CHAPTER: 1

INTRODUCTION

1.1 Background of the Study

Nepal is landlocked country, which lies between two border countries i.e. India and China. It is a kingdom of hills and mountains. It occupies on area of 1, 47,181 square meters. It is located on the southern block of Himalayan range. It extends about 885 km along east to west; the northern extension varies from 145km to 193 km. According to recent government statistics 38% of the total population lives below the poverty line. Based on a World Bank report Nepal is the 12^{th} poorest country in the world and the poorest in the South Asia with a per capita income of $220 per annum planned attempts have been model to address the problem of poverty with focus on agriculture and rural development several credit programs have been initiated in an attempt through bank credit s and there by increase income and improve living standard of the poor in rural areas. Cooperative is one of such rapidly expanding models of rural financing.

Nepal is an agricultural dependent country whose economic status is very poor expending upon only on the agriculture, Nepal could not solve the problem of poverty. So the non-agriculture sector should also be given priority. The non-agricultural sector can also help in the economic development and the problem of unemployment can be solved to an extent. Hence, for this various industries should be established. But establishment of such institutions is to sufficient for economic development their successful operation is also necessary. For successful operation, financial is needed for each organization. Finance is the art and science of managing money which is concerned with the process, institutions, market and instructions involved in the transfer of

money among and between individuals, business and government. The proper decision made by the top management related to the management of funds, determines the future of organization. Investment decision, financing decision and assets management decision are the top management decision related to the finance.

Financial analysis is the tool of decision-making and covers the acquisition, utilization, control and administration of funds. Such type of study and analysis is performed through managerial finance. Managerial finance is the part of finance, which is concerned with the duties of the financial manger in the fussiness firm. Managerial finance is important in all type of business whether they are public or private, deal with financial services or manufactures. Today the field of finance is broad and dynamic. Various tools of analysis for acquisition of funds and effective utilization have been developed. The stock market is one of the leading sectors of economy concerned with finance.

The development of financial system in Nepal dates back to a rudimental has been elsewhere in the world, such a gold and silver coins. The silver coins age which come in to existence in Nepal in the 12th century is said to have marked a new epoch in the economic history since then, the financial system under went through various stages it till the evaluation of modern banking in 1937. The financial monopoly has changed with the introduction of joint venture banks in 1984. The domestic bank of Nepal is Nepal Bank Limited and Rastriya Banijya Bank could no longer able to enjoy monopoly. The number of commercial banks has been increasing so in various sectors. Contribution of commercial banks has been increasing in the overall economic development of the country.

Return is the main factor of investment but it involves risk. Return is the reward for waiting and compensation for risk bearing. It is the income received in investment people invests 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. Researchers have shown that most of the investor is risk averter. So, it can be concluded that people invest their belonging in those opportunities where there is higher return with low level of risk.

Risk is defined as the chance of financial loss more formally; the variability of the actual return from the expected return, the higher risk will be projected. “Risk plays a central role on the analysis of investment. Risk are facts of life, which is products of uncertainty and its magnitudes depends upon the degree of variability in uncertain cash flow. Risk in fact is an indication of chance of closing investment value. Different people interpret risk in different ways. To some its simply a lack of definite outcome, which can be any unknown events which may be unfavorable. It is a chance of happening some favorable events or danger of loosing some materials value. Risk can be thought of as the possibilities that the actual return from holding security with deviate from unexpected return.”[1]

“The concept of 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 possibility that we face. In the most basic sense of risk can be defined as the chance of loss. Assets having greater chances of losses are viewed as risky then those with lesser chances of loss. Mare formally, the term risk is used interchangeable with uncertainty to refer to the variable of return associated with a given assets.”[2]

Common Stock investment is a risky investment. There is the uncertainty of future return whose main sources is the price fluctuation of the stock. The stock price may be decreased due to the economic factors such as inflation, interest rate, strength of dollar, economic growth of the nation etc. The stock prices are also affected by political and legal environment of the nation. The dividend received by the investors but at the same time reduced the amount of earnings

reinvested by the firm resulting limited potential growth. So mainly the risk of a stock investment can be measured by its price volatility and degree of uncertainty of dividend fluctuation.

In the investment of common stock an investor agrees to pay the price for stock in the application of future dividend and growth in stock price. But various financial and non-financial factors play a vital role in price determination even in the imperfect market.

Financial market brings together people and organization that want to borrow money with those having surplus funds. The capital market is the part of financial market, which is related to long-term debt and corporate stock i.e. in capital market the financial assets such as stock and bonds are purchased or sold. The main objectives of such markets are to create opportunity for maximum number of people to get the benefit from the return obtained by directing the economy towards the productive sector by mobilizing long-term capital. Stock market is a financial market, which probably has the greatest glamour and is perhaps the least understood. Some observes consider it as a game in which the sole purpose is picking winners. The organized stock exchange and over the counter markets helps to bring together people and organizations of stock and fund exchange. The organized stock change buys the securities of large business firm or the general public where, the transactions of the only listed companies are made. Where as in the over the counter markets the stocks of the companies not listed in the stock exchange is treated. Without the development of financial markets the proper choice of securities for investment is impossible.

“There are three types of financial markets. They are money and capital market, primary and secondary market, security and non security market. Money market typically involves financial assets that have life span of one year or less where as capital markets typically financial assets that have life span of greater than one year.”[3]

In Nepal, the institutional development of stock began after the establishment of "Security Exchange Center" in 1975 A.D. Now it is called Nepal Stock Exchange Limited. But there are various problems for the development of stock markets in Nepal even after the establishment of Nepal Stock Exchange Limited. The main problem is that the lack of knowledge and information about stock investments due to which the market inter mediaries exploit investor. The interested investors afraid to invest in stocks and the investors who are investing in stocks are found to invest in single security due to lack of ability to analyze risk and return and low level of knowledge about portfolio investment. So, in Nepal proper information about the stock investment should provide to participate the people on stock investment because the dynamic trading may play an important role in economic development of the nation. To exist the security market their mechanism should be created to market easy the exchange of security.

"In Nepal buying and selling activities of financial securities (mainly stock) is conducted in Nepal Stock Exchange (NEPSE). The development of stock market in Nepal started with establishment of commercial bank in the country beside the formal sectors. The listing of share in the stock exchange (SEC) and their trading in the stock market is recent phenomenon."[4]

1.1.1 Meaning of Commercial Bank

Commercial bank is an financial intermediary accepting deposit and granting loans, commercial banks offer services to individuals, they re primarily concerned with a receiving deposit and lending to business. It makes loans to business and consumers. It also buys corporate bonds and government bonds.

The banks which perform all kinds of banking business are known as commercial banks. Generally commercial bank deals with finance, trade and commerce. Since, their deposits are for a short period; these banks

normally advance short term loans to the businessman and traders. They specially avoid long-term lending. Majority of commercial banks are in the public sectors. They are established with the capital collected by issuance of share in public. Hence the commercial banks are also called joint stock banks.

According to Nepal Commercial Bank Act 2031 “A commercial bank refers to such type of bank other than specified bank related to co-operative, agricultural, industrial and other which deals in money exchange accepting deposit and advancing loan etc. (Commercial Bank Act: 2031)

Commercial banks play vital role to development of the nation. They collect the money which trapped in unutilized sector and provide the money as loan to traders, businessman, industrial etc. Thus, commercial banks are the heart of the financial system. Therefore, commercial banks are those financial institutions, which collects loan against proper securities for their productive purpose.

1.1.2 Functions of Commercial Banks

The functions of commercial banks are divided into two categories: primary functions and secondary functions.

(i) Primary Functions:

The primary functions of commercial banks include

(a) Accepting Deposits

(b) Granting Loans and Advances

(c) Accepting Deposits

The most important activity of a commercial bank is to mobilize deposits from the public. People who have surplus income and savings find it convenient to deposit the amount with banks. Depending upon

the nature of deposit, funds deposited with bank also earn interest. Thus, deposits with the bank grow along with the interest earned. If the rate of interest is higher, public are motivated to deposit more funds with the bank. There is also safely of funds deposited with the bank.

- **Current deposit / current account**

  Current deposit can be withdrawn by the depositor at any time by cheques. Businessman generally open current accounts with bank. Current account do not carry any interest as the amount deposited in these accounts is repayable on demand without any restriction, Banks usually charge a small amount known as incidental charges on current deposit accounts depending on the number of transaction.

- **Saving deposit / Fixed account**

  Savings deposits account is meant for individuals who wish to deposit small amounts out of their current income. It helps in safe guarding their future and also earning interest on the savings. A saving a/c can be opened with on without cheque book facility. There are restrictions on the withdrawals from this a/c. Saving a/c holders are also allowed to deposit cheques, drafts, divided, warrants etc. drawn in their favor for collection by the bank. To open this a/c, it is necessary for the depositor to be introduced by a person having a current or savings a/c with the same bank.

- **Fixed deposit / Fixed account**

  The term “fixed deposit” means deposit repayable offer the expiry of specified period. Since it is repayable only after a fixed period of time, which is to be determined at the time of opening of the a/c. Fixed deposits are most useful of opening of the a/c. Fixed deposits are most useful for a commercial banks. Since they are repayable only after a fixed period, the bank may invest these find more profitability by lending at higher rate of interest and for relatively larger period. The

rate of interest on fixed deposits depends upon the period of deposits. The longer the period the higher will be the rate of interest.

- **Recurring Deposits**

Recurring deposits are gaining wide popularity these days. Under this type of deposit, the depositor is required to deposit a fixed amount of money every month for a specific period of time. Each installment may vary from Rs 5 to Rs 500 or more per month and the period of account may vary from 12 months to 10 years. After the completion of the specified period, the customer gets back all his deposits along with the cumulative interest accrued on the deposits.

b) Grant Loans and Advance

The second important function of a commercial bank is to grant loans and advances. Such loans and advances are given to member of the public and to the business community at a higher rate of interest than allowed by banks on various deposits accounts. The rate of interest charged on loans and advances various deposits accounts. The rate of interest charged on loan and advances varies depending upon the purpose, period and the mode of repayment. The difference between the rate of interest allowed on deposits and the rate charged on the loans is the main source of a bank's income.

- **Cash Credit**

A cash credit is an arrangement where by the bank agrees to lend money to the borrower up to certain limit. The bank puts this amount of money to the credit of the borrower. The borrower draws the money s and when he needs. Interest is charged only on the amount actually drawn and not on the amount placed to the credit of borrower's account. Cash credit is generally granted on a bond of credit or certain other securities. This is very popular method of lending in our country.

- **Loan**

A specified amount sanctioned by a bank to the customer is called a loan. It is granted for a fixed period, say six month or a year. The specified amount is put on the credit of the borrowers account. He can amount is put on the credit of the borrowers account. He can withdraw this amount in lump sum or can draw cheques against this sum for any amount. Interest is charged on the full amount even if the borrower does not utilize it. The rate of interest I lower on loans in companies to cash credit. A loan is generally granted against the security of property or personal security. The loan may be repaid in lump sum or in installment. Every bank has its own procedure or granting loans. The loan can be granted.

- **Demand Loan**

Demand loan is repayable on demand. In other words, it is repayable at short time. The entire amount of demand is disbursed at one time and the borrower has to pay interest on it. The borrower can repay the loan either in lump sum on as agreed with the bank. Loans are normally granted by the bank against tangible securities including securities like kisan vikas patra, life insurance policies etc.

- **Term Loan**

Medium and Long term loans are called ‘Term Loans’. Term Loans are granted for more than one year and repayment of such loans is spread over a longer period. There payment is generally made in suitable installments of fixed amount. These loans are repayable over a period of 5 years and maximum up to 15 years. Term Loan is required for the purpose of setting up of new business activity, renovation, modernization, expansion, extension of existing units purchase of plant and machinery, vehicles, loan for setting up a factory, construction of factory, building or purchase of other immovable assets.

- **Overdrafts**

  Overdraft facility is more or less similar to cash credit facility. Overdraft facility is the result of an agreement with the bank by which a current a/c holder is allowed to with draw a specified amount over and above the credit balance in his/her a/c. It is a short term facility. This facility is made available to current a/s holders who operate their a/c through cheques. The customer is permitted to withdraw the mount as and when he/she needs it and to repay it through deposits in his a/c as and when it is convenient to him/her. Overdraft facility is generally granted by bank on the basis of a written request by the customer. Interest is charged on actual amount withdrawn by the customer. The interest rate on overdraft is higher than that of the rate on loan.

- **Discounting of bills of Exchange**

  A part from granting cash credit, loan and overdraft, banks also grant financial assistance to customers by discounting bills of exchange. Banks purchase the bills of face value minus interest of current rate of interest for the period of the bill. This is known as “discounting of bills”. Bills of exchange are negotiable instruments and enable the debtors to discharge their obligations towards their creditors. Such bills of exchange asses out of commercial transactions both in internal trade and external trade. By discounting these bills before they are due for a nominal amount, the banks helps the business community. Of Course, the banks recover the full amount of these bills from the persons liable to make payment.

(ii) Secondary Functions

Besides the primary functions of accepting deposits and lending money, banks perform a number of other functions which are called secondary functions. These are as follows:

- Issuing letters of credit, travelers cheques, circular notes etc.

- Undertaking safe custody of valuable, important documents, and securities by providing safe deposit vaults or lockers.
- Providing customers with facilities of foreign exchange.
- Transferring money from one place to another and from one branch to another branch of the bank.
- Standing guarantee of behalf of its customers, for making payment for purchase of goods, machinery, vehicles etc.
- Collecting and supplying business information.
- Issuing demands drafts and pay orders.
- Providing reports on the credit worthiness of customers.

1.1.3 Role of Commercial Banks

Commercial banks are fundamental to a developed economy, and are unintentional agents of monetary policy. Commercial banks must be able to forecast the effects of government policy on overall economic activity, interest rates and risk in order to manage their deposits money.

With the introduction of "Financial Sector Reform" in the year 1980, Nepal allowed the entry of foreign banks as joint venture up to maximum 5% equity participation. A meaningful step towards financial liberalization was undertaken on the fiscal year 1987/88, with the objective of expanding the process of economic development under structural adjustment program and major reforms including liberalization of interest rate strengthening of banking operation of a shift from direct to indirect to indirect money control instruments.

The establishment of new commercial banks has brought an environment of health competition in front of the existing commercial

banks. The increased competition forces the existing banks to improve their quality and extend their services by simplifying procedures and by training, motivating heir own staff to respond to the new challenges these banks have contributed towards introducing new technology, new banking systems and efficient services delivery in the country. These banks have been contributing in line with the trust of economic liberalization and financial sector reform, i.e. making the financial system more competitive, efficient and profitable.

The various roles of commercial banks performed in Nepal can be stated as below:

- Capital formation
- Economic development
- Healthy competition
- Regional balance
- Foreign investment
- New banking techniques

1.1.4 Profiles of the Commercial Banks under Study

(i) Nepal Investment Bank Limited (NIBL)

Nepal Investment bank Ltd was established at 21 January 1986 as a third joint venture bank under the company Act 1964. Initially the bank was managed by "Banque Indosuez" pairs in accordance with joint venture and technical services. 50% of the share of Nepal Indosuez bank Ltd. held by credit Agricole Indosuez was sold to the Nepalese promoters on April 25, 2002 as per the transaction record of NEPSE. After this investment of share by Nepalese owners, the name of the company was charge to Nepal Investment Bank by its 15th annual general meeting held on May 31, 2002. Out of total equity share of NIB,

50% share are held by a group of companies, 16% by commercial banks, another 15% by financial institutions and remaining 20% held by general public. Authorized capital of NIBL in the year 2008/09 is Rs 4000 million and issued paid up capital are Rs 2407.83 million respectively. Market capitalization of the bank in the year 2008/09 is Rs 15,466,407,234.

NIBL is one of the leading banks of Nepal. It was established with the vision to be the most preferred provider of finanancial services in Nepal. NIBL provides a complete range of commercial banking services with 30 points of representation in different parts of the country till August 2009. It also has a wide spread reach across the globe with the tie up with various corresponding banks. It has also fully equipped with modern technology which includes ATMs, credit cards, state-of-art, world-renewed software from Infosys Technology system. Internal banking system and Tele banking system.

(ii) Himalayan Bank Limited (HBL)

Himalayan Bank Limited was established in 1992 by the distinguished business personalities of Nepal in partnership with Employees provident Habib Bank Limited, one of the largest commercial bank of Pakistan.

It is the first commercial bank of Nepal with maximum shareholding by the Nepalese private sector. Besides commercial activities, the bank also offers industrial and merchant banking.

Himalayan Bank has access to the world wide correspondent network of Habib Bank funds transfer letters of credit of any banking business anywhere in the world. Habib Bank is the largest and oldest bank in Pakistan having over 1700 domestic and 65 overseas worldwide. Besides Himalayan Bank has correspondent arrangements with 178 internationally renowned banks like American Express Bank, Citibank and ABN Amro.

With its head or corporate office in Thamel, Kthmandu, the bank has 20 branches, 6 of its branches are located inside the valley while the rest are spread across the nation. The bank has a very aggressive plan of establishing more branches in different parts of the kingdom in the near future.

(iii) Bank Of Kathmandu Limited (BOK)

Bank Of Kathmandu Limited is the latest joint venture bank listed in BWPSE. It was established in Falgun 28th 2051 B.S. (1993 A.D.) collaborating with the SIAM Commercial Bank Pcc, Thailand under the company Act. The major objective of the bank was to operate commercial banking activities through out the country with the approval of NRB. The SIAM commercial bank directed its holding to the Nepalese Citizen in 1998. Hence, Nepalese public hold 97.72% of the equity share of BOKL and remaining share are hold by financial institution (0.9%) and organized institution (1.38%). Authorized capital and paid up capital of BOK Ltd. are Rs 100 and number of shareholders is 18888.. Market capitalization of the bank in the year 2007/08 is Rs 12,708,188,395.

(iv) Nabil Bank Limited (NABIL)

Nabil Bank Limited, the first foreign joint venture bank of Nepal, started operations in July 1984. NABIL was incorporated with the objective of extending international standard modern banking services to various sectors of the society. Pursuing its objectives, NABIL provides a full range of commercial banking services through its 19 points of representation across the globe. NABIL, as a pioneer in introducing many innovative products and marketing concepts in the domestic banking sector, represents a milestone in the banking history of Nepal as it started as era of modern banking with customer satisfaction measured as a coal objective while doing business.

It has all around 410 staffs all over the country. Operations of he bank including day to day operations and risk management are managed by highly qualified and experienced management team.

The main slogan of the bank is “YOURBANK AT YOUR SERVICE”. The head office is located in Kamaladi, Kathmandu. NABIL Bank has encouraged foreign investment and joint venture operation with Nepalese investors or in certain circumstances as fully owned subsidiary. NABIL Bank has world wide correspondent network, which enables it to conduct international trade business with high level of accuracy and efficiency. NABIL provides a full range of commercial banking services through its 32 points of representation across the kingdom and over 170 reputed correspondent banks across the globe along with 5 correspondent banks.

1.2 Focus of he Study

The main focus of this study is the risk and return analysis of the listed commercial banks of Nepal. The relationship between risk and returns a topic of major concerned is very critical and very difficult to understand. The relationship is very critical and very difficult to understand. The study of risk and return analysis of commercial banks in Nepal verifies the relationship between the risk and return of the different commercial banks which is taken as samples. The main purpose of the study is to analysis how one can get sustainable profit by minimizing the risk for this purpose expected return, total unsystematic risk and systematic risk are analyzed to give an idea to get sustainable profit by diversifying the risk to avoid future loss of investment. Investment decision is very difficult for general people where there is investment there exists risk therefore doing as well as risk.

The analysis of the risk and return is a significant in investment decision as well as managerial decision. In influences risk and return of the shareholders. Consequently the risk and return analysis is influences the

market price of the stock. So before making an investment decision a person must analyze the risk and return from particular stocks as well as they can make a good risk minimizing portfolio between their investments in the stock. The investors suffer more for not recognizing the trade off between risk and return. It is understood that return of co-variation (relation) is yet to be found out. Return and risk are the two most important criteria for investment decision. Return is the income from 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 of risk are investing in the capital market without any proper knowledge and information.

The study will gives information about Nepalese capital market by analyzing risk and return and will definitely contribute to increase analytical power of the investor in capital markets. The studying is not only to fulfill but also to provide some useful 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 market to make necessary policies to attract private sectors and reforms in policies reputation to stock trades 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 in which investing in financial securities. A part from all these this study may be matter of interest for academicians, students, teachers and practices in the field of finance.

1.3 Statement of the Problems

The study of “risk and return analysis” of common stock investment occupies on important place in the theory of finance. Lack of knowledge about risk and return is the main cause of manipulation by the financial

institutions or stockbrokers to the investors. Investor's attitude and perception towards stock investment is not good in Nepalese stock market. So, they feel more risk in stock investment than as its real risk. The academicians also cannot analyze risk and return properly while investing. Investors should be informed properly about the corporate, it's financial position and about the stock market because investors are the main bases for any company and stockbrokers. Investors are the primary source of funds or capital for company and also the source of revenue as a customer for the stock brokers and financial intermediaries. But in Nepal, there are no any separate institutions providing adequate information to investors about the stock market. It seems necessary to establish separate entity, which provides adequate information about financial markets, which may accelerate the stock investment and market efficiency.

To invest in stock one should know what the accurate price of the stock is. For this the theories knowledge as well as market condition should be known clearly about the determinants of stock process. According to the theory of stock price, stock price in market is guided by the intrinsic value, which is calculated with the inputs-dividend, required rate of return of investors and growth in dividends. The stock prices are assumed to remain in security market line and if it is not so, they strive toward this line and come to the equilibrium. If the expected rate of return from stock and required rate of return of investors are not equal, the intrinsic value and market value of stock will not be equal. In such case the price of stock may be overpriced or under priced. Hence, the location of expected rate of return may lie above or below the security market line. The stocks firstly traded in the primary market by the investing corporation and these securities are traded in the secondary market by the investors and stockbrokers. Since common stock do not guarantee for dividends and capital gain, it needs courage to invest on it. For the guarantee of return o proper analysis of risk and return should be performed to the prevailing market atmospheres.

Some of the common questions that arise in an investor's mind can be listed as follows:

- What is the relationship between risk and return?
- What is the risk and return using portfolio management?
- What is coefficient of variation of common stock of commercial banks?
- What is the beta coefficient of common stock of commercial banks?
- How an individual common stock return and portfolio return differ?
- Does an investor prefer singly investment or in portfolio?
- What is a systematic and unsystematic risk?
- How can we make higher return through risk?
- How can investor diversify the risk?
- How do they know about the magnitude of risk?
- What should be the compensative for bearing risk?
- So these are the burning issue that have influenced researcher to carry on these studies.

1.4 Objectives of the Study

The main objectives of the study is to analyze examine and interpret the risk and return analysis of commercial banks and market. The study will also try to focus on the real problem occurring in common stock of commercial banks. The stated problems are analyzed regarding to bank sector.

The specific objectives of the study are listed below:

- To calculate the risk and return on the investment of the commercial banks.
- To change the risk and return of commercial banks and markets as a whole.
- To compare the commercial banks risk and return with market.
- To examine the portfolio which minimize the risk
- To analyze the importance of correlation coefficient.
- To suggest and recommend about the risk and return on the basis of analyzing data.
- To measures systematic and unsystematic risk of the commercial banks.
- To provide applicable suggestion on the basis of founding to management and government.
- To perform sector wise comparison on he basis of market capitalization.
- To constructs on optimum portfolio.

