CHAPTER–I

INTRODUCTION

Development of any country is directly related with its economic development. The economic development of the country in turn depends upon the capital formation and industrialization. Industrialization can be achieved through proper use of the funds and their investment in the productive sector. Scattered funds around the country can be collected through the financial institution. "Investment can be made through the stock market or capital market. Stock market is such financial market which facilitates the buying and selling of stock conveniently to all those who are interested in carrying out such transaction. It is assumed that development of stock market enhances the development of country's financial sector and it finally helps in growth of the nation. Hence it is very essential to have very sound and action stock as well as it help general public by providing the necessary information and services under one root, thus making it easy for them. "Securities market exists in order to securities meaning buyer and seller of securities meaning they are mechanism to create and facilitate the exchange of financial assets. (Pandey 1999:570)

1.1Background

Nepal is the kingdom of hills and mountains with an area of 1,47,181 square meters. It is located on the southern flock of Himalayan range. It extends about 885kms. Along east west; the northern extension varies from 145 km to 241kms. Nepal is landlocked country which is sandwiched between China and India. Nepal and India share an open border stretching over 1700 km. Nepal is one of the least developed countries in the world and has many implicit and explicit obstacles for the development Agriculture is the largest sector and backbone of the country or Nepalese economy. Nepal is poor in mineral resource but very rich in huge potential for hydroelectricity power. It is famous for its high Himalayan ranges, diversity in natural beauty, caste, religion, culture, language, archaeology etc. Due to the plain greenly area in south hills and valleys in middle and silvery peaks of the Himalayas as in the north, Nepal has been divided into three region. They are Terai, Hill and mountain area.

Although agriculture is the backbone of the country, non-agriculture sector has also significant contribution in the national economy. Agricultural and non-agricultural sector needs a sound financial system to carry out its activities

effectively because each and every managerial decision- making is based on financial analysis. It involves acquisition, utilization, control and administration of funds needed for the different sector.

The business world is entirely different from one in the past. The changing lifestyle has always been challenging to the business community and has given opportunities to producers thousand of type of good and services to satisfy the challenging need of people. The social needs have tremendously increased the quantity as well as quality. Financial institutions play a vital role for the economic growth and development of the country. They promote trade and industry, influence the economic activity and monetize the economy. They help to alleviate the poverty by creating employment opportunities. It aids in raising the living standard of the people. Infact, they are the requirement of the twenty first century for every economy, including Nepal.

Market for product and services has developed throughout the world and the competition among firms has altered their managers to present the future preference of society. All this has induced business to gear up investment in many fields where investment need huge amount which cannot be covered by the firm past profit and surplus of individual investor only. And also the member of an economic society, individual and institution rarely have balanced budget. Some of them always earn more than what they consume and some earn less than what they consume. Further some member of the society undertakes additional activities of investing requiring more funds than what they have. Thus, there is no equilibrium in income and expenditure. Similarly these members have varying perception towards risk and enterprising ability. This disequilibrium in income expenditure in the hand of perception towards risk and enterprising ability of the other necessitated a mechanism to transfer financial resource from one unit to another unit of the society. The adventure of securities market has successfully served this purpose of fund transfer from one unit to another.

Return is the reward for uncertainty of risk. It is the income received in investment. People invest their belonging with an expectation of getting some reward for leaving its liquidity, they only invest in those opportunities where they can get higher return. In other words return in the man attraction for investor to invest in risky securities as stock accepting a varying degree of risk tolerance. Hence, investor wants favorable return to be yield by its stock, and go for those, which yield more.

“Risk plays a central role in the analysis of investment. Risks are the facts of life, which are product of uncertainty and its magnitude, depend upon the degree of variability in uncertain cash flows. Risk in-fact is the indication of

chance of losing investing values. 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 chance of happening some unfavorable event or danger of losing some material value. Risk can be thought of as the possibility that the actual return from holding security will deviate from unexpected return." (Pandey, 1997: 878).

"The concept of risk and return are the determinant of the valuation of securities. However, risk means that we do not know what is going to happen even though we occasionally have a good idea of the range of possibilities that we face. In the most basic term risk can be defined as the chance of loss. More formally, the term risk is used interchangeable with uncertainty to refer to the variability of return associated with a given assets" (Gitman, 2001:237).

A stock refers the uncertainty about future returns, such that the actual return may be less than expected. The main source of uncertainty is the price at which the stock will be sold. Dividend tend to be much more stable than stock prices, and at the same time reduce the amount of earning re-invested by the firm which limits its potential growth, And stock price can be affected by economic factor such as interest rates, economic growth, inflation and the strength of dollar. They can also be affected by micro economic factors such as specific policies enacted by a particular firm that will affect its future earnings. The risk of a stock can be measured by its price volatility. "A stock volatility serves as a measure of risk because it may indicate the degree of uncertainty surrounding the stock return." (Madura, 2001:29).

An investment involves sacrifice of current rupee for future rupees. The sacrifice takes place in the present and is certain. The reward later is uncertain, Investors have varying perception towards risk and enterprising ability, investor will want their investment to yield favorable return hence they invest in those opportunity which has certain degree of risk associated with it.

The stock exchange market or stock market is one of the forms of secondary market. It is major component of securities market and also the medium through which corporate sector mobilize funds to finance the productive projects by issuing shares in the market. It is a place where shares of listed companies are transferred from one hand to another at a fair price through the organized brokerages firms. The stock is a financial market which probably has the greater glamour and is perhaps the best under stood. More over security market exists in order to bring together buyer and seller of securities to facilitate the exchange assets. Hence it creates and enhances liquidity in the securities in order to make transaction of securities. The listed companies receive certain amount of free advertisement, publicity and the status being listed enhances their reputation.

The securities market provides at least four economic functions which are as: Security exchanges facilitate the investment process by providing a market place to conduct efficient and relatively less expensive transaction. The investors thus assure that they would have place to see their securities. The investor are capable of handling continuous testing the value of securities, the purchase and sale of securities ,records, judgment on the values and prospects of companies. Those prospects are judged favorably by the investors, have higher values, which facilitate new financing and growth. Security prices are more stable because of he operation of the security market. They improve liquidity by providing continuous market that makes a more frequent by smaller price change.

"Nepal stock exchange (NEPSE) is the only exchange centre in the country owned by the government (55.55 %), Nepal Rastra Bank (37.72), Nepal Industrial Development Corporation (7.04%) and security business person (0.69%) "Annual Report SEBO, 2001-P-$)

The concept banking system was introduced in Nepal with the establishment of Nepal Bank ltd in 1937. The financial monopoly has changed with the introduction of joint venture banks in 1984. The domestic banks of Nepal, Nepal Bank Ltd and Rastriya Banijya Bank could no longer able to enjoy monopoly. The number of commercial bank has been increasing in various sectors. Contribution of commercial banks has been increasing in the overall economic development of the country.

"Commercial bank exchanges money, deposits grants loan and performs other commercial bank function and is not a bank meant for corporative, agriculture, industrial as per specific function." (Commercial Bank Act, 2031:45).

1.1.1 Himalayan Bank Limited.

Himalayan Bank Limited (HBL) , the largest and one of leading private sector banks of Nepal was set up in 1993 in joint collaboration with Habib Bank Limited of Pakistan. Through its customized services and innovative approach it has emerged as one of the premier commercial banks in Kathmandu and Nepal. Kathmandu Himalayan Bank Limited is 'Globus' enabled, which is a single banking software integrating all its branches. Himalayan Bank Limited Kathmandu offers retail, corporate, and international banking facilities for its customers. Himalayan Bank is also the first commercial bank of Nepal with most of shares held by the private sector of Nepal. Besides commercial banking services, the Bank also offers industrial and merchant banking service.

With its head or corporate office in Thamel, Kathmand, the bank has 18 branches. Six of its branches are located inside the Kathmandu Valley while the rest are spread across the nation.

1.1.2 Nepal Investment Bank Limited

Nepal Investment Bank, one of the leading commercial banks of the country, was earlier known as the Nepal Indosuez Bank. Nepal Investment Bank Limited was established in 1986. Nepal Investment Bank was a joint commercial enterprise between the Credit Agricole Indosuez (one of the largest banking group in the world) and the Nepalese. The Head office of the Nepal Investment Bank Limited is located at Durbar Marg- Kathmandu, which remains open all round the year. This bank has 15 branches and 78 remittance centers across Nepal.

Nepal Investment Bank Limited (NIBL) functions on the thumb rule given by the Nepal Government and the Nepal Rastra Bank or the Central Bank of Nepal. Besides all the function that Nepal Investment Bank Limited (NIBL) performs, it is generally known for its remittance services. It boasts of being one of the most dependable and the strongest center of money transfer to Nepal. Money can be sent to NIBL via their exchange houses, correspondent banks and the Middle-East banks using NIBL's in-house remittance software and the Prithivi Express by the remitters across the globe.

We believe that NIBL, which is managed by a team of experienced bankers and professionals having proven track record, can offer you what you're looking for. We are sure that your choice of a bank will be guided among other things by its reliability and professionalism.

1.1.3 Nepal SBI Bank Limited

Nepal SBI Bank Ltd. (NSBL) is the first Indo-Nepal joint venture in the financial sector sponsored by three institutional promoters, namely State Bank of India, Employees Provident Fund and Agricultural Development Bank of Nepal through a Memorandum of Understanding signed on 17th July 1992. NSBL was incorporated as a public limited company at the Office of the Company Registrar on April 28, 1993 under Regn. No. 17-049/50 with an Authorized Capital of Rs.12 Crores and was licensed by Nepal Rastra Bank on July 6, 1993 under license No. NRB/l.Pa./7/2049/50. NSBL commenced operation with effect from July 7, 1993 with one full-fledged office at Durbar Marg, Kathmandu with 18 staff members. The staff strength has since increased to 511. Under the Banks & Financial Institutions Act, 2063, Nepal Rastra Bank granted fresh license to NSBL classifying it as an "A" class licensed institution

on April 26, 2006 under license No. NRB/I.Pra.Ka.7/062/63. The Authorized, Issued and Paid-Up Capitals have been increased to Rs. 200 Crores,Rs. 166.16 Crores and Rs. 165.36 Crores, respectively.

The management team and the Managing Director who is also the CEO of the Bank are deputed by SBI. SBI also provides management support as per the Technical Services Agreement. Fifty five percent of the total share capital of the Bank is held by the State Bank of India, fifteen percent is held by the Employees Provident Fund and thirty percent is held by the general public.

1.1.4 Bank of Kathmandu Limited

Bank of Kathmandu Limited has become a prominent name in the Nepalese banking sector. We would like to express our sincere gratitude to our customers, shareholders, employees and other stakeholders for their support and co-operation for leading the bank to the present height of achievements. We wish to reiterate here that whatever activity we undertake; we put in conscious efforts to glorify our corporate slogan, "We make your life easier". Bank of Kathmandu is committed to delivering quality service to customers, generating good return to shareholders, providing attractive incentives to employees and serving the community through stronger corporate social responsibility endeavor.

Bank of Kathmandu Limited (BOK) has today become a landmark in the Nepalese banking sector by being among the few commercial banks which is entirely managed by Nepalese professionals and owned by the general public. BOK started its operation in March 1995 with the objective to stimulate the Nepalese economy and take it to newer heights. BOK also aims to facilitate the nation's economy and to become more competitive globally. To achieve these, BOK has been focusing on its set objectives right from the beginning.

1.1.5 Nepal Everest Bank Limited

Everest Bank Limited (EBL) started its operations with a view and objective of extending professionalized and efficient banking services to various segments of the society. The bank is providing customer-friendly services through its Branch Network. All the branches of the bank are connected through Anywhere Branch Banking System (ABBS), which enables customers for operational transactions from any branches. Everest Bank Ltd. was established in 1992 under the company Act 1964 United Bank of India Ltd. under technical services Agreement signed between it and Nepali promoters were managing the bank till November 1996. Later on management was handed to the Punjab National Bank Ltd. India that holds 20% equity on the bank's share capital. The

main objective of the bank is to carry out commercial banking activities. The bank started its operation in 1993(A.D.). It was listed in NEPSE on 12/25/52 (B.S.).

With an aim to help Nepalese citizens working abroad, the bank has entered into arrangements with banks and finance companies in different countries, which enable quick remittance of funds by the Nepalese citizens in countries like U.A.E, Kuwait, Bahrain, Qatar, Saudi Arabia, Malaysia, Singapore and U.K.

1.2 Focus of the study

The main focus of this study is the risk and return analysis of the common stock of investment of the listed commercial banks of Nepal. The relationship between risk and return is a major topic concerned among investor and analyst. The relationship is very critical and very difficult to understand common stock in 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, 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.

The analysis of the risk and return is 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 so that they can make a good risk- minimizing portfolio between their investments in the stock. The investor suffers more for not recognizing the trades off between risk and return. Return and risk are the two most important criteria for investment decision. Return is the income from an investment.

In the context of Nepal, the capital market is growing very slowly. The market is not efficient, there are very few magazines or articles related to capital market and very few students are made on the topic risk and return. Because of these all thing most of the investor is investing all thing most of the investor are investing on the capital market without any proper knowledge and information.

The study will give information about Nepalese capital market by analyzing risk and return and will definitely contribute to increase the analytical power of the investor in capital market. The studying is not only to fulfill but also to provide some knowledge about the Nepalese stock market development. Other

theories and tools are also used to support the risk and return theory. It is suggested to the policy maker to make necessary policies to attract private sector investment in the productive sector and reforms in policies ration to stock trade is quite necessary for development of security market in Nepal. It is believed that this study will help many investors to know how they should use their money which investing in financial securities. Apart from all these this study may be matter of interest for academicians, students, teachers etc.

1.3 Statement of the Problem

It is true that after the establishment of Nepal, Stock exchange, the capital market has grown rapidly within a very short period, however the attitude, thoughts and knowledge of the most investors is not changed. Most of the investor are least familiar with the financial activities. They don't have idea of risk and return. Without having theoretical knowledge of risk associated with investment most of the investors are making investment an stock which is very wrong and bad trend.

Theory says that the stock price in market is guided by the intrinsic value, which is calculated by end of company's result of financial performance such as dividend, required rate of return and growth rate. In an efficient market condition stock price is equal to the intrinsic value. Since buyer and the seller are fully aware of the facts and figures of the company. Therefore, one can say that the market price and financial performance are positively correlated but condition have are totally different from that whatever the theory has depicted, is not applicable in our context where most of the investor does not know to interpret the information regarding transaction of the stock. Therefore, stock price is Nepal is determined more by other factor than the financial performance of the concerned company.

At the same time there are no any separate institutions which provide information required to make rational decision that can acceleration stock investment and market efficiency. Government policy is found less encouraging in promoting common stock investment. Therefore, courage is needed and at the save time faith to invest in common stock because there are several questions which may have arising in the mind of the individual investors at the time of the investment. Some of the common question that frequently occurs is an investors mind can be listed as follows:

How do they know about the magnitude of risk?
What should be the compensation for bearing risk?
What are the criteria for evaluation that the stock they are holding will give them favourable return?

How can investor diversify risk?
So, there are the burning issues that have researcher to carry on these studies.

1.4 Objective of the study

The basic objective of the study is to focus on the risk, return and common stock investment of Nepalese joint venture banks. The study will also try to pin point the real problems occurring in common stock in joint venture banks. The stated problems are analyzed regarding to banks sectors. The specific levels of objectives of the study are:

a) To evaluate the common stock of listed joint venture banks in terms of risk and return.

b) To measure systematic and unsystematic risk of the commercial banks.

c) To find the overprice, under price and correctly priced of common stocks of joint ventures banks.

d) To identify the co-variance and correlation between the return of common stocks of joint venture banks.

e) To examine the relationship between risk and return.

f) To analyze risks of these sectors those can be eliminated through diversification without any cost.

g) To provide applicable suggestion on the basis of finding to management and government.

1.5 Significance of the study

The research study will give correct information about Commercial Banks and may contribute in the analytical power of the investors. In Nepalese context, very few studies are made and there are no specific magazines and articles on the topic. So, the study will be more significant for exploring and increasing stock investment. People are curious to know about the riskiness of the Commercial Banks that helps to minimize their risk position. The main significance of this study is:

- This study will be a matter of interest for academic students and investors.

- This study will be beneficial for all the person who are directly or indirectly related to the Nepalese stock market.

- This study may provide significant information to Nepalese stock market development along with providing ideas to minimize the risk on stock investment.

1.6 Limitations of the study

Research study may not be free from its own limitations. Mainly this study is made for the partial fulfillment of M.B.S. level. So, there are couples of limitation, which weaker the generalization. Limitation are in adequate coverage of industries, time taken, reliability of statistical tools used and other variables which are not included in the study. Every study has certain limitations. This study also has certain limitations. So, it claims no perfections. It has the following limitations:

- This study is mainly based on only commercial banks. Here, manufacturing sector is not included.

- Commercial bank activities are mainly included.

- The main focuses are given to the quantities and qualities factors.

- This study is based on secondary data, which are extracted from the financial statement of banks concerned.

- Altogether five commercial bank is taken for study.

- .The data related to risk and return on common stock are analyzed and interpreted.

1.7 Theoretical Framework

This study focuses on the determination of risk, return and investment position of Nepalese Commercial Banks. Basically, Commercial banks are concerned with financial transaction. Different types of financial division are involved in the financial transaction. All the financial decision often involves alternative courses of actions. The alternative courses of action typically have different risk-return implications.

While selecting the investment alternative, the first priority of the investor is to identify the amount of rate of returns.

1.8 Hypothesis

This study will test the following hypothesis: (the hypothesis tests are based on test of significance for a single mean)

Hypothesis I

Null hypothesis (H0): There is no significant difference between the portfolio return of common stocks of MPCs and overall market returns. In other word, average return on common stock of MPCs is equal to the market return.

Alternative Hypothesis (H1): There is a significant difference between the portfolio return on common stocks of MPCs and overall market return. In otha words, average return on common stock of MPCs is not equal to the market return.

1.9 Organization of the study

The study has been organized into five chapter, they are

Introduction
Review of literature
Research methodology
Presentation, analysis and interpretation of data
Summary, conclusion and recommendation

Chapter–I "Introduction"

It includes general introduction, background, information, focus of the study, statement of the problem, purpose of the study significance, variables, hypothesis and assumptions and so on. Therefore, this chapter highlights on the aim and structure of the study.

Chapter–II "Review of literature"

It is dealt in the second chapter. It includes introduction, definition, theories (model) and review of previous studies.

Chapter–III "Research Methodology"

In the third chapter research methodology has been discussed. This chapter deals with the research design, population and sample, nature and types of data, source of data, data collection, procedures data processing procedures, tools and techniques for the analysis of data.

Chapter–IV "Presentation, analysis and interpretation of data"

This chapter attempts to analysis and evaluates the data with the help of analytical tools and interprets the result so obtained.

Chapter–V "Summary, Conclusion and recommendations"

The last chapter is the summary, conclusion and recommendations. It contains the summary and conclusion of the study and recommendation for the further study. It sums of the results obtained through analysis and recommends some suggestions.

CHAPTER–II

REVIEW OF LITERATURE

Review of literature is the selection of available documents (both published and unpublished) on the topic, which contain information, ideas, data and evidence written from a particular standpoint to fulfill certain aims or express certain views on the nature of the topic and how it is to be investigated, and the effective evaluation of these documents in relation to the research being proposed. ,. A literature review is a body of text that aims to review the critical points of current knowledge including substantive findings as well as theoretical and methodological contributions to a particular topic. Literature reviews are secondary sources, and as such, do not report any new or original experimental work. Most often associated with academic-oriented literature, such as theses, a literature review usually precedes a research proposal and results section. Its ultimate goal is to bring the reader up to date with current literature on a topic and forms the basis for another goal, such as future research that may be needed in the area.

