -0.1359

When, x = 5, Yc = 0.1673 + (-0.0758) ×5) = -0.2117

Diagram 4.10

Movement of Stocks Rate of Return and Trend Line of NIB



	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Rate of Return (Y)	-0.1356	0.6	0.3762	0.4213	-0.4253			
Trend Value (Yc)	0.3189	0.2431	0.1673	0.0915	0.0157	-0.0601	-0.1359	-0.2117

The above diagram 4.8 shows the movement of common stock of NIB's rate of return (R) and trend line. Here, in the beginning Rate of Return is negative in FY 2004/05 (i.e. -0.1356) and increases in great speed in FY 2005/06 (i.e. 0.6000) and

then falls downwards slowly in FY 2006/07 (i.e. 0.3762) then again increases slowly in FY 2007/08 (i.e. 0.4213). After that it falls in high speed in FY 2008/09 and reaches to negative value (i.e. -0.4253). Similarly the trend value is high in FY 2004/05 (i.e. 0.3189) and goes downward movement and reaches to the lowest point in FY 2011/12. (i.e -0.2117).

4.2 INTER - BANK COMPARISON

4.2.1 One the basis of Risk and Return Analysis

After analyzing the expected returns, standard deviation of returns, coefficient of variation of each bank for the FY 2000/01 to FY 2004/05 results are given in the following table 4.16.

Table No. 4.16

Expected return, Standard Deviation and CV of Sample Banks

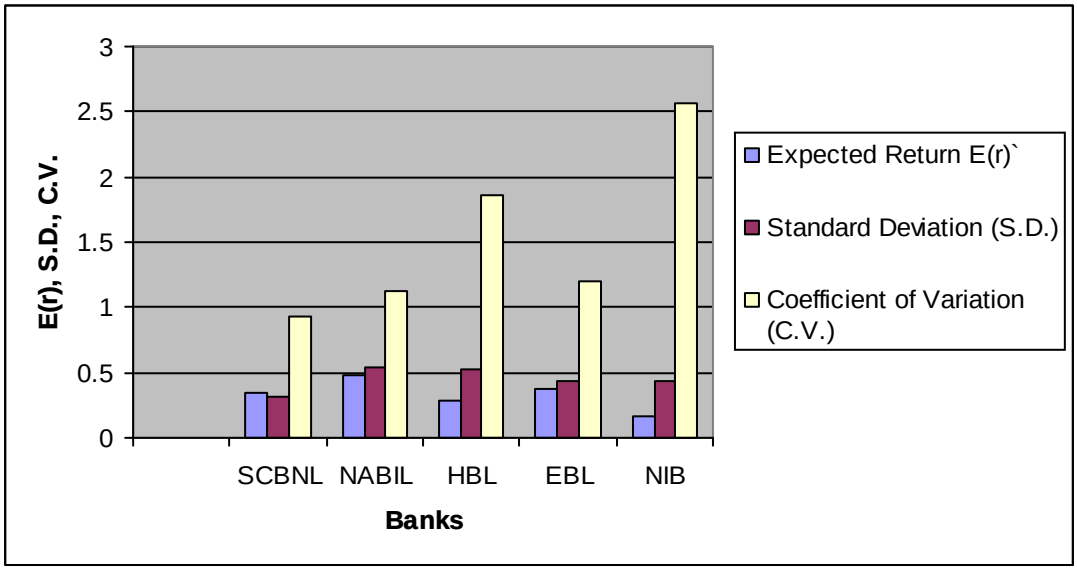
S.N.	Sample Banks	Expected Return E(r)`	Standard Deviation (±)	Coefficient of Variation (C.V.)	Remark		
					E (r)	±=	C.V.
1	SCBNL	0.3441	0.3178	0.9236		Lowest	Lowest
2	NABIL	0.4808	0.5403	1.1238	Highest	Highest	
3	HBL	0.2828	0.5274	1.8651			
4	EBL	0.3686	0.4406	1.1952			
5	NIB	0.1673	0.4296	2.5678	Lowest		Highest

The table shows that investors can get the highest return for investment in common stock of Nabil Bank Limited and lowest return from investment in common stock of Nepal Investment Bank Limited. Nabil Bank Limited has the highest and Standard Chartered Bank Nepal Limited has the lowest standard deviation. But coefficient of variation is best way to make investment decision is common stock when two or more investment opportunities have different return and different risk. Coefficient of variation measures the risk per unit. Nepal Investment bank limited has highest and

Standard Chartered Bank Nepal Limited has lowest C.V. To earn one unit of return an investor has to bear 0.9236 unit of risk only by investing in SCBNL but 2.5678 unit of risk by investing Nepal Investment Bank Limited. To make the comparison easily understandable diagram 4.11 is represented below.

Diagram No. 4.11

Expected return, Standard Deviation and CV of Sample Banks



4.2.2 On the Basis of Market Capitalization

Market Capitalization of Sample Commercial Bank at the end of FY 2061/062 are presented below in Table No. 4.27. Market Capitalization is the total market value at specific time period of the company.

Table No. 4.17

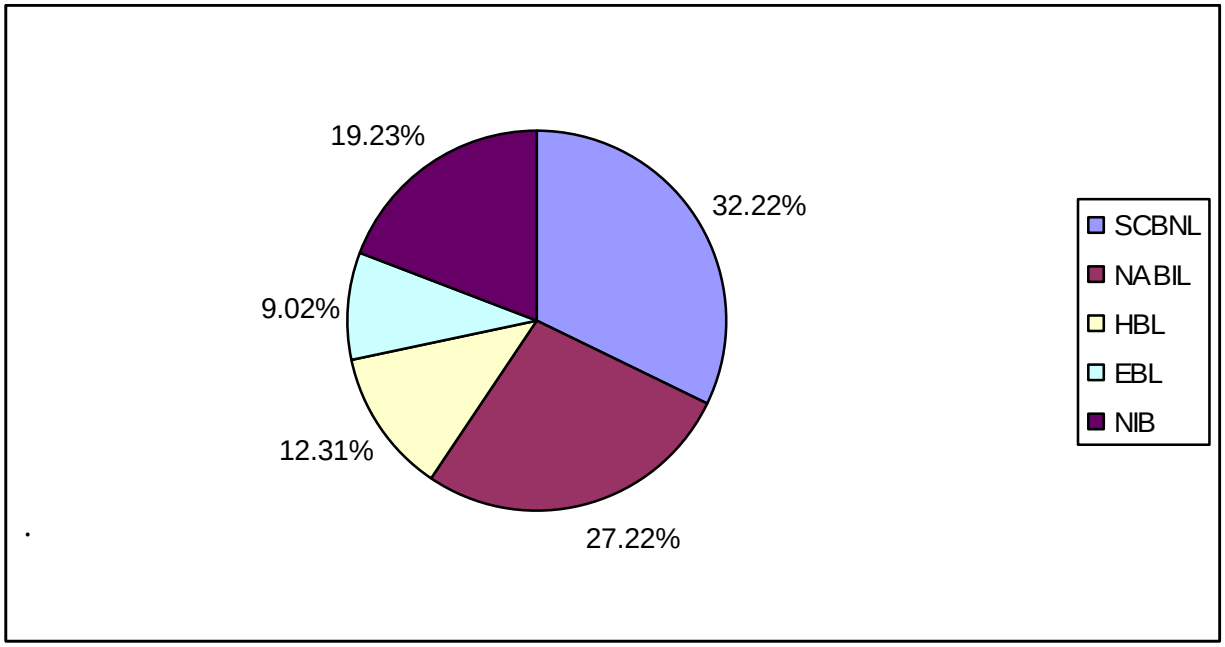
Market Capitalization of Selected Banks at 15th, July 2009

S.N.	Sample Bank	Market Capitalization (In Million) (Rs.)	Percentage
1	SCBNL	56011.18	32.22%
2	NABIL	47311.95	27.22%
3	HBL	21405.38	12.31%
4	EBL	15683.03	9.02%
5	NIB	33410.12	19.23%
	Total	173821.17	100%

Data Sources: NEPSE Index.

Diagram 4.12

Market Capitalization of Selected Banks



The comparison is made on the movement of market capitalization. Here only five commercial banks are taken into consideration as their data covers the entire study period. On the basis of market capitalization SCBNL is the biggest (i.e. 32.22%) and the EBL is the smallest (i.e. 9.02%) among the sample banks.