1.5 Significance of the Study

This researcher study will provide actual information about contribute in he analytical power of the investor. 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 exposing and increasing stock investment.

The main significance of this study is mentioned below:

- The study may provide significant information to Nepalese stock market deals along with providing ideas to minimize the risk on stock investment.
- The study might have the clean concept over their investor, they will be able to distinct the right investment among all investment opportunities.
- The study will be beneficial for the person who is directly and indirectly related to the Nepalese stock markets.
- This study will be a matter of interest for academicians, students and investors.
- This study also provides the information to the investor that assets are risk or not risk.
- Last but not least, it provides the literature to the researcher who wants carry on future research in the field.

1.6 Limitation of the Study

Any research study may not free from its own limitation. Mainly this study of risk and return analysis of commercial banks is done for the partial fulfillment of master's degree of business studies. Every study has certain limitation. The main limitation are inadequate coverage of industries, time taken, reliability of statistical tools used and other variables, which are not included in this study.

The main limitation is time constraints and other is as follows:

- This study is based on 4 listed commercial banks in NEPSE only. These banks may not be the representative of total banking sector.

- The study is not based on primary data; it is based on secondary data. Consequently the result depends on the reliability of secondary data.
- The study covers the relevant data and information only for latest five years.
- Time and money are also the limitation of this study.
- This study is basically concerned with the risk and analysis of commercial banks and markets (NEPSE). It does not consider other financial analysis of the banks.
- Lack of knowledge and information about the financial firm is difficult to collect the data from the related party.
- Variation in data published from different sources like NEPSE and from Company itself.

1.7 Organization of the Study

This study is organized in to five chapters. The contents of each of these chapters are as follows:

Chapter 1: Introduction

Chapter 2: Review of Literature

Chapter 3: Research Methodology

Chapter 4: Presentation and Analysis of data

Chapter 5: Summary, conclusions and recommendation

Chapter 1: Include the introduction part of this study as already mentioned which describes the background, focus of the study, statement of problem, objectives of the study, significance of the study, limitation of the study, organization of the study.

Chapter 2: Describes theoretical analysis and brief reviews of related and pertinent literature available. It includes a discussion on the conceptual framework and review of the major studies.

Chapter 3: Describes the research methodology enjoyed in this study. This describes the matter and sources of data, population and sample, mode of analysis, meaning and definition of financial and statistical tools.

Chapter 4: Deals with presentation and analysis of secondary data by using various analytical tools.

Chapter 5: The last chapter is the summary, conclusions and recommendation. It contains the summary and conclusion of the study and recommendation for the future study.

CHAPTER – II

REVIEW OF LITERATURE

Review of literature means reviewing research studies or other relevant proposition in the related areas of stiff so that all the past studies, their conclusions and deficiencies may be known and further research can be conducted. It is an integral and mandatory process in research work.

Review of literature is the chapter where researcher reviews the books, journals, magazine or any other types of studies which are related to his/her field of the study. Research is continuous process is never ends. The purpose of reviewing the literature is to develop some expertise in one's are to see what new contribution can be made and to receive some ideas for developing a research design. Thus, the previous studies cannot be ignored because they provide the foundation to the present study. The continuity in research is ensured by linking the present study with the past research studies.

The concerned of the study is focus on common stock investment and its impact on individual risk and return. Risk and Return analysis of the stock in the present days has been the focus point in the capital market is in relation with portfolio management on 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 to risk and to calculate the risk premium that investors needs for involving in the risky investment. Eventually the analysis help and investor quantity their trade off between risk and return. Capital market is the venue of resource allocation and the source of capital accumulation. There are many theories regarding capital market that explains and help predict market behavior.

In this chapter, some Nepalese and foreign banks, journals, and magazines reviewed which are related to the topic risk and return and also thesis of seniors related to the study is reviewed below.

2.1 Theoretical Framework

The theoretical framework is the basis or foundation upon with the study is established. It is with in the framework of this theory that the entire study proceed. Since the general purpose of research is the developed theories about problems and questions it is important that the theoretical framework be carefully developed and presented.

The theoretical from work is the foundation of which the entire thesis is based. It is the logically developed described and elaborated network of associations among variables that have been identified through such process as interviews, observation and literature survey. This study focus on the determination of risk return and investment position of Nepalese commercial banks. Basically commercial banks are concerned with financial transaction. All the financial decision often involves alternative course of action. The alternative action typically have different risk and return implication. While section of investment alternative the first priority of the investor is to identify the amount of rate of return.

2.1.1 Common Stock

The study is focused on common stock investment, therefore light is thrown on it. "Common stock represents and ownership position in a co-operation. It is a residual claim, in the sense that creditors and preference shareholders most be paid as schedule before common stockholders can receive any payments."[5]

"Common stock represents equity or ownership position in a corporation company, the holders of common stock called shareholders and legal owners of the company. Common stocks are the sources of payment capital hence they do not have a maturity date. The capital contributed by shareholders by purchasing ordinary hare are entitled or dividend. The amount of rate of dividend is not fixed. The company is board of director's decides it. A common stock is therefore knows the

risk of ownership. They are entitled to dividend after the income claims of to other have been satisfied. Similarly when the company winds up they can exercise their claims on assets, after the claims of other suppliers of capital have been taken care off.

"All the shares with the exception of preference share are regarded as equity shares or common stock."[6] In Nepal as per provision of Nepal, company act 2053 B.S. the per value of share should be Rs 10 per Rs 100.

Stockholders return on investment is less than the returns to lender or a preferred stockholder can be authorized with or without par value. The par value of a stock is merely a stated figure in the corporate character and is of little economic significance. A company should not issue stock as a price less than par would be liable to creditors for the difference between the below par price they paid and par value.

2.1.2 Common stock Fundamentals

The true owners of business firms are the common stockholders invest their money in the firm because of their expectation of future returns. A common stockholder is sometimes referred to as residuals owner, since in essence she or he receives what is left after all others claim on the firm's income and assets have been satisfied. Here are the fundamental aspects of common stocks:

Control

Common stockholders 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.

- Any issue that will have material effect on the co-operation.
- Any proposal that will change heir individual percentage ownership
- Any significant contract on financial management.

The extent of control depends on the voting right specified in the corporate charter member of the board of directors are elected by two methods, “starting voting and cumulative voting”.

Pre-emptive Right

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

Liquation Right

Common stockholders receive no priority as owner 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 stockholders are satisfied.

Dividends

The payment of corporate dividends is at the discretion of the board of director, most corporations pay dividend quarterly. Dividend may be paid as cash, stock or merchandise. Case dividends are the most common memorial where as merchandise dividends are the least common. Before dividends are paid to the common stockholders, the claims of all creditors, the government and preferred stockholders must be satisfied.

Common stock value

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

Par Value

The face value of the stock which is established at the time where the stock is initially issued is called par value. Without a stock split or other action performed by the board of direction, the par value of the stock doest not changes.

Market Value

Market value in the secondary markets it determined by supply and demand factors and reflects the consensus of investors and traders concerning the "value" of the stock.

Distribution of Earning and Assets

Common stock leaders have no guarantee of receiving any periodic distribution of earning in the form of dividend; on they are not guaranteed anything in the events of liquidation. However, one thing they are assured of is that they cannot loose any more than they have invested in the firm.

Voting Right

Generally, each share of common stock entitle the holder to one vote in the election of direction and in order special election votes are generally assignable and must be cast of the annual stockholders meeting.

2.1.3 Return on common stock

The main purpose of investment on common stock is to get return from dividend and price appreciation of share and to get the control on the company. Return is the main target of investment. The return on common stock can be defined as the dividend yield plus the capital gain or loss. Dividend on common stock is distributed from its earnings. Dividend payment and the amount of dividend are decided by the management.

Common stock provides the expected future cash flow stream, and the stock s value is found in the same manner as value of other financial assets namely as present value of expected cash flow stream. The expected cash flows consist of two elements. One is dividend expected in one year and other is the price investor expects to receive when they sell stock. The expected final stock price includes the return of original investment plus expected capital gain.

Return on common stock consists of the dividend yield and capital gain. An example derived from the book of Brealey and Mayears (1998) Pg-68 is taken in to the consideration to make it more clear. According to them "if current price of share is P_o that the expected price at the end of the year is P_1 and that the expected dividend per share is div_1. The rate of return that investors expected from this share over the next year is defined as the expected dividend per share (D_1) plus the expected price appreciation per share (P_1-P_0), all dividends by the beginning price (P_0) which can be shown as follows:

$$\text{Expected Return } (\overline{R}) \text{ X} \frac{P_1 \text{ Z} P_0 \text{ } \Gamma D_1}{P_0}$$

The equation defined the single period return for a share of common stock

where,

P_o = Beginning stock price

P_1 = Ending stock price

D_1 = Cash dividend for firm

"The return from an investment is measured the total gain or loss experienced on behalf of owner saver a given period of time. It is a company started as the change in value plus any cash distribution expressed as percentage of the beginning of period investment value."[8]

2.1.4 Holding Period Return (HPR)

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

$$\text{Holding period Return (nPR)} = \frac{EP - BP + D_1}{BP}$$

Where,

HPR = Holding period return

EP = Ending price of stock in year 1

BP = Beginning price of stock in year 1

D_1 = Dividend received in year 1

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

“Holding period return (HPR) measures mention above is useful with an investment horizon of one year or loss. For longer period it is no better to calculate rate of return as investment yield. The yield calculation is present value based and this considers the time value of money.”

Holding period return are often calculated for periods other than one year for this reason the length of the holding period must always be indicated for the specific HPR. Many HPR owner periods shorter or

longer than one year are annualized. In general if the length of the holding period is not specified it is assumed to be one year.

2.1.5 Expected Rate of Return

Most of the investment decision is made for future events. Hence it is necessary to predict the future returns than the past return. But future is always uncertain for common stockholders. Therefore it leads to find the expected rate of return. The expected rate of return on a security is sum of the products of possible rate of return and their probabilities.

Thus,

$$\text{Expected Return } (\overline{R}) \text{ X} \frac{R_1P_1 \text{ Γ } R_2P_2 \text{ Γ } \ldots\ldots\ldots \text{Z} R_nP_n}{P_0}$$

$$\text{X} \quad t^n \text{ X1} R_tP_t$$

Where,

R_t = rate of return for the t^{th} possibility

P_t = Probabilities of that returns accruing

n = No. of possibilities

The above return is calculated is based on future outcomes or events. However, predicting the future outcomes is a difficult task. If we assume that he future is a proxy of past, that the past event will not change and hence the profit, investment and the market factors than we can calculated expected return or factors than we can calculated expected return or arithmetic average. Expected rate of return based on the historical data can be calculated as follows:

$$\text{Expected Rate of Return } (\overline{R}) \text{ X} \frac{R_j}{n}$$

where,

R_j = Sum of the return of stock j

n = No. of years that the return are taken

2.1.6 Risk on Common Stock

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

Investment on common stock is a risky investment. So uncertainties of return on common stock are the fact of life to common stockholders. Many investors consider risk as a chance of occurring some unfavorable event of danger of losing some value. In financial management, the uncertainty of cash flow is transferred into a mathematical value. The uncertainty is transferred into a mathematical value by calculating the expected value of all possible uncertain outcomes. The risk is measured by using standard deviation on the expected value of uncertain outcomes. Most investors know that here there is no free lunch i.e. the return you can expect is a function of the risk you take. Those investors who can tolerance higher level of risky should be rewarded with high value of returns. Intelligent investigating involves combining investment alternatives in a portfolio that offers a fair return for the risk you are willing to assume.

Uncertainty and risk are treated separately in financial analysis. Risk is unlooked and unwanted event in the future. Someone has said that risk was sugar and salt of life “Instated of measuring risk the probability of a no. of different possible outcomes, the measure of should some how estimates the extent to which the actual outcomes likely to diverge from the expected outcomes, standard deviation is a measure that does this

because it is an estimate of likely divergence of actual return from an expected return."[7]

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

Investment risk is related the probability of earning a return less than the expected return the greater the chance of low or negative return the riskier the investment. However we can define risk more precisely and it is useful to do so.

2.1.6.1 The Range

Range is defined as the maximum value less the minimum value. The risk on return of common stock can be measured by range.

[Range = best possible rate of return – worse possible rate of return.]

"The range (maximum return- minimum return) is known as one of the traditional way of measuring risk. It is simply shows the difference between the best possible return and the worst possible return best does not provide information about the different of the rate of return between the extremes."[8]

2.1.6.2 Standard Deviation

Standard Deviation is statistical measures of the variability of different aground its mean. The standard deviation is the measurement of risk of the deviation of return from their mean value. The main advantage of standard deviation is that the uncertainties of the returns can be summarized in to single easily calculated number. On the other hand, the main disadvantages of standard deviation are that it considers

possible returns above the expected value to be as risky as return below the expected value. Standard Deviation is also known as root mean square deviation for the reason that is the square root of the mean of the square deviation from the expected return. The standard deviation measures the absolute variability of a distribution the greater the standard deviation of the values from their mean. Standard deviation measure the degree of risk of common stock. Since, risk is variability of return. Risk is measured by examining the tightness of the probability distribution, associated with the possible outcomes.

"Probability distribution is a set of possible values that a random variable can assume and their associated probabilities of occurrence."[9]

Normally, the width of the probability distribution indicates the amount of scatter ness or variability of the possible event. The higher the probability distribution of the expected return, the less is variability of return. Thus the small risk associated with the investment will occurs. The risk and standard deviation is denoted by (Ω) which given by:-

$$¢ X\sqrt{\sum_{tX1}^{n} (R_j Z\overline{R}_i)^2 P_i}$$

Where,

Ω = Standard Deviation

R_j = Return for the j^{th} probabilities

$\overline{R_j}$ = Expected rate of return

P_j = Probability of occurrence of expected return

For historical return, the standard deviation is calculated by simply taking the deviation of return from the mean return the ex-post returns are:-

$$¢ X \sqrt{\frac{\sum_{tX1}^{n} (R_j Z \overline{R}_i)^2}{n Z 1}}$$

where,

N = No. of historical return.

In summary, standard deviation is the weighted average deviation from the expected value and its given as idea of how for above or below expected value and the actual value likely to be. It is a statistical tool for measuring risk which contains both systematic and unsystematic risk.

2.1.6.3 Coefficient of Variation

Coefficient of variation is defined as the standard deviation divided by the mean of expected return. It is used to standardize the risk per unit of return i.e. measure the risk per rupee.

If a choice must be made between two investments which have a some expected rate of return but different standard deviation, must people would choose the one with the lower standard deviation and therefore the lower risk. Similarly, given a choice between two investment with the same risk (standard deviation) but different expected return, investors would generally prefer the investment with the higher expected return. To the most people, this is common sense – return is "good" risk is "bad" and consequently, investors want as much and as title risk as possible. But how do we choose between two investment s when one has the higher expected return but the other has lower standard deviation. To help answer this questions, we use another measure of risk, the coefficient of variation, which is the standard deviation divided by the expected return.

$$\text{Coefficient of variation } X \frac{¢}{\overline{R}}$$

"Standard deviation can sometimes be misleading in comparing the risk and uncertainty surrounding alternatives of they differ in size. To adjust for the size or scale, problem the standard deviation can be divided by the expected return to compute the coefficient of variation (C.V.). Thus the C.V. is a measure of risk per unit of expected return. The larger the C.V. the larger the relative risk of the management."[10]

The coefficient of variation is generally computed only for data that are non-negative. The C.V. measure per unit risk in percentage of an asset in the financial analysis but when there is negative expected return is that case C.V. could come negative value. Negative value of C.V. could not measure per unit of risk.

2.1.6.4 Co-Variance between Rate of Return of two stocks (Cov_{AB})

The co-variance between rate of return of two stocks shows that how the rate of return of one stock change due to change in rate in return of another stock. The positive co-variance indicates that the direction of change in rate of return of two stocks are same. If the rate of return of one stock increase, the rate of return of another stock also increase and vice-versa.

$$COV_{AB} = \sum (R_A - \bar{R}_A)(R_B - \bar{R}_B) P'$$

where,

COV_{AB}	=	Co-variance between stock A & stock B
$\bar{R}A$	=	Return of stock A
$\bar{R}A$	=	Expected return of stock A
$\bar{R}B$	=	Return of stock B
$\bar{R}B$	=	Expected return of stock B

For the historical return the co-variance is calculated as follows:

$$COV_{AB} X \frac{\left(R_A - \overline{R}_A\right)\left(R_B - \overline{R}_B\right)}{N-1}$$

2.1.6.5 Correlation Coefficient between Rates of Return of two stocks (r)

Correlation coefficient doesn't measure the enough of change. It measures direction of change. Correlation coefficient shows that what is the impact in the rate of return of one stock due to the change in rate of return of another stock. Correlation must lies between 1.

Positive Correlation

Positive correlation shows as the rate of return of one stock increases, the rate of return of another stock also increases.

Negative Correlation

The negative correlation shows opposite charge in rate of return of two stocks. As the rate of return of one stock decreases, rate of return of another stock increases.

Perfectly Positive correlation ($r_{AB} = +1$)

The ratio of change in one variables and the ratio in change if another variable are equal but opposite direction, the correlation is perfectly negative.

$$r_{AB} X \frac{COV_{AB}}{¢_A - ¢_B}$$

where,

r_{AB} = Correlation between stock A & B.

2.2 Portfolio Theory

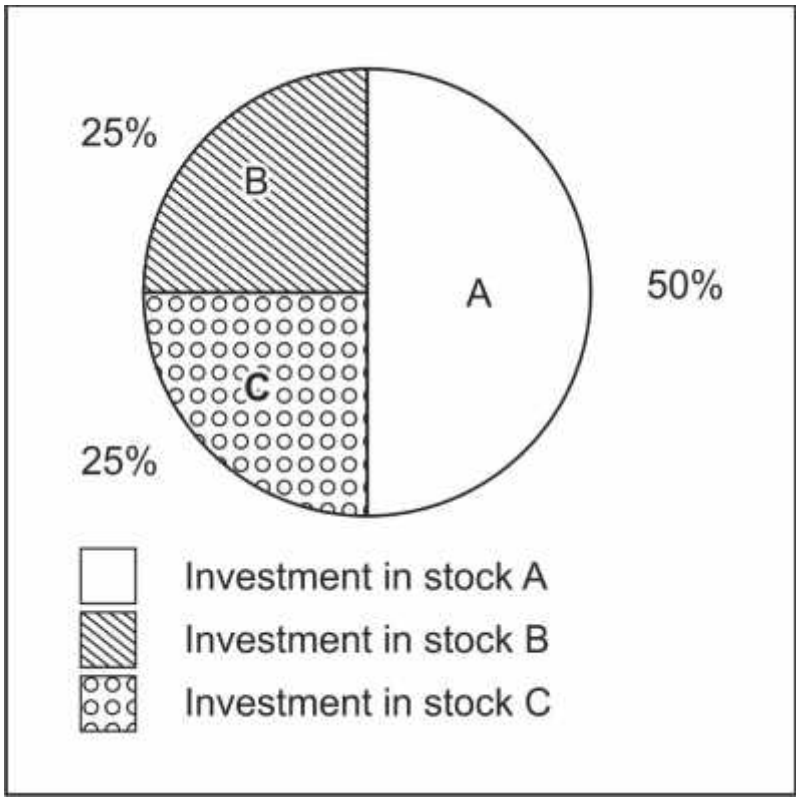
Portfolio is a bundle or combination of individual assets of securities. In other words "the portfolio is the holding of more than two securities and

investment in financial assets. i.e. bond, stock" portfolio is also known as combination or merger, portfolio management is related to the efficient investment in financial assets. Portfolio return is simply the weighted average of expected return of individual Securities making portfolio.

Investing all the funds in to a single assets or single stock is risky. If the company is bankrupt the whole investment becomes worthless. To minimize the risk the investment should be done in more than one asset. Because it there is no return from the one asset there is chance that the investor may have return from another assets. The portfolio theory explains that for the minimization of risk the investor should include more than one assets in his portfolio. A portfolio is a set of investment opportunity.

Fig 2.1

Total investment Rs 1000000



In the above examples the portfolio of the investor includes three assets. He has invest Rs 50000 in stock A, Rs 25000 in stock B and Rs 25000 in stock C. The main zest of the portfolio theory is “DO NOT PUT ALL EGGS IN ONE BASKET”.

The basic assumption of portfolio analysis is that most investor dislikes risk. Also most investors would prefer higher return to low risk. However, it is possible to reduce risk without reducing expected returns. It follows that investors will attempted to do this. It will be assumed that s.d. of the rate of return form a portfolio of securities is a reasonable measure of the portfolio risk. Thus there is an incentive to use diversification to reduce the s.d. of portfolio.

The base of portfolio is a well diversification efforts to spread and minimum risk take the from diversification. However it is always difficult to find right kind of diversification and the right reason. There are three types of diversification technique before the marketwise diversification technique come in to scenario. One is simple diversification second is spirituous diversifications & third is diversification across industries.

Markowitz diversification in the combining of assets, which are less perfectly positively correlated in order to reduce portfolio risk. It can sometimes reduce risk below the undiversifiable level. Markowitz diversification in more analytical than simple diversification and consider assets correlation on co-variance.

The lower correlation between assets, the more that Markowitz diversification will be able to reduce the portfolio risk. All the theories on portfolio are now based on the Markowitz diversification theory.

Especially portfolio theory holds that all investors are risk adverse. This means that other things being equal all rational investors will avoid risk on held well diversified portfolio instead of investing their entire wealth in a single assets or security. “The objective of portfolio analysis is to

develop a portfolio that has the maximum returns at what ever level of risk the investors deems appropriate."[11]

2.2.1 Assumption of Portfolio Theory

Portfolio performance coincides without intuitive risk making. The assumption of portfolio theories follows:-

1. The investors are risk adverse. But there are some investors, who prefer risk to return. Risk seekers, risk averters and risk neutrals are various types of investors. If

   E(W)>U(W) - risk aversion i.e. if the expected wealth is greater then utility of wealth then it is known as risk aversion

   E(W)<U(W) – risk seeking i.e. if the expected return is less than utility of wealth than it is known as risk seeking.

   E(W)=U(W) – risk neutrality i.e. if the expected wealth is equal to utility of wealth than it is known as neutrality.

2. An investor makes investment (portfolio) decisions purely on the basis of risk and return of that assets or portfolio i.e. the utility function (or indifferent curve) of the investor is based on risk and return.

3. Investors adhere to the principle of dominance that means investors prefer the assets which has high return for any level of risk then which has low return. They prefer the assets which has low risk for any given level of return that the assets which has very high risk.

4. The risk from an assets or security is the variability of returns from the average value of return, which is the standard deviation or variance.

5. The risk from an assets or security is the expected return i.e. weighted average value returns, weight being the probability distribution return for the same period.

2.2.2 Return on Portfolio

The expected return on a portfolio $E(R_P)$ simply the weighted average of the expected return on the individual assets in the portfolio with the weighted being he fraction of the total portfolio invested in each assets. In other words, it is the weighted average return of individual securities which are combined in certain ratio in portfolio and weights being the proportion invested in individual securities. The rate of return to our portfolio, in any given period of time, is weighted average of rate of return that is being produced by the securities in the portfolio, where are waiting by the fraction of our money that we are investing in security in the portfolio. These fractions are also called portfolio weights.