A well-structured literature review is characterized by a logical flow of ideas; current and relevant references with consistent, appropriate referencing style; proper use of terminology and an unbiased and comprehensive view of the previous research on the topic.

Risk and return analysis of the stock in the present days has been the focal point in the capital market area in relation with portfolio management in particular. In the investment process, risk and return aspects and the formation of an optimal portfolio are the major two tasks. The basic essential of the modern portfolio theory are to avoid risks and to calculate the risk premium that investors needs for involving in the risky investment eventually, the analysis help an investors to quantify their trade off between risk and return. Capital market is the value for resources allocation and many things regarding Capital market that contains and help product market behaviors.

2.1 Conceptual framework

Various books which deal with theoretical aspects of risk and return are taken into consideration. Major fours are on the investment of common stock and its impact on individual risk and return the Capital.

2.1.1 Common stock

The study is focused on common stock investment. Therefore Main fours are given upon it. "Common stock represents equity or ownership position in a corporation. It is a residual claim, in the sense that creditors and preferred stock holders must be paid as scheduled before common stock holders can receive any payment." (Sharpe, Alexander, Bailey, 1999:450) When investor buys common stock, they receive certificate of ownership as a proof of their being part of ownership of the company. The certificate states the number of share purchased and their face value. Securities market exits in order to bring together buyers and seller of securities to facilitate the exchange of financial assets in stock market which probably has the greatest glamour and is perhaps the least understood. Some observers consider it has a legalized heaven for gambling and very few investors consider stock market as an interesting game in which the sole purpose is picking his repress. Load Keynes is the first person to express stock market as "a game of professional's investment". The main purpose is to win or to make lots of money. Success comes to one who treats it as a game to be played not only for profit but also for enjoyment and sports. Stock market provides both opportunity and threats. It is useful for the well-learned peoples who have better knowledge of market realities and it becomes a danger for the unknown people.

Securities Boards, Nepal, (SEBO) was established on 26 May under the provision of the securities Exchange Act 1983. It was established with the objectives of promoting and protecting the interest of investors by regulating the securities market besides the regulatory role. It is also responsible for the development of securities market in the country.

Among all the forms of securities, common stock appears to be the most romantic. While fixed income investment revenue may be more important to most of the investors, common stock seems to capture their interest the most The potential reward and penalties associated with common stocks make them an interesting and exciting proposition and common investment is a favorite topic for conversation in parties and get together. (Securities board Nepal, Annual report, 1999/2000 SEPO, May 2001:5).

Common stock holders of a corporation are its residual owner. Their claim to income and assets comes after creditors and preferred stocks holders have been paid fully. As a result stockholder return on investment is less certain than the return to lender or to preferred stock holder. On the hand, the share of the common stock can be authorized either with or without par value. The par value

of the stock is merely a stated figure in the corporate charter and is of little economic significance.

The great advantage of the corporate form of origination is the limited liability if its owner. Common stock are generally regarded as " fully paid and non assessable ", which means that common stock holders may not lose their initial investment. That is, if the corporation fails to meet its obligation, the stockholder cannot be forced to give the corporation the funds that are needed to payoff the obligation. However as a result of such a failure, it is possible that the value of a corporation shares will be negligible. This will result in the shareholder having listed on amount equal to the price previously paid to buy the shares.

2.1.2 Common stock fundamentals

The true owners of business firms are the common stock holders to invest their money in the firm because of their expectation of future returns. A common stock holder is sometimes referred as a residual owner, as he /she receives what is left after all other claim on the firms income and assets have been satisfied. Here are the fundamental aspects of common stock.

Control

Common stockholder have voting rights that can be used to elect corporate director who in turn appoints the corporate officers. Generally, stockholder also has the right to vote on

1. Any issue that will have a material effect on the corporation.

2. Any proposal that will change their individual percentage ownership.

3. Any significant contract or financial arrangement.

Pre - Emptive right

A pre - emptive right gives existing stockholder the first option to purchase a proportionate interest in a new issue of a corporation stock. The purpose of this provision is to protect stockholder against a loss of voting control and a dilution in their share.

Liquidation Right

Common stockholder receives no priority as owners rather than creditors in the distribution of assets resulting from a liquidation of the corporation typically after assets are sold and liabilities as well as preferred stockholder are satisfied.

Dividends

The payment of corporate dividend is at the discretion of the board of director. Most corporation pay dividend quarterly. Dividend may be paid as cash, stock or merchandise. Cash dividend is the most common memorial whereas merchandise dividends are the least common. Before dividend are paid to the common stockholder, the claim of all creditors, the government and preferred stockholder must be satisfied.

Common Stock Values

Terms that are frequently used to refer to common stock values include par value, book value and the market values. These terms are quite different and in most cases the rupees amount of these values is not related for an individual stock.

Par value

The face values of the stock which is established at the time when the stock is initially issued is called par value. Without a stock split or others action performed by the board of director, the par value of the stock does not change.

Market value

Market value in the secondary market is determined by supply and demand factors and reflects consumers of investors and traders concerning the value of the stock.

Distribution of Earning and Assets

Common stock lenders have no guarantee of receiving any periodic distribution of earning in the form of dividend or they are not guaranteed any thing in the event of liquidation. However one thing they are assured of is that they cannot lose any more than they have invested in the firm.

Voting Right

Generally each share of common stock entitles the folder to one vote in the election of directors and in order special election votes are generally assignable and must be cost of the annual stockholders meeting

2.2 Meaning of Return

The concept of return has different meaning to different invertors seek near term cash in flow and gives less value to more distant return such an investor might purchase the stock of other firm that pays large cash dividends. Other investors are concerned primarily with growth. They would see project that offer the promise of long term, higher than average growth of sales earning and capital appreciation. With most investment an individual or a business organization spends money today with the expectation of earning even more money in the future. Thus, the concept of return provides investor with a convenient way of expressing the financial performance of an investment.

"The return is the total gain or loss experience on as investment over a given period of time. It is commonly measured as the change in value thus any cash distribution during the period, expressed as a percentage of the beginning of period investment value." (Gittmen, 2001: 238).

2.2.1 Return on common stock

"The return from an investment is the realization cash flow earned by its owner during a given period of time. Typically it is expressed as percentage of beginning of period value of the investment. "(Chandra, 1995:62)

Return on common stock consists of the dividend yield and capital gain. An example derived from the book of Bready and Mayers (1998:68) is taken into consideration to make it clear. According to them " if current price of share is p0 and expected price expected at the end of the year is P1, and the expected dividend per share is Div1, the rate of return that investor expect from share over the next year is defined as the expected price appreciation per share P1-P0, all divided by the beginning price P0.

$$\text{Expected Return } (\overline{R}) = \frac{P_1 - P_0 + Div_1}{P_0}$$

Expected Rate of Return

Most of the investment decisions are made for future event. Hence it is necessary to predict the future return than the past return. But future is always

uncertain for the common stockholders. There fore it leads to find expected rate of return of a security is the sum of the product of possible rate of return and their probabilities.

E(R) = r1p1 + r2p2+..... + rnpn

$$= \sum_{t=1}^{n} r_t P_t$$

Where,
Rt = rate of return for the tth probability
P1 = Probabilities of that return occurring
n = no of probabilities

The above return calculated is based on future outcome or events. However predicting future to that outcome and assigning a probability to that the future is a proxy of past that the past event will not change and hence the profit. Investment and the market factors that we can calculate expected return on arithmetic average. Expected rate of return based on the historian data can be calculated as follows: -

$$\text{Expected rate of return } (\bar{R}) = \frac{\sum r_j}{n}$$

Where,
∑rj = sum of the return of stock j
n = no. of years that the return are taken

The holding period returns refers to the returns from holding an investment over some period as cash payment received due to ownership and the change in the market price derived by the beginning price. If an investor purchase a stock of any company and holds in the for certain period he can get return in two ways one is increased in the volume of that stock as compared to initial one and another is direct cash payment. The increase in capital appreciation and direct cash payment is dividend.
For common stock we can define one period return as

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

Where,
R = Expected return
Dt = Dividend received at the time t
Pt-1 = Particular time period

This formula can be used to determine both actual one period return when based on historical figures and expected one period return when based on expected dividend and prices.

"Holding period return mentioned above is useful with an investment horizon of one year or less. For longer period it is better to calculate rate of returns as investment yield. The yield calculation is present value based and this considers the time value of money." (Van Home and Wachowics, 1997:10). "Holding period returns are often calculated for periods other than one year for this season, the length of the holiday period must always be indicated for the specific HPR. Many HPR over periods shorter or longer than are year are annualized. In general if the length of the hading is not specified it is assume to be one year" (Cheney,Moses:31).

2.3 Meaning of Risk

Risk and return are the determinant for the valuation of securities. However, risk means that we do not know what is going to happen even though we occasionally have a good idea of the range of possibilities that we face. In other words, when the firm moves to recognize that the forecast return may or may not be achieved. This is the element of risk in the decision making process. Therefore, risk may be defined as the "likelihood that the actual return from an investment will be less than the forecast return stated differently. It is the variability of return from an investment" (Hampton , 1996:345).

"In the most basic sense, risk is the chance of financial loss. Assets having greater chances of loss are viewed as more risky than those with lesser chances of loss. More formally the term risk is used interchangeably with uncertainty to refer to the variability of returns associated with a given asset. (Gitman, 2001:237).

2.3.1Risk on common stock

Risk can be defined as the variability of possible returns around the expected return of an investment. For some investment this variability can be quite small. Each investor has his or her own attitude about risk and how much he/she tolerate since investment alternative have different types of risks associated with them. The investor must determine which combination of alternative matches his or her particular risk tolerances.

Investment on common stock is risky investment. So, the uncertainties of return as concern stock are the facts of life to the common stock holders. Many

investors consider risk as a chance of occurring some unfavorable event of danger of losing some value. Most investor know that there is no free bench, that is the return you can expect is a function of the risk your take. Those investors who can tolerate higher level of risk should be rewarded with high value of returns. Intelligent investing involves combining investment alternatives in a portfolio that offer a fair return for the risk you are willing to assume.

Uncertainty and risk are treated separately in financial analysis. Risk is the unlooked and unwanted event in the future. Some one has said that risk is the sugar and salt of life. Although, risk arises from uncertainty its magnitude depends upon the degree of variability in uncertain cash flow and it is measured in terms of standard deviation. In financial management the uncertainty of cash flow is translated into a mathematical value by calculating the expected value of all possible uncertain outcomes.

What creates risk is an often asked question? Some external factors that cannot be controlled, and some internal factor, which can be controlled creates the risk, external factors that cannot be controlled called systematic risk. It includes mainly market risk, interest rate risk, and purchasing power risk. Internal factors that can be controlled is called unsystematic risk. It includes business risk, financial risk etc.

Measuring Risk

We have already discussed above that the risk is a difficult concept to grasp and great deal of the controversy has surrounded attempt to define and measure it. To be most useful, any measure of risk should have definite value we need a measure of the lightness of the probability distribution. One such measure is the standard deviation, the symbol for which is (σ) pronounced sigma. The smaller the standard deviation the tighter the probability distribution and accordingly the lower the riskiness of the stock. To calculate the standard deviation, following steps should be taken:

1. Calculate the expected value:

$$\text{Expected Value } E(r) = \sum_{t=1}^{n} r_t p_t$$

2. Subtract the expected value, E(r) , from each possible outcome deviation = r-E(r)

3. Square each deviation and multiply it by the probability occurrence of the applicable state of the economy, and then sum these product to obtain the variance (σ 2)

$$\sigma 2 = \text{Variance} = \text{Var}(r) = \sum_{t=1}^{n} Pt[rt - E(r)]2$$

The variance of return (σ 2) for assets using historical returns is calculated with this equation

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

4. Take the square root of the variance to obtain the standard deviation. The square root of the variance of the rates of return is called the standard deviation (σ) of the rates of return.

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

The standard deviation and the variance are equally acceptable and conceptually equivalent quantitative measure of an assets total risk.

Coefficient of variation

The other useful measure of risk is the coefficient of variation (C.V.). It is the standard deviation divided by the expected return, which measures risk per unit of return. It provides a more meaningful basis for comparison within the expected reruns as too alternatives are not the same. If investors believe that the rate of return should increase as the risk increases, then the coefficient of variation provides a quick summary of the relative trade off between expected return and risk.

$$\text{Coefficient of variation} = \frac{\sigma}{E(r)}$$

Where,

σ = Standard deviation

E(r) = Expected rate of return

2.4 Portfolio Theory

Portfolio theory gives the concept of diversification of risk by investing the total funds in move than one type of asset or stocks. The concept of portfolio theory was developed by Harry M Markowitz. He explained that the risk could be reduced without loosing considerable return by investing into portfolio. His approach to investing begins by assumption that an investor has a given sum of money to invest at the present time for a particular length of time which is known as "Holding Period". This theory explains how investors should construct efficient portfolio by estimating portfolio risk and expected return under uncertain circumstances. However, before Markowitz the risk was talked, but was not quantified. The theory is also known as mean variance efficient portfolios and Markowitz efficient set of portfolios.

The basic assumption of portfolio analysis is that the most investors dislike risk. Also most investors would prefer higher return to lower returns, other than being equal. Whenever it possible to reduce risk without reducing expected returns, it follows that investor will attempt to do this. It will be assumed that the standard deviation of the rate of return from a portfolio of securities is a reasonable measure of the portfolio risk. Thus theory is an incentive to use diversification to reduce the standard deviation of a portfolio.

The base of portfolio is a well diversification. Efforts to spread and minimize risk take the form of diversification, However it is always a difficulty to find the right kind of diversification and the right reason. There were three types of diversification techniques before the Markowitz diversification technique came into scenario. One is simple diversification, second is superfluous diversification and their is diversification across industries.

Markowitz diversification is combining of assets, which are less perfectly positively correlated in order to reduce portfolio risk. It can sometimes reduce risk below the non-diversifiable level. Markowitz diversification is more analytical than simple diversification and considers assets correlation or co-variance. The lower the correlation between assets, the more the Markowitz diversification will be able to reduce the portfolio risk. All the theories an portfolio are now based on the Markowitz diversification theory.

2.4.1Return on Portfolio

The expected return an portfolio, E(Rp) is simply the weighted average of the expected returns on the individual assets in the portfolio with the weight being the function of the total portfolio invested in each assets.

The expected return of portfolio consisting of two securities is
E(Rp) = Wx X E(rx) + (1 – Wx) E(ry)

Where,
E(Rp)= Expected return on a portfolio
E(rx) = Expected return on security "X"
E(ry) = Expected return on security "Y"
Wx = Proportion of portfolio invested in security "X"
WY = Proportion of portfolio invested in security "Y"

"A portfolio weight can be either positive or negative. A positive weight means you are buying the security, we also refer to this as taking long position is the security. The opposite of taking a long position is taking a short position, or selling short. In this case, the portfolio weight is negative because the numerator is negative." (Haugen, 1998:68).

2.4.2 Risk on Portfolio

Risk on portfolio is not a weighted average risk. Securities considered is a portfolio are associated with each other. Therefore, the portfolio risk also accounts for co-variance between the returns of securities. Covariance is the product of the standard deviation of individual securities times their correlation coefficient. The portfolio risk in the case of a two-security portfolio can be computed as follows:

Expected risk of a portfolio is a function of the proportions invested in the component, the riskiness of the component and correlation of return of the component securities. It is measured by standard deviation and calculated by using the formula.

$$\sigma_p = \sqrt{w_i^2 \sigma_i^2 + w_j^2 \sigma_j^2 + 2 w_i w_j Cov_{ij}}$$

Where,
σ_p = Portfolio standard deviation
Wi = Proportion of the portfolio devoted by security "i"
σ_{i2} = Variance of security "i"
σ_{j2} = Variance of security "j"
Covij = Covariance of stock i and j

Wj = Proportion to the portfolio devoted by security j

We may observe that the portfolio risk consists of the risk of the individual securities plus the covariance between securities. The magnitude of the portfolio risk well depend on the correlation between the securities portfolio risk will be equal to the weighted risk of individual securities, if correlation coefficient is +1 for a correlation coefficient less than the weighted average risk. When the two securities are perfectly negatively correlated that is the correlation coefficient is -1 the portfolio risk becomes zero.

As the numbers of securities in the portfolio increases, the portfolio variance approaches the average co-variance thus diversification helps in reducing the risk.

Most stock returns tend to move together but not perfectly. Therefore, the correlation coefficient between two stocks is generally positive but less then 1. The important principles to group are that as long as the correlation caffeine between two securities is less than the weighted average of two individual standard deviation. Hence, everything else begin equal, risk average investors securities that have less than perfect positive correlation among themselves. To do otherwise would be to expose oneself to needless risk.

2.4.3 Systematic and Unsystematic Risk

A security (or assets) risk is said to consists of two components diversifiable and non-diversifiable risk. Diversifiable risk, which is sometimes called unsystematic risk, represent the through of an asset's risk that can be eliminated of uncontrollable and random events, such as account and so forth. The events that cause firm to have diversifiable risk vary from firm to firm, they are therefore unique to the given firm.

Non–diversifiable risk, which is also called systematic risk, is attributed to forces that affects all firms. Factors such as war, inflation, international incidents and political assessed in relation to the risk of a diversified portfolio of all assets, which is commonly called the market portfolio on the market.

Thus the total risk can be divided into two parts.
Total risk = Systematic risk + Unsystematic risk

$$\sigma_{J2} = \text{Var}(Brm) + \text{Var}(e)$$
$$= Bj2\ \text{Var}(rm) + \sigma_{Ej2}$$

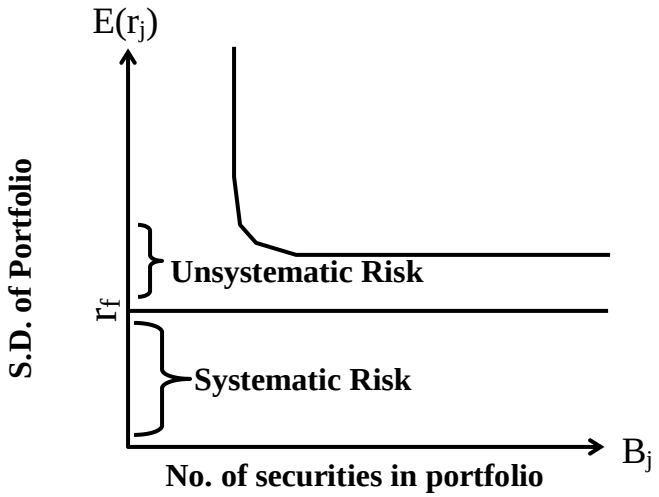
Where,

B j 2 Var(rm) =Market risk or systematic risk

σ Ej2 =Unsystematic or unique risk of the security.

Market risk, as the product of beta square of the individual security and the market variance is related to the movement of market portfolio. Unsystematic risk, error squared in regression language.

The following figure shows the relationship among diversification, unsystematic risk.



"As shown in figure, unsystematic risk can be reduced as more and more securities are added to a portfolio. In, USA it has been found that unsystematic risk can be eliminated by holding about unsystematic risk can be eliminated by holding about fifteen securities and in India, it is forty"

However by diversification this kind of risk can be reduced and even eliminated if diversification is efficient. Therefore, not all the risk involved in holding a stock is relevant since part of these risks can be diversified away. The important risk of stock is its unavoidable systematic risk. Investor will be compensated for priority this systematic risk. They should not however expect the market to provide any extra compensation for bearing available risk. It is this logic that lies behind capital assets pricing model (CAPM).