Table 4.18

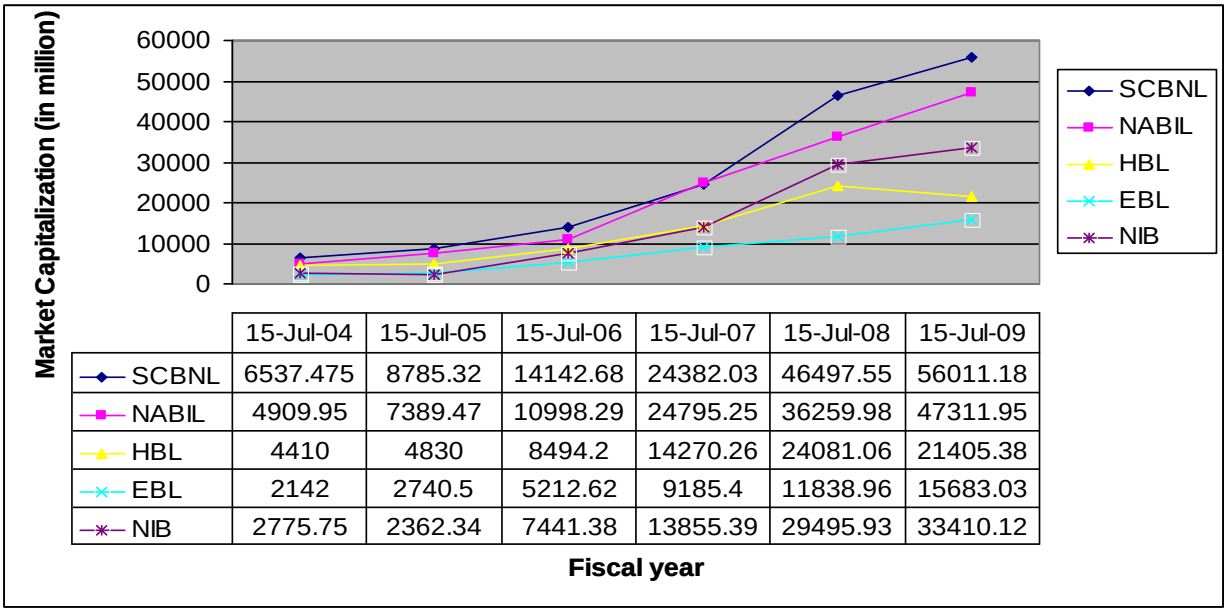
Year wise comparative movement of market capitalization (in Million)

Year ì Banks í	15 July 2004 (Rs.)	15 July 2005 (Rs.)	15 July 2006 (Rs.)	15 July 2007 (Rs.)	15 July 2008 (Rs.)	15 July 2009 (Rs.)
SCBNL	6537.475	8785.32	14142.68	24382.03	46497.55	56011.18
NABIL	4909.950	7389.47	10998.29	24795.25	36259.98	47311.95
HBL	4410.000	4830.00	8494.20	14270.26	24081.06	21405.38
EBL	2142.000	2740.50	5212.62	9185.40	11838.96	15683.03
NIB	2775.750	2362.34	7441.38	13855.39	29495.93	33410.12

Source : Annual Report of NEPSE

Diagram 4.13

Year wise comparative movement of Market Capitalization



	15-Jul-04	15-Jul-05	15-Jul-06	15-Jul-07	15-Jul-08	15-Jul-09
SCBNL	6537.475	8785.32	14142.68	24382.03	46497.55	56011.18
NABIL	4909.95	7389.47	10998.29	24795.25	36259.98	47311.95
HBL	4410	4830	8494.2	14270.26	24081.06	21405.38
EBL	2142	2740.5	5212.62	9185.4	11838.96	15683.03
NIB	2775.75	2362.34	7441.38	13855.39	29495.93	33410.12

4.3 ANALYSIS OF MARKET RISK AND RETURN

In Nepal these is only one stock market, namely Nepal Stock Exchange. Overall market movement is represented by NEPSE index. To calculate annual return, expected return on market, market standard deviation and coefficient of variation of overall market is presented below in table 4.19.

Table No. 4.19

Rate of Return, Expected Return, S.D. and C.V. of Market

FY	NEPSE Index (NI)	$Rm = \frac{NI_t - NI_{t-1}}{NI_{t-1}}$	$[R_m\text{-}E(R_m)]$	$[R_m\text{-}E(R_m)]^2$
2060/61 (2003/04)	222.04	-	-	-
2061/62 (2004/05)	286.87	0.2920	-0.0269	0.0007
2062/63 (2005/06)	386.83	0.3485	0.0296	0.0009
2063/64 (2006/07)	683.95	0.7681	0.4492	0.2018
2064/65 (2007/08)	963.36	0.4085	0.0896	0.0080
2065/66 (2008/09)	749.10	-0.2224	-0.5413	0.2930
		1.5947		0.5044

Data Source: Annual Report of NEPSE .

We have,

Expected Return, $E(R_m) = \frac{\sum R_m}{N} = \frac{1.5947}{5} = 0.3189 = 31.89\%$

Standard Deviation (σm) $= \sqrt{\frac{\sum [R_m - E(R_m)]^2}{n-1}} = \sqrt{\frac{0.5044}{5-1}} = \sqrt{0.1261} = 0.3551$

Coefficient of Variation (C.V.) $= \frac{\pm_m}{E(R_m)} = \frac{0.3551}{0.3189} = 1.1135$

Expected rate of returns (Trend value) for each year are calculated on the basis rate of return on the market index respective year by using least square method.

Table 4.20

Year Wise Expected Rte of Return Data of NEPSE Index

FY	Rate of Return (Y)	Deviation from (FY 2006/07 (X)	XY	X^2	Trend Value (Y_c)
2062/63 (2004/05)	0.2920	-2	-0.5840	4	0.5127
2063/64 (2005/06)	0.3485	-1	-0.3485	1	0.4158
2064/65 (2006/07)	0.7681	0	0	0	0.3189
2065/66 (2007/08)	0.4085	1	0.4085	1	0.2220
2066/67 (2008/09)	-0.2224	2	-0.4448	4	0.1251
2067/68 (2009/10)					0.0282
2068/69 (2010/11)					-0.0687
2069/70 (2011/12)					-0.1656
	1.5947	01	-0.9688	10	

We have,

The equation of trend line is Yc = a + bx

As, Σx = 0, $a = \frac{\sum y}{n} = \frac{1.5947`}{5} = 0.3189$

$$b = \frac{\sum xy}{\sum x^2} = \frac{-0.9688}{10} = -0.0969$$

Here,

Trend line Yc = a + bx

= 0.3189 + (-0.0969) × X

When, x = -2, Yc = 0.3189 + (-0.0969) × (-2) = 0.5127

When, x = -1, Yc =0.3189 + (-0.0969) × (-1) = 0.4158

When, x = 0, Yc =0.3189 + (-0.0969) × 0 = 0.3189

When, x = 1, Yc =0.3189 + (-0.0969) × 1 = 0.2220

When, x = 2, Yc =0.3189 + (-0.0969) × 2= 0.1251

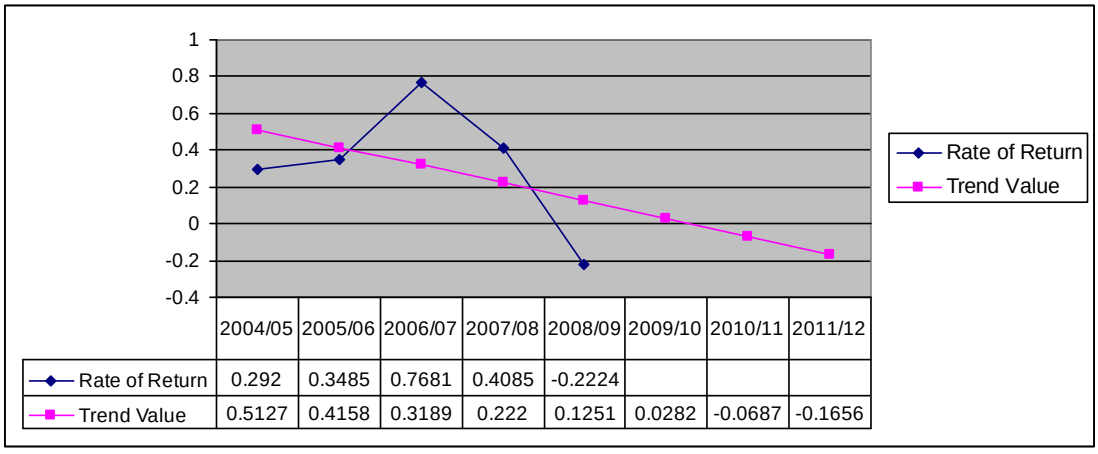
When, x = 3, Yc =0.3189 + (-0.0969) × 3= 0.0282

When, x = 4, Yc =0.3189 + (-0.0969) × 4= -0.0687

When, x = 5, Yc =0.3189 + (-0.0969) × 5= -0.1656

Diagram: 4.14

Movement of Market Rate of Return and Trend Line of Market Return



	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Rate of Return	0.292	0.3485	0.7681	0.4085	-0.2224			
Trend Value	0.5127	0.4158	0.3189	0.222	0.1251	0.0282	-0.0687	-0.1656

The diagram 4.14 shows the movement of rate of returns and trend line of market. In the beginning FY 2004/05 Rate of Return of market is 0.2920 and it moves up slowly and reaches 0.3485 in FY 2005/06 and 0.7681 in FY 2006/07 respectively, then falls down 0.4085 in FY 2007/08 and reaches negative in FY 2008/09 (i.e. -

0.2224). Similarly the trend value in the beginning (FY 2004/05) is highest (i.e. 0.5127) and started to move downward slowly and reaches negative in FY 2011/12 (i.e. -0.1656).