The expected return of a portfolio is simply a weighted average of the expected return of securities comprising that portfolio. The weights are the proportions of total funds invested in each security and the sum of weights equal to 100%. The formula for calculating the return on portfolio is:-

$$\overline{R_P} \; X \underset{tX1}{\overset{n}{} } W_j \overline{R}_j$$

Where,

N = Total no of different securities in the portfolio for the investment of two assets.

W_j = Proportion or weight of total funds invested in security j

$\overline{R_j}$ = Expected return for security for security j

For investment of two assets the formula can be derived as :-

$$\bar{R}_P \; X W_A \bar{R}_A \; \Gamma W_B \bar{R}_B \; \Gamma \ldots\ldots\ldots\ldots\ldots W_N . \bar{R}_N '$$

Where,

R_A = Expected return on security A

R_B = Expected return on security B

$\bar{R}_B$ = Weight on security A

$\bar{R}_A$ = Weight on security B

By investing in a portfolio, the investor can earn the average return of the securities comprising that portfolio and we also assumes the minimum risk on such portfolio.

"As portfolio weight can be either positive or negative. A positive weight means you are buying the security we also refer to this as taking along position in the security. The opposite of taking a long position is taking short position or selling short. In this case the portfolio weight is negative because the numerator is negative."[12]

2.2.3 Risk of Portfolio

Risk on portfolio is not weighted average risk. Securities considered in a portfolio are associated with each other. Therefore the portfolio risk also cannot for covariance between the returns of securities. Covariance is the product of the standard deviation of individual securities times their correlation coefficient. Risk on portfolio is a function of the proportion invested in the components the riskiness of the components and correlation of returns on the components securities. It is measured by standard deviation. It rather depends upon the co-movement (interactive risk) among the securities as well. This interactive risk is measured by covariance which is relative measurement. The correlation is statistical

measures of degree to which to variables such as securities return more together.

$$¢_P \text{ X}\sqrt{\quad \frac{n}{d} i \quad R_j W_j W_A COV_{AB}}$$

or,

$$¢_P \text{ X}\sqrt{W_A{}^2 .¢_A{}^2 \text{ Γ} W_B{}^2 .¢_B{}^2 \text{ Γ } 2W_A .. W_B .COV_{AB}}$$

or,

$$¢_P \text{ X}\sqrt{W_A{}^2 .¢_A{}^2 \text{ Γ} W_B{}^2 .¢_B{}^2 \text{ Γ } 2W_A .W_B .¢_A .¢_B .R_{AB}}$$

where,

 = S.D. of portfolio return

W_A = proportion of total fund invest in stock A.

W_B = proportion of total fund invest in stock B.

$¢_A$ = S.D. of stock A

$¢_B$ = S.D. of stock B

r_{AB} = Correlation between stock A & B.

COV_{AB} = Covariance of the return between stock A & B.

$$COV_{AB} \text{ X} ¢_A .¢_B .r_{AB}$$

$$r_{AB} \text{ X} \frac{COV_{AB}}{¢_A \text{ Z} ¢_B}$$

The correlation coefficient which is significant in portfolio contraction is standardized statistical measure of the liner relationship between two variables. It ranges from -1 to +1 i.e. perfect negative correlation. The risk can be diversified of the correlation between securities is negative.

2.2.4 The Efficient Frontier

The fact that the expected return and S.D. of a given portfolio on securities can be computed from the equation as,

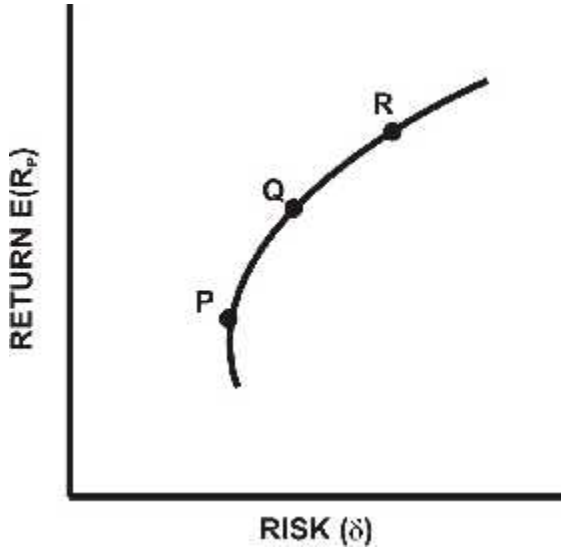
$$E(R_P) \text{ X } \sum_{t\text{X}1}^{n} W_{ij}(R_{ij})$$

And,

$$¢_{P^2} \text{ X } \sum_{t\text{X}1}^{n} W_i^2 ¢_i^{\ 2} \Gamma W_j^{\ 2} ¢_j^{\ 2} \Gamma 2W_i W_j P_{ij} ¢_i ¢_j$$

Does not answer the equation of which securities should be held and in what proportions. There is an infinite no. of possible portfolios that can be formed so long as there at least two securities because the total investment can be allocated among in any of an infinity of ways. However the set of probability can be through of in general terms, assuming many securities.

Fig 2.2



Suppose that expected return and S.D. of possible portfolios were plotted as in figure above. We may observe that portfolio ‘P’ has

minimum risk. Portfolio P has low risk and low return than Portfolio Q that has high risk and high return. Portfolio R has high risk and high return as compared to portfolio Q. Thus, Portfolio Q dominated Portfolio R. A risk adverse investor will prefer a portfolio with highest expected return for a given level of risk or prefer a portfolio with a lowest level of risk for a given level of expected return. In the portfolio theory, this is referred to as the principles of dominance and the portfolio which has the highest expected return for a given level of risk is called efficient portfolio. "An efficient portfolio is the one of that offers the largest return compatible with a specified degree of risk or which minimizes the risk accompanying a sought for level of return."[13]

In the above figure, both portfolio P and R is the efficient frontier and represents the focus of all portfolios, which have the highest return for a given level of risk. All level of portfolios, which lie outside the efficient frontier are efficient frontier.

It may be observe that in above figure both portfolio P and Q are equally efficient portfolio. Portfolio P has low risk and low return, while Portfolio Q has high risk and high return, which portfolio investor will choose will depends on his risk return preference.

Thus efficient frontier is a curve in which the efficient portfolios lie. It indicates that the portfolio which lies in the efficient frontier curve, is more efficient that portfolio, which lies below the curve. Because of lack of perfectly positive correlation the efficient frontier is concave.

2.2.5 Systematic and Unsystematic Risk

Any type of business, whether it is large or small, suffers risks because investment is a part of economics and the economical cycle changes frequently when the market is bullish there is low risk and when it starts declining i.e. bearish there may be high risk. The total risk associated with the investment can be classified as systematic and unsystematic risk.

Systematic risk is the portion of the total risk of an individual security caused by market factors that simultaneous affects the price of all securities. It cannot be diversified away. It is also called market risk or unavoidable risk or un-diversifiable or beta risk. It stems from factors which systematically affect all firms, such as war, recession, high interest rates, depressions and long term changes in consumption in the economy.

Mathematically the systematic risk (beta) is measured as the covariance of the stock returns with the market returns expressed per unit of market variance as follows:

Beta Coefficient (B_i) = $\frac{CoV(r_m \, Z r_j)}{¢m^2}$

$B_i \, X \frac{r_{im} \, | ¢_i \, | ¢_m}{¢m^2}$

Where,

COV ($r_m r_j$) = Covariance between the return of security i and market

$¢m^2$ = Variance of market return

r_{im} = Correlation between the returns of security i and market

Unsystematic risk is the portion of the total risk that can be diversified away. It is also called diversified risk or avoidable risk or company specific risk or non market risk. This type of risk differs from one company to another. It is called by events particular to the firms. For example, labor strikes, management errors, invention, advertising companies, shifts in consumer taste and law suits etc. This type of risk can be eliminated through efficient diversified portfolio. This unsystematic risk refers to the risk related only to the individual firm.

Investors can expect to be compensated for bearing the systematic risk. They should not expect the market to provide any extra compensation for bearing avoidable risk or unsystematic risk is:

[Total risk ∫¢ A = Systematic risk (B) + unsystematic risk]

where,

Systematic risk = $fr_{im}.¢_i A$

Unsystematic risk = $¢_i (1 Z r_{im})$

…Total risk (¢) = $r_{im}.¢_i \Gamma ¢_i (1 Z r_{im})$

The following figure shows the systematic B unsystematic risk clearly.

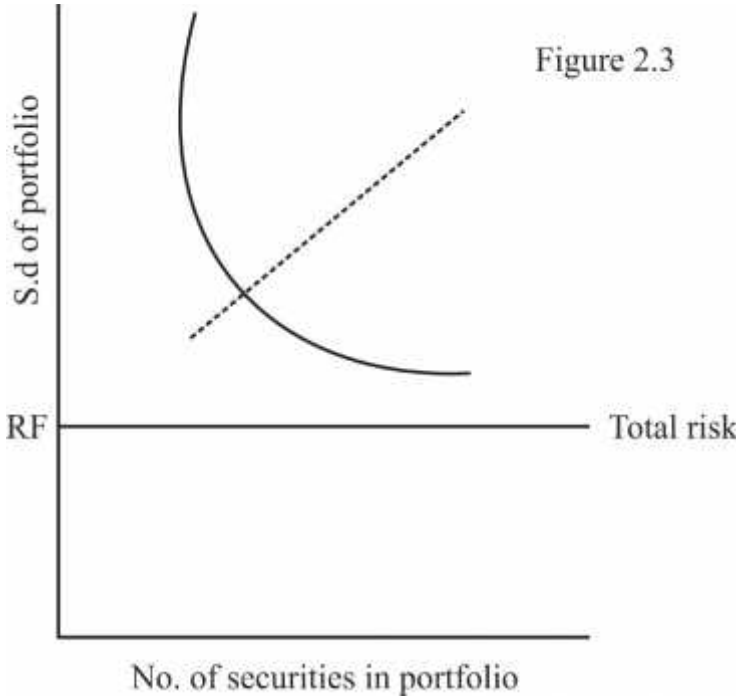


Figure 2.3

As shown in the 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 fifteen securities and in India, it is forty.

The differences between systematic and unsystematic risk are as follows:

Systematic Risk	Unsystematic Risk
1. Systematic risk is market related risk. It is also called un-diversifiable risk. For eg. Inflation, intonate, war etc.	1. Unsystematic risk is non market related risk. It is also called company specific risk or diversifiable risk. For eg: Winning a new contract an industrial dispute and the discover of new technology, labor strike.
2. The risk affects all firms in the market.	2. It is inherent in individuals companies or projects.
3. This portion of total risk is non-diversifiable and cannot be reduced by diversification.	3. This portion of total risk is diversifiable and it is possible to reduce or eliminate through diversification of investment.
4. The systematic risks are warded in the form of risk premium.	4. The unsystematic risk is not rewarded because it can be reduced to zero.

2.2.6 Capital Assets Pricing Model (CAPM)

The CAPM was developed by Sharpe and Linter in 1960. The model explains the relationship between the expected return and unavoidable risk of security. The greater return is expected by the investor from that security. The relevant risk for an individual asset is systematic risk because non market risk can be eliminated by diversification. The relationship between an assets return and its systematic risk can be expressed by the CAPM.

CAPM is the model that describes the relationship between risk and expected return. It explains the behavior of a security price. It is also describes bow the price and interest rate on risky financial assets are determined in the capital market. In this model a security return is the risk free plus a premium based on the systematic risk of the security, where the risk is measured by the beta coefficient. The CAPM is an equilibrium model for measuring the risk return trade off assets including both efficient and inefficient portfolios. CAPM suggests that in equilibrium market, every security available in the market is priced and they provide risk adjusted rate of return. CAPM was developed to explain the behavior of security prices and provide a mechanism where by investors could assess the impact of proposed security investment on their overall portfolio risk and return. It is well known that objective of firm and managers are multidimensional and that there will be a reluctance to ignore risk because it does not affect the well diversified investor. Thus, unsystematic risk can’t be ignored by the management that includes among its objectives the continuity of existence of the firm.

Harry M. Markowitz laid down the foundation of modern portfolio theory in 1952. It suggests that investment decision should base on the total risk and price of assets showed also be determined on the basis of total risk. But the CAPM suggest that investor can create a portfolio of assets that will eliminates virtually all diversifiable risk the only relevant risk is non diversifiable risk. . Therefore the investment decision and pricing of assets should be based on the diversifiable risk. The CAPM further suggest that price of capital assets should determined in way to compensate the systematic risk. Based on the behavior of risk adverse investors, there is an implied equilibrium relationship between risk and expected return for each security. In market equilibrium a compensation for systematic risk is provided to expected return. CAPM is based on the following number of assumption. They are

- All investors on a single holding period and they seek to maximize the expected utility of their wealth by closing among alternative portfolios on the basis of each portfolio is expected return and standard deviation.
- Al investor can borrowed and lend an unlimited amount at a given risk free rate of interest and there are no restrictions on short sales of any assets.
- All assets are perfectly divisible and perfectly liquid.
- There are no transaction cost
- There are no taxes.
- All investors are price taker (that is all investor assumes that heir own buying and savings activity will not affect stock prices.
- All investors have identical estimates of the expected return variances and c0-variance among all assets that is investors have homogeneous expectation:

The equation of CAPM is:

$E(R_j) = R_j + [E(R_m) - R_j]\beta_j$

Where,

R_j = required rate of return on stock j

R_m = expected rate of return on market portfolio

R_j = risk free rate of return

β_j = beta coefficient of stick j

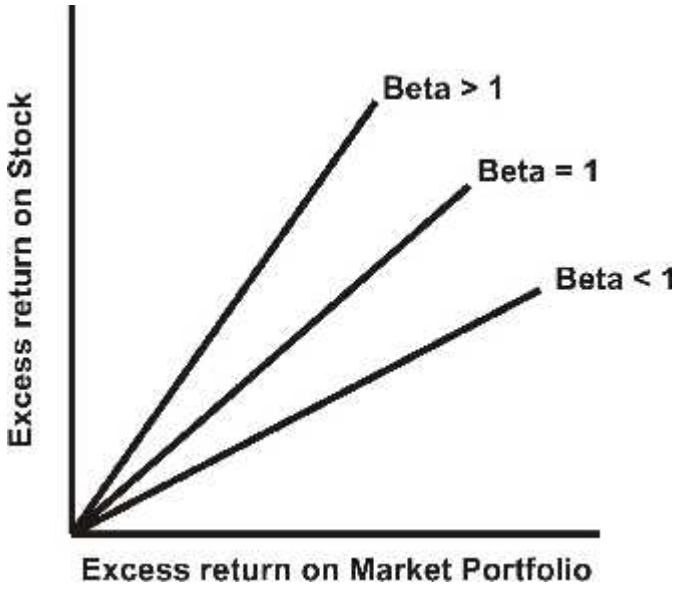
2.2.7 Beta

The measure with which we are concerned and most important for our purpose is beta. The beta is simply the slope of the characteristics line. It depicts the sensitivity of the security excess return to that of market portfolio. If the slope is 1, it means that excess return for the stocks vary proportionally with excess return for the portfolio. In other words, the stock has the same unavoidable or systematic risk as the market as a whole. A slope of steeper than mean that the stock excess returns varies more than proportionally with excess return of the market portfolio. It has more systematic risk than the market as a whole. These types of stocks are often called an “aggressive” investment, a slope of less than means that the stock has unavoidable or systematic risk than does the market as a whole. This type of stocks is often called a ‘defensive’ investment.

Beta is measure of percentage change in security return as a result of one percentage change in excess market return. It is an index of systematic risk measuring the sensitivity of stock returns to changes in returns on the market portfolio. The beta of assets is its systematic risk i.e. $COV_{jm}/\int_m$. This beta is not a measure of the systematic risk of security or a portfolio. It is more like of index of systematic risk. The only difference in beta measurement and systematic risk measurement is the devisor $\int_{m.}$ The beta of a portfolio is simple a weighted average of the individual stock beta in the portfolio.

In the figure 2.4 the three type of characteristics line represent the different types of beta. The characteristics line can be drawn with the help of various period historical return of assets j, risk free return and market rate of return. Beta is simply the slope i.e. $\Delta Y/\Delta X$ of the characteristic line, If B=1 i.e. beta is one, it means that excess return for the stock (ΔY) vary proportionally with excess return for the stock (ΔX) saying another way, if Beta =1 the stock has the same systematic risk as the market as a whole.

Fig 2.4



B>1 = Risky

B<1 = Less risky than market portfolio

B=1 = As much as risky as market portfolio

In such situation, if market goes up and provides an excess return of ten percent for a period the stock excess return would be expected an average ten percent as well. A slope stepper is more than one (i.e. B>1)means the excess returns varies more than proportionally with the excess returns of the market portfolio i.e. it has more systematic risk than the market. This type of market is called an aggressive investment. A slope is less than one (i.e. B<1) means that the stock excess return varies less than proportionally with the excess return of the market portfolio. This type of stock is called defensive investment.

2.2.8 Security Market Line

Security market line is graphical representation of the CAPM. It shows relationship between risk and required rate of return. “SML is the line that shows the relationship between risk as measured by the beta and the req. rate of return for individual securities.”[14] The SML equation can be used to find the required rate of return on stock j. When setting the required rate of return on an investment, an investor must consider the real rate of return, expected inflation and risk premium. The SML defines the risk return relationship for individual assets. The relevant risk for and individual risk for and individual assets is systematic risk (or market risk) because non market risk can be eliminated by portfolio investment.

The SML clearly shows that returns are increasing function, in fact a line only increasing function of risk. The line shows that if risk increases, the return function also increases proportionally. This risk affecting the return is the market risk. The SML describes that the investors can’t get compensation for unsystematic risk, the systematic risk is only compensated representing by beta of security.

The equation for the SML is

$$[E f R_J A \mathbf{R}_F \Gamma(\overline{R}_M \, \mathbf{Z} R_F) R_J]$$

where,

$E(R_j)$ = The expected return for assets

R_F = Risk free rate of return

$\overline{R}_M$ = Expected return of market portfolio

$_j$ = Beta coefficient for assets

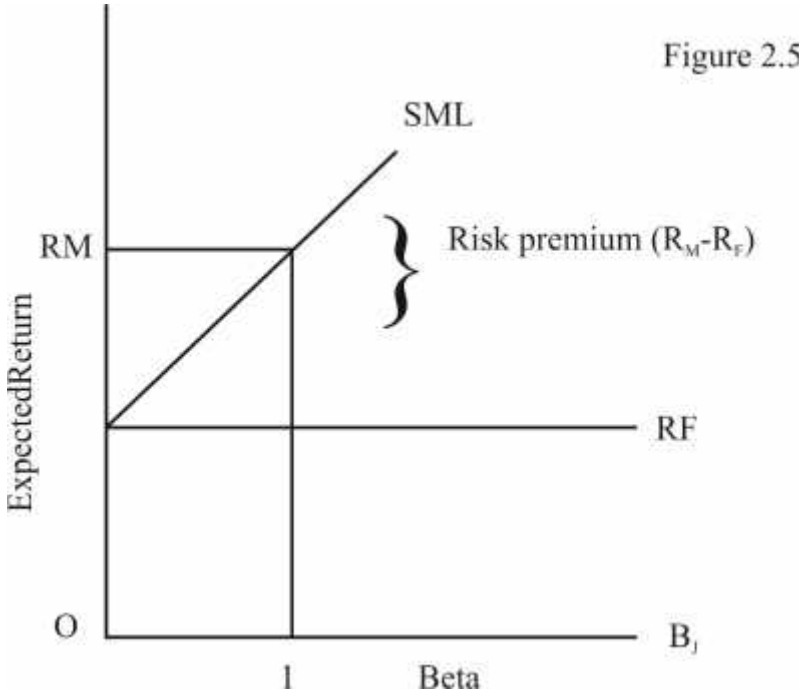


Figure 2.5

In the figure, the expected one year return is shown is Y axis. Beta an index of systematic risk is shown in X-axis. At zero risk the SML has intercept on the vertical axis equal to the risk free rate. The return is presented even in the situation of zero risk for the compensation to the time value of money. As risk increases the required rate of return increases in the manner as shown in figure.

If the stocks are under priced/undervalued, they lie above the SML and if they are overpriced/overvalued, they lie below the SML. If the expected return of stock is more than required rate of return, the stock is called under priced and vice-versa.

2.3 Review from Related Studies

The objective of this section is to show how the relationship between risk and return is defined, described and measured by different studies. In the section we will review the previous study which is related to this topic which is published in journals thesis and independents.

2.3.1 Review from journals

There are not sufficient or huge books and research based on journals in the field of Nepalese context. It means there are very few books and research based on journals field of finance in Nepalese context. Almost no articles about the risk and return analysis on common stock investment can be found. Nowadays information highway or the internet has become the most easily accessible medium to get information in to account to review the risk and return topic.

There is an article “The theoretical relationship between systematic risk and financial variables” by Robert G. Bownna. The purpose of the study was examining the relationship between dividend and systematic risk and also size and growth of the firm and systematic risk. This study shows that there is there is a theoretical relationship between systematic risk and firms accounting beta. This is not only the function of coming variability dividends and policies but also size and growth of firm.

In August 1999, an article entitled “local returns factors and turnover is emerging stock market” by K Ornect Rouwenhorust published in the journal of finance by American finance association has been reviewed here “There is growing empirical evidence that multiple factors are cross sectionally correlated with average return than large bang (1981) fama frence (1992/1996) and Lokenishock Shleifer an Vishny (1994). Show that stock with book to market (B/M), earning to price (E/P) and cash flows to price (C/P) out perform growth stock with low B/M, E/P and C/P. Moreover, stocks with high return over than past three months to one year continue to out perform stock with poor prior performance (Jagedees and titman 1993). The evidence that beta is also compensated for in average returns in weaker (Fama and frence 1992), Kothari, Shaken and Stone (1995). The paper examines the sources of return variation in emerging stock markets. From the perspective of collecting independent samples, emerging market countries are particularly interesting because of their relative isolation from the capital market of other countries

compared to developed markets, the correlation between most emerging markets and stock markets has historically been low (1995) find that despite the resent trend toward abolition of these restriction and the substantial inflows of foreign capital market have actually become more segmented from word capital of emerging economics are held by local investors who are likely to evaluate their portfolio in light of local market condition.

In the above description Rouwenhorst tries to answer the two set of questions. “The first set of three question concern the existence of expected premium.(1) Do the factors that explains expected return differences in developed equity market also describe the cross section of expected return of emerging market forms?(2) Are the returns factors in emerging market primarily local or they have global components as well? (3) How does the emerging market evidence contribute to the international evidence from developed markets that similar return factors are present in market around the world?

The second set of question of the paper includes (1) Is there a cross sectional relation between liquidity and average returns in emerging market? (2) Are the return factors in emerging market cross sectional correlated with liquidity?

About the data Rouwenhorst started that as of April 1997 the emerging market data berserk (EMDB) of IFC contains data on more than 2200 firm from 3100 emerging market but not all are included in the sample. Eleven countries are excluded because of in sufficient return histories, which leave 1705 firm in the 20 countries that IFC tracks for at least seven years. For some firms monthly closing process and dividends dating back to 1975.

There is little evidence that the correlation between the local factors portfolios have increases, which suggests that the factors responsible for increase of the emerging market countries correlation are separate from

those that drive the difference between expected return with in these markets. A Bayesian analysis of premiums in developed and emerging markets show that unless one has strong prior beliefs to the country, the empirical evidence favors the hypothesis that size, momentum and value strategies are compensated for in expected return around the world. Finally the paper documents the relationship between expected returns and share turnover examines the turnover characteristics of local return factors portfolio. There is no evidence of relation between expected returns and turnover in emerging markets. However, beta, size momentum and value are positively cross sectional correlated with turnover in emerging markets. Thus that the return premiums don't simply reflects a compensation for liquidity.