2.5 Review from Capital Assets Pricing Model (CAPM)

The capital assets, almost always referred to as the CAPM is a centerpiece of modern financial economics. The relationship between expected return and unavoidable risk, and the valuation of securities that follows is the essence of the capital assets pricing model (CAPM) this model was developed by William

F Sharpe (who was the Nobel prize winner in economics in 1990 and John Linter in the 1960's and it had important implications for finance ever since. This is useful for two seasons. First it provides a Benchmark return for evaluation existing securities. It allows us to find the return required for a given level of risk. Second it allows us to make an educated guess as to the initial price of a newly issued security.

The significant contribution of the capital assets pricing model is that it provides a measure of the risk of an individual security, which is consistent with portfolio theory. It enables us to estimate any un-diversifiable risk of a well-diversified portfolio. The CAPM equation or SML equation is usually written as.

$$E(Rj) = Rf + [E(Rm) – Rf]Bj$$

"The capital assets pricing model states that the inspected risk premium as cash investment is proportional to its beta. This means that each investment should lie on the sloping security market line connecting treasury bills and market portfolio." (Brealy and Mayers, 2000:20).

"Based on the behavior of risk adverse investor there is an implied equilibrium relationship, between risk and expected return for each security." In market equilibrium a security is supposed to provide an expected return commensurate with its systematic risk of a security. Greater the systematic risk greater the return that investor will expect from the security. The relationship between expected return and systematic risk and the valuation of securities follows the essence of Nobel Laurent William Sharpe's capital assets pricing model." (Van Moune and Wachouria 1997:101).

As with any model there are assumptions to be made. CAPM is also based on a number of assumption, the most important assumption are:

- The capital market is efficient. The capital market efficiency implies that share price reflect all available information.

- Investors are risk averse. They evaluate securities return and risk in terms of the higher expected returns for a given level of risk.

- All investors have the same expectation about the expected return and risk of time period.

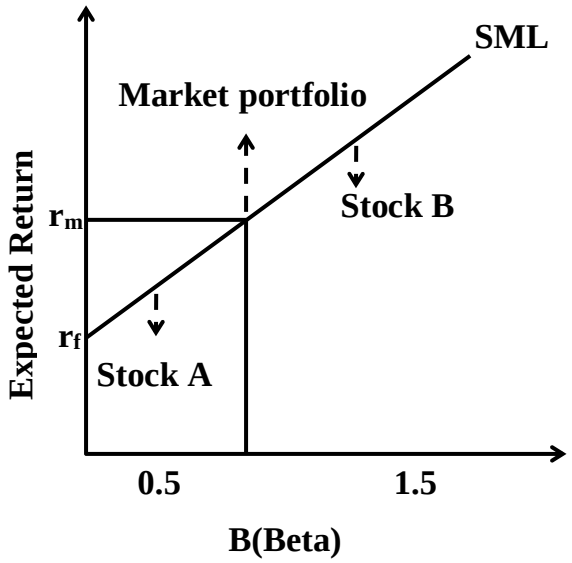
- All investors' decision is based on single time period.

- All investors can land or borrow at a risk free rate of interest.

- Taxes and transaction cost are irrelevant
  (Sharpe, Alexander and Bailey, 2000:262).

If everyone holds the market portfolio risk premium demanded, investment is proportional to its beta.

That's what the CAPM says.



In above figure in equilibrium a stock can lie below the SML. For instance instead of buying stock, an investor would prefer to land part of their money and put the balance in the market portfolio and instead of buying stock B they would prefer to borrow and invest in the market portfolio.

An investor can always obtain an expected risk premium of B(rm – rf) by holding a mixture of the market portfolio and a risk free loan. So, in well functioning market nobody will hold a stock that offers an expected risk premium of loss than B (rm – rf) But what about the other possibility? Are there stock that offer highest expected risk premium? In other words, are there any that lie above the SML in above figure? If we take all stock together we have the market portfolio. Therefore we know that the stock on average lie on the line. Since none lie below the line, then therefore also cannot be any that lie above the line. Thus each and every stock lie on the security market line and offer an expected risk premium of r – rf = B(rm – rf) If we assure that financial market are efficient and that investors as a whole are efficiently

diversified, unsystematic risk is a minor risk. The greater the Beta of a stock, the greater the relevant risk of that stock and the greater the return required which can be written in a form.

$E(Rj) = Rf + (Rm – Rf) Bj$

Where,
E(Rj) = The expected return on stock j
Rf = The rate of return on a risk less asset.
E(Rm)= The expected return on he market portfolio.
Bj = A measure of the un-diversifiable risk or Beta coefficient of stock j.

"Capital market line (CML) is the set of portfolios obtainable by combining the market portfolio with risk free borrowing or lending. The linear efficient set of the CAPM is known as capital market line assuring homogeneous expectation and perfect markets." (Francis, 1983:256) The capital market line (CML) and security market line (SML) are merely different pictures of the same market equilibrium. The CML may be used for determining the required return only for those efficient portfolios that are perfectly correlated with the market portfolio because they fall on the CML, but the SML may be used to explain the required rate of return on all securities whether or not they are efficient. The SML provides a unique relationship between un-diversifiable risk measured by Beta and expected return.

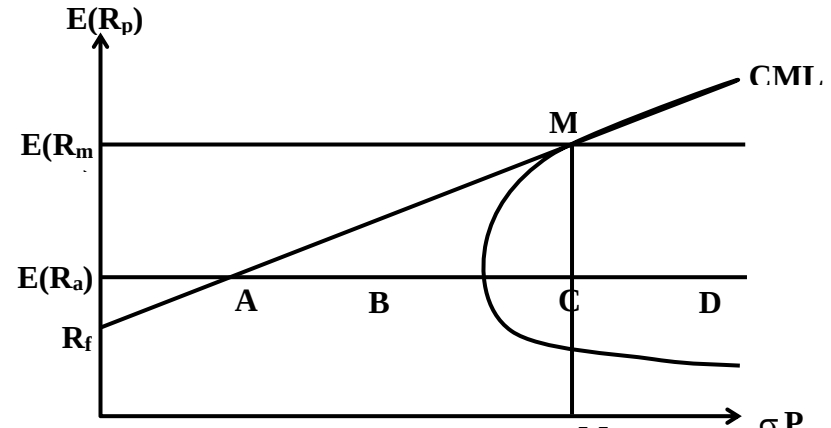


Figure : Capital Market

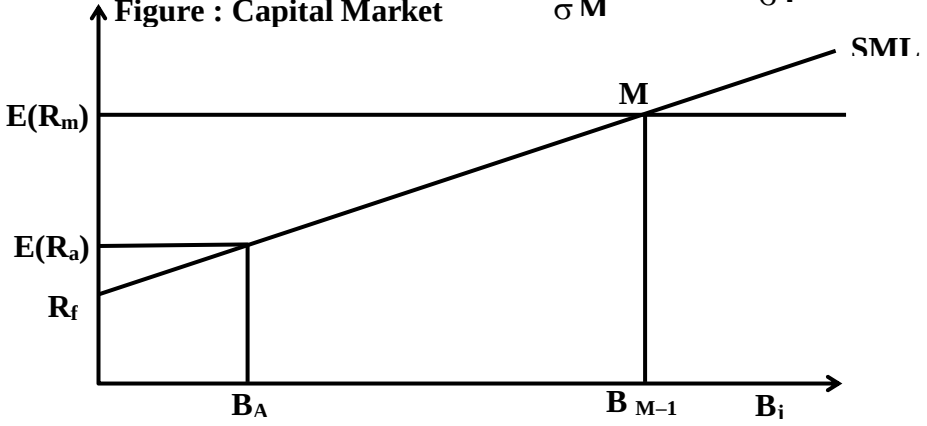


Figure : Security Market Line

In equilibrium all securities must be priced so that they fall on the SML. Assets A, B, C, and D in figure (a) all have different variances but the same expected return. The fact that they have different total risk is irrelevant for determining their expected return, because total risk contains a diversifiable component, which is not priced in market equilibrium.

2.6 Review form Thesis

However, risk and return is not a new concept of financial analysis, in context of Nepal and it's very slow growing capital market, very little studies are made regarding this topic. 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. Some studies are made as a thesis for the partial fulfillment of Master degree in T.U., which are reviewed here.

Mr. Sudeep Upadhyay has conducted the study in the title of "Risk and Return on Common Stock Investment of Commercial Bank in Nepal" (2001).

With the objectives to evaluate to 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 of from study. Mr. Upadhyay find out the common stock of Nepal Grindlays Bank (Now Standard Chartered Bank) bears the maximum rate of return (127.84% and SBI Bank has minimum (7.77%) rate of return. In the context of industries or sector return of other sector is highest and manufacturing and production sector is found least performer.

This study has proved 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. Upadhyay has recommended for the portfolio construction, to selected the stock that have higher return with not correlated or negatively correlated stocks otherwise stock cannot be diversity risk properly. (Upadhyay, 2001).

"Miss Nisha Shakya has done study in risk and return analysis in common stock investment which may helps in decision making about stock investment. The specific objective of study are to assess the general investors perception, attitude and awareness towards risk associated with return, to calculated risk and return of selected securities and their portfolio and to analyzed the volatility of common stock and other valuates. Researches find out that, 58.3% investment consider return, and 33.3 percent investors consider risk before

investing. To invest in common stock 50 percent prefer primary market, 21.67 percent prefer secondary and 28.3 percent of total investor prefer both 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 investor prefers C.V. and 36.7 percent prefer S.D. for measuring risk.

Miss Shakya 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 point of diversifiable. (Shakya, 2003)

Another study by Mr. Jeet Bahadur Sapkota in 2000, entitled "Risk and Return Analysis in Common Stock Investment" is a very closely related to this study. Researcher's main objective of the study is 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 in his study has concluded that "Commercial stock is the most risky security and lifeblood of stock market because of the highest expect. CS attracts more investors. Private Cs holders are the passive owners of the company. But the private investor's plays a vital role in economic development of the nation by mobilizing the dispersed capital remained in different form in the society. As overall economy, Nepalese stock the political change in 1990 in effect of openers and liberalization in national economy. But lack of information and poor knowledge, Nepalese private investors cannot analyze the securities as well as market property. (Sapkota, 2000:189)

Above books, journals and independent studies by different authors are presented here in this chapter knowledge relating to the topic has been achieved and those studies provided crucial cases for the research purpose.

CHAPTER-III

RESEARCH METHODOLOGY

Research methodology refers to the analysis of principles of methods, rules and techniques. Research methodology is a way to systematically solve the research problem. It may be understood as a science of studying new research done systematically. In it we study the various steps that are generally adopted by researcher in studying his research problem along with the logic behind him. This chapter deals with the research design, nature of data, data collection and processing and financial statistical tool used.

3.1 Research Design

Research design is a plan outlining how information is to be gathered for an assessment or evaluation that includes identifying the data gathering method(s), the instruments to be used/created, how the instruments will be administered, and how the information will be organized and analyzed. Since the study is related to the risk and return and portfolio of common stock of some of the listed Nepalese Commercial Banks, the research design of this study is analytical, descriptive, historical and co-relational research.

3.2 Population and samples

The term population or universe for research means all the members of any well defined class of people, event or subject. Because of its large size, it is difficult to collect detailed information from each member. So, a sub group is chosen which is believed to be representative of the population. Theirs sub group is done by sampling.

This study is concerned with the risk and return analysis of listed commercial Banks. So it is obvious that all the banks listed in stock market are population for this study. How ever, the stock market population is neither feasible nor desirable. Therefore, a subgroup of the population is selected which is called sample and it is believed that the sample represents the population in true sense. In this study convenience sampling is used. Of total 14 Banks enlisted in NEPSE, 5 commercial banks, for study has been chosen.
The following are the sampled banks:
Himalayan Bank Ltd.

Nepal Investment Bank Ltd.
Nepal SBI Bank Ltd.
Everest Bank Ltd.
Bank of Kathmandu Ltd.

To study financial data from each of the sampled Bank, data were taken for period of 5 years from 2004 to 2009.

3.3 Sources of Data

Data can be obtained from either primary or secondary source. But the data used in this study are basically secondary in nature. The following are the source of secondary data, which we have used in this study.
Annual reports of concerned commercial banks.
Trading report published by NEPSE.
Material published by magazines and papers.
Related web sites (i.e. www.nepalstock.com)

3.4 Data collection Techniques

In order to gather required information and data for the study undertaken, following processes have been employed.

Nature of the data has been identified in light of need of study.
Related organization and websites have been identified to collect the data and information.
Personal approach has been made to collect the required data and information.
Finally presentation, interpretation and analysis of data have been done.

3.5 Data Analysis Tools

The data can be analyzed by using various statistical tools and financial tools. In this study, the collected data are analyzed by using both financial and statistic tools.

3.5.1 Dividend (D)

Dividend is the reward for waiting to the investors. The dividend decision is the decision of financial manager that out of earning how much portion of earning should be paid as dividend and how much portion of earning should be retained. The dividend decision is the crucial decision because it directly affects to the market price of share. Dividends are of two type's cash dividend and

stock dividend. If only cash dividends are paid there will be no problem in calculation of total gain to the stockholders. If stock dividend is paid, stockholder gets extra number of shares as dividend and simultaneously price of the stock decline due to increased number of shares. To get the real amount of dividend there are no any model or formula. So the model has been developed considering practical as well as theoretical aspects after several discussions with NEPSE staff investors.

The model is
Total dividend amount = Cash dividend + stock dividend % X next years MPS.

3.5.2 Market price of stock (MPS)

Market price of stock is also the major part of return. NEPSE index shows three types of market prices, high, low and closing. Among them the closing price of each year has been taken as the market stock price. So, the study has been focused in an annual basis. To get the real average, volume and price of each transaction of the stock and duration of time of each transaction in the whole year are essential which is tedious and impossible too. Considering the date availability and maintenance nacre, the closing price is used as the market price of stock, which has a specific time span of one year and the study has been focused in annual basis.

3.5.3 Return on Common Stock (Rj)

The rate of return that investors expect from their share over the next year is the return on common stock. An investor can obtain two kinds of income from an investment, the first one is income from price appreciation, and called capital gain and the other is cash flow income from cash dividend.

Symbolically,

$$\text{Return on common stock} = \frac{Div_1 + P_1 - P_0}{P_0}$$

Where,
Div1 = Expected dividend per share
P1 = Price of the stock at time 1 year
P0 = Current price of stock

3.5.4 Expected Rate of Return on Common stock E (Rj)

The study also aims to find out the expected return on the investment in common stock. Usually this rate is obtained by arithmetic mean of the post year's return.

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

Where,
E (Rj) = Expected rate of return on stock j
Rj = Return of stock j
n = Number of years that the return is taken
∑ = Sign of summation.

3.5.5 Standard Deviation (S.D. or σ)

The risk is measured in various ways. One of the popular statistical measures of an asset's risk is the standard deviation. Standard deviation is a weighted average deviation from the expected value and it gives an idea of how far above and below the expected value with the actual value is likely to be. The larger standard deviation indicates a greater variation of returns. Standard deviation can be calculated by using the following formula.

$$\text{S.d or ó} = \sqrt{\frac{\sum [R - E(R)]^2}{N - 1}}$$

Where
Ó = Sigma, denoted for standard deviation
R = Return
E (R) = Expected Return
N = No. of observation / No. of years.

3.5.6 Coefficient of variation (C.V.)

Another useful measure to evaluate risky investment is the coefficient of variation. Coefficient of variation is defined as the ratio of the standard deviation to the expected return. It is a relative measure of variability, since it measures the risk per unit of expected rate. As the coefficient of variation increases, so does the risk of an asset.

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

Where,
ó = Standard Deviation
E (R) = Expected return

3.5.7 Portfolio Risk and Return

An investor can invest all his fund in a single security or divert his investable fund in several types of securities. The later is known as portfolio investment. A portfolio is the combination of investment in two or more securities at a given point of time. Portfolio investment means spending the investable amount in various types of securities rather concentrating in one.

3.5.7.1 Portfolio Return

The expected return of a portfolio is simply a weighted average of the expected return of the securities comprising that portfolio. The weights are the proportions of total funds invested in each security and the sum of weight equals to 100% The return on the portfolio in case of only two assets portfolio is given by

RP = WARA + WBRB

Where,
RP = Expected return on portfolio of stock A & B
WA = Weight on investment on stock A
WB = Weight or investment on stock B
WA + WB = 1 or 100%

3.5.7.2 Portfolio Risk

Risk from a portfolio is not the weighted average of the risk of individual security included invested as the components, the riskiness of the component and correlation of returns on the component securities. It is measured by standard deviation and calculated by using this formula.

$$\sigma_P = \sqrt{\sigma_A^2 W_A^2 + \sigma_B^2 W_B^2 + 2 W_A W_B \rho_{AB} \sigma_A \sigma_B}$$

Where,
σ_P = Portfolio standard deviation
σ_A = Standard Deviation of security A

σ_B = Standard Deviation of security B
WA = The portion of the portfolio devoted by asset A
WB = The proportion of the portfolio devoted by asset B
AB = Correlation between the assets A & B

3.5.8 Minimum Variance Portfolio

It is the portfolio with the lowest level of risk in the efficient frontier. It is also called risk minimizing weight or optimal weight in two stock portfolio.The optimal weight to invest in stock A and B are calculated as follows:

$$WA = \frac{\sigma_B^2 - \rho_{AB}\sigma_A\sigma_B}{\sigma_A^2 + \sigma_B^2 - 2p_{AB}\sigma_A\sigma_B}$$

$WB = 1 - WA$

Where,
WA = Optimal weight to invest in stock A
WB = Optimal weight to invest in stock B
ó2A = Variance of stock A
ó2B = Variance of stock B
ρAB = Correlation between stock A and Stock B

3.5.9 Correlation Coefficient

The correlation coefficient is also a measure of the relationship between two assets. Its value is limited between the range of +1 and –1

Case1: Perfectly Positive Correlation (r = 1)
If a portfolio consists of perfectly positively correlated stock, then the risk of a portfolio doesn't diversify or diversification does nothing to reduce risk.

Case2: Perfectly negative correlation (r = –1)
Risk can be completely diversified if portfolio consists of perfectly negatively correlated stock.

Case3: No relationship between returns (r = 0)
When the correlation between two stock is exactly zero, there is no relationship between the returns, they are independent of each other. In this condition some risk can be reduced.

Case4: Intermediate Risk (r = +0.5)

Most stocks are positively correlated, but not perfectly. Under this condition combining stocks into portfolio reduces the risk but do not diversify completely.

The formula to calculate correlation coefficient is given by:

$$\rho = \frac{Cov_{AB}}{\sigma_A \sigma_B}$$

Where,

P = Correlation Coefficient

Cov AB = Covariance between stock A & B

σA = Covariance between stock A & B

σB = Standard deviation of stock B

3.5.10 Beta (B)

Beta coefficient measures the non-diversifiable risk. It is an index of the degree of movement of an assets return in response to a change in the market return. It is the systematic risk per market risk, the investors must bear type of risk for the investment and investors must be compensated for bearing risk.

B > 1:The stock is more volatile or changeable. High degree of risk than market portfolio or average return.

B < 1:The stock is less volatile low degree of risk as compared to market portfolio or average stock.

B = 1:The market portfolio beta is always1. Therefore, the stock beta is equal to 1 means the proportional change in risk and return of the stock is equal to proportional change of return and risk or market portfolio.

$$Bj = \frac{R_{jm}\ \sigma_j \sigma_m}{\sigma_m^{\ 2}} \quad \text{or} \quad \frac{Cov(r_j r_m)}{\sigma_m^{\ 2}}$$

Where,

Bj = Beta coefficient of stock j

Cov(rj rm) / Rjm σj σm = Covariance of return for security "j" with those of the market.

Rjm = Expected correlation between possible return for security "j" and market portfolio.

3.5.11 Market Return (Rm)

Market return refers to the average return of overall market portfolio. The market return for this study has obtained by taking differences between the endives, i.e. NEPSE index whose market dividend is ignored.