4.4 COMPARISON OF SAMPLE BANKS WITH MARKET

4.4.1 Standard Charted bank Nepal Limited (SCBNL)

Table 4.21

Summary of Risk and Return for SCBNL and Market

Statistics	SCBNL	Market
Expected Return, E(R)	0.3441	0.3189
Variance (σ^2)	0.1010	0.1261
Standard Deviation (σ)	0.3178	0.3551
Coefficient of Variation (C.V.)	0.9236	1.1135
Systematic risk ($ß^2\ \sigma^2m$)	0.0383	.-
Unsystematic risk (e^2)	0.0628	-
Beta (ß) = Index of Systematic risk	0.5508	1
Alpha (α) = Intercept	0.1685	
Correlation with market (ρ)	0.6154	
Proportion of Systematic Risk (ρ^2)	0.3787	
Proportion of unsystematic risk (1- ρ^2)	0.6213	

Source: Appendix-II

SCBNL's common stocks expected return is higher than the market return (0.3441 >0.3189). SCBNL's common stocks standard deviation is lower than the market standard deviation (i.e. 0.3178< 0.3551)

Coefficient of Variation is better measure of risk because it measures per unit risk. C.V. of SCBNL is lower than C.V. of market (i.e. 0.9236 < 1.1135) which means common stock of SCBNL has lower risk per unit return than the market return.

Beta coefficient of SCBNL is 0.5508 based on the yearly returns during FY 2003/04 to 2008/09. A beta of 0.5508 (ß <1) means that SCBNL's return is less volatile than the market return so it is called a defensive asset.

The intercept is 0.1685. It shows that the SCBNL's return when market return is zero. Expected return of SCBNL is 16.85**% w**hen the market earns nothing. If the yearly market return is expected to be 1 percent, expected yearly return of SCBNL is

$R_j = \alpha + ß_j R_j$

$= 0.1685 + 0.5508 \times 0.3189$

$= 0.3442 = 34.42\ \%$

The correlation with market is 0.6154. The positive correlation indicates that the market (NEPSE) return goes up, return of SCBNL also goes up or vice versa. The coefficient of determination or proportion of systematic risk is 0.3785. It indicates the percentage of the variance of SCBNL's return explained by the change in the market return. So, it is called the systematic (Market) risk and therefore, it is un-diversifiable.

The 0.6213 $(1 - \rho^2)$ residual variance is specific risk of these firm. It is called unsystematic risks and it is diversifiable. The value of systematic risk and unsystematic risk are shown above table no. 4.21.

4.4.2 Nepal Arab Bank Limited (NABIL)

Table No.4.22

Summary of Risk and Return for NABIL and Market

Statistics	NABIL	Market
Expected Return, E(R)	0.4808	0.3189
Variance (σ^2)	0.2919	0.1261
Standard Deviation (σ)	0.5403	0.3551
Coefficient of Variation (C.V.)	1.1238	1.1135
Systematic risk ($ß^2\ \sigma^2m$)	0.1251	.-
Unsystematic risk (e^2)	0.1669	-
Beta (ß) = Index of Systematic risk	0.9959	1
Alpha (α) = Intercept	0.1632	
Correlation with market (ρ_{jm})	0.6545	
Proportion of Systematic Risk (ρ^2)	0.4284	
Proportion of unsystematic risk (1- ρ^2)	0.5716	

Source: Appendix-II

Expected return of NABIL bank is higher than the market return. (i.e. 0.4804>0.3189). Standard deviation of NABIL bank is higher than the market standard deviation, which means total risk on return of NABIL bank is 1.52 times (i.e. 0.5403/0.3551) high riskier than the market return on common stock.

Coefficient of variation is better measure of risk because it measures per unit risk. C.V. of NABIL bank is higher than market (1.1238>1.1135) which means NABIL bank has high risk per unit return than the market return. Beta of NABIL bank is 0.9959, based on the yearly returns during FY 2004/05 to 2008/09. A beta of 0.9959 (ß<1) means that return of NABIL bank is a bit less volatile than the market return. Hence, the stock of NABIL bank has almost undiversifiable risk. The intercept is 0.1632. It shows the return of NABIL Bank when market return is zero. The correlation with market is 0.6545. The positive correlation indicates that the market return goes up, return of NABIL bank also goes up or vice versa.

The coefficient of determination or proportion of systematic risk is 0.4284. It

indicates that the percentage of the variance of NABIL's return explained by the change in the market returns. Thus the market explains 42.84 percent risk of NABIL BANK. It is known, as systematic risk which cannot be diversified.

The 57.16 percent ($1-\rho^2$) residual variances is specific risk of the firm. It is called unsystematic risk and it is diversifiable. The values of systematic risk and unsystematic risk are shown in above table.

4.4.3 Himalayan Bank Ltd. (HBL)

Table 4.23

Summary of Risk and Return for HBL and Market

Statistics	**HBL**	**Market**
Expected Return, E(R)	0.2828	0.3189
Variance (σ^2)	0.2782	0.1261
Standard Deviation (σ)	0.5274	0.3551
Coefficient of Variation (C.V.)	1.8651	1.1135
Systematic risk ($ß^2\ \sigma^2m$)	0.0220	.-
Unsystematic risk (e^2)	0.2561	-
Beta (ß) = Index of Systematic risk	-0.4178	1
Alpha (α) = Intercept	0.4160	
Correlation with market (ρ)	-0.2813	
Proportion of Systematic Risk (ρ^2)	0.0791	
Proportion of unsystematic risk ($1-\rho^2$)	0.9209	

Source: Appendix-II

Expected return on common stock of HBL is lower than the market return. (i.e.0.2828<0.3189). Similarly standard deviation of HBL is higher than the market standard deviation (i.e.0.5274>0.3551) which means total risk on return of HBL's stock is more risky than the market return.

Coefficient of variation is better measure of risk because it measures per unit risk. C.V. of HBL is more than C.V. of market (i.e. 1.8651>1.1135) which means HBL has high risk per unit of return than the market return.

Beta of HBL is -0.4178 which is based on the yearly returns during FY 2003/04 to 2008/09. A beta of 0.4178 (ß>1) means that return of HBL is less volatile than the market return. The intercept is 0.4160 . It shows the return of HBL, when market return is zero. Expected yearly return of HBL is about 1.5% when the market earn nothing.

The correlation with market is 0.2813. The negative correlation indicates than the market return goes up, HBL return goes down or vice versa.

The coefficient of determination (ρ^2) or proportion of systematic risk is 0.0791. It indicates the percentage of the variance of HBL's return explained by the change in the market return. Thus 7.91 percent of HBL's risk is explained by the market. It is known as systematic risk, which can not be diversified.

The 0.9209 percent ($1-\rho^2$) residual variance is specific risk of the firm. It is called unsystematic risk. This risk can be avoided through diversification. The value of systematic risk and unsystematic risk are shown in above Table. 4.23.

4.4.4 Everest Bank Limited (EBL)

Table No. 4.24

Summary of Risk and Return for EBL and Market

Statistics	EBL	Market
Expected Return, E(R)	0.3686	0.3189
Variance (σ^2)	0.1941	0.1261
Standard Deviation (σ)	0.4406	0.3551
Coefficient of Variation (C.V.)	1.1952	1.1135
Systematic risk ($ß^2 \sigma^2 m$)	0.0329	.-
Unsystematic risk (e^2)	0.1612	-
Beta (ß) = Index of Systematic risk	0.5109	1
Alpha (α) = Intercept	0.2057	
Correlation with market (p)	0.4117	
Proportion of Systematic Risk (p^2)	0.1695	
Proportion of unsystematic risk (1-p^2)	0.8305	

Source: Appendix-II

Expected return on common stock of EBL is higher than market (i.e.0.3686>0.3189).Similarly standard deviation of EBL is higher than the market standard deviation (i.e. 0.4406> 0.3551), which means total risk on common stock of EBL is more riskier than the market return.