This study has been analyzed the return factors in worldwide stocks and doesn't consider the analysis of single security. However, it concentrated in the various emerging stock market. Hence, this article contributes in the area of risk and return analysis in common stock.

2.3.2 Review from Nepalese Studies

Very independent studies can be found in the topic of finance. However the available independent studies which are related to the Nepalese stock market and about shareholders democracy, veins expressed by different person in their article regarding risk and return of common stock of commercial banks are represented of reviewed here in the topic

Mr. R.S. Pradhan, in 1993 carried out a study entitled "Stock market behavior on small capital market. A case study in Nepal. "This study was based on data for seventeen enterprises form 1986 to 1990. One of the major objectives, which are related to this study, was to assess to stock market behavior in Nepal. Mr. Pradhan has given following findings:

- DPS and MPS is positively correlated

- Higher the earning on stock, larger the ratio of dividend per share to MPS.
- There are positive relationship between dividend payout and liquidity.

A study concluded by Prof. Dr. Radhe shyam Pradhan and Mr. Surya Blampaki in the topic of fundamental of stock return in Nepal in 2004 is taken in to consideration. His study is helpful to analyze the stock return from different aspects.

"This study is based as period cross sectional data of 40 listed companies in NEPSE Ltd. And traded in the stock market. The study examines if dividends yield, capital gain yield, and total yield are related to earning yield, book to market ratio and cash flow yields.

Pradhan and Balampaki have summarized the following result:

- Earning yield and cash flow yield have significant positive impact on dividend yield and insignificant impacts on book to market value, where as size has negative impact on dividend yield. In the case of earning yield and cash floe yield. Cash flow yield has been found to be more information then earning yield.
- Capital gain yield is positive influents by earnings yield and size, where size has negative infused by book to market value and cash flow yield. Book to market value has found to be statistically strong in predicting capital gain yield.
- Total yield is positive determined by earning yield and size, where as the same is negatively determined by book to market value has been found to be more information than other variables.

Similarly, another study was carried out by Narayan Prasad Poudel in the topic of "Investing in shares in commercial Banks in Nepal. An assessment of risk and return elements" has come up with the conclusion that risk and return characteristic do not seem to be same for

all shares reviewed. Most of the shares fall under the category of defensive stocks.

The study of Yogendra Timilsina on “Capital market development and stock price behavior in Nepal” has come with the conclusion that the market price of shares depends on EPS as well as on DPS, but DPS is more price sensitive and it will have direct and immediate response in the market behavior market value of share computed on the basis of EPS are mean to the observed values. Therefore the observed market prices of equity shares revel that the stock market is not inconsistent.

Further health adds the relationship the ups and downs of stock market, those of economic variables. To put in his own wards, up wards swings in the economy would help to push up the market value of shares. On the other hands, the downward swings in the economy would help to push up the market value of shares.

2.3.3 Review form Thesis

Under this section on effort is being made to some research outcomes performed under the heading of risk and return analysis had been conducted as their for the partial fulfillment of master degree in Tribhuvan University which are reviewed here. This are some studies related to this topic such as study conducted by Mr. Durga Bhattarai in 2004 entitled “Risk and Return Analysis of common stock investment with special reference to commercial bank.” By Mr. Jeet Bdr. Sapkota in 2000 entitled “Risk and Return Analysis in common stock investment” are reviewed here.

The study conducted by Mr. Durga Bhattarai has included seven listed commercial banks with data from 1998/99 to 2002/03, the main objectives of the study was “Risk and Return analysis of common stock investment with special reference to commercial bank”. It plays vital role in the process of investment. The investor will invest in risky assets only when health is assured of adequate compensation for risk bearing.

On the basis of finding Mr. Bhattarai derived following conclusion:

- Price per share is determined by economic condition, policy of Govt. peace and political situation of nation.
- Investor can invest in such companies whose CV of return of common stock is longest.
- To minimize the risk, investor should invest their fund in various companies.
- The under priced common stock should be purchased and over priced stock should be sold.
- NEPSE should improved information technology and expand many branches in their main cities around country.
- Govt. should also monitor the activities of financial institution.

From the study of Mr. Bhattarai research, it can be said that the focus has given the analysis of risk and return in common stock investment. The study has not focused the view point of investor and concentrated on the companies and stock market. However this study has explored some dimension for further research in this subject.

Another study by Mr. Jeet Bdr. Sapkota in 2000 entitled "Risk and Return Analysis in common stock investment" is a very closely related to this study. Researcher's main objectives of the study are to analyze the risk and return of common stock in Nepalese stock market. This study is focused on the common stock of commercial banks.

Mr. Sapkota in the study has concluded that "common stock is the most risky security and lifeblood of stock market because of high expected return. Common stock attracts the more investor. Private common stock holders are passive owners of the company. But the private investors play a vital role in the economic development of nation by mobilizing the

dispersed capital remained in different from the society. As overall economy Nepalese stock market is emerging state. Its development is accelerating since the political change in 1990 effects the openers and liberalization in national economy. But the lack of information and poor knowledge, Nepalese private investor can not analyze the security as well market property (Sapkota, 2008)

Another thesis submitted by Mr. Yamnath Dahal in 2007 entitled risk and return analysis with reference to the listed commercial banks is also related to this study.

In this study health has taken listed commercial banks with date from 2004/05 to 2007/08. The main objectives of this study are to analysis the risk and return on common stock investment of Nepalese stock market and it is focused on common stock of commercial banks listed in NEPSE.

Hence, from the above reviews from journals, thesis and independent studies can be concluded that the Nepalese market is just growing up and all related sector, personnel, organizational, interested person and academic and have to work seriously for its development.

CHAPTER – III

RESEARCH METHODOLOGY

3.1 Introduction

The third chapter research methodology includes the study of methodological aspects. It may be defined as a systematic process that is adopted by the researcher in studying problems with certain objectives in view. In other words, research methodology describes the methods and process applied in the entry aspect of the study as focus of data gathering instrument and procedure data tabulating and processing and methods of analysis.

Research Methodology is one of the crucial aspects of the thesis writing. It is a systematic and scientific method of identifying problems, collecting facts and information tabulating and recording the data, setting, hypothesis, analyzing the fact and researching certain conclusion with view of finding answer to the problem.

The research methodology adopted in this study to accomplish the objectives of the study on risk and return analysis of four listed commercial banks in Nepal. Research can be conducted on the basis of primary and secondary data. Here in the study all the data are secondary data and observed data are analyze with using appropriate financial and statistical tools out comes are presented in simple way detailed research methods are described in following heading.

3.2 Research Design

Research Design is the plane structure and strategy of investigation conceived so as to obtain a number of research questions and control variance. The research design is the outline of a plan to test the hypothesis and should include all the procedure the follow. Basically the research design has two purposes. The first purpose is to answer the

research question and test the research hypothesis. The second purpose of research design is to control variance.

The research study attempt to analyze the position of risk and return of the selected commercial banks. For the analysis data are obtain form NEPSE website www.nepalstockexchange.com as research is based on historic data. It covers the five year data. The pattern of return and volatility are analyzed in the study. The trend of return of each commercial bank is also studied. More than that the relationship between mean return, standard deviation and C.V. are examined o find whether the relationship between these variables in the study is positive or negative. The rest of correlation and analysis of variance are also done in this study. Therefore, the research design used in the study is basically descriptive analytical in the nature.

3.3 Population and Sample

The term "population" is used in statistical denotes the aggregates from which the sample is to be taken and term "sample" is that part of the population which we select for the purpose of investigation for our regard as population. There are 32 commercial banks till the research work. Among them these four commercial banks are taken as example for the study. These are as follows:

- Nepal Investment Bank Limited (NIBL)
- Himalayan Bank Limited (HBL)
- Bank of Kathmandu Limited (BOKL)
- Nabil Bank Limited (NABIL)

3.4 Sources and Nature of Data

The study is mainly based upon the secondary data. The data relating to risk and return have been directly obtained from concerned banks. The supplementary data and information have been obtained from

unpublished official records of the concerned banks, booklets, journals, review report and related website. Financial reports of commercial banks are also collected. Besides, the secondary data have been acquired from various other sources like:

- Annual report of concerned commercial banks.
- Material published in paper and magazines
- Trading reports published by Nepal Stock Exchange Ltd.
- Other related books.

3.5 Data processing Procedure

The relevant data has collected from annual reports of the banks. Degree campus library, Biratnagar and internet search and put them in a sheet. Then data were entered in to the spreadsheet to work out the financial ratio and prepare necessary figures, according to the need and requirement of this study. For this purpose, gathered data have been processed using computer, programs like Microsoft excel and word.

3.6 Data Analysis Tools

The primary and secondary data collected from various sources leads to the logical conclusion, only if the appropriate tools and the techniques are adopted to analyze such data. The collected data is analyzed using statistical tools and financial tools. A brief explanation of the term and tools of analysis used in this study are as follows:

3.6.1 Dividend (D)

Dividend Policy involves the decision to payout earning vesus retaining tem for reinvestment on the firm. Any change in dividend policy has both favorable and unfavorable effects on the firm stock price. Higher the dividend means higher the immediate cash flows to investor which good but lower future growth which is bad. The dividend policy is

should be optimal which balances the opposing force and maximizes stock price. Management should try to maintain regular dividend for regular dividend the firm will have sufficient earnings management will set a lower dividend rate than firms with the same average earnings but less volatility. Management may also declare extra dividend in years when earnings are high and funds are available.

According to changing needs of corporations dividend is being distributed in several firms. They are as follows:

- **Cash Dividend:**

  Cash dividend is the dividend which is distributed to the shareholders in cash out of the earnings of the company when cash dividend is distributed both total assets and net worth of the company decreases as cash and earnings decreases. The market price of the share drops in most cases by the amount of cash dividend distributed.

- **Stock Dividend**

  A stock dividend occurs when the board of directors authorizes a distribution of common stock to existing shareholders. Stock dividend increases the no. of out-standings shares of the firms stock under the stock dividend stock holders receives additional share of the company in live of each dividend.

  There is no cash involved in stock dividend. Net worth remains unchanged and the no. of shares increases.

- **Stock Split**

  - ✓ No. of shares outstanding increased.
  - ✓ Participation value of stated value decreased.
  - ✓ The total net worth of the firm remain unchanged.

- ✓ The stock split does not involve any cash payment.

- **Reverse Split**
  - ✓ No. of shares outstanding decreased.
  - ✓ Participation value or stated value increased.
  - ✓ The total net worth of the firm remains unchanged.
  - ✓ The reverse split does not involve any cash payment only additional certificated representing new shares.

- **Stock Repurchase**
  - ✓ No. of shares outstanding increased.
  - ✓ Increasing the EPS and price of stock
  - ✓ Share price for repurchase or the equilibrium price is calculated from the following equation.

$$[\text{Repurchase Price } (P^*) = S \times PC / S\text{-}N]$$

where,

S = Total no. of share outstanding

P_C = Current market price per share

N = No. of shares to be purchased

$$\text{Dividend Per Share (DPS)} = \frac{\text{Total Amt of dividend}}{\text{No. of common stock outstanding}}$$

3.6.2 Earning Per Share (EPS)

Earning refers to the net income after tax of the company per share (EPS) is the result of net income after taxes dividend by outstanding no. of common stock. Symbolically, EPS can be expressed as follows:

$$\text{Earning Per Share (EPS)} = \frac{\text{Net Income after taxd}}{\text{No. of common stock outstanding}}$$

3.6.3 Market price of stock (MPS)

If the market prices of share of companies are followed there it can be found that there are three types of prices high. Low and closing price MPS is determined by the demand and supply force. For the analysis single is needed, so average price or closing price approaches can be used. Here in this study the closing price is taken as the market price of stock, which has specific time of span of one year the study has focused in annual basis. To get the real average, volume and price of each transaction in the whole year are essential which is tedious and impossible too, considering the data available and maintenance. Hence, the closing price is used the market price of stock, which has a specific fine span of once year and the study has focused in annual basis.

3.6.4 Holding Period Return and Common Stock Investment

Holding period rate of return is the sum of capital gain and dividend income. It is also called the combination of dividend income and change in market price of stock. The return is measured in terms of its and percentage. The single period return from the security is calculated as follows:

Symbolically,

Return = Capital gain + Dividend income / Interest

% of return = Total return / Initial Investment

$$\frac{R\ XD_t\ \Gamma(P_t - P_t - 1)}{P_{t-1}}$$

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

D_t = Cash dividend received at time t.

P_t = Price of stock at time t or ending price of stock.

P_{t-1} = Price of stock at time t-1 or beginning price of stock

3.6.5 Expected Rate of Return on Common Stock (R_j)

One the main aims of the study is to determine the expected return on the investment in common stock. Expected rate of return is average rate of return. The expected rate of return for any assets is the weighted average rate of return using probability of each rate of return as the weights. The expected rate of return is calculated by summing the products of the rates of returns and their respective probabilities.

Mathematically,

$$\text{Expected Return } \overline{R}_J \text{ X } t^n \text{ Z1} R_J . P_I'$$

R_j = Rate of return jth outcome / event

N = number of years that the return is taken.

P_i = probability of occurrence of 1^{th} outcomes / events

When historical returns are used the following formula is used to calculate an average return.

$$\text{Expected Return}(\overline{R}_J) \text{ X} \frac{R_J}{n}$$

3.6.6 Standard Deviation (S.D.)

Standard deviation is the measurement of dispersion of variables around mean value. It is a total risk of single assets. S.D. is a weighted average deviation from the expected value and it gives an idea of how far above or below the expected value the actual values is likely to be. The standard deviation and variance are equally acceptable and conceptually equivalent quantitative measure of an assets total risk. Higher the variance or S.D. Higher the total risk and vice-versa. The square root of

the variance of the rate of return is called standard deviation. It is denoted by “sigma” (). Standard Deviation is calculated as under:

When the historical data is used,

$$¢_J \text{ X} \sqrt{\frac{(R_J \text{ Z} \overline{R}_i)^2}{n \text{ Z} 1}}$$

Where, Probability distribution is used

$$¢_J \text{ X} \sqrt{\sum_{j\text{X}1}^{n} (R_j \text{ Z} R_i)^2 P_i}$$

P_i = Probability on stock j

R_j = Return on stock j

R_j = Expected return on stock j

n = no. of years

3.6.7 Coefficient of Variation (C.V.)

Coefficient of Variation is the standard deviation by the mean of expected return. It is used to standardize the risk per unit return. “The coefficient of variation is the relative measure of dispersion. Comparable across distribution, which is defined as the ratio of standard deviation to mean expressed in percentage.”[15] The coefficient of variation should be used to compare investment when both the standard deviation and expected values differ

$$CV \text{ X} \frac{¢_i}{R_i}$$

where,

CV_j = Coefficient of variation of stock j

A project with a low C.V. has less risk per rupee than a project with a high CV.

3.6.8 Correlation Coefficient (r_{ij})

The correlation coefficient is also measure of the relationship between two assets. Its value is limited between the range of +1 and -1. Correlation is the relative measurement of communication-moment of the return of the stocks correlation and covariance are related by the following equations

Correlation Coefficient P_{ij} X $\frac{COV_{ij}}{¢_i ¢_j}$

$Cov_{ij} = ΩΩp_{ij}$

where,

r_{ij} = Correlation coefficient between stock i and j

Cov_{ij} = Covariance between stock i and j

Ω = standard deviation of stock i

Ω = standard deviation of stock j

There are following various cases of correlation and risk condition:

Case-1 [Perfectly Positive correlation (r_{ij} = +1)]

Return on two perfectly positive correlated stocks would move up and down together and a portfolio of such stocks would be exactly as the individual stocks. Thus diversification does nothing to reduce risk of the portfolio consist of perfectly correlated stocks.

Case-2 [Perfectly Negative correlation (r_{ij} =-1)]

Return on two perfectly negative correlated stocks would move perfectly together but exactly opposite direction. In this condition risk

can be completely eliminated perfect negative correlation is almost never found in the real world.

Case-3 [No relation between returns (r_{ij} = 0)]

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

Case-4 [Intermediate risk (r_{ij} = + 0.5)]

Most stocks are positively correlation but no perfectly on average the return on two stocks would lie on the range of +0.4 and +0.75. Under such conditions combining stocks in to portfolio reduces risk but does not eliminate it completely.

3.6.9 Beta Coefficient (β)

It is a modern technique to measure systematic risk of on investment or is an index of systematic risk. It measures the sensitivity of a stock's return on the market portfolio.

Symbolically,

$$_{A}\ \mathrm{X}\frac{COV(R_A R_M)}{¢m^2}$$

Where,

β_A = Beta Coefficient of stock A

COV ($R_A R_M$) = Covariance bet$_n$ R_A and R_M.

Ωm^2 = Variance of market return

$$COV(R_A R_M)\ \mathrm{X}\frac{(R_A\ \mathrm{Z}\overline{R}_M)(R_M\ \mathrm{Z}\overline{R}_M)}{n\ \mathrm{Z}1}$$

Beta of stock A is its systematic risk i.e. $\frac{COV(R_A ZR_M)}{¢m}$ expressed in units of market risk (Ωm). Thus, beta is not a measure of systematic risk of a security or portfolio. It is more like an index of systematic risk. The only difference in beta measurement and systematic risk measurement is the devisor Ωm.

Beta coefficient may be used for ranking the systematic risk of different assets. If the beta is larger then the one, β>1, the assets is more volatile than the market and is called an aggressive assets. If the beta is less than one β<1, the assets is a defensive assets, it price fluctuations are less volatile than the market. Beta coefficient of market is always equal to one.

3.6.10 Portfolio Risk and Return

A portfolio is the combination of two or more securities or assets. It means making investment in more than one alternative at the same time. It is also called investment diversification or combination of investment. If whole fund is invested in a particular assets risk became higher. But if investment is made in more than one asset, risk became lower because profit from one area can compensate the loss on another asset.

Risk and Return of portfolio is determined as follows:

3.6.10.1 Portfolio return

While investing more than in one asset the created expected return is portfolio return. It depends an individual return rate of portfolio asses and the proportion of investment. So the expected return on portfolio may be defined as the weighted average of the expected return on the assets, which compromises the portfolio. The weighted on the assets which reflect the proportion of the portfolio or weighted involve in assets.

$\overline{R}_P = W_A.R_A+W_B.R_B+ \ldots\ldots\ldots..+W_n.R_n$

Where,

$\overline{R}_P$ = expected return on portfolio of stock A and stock B

W_A = weight of investment on stock A

W_B = weight of investment on stock B

R_A = Return on stock A

R_B = Return on stock B

3.6.10.2 Portfolio Risk

Portfolio risk means that risk which is created while investing in more than one asset all together. The portfolio is influenced by three elements. The portfolio is the individual risk of the assets involved in portfolio, the second is weighted of every assets and the third one is the communication-movement between the return of the invested assets. The risk created by the investment in fixed amount in two or more assets can be determined as follows:

$$¢_P \text{ X}\sqrt{¢_A{}^2 W_A{}^2 \Gamma ¢_B{}^2 W_B{}^2 \Gamma 2 W_A W_B COV_{AB}}$$

OR,

$$¢_P \text{ X}\sqrt{W_A{}^2 ¢_A{}^2 \Gamma W_B{}^2 ¢_B{}^2 \Gamma 2.W_A W_B.¢_A.¢_B.COV_{AB}}$$

Where,

| Ω_p = Portfolio of Standard Deviation

| $\Omega_A{}^2$ = Variance of assets A i.e. risk of assets A

| $\Omega_B{}^2$ = Variance of assets B i.e. risk of assets B

W_A = Weight of investment of stock A

W_B = Weight of investment of stock B

COV_{AB} = Covariance bet^{n} return of assets A and B

r_{AB} = Correlation coefficient between assets A and B

3.6.11 Minimum Variance Portfolio

The portfolio of which the risk is the lowest is minimum variance portfolio. It shows the percentage of fund to be involved in two stocks. So as to be the risk is the lowest. 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 portfolios the optimal weight to invest in stock A and B are calculated as follows:

$$W_B = \frac{\sigma_B^2 - COV_{AB}}{\sigma_A^2 + \sigma_B^2 - 2COV_{AB}}$$

or,

$$W_B = \frac{\sigma_B^2 - \sigma_A.\sigma_B.r_{AB}}{\sigma_B^2 + \sigma_A^2 - 2.\sigma_A.\sigma_B r_{AB}}$$

$\therefore W_B = 1 - W_A'$

where,

W_A = Optimal weight to invest in stock A.

W_B = Optimal weight to invest in stock B.

3.6.12 Market Return (R_M)

Market Return is independent variable of characteristic line. In the context of Nepalese financial market average return or market return can be found by using NEPSE index. Mathematically market return can be calculated as follows:

$$R_{Mt} = \frac{NI_t - NI_{t-1}}{NI_{t-1}} \times 100\%$$

Rm	=	return on market
NI_t	=	NEPSE index at the time t
NI_t-1	=	NEPSE index at the beginning time t

3.7 Limitation of the Methodology

Any problem can by solved by various ways. Research methodology is the systematic way to solve the research problem. In the way to solve the problem, there may be some limitation of the methodology used. Some limitations of the methodology used are described as follows:-

1. The sources of data are secondary and mainly collected from website of NEPSE. So, accuracy of methodology is based on the secondary data.
2. The study is based on historic figures to forecast the future i.e. the research design for this study is historic part may be the genesis for future but the past may not happen in the future in some manner.
3. The population is only 32 banks, which are listed in the NEPSE and the total no. of samples are only four listed commercial banks. So, the sample does not cover whole the industry.
4. The data analysis tools are based financial and statistical concepts. The values provided by such tools may be the approximation values only.

CHAPTER – IV

PRESENTATION AND ANALYSIS OF DATA

This part of this study includes presentation and analysis of those data which are collected from different sources. The data related to dividend for share market price of share of each bank and market as a whole i.e. NEPSE index of each sector with market are presented and their analysis and interpretation have been done. The main focus have been given to analysis the "Risk and Return" of a commercial banks in Nepal. The presentation and analysis of data includes organizing tabulating and analyzing financial and statistical result. Different tables and diagrams area drawn to understand the result easily.