Mathematically,

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

Where,
NIt = NEPSE index at time "t"
NI t–1= NEPSE at time t-1
RM = Return of market

3.5.12 Expected Return on Market E(Rm)

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

$$\sum(Rm) = \frac{\sum Rm}{n}$$

Where,
∑(Rm)= Summation of market return
n = Number of sample period

3.5.13 Systematic Risk and unsystematic Risk

Total risk can be divided into two parts. They are systematic risk and unsystematic risk.

Total Risk (σ) = Systematic Risk + Unsystematic Risk

3.5.13.1 Systematic Risk

Systematic risk is the portion of total risk of an individual security caused by market factor that simultaneously affects the prices of all securities. It cannot be diversified away. The systematic risk is the changes in interest rate,

inflation, investors' expectation above the overall performance of the economy etc.

$$\text{Systematic Risk} = \frac{Cov_{AM}}{\sigma_M}$$

Or

$$\text{Systematic Risk} = \frac{\rho_{AM}\,\sigma_A\sigma_M}{\sigma_M}$$

$$= \rho AM\ \sigma A$$

Where,
Cov AM = Covariance of return of assets A with market.
ρAM = Correlation of assets A with market.

3.5.13.2 Unsystematic Risk

Unsystematic risk is the portion of total risk can be diversified away. It is the result of management capabilities and decisions, strikes, the availability of raw materials, particular level of financial and operating leverage the firm employs.

$$\text{Unsystematic Risk} = \sigma A - \frac{Cov_{AM}}{\sigma_M}$$

$$= \sigma A - \rho AM\ \sigma A$$

$$= \sigma A\ (1-\rho AM\sigma A)$$

3.5.14 Proportion of systematic risk and unsystematic risk

The proportion of systematic risk indicates the percentage of variance of stock's return explained by the change in the market return and it cannot be diversified. The proportion of unsystematic risk indicates the % of variance of stock's return and is called unexplained variance which is firm specific risk and it can be diversified.

$$\rho 2 = \frac{B_j^{\,2}\sigma_M^{\,2}}{\sigma_j^{\,2}}$$

$$1 - \rho 2 = \frac{Var(e)}{\sigma_j^{\,2}}$$

Where,

$\rho 2$ = Proportion of systematic risk
1-P2 = Proportion of unsystematic risk
$\sigma j2$ = Variance of stock j

3.5.15 Required rate of return

Required rate of return refers to the minimum return that an investor expects at least no to suffer from loss. It means if they gets the return below the required rate of return they suffer from loss. SML gives required rate of return as follows:

$Rj = Rf + (RM - Rf) Bj$

Where,
Rj = Required rate of return on stock J
Rf = Risk face rate of return
Rm = Market rate of return.
Bj = Beta coefficient of stock J

This formula can be used to calculate both return on individual investment and portfolio investment.

3.5.16 T Test

As the test is "Test of Significance for a single means the test statistics (t) is

$$S = \frac{\bar{\bar{X}} - \mu}{\frac{S}{\sqrt{n}}}$$

Where,
t = Student's test (t) statistics.
$\bar{X}$ = Arithmetic mean of sample statistics
μ = Arithmetic mean of population parameter
n = Sample size
s = Estimated Std. dev of population parameter, which is given as:
(if deviation is taken from actual mean)

$$S = \sqrt{\sum \frac{(X - \bar{X})^2}{n-1}}$$

Again if the test in test of significance of difference of means, the test statistics "t" is:

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{S^2\left(\frac{1}{n_1} - \frac{1}{n_2}\right)}}$$

Where,

$\bar{X}$ = Arithmetic means of first sample
n1 = First sampled size

$\bar{X}_2$ = Arithmetic mean of second sample
n2 = Second Sample Size
S2 = Unbiased sample variance of population

3.6 Limitation of Methodology

This study is based on the historical figures to forecast the future, i.e. their search design for study in historical past may be the genesis for future but the past may not happen in future, i.e. their search design for his study in historical part may be the genesis for future but the past may not happen in future in same manner.

- The population is only 17 commercial banks, which are listed in NEPSE and total no. of samples are only 5 listed commercial banks. So, the sample does not cover whole industry.

- The source of data is secondary and mainly collected from websites of NEPSE. So, accuracy of methodology is based on secondary data.

- The data analysis tools are based on financial and statistical concepts. The values provided by such tool may be the approximation values only.

CHAPTER–IV

DATA PRESENTATION AND ANALYSIS

This chapter focuses on the data analysis and data presentation of the sampled banks. This chapter consists of the descriptive analysis of the banks under review, calculation of expected rate of return, total risk including calculation of beta and other indicators to estimate total risk. It is believed that tables and figures make the result simple and understandable. So tables and figures are also constructed.

4.1 Descriptive Analysis of Bank

In this part, researcher has made an effort to make descriptive analysis. As such, researcher has covered financial statement analysis of the sampled banks. This is to make aware the investors and make an effort to link this data with the risk and return analysis of the sampled banks, which is one of the objectives of the researcher. Among 21 commercial banks operating in Nepal, 5 commercial banks have taken for this study.

4.1.1Himalayan Bank Ltd.

Table 4.1

MPS and DPS of HBL

Fiscal year	Closing price	Cash Dividend	Stock Dividend(%)	Total Dividend
2004/05	920	11.58	31.58	358.96
2005/06	1100	30	35	646
2006/07	1760	15	40	807
2007/08	1980	25	45	817
2008/09	1760	12	43.56	12

Source: Trading report, financial statistics of security board and bank's annual report.

Diagram 4.1 Closing MPS and DPS of common Stock of HBL

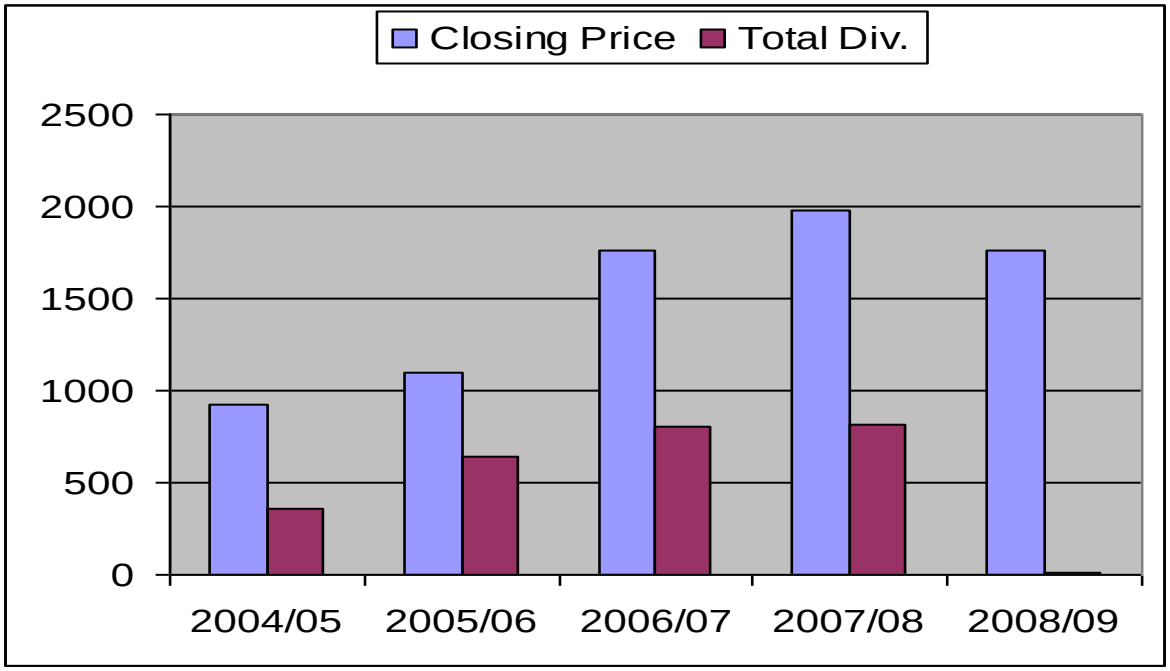


Table 4.2

Annual Return, Expected rate of Return ,S.D. and C.V. of HBL

Fiscal Year	Closing Price	Total Div.	$R = \frac{P_t - P_{t-1} + D_1}{P_{t-1}}$	$R - \overline{R}$	$\left(R - \overline{R}\right)^2$
2004/05	920	358.96	--	--	--
2005/06	1100	646	0.8978	0.2189	0.04791

2006/07	1760	807	1.3336	0.6547	0.4286
2007/08	1980	817	0.5892	-0.0897	0.00805
2008/09	1760	12	-0.1051	-0.784	0.61466
Total			2.7155		1.09922

Expected Return:
$\bar{R} = \Sigma R/N = 2.7155/4 = 0.6789$

Standard Deviation: $\sigma = \sqrt{\frac{\Sigma(R-\bar{R})2}{N-1}}$ = =√(1.09922/3) =0.60532

C.V. $= \frac{\sigma}{\bar{R}}$ = 0.60532/0.6789 =0.8916

4.1.2 Nepal Investment Bank Ltd.

Table 4.3

MPS and DPS of NIBL

Fiscal year	Closing Price	Cash Dividend	Stock Dividend(%)	Total Dividend
2004/05	800	12.50	12.50	170
2005/06	1260	20	55.46	978.9
2006/07	1729	5	30	740
2007/08	2450	7.50	40.83	574.22
2008/09	1388	20	20	20

Source: Trading Report, Financial statistics of security board and bank's annual report

Diagram 4.2 Closing MPS and DPS of common stock of NIBL

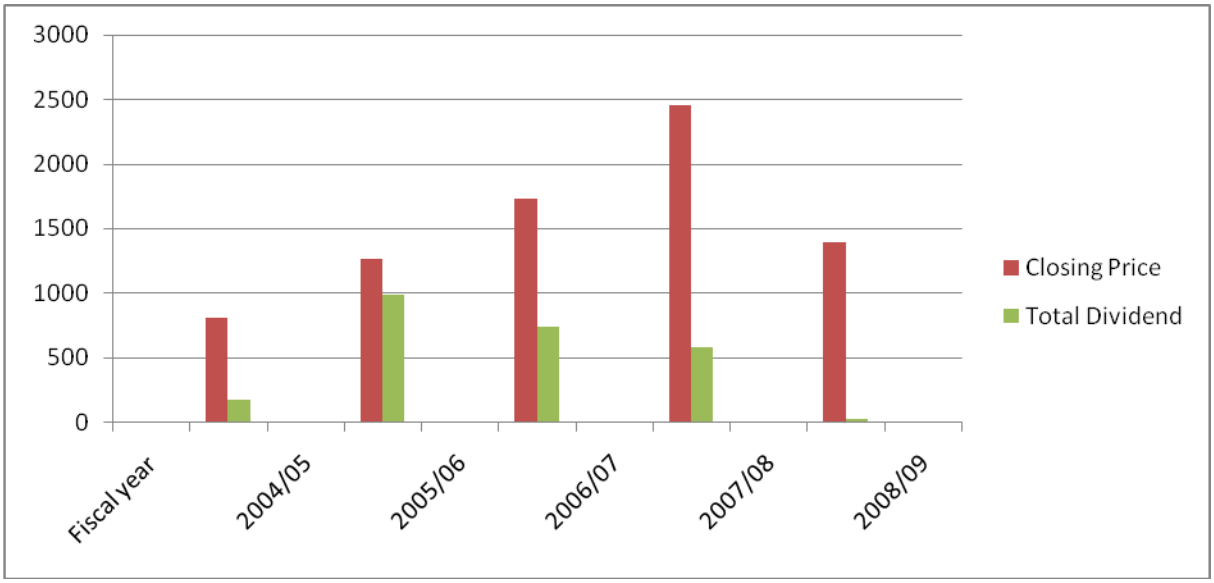


Table 4.4

Annual Return, Expected Rate of Return, S.D. and C.V. of NIBL

Fiscal year	Closing Price	Total Dividend	$R = \frac{P_t - (P_{t-1} - D_1)}{P_{t-1}}$	$R - \overline{R}$	$\left(R - \overline{R}\right)^2$
2004/05	800	170	--	--	--
2005/06	1260	978.9	1.7986	1.0281	1.0570
2006/07	1729	740	0.9595	0.189	0.0357
2007/08	2450	574.22	0.7491	-0.0214	0.00046
2008/09	1388	20	-0.42531	-1.1958	1.4299
Total		--	3.0819		2.5231

Expected return :

$\bar{R}$ = ΣR/N =3.0819/4 =0.7705

Standard Deviation: $\sigma = \sqrt{\frac{\Sigma(R-\bar{R})2}{N-1}}$ =√(2.5231/3) =0.9171

C.V. =$\frac{\sigma}{\bar{R}}$ = 0.9171/0.7705 =1.1903

4.1.3 Nepal SBI Bank Ltd.

Table 4.5

MPS and DPS of SBI

Fiscal year	Closing Price	Cash Dividend	Stock Dividend(%)	Total Dividend
2004/05	335	--	--	--
2005/06	612	5	5	63.8
2006/07	1176	12.59	47.59	731.67
2007/08	1511	--	--	--
2008/09	1900	2.11	42.11	2.11

Source: Trading Report, Financial statistics of security board and bank's annual report

Diagram 4.3 Closing MPS and DPS of common stock of SBI

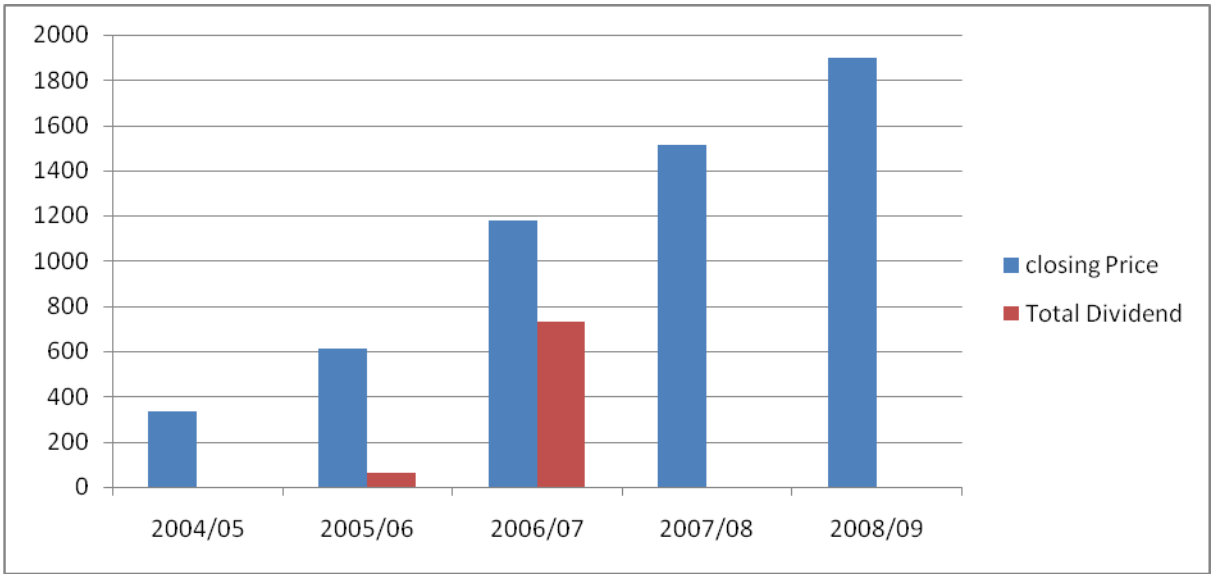


Table 4.6

Annual Return, Expected Rate of Return, S.D. and C.V. of SBI

Fiscal year	Closing Price	Total Dividend	$R = \frac{P_t - (P_{t-1} - D_1)}{P_{t-1}}$	$R - \overline{R}$	$\left(R - \overline{R}\right)^2$
2004/05	335	--	--	--	--
2005/06	612	63.8	1.0173	0.0978	0.00956
2006/07	1176	731.67	2.1171	1.1976	1.4342
2007/08	1511	--	0.2849	-0.6346	0.4027
2008/09	1900	2.11	0.2588	-0.6607	0.4365
Total		--	3.6781		2.2830

Expected return:

$\bar{R}$ = ΣR/N =3.6781/4 =0.9195

Standard Deviation = $\sigma = \sqrt{\frac{\Sigma(R-\bar{R})2}{N-1}}$=√(2.2830/3)=0.8724

C.V.= $\frac{\sigma}{\bar{R}}$ = 0.8724/0.9195 =0.9488

4.1.4 Nepal Everest Bank Ltd.

Table 4.7

MPS and DPS of EBL

Fiscal year	Closing Price	Cash Dividend	Stock Dividend(%)	Total Dividend
2004/05	870	--	20	275.8
2005/06	1379	25	--	25
2006/07	2430	10	30	949.6
2007/08	3132	20	30	756.5
2008/09	2455	30	30	30

Source: Trading Report, Financial statistics of security board and bank's annual report

Diagram 4.4 Closing MPS and DPS of common stock of EBL

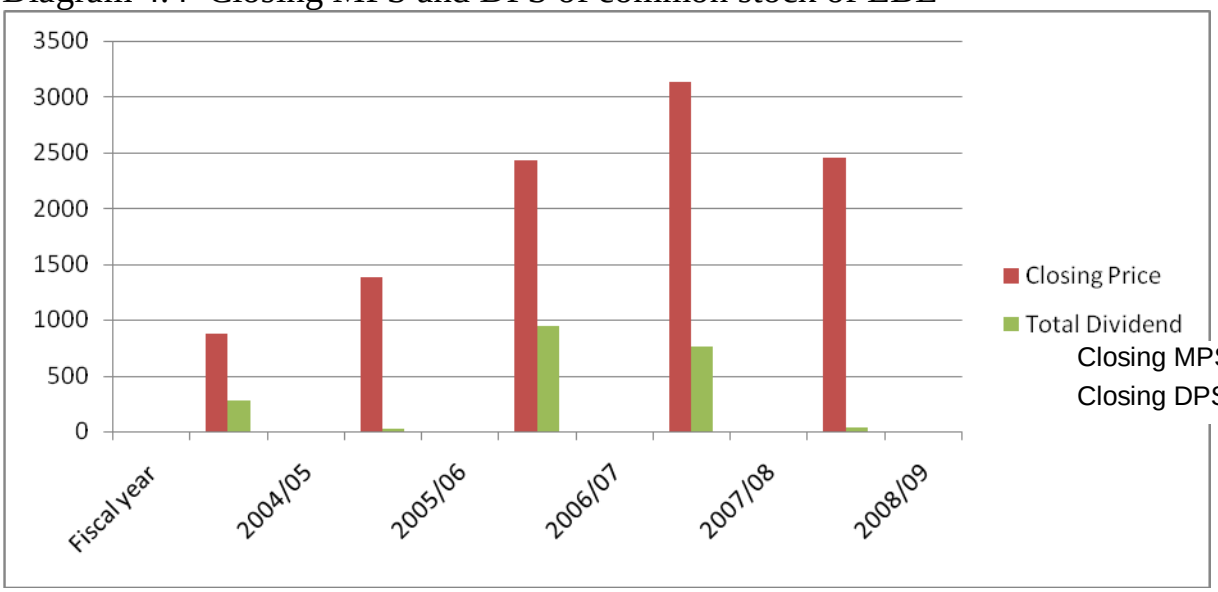


Table 4.8

Annual Return, Expected Rate of Return, S.D. and C.V. of EBL

Fiscal year	Closing Price	Total Dividend	$R = \frac{P_t - (P_{t-1} - D_1)}{P_{t-1}}$	$R - \overline{R}$	$\left(R - \overline{R}\right)^2$
2004/05	870	275.8	--	--	--
2005/06	1379	25	0.6138	0.0008	0.00000064
2006/07	2430	949.6	1.4508	0.8362	0.6992
2007/08	3132	756.5	0.6002	-0.0144	0.00021
2008/09	2455	30	-0.2066	-0.8212	0.6744
Total		--	2.4582		1.3738