Coefficient of variation is the best way of measure the risk, because it measures per unit risk. C.V. of EBL is more than market C.V. (i.e. 1.9252 > 1.1135) which means EBL has more risk per unit return than the market.

EBL has a beta (ß) of 0.5109 based on the yearly returns during FY 2003/04 to 2008/09 A beta of 0.5109 (ß < 1) means that return of EBL is less volatile than the

market return. The intercept is 0.2057 . It shows the return of EBL when the market return is zero. Expected yearly return of EBL is 20.57% when the market earns nothing.

The correlation with market is 0.4117. The positive correlation indicates that the market return goes up, return of EBL also goes up or vice versa.

The proportion of systematic risk (ρ^2) is 0.1695. It indicates the percentage of variance of EBL's return explained by the change in the market returns. Thus 16.95 percent of EBL's risk is explained by the market. It is called the systematic risk and it can not be diversified. The 0.8305 ($1-\rho^2$) unexplained variance is the firm specific risk. It is called unsystematic risk and it is diversifiable. The value of systematic risk and unsystematic risk are shown in above table 4.24.

4.4.5 Nepal Investment Bank Ltd (NIB)

Table No. 4.25

Summary of Risk and Return for NIB and Market

Statistics	NIB	Market
Expected Return, E(R)	0.1673	0.3189
Variance (σ^2)	0.1846	0.1261
Standard Deviation (σ)	0.4296	0.3551
Coefficient of Variation (C.V.)	2.5678	1.1135
Systematic risk ($ß^2\ \sigma^2m$)	0.0666	.-
Unsystematic risk (e^2)	0.1179	-
Beta (ß) = Index of Systematic risk	0.7270	1
Alpha (α) = Intercept	-0.0645	
Correlation with market (p)	0.6009	
Proportion of Systematic Risk (p)	0.3611	
Proportion of unsystematic risk ($1-p^2$)	0.6389	

Source: Appendix-II

Expected return on common stock of NIB is lower than the market return (i.e. 0.1673 < 0.3189). Similarly standard deviation of NIB is higher than the market standard deviation (i.e 0.4438 > 0.3551) It means NIB's stocks total risk on return is more riskier than the market return.

Coefficient of variation is better measure of risk because it measures per unit risk. C.V. of NIB is higher than the C.V. of market (i.e. 2.5678 > 1.1135). It means NIB has more risk per unit return than the market return.

NIB has a beta (ß) of 0.7270 based on the yearly return during FY 2003/04 to 2008/09 A beta of 0.7270 (ß<1) means that return of NIB is less volatile than the market return and called an defensive asset.

The intercept (α) is -0.0645. It shows the return of the NIB when market return is zero. NIB's expected yearly return is -6.45 percent when the market earns nothing.

The correlation with market is 0.6009. The positive correlation indicates that the market return goes up return of NIB also goes up or vice versa.

The proportion of systematic risk (ρ^2) is 0.3611 (i.e.36.11 %). It indicates the percentage of variance of NIB's return explained by the change in the market returns. Thus 36.11 percent NIB's risk is explained by the market. It is called the systematic risk and therefore it can not be diversified.

The 0.6389 percent ($1-\rho^2$) is unexplained variance is the specific risk of the firm. It is called unsystematic risk and it is known as diversifiable risk. The value of systematic risk and unsystematic risk are shown above table.

Table No. 4.26

Summary of Risk and Return for Sample

Statistic	SCBNL	NABIL	HBL	EBL	NIB
E(R)	0.3441	0.4808	0.2828	0.3686	0.1673
σ	0.3178	0.5403.	0.5274	0.4406	0.4296
σ^2	0.1010	0.2919	0.2782	0.1941	0.1846
C.V.	9236	1.1238	1.8651	1.1952	2.5678
$\beta^2\sigma_m{}^2$	0.0383	0.1251	0.0220	0.0329	0.0666
e^2	0.0628	0.1669	0.2561	0.1612	0.1179
β	0.5508	0.9959	-0.4178	0.5109	0.7270
α	0.1685	0.1632	0.4160	0.2057	-0.0645
ρ	0.6154	0.6545	0.2816	0.4117	0.6009
ρ^2	0.3787	0.4284	0.0791	0.1695	0.3611
$1-\rho^2$	0.6213	0.5716	0.9209	0.8305	0.6389

4.5 PRICE EVALUATION OF SELECTED BANKS

CAPM is model that assumes stock's required rate of return is equal to the risk free rate plus its risk premium where risk is measured by the beta coefficient. Beta coefficient play vital role in CAPM approach. If the required rate of return is less than expected rate of return, the stock is said to be under priced and required rate of return is more than expected rate of return, the stock is said to be over priced. For this analysis the risk free rate of return is needed, which is taken from the interest rate of Treasury bill issued by Nepal Rastra Bank. (NRB) issued treasury bill, 91 days, 182 days and 364 days time duration. Table 4.27 shows the required rate of return, expected return and price evaluation. 91 days duration Treasury bill rate is taken as a risk free rate from website of NRB. Which is approximately 7.95 percent in date 12/11/2010.

Table No. 4.27

Calculation of Required Rate of Returns and Price Evaluation by CAPM Model

Banks	Rf	E(Rm)	beta	E(Ri)=Rf+[E(Rm)-Rf] i	E(R)	Price Situation
SCBNL	0.0795	0.3189	0.5508	0.2114	0.3441	over priced
NABIL	0.0795	0.3189	0.9959	0.3179	0.4808	over priced
HBL	0.0795	0.3189	-0.4178	-0.0205	0.2828	over priced
EBL	0.0795	0.3189	0.5109	0.2018	0.3686	over priced
NIB	0.0795	0.3189	0.7270	0.2535	0.1673	under priced

Where,

E(R) = Expected rate of return (from table 4.26)

Rf = Risk free rate of return (0.0795)

E(Rm) = Market rate of return (0.3189)

ß = Beta of individual sample Banks (From table 4.26)

The stocks of SCBNL, NABIL, HBL and EBL are overpriced and NIB is under priced. The under priced stocks value will be increased in the near future providing the investors higher return. So investor should buy these stocks and who are holding they shouldn't sell. The over priced stocks value will be decreased in future providing the investors lower return. So investor should sell these stocks.

4.6 CORRELATION BETWEEN BANKS

The correlation coefficient always lies between + 1 and -1. Returns of securities are very perfectly together when the correlation coefficient is +1 and in perfectly opposite direction when it is -1. A zero correlation coefficient implies that there is no relationship between the returns of securities. Correlation between the returns of the two securities plays a significant role in risk reduction by portfolio construction. The table no. 4.28 presented below shows the various consolations between each sample banks.

Table no. 4.28

Correlation Matrix

Sample	SCBNL	NABIL	HBL	EBL	NIB
SCBNL	1	0.6396	-0.6855	0.4042	0.5788
NABIL		1	0.1574	0.0381	0.3356
HBL			1	-0.6305	-0.4172
EBL				1	0.7207
NIB					1

Source: Appendix-III

Above table no. 4.28 shows that correlation between sample banks stocks. There is positive correlation between various banks. If correlation between stocks is +1, any part of risk can not be reduced by diversification. On the other hand, If correlation between stocks are -1, the proper combination of two stocks can reduces all the risk.

So in conclusion it can be said that as long as correlation between securities return is negative, construction of portfolio is beneficial.

Among the above correlation combination, combination between SCBNL and HBL is much more beneficial than any other combination because this combination has the highest negative correlation (i.e. -0.6855).

4.7 PORTFOLIO ANALYSIS

The portfolio is the holding of securities and investment in financial assets i.e. bond, stock. A portfolio is a combination of investment assets. Portfolio management is related to efficient portfolio investment in financial assets. If portfolio is being constructed they can reduce unsystematic risk without loosing considerable return. The portfolio analysis is performed to develop a portfolio that has the maximum return at whatever level of risk an investor thinks appropriate. Therefore, we need to extend our analysis risk and return to portfolio context.

The expected return on a portfolio is simply the weighted average of the expected returns on the individual assets in the portfolio with the weight being the fraction of the total portfolio invested in each asset. The weights are equal to the proportion of total funds invested in each security (the sum of weight must be 1 to 100%). The analysis is based on two assets portfolio and the tools for analysis are presented in the chapter, research methodology.