4.1 Data Presentation and Analysis

This study has been focused on four listed commercial bank. The presentation and analysis of data has been made in order to commercial banks published by NEPSE Ltd. In the heading of "classification of listed comprise under the listing by law 2053 B.S." The position orders of the commercial banks are as follows:

1. Nepal Investment Bank Ltd. (NIBL)
2. Himalayan Bank Ltd. (HBL)
3. Bank of Kathmandu Ltd (BOK)
4. Nabil Bank Ltd. (NABIL)

4.1.1 Nepal Investment Bank Ltd. (NIBL)

4.1.1.1 Data

The market price per share (MPS) dividend per share (DPS) and Earning per share (EPS) of NIBL has shown on table no. 4.1 and year end market price movement has shown in diagram 4.1

Table 4.1

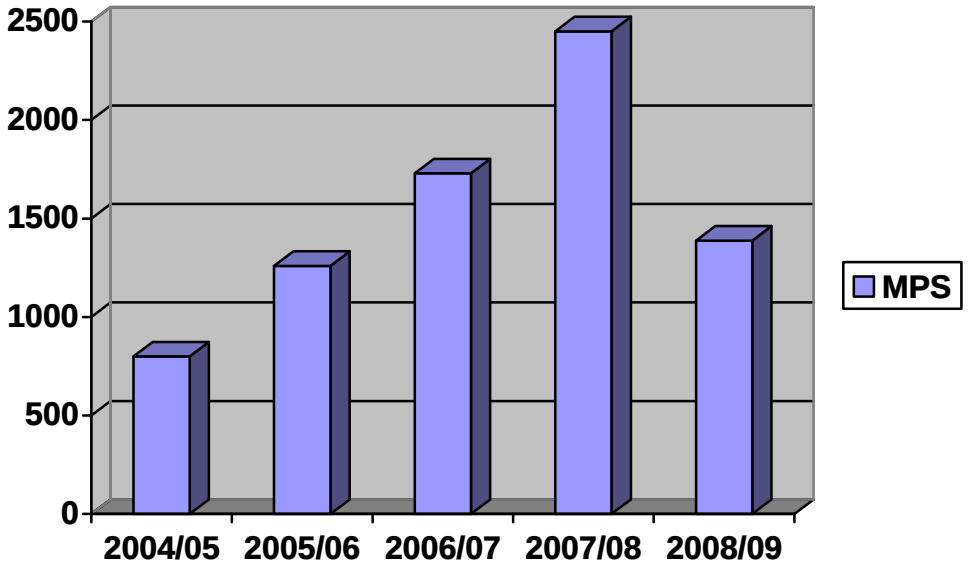
MPS, DPS and EPS Data of NIB

Fiscal Year	MPS	DPS	EPS
2004/05	800	12.50	39.50
2005/06	1260	20	59.35
2006/07	1729	5	62.57
2007/08	2450	7.50	57.87
2008/09	1388	20	37.42

Sources: NEPSE and Annual report of NIBL, 2009

Diagram 4.1

Year End market price movement of NIB Common Stock



4.1.1.2 Realized rate of return (R), Expected rate of return (R), standard deviation (¢Flvariance (¢^{O}F=and coefficient of variation (C.V.)

Table 4.2

Realized rate of return, Expected rate of return, s.d., variance & coefficient of variation on C.S. of NIBL

Fiscal Year	MPS	DPS	$R_{NI}=(P_1-P_0+D_1)/P_0$	$R_{NI} - \overline{R}_{NI}$	$\int R_{NI} - \overline{R}_{NI}$ Å
2004/05	800	12.50	-	-	-
2005/06	1260	20	0.6	0.3570	0.1275
2006/07	1729	5	0.3762	0.1331	0.0177
2007/08	2450	7.50	0.4213	0.1782	0.0318
2008/09	1388	20	-0.4253	-0.6684	0.4468
Total			∑R = 0.9722		0.6238

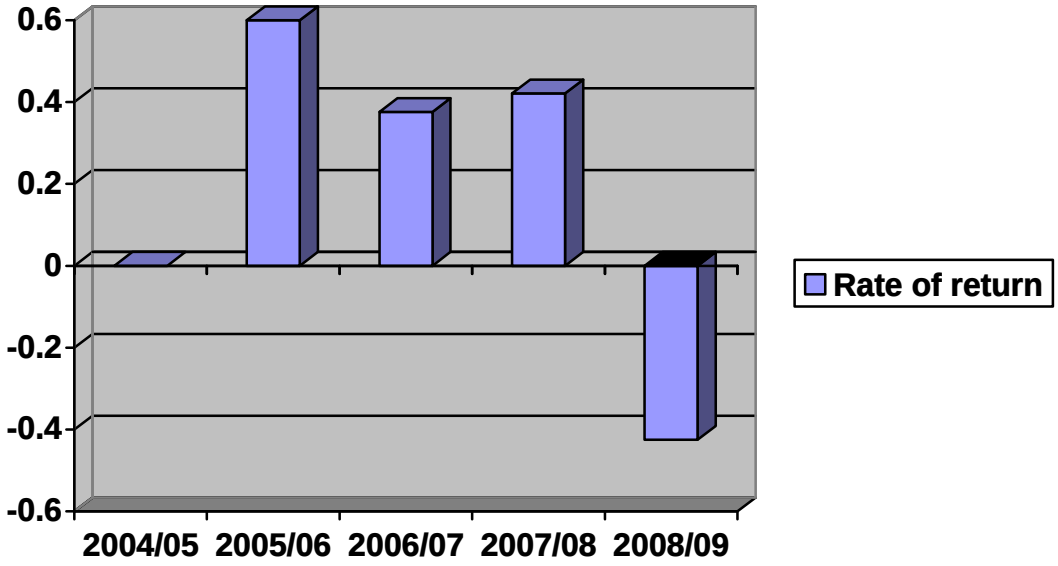
Expected Return $(\overline{R}_{NI})$ X $\frac{R_{NI}}{N}$ X$\frac{0.9722}{4}$ X0.2431 X24.31%

Standard Deviation $(¢_{NI})$ X$\sqrt{\frac{(R_{NI} Z\overline{R}_{NI})^2}{N Z1}}$ X$\sqrt{\frac{0.6238}{4 Z1}}$ X0.4560 X45.60%

Variance $(¢^2_{NI})$ X$(0.4560)^2$ X0.2079

Coefficient of variation (CV_{NI}) X$\frac{¢_{NI}}{R_{NI}}$ X$\frac{0.3949}{0.2431}$ X$\frac{0.4560}{0.2431}$ X1.6244 X1.8758%

Diagram 4.2



4.1.2 Himalayan Bank Ltd. (HBL)

4.1.2.1 Data

The market price per share (MPS) dividend per share (DPS) and Earning per share (EPS) of HBL has shown in table 4.3 and year-end market price movement has shown in diagram 4.3

Table 4.3

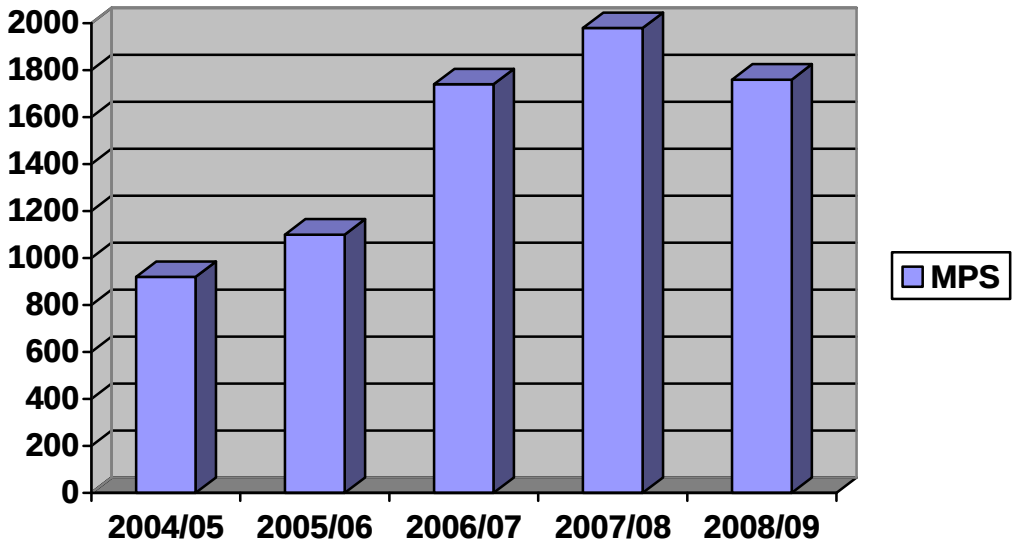
MPS, DPS and EPS data of HBL

Fiscal Year	MPS	DPS	EPS
2004/05	920	11.50	47.91
2005/06	1100	30	59.24
2006/07	1740	15	60.66
2007/08	1980	25	62.74
2008/09	1760	12	61.90

Sources: NEPSE and Annual report of HBL, 2009

Diagram 4.3

Year-End market price movement of HBL C.S.



4.1.2.2 Realized rate of return (R), Expected rate of return (R), standard deviation (¢Flvariance (¢⁰F=and coefficient of variation (C.V.)

Table 4.4

Realized rate of return, Expected rate of return, s.d., variance & coefficient of variation on C.S. of HBL

Fiscal Year	MPS	DPS	$R_H=(P_1-P_0+D_1)/P_0$	$R_H - \overline{R}_H$	$\int R_H - \overline{R}_H$ Å
2004/05	920	11.50	-	-	-
2005/06	1100	30	0.2282	0.0105	0.001
2006/07	1740	15	0.5955	0.3778	0.1427
2007/08	1980	25	0.1523	-0.0654	0.0043
2008/09	1760	12	-0.1051	-0.3228	0.1042
Total			∑R = 0.8709		0.2513

Expected Return $(\overline{R}_H)$ X $\frac{R_H}{N}$ XX $\frac{0.8709}{4}$ X 0.2177

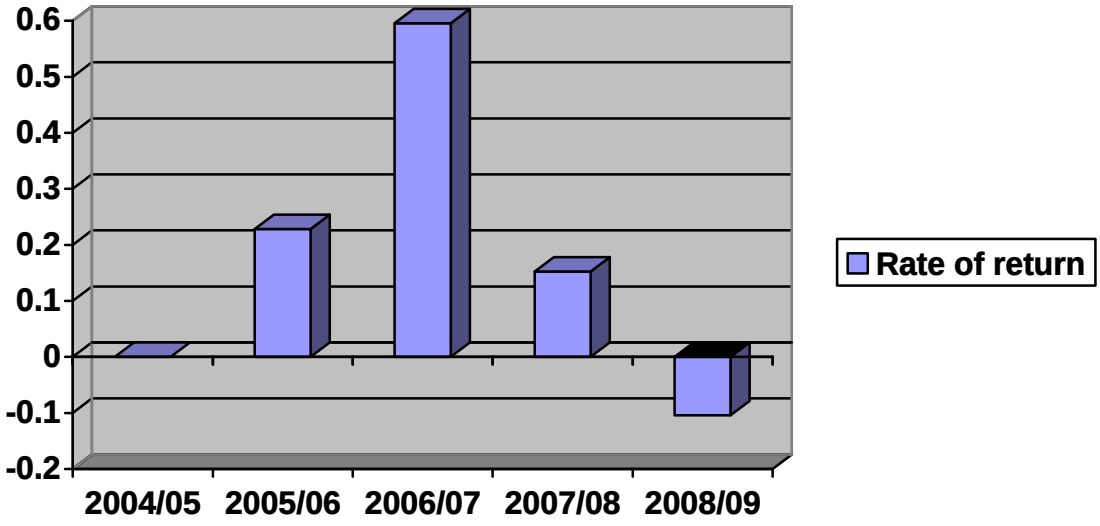
Standard Deviation $(¢_H)$ X $\sqrt{\frac{(R_H \; Z\overline{R}_H)^2}{N \; Z1}}$ X $\sqrt{\frac{0.2519}{4 \; Z1}}$ X0.2894

Variance $(¢^2_H)$ X$(0.2894)^2$ X0.20838

Coefficient of variation (CV_H) X$\frac{¢_H}{R_H}$ X$\frac{0.2894}{0.2177}$ X1.3294

Diagram 4.4

Realized rate of return of the C.S. of HBL



4.1.3 Bank of Kathmandu Ltd. (BOK)

4.1.3.1 Data

The market price per share (MPS), Dividend per share (DPS) and Earning per share (EPS) of BOK has shown in table 4.5 and year end market price movement has shown in diagram 4.5

Table 4.5

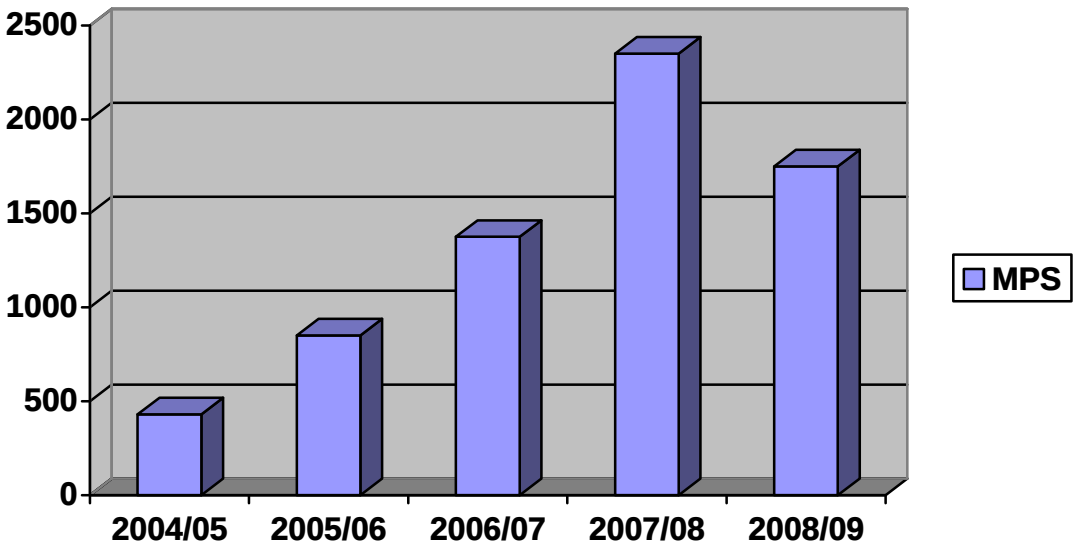
MPS, DPS and EPS data of BOK

Fiscal Year	MPS	DPS	EPS
2004/05	430	15	30.10
2005/06	850	18	43.67
2006/07	1375	20	43.50
2007/08	2350	40	59.94
2008/09	1750	47.37	54.68

Sources: NEPSE and Annual report of BOK, 2009

Diagram 4.5

Year End market price movement of BOK, 2009



4.1.3.2 Realized rate of return (R), Expected rate of return, standard deviation(), variance and coefficient of correlation of BOK

Table 4.6

Realized rate of return, Expected rate of return, s.d., variance & coefficient of variation on C.S. of BOK

Fiscal Year	MPS	DPS	$R_{BOK}=(P_1-P_0+D_1)/P_0$	$R_{BOK} - \overline{R}_{BOK}$	$\int R_{BOK} - \overline{R}_{BOK}$ Å
2004/05	430	15	-	-	-
2005/06	850	18	1.0186	0.4779	0.2284
2006/07	1375	20	0.6412	0.1005	0.0101
2007/08	2350	40	0.7382	0.1975	0.0390
2008/09	1750	47.37	-0.2352	-0.7759	0.6020
Total			$\sum R = 2.1628$		0.8795

Expected Return $(\overline{R}_{BOK})$ X $\frac{R_{BOK}}{N}$ XX $\frac{2.1628}{4}$ X 0.5407

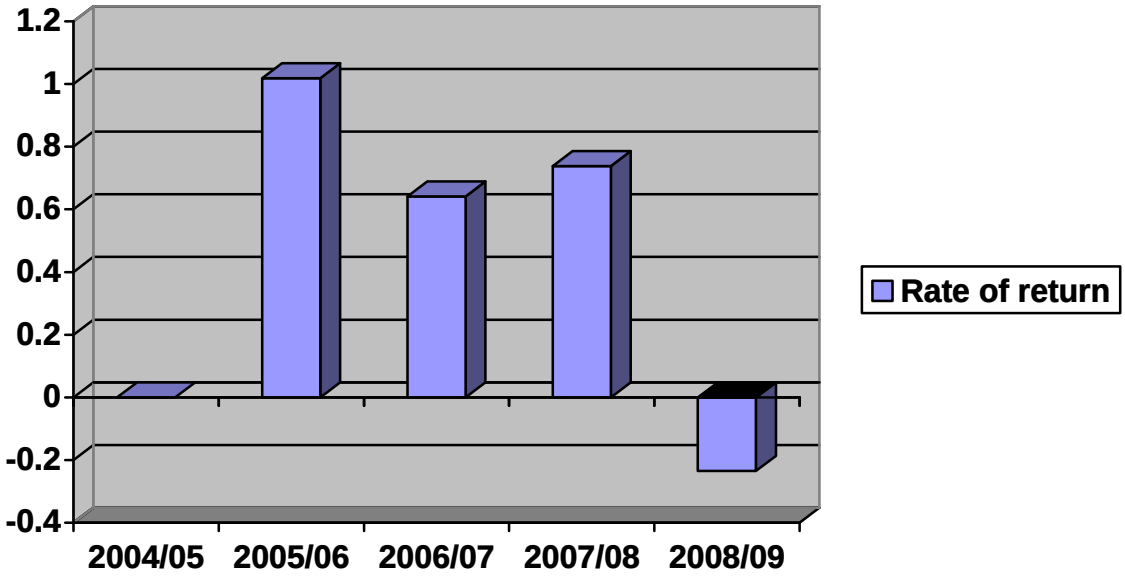
Standard Deviation $(¢_{BOK})$ X $\sqrt{\frac{(R_{BOK} Z \overline{R}_{BOK})^2}{N Z 1}}$ X $\sqrt{\frac{0.8795}{4 Z 1}}$ X0.5414

Variance $(¢^2_{BOK})$ X$(0.5414)^2$ X0.2931

Coefficient of variation (CV_{BOK}) X $\frac{¢_{BOK}}{R_{BOK}}$ X $\frac{0.5414}{0.5407}$ X1.0013

Diagram 4.6

Realized rate of return of the C.S. of BOK



4.1.4 Nabil Bank Limited (NABIL)

4.1.4.1 Data

The market price per share (MPS), Dividend price per share (DPS) and Earning Price per share (EPS) of NBIL has shown in table 4.7 and year end market price movement has shown in diagram 4.7.

Table 4.7

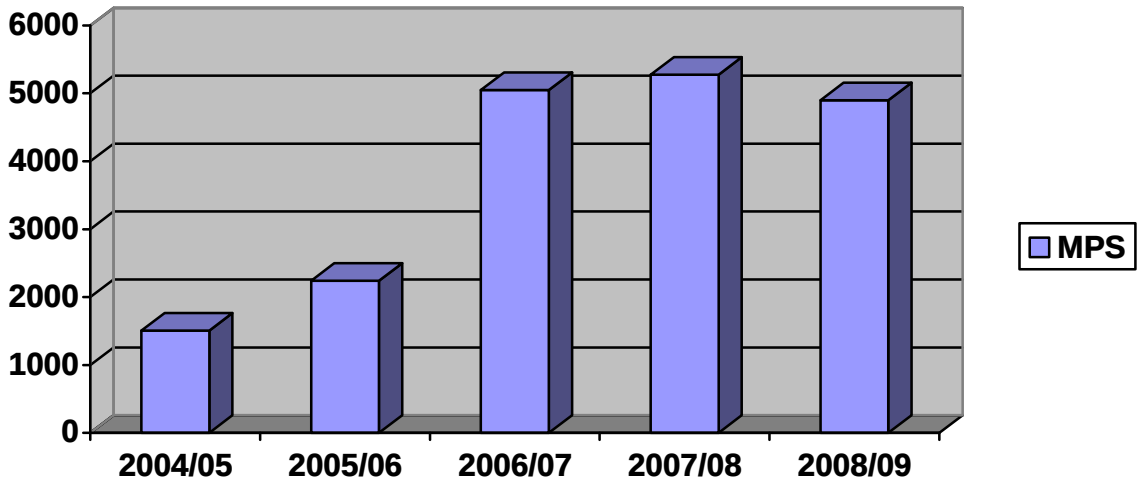
MPS, DPS and EPS data of NABIL

Fiscal Year	MPS	DPS	EPS
2004/05	1505	70	105.79
2005/06	2240	85	129.21
2006/07	5050	140	137.08
2007/08	5275	100	108.31
2008/09	4899	85	106.76

Sources: NEPSE and Annual report of NABIL, 2009

Diagram 4.7

Year-End market price movement of NABIL



4.1.4.2 Realized rate of return (R), Expected rate of return, standard deviation (), variance and coefficient of variation (C.V.)

Table 4.8

Realized rate of return, Expected rate of return, s.d., variance & coefficient of variation on C.S. of BOK

Fiscal Year	MPS	DPS	$R_{NA}=(P_1-P_0+D_1)/P_0$	$R_{NA} - \overline{R}_{NA}$	$\int R_{NA} - \overline{R}_{NA}$ Å
2004/05	1505	70	-	-	-
2005/06	2240	85	0.5449	0.0771	0.0059
2006/07	5050	140	1.3170	0.8492	0.7211
2007/08	5275	100	0.0644	-0.4034	0.1627
2008/09	4899	85	-0.0552	-0.523	0.2735
Total			∑R = 1.8711		1.1632

Expected Return $(\overline{R}_{NA})$ X $\frac{R_{NA}}{N}$ XX $\frac{1.8711}{4}$ X 0.4678

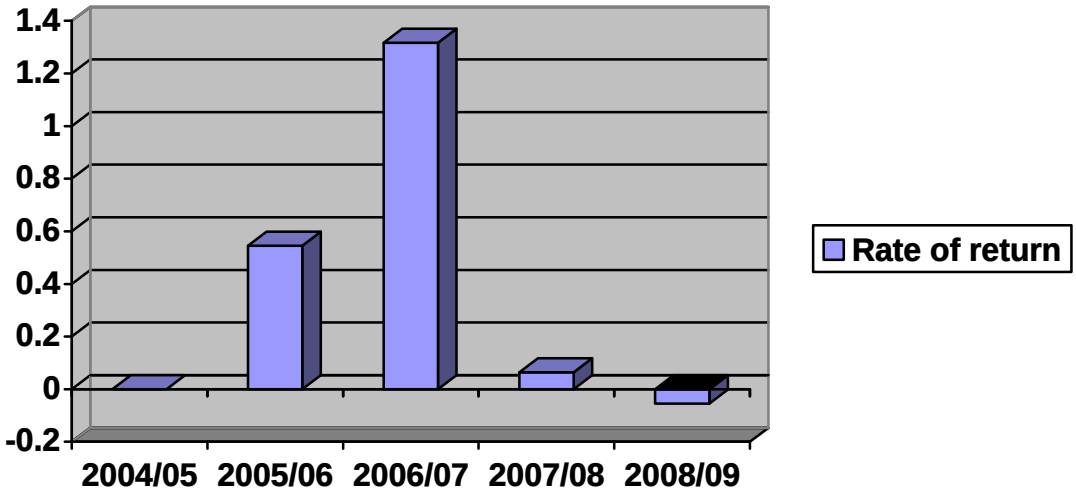
Standard Deviation $(¢_{NA})$ X $\sqrt{\frac{(R_{NA} Z \overline{R}_{NA})^2}{N Z1}}$ X $\sqrt{\frac{1.1632}{4 Z1}}$ X0.6227

Variance $(¢^2_{NA})$ X$(0.6227)^2$ X0.3878

Coefficient of variation (CV_{NA}) X $\frac{¢_{NA}}{R_{NA}}$ X $\frac{0.6227}{0.4678}$ X1.3311

Diagram 4.8

Realized Rate of return of the C.S. of NABIL



4.2 Inter Bank Comparison

The risk and return of the individual bank has calculated in section 4.1. The main purpose of such return and risk analysis is to select the banks for investment. So on the basis of calculation from the section 4.1, a comparative analysis the expected return, standard deviation of return, coefficient of variation of each bank for the year 2004/05 to 2008/09 are given in the table no. 4.9

Table 4.9

Expected Return, Standard Deviation and Coefficient of variation of each bank

Banks	R	S.D.	C.V.	Remarks
NIBL	0.2431	0.4560	1.8758	Highest C.V., highest S.D.
HBL	0.2177	0.2894	1.3294	Highest C.V., highest S.D.
BOK	0.5407	0.5414	1.0013	Highest C.V., highest S.D.
NABIL	0.4678	0.6227	0.331	Highest C.V., highest S.D.