Expected return:

$\overline{R}$ = ΣR/N =2.4582/4 =0.6146

Standard Deviation = $\sigma = \sqrt{\frac{\Sigma(R-\overline{R})2}{N-1}}$=√(1.3738/3)=0.4580

C.V.= $\frac{\sigma}{\overline{R}}$= 0.4580/0.6146 =0.7452

4.1.5 Bank of Kathmandu Ltd.

Table 4.9

MPS and DPS of BOKL

Fiscal year	Closing Price	Cash Dividend	Stock Dividend(%)	Total Dividend
2004/05	430	15	15	142.5
2005/06	850	18	48	678
2006/07	1375	20	20	490
2007/08	2350	2.11	42.11	739.04
2008/09	1750	7.37	47.37	7.37

Source: Trading Report, Financial statistics of security board and bank's annual report

Diagram 4.5 Closing MPS and DPS of common stock of BOKL

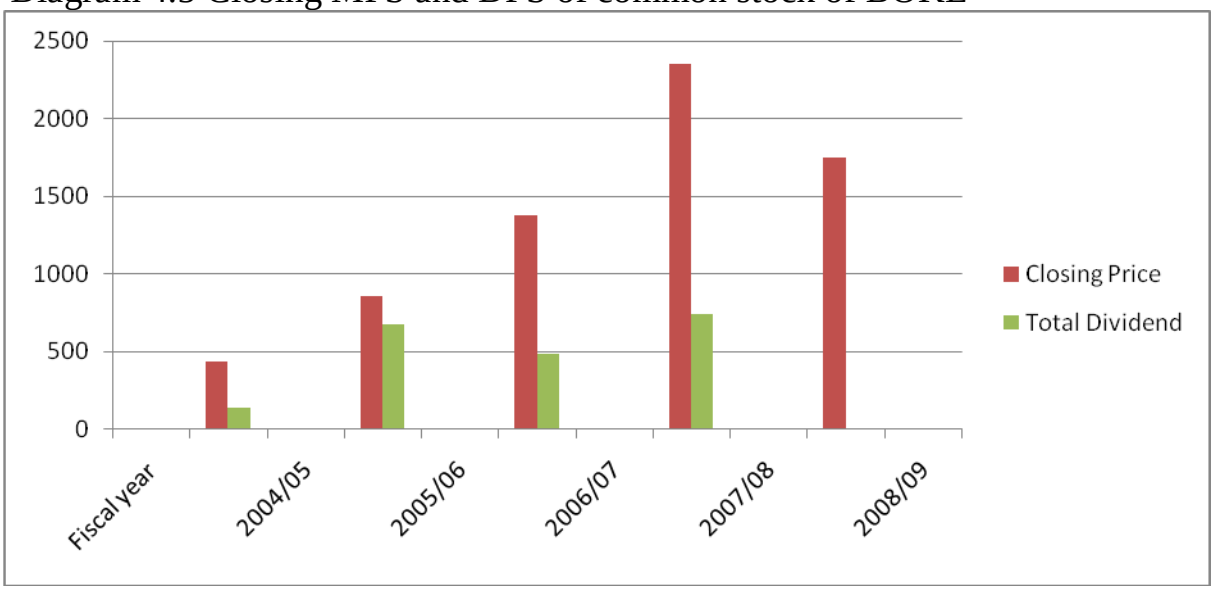


Table 4.10

Annual Return, Expected Rate of Return, S.D. and C.V. of BOKL

Fiscal year	Closing Price	Total Dividend	$R = \frac{P_t - (P_{t-1} - D_1)}{P_{t-1}}$	$R - \bar{R}$	$\left(R - \bar{R}\right)^2$
2004/05	430	142.5	--	--	--
2005/06	850	678	2.5535	1.368	1.8714
2006/07	1375	490	1.1941	0.0086	0.000074
2007/08	2350	739.04	1.2466	0.0611	0.0037
2008/09	1750	7.37	-0.2522	-1.4377	2.067
Total		--	4.742		3.9422

Expected return:

$\bar{R}$ = ΣR/N =4.742/4 =1.1855

Standard Deviation = $\sigma = \sqrt{\frac{\Sigma(R-\bar{R})2}{N-1}}$=√(3.9422/3)=1.1463

C.V.= $\frac{\sigma}{\bar{R}}$= 1.1463/1.1855 = 0.9670

4.2 Inter Firm comparison

After analyzing the expected return and total risk and risk per unit, results are shown in table no. 4.11

Table 4.11

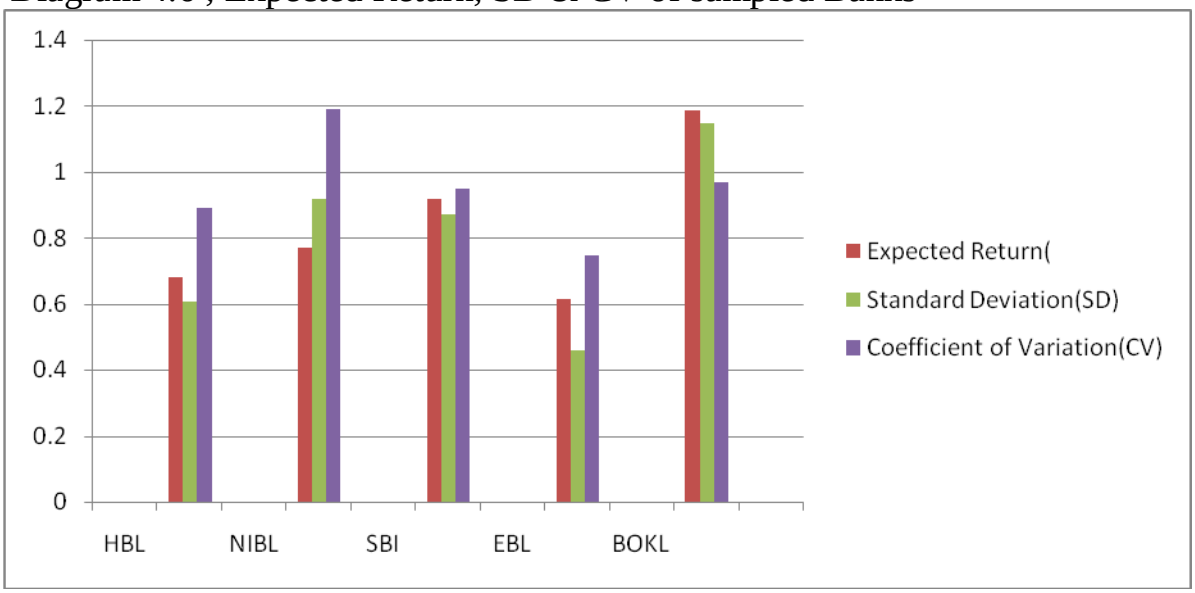
Expected Return, S.D. & C.V of each sample

Commercial Bank	Expected Return($\bar{R}$)	Standard Deviation(SD)	Coefficient of Variation(CV)
HBL	67.89%	60.532%	0.8916
NIBL	77.05%	91.71%	1.1903
SBI	91.95%	87.24%	0.9488
EBL	61.46%	45.80%	0.7452
BOKL	118.55%	114.63%	0.9670

The above table shows that expected return and S.D. of BOKL are higher than other sample banks EBL has lowest return and lowest risk among others. CV measures the risk per unit CV of common stock of EBL is minimum than

other. The minimum CV, the lesser the risk. To earn one unit of return an investor has to bear 0.7452 unit of risk, by investing in EBL.

Diagram 4.6 , Expected Return, SD & CV of sampled Banks



4.3 Analysis of Market Risk and Return

In Nepal there is only one stock market, namely Nepal stock exchange ltd. (NEPSE). Overall market movement is represented by NEPSE index. To calculate expected return of market, market risk, closing index of particular year is considered. Annual return, expected return, S.D. and C.V. or overall market is presented below.

Table 4.12

Calculation of Annual Return, Expected Return, S.D. and C.V. of overall market

Fiscal Year	NEPSE Index (NI)	$R=\frac{(NI_t - NI_{t-1})}{NI_{t-1}}$	$R_M - \overline{R}_M$	$\left(R_M - \overline{R}_M\right)^2$
2004/05	286.67	--	--	--
2005/06	386.83	0.3494	0.1321	0.0175

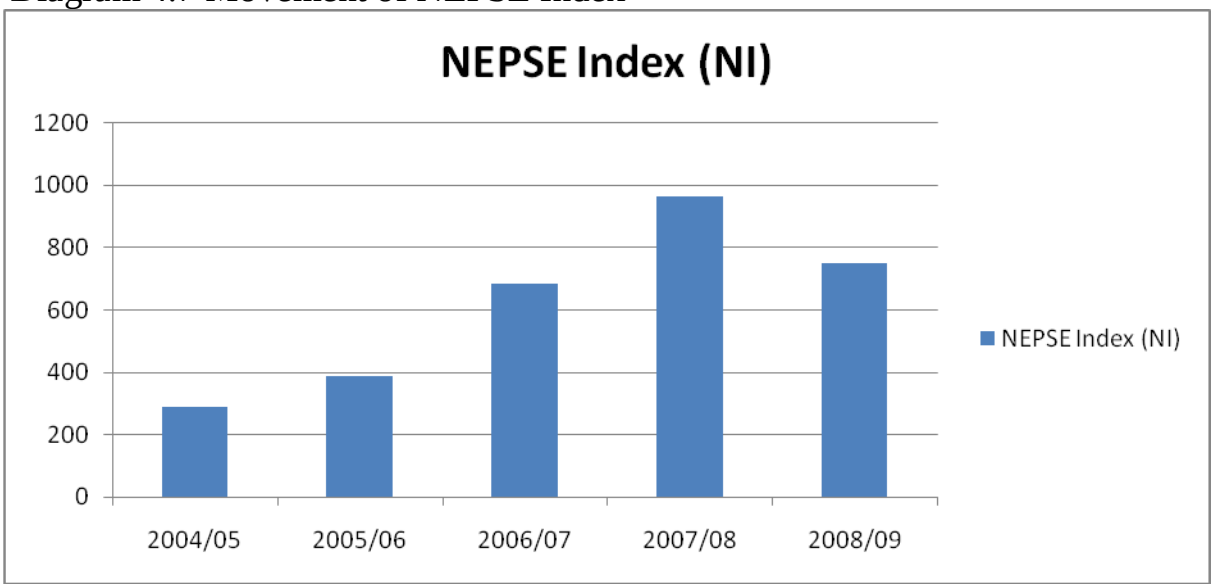
2006/07	683.95	0.7681	0.5508	0.3034
2007/08	963.36	0.4085	0.1912	0.0366
2008/09	749.10	-0.2224	-0.4397	0.1933

Expected Return $(\overline{R}_M) = \frac{\Sigma R_M}{N} = \frac{1.3036}{4} = 0.2173$

Standard Deviation $(\sigma_M) = \sqrt{\frac{\Sigma\left(R_M - \overline{R}_M\right)^2}{N-1}} = \sqrt{\frac{0.5508}{4-1}} = 0.4285$

C.V.=. $\frac{\sigma}{\overline{R}} = \frac{0.4258}{0.2173} = 1.972$

Diagram 4.7 Movement of NEPSE Index



Index of Nepal Stock Exchange of various years are shown in diagram 4.7. Above diagram shows that NEPSE index is in increasing trend up to year 2002/03 than it is in decreasing trend and index is highest in year 2002/03 among observed period lowest index is in year 2000/01 among sample period.

4.4 Portfolio and Diversification Analysis

Portfolio is combination of assets. In this study the portfolio analysis has been done to find out that portfolio return is more than individual security's return. Portfolio mgmt. is related to the efficient portfolio investment in financial assets. To invest in single security is risky, but is to be relatively safe if held in a portfolio.

To calculate portfolio return and risk, we have to calculate co-variation between two securities. Table No. 4.13 shows the calculation of covariance of return of common of Himalayan Bank Ltd. and NIBL.

Table 4.13

Calculation of $COV_{HBL, NIBL}$

Fiscal year	$R_{HBL} - \overline{R}$ HBL	$R_{NIBL} - \overline{R}$ NIBL	$(R_{HBL} - \overline{R}$ HBL)($R_{NIBL} - \overline{R}$ NIBL)
2004/05	--	--	-
2005/06	0.2189	1.0281	0.2251
2006/07	0.6547	0.189	0.1237
2007/08	-0.0897	-0.0214	0.00192
2008/09	-0.784	-1.1958	0.9375
Total			1.29452

Data is taken from table No. 4.2 and 4.4

We have,

$$COV_{HBL,\ NIBL} = \frac{\sum(R_{HBL} - \bar{R}_{HBL})(R_{NIBL} - \bar{R}_{NIBL})}{N-1}$$

$$COV_{HBL,\ NIBL} = \frac{1.29452}{4-1} = 0.4315$$

Now with the help of $COV_{HBL,\ NIBL}$ we can calculate optimal weight of stock of HBL & NIBL which minimize the risk.

$$W_{HBL} = \frac{\sigma^2_{NIBL} - COV_{HBL,\ NIBL}}{\sigma^2_{HBL} + \sigma^2_{NIBL} - 2COV_{HBL,\ NIBL}}$$

$$W_{NIBL} = 1 - W_{HBL}$$

Where,

W_{HBL} = Optimal weight to invest in stock of HBL

W_{NIBL} = Optimal weight to invest in stock of NIBL

$W_{HBL} = (0.9171^2 - 0.4315)/(0.60532^2 + 0.9171^2 - 2 \text{ X } 0.4315)$

$= 0.4096/0.3445$

$= 1.1890$

Since the optimal weight of stock of HBL is 1.1890 and stock of NIBL is 0.189 when holding portfolio of HBL and NIBL. WHBL is grater than 1, so WNIBL is negative.

Now we can calculate portfolio return and risk of HBL and NIBL. Portfolio return is the sum of returns on individual securities multiplied by their respective weights.

$$\bar{R} = W_{HBL} \times \bar{R}_{HBL} + W_{NIBL} \times \bar{R}_{NIBL}$$

$= (1.1890 \text{ x } 0.6789) + (-0.189 \text{ X } 0.7705)$

$= 0.6616$

Where,

$\bar{R}_P$ = Expected return on portfolio of stock of HBL & NIBL

$\overline{R}_{HBL}$ = Expected return of Himalayan Bank (as per table)

$\overline{R}_{NIBL}$ = Expected return of Investment Bank (as per table)

W_{HBL} = Optimal weight of HBL

W_{NIBL} = Optimal weight of NIBL.

Portfolio risk is the risk of individual security plus covariance between securities.

$$\sigma_P = \sqrt{W_{HBL}^2\sigma^2_{HBL} + W_{NIBL}^2\sigma^2_{NIBL} + 2W_{HBL}W_{NIBL}.COV_{HBL,NIBL}}$$

$$= \sqrt{0.5180 + 0.0328 - 0.1940}$$

$$= \sqrt{0.3568}$$

$$= 0.5973$$

4.4.1 Comparison of risk and return of HBL and NIBL in Isolation and in portfolio

Table 4.14

Portfolio risk and return of HBL and NIBL

	In Isolation			In portfolio			Cov.	Corr.
	Return	S.D.	C.V.	Return	S.D.	C.V.		
HBL	0.6789	0.60532	0.8916	0.6616	0.5973	0.903	0.4315	0.7773
NIBL	0.7705	0.9171	1.1903					

Data is taken from Table No.4.11 and Appendix-I

Return and risk of HBL & NIBL are shown in table no. 4.14. We can see that total risk of HBL and NIBL are 0.60532 and 0.9171 respectively in isolation. And total risk of S.D. of HBL and NIBL in portfolio is only 0.5973.

$$\text{Corr}HBL, NIBL = \frac{0.7397}{0.639 \times 1.4247} = \frac{0.7379}{0.9104} = 0.8125$$

4.4.2 Comparison of Risk and Return of HBL and SBI in Isolation and in portfolio.

Table 4.15

Portfolio risk and return of HBL and SBI

	In Isolation			In portfolio			Cov.	Corr.
	Return	S.D.	C.V.	Return	S.D.	C.V.		
HBL	0.6789	0.60532	0.8916	0.5706	0.5691	0.9974	0.4602	0.8715
SBI	0.9195	0.8724	0.9488					

Data is taken from Table No.4.11 and Appendix-I

By holding investments of HBL and SBI, investor can get more return than HBL's return in isolation and risk of both banks is less in portfolio than isolation. Risk unit of return of SBI can be minimized significantly by holding portfolio with HBL.

4.4.3 Comparison of risk and return of HBL and EBL in Isolation and in portfolio:

Table 4.16

Portfolio risk and return of HBL and EBL

	In Isolation			In portfolio			Cov.	Corr.
	Return	S.D.	C.V.	Return	S.D.	C.V.		
HBL	0.6789	0.60532	0.8916	0.6699	0.6089	0.909	0.3975	1.4338
EBL	0.6146	0.4580	0.7452					

Data is taken from Table No.4.11 and Appendix-I

Above table no. 4.15 shows that holding portfolio HBL is acceptable. Because return is more in portfolio than isolation and S.D.of portfolio is less than both bank's S.D. and C.V. of portfolio is high than in isolation.

4.4.4 Comparison of risk and return of NIBL and SBI in Isolation and in portfolio

Table 4.17

Portfolio risk and return of NIBL and SBI

	In Isolation			In portfolio			Cov.	Corr.
	Return	S.D.	C.V.	Return	S.D.	C.V.		
NIBL	0.7705	0.9171	1.1903	0.8520	0.7662	0.8993	0.3768	0.4710
SBI	0.9195	0.8724	0.9488					

Data is taken from Table No.4.11 and Appendix-I

Above data shows that risk can be minimized by holding optimal portfolio in NIBL and SBI. Risk or S.D.is 0.9171 and 0.8724 of NIBL and SBI respectively.

4.4.6 Comparison of risk and return on basis of isolation and portfolio of NIBL and EBL

Table 4.18

Portfolio risk and return of NIBL and EBL

	In Isolation			In portfolio			Cov.	Corr.
	Return	S.D.	C.V.	Return	S.D.	C.V.		
NIBL	0.7705	0.9171	1.1903	0.5226	0.3308	0.6330	0.3804	0.9056
EBL	0.6146	0.4580	0.7452					

Data is taken from Table No.4.11 and Appendix-I

Above table shows that total risks of NIBL and EBL are 0.9171 and 0.4580 respectively in isolation. Total risk of NIBL & EBL in portfolio is 0.3308. Risk is reduced in portfolio than isolation.

4.4.7 Comparison of risk and return on basis of isolation and portfolio of SBI and EBL

Table 4.19

Portfolio risk and return of SBI and EBL

	In Isolation			In portfolio			Cov.	Corr.
	Return	S.D.	C.V.	Return	S.D.	C.V.		
SBI	0.9195	0.8724	0.9488	2.069	1.296	0.6264	0.5177	1.296
EBL	0.6146	0.4580	0.7452					

Data is taken from Table No.4.11 and Appendix-I

Return and risk of SBI and EBL are shown in above table No. 4.18. Risk of SBI and EBL are 0.8724 & 0.4580 respectively in isolation. Total risk can be increased by holding portfolio of common stock of these banks. Therefore, risk is reduced in isolation than in portfolio.