Portfolio analysis is done taking to sample Banks having highest positive correlation (i.e 0.7207 of EBL and NIB) and having highest negative correlation (i.e. -0.6855 of SCBNL and HBL)

Now taking two commercial banks EBL and NIB having highest positive correlation. EBL stock is symbolized as ‘A’ and NIB stock is symbolized as ‘B’.

Table 4.29

Year	$R_A - E(R_A)$ (SCBNL)	$R_B - E(R_B)$ (NIB)	$[R_A - E(R_A)][R_B - E(R_B)]$
2004/05	-0.2032	-0.3029	0.0615
2005/06	0.4314	0.4327	0.1867
2006/07	-0.1075	0.2089	-0.0225
2007/08	0.4544	0.2540	0.1154
2008/09	-0.5752	-0.5926	0.3409
			$\sum [R_A - E(R_A)][R_B - E(R_B)] = 0.6820$

$\sigma_A = 0.4406$

$\sigma_B = 0.4296$

$cov_{AB} = \sum [R_A - E(R_A)][R_B - E(R_B)] / 5 = 0.6820/5 = 0.1364$

The optimal portfolio weight of stock A and B, which minimized the risk, is given below:

$W_A = (\sigma_B^2 - Cov_{AB}) / (\sigma_A^2 + \sigma_B^2 - 2Cov_{AB})$

$W_B = 1 - W_A$

Where,

W_A = Optimal weight to invest in stock of EBL

W_B = Optimal weight to invest in stock of NIB

σ_A^2 = Variance of EBL

σ_B^2 = Variance of NIB

$$W_A = \frac{\left[(0.4296)^2 - 0.1364\right]}{\left[(0.4206)^2 + (0.4296)^2 - 2 \times 0.1364\right]}$$

$$= \frac{[0.1846 - 0.1364]}{[0.1769 + 0.1846 - 02728]}$$

$$= \frac{0.0482}{0.0887} \qquad = 0.5434$$

$W_B = 1- W_A$

$= 1- 0.5434$

$= 0.4566$

As we know that the proportion of stock 'A' in the portfolio is constructed with 54.34 % of EBL and 45.66% of NIB common stock that will minimize risk and be ideal proportion. From the above calculation while investing in two banks equity investors can minimize buying 54.34% share of EBL and 45.66% share of NIB.

4.7.1 Portfolio Return of Two Assets having Highest Positive Correlation

It is a combination of two or more securities or assets and portfolio return is simply a weighted average of the expected returns on individual stock returns.

Symbolically,

$R_A = 0.3686$, $R_B = 0.1673$, $\sigma_A = 0.4406$, $\sigma_B = 0.4296$

$W_A = 0.5434$, $W_B = 0.4566$ $Cov_{AB} = 0.1364$

Return of Portfolio (R_p) = $W_A . R_A + W_B . R_A$

= $0.5434 \times 0.3686 + 0.4566 \times 0.1673$

= 0.2767

Where, R_p = Expected return on portfolio of stock A & B.

R_A = Expected return of EBL

R_B = Expected return of NIB

Portfolio Risk of two assets having highest positive correlation

Portfolio risk is a function of the proportions invested in the common stocks. It is measured by standard deviation and calculated by using this formula,

$$\sigma_p = \sqrt{W_A{}^2 \pm_A{}^2 + W_B{}^2 \pm_B{}^2 + 2W_A W_B . COV_{AB}}$$

$$= \sqrt{(0.5434)^2 (0.4406)^2 + (0.4566)^2 (0.4296)^2 + 2 \times 0.5434 \times 0.4566 \times 0.1364}$$

$$= \sqrt{0.0573 + 0.0385 + 0.0677}$$

$$= \sqrt{0.1635}$$

$$= 0.4044$$

Where,

σ_p = the standard deviation of portfolio return of stock A and B.

W_A = Optimal weight to invest in stock of EBL

W_B = Optimal weight to invest in stock of NIB

$\sigma_A{}^2$ = Variance of EBL

$\sigma_B{}^2$ = Variance of NIB

COV_{AB} = Co-variance of Stock of EBL and NIB

From the above calculation the portfolio return and risk (i.e. standard deviation) for EBL and NIB are 27.67% and 40.44% respectively.

Now taking two commercial banks stock having highest negative correlation is SCBNL is symbolized as ‘C’ and HBL stock is symbolized as ‘D’.

Table 4.30

Year	$R_c - E(R_c)$ (EBL)	$R_D - E(R_D)$ (NABIL)	$[R_C - E(R_C)][R_D - E(R_D)]$
2004/05	0.0685	-0.1738	-0.0119
2005/06	0.3211	-0.0545	-0.0175
2006/07	0.2400	0.3308	0.0794
2007/08	-0.1729	-0.7459	0.1290
2008/09	-0.4568	0.6433	-0.2939
			$\sum [R_C - E(R_C)][R_D - E(R_D)] = -0.1149$

$\sigma_C = 0.3178$

$\sigma_D = 0.5274$

$cov_{CD} = \sum [R_C - E(R_C)][R_D - E(R_D)] / 5 = -0.1149/5 = -0.0230$

The optimal portfolio weight of stock C and D, which minimized the risk, is given below:

$W_C = (\sigma_D^2 - Cov_{CD}) / (\sigma_C^2 + \sigma_D^2 - 2Cov_{CD})$

$W_D = 1 - W_C$

Where,

W_C = Optimal weight to invest in stock of SCBNL

W_D = Optimal weight to invest in stock of HBL

σ_C^2 = Variance of SCBNL

σ_D^2 = Variance of HBL

$$W_C = \frac{\left[(0.5274)^2 - (-0.0230)\right]}{\left[(0.3178)^2 + (0.5274)^2 - 2(-0.0230)\right]}$$

$$= \frac{[0.2782 + 0.0230]}{[0.1010 + 0.3178 + 0.0460]}$$

$$= \frac{0.3012}{0.4648} \qquad = 0.6480$$

$W_D = 1 - W_C$

$= 1 - 0.6480$

$= 0.3520$

As we know that the proportion of stock 'C' in the portfolio is constructed with 64.80 % of SCBNL and 35.20% of HBL common stock that will minimize risk and be ideal proportion. From the above calculation while investing in two banks equity investors can minimize risk by investing 64.80% in SCBNL and 35.20% HBL banks stock.

4.7.2 Portfolio Return of Two Assets having Highest negative Correlation

It is a combination of two or more securities or assets and portfolio return is simply a weighted average of the expected returns on individual stock returns.

Symbolically,

$R_C = 0.3441$, $R_D = 0.2828$, $\sigma_C = 0.3178$, $\sigma_D = 0.5274$

$W_C = 0.6480$, $W_D = 0.3520$ $Cov_{CD} = -0.0230$

Return of Portfolio (R_p) = $W_C . R_C + W_D . R_D$

$= 0.6480 \times 0.3441 + 0.3520 \times 0.2828$

$= 0.2230 + 0.0995$

$= 0.3225$

Where, R_p = Expected return on portfolio of stock C & D.

R_C = Expected return of SCBNL

R_D = Expected return of HBL

Portfolio Risk:

Portfolio risk is a function of the proportions invested in the common stocks. It is measured by standard deviation and calculated by using this formula,

$$\sigma_p = \sqrt{W_C{}^2 \pm_C{}^2 + W_D{}^2 \pm_D{}^2 + 2W_C W_D . COV_{CD}}$$

$$= \sqrt{(0.6480)^2 \times (0.3178)^2 + (0.3520)^2 \times (0.5274)^2 + 2 \times 0.6480 \times 0.3520 \times (-0.0230)}$$

$$= \sqrt{0.0424 + 0.0345 - 0.0105}$$

$$= \sqrt{0.0664}$$

$$= 0.2577$$

Where,

σ_p = the standard deviation of portfolio return of stock C and D.

W_C = Optimal weight to invest in stock of SCBNL

W_D = Optimal weight to invest in stock of HBL

$\sigma_C{}^2$ = Variance of SCBNL

$\sigma_D{}^2$ = Variance of HBL

COV_{CD} = Co-variance of Stock of SCBNL and HBL

From the above calculation the portfolio return and risk (i.e. standard deviation) for SCBNL and HBL are 32.25% and 25.77% respectively.

CHAPTER V

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Summary

Common stock is a source of capital which is considered to be riskier and lifeblood of stock market. Therefore, investment in common stock is very sensitive on the ground of its uncertainty nature. Dividends to common stockholders are only paid if the firm makes profit after tax and preference shareholders dividend. The company can return the principal incase of its liquidation only to the extend of the residual assets after satisfying to all its preference shareholders. Besides this, the investors have to sacrifice the return on their investment in common stock which would be earned investing elsewhere. Risk and return is getting considerable attention in financial management. The central focus of finance is trade off between risk and return. Development in the field of finance has led to the application of many new concepts and models to deal with various related to financial management.