The statistical result imply what over the period the stock of BOK offers the highest expected rate of return 0.5407, where as the stock of HBL offers the lowest expected rate of return, the stock of BOK is seems to be the best for investment.

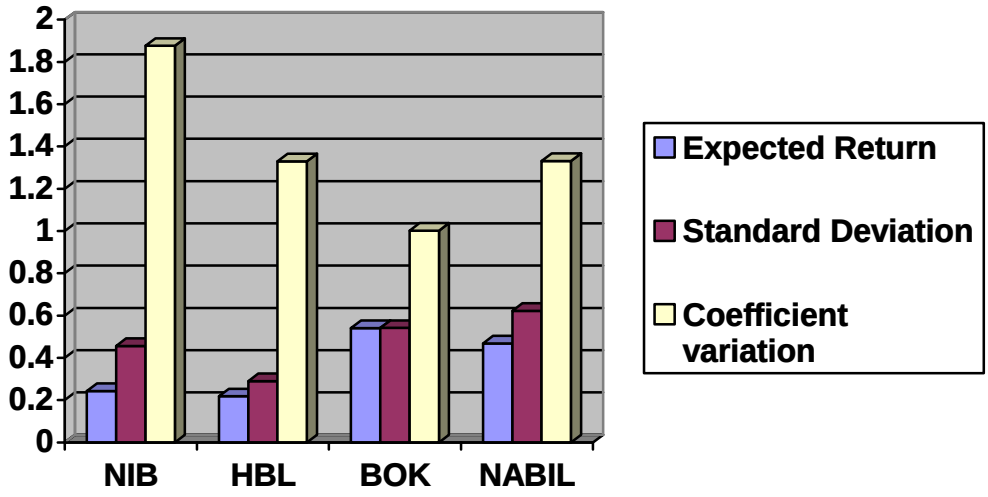
Analysis the return characteristics separately will missed in the investment decision. Each and every return carries uncertainty or risk. The risk is measured by standard deviation. Observing the standard deviation of returns of individuals banks. NABIL has the highest risk of 0.6227 and HBL has the lowest risk taker among all the banks.

However, expected rate of return are not same and in such situation s.d. may not provide a meaningful basis for measuring risk. So the decision based on the risk and return separately of risk per unit of return. Lowest C.V. is preferable. Lowest CV means more consistency in return. On the basis of C.V. BOK should be selected because of lowest C.V. BOK is attractive among the other banks. NIB offers the highest C.V. So, investor retaining stock of NIB should assume more risk than only other bank.

For making easy to understand the diagram 4.9 representing the statistical tools in presented below.

Diagram 4.9

Expected return, s.d. and coefficient of variation of each commercial banks



4.3 Analysis of Market risk and return

According to securities trading report published by NEPSE on 2009, the yearly closing price of stock and yearly market index are given the following table

Table no 4.10

Movement of NEPSE Index

Fiscal years	NEPSE Index
2004/05	367.66
2005/06	412.83
2006/07	531.44

2007/08	652.07
2008/09	749.11

Source: Annual Reports of Nepal Stock Exchange, 2009

From the above table, shows that from FY 2004/05 to FY 2008/09, NEPSE is increasing highly. It shows that market condition is good in FY year 2008/09.

NEPSE index is shown in diagram 4.10

Diagram 4.10

Movement of NEPSE Index

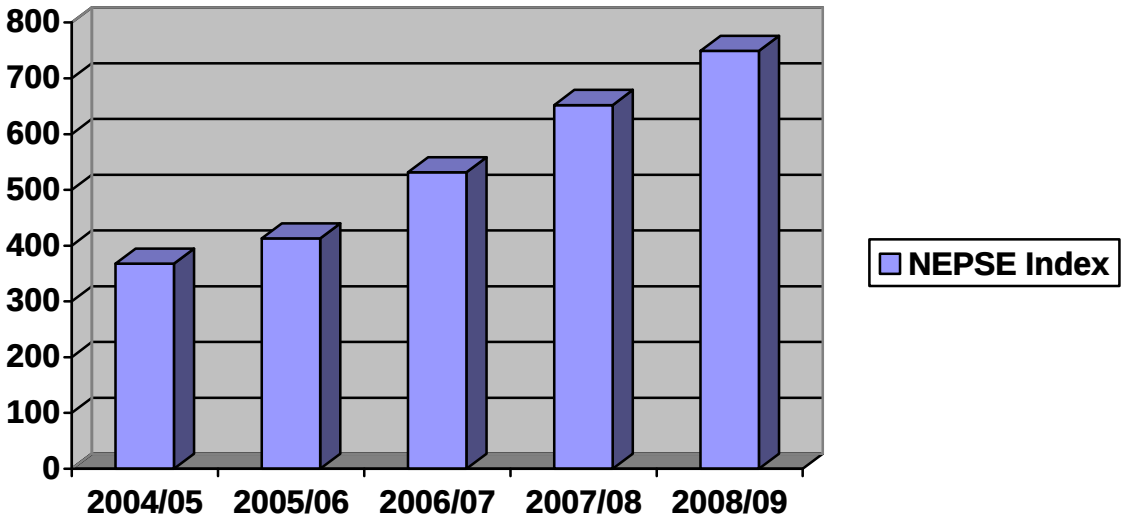


Table no. 4.11

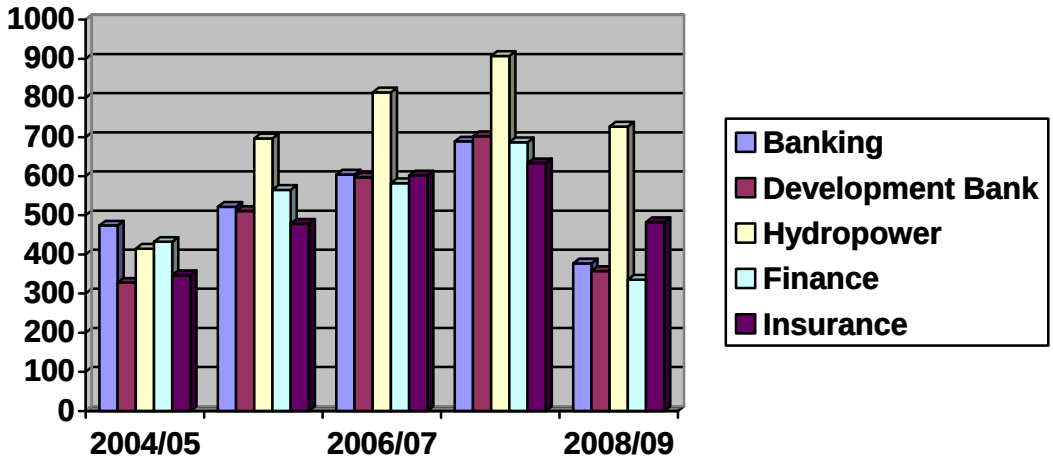
Industry wise NEPSE Index

Fiscal Year	Banking	Development Bank	Hydropower	Finance	Insurance
2004/05	473.98	327.55	414.39	432.29	347.08
2005/06	521.89	511.09	696.33	565.02	478.37
2006/07	603.85	596.78	814.20	582.27	601.98
2007/08	688.66	701.96	907.47	686.56	633.16
2008/09	377.18	357.3	726.47	335.62	482.32

Source: Appendix 1

Diagram no. 4.11

Movement of Industry-wise NEPSE Index



4.4 Industry-wise expected return, standard deviation and co-efficient of variation of return:

Based on the market capitalization as describes on 4.3 the best industry for the investment is industry. But the proper method of investment decision is risk and return analysis. So, in this section industry wise comparison of risk and return is made here on the basis of year and NEPSE Index.

The year wise NEPSE index and calculation related to this analysis has presented in appendixes no. 2 to 6. Table no 4.13 shows the industry-wise statistical tools for analysis.

Table 4.12

Industry-wise expected return, sd. deviation and coefficient of variation of return

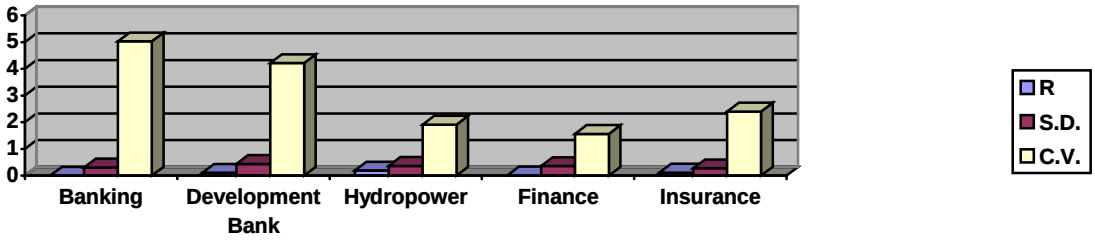
Industry	R	S.D.	C.V.	Remarks
Banking	0.0006	0.3018	503	Lowest
Development Bank	0.1034	0.4364	4.22	
Hydropower	0.1912	0.3644	1.91	
Finance	0.0023	0.3605	156.74	
Insurance	0.1126	0.2701	2.3988	

Sources: Appendix 2, 3,4,5,6

The expected return, s.d. and coefficient of variation of different industries have calculated in Appendices no. 2 to no. 6. The industry wise NEPSE index has presented in Appendix no. 1.

Based on risk per unit (i.e. C.V.) of different industry. Hydropower industry is best to invest in common stock because while the other industries have more C.V. than 1.91. But the average rate of return of Hydropower industry has also more than that of other, which has also shown in diagram 4.12.

Diagram 4.12



4.5 Comparison of Return and Risk of each Bank with market:

The risk and return of market is the average return and risk of all securities available in the market. The market assuming the lowest risk provides the best return. In this section the industry wise risk and return is compared with the market risk and return.

4.5.1 Market Risk and Return:

The market risk and return has calculated from NEPSE index in Appendix no. 7.

Table no. 4.13

Expected Return, Std. Deviation and Coefficient of variation of market returns

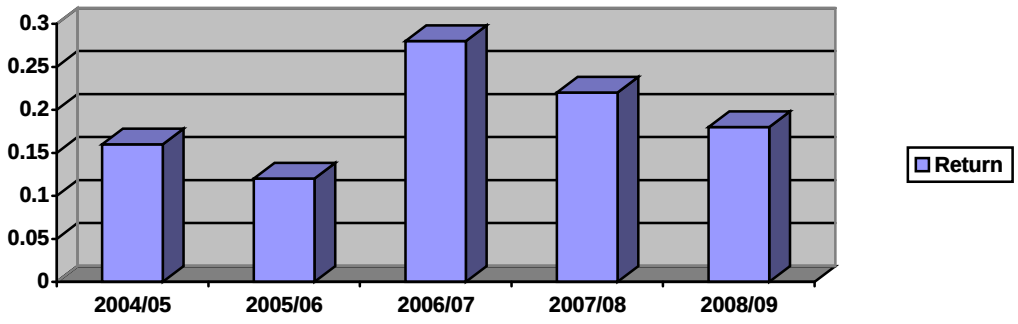
Statistical Tools	Values
Expected Return	0.1965
Standard Deviation	0.0748
Coefficient of Variation	0.3807

Sources: Appendix 7

The market return (R_m) is 19.65%, Total risk is 7.48% and risk per unit i.e. (C.V.) of return is 0.3807.

Diagram 4.13

Movement of Market Return



The above diagram shows that market return is positive and higher in fiscal year 2006/07 and lowest in fiscal year 2005/06. The highest rate of return was 28073% and lowest rate of return was 12.28%.

4.5.2 Market Sensitivity of Common Stocks:

The sensitivity of common stock is measured by its beta coefficient. Beta is systematic risk measurement. The beta of market is always taken as 1. Beta of stock more than 1 is called aggressive and beta of stock less than 1 called defensive. Investment in aggressive stock can get more return than market and vice-versa. Aggressive denotes more risky and defensive denotes less risky.

4.5.2.1 Calculation of Beta of Market

$$_{J} \text{ X } \frac{CoV_{jm}}{¢m^{2}}$$

$$\text{X } \frac{¢_{1}.¢_{2}.¢_{3}}{¢m^{2}} \text{ X } \frac{¢_{1}.r_{jm}}{¢m}$$

where,

r_{jm} = Correlation coefficient between returns of market and stock J

again,

$$_{mJ} \text{ X } \frac{CoV\ (R_{m}.R_{m})}{¢m^{2}}$$

$$\text{X } \frac{¢_{m}.¢_{m}.¢_{mm}}{¢m.¢m} \text{ X } r_{mm} \text{ X1}$$

So, the beta coefficient of market is 1.

4.5.2.2 Calculation of Beta of common stocks of the banks

The beta coefficient stock of each bank has calculated in appendix 8 to 11. The summary has presented in table 4.14.

Table 4.14

Beta coefficient of different banks

Banks	Beta coefficient	Remarks
NIBL	1.3815	Most Aggressive
HBL	2.7857	Most Aggressive
BOK	2.9107	Most Aggressive
NABIL	5	Most Aggressive

Sources: Appendix 8, 9, 10, 11

The beta coefficient of all banks is more then 1. So common stock of all banks is the most aggressive stock. NABIL with beta coefficient of 5 is more risky and most aggressive in nature and NIBL with beta coefficient 1.3815 is less risky than other and defensive in nature.

4.5.2.3 Price Evaluation of Stock

Price evaluation of examines the over priced and under price stocks. The comparison of required rate of return and expected rate of return gives the result of over priced, under priced and correctly priced stocks. There are three conditions of price evaluation, which are:

Expected rate of return > Required rate of return = under priced

Expected rate of return < Required rate of return = over priced

Expected rate of return = Required rate of return = correctly priced

For the price evaluation, the calculation of required rate of return is necessary

The required rate of return can be calculated as:

$E(R_j) = R_f + [E(R_m) - R_f] B_j$

In the above equation, the risk free rate of return is needed to determine. The interest rate of T-bill issued by Nepal Rastriya Bank is taken as R_f in Nepal. As suggested by the T-bill section of NRB, the into rate of 91 days T-bill converted to 364 days duration comes approximately to 3.2174% at current period.

Here, the inputs for the equations are:

R_f = Risk Free rate of return = 3.2974% = 0.033

$E(R_m)$ = Expected market rate of return = 0.1965

The beta has calculated in appendix 8 to 11. The required rate of return and comparison has presented in table 4.16.

Table 4.15

Required rate of return $E(R_j)$, Expected rate of return $E(R_j)$, and price evaluation

Banks	Beta	$E(R_j)$	$E(\overline{R}_j)$	Price Evaluation
NIBL	1.3815	0.2589	0.2431	Over priced
HBL	2.7857	0.4885	0.2177	Over priced
BOK	2.9107	0.5089	0.5407	under priced
NABIL	5	0.8505	0.4678	Over priced

$E(R_j) = R_f + [E(R_m) - R_f] B_j$

$= 0.033 + [0.1965-0.033] B_j$

From the above table, NIBL, HBL and NBIL stocks are overpriced and BOK stock is under priced. So the stocks of NIBL, HBL and NABIL are bad investment opportunity. The stock of BOK is in demand and good investment opportunity. The investor can gain from buying the under priced stocks. But the price of stocks which increase only up to the point where expected return is equal to required rate of return. Similarly, the price of stocks of NIBL, HBL and NABIL decreases up to the equilibrium state.

4.6 Portfolio Analysis

Portfolio analysis gives the concepts of diversification of risk by investing total funds is more than one type of assets of stocks. The concept of portfolio theory was developed by Prof. Hairy M. Markowitz. Markowitz explained that risk could be reduced without loosing considerable return by investing in to a portfolio. By investing on to a portfolio, the investor can diversify the systematic risk will be zero. In making portfolio investment, the fund is divided in to a proper amount or weight for different security. The weight of portfolio equal to 100%.

4.6.1 Diversification of risk by investing into a portfolio

Investing common stocks of various banks could do the risk diversification, but due to limitation of data processing and difficulties. We can analysis only two assets case and three assets case. The tools for analysis have described in research methodology chapter in this study. Here the portfolios of the common stocks of various banks are as follows:

1. **The portfolio of commons stock of NIBL (say stock A) and HBL (say stock B)**

Table 4.16

Calculation of covariance between stock A and Stock B

Fiscal Year	$(R_A - \bar{R}_A)$	$(R_B - \bar{R}_B)$	$(R_A - \bar{R}_A)(R_B - \bar{R}_B)$
2004/05	-	-	-
2005/06	0.3570	0.0105	0.0038
2006/07	0.1331	0.3778	0.0503
2007/08	0.1782	-0.0654	-0.0117
2008/09	-0.6684	-0.3228	0.2158
Total			0.2582

We have,

$$Cov_{AB} = \frac{(R_A - \bar{R}_A)(R_B - \bar{R}_B)}{N - 1} = \frac{0.2582}{4 - 1} = 0.0861$$

The proportion of Stock A to minimize the risk is given by:

$$W_A = \frac{\sigma_B^2 - CoV_{AB}}{\sigma_A^2 + \sigma_B^2 - 2Cov_{AB}}$$

$$= \frac{f0.2894Å - 0.0861}{(0.4560)^2 + (0.2894)^2 - 2 \mid 0.0861}$$

$$= \frac{0.0838 - 0.0861}{0.2079 + 0.3878 - 0.2788 - 0.1722}$$

$$= \frac{-0.0023}{0.1195}$$

$$= -0.0193$$

$W_B = 1 - W_A$

$= 1 - (-0.0193)$

$= 0.0193$

Now, If

$W_A = -0.0193$

$W_B = 1.0193$

$\overline{R}_A = - 0.2431$

$\overline{R}_B = 0.2177$

$¢_A = 0.4560$

$¢_B = 0.2894$

$CoV_{AB} = 0.0861$

Then, the portfolio return will be

$\overline{R}_P \; X W_A . \overline{R}_A \; \Gamma W_B . \overline{R}_B$

$= -0.0193 \times 0.2431 + 1.0193 \times 0.2177$

$= -0.0047 + 0.2219$

$= 0.2172$

And, the portfolio risk will be

$¢_P \; X \sqrt{W_A^{\;2} . ¢_A^{\;2} \; \Gamma W_B^{\;2} . ¢_B^{\;2} \; \Gamma 2 . W_A .. W_A . CoV_{AB}}$

$X \sqrt{fZ0.0193Å \mid f0.4560Å \Gamma f1.0193Å \mid f0.2894Å \Gamma 2 \mid 0.0193 \mid 1.0193 \mid 0.0861}$

$X \sqrt{0.0004 \mid 0.2079 \Gamma 1.0390 \mid 0.0836 \; Z0.0034}$

$X \sqrt{0.00008 \Gamma 0.0869 \; Z0.0034}$

$X 0.2891$

The investing only on the common stock of NIBL there is the risk of 45.60% and investing only in the common stock of HBL there is the risk of 28.94%. But investing in the both securities in the ratio of -0.0193: 1.0193, the total risk reduces to 28.91% which is lower than the risk before diversification. This result indicates if the investor wanted to minimize risk then, health would have to invest 0% in NIBL stock and 100% in HBL stock.

2. The portfolio of common stock of NIBL (say stock A) and BOK (say stock B)

Table 4.17

Calculation of covariance between stock A and stock B

Fiscal Year	$(R_A - \bar{R}_A)$	$(R_B - \bar{R}_B)$	$(R_A - \bar{R}_A)(R_B - \bar{R}_B)$
2004/05	-	-	-
2005/06	0.3570	0.4779	0.1706
2006/07	0.1331	0.1005	0.0134
2007/08	0.1782	0.1975	0.0352
2008/09	- 0.6684	- 0.7795	0.3210
Total			0.5402

We have,

$$Cov_{AB} = \frac{(R_A - \bar{R}_A)(R_B - \bar{R}_B)}{N - 1} = \frac{0.5402}{4 - 1} = 0.1801$$

The proportion of Stock A to minimize the risk is given by:

$$W_A = \frac{\sigma_B^2 - CoV_{AB}}{\sigma_A^2 + \sigma_B^2 - 2Cov_{AB}}$$

$$= \frac{(0.5414)^2 - 0.1801}{(0.4560)^2 + (0.5414)^2 - 2 \times 0.1801}$$

$$= \frac{0.2931 - 0.1801}{0.2079 + 0.2931 - 0.3602}$$

$$= \frac{0.113}{0.11408}$$

$$= 0.8026$$

$W_B = 1 - W_A$

$= 1 - 0.8026$

$= 0.1974$

Now, If

$W_A = 0.8026$

$W_B = 0.1974$

$\bar{R}_A = 0.2431$

$\bar{R}_B = 0.5407$

$\sigma_A = 0.4560$

$\sigma_B = 0.5414$

$CoV_{AB} = 0.1801$

Then, the portfolio return will be

$$\bar{R}_P = W_A.\bar{R}_A + W_B.\bar{R}_B$$

$= 0.8026 \times 0.2431 + 0.1974 \times 0.5407$

$= 0.1951 + 0.1067$

= 0.3018

And, the portfolio risk will be

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

$$= \sqrt{(0.8026)^2 \times (0.4560)^2 + (0.1974)^2 \times (0.5414)^2 + 2 \times 0.8026 \times 0.1974 \times 0.1804}$$

$$= \sqrt{0.6442 \times 0.2079 + 0.0389 \times 0.2931 + 0.0571}$$

$$= \sqrt{0.1340 + 0.0114 + 0.0571}$$

$$= 0.4501$$

The investing only in the common stock of NIBL there is the risk of 45.60% and investing only in the common stock of BOK there is the risk of 54.14%. But investing in the both securities in the ratio of 0.8026: 01974, the total risk reduces to 45% which is lower than the before diversification. This result indicates if the investor wanted to minimize the risk then health would have to invest 80.26% in NIBL stock and 19.74% in BOK stock.

3. The portfolio of common stock of NIBL (say Stock A) and NABIL (say stock B)

Table 4.18

Calculation of covariance between stock A and stock B

Fiscal Year	$(R_A - \bar{R}_A)$	$(R_B - \bar{R}_B)$	$(R_A - \bar{R}_A)(R_B - \bar{R}_B)$
2004/05	-	-	-
2005/06	0.3570	0.0771	0.0275
2006/07	0.1331	0.8492	0.1130

2007/08	0.1782	-0.4034	-0.0719
2008/09	-0.6684	-0.523	0.3496
Total			0.4182

$$Cov_{AB} = \frac{(R_A - \bar{R}_A)(R_B - \bar{R}_B)}{N - 1} = \frac{0.4182}{4 - 1} = 0.1394$$

The proportion of Stock A to minimize the risk is given by:

$$W_A = \frac{\sigma_B^2 - CoV_{AB}}{\sigma_A^2 + \sigma_B^2 - 2Cov_{AB}}$$

$$= \frac{(0.6227)^2 - 0.1394}{(0.4560)^2 + (0.6227)^2 - 2}$$

$$= \frac{0.2484}{0.2079 + 0.3878 - 0.2788}$$

$$= \frac{0.2484}{0.3169}$$

$$= 0.7838$$

$W_B = 1 - W_A$

$= 1 - 0.7838$

$= 0.2162$

Now, If

$W_A = 0.7838$

$W_B = 0.2162$

$\bar{R}_A = 0.2431$

$\bar{R}_B = 0.4678$

$\sigma_A = 0.4560$

$¢_B$ = 0.6227

CoV_{AB} = 0.1394

Then, the portfolio return will be

$\bar{R}_P = W_A.\bar{R}_A + W_B.\bar{R}_B$

= 0.7838 × 0.2431 + 0.2162 × 0.4678

= 0.1905 + 0.1011

= 0.2916

And, the portfolio risk will be

$¢_P = \sqrt{W_A^2.¢_A^2 + W_B^2.¢_B^2 + 2.W_A..W_A.CoV_{AB}}$

$= \sqrt{(0.7838)^2 | (0.4560)^2 + (0.2162)^2 | (0.6227)^2 + 2 | 0.7838 | 0.2162 | 0.1394}$

$= \sqrt{0.6143 | 0.2079 + 0.0467 | 0.3876 + 0.0472}$

$= \sqrt{0.1277 + 0.0181 + 0.0472}$

$= 0.4393$

The investing only in the common stock of NIBL there is the risk of 45.60% and investing only in the common stock of NABIL there is the risk of 62.27%. But investing in the both securities in the ratio of 0.7838:0.2162, the total risk reduces to 43.93% which is lower than the risk before diversification. This results if the investor wanted to minimize the risk then health would have to invest 78.38% in NIBL stock and 21.62% in NBIL stock.