4.4.8 Comparison of risk and return of BOKL and NIBL in isolation and in portfolio

Table 4.20

Portfolio risk and return of BOKL and NIBL

	In Isolation			In portfolio			Cov.	Corr.
	Return	S.D.	C.V.	Return	S.D.	C.V.		
BOKL	1.1855	1.1463	0.9670	1.945	1.596	0.8206	1.042	0.9912
NIBL	0.7705	0.9171	1.1903					

Data is taken from Table No.4.11 and Appendix-I

Above table shows that risk can be maximized by holding optimal portfolio in BOKL and NIBL. Risk is reduced in isolation than in portfolio.

4.4.9 Comparison of risk and return of BOKL and SBI is isolation and in portfolio:

Table 4.21

Portfolio risk and return of BOKL and SBI

	In Isolation			In portfolio			Cov.	Corr.
	Return	S.D.	C.V.	Return	S.D.	C.V.		
BOKL	1.1855	1.1463	0.9670	0.9966	0.7995	0.7982	0.352	0.352
SBI	0.9195	0.8724	0.9488					

Data is taken from Table No.4.11 and Appendix-I

Above table shows that risk can be minimized by holding optimal portfolio in BOKL and SBI.

4.4.10 Comparison of risk and return of BOKL and EBL is isolation and in portfolio

Table 4.22

Portfolio risk and return of BOKL and EBL

	In Isolation			In portfolio			Cov.	Corr.
	Return	S.D.	C.V.	Return	S.D.	C.V.		
BOKL	1.1855	1.1463	0.9670	0.4696	0.4030	0.8582	0.396	0.7543
EBL	0.6146	0.4580	0.7452					

Data is taken from Table No.4.11 and Appendix-I

Above table shows that risk can be minimized by holding optimal portfolio in BOKL and EBL.

4.4.11 Comparison of risk and return of HBL and BOKL is isolation and in portfolio

Table 4.23

Portfolio risk and return of HBL and BOKL

	In Isolation			In portfolio			Cov.	Corr.
	Return	S.D.	C.V.	Return	S.D.	C.V.		
HBL	0.6789	0.60532	0.8916	0.6029	0.5917	0.9814	0.4756	0.6854
BOKL	1.1855	1.1463	0.9670					

Data is taken from Table No.4.11 and Appendix-I

Return and risk of HBL and BOKL are shown in above table 4.22. Above table shows investing in portfolio of HBL and BOKL is not profitable.

4.4.12 Comparison of risk and return of SBI and NIBL in Isolation and in portfolio

Table 4.24

Portfolio risk and return of SBI and NIBL

	In Isolation			In portfolio			Cov.	Corr.
	Return	S.D.	C.V.	Return	S.D.	C.V.		
SBI	0.9195	0.8724	0.9488	0.8551	0.7693	0.8997	0.3768	0.4710
NIBL	0.7705	0.9171	1.1903					

Data is taken from Table No.4.11 and Appendix-I

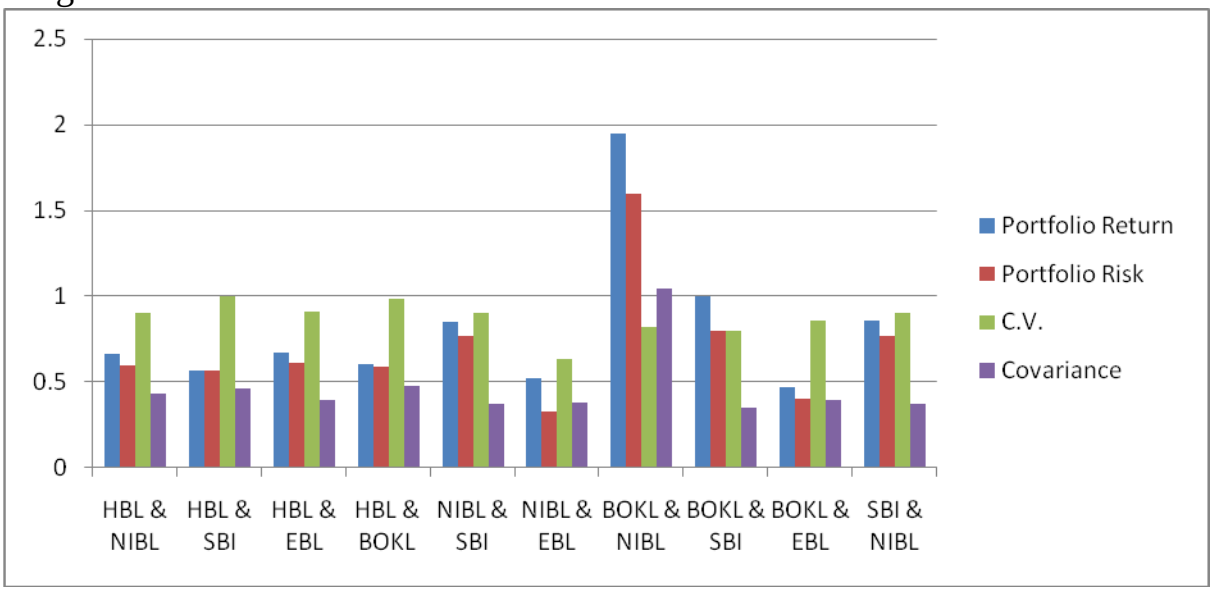
Table 4.25

Comparative analysis of Portfolio risk and return.

Portfolio	Portfolio Return	Portfolio Risk	C.V.	Covariance
HBL & NIBL	0.6616	0.5973	0.903	0.4315
HBL & SBI	0.5706	0.5691	0.9974	0.4602
HBL & EBL	0.6699	0.6089	0.909	0.3975
HBL & BOKL	0.6029	0.5917	0.9814	0.4756
NIBL & SBI	0.8520	0.7662	0.8993	0.3768
NIBL & EBL	0.5226	0.3308	0.6330	0.3804
BOKL & NIBL	1.945	1.596	0.8206	1.042
BOKL & SBI	0.9966	0.7995	0.7982	0.352
BOKL & EBL	0.4696	0.4030	0.8582	0.396
SBI & NIBL	0.8551	0.7693	0.8997	0.3768

Above table shows the portfolio return, portfolio risk and covariance between five joint venture banks portfolio of BOKL & NIBL has highest return 1.945. Portfolio of NIBL & EBL has lowest S.D. but it also has lowest return. Investor can earn highest return by holding optimal portfolio of BOKL and NIBL. Investor has to bear lowest risk by holding optimal portfolio of NIBL and EBL. But risk per unit of C.V. is lowest with portfolio of NIBL and EBL among nine portfolio opportunity.

Diagram 4.8 Portfolio Risk & Return



Generally it is said that, securities return of same sector moves in same direction. So correlation between securities of same be positive. Correlation between common stock samples of joint venture banks are shown below.

Table 4.26

Correlation Matrix

	HBL	NIBL	SBI	EBL	BOKL
HBL	1	0.7773	0.8715	1.4338	0.6854
NIBL		1	0.4710	0.9056	0.9912
SBI			1	1.296	0.352
EBL				1	0.7543
BOKL					1

Above table 4.26 shows the correlation between banks stocks. Investors cannot obtain gain by constructing portfolio, which has positive correlation. Correlation between stock of HBL & EBL is greater than +1(1.4338).Correlation between NIBL and BOKL is also highly positive. Correlation between stock of SBI and BOKL is near to 0(0.352) so by constructing optimal Portfolio of SBI & BOKL investor can get advantage and can reduce unsystematic risk significantly.

4.5 Market Sensitivity Analysis

Market sensitivity of securities is explained in terms of beta coefficient. Beta coefficient is an index of systematic risk that cannot be reduced by diversification. Beta coefficient shows how sensitive the stock is, in comparison with market. The greater the beta, the greater the risk and greater the expected return.

Beta coefficient of particular stock will be less than, equal or more than 1, but market beta will be always 1.

To calculate beta of stock, first we have to calculate the covariance between return on that stock and market return. Then we can calculate the beta coefficient by using

$$B_j = COV_{jM} / \sigma M^2$$

4.5.1 Beta coefficient of stock of HBL.

Table 4.27

Covariance between stock of HBL and market.

Fiscal year	$R_{HBL} - \overline{R}_{HBL}$	$R_M - \overline{R}_M$	$\left[\left(R_{HBL} - \overline{R}_{HBL}\right)\left(R_M - \overline{R}_M\right)\right]$
2004/05	--	--	--
2005/06	0.2189	0.1321	0.0289
2006/07	0.6547	0.5508	0.3606
2007/08	-0.0897	0.1912	-0.0171
2008/09	-0.784	-0.4397	0.3447
Total			0.7171

Data is taken from table no. 4.2 and 4.11

We have,

$$\text{Cov}_{HBL,M} = \frac{\sum(R_{HBL} - \overline{R}_{HBL})(R_M - \overline{R}_M)}{N-1}$$

$$= \frac{0.7171}{4-1}$$

$$= 0.2390$$

Beta Co-efficient of common stock of HBL (B_{HBL})

$$B_{HBL} = (COVHBL, M)/\sigma M^2$$

$$= \frac{0.2390}{(0.4258)^2}$$

$$= 1.3182$$

Where, σM^2=variance of market return.

4.5.2 Beta coefficient of stock of NIBL

Table 4.28

Covariance of stock of NIBL & Market

Fiscal year	$R_{NIBL} - \overline{R}_{NIBL}$	$R_M - \overline{R}_M$	$\left[\left(R_{NIBL} - \overline{R}_{NIBL}\right)\left(R_M - \overline{R}_M\right)\right]$
2004/05	--	--	--
2005/06	1.0281	0.1321	0.1358
2006/07	0.189	0.5508	0.1041
2007/08	-0.0214	0.1912	-0.0041
2008/09	-1.1958	-0.4397	0.5258
Total			0.7616

Data is taken from Table no. 4.4 and 4.11

We have,

$$Cov_{NIBL,M} = \frac{\sum(R_{NIBL} - \overline{R}_{NIBL})(R_M - \overline{R}_M)}{N-1}$$

$$= \frac{0.7616}{4-1}$$

$$= 0.2539$$

Beta Co-efficient of common stock of NIBL(B_{NIBL})

$$B_{NIBL} = (COVNIBL, M)/\sigma M^2$$

$$= \frac{0.2539}{(0.4258)^2}$$

$$= 1.4004$$

Where, σM^2=variance of market return.

4.5.3 Beta Co-efficient of stock of SBI

Table 4.29

Covariance between stock of SBI and Market.

Fiscal year	$R_{SBI} - \bar{R}_{SBI}$	$R_M - \bar{R}_M$	$\left[\left(R_{NIBL} - \bar{R}_{NIBL}\right)\left(R_M - \bar{R}_M\right)\right]$
2004/05	--	--	--
2005/06	0.0978	0.1321	0.0129
2006/07	1.1976	0.5508	0.6596
2007/08	-0.6346	0.1912	-0.1213
2008/09	-0.6607	-0.4397	0.2905
Total			0.8417

Data is taken from Table no. 4.6 and 4.11
We have,

$$\text{Cov}_{SBI,M} = \frac{\sum(R_{SBI} - \bar{R}_{SBI})(R_M - \bar{R}_M)}{N-1}$$

$$= \frac{0.8417}{4-1}$$

$$= 0.2806$$

Beta Co-efficient of common stock of SBI (B_{SBI})

$B_{SBI} = (COVSBI, M)/\sigma M^2$

$$= \frac{0.2806}{0.4258^2}$$

$$= 1.5477$$

Where, σM^2 = variance of market return

4.5.4 Beta coefficient of stock of EBL

Table 4.30

Covariance between stock of EBL and Market.

Fiscal year	$R_{EBL} - \overline{R}_{EBL}$	$R_M - \overline{R}_M$	$\left[\left(R_{EBL} - \overline{R}_{EBL}\right)\left(R_M - \overline{R}_M\right)\right]$
2004/05	--	--	--
2005/06	0.0008	0.1321	0.00011
2006/07	0.8362	0.5508	0.4606
2007/08	-0.0144	0.1912	-0.0028
2008/09	-0.8212	-0.4397	0.3611
Total			0.8190

Data is taken from Table no. 4.8 and 4.11
We have,

$$\text{Cov}_{EBL,M} = \frac{\sum(R_{EBL} - \overline{R}_{EBL})(R_M - \overline{R}_M)}{N-1}$$

$$= \frac{0.8190}{4-1}$$

$$= 0.297$$

Beta Co-efficient of Everest Bank Ltd. (B_{EBL})

$$B_{EBL} = (COVEBL, M)/\sigma M^2$$

$$= \frac{0.297}{0.4258^2}$$

$$= 1.6381$$

Where, σM^2 = variance of market return

4.5.5 Beta Co-efficient of stock of BOKL

Table 4.31

Covariance between stock of BOKL and Market.

Fiscal year	$R_{BOKL} - \overline{R}_{BOKL}$	$R_M - \overline{R}_M$	$\left[\left(R_{BOKL} - \overline{R}_{BOKL}\right)\left(R_M - \overline{R}_M\right)\right]$
2004/05	--	--	--
2005/06	1.368	0.1321	0.18074
2006/07	0.0086	0.5508	0.0047
2007/08	0.0611	0.1912	0.0117
2008/09	-1.4377	-0.4397	0.6322
Total			0.8293

Data is taken from Table no. 4.10 and 4.11

We have,

$$Cov_{BOKL,M} = \frac{\sum(R_{BOKL} - \overline{R}_{BOKL})(R_M - \overline{R}_M)}{N-1}$$

$$= \frac{0.8293}{4-1}$$

$$= 0.2764$$

Beta Co-efficient of common stock of BOKL (B_{BOKL})

$$B_{BOKL} = (COVBOKL, M)/\sigma M^2$$

$$= \frac{0.2764}{0.4258^2}$$

$$= 1.5245$$

Where, σM^2 = variance of market return

Calculation of beta-coefficient of selected sample joint venture bank are shown below:

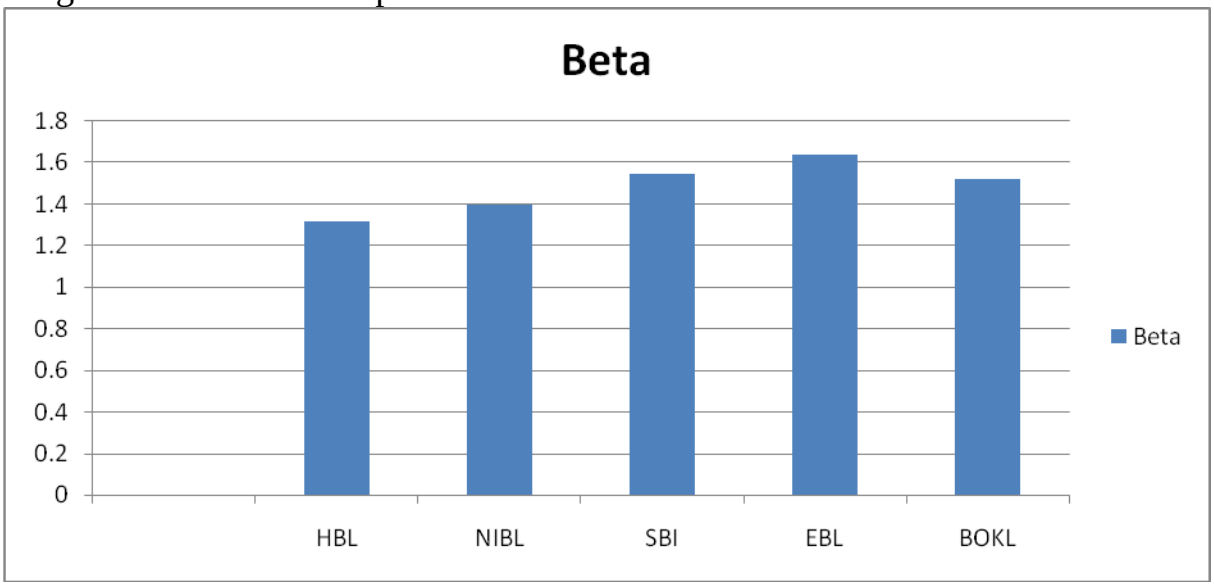
Table 4.32

Beta Coefficient of five joint venture banks

S.N.	Name of Banks	Beta
1	**HBL**	1.3182
2	**NIBL**	1.4004
3	**SBI**	1.5477
4	**EBL**	1.6381
5	**BOKL**	1.5245

Above table shows the beta coefficient of five joint venture banks. Beta of HBL is 1.3182, which indicates that stock return of HBL is more volatile than market return. 1% change in market return will course 1.3182% change in HBL stock's return and so on.

Daigram 4.8 Beta of sampled bank



Above diagram shows that beta of all observed J.V Banks are positive that means return of stock of these banks moves to same direction where the market returns moves. Beta coefficient of EBL is highest among observed banks, if market return rises, all sample bank's return rises and vice versa.

4.6 Price valuation of CS of selected banks

Beta plays major role in CAPM. CAPM is model that assumes stock's required rate of return (RRR) is equal to the risk free rate plus its risk premium, where risk is measured by the beta coefficient. Comparison of RRR with expected rate of return (ERR) determines whether that stock is overpriced or under priced.

If RRR is less than ERR stock is said to be under priced.
If RRR is more than ERR stock is said to be overpriced.

Table 4.33

RRR, ERR and Price Valuation

S.N.	Banks	RF	Beta (B)	$\overline{R}_M$	ERR	RRR	Price Valuation
1.	**HBL**	3.8	1.3182	0.2173	0.6789	0.2746	Under Priced
2.	**NIBL**	3.8	1.4004	0.2173	0.7705	0.2891	Under Priced
3.	**SBI**	3.8	1.5477	0.2173	0.9195	0.3155	Under Priced
4.	**EBL**	3.8	1.6381	0.2173	0.6146	0.3317	Under Priced
5.	**BOKL**	3.8	1.5245	0.2173	1.1855	0.3113	Under Priced

Required rate of return (RRR) = RF + (RM – RF) B
Where,
RF = Risk free rate of return= 3.8% Source: NRB [2060/11, Treasury bill]
$\overline{R}_M$= Market rate of return = 21.73%

Beta plays a significant role in stock's RRR. Other major factor, which affects RRR, are expected return on market (Rm) and risk free rate (Rf). Above

tables shows the price situation of five selected J.V. banks. Results indicates that common stock of all banks are under priced and investor can gain from buying these stocks. So new investor should buy these stocks and who are holding they shouldn't sell.

4.7 Partitioning Risk

Total risk for an individual security can be measured by S.D. or variance of rate of return. According to CAPM total risk can be divided into two parts.

Systematic risk is related to market risk, which is caused by an external forces as economical, political and legal sociological changes. Securities with larger betas will have larges expected returns.

Unsystematic risk is related to no-market factors as labour strikes, management ever etc. It can be diversified away. Investors are rewarded only for bearing systematic risk not for unsystematic risk.

Diversifiable risk can be diversified at no cost. So investor should know the portion of systematic risk and unsytematic risk because by portioning risk, investor knows what extent risk of particular stock can be diversified away by holding a optimal portfolio.

Calculation of systematic risk and unsystematic risk and their proportion of stock of each banks are as follows.

4.7.1 Partitioning of risk of stock of HBL

Total risk measured by variance (σ^2), has been portioned into systematic and unsystematic components.