The relationship between risk & return is described by investor's attitude about risk and their demand for compensation. No investor will like to invest risky asset unless he is assured of adequate compensation for the acceptance of risk. Hence, they invest in those opportunities which have certain degree of risk associated with it. Therefore, risk plays a vital role in the analysis of investment. It can be said that the rate of return on investment is a function of many factors including the real cost of money, inflation risk etc. The investors willingly offer more capital at higher rate of return, whereas users of capital always show their readiness to use more capital of lower rate.

The main objective of the study is to analyze the risk and return of commercial

banks. Up to 2009 only twenty one commercial banks are listed in NEPSE out of which five joint venture banks (Standard Chartered Bank Ltd (SCBNL), Nabil Bank Ltd. (NABIL), Himalayan Bank Ltd (HBL), Everest Bank Ltd. (EBL) and Nepal Investment Bank Ltd. (NIB) are taken as reference to analyze the risk and return. The specific objectives were as follows.

1. To evaluate risk and return on common stock investment of commercial banks.
2. To see the trend of rate of return of commercial banks.
3. To analyze the correlation among the returns of commercial banks.
4. To analyze comparative risk and return position of this sector.

The major limitation of this research is, the generalization of the finding may not be appropriate in every condition and situation.

This research mainly review the related theories about this matter on Books such as 'Investment Management' of Bhalla, 'Financial Management and Policies' of Van Horn James & wachowizeh, Journals such as 'The Performance of Hedge funds Risk Returns & Incentives, 'The Thoritical Relationship between Systematic Risk & Financial Variables and Thesis such as 'Assessment of the Performance of the Listed Companies in Nepal' of Bhatta (1995), 'Risk and Return Analysis of Common Stock Investment' of Pandey (2000), 'A Case Study on Risk and Return Analysis of Common Stock Investment' of Kanshakar (2004) etc.

This research mainly uses the secondary data of five sample commercial Banks from their respective annual reports, annual trade report of Nepal Stock Exchange from its website www. nepal stock.com.np, Security Board of Nepal from its website www.sebon.com.np, and Nepal Rastra Banks report from it's website www. nrb. org. np. and other interviews with related persons.

Those collected data were analyzed by calculating individually.

1. Refurn on Common Stock
2. Expected rate of return on common stock
3. Return on Market
4. Expected return on market
5. Standard Deviation
6. Coefficient of variation.
7. B. coefficient
8. Correlation Coefficient
9. Portfolio standard deviation.

From the above calculation, summary of the risk and return in presented below on the table

Summary of Risk and Return for Sample

Statistic	SCBNL	NABIL	HBL	EBL	NIB
E(R)	0.3441	0.4808	0.2828	0.3686	0.1673
σ	0.3178	0.5403.	0.5274	0.4406	0.4296
σ^2	0.1010	0.2919	0.2782	0.1941	0.1846
C.V.	9236	1.1238	1.8651	1.1952	2.5678
$\beta^2\sigma_m^2$	0.0383	0.1251	0.0220	0.0329	0.0666
e^2	0.0628	0.1669	0.2561	0.1612	0.1179
β	0.5508	0.9959	-0.4178	0.5109	0.7270
α	0.1685	0.1632	0.4160	0.2057	-0.0645
ρ	0.6154	0.6545	0.2816	0.4117	0.6009
ρ^2	0.3787	0.4284	0.0791	0.1695	0.3611
$1-\rho^2$	0.6213	0.5716	0.9209	0.8305	0.6389

The study made on risk return analysis of common stocks of listed commercial banks is based on secondary data from fiscal year 2003/04 to fiscal year 2008/09. In this study, expected rate of return of NABIL's stock is highest i.e. 48.08% and NIB's stock has the lowest return i.e. 16.73%. Like wise in terms of standard deviation, NABIL has the highest risk i.e. 54.03% and SCBNL has the lowest risk

i.e. 31.78% But, generally standard deviation is not used to determining risk, as there may be different expected return. Therefore, the coefficient of variance is considered as the best mechanism to measure the risk. On the basis of C.V. NIB's stock seems to be the most risky with 2.5678 whereas the least risky stock is of SCBNL i.e. 0.9236. On the other hand, it is found that the required rates of return of SCBNL, NABIL, HBL and EBL are lower than their expected rate or return. It means that all the banks stocks are over priced where as NIB has higher required rate of return than expected rate of return. It means NIB's that two banks' stocks are over priced. Similarly, the study made to analyze the diversifiable and undiversifiable risk reflects that all the banks' stock except have high unsystematic risk. Thus, it is reflected from the format he above study that they have the highest unsystematic risk, which can be minimized or eliminated. Such type of stock can be mentioned as defensive stock. The investors do not have to invest in only one stock. If they invest in only one stock, they cannot minimize the risk. Therefore, the investors have to diversify their funds in more than one stocks in order to reduce risk more significantly. For this, portfolio risk and return should also be considered while investing. It is clear from the study that the portfolio made with EBL and NIB has the lowest risk having the weight 54.34% and 45.66% respectively which means that the investor should invest 54.34% wealth in SCBNL stock and 45.66% in the stock of NIB. Similarly while taking a the highest negative correlation stocks portfolio of SCBNL and HBL, the investor should invest 64.8% wealth in stock of SCBNL and 35.2% of wealth in stock of HBL to minimize risk.

5.2 Conclusion

The study made on risk return analysis of commercial banks, based on 2003/04 to 2008/09 conclusion the following findings.

1. Expected return is highest in NABIL Bank and lowest in NIB
2. To invest in NABIL Bank is most risky and in HBL is least risky.

3. Per unit risk is highest in NIB and least in SCBNL.
4. The trend of return of commercial Bank in found in decreasing order.
5. All of the banks have the positive co-relation with market in their return except HBL (i.e. HBL has negative correlation with market).
6. The portfolio analysis has been conducted between two sets of commercial banks having highest positive correlation and highest negative correlation. Portfolio combination of the SCBNL and HBL Bank is found minimizing risk in higher rate. The portfolio return and risk (i.e. standard deviation) for SCBNL and HBL are 32.25% and 25.77% respectively

5.3 Recommendations

Recommendations are the final output of the whole study. It helps to convey positive information and proper way of improvement to the concerned people and to other interested researcher in the upcoming days. Various analysis have been done till these steps. The following are the recommendations based on the above findings, conclusions and analysis of data.

- Investors must focus on the risk factors before making an investment if they want to get maximum benefit from the investment. The coefficient of variation is considered the best tool for relative measurement of risk. On the basis of C.V, it is proved that NIB's stock is the riskiest one for the investment i.e. 2.5678 whereas the SCBNL's stock is the lowest risky i.e. 0.9236. Hence it is recommended that the stock of SCNBL is the best for investment, as the investor has to bear only 0.9236 risks per unit of return.
- Beta coefficient measures the sensitivity of the stock with market. Higher the beta greater the volatility. The beta of market is always equal to 1. Stock having beta coefficient more than 1 is more risky than the market. If an investor is aggressive or risk taker, he/she can invest the market on that stocks. Stock having beta coefficient less than 1 is less risky than the market. Risk averter investor can invest in that type of common stock. So, it

is recommended that the investor should select HBL stock whose beta is lowest i.e. -0.4178 as compare to other banks. Hence, it is less risky or defensive stock.

- The stocks having more systematic risk have high sensitivity as such type of risk cannot be minimized. So, the investors have to consider the adequate compensation for the acceptance of risk. It is clear from the study that all bank's stocks have high proportion of unsystematic risk that can be diversifiable constructing portfolio. Therefore, it is recommended that the investor had better investment in stock, as it is not highly risky.
- The investors have to buy those stocks during the time of under valuation and they have to sell the stocks at the time of overvaluation. It is found from the study that four banks' (SCBNL, HBL, NABIL & EBL) stock are undervalued as the required rate of return of all banks are lower than the expected rate of return and NIB's stocks are undervalued as the required rate of return are higher than the expected rate of return. So it is recommended to the investors to buy under priced stock and sale overpriced stocks.
- The investors do not have to invest in single stock, as the risk cannot be minimized properly. Therefore, the investors have to invest their fund in various stocks for minimizing risk. As far as possible, they had better investment in those stocks, which have negative correlation. It is found from the study that the portfolio made with EBL and NIB has lowest risk with the weight of 54.34% and 45.66% respectively. Similarly in the portfolio of SCBNL and HBL, it is found better to invest 64.80% of wealth in the stocks of SCBNL 35.20% of wealth in the stocks of HBL to minimize risk.