4. The portfolio of common stock of HBL (say stock A) and BOK (say stock B)

Table 4.19

Calculation of covariance between stock A and stock B

Fiscal Year	$(R_A - \bar{R}_A)$	$(R_B - \bar{R}_B)$	$(R_A - \bar{R}_A)(R_B - \bar{R}_B)$
2004/05	-	-	-
2005/06	0.0105	0.4779	0.0050
2006/07	0.3778	0.1005	0.0380
2007/08	-0.0654	0.1975	-0.0129
2008/09	0.3228	-0.7795	0.2516
Total			0.2817

$$Cov_{AB} = \frac{(R_A - \bar{R}_A)(R_B - \bar{R}_B)}{N - 1} = \frac{0.2187}{4 - 1} = 0.0939$$

The proportion of Stock A to minimize the risk is given by:

$$W_A = \frac{\sigma_B^2 - CoV_{AB}}{\sigma_A^2 + \sigma_B^2 - 2Cov_{AB}}$$

$$= \frac{0.5114 - 0.0939}{(0.2894)^2 + (0.5414)^2 - 2 \times 0.0939}$$

$$= \frac{0.2931 - 0.0939}{0.0838 + 0.2931 - 0.1878}$$

$$= \frac{0.01902}{0.1899}$$

$$= 1.00$$

$W_B = 1 - W_A$

$= 1 - 1$

$= 0$

Now, If

$W_A = 1$

$W_B = 0$

$\overline{R}_A = 0.2177$

$\overline{R}_B = 0.5407$

$¢_A = 0.5894$

$¢_B = 0.5414$

$CoV_{AB} = 0.0939$

Then, the portfolio return will be

$\overline{R}_P = W_A.\overline{R}_A + W_B.\overline{R}_B$

$= 1 \times 0.2177 + 0 \times 0.5407$

$= 0.2177$

$= 0.2916$

And, the portfolio risk will be

$¢_P = \sqrt{W_A^2.¢_A^2 + W_B^2.¢_B^2 + 2.W_A.W_A.CoV_{AB}}$

$\sqrt{1^2 | (0.2894)^2 + 0^2 | ƒ0.5414Å + 2 | 1 | 0 | 0.0939}$

$\sqrt{0.0838 + 0 + 0}$

0.2895

The investing only in the common stock of HBL there is the risk of 28.94% and investing only in the common stock of BOK there is the risk of 54.14%. But investing in the both securities in the ratio of 1:0, the total risk reduces to 28.95% which is lower than the risk before diversification. This result indicate if the investor wanted to minimize the risk than health would have to invest 100% in HBL stock and 0% in BOK stock.

5. The portfolio of common stock of HBL (say stock A) and NABIL (say stock B)

Table 4.20

Calculation of covariance between stock A and stock B

Fiscal Year	$(R_A - \bar{R}_A)$	$(R_B - \bar{R}_B)$	$(R_A - \bar{R}_A)(R_B - \bar{R}_B)$
2004/05	-	-	-
2005/06	0.0105	0.0771	0.0008
2006/07	0.3778	0.8492	0.3208
2007/08	0.0654	- 0.4034	-0.0264
2008/09	- 0.3228	- 0.523	0.1688
Total			0.464

$$Cov_{AB} = \frac{(R_A - \bar{R}_A)(R_B - \bar{R}_B)}{N - 1} = \frac{0.464}{4 - 1} = \frac{0.464}{3} = 0.1547$$

The proportion of Stock A to minimize the risk is given by:

$$W_A = \frac{\sigma_B^2 - Cov_{AB}}{\sigma_A^2 + \sigma_B^2 - 2Cov_{AB}}$$

$$= \frac{(0.6227)^2 - 0.1547}{(0.2894)^2 + (0.6227)^2 - 2 \times 0.1547}$$

$$= \frac{0.2331}{0.0838 + 0.3878 - 0.3094}$$

$$= \frac{0.2331}{0.1622}$$

$$= 1.4371$$

$W_B = 1 - W_A$

$= 1 - 1.4371$

$= -0.4371$

Now, If

$W_A = 1.4371$

$W_B = - 0.4371$

$\bar{R}_A = 0.2177$

$\bar{R}_B = 0.4678$

$\sigma_A = 0.2894$

$\sigma_B = 0.6227$

$CoV_{AB} = 0.1547$

Then, the portfolio return will be

$$\bar{R}_P = W_A.\bar{R}_A + W_B.\bar{R}_B$$

$= 1.4371 \times 0.2177 + (-0.4371) \times 0.4678$

$= 0.3129 - 0.2045$

$= 0.1084$

And, the portfolio risk will be

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

$$= \sqrt{(1.4371)^2 \times (0.2894)^2 + (-0.437)^2 \times 0.6227 + 2 \times 1.4371 \times -0.4371 \times 0.1547}$$

$$= \sqrt{2.0653 \times 0.0838 + 0.1911 \times 0.3878 - 0.1944}$$

$$= \sqrt{0.1731 + 0.0741 - 0.1944}$$

$$= 0.2298$$

The investing only in the common stock of HBL there is the risk of 28.94% and investing only in the common stock of NBIL there is the risk of 62.27%. But investing in the both securities in the ratio of 1.4371:-0.4371. The total risk reduces to 22.98% which is lower than the risk before diversification. This result indicates if the investor wanted to minimize the risk then health would have to invest 0% in HBL and 100% in NABIL.

6. The portfolio of common stock of BOK (say stock A) and NBIL (say stock B)

Table 4.2

Calculation of covariance between stock A and stock B

Fiscal Year	$(R_A - \bar{R}_A)$	$(R_B - \bar{R}_B)$	$(R_A - \bar{R}_A)(R_B - \bar{R}_B)$
2004/05	-	-	-
2005/06	0.4779	0.0771	0.0368
2006/07	0.1005	0.8492	0.0853
2007/08	0.1975	-0.4034	-0.0797

2008/09	0.7795	0.523	-0.4077
Total			-0.3653

$$Cov_{AB} = \frac{(R_A - \bar{R}_A)(R_B - \bar{R}_B)}{N - 1} = \frac{-0.3653}{4 - 1} = -0.1218$$

The proportion of Stock A to minimize the risk is given by:

$$W_A = \frac{\sigma_B^2 - CoV_{AB}}{\sigma_A^2 + \sigma_B^2 - 2Cov_{AB}}$$

$$= \frac{(0.6227)^2 - (-0.11218)}{(0.5414)^2 + (0.6227)^2 - 2 \times (-0.1218)}$$

$$= \frac{0.3878 + 0.1218}{0.2931 + 0.3878 + 0.2436}$$

$$= \frac{0.5096}{0.9245}$$

$$= 0.5512$$

$W_B = 1 - W_A$

$= 1 - 0.5512$

$= 0.4488$

Now, If

$W_A = 0.5512$

$W_B = 0.4488$

$\bar{R}_A = 0.5407$

$\bar{R}_B = 0.4678$

$\sigma_A = 0.5414$

$\sigma_B = 0.6227$

CoV_{AB} = - 0.1218

Then, the portfolio return will be

$\bar{R}_P = W_A.\bar{R}_A + W_B.\bar{R}_B$

= 0.5512 × 0.5407 + 0.4488 × 0.4678

= 0.2980+0.2099

= 0.5079

And, the portfolio risk will be

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

$= \sqrt{(0.5512)^2 | (0.5414)^2 + (0.4488)^2 | f0.6227Å + 2 | 0.5512 | 0.4488 | (Z0.1218)}$

$= \sqrt{0.3038 | 0.2931 + 0.2014 | 0.3878 Z 0.0603}$

$= \sqrt{0.0890 + 0.781 Z 0.0603}$

$= 0.3268$

The investing only in the common stock of BOK there is the risk of 54.14% and investing only in the common stock of NABIL there is the risk of 62.27%. But investing in the both securities in the ratio of 0.5512:0.4488. The total risk reduces to 32.68% which is lower than the risk before diversification. This result indicates if the investor wanted to minimize the risk then health would have to invest 55.12% in BOK and 44.88% in NABIL.

4.7 Correlation between returns of common stock of different banks

If there is perfect negative correlation between the returns of the stocks, the risk can be easily diversified. But, if there is perfectly positive correlation, risk can not be reduced. In the portfolio construction, the correlation between returns of the stocks plays vital role. Hence, the correlation between the returns of common stocks of different banks have presented below:

1. Correlation between NIBL (say stock A) and HBL(say sock B)

$$r_{AB} \text{ X} \frac{CoV_{AB}}{¢_A ¢_B} \text{ X} \frac{\text{Z}0.061}{0.4560 \mid 0.2894} \text{ X} \frac{0.0861}{0.1320} \text{X}0.6523$$

The proportion of Stock A to minimize the risk is given by:

where,

r_{AB} = Correlation coefficient of returns between common stock of NIBL and HBL

$\Omega_{7\|}$ = Standard deviation of NIBL

$\Omega_{3\#\|}$ = Standard deviation of HBL

COV_{AB} = Covariance between stock of NIBL and HBL

2. Correlation between NIBL (say stock A) and BOK (say stock B)

$$r_{AB} \text{ X} \frac{CoV_{AB}}{¢_A ¢_B} \text{ X} \frac{0.1801}{0.4560 \mid 0.5414} \text{ X} \frac{0.1801}{0.2469} \text{X}0.7295$$

where,

r_{AB} = Correlation coefficient of returns between common stock of NIBL and BOK

| $\Omega_{7\|}$ = Standard deviation of NIBL

| $\Omega_{3\#}$ = Standard deviation of BOK

COV_{AB} = Covariance between stock of NIBL and BOK

3. Correlation between NIBL (say stock A) and NABIL (say stock B)

$$r_{AB} \text{ X} \frac{CoV_{AB}}{¢_A ¢_B} \text{ X} \frac{0.1394}{0.4560 \mid 0.6227} \text{ X} \frac{0.1394}{0.2840} \text{X} 0.4909$$

where,

r_{AB} = Correlation coefficient of returns between common stock of NIBL and NABIL

| $\Omega_{\prime\prime}$ = Standard deviation of NIBL

| $\Omega_{\prime\prime}$ = Standard deviation of NABIL

COV_{AB} = Covariance between stock of NIBL and NABIL

4. Correlation between HBL (say stock A) and BOK (say stock B)

$$r_{AB} \text{ X} \frac{CoV_{AB}}{¢_A ¢_B} \text{ X} \frac{0.0939}{0.2894 \mid 0.5414} \text{ X} \frac{0.0939}{0.1567} \text{X} 0.5992$$

where,

r_{AB} = Correlation coefficient of returns between common stock of HBL and BOK

| $\Omega_{\prime\prime}$ = Standard deviation of HBL

| $\Omega_{\prime\prime}$ = Standard deviation of BOK

COV_{AB} = Covariance between stock of HBL and BOK

5. Correlation between HBL (say stock A) and NABIL (say stock B)

$$r_{AB} \text{ X} \frac{CoV_{AB}}{¢_A ¢_B} \text{ X} \frac{0.1547}{0.2894 \mid 0.6227} \text{ X} \frac{0.1547}{0.1802} \text{ X} 0.8585$$

where,

r_{AB} = Correlation coefficient of returns between common stock of HBL and NABIL

| Ω = Standard deviation of HBL

| Ω = Standard deviation of NABIL

COV_{AB} = Covariance between stock of HBL and NABIL

6. Correlation between BOK (say stock A) and NABIL (say stock B)

$$r_{AB} \text{ X} \frac{CoV_{AB}}{¢_A ¢_B} \text{ X} \frac{\text{Z}0.1218}{0.5414 \mid 0.6227} \text{ X} \frac{\text{Z}0.12189}{0.10.3371} \text{ XZ}0.3613$$

where,

r_{AB} = Correlation coefficient of returns between common stock of BOK and NABIL

| Ω = Standard deviation of BOK

| Ω = Standard deviation of NABIL

COV_{AB} = Covariance between stock of BOK and NABIL

Table 4.22

Correlation Coefficient of different Banks

Banks	NIBL	HBL	BOK	NABIL
NIBL	1	0.6523	0.7295	0.4909
HBL		1	0.5992	0.8585
BOK			1	-0.3613
NABIL				1

In the above table, there are positive correlation and some are negative correlation. Correlation between return on stock of different banks, there is no perfectly positive or perfectly negative correlation. So, the risk can be reduced to an extent by investing in to a portfolio. In such condition, combining those stocks in to portfolio reduce risk but cannot be eliminated completely. It is better to make the combination of stock whose correlation of return in negative.

4.8 Comparison of diversifiable and undiversifiable risk of commercial banks

Total diversifiable and undiversifiable risk and their proportions of stock of the commercial banks are presented in the below figure:

Table 4.23

Comparison of diversifiable and undiversifiable risk

Banks	Total Risk	Undiversifiable risk		Diversifiable Risk	
		Value	%	value	%
NIBL	0.2079	0.0107	5.15	0.1972	94.85
HBL	0.0838	0.0435	48.10	0.0403	51.90
BOK	0.2932	0.0475	16.20	0.2457	83.8
NABIL	0.3878	0.14	36.10	0.2478	63.9

Sources: Appendix 8, 9, 10, 11

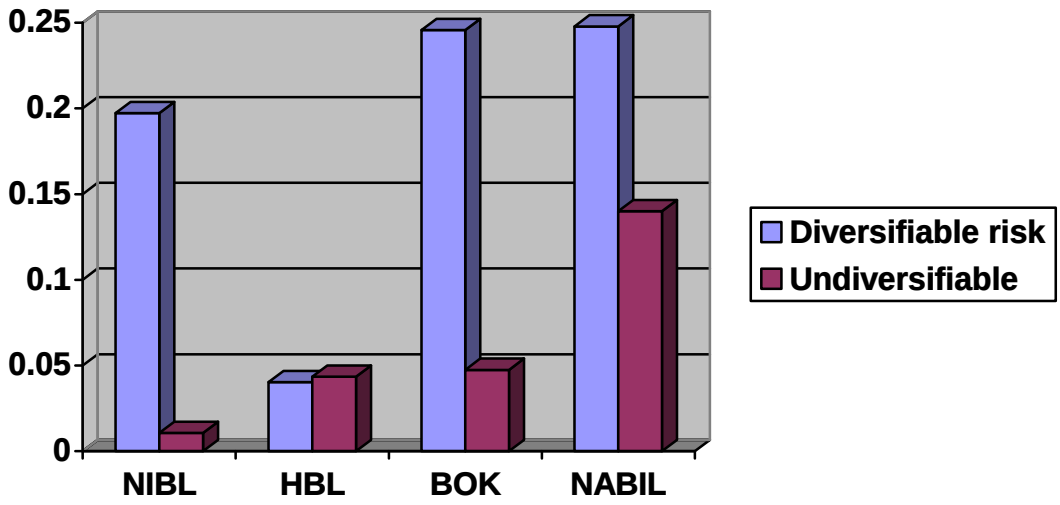
In the above table, we can see that the total risk of NABIL is 0.3878, BOK is 0.2932, NIBL is 0.2079 and HBL is 0.0838. We can say that NBIL is more risky than other banks. The undiversifiable risk of NBIL is also higher than other banks. It is market related risk and it cannot be diversifiable from the bank.

Diversifiable risk of NABIL is also higher than other banks i.e. 0.2478 therefore NBIL has higher diversifiable risk.

The diversifiable and undiversifiable risk of the commons stock of commercial banks is shown in following diagram.

Diagram 4.14

Comparison of Diversifiable and undiversifiable Risk



We can see in the above diagram the total risk of NABIL is higher than NIBL, HBL and BOK.

4.9 Hypothesis

Hypothesis Formulation:

Null hypothesis (H_o: $\mu_1 = \mu_2 = \mu_3 = \mu_4$) i.e. there is no significant difference in average return of common stock of listed commercial banks.

Alternative Hypothesis (H_1: $\mu_1 \neq \mu_2 \neq \mu_3 \neq \mu_4$) i.e. there is significant difference in average return of common stock of listed commercial bank.

Table 4.24

Computation of test static

Holding Period Return					Sum of squares			
Year	**NIB(X_1)**	**HBL(X_2)**	**BOK(X_3)**	**NABIL(X_3)**	**X_1^2**	**X_2^2**	**X_3^2**	**X_4^2**
2004/05	-	-	-	-	-	-	-	-
2005/06	0.6	0.2282	0.0186	0.5449	0.36	0.0521	0.0003	0.2970
2006/07	0.3762	0.5955	0.6412	1.3170	0.1415	0.3546	0.4111	1.7345
2007/08	0.4213	0.1523	0.7382	0.0644	0.1775	0.0232	0.5449	0.0041
2008/09	-0.4253	-0.1051	-0.2352	-0.0552	0.1809	0.0110	0.0553	0.0030
Total	0.9722	0.8709	2.1628	1.8711	0.8599	0.4409	1.0116	2.0386

Total no. of observation (n) = 20

Grand Total (T) = $\sum X_1+\sum X_2+\sum X_3+\sum X_4$

= 0.9722+0.8709+2.1628+1.8711

= 5.877

Correction Factor (C.F.) $X\frac{T^2}{N} X\frac{(5.877)}{20} X1.7270$

Sum of square between samples (SSB) =

$$\frac{(x_1)^2}{n} + \frac{(x_2)^2}{n} + \frac{(x_3)^2}{n} \frac{(x_4)^2}{n}$$

$$X \frac{(0.9722)^2}{5} + \frac{(0.8709)^2}{5} + \frac{(2.1628)^2}{5} + \frac{(1.8711)^2}{5}$$

$X\,0.1890 + 0.1517 + 0.9355 + 0.7002$

$X1.9764$

Total sum of square (TSS)

$= \quad \sum X_1^2 + \sum X_2^2 + \sum X_3^2 + \sum X_4^2$

$= \quad 0.8599 + 0.4409 + 1.0116 + 2.0386$

$= \quad 4.351$

Sum of squares with in samples (SSW) = TSS – SSB

= 4.351 – 1.9764

= 2.3746

ANOVA Table

Sources of variation	Degree of freedom Sum of Square	Sum of Squares	Mean sum of squares	F Ratio
Between simple	4-1 = 3	SSB = 1.9764	MSC = 0.6588	0.6588/0.1484
Within Return	20-4 = 16	SSW=2.3746	MSW= 0.1484	4.4394

Therefore, DF = (3, 16)

The tabulated value of F at 5% level of significance at (3, 16) degree of freedom from F distribution table is 3.24.

Conclusion, since the computed value of F (i.e. F_{cal}=4.4394) is greater than the tabulated value of F (i.e.F_{tab}=3.24). So null hpothesis is rejected, it means alternative hypothesis is accepted. Therefore there is significant difference in average return of common stock of four sampled commercial banks.

CHAPTER – V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This chapter focuses facts and matters required for the various parts of the study. Analytical parts, which are the heart of the study. The aspect of the risk and return on common stock investment of commercial banks are by using some important financial as well as statistical tools. The first aspect of the study is focused to find the fact and second aspect of the study is to give the recommendation to the banks power the true result down from the study.

Further more, the effort has been done to suggest for the corrective actions and to remove the heathens and continuity of profitable services etc. This small effort would really be a bit meaningful to the top management of the banks to initiate action and achieve the desire result.

This chapter consists of the summary, conclusion and recommendation from this study.

5.1 Summary

This study is divided in to five chapters. They are introduction, review of literature, research methodology, presentation and analysis of data and finally summary, conclusion and recommendations.

The first chapter covers generally background of the study, focus of the study, statement of problem, objectives of the study, significance of the study and limitation of the study.

The second chapter is review of literature and it gives the concept of risk and return and its analysis and its techniques researcher of the earlier studying a risk and return investment, review of researcher tools.

The third chapter consists of the research methodology in which the introduction, research design, population and sample, sources and nature of data, data processing procedure and data analysis tools.

The fourth chapter is data analysis and presentation consist realized return, expected return, standard deviation, coefficient of variation, covariance, beta coefficient,

Similarly, the fifth chapter consist the summary of the earlier chapter. Here, an attempt is made to offer various suggestions and recommendations for the improvement of the future performance for risk and return analysis of the four commercial banks.

In recent days risk and return, is being central focus of the finance, before investment of any security the risk and return analysis is performed. Being the speculative nature, common stocks are taken for analyzing risk and return.

The common stock is most risky security. An investment in common stock of a company cannot ensure the annual return and the return of principal. Dividends are paid to the stockholders only if there will be earning available to equity shareholders. In Nepal, there is not various type of securities but due to development of banking industries. There is sufficient common stock for attracting Nepalese investors.

There is deep relationship between risk and return. Risk and Return plays vita role in the process of investment. However, the relationship between risk and return is described by investor's perceptions about risk and their demand for compensation. The investors will invest risky assets only when health is assured of adequate compensation for risk bearing.

The main objectives of this study are to analysis the risk and return on common stock investment of Nepalese stock market and it is focused on common stock of four commercial banks in listed in NEPSE. In the

course of this study, briefs review of related study has been performed. The collected secondary data has analyzed by using scientific methods and tables, graphs diagrams have been used to present data more clearly. The secondary data were collected from the NEPSE websites, journals, and concerned banks. Both quantitative and qualitative analysis have been derived the conclusion. Finding of analysis is summarized and conclusions are drawn as follows.

5.2 Conclusion

Economic liberalization policy of the government has encouraged the establishment of growth of the backs of the country within short period of time. Nepalese stock market is in emerging state. The scientific information about the stock market of Nepal is not available easily. So, people think that health stock market investment is a back and they are afraid of investing in common stocks. This study will enable investors to know about the stocks market and process of choosing the common stock or investing in a portfolio. The openness and liberalization in national economy followed by the nation, since the political change in 1990, has developing the stock market gradually. However, due to the poor knowledge and inadequate information about stock market, the Nepalese investors are not able to analyze the risk and return on common stock properly. The others findings and conclusion in the course of this study are as under:

- There are various aspects of risk and return of common stocks. The lack of adequate information and poor knowledge is one of the aspects due to which the investor cannot earn proper return even bearing the high risk. The frequent change in fiscal and monetary policy, tax policy and inflation also affect fund of risk and return of stocks. Most of the Nepalese investors in single securities due to which the level of risky may increase and if they invest in more than banks common stocks. They select the stocks on the basis of expectations and assumptions that they will provide higher return at

lower risk. But without analyzing the risk and return, higher return at lower risk cannot be expected.