Variance of stock of HBL = Total risk of HBL

$\sigma^2_{HBL} = B^2_{HBL} X \sigma^2_M + Var(e)$

$(0.60532)^2 = (1.3182)^2 X (0.4258)^2 + Var (e)$

$0.3664 = 0.3150 + Var (e)$

$Var(e) = 0.0514$

Systematic risk of stock of HBL = 0.3150
Unsystematic risk of stock of HBL= 0.0514

Proportion of Undiversifiable risk

$$P^2 = \frac{\text{Systematic Risk}}{\text{Total Risk}} = \frac{B^2_{HBL}\sigma^2_M}{\sigma^2_{HBL}}$$

$$= \frac{0.3150}{0.3664}$$

$$= 0.8597 \text{ or } 85.97\%$$

Diversifiable proportion of risk of stock of HBL

$$1-P^2 = \frac{\text{Unsystematic Risk}}{\text{Total Risk}} = \frac{\text{Var(e)}}{\sigma^2_{HBL}}$$

$$= \frac{0.0514}{0.3664}$$

$$= 0.1403 \text{ or } 14.03\%$$

4.7.2 Partitioning of risk of stock of NIBL

Variance of stock of NIBL = Total risk of NIBL

$\sigma^2_{NIBL} = B^2_{NIBL} X \sigma^2_M + Var(e)$

$(0.9171)^2 = (1.4004)^2 X (0.4258)^2 + Var (e)$

$0.8411 = 0.3556 + Var (e)$

$Var(e) = 0.4855$

Systematic risk of stock of NIBL = 0.3556

Unsystematic risk of stock of NIBL =0.4855

Proportion of Un-diversifiable risk

$$P^2 = \frac{\text{Systematic Risk}}{\text{Total Risk}} = \frac{B^2_{NIBL}\sigma^2_M}{\sigma^2_{NIBL}}$$

$$= \frac{0.3556}{0.8411}$$

= 0.4228 or 42.28%

Diversifiable proportion of risk of stock of NIBL

$$1-P^2 = \frac{\text{Unsystematic Risk}}{\text{Total Risk}} = \frac{\text{Var(e)}}{\sigma^2_{NIBL}}$$

$$= \frac{0.4855}{0.8411}$$

$$= 0.5772 \text{ or } 57.72\%$$

4.7.3 Partitioning of risk of stock of SBI

Variance of stock of SBI = Total risk of SBI

$\sigma^2_{SBI} = B^2_{SBI} X \sigma^2_M + Var(e)$

$(0.8724)^2 = (1.5477)^2 X (0.4258)^2 + Var (e)$

$0.7611 = 0.4343 + Var (e)$

$Var(e) = 0.3268$

Systematic risk of stock of SBI = 0.4343

Unsystematic risk of stock of SBI = 0.3268

Proportion of Un-diversifiable risk

$$P^2 = \frac{\text{Systematic Risk}}{\text{Total Risk}} = \frac{B^2_{SBI}\ \sigma^2_M}{\sigma^2_{SBI}}$$

$$= \frac{0.4343}{0.7611}$$

$$= 0.5706 \text{ or } 57.06\%$$

Diversifiable proportion of risk of stock of SBI

$$1-P^2 = \frac{\text{Unsystematic Risk}}{\text{Total Risk}} = \frac{\text{Var(e)}}{\sigma^2_{SBI}}$$

$$= \frac{0.3268}{0.7611}$$

$$= 0.4294 = 42.94\%$$

4.7.4 Partitioning of risk of stock of EBL

Variance of stock of EBL = Total risk of stock of EBL

$\sigma^2_{EBL} = B^2_{EBL} X \sigma^2_M + Var(e)$

$(0.4580)^2 = (1.6381)^2 X (0.4258)^2 + Var(e)$

$0.2098 = 0.4865 + Var(e)$

$Var(e) = 0.2767$

Systematic risk of stock of EBL = 0.4865
Unsystematic risk of stock of EBL = 0.2767

Proportion of Un-diversifiable risk

$$\frac{\text{Systematic Risk}}{\text{Total Risk}} = \frac{B^2_{EBL}\ \sigma^2_M}{\sigma^2_{EBL}}$$

$$P^2 = \frac{0.4865}{0.2098}$$

$= 2.3189$ or 231.89%

Diversifiable proportion of risk of stock of EBL

$$1-P^2 = \frac{\text{Unsystematic Risk}}{\text{Total Risk}} = \frac{Var(e)}{\sigma^2_{EBL}}$$

$$= \frac{0.2767}{0.2098}$$

$= 1.3189$ or 131.89%

4.7.5 Partitioning of risk of stock of BOKL

Variance of stock of BOKL = Total risk of stock of BOKL

$\sigma^2_{BOKL} = B^2_{BOKL} X \sigma^2_M + Var(e)$

$(1.1463)^2 = (1.5245)^2 X (0.4258)^2 + Var(e)$

$1.3140 = 0.4214 + Var(e)$

$Var(e) = 0.8926$

Systematic risk of stock of BOKL = 0.4214
Unsystematic risk of stock of BOKL = 0.8926

Proportion of Un-diversifiable risk

$$\frac{\text{Systematic Risk}}{\text{Total Risk}} = \frac{B^2_{BOKL}\sigma^2_M}{\sigma^2_{BOKL}}$$

$P^2 = \frac{0.4214}{1.3140}$

$= 0.3207$ or 32.07%

Diversifiable proportion of risk of stock of BOKL

$$\frac{\text{Unsystematic Risk}}{\text{Total Risk}} = \frac{\text{Var(e)}}{\sigma^2_{BOKL}}$$

$1-P^2 = \frac{0.8926}{1.3140}$

$= 0.6793$ or 67.93%

Table 4.34

Proportion of Diversifiable risk and non-diversifiable risk of stock of each Bank

S.N.	Banks	Total Risk ($\sigma 2$)	Sys. Risk	Proportion	Unsys. Risk	Proportion
1	**HBL**	0.3664	0.3150	0.8597	0.0514	0.1403
2	**NIBL**	0.8411	0.3556	0.4228	0.4855	0.5772
3	**SBI**	0.7611	0.4343	0.5706	0.3268	0.4294
4	**EBL**	0.2098	0.4865	2.3189	0.2767	1.3189
5	**BOKL**	1.3140	0.4214	0.3207	0.8926	0.6793

4.8 Test of Hypothesis

The hypothesis is based on the test of significance of a difference of mean (t-test).For this case, expected return of listed commercial banks is taken to calculate overall expected return of all components.

Table 4.35

Calculation of Expected Return, Standard Deviation and Coefficient of Variance

Name of Bank	R	$(R - \bar{R})$	$(R - \bar{R})^2$
HBL	0.6789	-0.1549	0.0240
NIBL	0.7705	-0.0633	0.0040
SBI	0.9195	0.0857	0.0073
EBL	0.6146	-0.2192	0.0480
BOKL	1.1855	0.3517	0.1237

Expected return:

$\bar{R} = \Sigma R/N = 4.169/5 = 0.8338$

Where

N = Number of Observations

Standard Deviation:

$$\sigma = \sqrt{\frac{\Sigma(R - \bar{R})2}{N - 1}}$$

$= \sqrt{(0.207)/(5-1)} = 0.2275$

C.V. $= \frac{\sigma}{\bar{R}} = 0.2275/0.8338 = 0.2728$

Null Hypothesis(H_0) = $u=u_0$ i.e. there is significant difference between the average return of common stock of listed commercial banks and overall market(Population)return.

Alternative Hypothesis(H_1)= $u \neq u_0$ i.e. there is not significant difference between the average return of commercial banks common stocks return and overall market return. In other words, average return on common stock of sample commercial banks is not equal to market return.

Test Statistics

$\alpha = 0.05$

$t = (\bar{X} - \mu) /(\sigma/\sqrt{n})$

$= (0.8338-0.2173)/(0.2275/\sqrt{5})$

= 0.6165/0.1017
= 6.062

Where,

$\bar{\bar{X}}$ = Average return on the portfolio of common stocks of sampled banks.

$\bar{\bar{X}} = \bar{R}$ =0.8338

μ = Average return of market portfolio.

n = Number of banks

σ = Standard deviation of return of common stock of listed commercial banks.

α = Level of significant.

The tabulated value of t at 5% level of significance for 5 degree of freedom is 2.447.

Decision

Since the calculated value of t(6.062) is more than the tabulated value(2.447) at 5% level of significance for 5 degree of freedom, the null hypothesis(H_0) is not accepted which means there is not significant difference between the average return of the commercial banks common stock return and overall market return.In other words,average return on the common stock of commercial bank is not equal to market return.

CHAPTER-V

SUMMARY, CONCLUSION AND RECOMMENDATIONS

This study is the research upon the Risk and Return of Listed Commercial banks in Nepal. This study includes Five Commercial banks which represents the study of the Risk and Return of Commercial banks in Nepal. The research study covers the period of five years from 2004 to 2009 A.D. This chapter summarizes the whole study, draws the major findings, conclusions and forwards the recommendation to solve the problem on the basis of findings.

5.1 Summary

This study "Risk and Return Analysis of Listed Commercial Banks in Nepal" has been prepared to fulfill the requirement of Master's of Business Studies(MBS).Mainly this study is based on the data provided by the concerned banks and NEPSE. While selecting the banks for analysis, five banks working in the similar field and similar nature have been selected. To conclude this study, the whole study has been divided into five chapters of different aspects. The Summary of each chapter can be presented in the following paragraphs.

First Chapter 'Introduction**'** provides the brief introduction of this study. The historical background of the listed commercial banks in Nepal shows the contribution of Nepalese business organization for the development of industrial sector in Nepal. Evaluation of risk and return can be taken as a reliable study in the field of financial management. The study mainly aims to analyze the risk nad return of listed commercial banks in Nepal. There specific objectives are:

- To examine the relationship between risk and return.
- To analyze comparative risk and return position of listed commercial banks in Nepal.
- To analyze risk of these sector those can be eliminated through diversification without any cost.
- To provide the useful suggestion to the different sector.

Even though this study cannot deprive from some limitations.

The literatures related to the risk and return has been reviewed in **Second Chapter**. In this chapter, the theoretical review and empirical review i.e. review of related studies has been presented separately. From the theoretical review section, we may take advantages of conceptual foundation of risk and return decision as well as reliability of different aspects of risk and return in Nepalese context. Similarly, by reviewing some previous studies, many inputs can be taken for this study and other researchers can also take advantages from this section. From this chapter, we can conclude that all the theories of risk and return are not properly applicable in the Nepalese context and almost all previous studies conducted by previous Master's level students has almost same conclusion.

Third Chapter explains about the Methodology of this study. Mostly the secondary data are used in this study. This study covers the five years data of listed commercial banks in Nepal. Descriptive and Analytical research design has been used in this study. Financial as well as statistical tools are used. This study includes risk and return analysis ,portion of systematic and unsystematic risk, beta coefficient, mean, standard deviation, hypothesis, test analysis, correlation analysis and CAPM analysis.

Data are presented and analyzed in the **Fourth Chapter.** Data analysis tools mentioned in the third chapter is used to analyze the data in this chapter. The study of relationship between risk and return was accomplished by collecting the data on market price per share, dividend per share and NEPSE index. For analysis, the data were rearranged for various financial and statistical tools. In the financial tools, capital assets price model and Sharpe Performance index is used. In the statistical tools, expected return(mean), standard deviation, variance, coefficient of determination, portion of systematic risk and unsystematic risk, hypothesis t-test was done and result was tested at 5% level of significance were used. From this chapter, results were tested and analyzed to get the solution according to objectives of the study.

Fifth Chapter is the concluding chapter. This chapter explains about the overall conclusion of this study. Summary, conclusion and recommendation are presented separately.

The detail calculations of various statistical and financial tools of the concerned banks have been presented in the **appendix.**

5.2 Conclusion

Based on the data provided by the concerned banks, the above analysis has been made. And based upon the main findings of the study as revealed in the analysis, the following conclusion can be drawn:

- Nepal stock market is in an emerging state. But its development is accelerating rapidly. The Political changes in 1990 have affected the openings and liberalization in national economy. But due to the lack of information and proper knowledge, Nepalese individual investors cannot analyze the security market properly.

- Return is the change in value plus any cash distribution expressed as a percentage of the initial value. Expected return of common stock of BOKL is maximum due to the effect of unrealistic annual return. Similarly, expected return of the common stock of EBL is found minimum.

- The risk of assets can be measured quantitatively using statistical tools as standard deviation and coefficient of variation that can be used to measure the variability of assets return. Standard deviation is only the way to measure systematic risk, which is not defined by the market and is measured by beta coefficient. On the basis of standard deviation, common stock of BOKL is most risky, since it has high S.D. of 1.1463 and common stock of EBL is less risky because of its lowest S.D. of 0.4580.

- Coefficient of variation is the best way to make investment decision in common stock, which measures the risk per unit of return. NIBL has highest C.V. of 1.1903 and EBL has lowest coefficient of variation of 0.7452. So, considering this fact the best decision would be to invest in the share of EBL.

- Beta Coefficient in this section of market sensitivity analysis measures the index of systematic risk. It may be used for ranking the systematic risk of different assets. By observing individual shares beta coefficient, most of the shares appears to be aggressive as beta coefficient are greater than one. High Beta stock is more volatile than the market as a whole. However beta of the stock of all the five banks are aggressive i.e. more risky than average stock.

- Coefficient of determination is the portion of systematic risk of assets. Coefficient of determination of EBL is highest (i.e.152.3%) where as

coefficient of determination of BOKL is lowest (i.e.56.63%). Alternatively, lower the coefficient of determination means higher the portion of unsystematic risk. That means BOKL common stock risk is highly diversifiable risk while EBL common stock risk is highly undiversifiable and higher unsystematic risk can be avoided through diversification. From the above analysis investors are recommended to buy those stocks which have higher expected return with lower portion of undiversifiable risk to make portfolio investment.

- According to security market line (CAPM) analysis none of share price is in equilibrium. The shares with higher expected return than the required rate of return will be striving towards equilibrium. Therefore, the prices of shares of all sampled banks are under priced.

- All the sampled banks have positive correlation with market. The positive correlation reveals that the return on bank goes up if the markets return goes up and vice-versa. In other words the shares move in the direction the market moves.

- To compare with market portfolio risk return, hypothesis is set. This hypothesis is based on t-test. The conclusion is that there is no significant difference between the average return of sample banks common stock and overall market return.

5.3 Recommendation

Based upon the above mentioned issues and constraints some recommendations have been made. These guidelines would help in taking prompt decision in relation to the risk and return management for mitigating the constraints. These recommendations are presented below:

- Return of BOKL for given sample period is the highest. So the investors could be more benefited if they invest in the common stock of BOKL.

- Risk and Return analysis is not completely sufficient to evaluate investment. However, there are so many techniques which are also necessary to evaluate, one of them is technical analysis.

- Investors must concern about the systematic risk of common stock. Sometime stock having less total risk may have more systematic risk. It cannot be diversified away. Investor must care about it.

- Normally it is believed that the share price of joint venture companies always increases and there is every time benefit. But in reality, it is not true. The price of share may decrease due to many reasons and factor affecting the stock market. Especially, the political factors, risk free rate of return, demand and supply of the share etc. so before investing in the stocks of companies, investors must have to think about the condition of the market, the economic and non-economic factors affecting the market.

- Considering the whole industry, commercial banking industry is better investment for the individual investors because it has lowest C.V from the analysis of individual common stocks of banking industry, the investment on common stock of EBL is recommended for individual stock investment because the C.V EBL common stock is the lowest.

- The market sensitivity of common stock also helps to invest the funds. It is better to invest the common stock of beta less than one i.e. defensive stock. But the higher return cannot obtain in such investment. The under priced common stock should be purchased and the over priced of common stock should be sold. The study recommends buying the common stock of all the five banks due to under priced.

- Under the CAPM approach, all the stocks of sampled banks are under priced. So, investors are suggested to purchase the stock and who are holding should not sell them.

- Government needs to aim the rule and regulation regarding stock market in time to time and to make the policy that protects the individual investor's right.

APPENDIX-I

Table No.1 Calculation of Cov and Corr between stock of HBL and SBI.

Fiscal year	$R_{HBL} - \overline{R}_{HBL}$	$R_{SBI} - \overline{R}_{SBI}$	$(R_{HBL} - \overline{R}_{HBL})(R_{SBI} - \overline{R}_{SBI})$
2004/05	--	--	-
2005/06	0.2189	0.0978	0.0214
2006/07	0.6547	1.1976	0.7841
2007/08	-0.0897	-0.6346	0.0570
2008/09	-0.784	-0.6607	0.5180

We have,

$$Cov_{HBL,SBI} = \frac{\Sigma(RHBL - \overline{R}_{HBL})(RSBI - \overline{R}_{SBI})}{N-1} = \frac{1.3805}{4-1} = 0.4602$$

$$Corr_{HBL,SBI} = \frac{CovHBL,SBI}{\sigma HBL,\sigma SBI} = \frac{0.4602}{0.60532\ X\ 0.8724} = 0.8715$$

Optimum Portfolio Weight

W_{HBL} $= (\sigma SBI^2 - Cov_{HBL,SBI})/(\sigma HBL^2 + \sigma SBI^2 - 2\ Cov_{HBL,SBI})$

$= (0.8724^2 - 0.4602)/(0.60532^2 + 0.8724^2 - 2 \times 0.4602)$

$= 0.3009/0.2071$

$= 1.45$

W_{SBI} $= 1 - W_{HBL}$

$= 1 - 1.45$

$= -0.45$

$\bar{R}_p$ $= (W_{HBL} X \overline{R}_{HBL}) + (W_{SBI} X \overline{R}_{SBI})$

$= (1.45 X 0.6789) + (-0.45 X 0.9195)$

$= 0.5706$

σ_P $= \sqrt{W_{HBL}^2 . \sigma HBL^2 + W_{SBI}^2 . \sigma SBI^2 + 2 W_{HBL} . W_{SBI} . Cov_{HBL,SBI}}$

$= \sqrt{\{(1.45^2 \text{ X } 0.60532^2) + (-0.45^2 \text{ X } 0.8724^2) + (2\text{X } 1.45\text{X } -0.45\text{X } 0.4602)\}}$

$= \sqrt{0.7704 + 0.1541 - 0.6006}$

$= \sqrt{0.3239}$

$= 0.5691$

C. V $= \sigma_P / \bar{R}_p$

$= 0.5691/0.5706$

$= 0.9974$

Table No.2 Calculation of Cov and Corr between stock of HBL and EBL.

Fiscal year	$R_{HBL} - \overline{R}_{HBL}$	$R_{EBL} - \overline{R}_{EBL}$	$(R_{HBL} - \overline{R}_{HBL})(R_{EBL} - \overline{R}_{EBL})$
2004/05	--	--	-
2005/06	0.2189	0.0008	0.000175
2006/07	0.6547	0.8362	0.5475
2007/08	-0.0897	-0.0144	0.00129
2008/09	-0.784	-0.8212	0.6438

We have,

$Cov_{HBL,EBL} = \frac{\Sigma(RHBL - \overline{R}_{HBL})(REBL - \overline{R}_{EBL})}{N-1} = \frac{1.1924}{4-1} = 0.3975$

$Corr_{HBL,EBL} = \frac{CovHBL,EBL}{\sigma HBL,\sigma EBL} = \frac{0.3975}{0.60532\ X\ 0.4580} = 1.4338$

Optimum Portfolio Weight

$W_{HBL} = (\sigma EBL^2 - Cov_{HBL,EBL})/(\sigma HBL^2 + \sigma EBL^2 - 2\ Cov_{HBL,EBL})$

$= (0.4580^2 - 0.3975)/(0.60532^2 + 0.4580^2 - 2 \times 0.3975)$

$= -0.18774/-0.2188$

$= 0.86$

$W_{EBL} = 1 - W_{HBL}$

$= 1 - 0.86$

$= 0.14$

$\bar{R}_p = (W_{HBL} X\ \overline{R}_{HBL}) + (W_{EBL}\ X\ \overline{R}_{EBL})$

$= (0.86\ X\ 0.6789) + (0.14X\ 0.6146)$

$= 0.6699$

$\sigma_P = \sqrt{W_{HBL}^2.\sigma HBL^2 + W_{EBL}^2.\ \sigma EBL^2 + 2\, W_{HBL}.\ W_{EBL}.\ Cov_{HBL,EBL}}$

$= \sqrt{\{(0.86^2\ X\ 0.60532^2) + (0.14^2\ X\ 0.4580^2) + (2X\ 0.86\ X\ 0.14X0.3975)\}}$

$= \sqrt{0.2709 + 0.00411 + 0.0957}$

$= \sqrt{0.37071}$

$= 0.6089$

C. V $= \sigma_P / \bar{R}_p$

$= 0.6089/0.6699$

$= 0.909$

Table No.3 Calculation of Cov and Corr between stock of NIBL and SBI.