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APPENDIX- I

Sample Companies Market price per Share (MPS) and Dividend per Share (DPS)

Company Name ↓		Year →	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09
Standard Chartered Bank Ltd. (SCBNL)	MPS	High (Rs)	1800/-	2325/-	3775/-	5900/-	9025/-	9200/-
		Low (Rs)	1520/-	1553/-	2200/-	3050/-	4505/-	4100/-
		Closing (Rs)	1745/-	2345/-	3775/-	5900/-	6830/-	6010/-
	Cash Dividend (Rs.)		-	120/-	130/-	80/-	80/-	50/-
Nepal Arab Bank Ltd. (NABIL)	MPS	High (Rs)	1005/-	1515/-	2300/-	5050/-	6700/-	6400/-
		Low (Rs)	705/-	1000/-	1500/-	2025/-	3410/-	3050/-
		Closing	1000/-	1505/-	2240/-	5050/-	5275/-	4899/-
	Cash Dividend (Rs.)		-	70/-	85/-	100/-	60/-	0/-
Everest Bank Ltd. (EBL)	MPS	High (Rs)	723/-	905/-	1410/-	2430/-	3195/-	3672/-
		Low (Rs)	560/-	625/-	800/-	1100/-	1804/-	1855/-
		Closing (Rs)	680/-	780/-	1379/-	1729/-	3132/-	2455/-
	Cash Dividend (Rs.)		-	12.5	25/-	10/-	20/-	30/-
Himalaya Bank Ld. (HBL)	MPS	High (Rs)	1010/-	1181/-	1200/-	1760/-	1181/-	2730/-
		Low (Rs)	600/-	855/-	900/-	950/-	855/-	1119/-
		Closing (Rs)	840/-	920/-	1100/-	1760/-	980/-	1760/-
	Cash Dividend (Rs.)		-	11.58	30/-	15/-	25/-	12/-
Nepal Investment Bank Ltd. (NIB)	MPS	High (Rs)	942/-	1430/-	1265/-	1729/-	3101/-	3670/-
		Low (Rs)	745/-	760/-	762/-	1000/-	1305/-	990/-
		Closing (Rs)	940/-	800/-	1260/-	1729/-	2450/-	1388/-
	Cash Dividend (Rs)		-	12.5	20/-	5/-	7.5	20/-

Source: NEPSE INDEX

APPENDIX- II

Statistical Calculation of Various Banks

Statistical Calculation of SCBNL						
Rj	E(Rj)	Rm	E(Rm)	Rm-E(Rm)	Rj-E(Rj)	[Rm-E(Rm)][Rj -E(Rj)]
0.4126	0.3441	0.2920	0.3189	-0.0269	0.0685	-0.001843
0.6652	0.3441	0.3485	0.3189	0.0296	0.3211	0.009505
0.5841	0.3441	0.7681	0.3189	0.4492	0.2400	0.107808
0.1712	0.3441	0.4085	0.3189	0.0896	-0.1729	-0.015492
-0.1127	0.3441	-0.2224	0.3189	-0.5413	-0.4568	0.247266
					$\sum$=	0.347244
					$Cov_{jm}=(\sum/5)$ =	0.069449
					$\beta= Cov_{jm}/\sigma_m^2$ =	0.550763
					$\alpha = E(Rj)-\beta E(R_m)$ =	0.168462
					β^2 =	0.303340
					σ_m=	0.3551
					Systematic Risk = $(\beta^2\times\sigma_m^2)$ =	0.038250
					σ_j =	0.3178
					$\rho_{jm} = Cov_{jm}/\sigma_j\times\sigma_m$	0.615406
					unsystematic Risk = $(\sigma_j^2 - \beta^2\times\sigma_m^2)$ =	0.062747
					Portion of Systematic Risk(ρ^2) = Systematic Risk/Total Risk =	0.378725
					Portion of Unsystematic Risk = 1- Portion of systematic Risk ($1-\rho^2$) =	0.621275

Statistical Calculation of NABIL						
Rj	E(Rj)	Rm	E(Rm)	Rm-E(Rm)	Rj-E(Rj)	[Rm-E(Rm)][Rj -E(Rj)]
0.5750	0.4808	0.2920	0.3189	-0.0269	0.0942	-0.0025
0.5449	04808	0.3485	0.3189	0.0296	0.0641	0.0019
1.2991	0.4808	0.7681	0.3189	0.4492	0.8183	0.3676
0.0564	0.4808	0.4085	0.3189	0.0896	-0.4244	-0.0380
0.0713	0.4808	-0.2224	0.3189	-0.5413	-0.5521	0.2989
					$\sum$=	0.6279
					$Cov_{jm}=(\sum/5)$ =	0.125580
					$\beta= Cov_{jm}/\sigma_m^2$ =	0.995908
					$\alpha = E(Rj)-\beta E(R_m)$ =	0.163205
					β^2 =	0.991832
					σ_m=	0.3551
					Systematic Risk = $(\beta^2\times\sigma_m^2)$ =	0.125066
					σ_j =	0.5403
					$\rho_{jm} = Cov_{jm}/\sigma_j\times\sigma_m$	0.654538
					unsystematic Risk = $(\sigma_j^2 - \beta^2\times\sigma_m^2)$ =	0.166858
					Portion of Systematic Risk(ρ^2) = Systematic Risk/Total Risk =	0.428420
					Portion of Unsystematic Risk = 1- Portion of systematic Risk ($1-\rho^2$) =	0.571580

Statistical Calculation of HBL						
Rj	E(Rj)	Rm	E(Rm)	Rm-E(Rm)	Rj-E(Rj)	[Rm-E(Rm)][Rj - E(Rj)]
0.1090	0.2828	0.2920	0.3189	-0.0269	-0.1738	0.004675
0.2283	0.2828	0.3485	0.3189	0.0296	-0.0545	-0.001613
0.6136	0.2828	0.7681	0.3189	0.4492	0.3308	0.148595
-0.4631	0.2828	0.4085	0.3189	0.0896	-0.7459	-0.066833
-0.9261	0.2828	-0.2224	0.3189	-0.5413	0.6433	-0.348218
					$\sum$=	-0.263394
					$Cov_{jm}=(\sum/5)$ =	-0.052679
					$\beta= Cov_{jm}/\sigma_m^2$ =	-0.417767
					$\alpha = E(Rj)-\beta E(R_m)$ =	0.416026
					β^2 =	0.174530
					σ_m=	0.3551
					Systematic Risk = $(\beta^2\times\sigma_m^2)$ =	0.022008
					σ_j =	0.5274
					$\rho_{jm} = Cov_{jm}/\sigma_j\times\sigma_m$	-0.281285
					unsystematic Risk = $(\sigma_j^2 - \beta^2\times\sigma_m^2)$ =	0.256143
					Portion of Systematic Risk(ρ^2) = Systematic Risk/Total Risk =	0.079121
					Portion of Unsystematic Risk = 1- Portion of systematic Risk ($1-\rho^2$) =	0.920879

Statistical Calculation of EBL						
Rj	E(Rj)	Rm	E(Rm)	Rm-E(Rm)	Rj-E(Rj)	[Rm-E(Rm)][Rj -E(Rj)]
0.1654	0.3686	0.2920	0.3189	-0.0269	-0.2032	0.0055
0.8000	0.3686	0.3485	0.3189	0.0296	0.4314	0.0128
0.2611	0.3686	0.7681	0.3189	0.4492	-0.1075	-0.0483
0.8230	0.3686	0.4085	0.3189	0.0896	0.4544	0.0407
-0.2066	0.3686	-0.2224	0.3189	-0.5413	-0.5752	0.3114
					$\sum$=	0.3221
					$Cov_{jm}=(\sum/5)$ =	0.064420
					$\beta= Cov_{jm}/\sigma_m^2$ =	0.510881
					α = E(Rj)-βE(R_m) =	0.205680
					β^2 =	0.260999
					σ_m=	0.3551
					Systematic Risk = ($\beta^2\times\sigma_m^2$) =	0.032911
					σ_j =	0.4406
					ρ_{jm} = $Cov_{jm}/\sigma_j\times\sigma_m$	0.411742
					unsystematic Risk = (σ_j^2 - $\beta^2\times\sigma_m^2$) =	0.161217
					Portion of Systematic Risk(ρ^2) = Systematic Risk/Total Risk =	0.169531
					Portion of Unsystematic Risk = 1- Portion of systematic Risk (1-ρ^2) =	0.830469