- The common stocks of the listed commercial banks have evaluated in the terms of risk and return. The return is income provided by the stock. The expected return is income provided by the stock. The expected return that on the common stock of Bank of Kathmandu Ltd. (BOK) is the maximum returns (54.07%). The highest return on common stock of BOK is due to effect of increase in price of share in secondary market. The expected return of Himalayan Bank Ltd. (HBL) has found the minimum return (21.77%). This minimum returns due to increase in price of share in secondary market.

- The risk is chance of deviation of return from expected value. The risk has measured in this study by standard deviation of return and coefficient of variation of returns. The common stock of NABIL is more risky on the basis of S.D. And the common stock of NIBL is more risky on the basis of C.V. But the C.V. is more rational basis of the measurement of risk. So, on the basis of C.V., the common stock of NIBL are more risky. Since, the CV is the highest and the common stock of BOK is less risky since the lowest C.V. On the basis of C.V. common stock of BOK are more suitable for investment.

- From this study of the over priced, under priced and correctly priced, common stock of commercial banks are found. The stocks of NIBL, HBL and NBIL are overpriced while the stock of BOK is under priced. There is no equilibrium price i.e. the stock market is not in equilibrium and all the stock in the market are striving towards the equilibrium. There is high difference in the expected return and required rate of return on common stock of NABIL and low difference on common stock.

- The correlation between the return of C.S. of different banks have determined with the help of covariance. There is no perfect positive or perfect negative correlation between on the stock of the banks. HBL and NABIL have highest degree of positive correlation and BOK and NABIL have negative correlation. It seems better negative correlated stocks can reduce the total risk considerably.

- On the basis of market sensitivity, the C.S. of NABIL is more volatile because it has the highest beta. The beta of NABIL is 5 which shows the change market return by 1% brings the change in on common stock of NABIL by 5%.The beta of NIBL has lowest i.e. 1.3815.

- Diversifiable or unsystematic risk of NABIL i.e. 0.2478 or 24.78% is higher than NIBL, HBL and BOK it can be diversifiable from the bank.

- Undiversifiable or systematic risk of NABIL is 0.14 or 14% and it is also higher than other banks. It is represent a portion of systematic risk out of the total risk.

- There is no perfect relationship between dividend and market price of stock. The study shows that dividend has no greater impact on the price of share. The dividend and market price has positive relationship with risk and return. If the DPS and MPS are increased, the return and risk also increased and vice-versa.

- The portfolio risk of HBL and NABIL is lower among the other portfolios. So, the preference goes to HBL and NABIL for the buyer who does not want to take any risk. Whereas the investors who are risk taker and want higher return, portfolio stock BOK and NABIL is preferable for investment.

- The study can access the investor interest towards stock investment. The study shows the investment should be made offer analyzing the

risk and return properly carious statistical tools, which have explained can measure the expected return and risk of individual common stock and portfolio by this study. Similarly this study also shows the interested investors that diversification of found by making as portfolio can reduce the unsystematic risk of individual securities for the investment having negative correlated stocks, the unsystematic risk can be reduced totally. But the risk cannot be reduced significantly if the investment made on stock having high positive correlation.

5.3 Recommendation

Mainly this study is made for the partial fulfillment of MBS level. However, this study may be helpful for the individual investors. The following recommendations are prescribed on the basis of data analysis and major findings of this study:

- The proper analysis of the individual stocks the industry and the whole market is essential to take an investment decision. The general knowledge about investment decision. The general economic condition, tax policy of Government peace and political situation is necessary which affect the price of share. Speculation of common stock may provide a good benefit rather investing for long period.

- Based on the analysis, findings and conclusion of the study, the following recommendations are suggested to overcome weakness, inefficiency and to improve the present fund mobilization and investment of commercial banks.

- Investors must focus on the risk factors before making and investment if they want to get maximum benefit from the investment. The correlation of variance is considered the best tool for relative measurement of risk. In the basis of coefficient of variance, it is proved that BOK's stock is the lowest risky and NIB is

the highest risky stock for the investment. So, it is recommended that the stock of BOK is the best for investment.

- Beta coefficient measures the sensitivity of the stock with market higher the beta, greater the volatility. The beta of market is always equal to 1. Stock having beta coefficient more than 1 is more risky than the market. If an investor is aggressive or risk taker, the investor can invest the market on that stocks. Stock having beta coefficient les than 1 is less risky than the market. Beta coefficient of NIBL is lower and it is recommended that the investor should selected NIB stock whose beta is lowest compare to other banks. Hence it is less risky or defensive stock.

- The stock having more systematic risk or undiversifiable risk have high sensitivity as such type of risk can not be minimized. So, the investors have to consider the adequate compensation for the acceptance of risk. It is clear from the study that health investor should select NIB's stock whose systematic risk is lowest as compare to other banks.

- Diversifiable or unsystematic risk diversification through the bank if it so, the bank or investor makes more benefits hence, HBL is more diversifiable risk than other banks. It is recommended that the investor should select HBL stock it is reduce diversifiable risk. Investor makes more profit than other banks.

- Investor of BOK has to wait for sometimes for the disinvestment of stock considering it's under priced stock. These stocks can not be sold but the investor should prefer to buy stocks and hold for some period. Where as the stock of NIB, HBL and NABIL are overpriced stock, investor should sell the stock in the market immediately.

- The portfolio return of BOK and NABIL is higher than other portfolios. So, the preference goes to BOK and NABIL for the buyers who want high return irrespective of higher risk.

- Portfolio standard deviation which measures the risk is also calculated to analyze the portfolio risk. T entire portfolio's have almost some kind of risk. Portfolio risk between HBL and NABIL is lowest which is less risky than other portfolio. So, it is recommended that the investor wants to take minimum risk they can invest in HBL and NABIL as best option for the investment.

- The stock market of Nepal is in emerging state of possible investor afraid of investing in secondary market. So NEPSE need to provide clear information about process f investment trading rules and regulations etc. Similarly NEPSE should develop effective information channel to provide the up to date information. Another recommendation to NEPSE is that it should take steps to establish the stock market in other main cities the countries. The market is concern traded only in the capital city which is the main difficulty in development of stock market.

- The financial institutions and companies should provide the real financial statements. The data provided by NEPSE and the company itself are different on some cases. It creates confusion to the possible investors about the actual financial condition of the company. The value of assets and liabilities should not by manipulated by the company to show the under profitability or over profitability.

- Government also should monitor the activities of stock market. Manipulation by stockholder s the company itself should be controlled. The rules and regulations regarding stock market should be amended in time to time and the attempts should be made for implementation of the rules and regulations, peace and political stability is the current burning issue of the country, which are the main elements of development of the stock market. So the attempts should be maintain pea end political stability of country.

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APPENDIX-1

Industry – wise NEPSE Index of closing date of fiscal year

Fiscal year	Banking	Development Bank	Hydropower	Finance	Insurance	Market
2004/05	473.98	327.55	414.39	432.29	347.08	367.66
2005/06	521.89	511.09	696.33	565.02	478.37	412.83
2006/07	603.85	596.78	814.20	582.27	601.98	531.44
2007/08	688.66	701.96	907.47	686.56	633.16	652.07
2008/09	377.18	357.3	726.47	335.62	482.32	749.11

APPENDIX-2

Calculation of Expected Return, S.D. Variance, and coefficient of variation of Return of Banking

Fiscal Year	**NI_B**	$R_B \text{ X} \frac{NI_t \text{ Z} NI_{t\text{Z}1}}{NI_{t\text{Z}1}}$	$(R_B \text{ Z} \bar{R}_B)$	$(R_B \text{ Z} \bar{R}_B)^2$
2004/05	453.18	-	-	-
2005/06	531.09	0.1740	0.1734	0.0301
2006/07	605.85	0.1408	0.1402	0.0197
2007/08	68.66	0.1389	0.1383	0.0191
2008/09	377.18	- 0.4514	- 0.452	0.2043
Total		ϕR_B=0.0023		0.2732

Expected Return $(\bar{R}_B) \text{ X} \frac{R_B}{N} \text{ X} \frac{0.0023}{4} \text{ X } 0.0006$

Standard Deviation $(¢_B) \text{ X} \sqrt{\frac{(R_B \text{ Z } \bar{R}_B)^2}{N \text{ Z} 1}} \text{ X} \sqrt{\frac{0.2732}{4 \text{ Z} 1}} \text{ X } 0.3018$

Variance $(¢_B)^2 \text{ X } (0.3018)^2 \text{ X } 0.0911$

Coefficient of Variation (C.V.$_B$) $\text{X} \frac{¢_B}{\bar{R}_B} \text{ X} \frac{0.3018}{0.0006} \text{ X } 503$

APPENDIX-3

Calculation of Expected Return, S.D. Variance, and coefficient of variation of Return of Development Banking

Fiscal Year	**NI_{DB}**	R_{DB} X $\frac{NI_t \text{ Z } NI_{t\text{Z}1}}{NI_{t\text{Z}1}}$	$(R_{DB} \text{ Z } \overline{R}_{DB})$	$(R_{DB} \text{ Z } \overline{R}_{DB})^2$
2004/05	327.55	-	-	-
2005/06	511.09	0.5603	0.4569	0.2088
2006/07	596.78	0.1677	0.0643	0.0041
2007/08	701.96	0.1763	0.0729	0.0059
2008/09	357.39	-0.4909	- 0.5943	0.3532
Total		ϕR_{DB}=0.4134		0.5714

Expected Return $(\overline{R}_{DB})$ X $\frac{R_{DB}}{N}$ X $\frac{0.4134}{4}$ X 0.1034

Standard Deviation $(¢_{DB})$ X $\sqrt{\frac{(R_{DB} \text{ Z } \underline{R}_{DB})^2}{N \text{ Z } 1}}$ X $\sqrt{\frac{0.5714}{4 \text{ Z } 1}}$ X 0.4364

Variance $(¢_{DB})^2$ X $(0.4364)^2$ X 0.1905

Coefficient of Variation (C.V.$_{DB}$) X $\frac{¢_{DB}}{\overline{R}_{DB}}$ X $\frac{0.4364}{0.1034}$ X 4.22

APPENDIX-4

Calculation of Expected Return, S.D. Variance, and coefficient of variation of Return of Hydropower

Fiscal Year	**NI_H**	$R_H \text{ X} \frac{NI_t \text{ Z } NI_{t\text{Z}1}}{NI_{t\text{Z}1}}$	$(R_H \text{ Z } \overline{R}_H)$	$(R_H \text{ Z } \overline{R}_H)^2$
2004/05	414.39	-	-	-
2005/06	696.33	0.6804	0.4892	0.2393
2006/07	814.20	0.1693	- 0.0219	0.0005
2007/08	907.47	0.1146	- 0.0766	0.0059
2008/09	726.47	0.1195	- 0.3907	0.1527
Total		ϕR_H=0. 7648		0.3984

Expected Return $(\overline{R}_H) \text{ X } \frac{R_H}{N} \text{ X } \frac{0.7648}{4} \text{ X } 0.1912$

Standard Deviation $(¢_H) \text{ X } \sqrt{\frac{(R_H \text{ Z } \underline{R}_H)^2}{N \text{ Z } 1}} \text{ X } \sqrt{\frac{0.3984}{4 \text{ Z } 1}} \text{ X } 0.3644$

Variance $(¢_H)^2 \text{ X } (0.3644)^2 \text{ X } 0.1328$

Coefficient of Variation $(\text{C.V.}_\text{H}) \text{X } \frac{¢_H}{\overline{R}_H} \text{ X } \frac{0.3644}{0.1912} \text{ X } 1.91$

APPENDIX-5

Calculation of Expected Return, S.D. Variance, and coefficient of variation of Return of Finance

Fiscal Year	**NI_F**	$R_F \text{ X} \frac{NI_t \text{ Z } NI_{t\text{Z}1}}{NI_{t\text{Z}1}}$	$(R_F \text{ Z } \bar{R}_F)$	$(R_F \text{ Z } \bar{R}_F)^2$
2004/05	432.29	-	-	-
2005/06	565.02	0.071	0.3048	0.929
2006/07	582.27	0.036	0.0283	0.0008
2007/08	686.56	0.1826	0.1803	0.0325
2008/09	335.62	- 0.5111	- 0.5134	0.2636
Total		ϕR_F=0.0092		0.3898

Expected Return $(\bar{R}_F) \text{ X } \frac{R_F}{N} \text{ X } \frac{0.0092}{4} \text{ X } 0.0023$

Standard Deviation $(¢_F) \text{ X } \sqrt{\frac{(R_F \text{ Z } \bar{R}_F)^2}{N \text{ Z } 1}} \text{ X } \sqrt{\frac{0.3898}{4 \text{ Z } 1}} \text{ X } 0.3605$

Variance $(¢_F)^2 \text{ X } (0.3605)^2 \text{ X } 0.1299$

Coefficient of Variation (C.V.$_F$) $\text{X } \frac{¢_F}{\bar{R}_F} \text{ X } \frac{0.3605}{0.0023} \text{ X } 156.79$

APPENDIX-6

Calculation of Expected Return, S.D. Variance, and coefficient of variation of Return of Insurance

Fiscal Year	**NI_I**	$R_I \text{ X} \frac{NI_t \text{ Z} NI_{t\text{Z}1}}{NI_{t\text{Z}1}}$	$(R_I \text{ Z} \bar{R}_I)$	$(R_I \text{ Z} \bar{R}_I)^2$
2004/05	347.08	-	-	-
2005/06	478.57	0.3789	0.2663	0.0709
2006/07	601.98	0.2579	0.1453	0.0211
2007/08	633.16	0.0518	- 0.0608	0.0037
2008/09	482.32	- 0.2382	- 0.3508	0.1231
Total		ϕR_I=0.4504		0.2188

Expected Return $(\bar{R}_I) \text{ X} \frac{R_I}{N} \text{ X} \frac{0.4504}{4} \text{ X } 0.1126$

Standard Deviation $(¢_I) \text{ X} \sqrt{\frac{(R_I \text{ Z } \bar{R}_I)^2}{N \text{ Z} 1}} \text{ X} \sqrt{\frac{0.2188}{4 \text{ Z} 1}} \text{ X } 0.2701$

Variance $(¢_I)^2 \text{ X } (0.2701)^2 \text{ X } 0.0730$

Coefficient of Variation (C.V.$_I$) $\text{X} \frac{¢_I}{\bar{R}_I} \text{ X} \frac{0.2701}{0.1126} \text{ X } 2.3988$

APPENDIX-7

Calculation of Expected Return, S.D. Variance, and coefficient of variation of Return of Market

Fiscal Year	**NI_I**	$R_I \text{ X} \frac{NI_t \text{ Z} NI_{t\text{Z}1}}{NI_{t\text{Z}1}}$	$(R_I \text{ Z} \bar{R}_I)$	$(R_I \text{ Z} \bar{R}_I)^2$
2004/05	367.66	-	-	-
2005/06	412.83	0.1229	- 0.0736	0.0054
2006/07	531.44	0.2879	0.0908	0.0082
2007/08	652.07	0.2270	0.0305	0.0009
2008/09	749.11	0.1448	- 0.0477	0.0023
Total		ϕR_M=0.7860		0.0168

Expected Return $(\bar{R}_M) \text{ X} \frac{R_M}{N} \text{ X} \frac{0.7860}{4} \text{ X } 0.1965$

Standard Deviation $(¢_M) \text{ X} \sqrt{\frac{(R_M \text{ Z} \underline{R}_M)^2}{N \text{ Z} 1}} \text{ X} \sqrt{\frac{0.0.0168}{4 \text{ Z} 1}} \text{ X } 0.0748$

Variance $(¢_M)^2 \text{ X } (0.0748)^2 \text{ X } 0.0056$

Coefficient of Variation $(CV_M) \text{ X} \frac{¢_M}{\bar{R}_M} \text{ X} \frac{0.0748}{0.11965} \text{ X } 0.3807$

APPENDIX-8

Calculation of Beta coefficient of NIB.

Fiscal Year	$(R_{NIB} - \bar{R}_{NIB})$	$(R_M - \bar{R}_M)$	$(R_{NIB} - \bar{R}_{NIB})(R_M - \bar{R}_M)$
2004/05	-	-	-
2005/06	0.3570	- 0.0736	- 0.0263
2006/07	0.1331	0.0908	0.0122
2007/08	0.1782	0.0305	0.0055
2008/09	- 0.6684	- 0.0477	0.0319
			0.0232

We have,

$$\text{CoV}\ (R_{NIB} - R_M) = \frac{(R_{NIB} - \bar{R}_{NIB})(R_M - \bar{R}_M)}{N} = \frac{0.0232}{4 - 1} = 0.0078$$

Now,

$$\beta_{NIB} = \frac{CoV\ (R_{NIB} - R_M)}{\sigma_M^2} = \frac{0.0078}{0.0056} = 1.3815$$

* Undivesifiable risk or = $\beta_{NIB}^2 \cdot \sigma_M^2$

Systematic risk = $(1.3815)^2 \times 0.0056$

= 0.0107

* Divesifiable risk or = $\sigma_{NIB}^2 - \beta_{NIB}^2 \cdot \sigma_M^2$

Systematic risk = 0.2079 – 0.0107

= 0.1972

* % of Undiversifiable risk $= \frac{\text{Undiversifiable risk}}{\text{Total risk}}$

$$X \frac{0.0107}{0.2079}$$

$$X\ 0.0515\ \textit{or}\ 515\ \%$$

* % of Diversifiable risk = 1 - undiviersifiable risk

= 1 - 0.0515

= 0.9485 or 97.85%

where,

N = No. of Observation = 4

ΩM^2 = Variance of Market

R_{NIB} = Return of stock of NIB

$CoV(R_{NIB}.R_M)$ = Covariance between stock of NIB & Market

β_{NIB} = Beta Coefficient of NIB

APPENDIX-9

Calculation of Beta coefficient of HB.

Fiscal Year	$(R_{HB} - \bar{R}_{HB})$	$(R_{HB} - \bar{R}_{HB})$	$(R_{HB} - \bar{R}_{HB})\ (R_{HB} - \bar{R}_{HB})$
2004/05	-	-	-
2005/06	0.0105	- 0.0736	- 0.0008
2006/07	0.3778	0.0908	0.0343
2007/08	- 0.0654	0.0305	- 0.0020
2008/09	- 0.3228	- 0.0477	0.0514
			0.0469

We have,

$$\text{CoV}\ (R_{HB} - R_M) = \frac{(R_{HB} - \bar{R}_{HB})(R_M - \bar{R}_M)}{N} = \frac{0.0469}{4 - 1} = 0.0156$$

Now,

$$_{HB} = \frac{CoV\ (R_{HB} - R_M)}{\sigma M^2} = \frac{0.0156}{0.0056} = 2.7857$$

* Undivesifiable risk or = $\beta_{HB}^2 . \sigma_M^2$

Systematic risk = $(2.7857)^2 \times 0.0056$

= 0.0435

* Divesifiable risk or = $\sigma_{HB}^2 - \beta_{HB}^2 . \sigma_M^2$

Systematic risk = 0.0838 – 0.0435

= 0.0403

* % of Undiversifiable risk $= \frac{\text{Undiversifiable risk}}{\text{Total risk}}$

$$X \frac{0.0403}{0.0838}$$

$$X\ 0.4810 \ or\ 48.10\ \%$$

* % of Diversifiable risk = 1 - undiviersifiable risk

= 1 - 0.4810

= 0.5190 or 51.90%

where,

N = No. of Observation = 4

Ω_M^2 = Variance of Market

R_{HB} = Return of stock of HB

$CoV(R_{HB}.R_M)$ = Covariance between stock of HB & Market

β_{HB} = Beta Coefficient of HB.

APPENDIX-10

Calculation of Beta coefficient of BOK.

Fiscal Year	$(R_{BOK} - \bar{R}_{BOK})$	$(R_{BOK} - \bar{R}_{BOK})$	$(R_{BOK} - \bar{R}_{BOK})(R_{BOK} - \bar{R}_{BOK})$
2004/05	-	-	-
2005/06	0.4779	- 0.0736	- 0.0352
2006/07	0.1005	0.0908	0.0091
2007/08	0.1795	0.0305	0.0060
2008/09	- 0.7795	- 0.0477	0.0372
			0.0489

We have,

$$\text{CoV}\ (R_{BOK} - R_M) = \frac{(R_{BOK} - \bar{R}_{BOK})(R_{BOK} - \bar{R}_M)}{N} = \frac{0.0489}{4-1} = 0.0163$$

Now,

$$_{BOK} = \frac{CoV\ (R_{BOK} - R_M)}{\sigma M^2} = \frac{0.0613}{0.0056} = 2.9107$$

* Undivesifiable risk or = $\sigma_{BOK}^2 . \Omega_M$

Systematic risk = $(2.9107)^2 \times 0.0056$

= 0.0475

* Divesifiable risk or = $\Omega_{BOK}^2 - \sigma_{BOK}^2 . \Omega_M$

Systematic risk = 0.2932 – 0.0475

= 0.2457

* % of Undiversifiable risk $= \frac{\text{Undiversifiable risk}}{\text{Total risk}}$

$$X \frac{0.0475}{0.2932}$$

$$X\ 0.1620 \ \textit{or}\ 16.20\ \%$$

* % of Diversifiable risk = 1 - undiviersifiable risk

= 1 – 0.1620

= 0.838 or 83.8%

where,

R_{BOK} = Return of stock of BOK

CoV (R_{BOK}. R_M) = Covariance between stock of BOK & Market

β_{BOK} = Beta Coefficient of BOK.

APPENDIX-11

Calculation of Beta coefficient of NAB.

Fiscal Year	$(R_{NAB} - \bar{R}_{NAB})$	$(R_{NAB} - \bar{R}_{NAB})$	$(R_{NAB} - \bar{R}_{NAB})\ (R_{NAB} - \bar{R}_{NAB})$
2004/05	-	-	-
2005/06	0.0771	- 0.0736	- 0.0057
2006/07	0.8492	0.0908	0.0771
2007/08	- 0.4034	0.0305	- 0.0123
2008/09	- 0.523	- 0.0477	0.0250
			0.0841

We have,

$$\text{CoV}\ (R_{NAB} - R_M) = \frac{(R_{NAB} - \bar{R}_{NAB})(R_M - \bar{R}_M)}{N} = \frac{0.0841}{4 - 1} = 0.0280$$

Now,

$$\beta_{NAB} = \frac{CoV\ (R_{NAB} - R_M)}{\sigma M^2} = \frac{0.0280}{0.0056} = 5$$

* Undivesifiable risk or = $\beta_{NAB}^2 . \sigma_M^2$

Systematic risk = $(5)^2 \times 0.0056$

= 0.14

* Divesifiable risk or = $\sigma_{NAB}^2 - \beta_{NAB}^2 . \sigma_M^2$

Systematic risk = 0.3878 – 0.14

= 0.2478

* % of Undiversifiable risk $= \frac{\text{Undiversifiable risk}}{\text{Total risk}}$

$$X \frac{0.14}{0.3878}$$

$$X\ 0.3610 \ \textit{or}\ 36.10\ \%$$

* % of Diversifiable risk = 1 - undiviersifiable risk

= 1 - 0.3610

= 0.6390 or 63.90%

where,

R_{BOK} = Return of stock of NAB

CoV (R_{NAB}. R_M) = Covariance between stock of NAB & Market

β_{NAB} = Beta Coefficient of NAB.