Fiscal year	$R_{NIBL} - \overline{R}_{NIBL}$	$R_{SBI} - \overline{R}_{SBI}$	$(R_{NIBL} - \overline{R}_{NIBL})(R_{SBI} - \overline{R}_{SBI})$
2004/05	--	--	-
2005/06	1.0281	0.0978	0.1005
2006/07	0.1089	1.1976	0.2263
2007/08	-0.0214	-0.6346	0.0136
2008/09	-1.1958	-0.6607	0.7901

We have,

$$Cov_{NIBL,SBI} = \frac{\Sigma(RNIBL - \overline{R}_{NIBL})(RSBI - \overline{R}_{SBI})}{N-1} = \frac{1.1305}{4-1} = 0.3768$$

$$Corr_{NIBL,SBI} = \frac{CovNIBL,SBI}{\sigma NIBL,\sigma SBI} = \frac{0.3768}{0.9171 \text{ X } 0.8724} = 0.4710$$

Optimum Portfolio Weight

$W_{NIBL} = (\sigma SBI^2 - Cov_{NIBL,SBI})/(\sigma NIBL^2 + \sigma SBI^2 - 2\ Cov_{NIBL,SBI})$

$= (0.8724^2 - 0.3768)/(0.9171^2 + 0.8724^2 - 2 \times 0.3768)$

$= 0.3843/0.8486$

$= 0.453$

$W_{SBI} = 1 - W_{NIBL}$

$= 1 - 0.453$

$= 0.547$

$\bar{R}_p = (W_{NIBL} \text{ X } \overline{R}_{NIBL}) + (W_{SBI} \text{ X } \overline{R}_{SBI})$

$= (0.453 \text{ X } 0.7705) + (0.547 \text{ X } 0.9195)$

$= 0.8520$

$\sigma_P = \sqrt{W_{NIBL}^2 . \sigma NIBL^2 + W_{SBI}^2 . \sigma SBI^2 + 2\, W_{NIBL} . W_{SBI} . Cov_{NIBL,SBI}}$

$= \sqrt{\{(0.453^2 \text{ X } 0.9171^2) + (0.547^2 \text{ X } 0.8724^2) + (2\text{X } 0.453 \text{ X } 0.547\text{X}0.3768)}$

$= \sqrt{0.7126+0.2277+0.1867}$

$= \sqrt{0.587}$

$= 0.7662$

C. V $= \sigma_P / \bar{R}_p$

$= 0.7662/0.8520$

$= 0.8993$

Table No.4 Calculation of Cov and Corr between stock of NIBL and EBL.

Fiscal year	$R_{NIBL} - \overline{R}_{NIBL}$	$R_{EBL} - \overline{R}_{EBL}$	$(R_{NIBL} - \overline{R}_{NIBL})(R_{EBL} - \overline{R}_{EBL})$
2004/05	--	--	-
2005/06	1.0281	0.0008	0.00082
2006/07	0.1089	0.8362	0.1580
2007/08	-0.0214	-0.0144	0.00031
2008/09	-1.1958	-0.8212	0.9820

We have,

$Cov_{NIBL,EBL} = \frac{\Sigma(RNIBL - \overline{R}_{NIBL})(REBL - \overline{R}_{EBL})}{N-1} = \frac{1.14113}{4-1} =$ 0.3804

$Corr_{NIBL,EBL} = \frac{CovNIBL,EBL}{\sigma NIBL,\sigma EBL} = \frac{0.3804}{0.9171 \text{ X } 0.4580} = 0.9056$

Optimum Portfolio Weight

$W_{NIBL} = (\sigma EBL^2 - Cov_{NIBL,EBL})/(\sigma NIBL^2 + \sigma EBL^2 - 2 Cov_{NIBL,EBL})$

$= (0.4580^2 - 0.3804)/(0.9171^2 + 0.4580^2 - 2 \times 0.3804)$

$= -0.1706/0.29004$

$= -0.59$

$W_{EBL} = 1 - W_{NIBL}$

$= 1-(-0.59)$

$= 1.59$

$\bar{R}_p = (W_{NIBL} X \overline{R}_{NIBL}) + (W_{EBL} X \overline{R}_{EBL})$

$= (-0.59 X 0.7705) + (1.59 X 0.6146)$

$= 0.5226$

$\sigma_P = \sqrt{W_{NIBL}^2 . \sigma NIBL^2 + W_{EBL}^2 . \sigma EBL^2 + 2 W_{NIBL} . W_{EBL} . Cov_{NIBL,EBL}}$

$= \sqrt{\{(-0.59^2 X 0.9171^2) + (1.59^2 X 0.4580^2) + (2X -0.59 X 1.59X0.3804)}$

$= \sqrt{0.2928+0.5303-0.7137}$

$= \sqrt{0.1094}$

$= 0.3308$

C. V $= \sigma_P / \bar{R}_p$

$= 0.3308/0.5226$

$= 0.6330$

Table No.5 Calculation of Cov and Corr between stock of SBI and EBL.

Fiscal year	$R_{SBI} - \overline{R}_{SBI}$	$R_{EBL} - \overline{R}_{EBL}$	$(R_{SBI} - \overline{R}_{SBI})($

			$R_{EBL} - \overline{R}_{EBL}$)
2004/05	--	--	-
2005/06	0.0978	0.0008	0.000078
2006/07	1.1976	0.8362	1.0014
2007/08	-0.6346	-0.0144	0.00914
2008/09	-0.6607	-0.8212	0.5426

We have,

$$Cov_{SBI,EBL} = \frac{\Sigma(R_{SBI} - \overline{R}_{SBI})(R_{EBL} - \overline{R}_{EBL})}{N-1} = \frac{1.5532}{4-1} = 0.5177$$

$$Corr_{SBI,EBL} = \frac{Cov_{SBI,EBL}}{\sigma SBI, \sigma EBL} = \frac{0.5177}{0.8724 \text{ X } 0.4580} = 1.296$$

Optimum Portfolio Weight

$W_{SBI} = (\sigma EBL^2 - Cov_{SBI,EBL})/(\sigma SBI^2 + \sigma EBL^2 - 2\, Cov_{SBI,EBL})$

$= (0.4580^2 - 0.5177)/(0.8724^2 + 0.4580^2 - 2 \text{ x } 0.5177)$

$= -0.3079/-0.0646$

$= 4.77$

$W_{EBL} = 1 - W_{SBI}$

$= 1 - 4.77$

$= -3.77$

$\bar{R}_p = (W_{SBI} \text{ X } \overline{R}_{SBI}) + (W_{EBL} \text{ X } \overline{R}_{EBL})$

$= (4.77 \text{ X } 0.9195) + (-3.77 \text{ X } 0.6146)$

$= 2.069$

$\sigma_P = \sqrt{W_{SBI}^2 . \sigma SBI^2 + W_{EBL}^2 . \sigma EBL^2 + 2\, W_{SBI} . W_{EBL} . Cov_{SBI,EBL}}$

$= \sqrt{\{(4.77^2 \text{ X } 0.8724^2) + (-3.77^2 \text{ X } 0.4580^2) + (2\text{X } 4.77 \text{ X } -3.77\text{X}0.5177)\}}$

$= \sqrt{17.317 + 2.9814 - 18.6195}$

$= \sqrt{1.6789}$

= 1.296

C. V = σ_P / $\bar{R}_p$

= 1.296/2.069

= 0.6264

Table No.6 Calculation of Cov and Corr between stock of BOKL and NIBL.

Fiscal year	$R_{BOKL} - \overline{R}_{BOKL}$	$R_{NIBL} - \overline{R}_{NIBL}$	$(R_{BOKL} - \overline{R}_{BOKL})(R_{NIBL} - \overline{R}_{NIBL})$
2004/05	--	--	-
2005/06	1.368	1.0281	1.4064
2006/07	0.0086	0.189	0.0016
2007/08	0.0611	-0.0214	-0.0013
2008/09	-1.4377	-1.1958	1.7192

We have,

$Cov_{BOKL,NIBL} = \frac{\Sigma(RBOKL - \overline{R}_{BOKL})(RNIBL - \overline{R}_{NIBL})}{N-1} = \frac{3.1259}{4-1} =$ 1.042

$Corr_{BOKL,NIBL} = \frac{CovBOKL,NIBL}{\sigma BOKL \sigma NIBL} = \frac{1.042}{1.1463X0.9171} = 0.9912$

Optimum Portfolio Weight

$W_{BOKL} = (\sigma NIBL^2 - Cov_{BOKL,NIBL})/(\sigma BOKL^2 + \sigma NIBL^2 - 2 Cov_{BOKL,NIBL})$

$= (0.9171^2 - 1.042) / (1.1463^2 + 0.9171^2 - 2 \times 1.042)$

$= 0.2009/0.0711$

$= 2.83$

$W_{NIBL} = 1 - W_{BOKL}$

$= 1 - 2.83$

$= -1.83$

$\bar{R}_p = (W_{BOKL} \times \overline{R}_{BOKL}) + (W_{NIBL} \times \overline{R}_{NIBL})$

$= (2.83 \times 1.1855) + (-1.83 \times 0.7705)$

$= 1.945$

$\sigma_P = \sqrt{W_{BOKL}^2 . \sigma BOKL^2 + W_{NIBL}^2 . \sigma NIBL^2 + 2 W_{BOK} W_{NIBL} Cov_{BOKL,NIBL}}$

$= \sqrt{\{(2.83^2 \times 1.1463^2) + (-1.83^2 \times 0.9171^2) + (2 \times 2.83 \times -1.83 \times 1.042)\}}$

$= \sqrt{10.524 + 2.8167 - 10.793}$

$= \sqrt{2.5477}$

$= 1.596$

C. V $= \sigma_P / \bar{R}_p$

$= 1.596/1.945$

$= 0.8206$

Table No.7 Calculation of Cov and Corr between stock of BOKL and SBI.

Fiscal year	$R_{BOKL} - \overline{R}_{BOKL}$	$R_{SBI} - \overline{R}_{SBI}$	$(R_{BOKL} - \overline{R}_{BOKL})(R_{SBI} - \overline{R}_{SBI})$
2004/05	--	--	-
2005/06	1.368	0.0978	0.1338
2006/07	0.0086	1.1976	0.0103

2007/08	0.0611	-0.6346	-0.0388
2008/09	-1.4377	-0.6607	0.9499

We have,

$$Cov_{BOKL,SBI} = \frac{\Sigma(RBOKL - \overline{R}\,BOKL)(RSBI - \overline{R}\,SBI)}{N-1} = \frac{1.0552}{4-1} = 0.352$$

$$Corr_{BOKL,SBI} = \frac{CovBOKL,SBI}{\sigma BOKL \sigma SBI} = \frac{0.352}{1.1463X0.8724} = 0.352$$

Optimum Portfolio Weight

W_{BOKL} $= (\sigma SBI^2 - Cov_{BOKL,SBI})/(\sigma BOKL^2 + \sigma SBI^2 - 2 Cov_{BOKL,SBI})$

$= (0.8724^2 - 0.352)/ (1.1463^2 + 0.8724^2 - 2 \times 0.352)$

$= 0.4091/1.3711$

$= 0.29$

W_{SBI} $= 1-W_{BOKL}$

$= 1-0.29$

$= 0.71$

$\bar{R}_p$ $= (W_{BOKL} X \overline{R}\,BOKL) + (W_{SBI} X \overline{R}\,SBI)$

$= (0.29 X 1.1855) + (0.71 X 0.9195)$

$= 0.9966$

σ_P $= \sqrt{W_{BOKL}^2 . \sigma BOKL^2 + W_{SBI}^2 . \sigma SBI^2 + 2 W_{BOK} W_{SBI} Cov_{BOKL,SBI}}$

$= \sqrt{\{(0.29^2 X 1.1463^2) + (0.71^2 X 0.8724^2) + (2X 0.29 X 0.71X0.352)\}}$

$= \sqrt{0.1105+0.38370+0.1450}$

$= \sqrt{0.6392}$

$= 0.7995$

C. V $= \sigma_P / \bar{R}_p$

$= 0.7995/0.9966$

$= 0.7982$

Table No.8 Calculation of Cov and Corr between stock of BOKL and EBL.

Fiscal year	$R_{BOKL} - \overline{R}_{BOKL}$	$R_{EBL} - \overline{R}_{EBL}$	$(R_{BOKL} - \overline{R}_{BOKL})(R_{EBL} - \overline{R}_{EBL})$
2004/05	--	--	-
2005/06	1.368	0.0008	0.0011
2006/07	0.0086	0.8362	0.0072
2007/08	0.0611	-0.0144	-0.00088
2008/09	-1.4377	-0.8212	1.181

We have,

$$Cov_{BOKL,EBL} = \frac{\Sigma(RBOKL - \overline{R}_{BOKL})(REBL - \overline{R}_{EBL})}{N-1} = \frac{1.18842}{4-1} = 0.396$$

$$Corr_{BOKL,EBL} = \frac{CovBOKL,EBL}{\sigma BOKL \sigma EBL} = \frac{0.396}{1.1463X0.4580} = 0.7543$$

Optimum Portfolio Weight

$W_{BOKL} = (\sigma EBL^2 - Cov_{BOKL,EBL})/(\sigma BOKL^2 + \sigma EBL^2 - 2 Cov_{BOKL,EBL})$

$= (0.4580^2 - 0.396)/ (1.1463^2 + 0.4580^2 - 2 \times 0.396)$

$= -0.1862/0.7318$

$= -0.254$

$W_{EBL} = 1 - W_{BOKL}$

$= 1-(-0.254)$

$= 1.254$

$\bar{R}_p$ $= (W_{BOKL} X \overline{R}_{BOKL}) + (W_{EBL} X \overline{R}_{EBL})$

$= (-0.254 X 1.1855) + (1.254 X 0.6146)$

$= 0.4696$

σ_P $= \sqrt{W_{BOKL}^2 . \sigma BOKL^2 + W_{EBL}^2 . \sigma EBL^2 + 2 W_{BOK} W_{EBL} Cov_{BOKL,EBL}}$

$= \sqrt{\{(-0.254^2 X 1.1463^2) + (1.254^2 X 0.4580^2) + (2X -0.254X 1.254X0.396)\}}$

$= \sqrt{0.0848+0.3299-0.2523}$

$= \sqrt{0.1624}$

$= 0.4030$

C. V $= \sigma_P / \bar{R}_p$

$= 0.4030/0.4696$

$= 0.8582$

Table No.9 Calculation of Cov and Corr between stock of HBL and BOKL.

Fiscal year	$R_{HBL} - \overline{R}_{HBL}$	$R_{BOKL} - \overline{R}_{BOKL}$	$(R_{HBL} - \overline{R}_{HBL})(R_{BOKL} - \overline{R}_{BOKL})$
2004/05	--	--	-
2005/06	0.2189	1.368	0.2995
2006/07	0.6547	0.0086	0.0056
2007/08	-0.0897	0.0611	-0.0055
2008/09	-0.784	-1.4377	1.1272

We have,

$Cov_{HBL,BOKL} = \frac{\Sigma(RHBL - \overline{R}_{HBL})(RBOKL - \overline{R}_{BOKL})}{N-1} = \frac{1.4268}{4-1} =$ 0.4756

$Corr_{HBL,BOKL} = \frac{CovHBL,BOKL}{\sigma HBL,\sigma BOKL} = \frac{0.4756}{0.60532\ X\ 1.1463} =$ 0.6854

Optimum Portfolio Weight

$W_{HBL} = (\sigma BOKL^2 - Cov_{HBL,BOKL})/(\sigma HBL^2 + \sigma BOKL^2 - 2\ Cov_{HBL,BOKL})$

$= (1.1463^2 - 0.4756)/(0.60532^2 + 1.1463^2 - 2 \times 0.4756)$

$= 0.8384/0.7292$

$= 1.15$

$W_{BOKL} = 1 - W_{HBL}$

$= 1 - 1.15$

$= -0.15$

$\bar{R}_p = (W_{HBL} X \overline{R}_{HBL}) + (W_{BOKL} X \overline{R}_{BOKL})$

$= (1.15 X 0.6789) + (-0.15 X 1.1855)$

$= 0.6029$

$\sigma_P = \sqrt{W_{HBL}^2 . \sigma HBL^2 + W_{BOKL}^2 . \sigma BOKL^2 + 2 W_{HBL} . W_{BOKL} . Cov_{HBL,BOKL}}$

$= \sqrt{\{(1.15^2 X 0.60532^2) + (-0.15^2 X 1.1463^2) + (2X 1.15X - 0.15X 0.4756)\}}$

$= \sqrt{0.4846 + 0.02957 - 0.1641}$

$= \sqrt{0.35007}$

$= 0.5917$

C. V $= \sigma_P / \bar{R}_p$

$= 0.5917/0.6029$

$= 0.9814$

Table No.10 Calculation of Cov and Corr between stock of SBI and NIBL.

Fiscal year	$R_{SBI} - \overline{R}_{SBI}$	$R_{NIBL} - \overline{R}_{NIBL}$	$(R_{SBI} - \overline{R}_{SBI})(R_{NIBL} - \overline{R}_{NIBL})$
2004/05	--	--	-
2005/06	0.0978	1.0281	0.1005
2006/07	1.1976	0.186	0.2263
2007/08	-0.6346	-0.0214	0.0136
2008/09	-0.6607	-1.1958	0.7901

We have,

$$Cov_{SBI,NIBL} = \frac{\Sigma(RSBI - \overline{R}_{SBI})(RNIBL - \overline{R}_{NIBL})}{N-1} = \frac{1.1305}{4-1} = 0.3768$$

$$Corr_{SBI,NIBL} = \frac{CovSBI,NIBL}{\sigma SBI,\sigma NIBL} = \frac{0.3768}{0.8724 \text{ X } 0.9171} = 0.4710$$

Optimum Portfolio Weight

W_{SBI} $= (\sigma NIBL^2 - Cov_{SBI,NIBL})/(\sigma SBI^2 + \sigma NIBL^2 - 2 Cov_{SBI,NIBL})$

$= (0.9171^2 - 0.3768)/(0.8724^2 + 0.9171^2 - 2 \times 0.3768)$

$= 0.4643/0.8486$

$= 0.547$

W_{NIBL} $= 1 - W_{SBI}$

$= 1 - 0.547$

$= 0.453$

$\bar{R}_p$ $= (W_{SBI} \text{ X } \overline{R}_{SBI}) + (W_{NIBL} \text{ X } \overline{R}_{NIBL})$

$= (0.547 \text{ X } 0.9195) + (0.453 \text{ X } 0.7705)$

$= 0.8551$

σ_P $= \sqrt{W_{SBI}^2 . \sigma SBI^2 + W_{NIBL}^2 . \sigma NIBL^2 + 2\, W_{SBI} . W_{NIBL} . Cov_{SBI,NIBL}}$

$= \sqrt{\{(0.547^2 \text{ X } 0.8724^2) + (0.453^2 \text{ X } 0.9171^2) + (2\text{X } 0.547 \text{ X} 0.453\text{X} 0.3768)\}}$

$= \sqrt{0.2277+0.1757+0.1884}$

$= \sqrt{0.5918}$

$= 0.7693$

C. V $= \sigma_P / \bar{R}_p$

$= 0.7693/0.8551$

$= 0.8997$

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