Statistical Calculation of NIB						
Rj	E(Rj)	Rm	E(Rm)	Rm-E(Rm)	Rj-E(Rj)	[Rm-E(Rm)][Rj -E(Rj)]
-0.1356	0.1673	0.2920	0.3189	-0.0269	-0.3029	0.00815
0.6000	0.1673	0.3485	0.3189	0.0296	0.4327	0.01281
0.3762	0.1673	0.7681	0.3189	0.4492	0.2089	0.09384
0.4213	0.1673	0.4085	0.3189	0.0896	0.2540	0.02276
-0.4253	0.1673	-0.2224	0.3189	-0.5413	-0.5926	0.32077
					$\sum$=	0.45833
					$Cov_{jm}=(\sum/5)$ =	0.09167
					$\beta= Cov_{jm}/\sigma_m^2$ =	0.72699
					$\alpha = E(Rj)-\beta E(R_m)$ =	-0.06454
					β^2 =	0.52851
					σ_m=	0.3551
					Systematic Risk = $(\beta^2\times\sigma_m^2)$	0.06664
					σ_j =	0.4296
					$\rho_{jm} = Cov_{jm}/\sigma_j\times\sigma_m$	0.60091
					unsystematic Risk = $(\sigma_j^2 - \beta^2\times\sigma_m^2)$ =	0.11792
					Portion of Systematic Risk(ρ^2) = Systematic Risk/Total Risk =	0.36109
					Portion of Unsystematic Risk = 1- Portion of systematic Risk ($1-\rho^2$) =	0.63891

APPENDIX- III

Statistical of Calculation for Co variation (I)

SCBNL (A)		EBL (B)		NIB (C)		HBL (D)		NABIL (E)	
R_A	$E(R_A)$	R_B	$E(R_B)$	R_C	$E(R_C)$	R_D	$E(R_D)$	R_E	$E(R_E)$
0.4126	0.3441	0.1654	0.3686	-0.1356	0.1673	0.1090	0.2828	0.5750	0.4808
0.6652	0.3441	0.8000	0.3686	0.6000	0.1673	0.2283	0.2828	0.5449	0.4808
0.5841	0.3441	0.2611	0.3686	0.3762	0.1673	0.6136	0.2828	1.2991	0.4808
0.1712	0.3441	0.8230	0.3686	0.4213	0.1673	-0.4631	0.2828	0.0564	0.4808
-0.1127	0.3441	-0.2066	0.3686	-0.4253	0.1673	0.9261	0.2828	-0.0713	0.4808

Statistical of Calculation for Co variation (II)

$R_A - E(R_A)$	$R_B - E(R_B)$	$[R_A-E(R_A)][R_B-E(R_B)]$	$R_A - E(R_A)$	$R_C - E(R_C)$	$[R_A-E(R_A)][R_c-E(R_C)]$
0.0685	-0.2032	-0.0139	0.0685	-0.3029	-0.0207
0.3211	0.4314	0.1385	0.3211	0.4327	0.1389
0.2400	-0.1075	-0.0258	0.2400	0.2089	0.0501
-0.1729	0.4544	-0.0786	-0.1729	0.2540	-0.0439
-0.4568	-0.5752	0.2628	-0.4568	-0.5926	0.2707
	$\sum$ =	0.2830		$\sum$ =	0.3954
	$Cov_{AB} = \sum/5$ =	0.0566		$Cov_{AC} = \sum/5$ =	0.0790
	σ_A =	0.3178		σ_A =	0.3178
	σ_B =	0.4406		σ_C =	0.4296
	$\rho_{AB} = Cov_{AB}/\sigma_A \times \sigma_B$	0.4042		$\rho_{AC} = Cov_{AC}/\sigma_A \times \sigma_C$	0.5788

Statistical of Calculation for Co variation (III)

$R_A - E(R_A)$	$R_D - E(R_D)$	$[R_A-E(R_A)][R_D-E(R_D)]$	$R_A - E(R_A)$	$R_E-E(R_E)$	$[R_A-E(R_A)][R_E-E(R_E)]$
0.0685	-0.1738	-0.0119	0.0685	0.0942	0.0065
0.3211	-0.0545	-0.0175	0.3211	0.0641	0.0206
0.2400	0.3308	0.0794	0.2400	0.8183	0.1964
-0.1729	-0.7459	0.1290	-0.1729	-0.4244	0.0734
-0.4568	0.6433	-0.2939	-0.4568	-0.5521	0.2522
	$\sum$ =	-0.1149		$\sum$ =	0.5491
	$Cov_{AD} = \sum/5$ =	-0.2230		$Cov_{AE} = \sum/5$ =	0.1098
	σ_A =	0.3178		σ_A =	0.3178
	σ_D =	0.5274		σ_E =	0.5403
	$\rho_{AD} = Cov_{AD}/\sigma_A \times \sigma_D$	-0.6855		$\rho_{AE} = Cov_{AE}/\sigma_A \times \sigma_E$	0.6396

Statistical of Calculation for Co variation (IV)

$R_B - E(R_B)$	$R_C - E(R_C)$	$[R_B-E(R_B)][R_C-E(R_C)]$	$R_B - E(R_B)$	$R_D-E(R_D)$	$[R_B-E(R_B)][R_D-E(R_D)]$
-0.2032	-0.3029	0.0615	-0.2032	-0.1738	0.0353
0.4314	0.4327	0.1867	0.4314	-0.0545	-0.0235
-0.1075	0.2089	-0.0225	-0.1075	0.3308	-0.0356
0.4544	0.2540	0.1154	0.4544	-0.7459	-0.3389
-0.5752	-0.5926	0.3439	-0.5752	0.6433	-0.3700
	$\sum$ =	0.6820		$\sum$ =	-0.7327
	$Cov_{BC} = \sum/5$ =	0.1364		$Cov_{BD} = \sum/5$ =	-0.1465
	σ_B =	0.4406		σ_B =	0.4406
	σ_C =	0.4296		σ_D =	0.5274
	$\rho_{BC} = Cov_{BC}/\sigma_B \times \sigma_C$	0.7207		$\rho_{BD} = Cov_{BD}/\sigma_B \times \sigma_D$	-0.3605

Statistical of Calculation for Co variation (V)

$R_B - E(R_B)$	$R_E - E(R_E)$	$[R_B-E(R_B)][R_E-E(R_E)]$	$R_C - E(R_C)$	$R_D-E(R_D)$	$[R_C-E(R_C)][R_D-E(R_D)]$
-0.2032	0.0942	-0.0191	-0.3029	-0.1738	0.0526
0.4314	0.0641	0.0277	0.4327	-0.0545	-0.0236
-0.1075	0.8183	-0.0880	0.2089	0.3308	0.0691
0.4544	-0.4244	-0.1928	0.2540	-0.7459	-0.1895
-0.5752	-0.5521	0.3176	-0.5926	0.6433	-0.3812
	$\sum$ =	0.0454		$\sum$ =	-0.4726
	$Cov_{BE} = \sum/5$ =	0.0091		$Cov_{CD} = \sum/5$ =	-0.0945
	σ_B =	0.4406		σ_C =	0.4296
	σ_E =	0.5403		σ_D =	0.5274
	$\rho_{BE} = Cov_{BE}/\sigma_B \times \sigma_E$	0.0381		$\rho_{CD} = Cov_{CD}/\sigma_C \times \sigma_D$	-0.4172

Statistical of Calculation for Co variation (VI)

$R_C - E(R_C)$	$R_E - E(R_E)$	$[R_C-E(R_C)][R_E-E(R_E)]$	$R_D - E(R_D)$	$R_E - E(R_E)$	$[R_D-E(R_D)][R_E-E(R_E)]$
-0.3029	0.0942	-0.0285	-0.1738	0.0942	-0.0164
0.4327	0.0641	0.0277	-0.0545	0.0641	-0.0035
0.2089	0.8183	0.1709	0.3308	0.8183	0.2707
0.2540	-0.4244	-0.1078	-0.7459	-0.4244	0.3166
-0.5926	-0.5521	0.3271	0.6433	-0.5521	-0.3552
	$\sum$ =	0.3895		$\sum$ =	0.2122
	$Cov_{CE} = \sum/5$ =	0.0779		$Cov_{DE} = \sum/5$ =	0.0424
	σ_C =	0.4296		σ_D =	0.5274
	σ_E =	0.5403		σ_E =	0.5403
	$\rho_{CE} = Cov_{CE}/\sigma_C \times \sigma_E$	0.3356		$\rho_{DE} = Cov_{DE}/\sigma_D \times \sigma_E$	0.1547