

CHAPTER I

INTRODUCTION

1.1 General Background:

In recent years international investors are attracted towards the financial markets of developing countries. As a result many joint ventures and multinational companies are being established in the country. Most of commercial banks doing well are also joint ventures banks.

The competition and increasing pressure of globalization on today's business world, investment management has become the most critical determinant of the economy. The most important fact of international business operation is continuous change in economic, political and social dimensions. These changes are beyond the control of international business concern. The growth of economy depends on availability of funds to finance the increased needs, not only of government and business, but also of individuals. Private domestic investment can be the contributor to economic growth and employment generation in the developing country. For the economic development of any country, public participation plays a vital role. If the people are rich, the country will be rich and people will have enough to invest on development of the country. To the extent that public investment expenditure result in the provision of public services which reduce the cost of production of the private sector, they have a positive effect on private profitability and investment. An investment in any funds is made to have some positive rate of return. Nobody is ready to bear risk without any return but to have return one must ready to face some risk. To minimize the risk at the given rate of return the concept of portfolio diversification is necessary. Portfolio is simply a collection of securities gathered to achieve certain investment goals. Usually investors diversify their portfolios to have minimum risk and maximum the return. So, to meet the investment goals there should be well-managed portfolio. Most investors hope that if they hold several securities then even one goes bad; the others will provide some protection from an external loss.

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

- Set investment policy
 - Perform security analysis
 - Construct a portfolio
 - Revise the portfolio
 - Evaluate the performance of the portfolio” (*Sharpe 1995:9*)
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- Among these investment processes the research is focused on security analysis and portfolio selection. Security analysis involves examine of individual securities or group of securities within the broad categories of financial assets. Portfolio construction identifies those specific assets in which to invest determining the proportion of the investor's wealth. Diversification should be done to minimize the risk and maximize the return. Portfolio performance involves determining periodically how the portfolio performs in terms of not only the return earned, but also the risk experienced by the investor”. (*Sharpe 1995:10-14*)

There are two types of market securities. Securities having life less than one year are called money market securities and securities having life of more than one year are called capital market securities. Money market securities generally have higher liquidity whereas capital market securities are used to generate a higher annual return to investors. Financial market facilitates the flow of funds from surplus to deficit units. Those financial markets that facilitate the flow of short-term funds, that is, less than one year are known as money markets, while those that facilitate the flow of long-term funds are known as capital markets

“Stock market is a financial market which probably has the greatest glamour and is perhaps the least understood. Some observers consider it as a legalized heaven for gambling and many investors consider stock market investing as a game in which the sole purpose is pocking winners” (*Lorie and Dodd; 1985:27*)

The well functioning stock market allows stockholders to achieve efficient diversification, which reduces risk, which in turn, lowers the risk premium component in the cost of capital. Stock markets lower the cost of capital by liquidating investors' investment. It encourages investors to retain their earning and convert it into cash by selling shares in the stock market. The stock market provides an opportunity to the portfolio managers and public for direct participating and sharing the gain of economic progress.

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

The concept of banking system was introduced in Nepal with the establishment of Nepal Bank Ltd. in 1937 A.D. But the financial scenario of Nepal changed with the establishment of joint venture banks in 1984 A.D. Nabil Bank Ltd. is the first joint venture bank introduced in Nepal. Since the joint ventures banks introduced in Nepal, the set up of joint ventures banks are increasing day by day and domestic banks like Nepal Bank Ltd. and Rastriya Banijya Bank no longer been able to enjoy monopoly. There is cut throat competition among these banks, which is healthy sign for the economic development of the country. Among the established commercial banks

twenty six are listed in NEPSE and for this research only three joint ventures banks are taken.

There always exists perceptible difference among investors in terms of risk and return and more than often, every investors have their own unique way of response pattern while making investment decision. Generally, investors invest their current cash only to those areas where there is high return and low risk. An investor looking for the common stock investment usually pays the price for stock based on his estimation about future dividends and grown in stock price. Investors can earn in the form of dividend or interest income and the appreciation in the price of the stock hold in stock market investment. So common stock represents a commitment on the part of a corporation to pay periodically whatever, its board of directors determine to assign as a cash dividend.

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

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

1.2 Focus of Study

Financial analysis is the important part of the economy so that every management is making their managerial decision on the basis of financial analysis. Finance is composed of three main functions: investment, financing and dividend. All investors invest their fund with hopes of getting good profit but for the lack of necessary knowledge the investor gets result in loss. In the context of Nepal, people are ignorant about the investment opportunity and risk associated with it. Investor must consider all related factors before considering making an investment.

The main focus of this study is the risk and return analysis of the common stock investment of the listed commercial banks of Nepal. Common stock is comparatively risky assets than other security in the capital market. The main purpose of the study is to analyze how one can get sustainable profit by minimizing the risk. For this purpose, market return, expected return, total risk, systematic risk and unsystematic risk are analyzed to give an idea to get sustainable profit by diversifying the risk to avoid future loss of the common stock investment.

1.3 Statement of Problems

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

Capital market is mat developed in Nepal so that most of people do not know about shares, bond, debenture and other securities. On other hand, there are no strong commitment towards increasing public investment in policy makers and government.

Stock brokers and financial institutions have no effective programs to develop investor's knowledge. So that moreover people are unfamiliar with the stock investment. They would rather prefer to invest in land, buildings, gold other unproductive items.

In an efficient market condition, stock price is equal to the intrinsic value of stock. When required rate of return and expected rate of return are not equal, then intrinsic value and market value of stock will not be equal. It is also assumed that all stock remain in security market line, and if the case is not so, they strive towards this line. But theoretical and practical knowledge may not always much each other.

Therefore it needs courage and at the some time faith to invest in common stock. In most of the time which can be generated through proper evaluation with giving view to the prevailing market atmosphere. But what are the criteria for evaluation that the stock they are holding will give them favorable return? What should be the compensation they have to receive for bearing risk? How can investors make higher return through lower risk?

The study seeks to analyze the following problems:

-) How do they know about the magnitude of risks?
-) How can one make higher return through lower risk?
-) What are the factors that determine the return out of the risk of a company?
-) What is the proportion of systematic and unsystematic risk to the total risk?

1.4 Objectives of Study

The basic objectives of this study are to assess the risks associated with return on the common stock investment on the basis of selective tools.

The other specific objectives of this study are as follows:

-) To examine risk and return of common stock of listed commercial Banks.
-) To analyze risk and return of selected portfolios.

-) To analyze risk and return relationship of individual stock with that of market.
-) To study systematic risks and unsystematic risk associated with security.
-) To provide suggestions and recommendation for the betterment of the selected Banks.

1.5 Significance of the Study

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

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

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

1.6 Limitation of Study

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

- 1) This research concerns only risks and returns common stock of the listed companies.
- 2) The accuracy of data's are depends upon the data collected and provided by the organization.
- 3) Analysis is based on primary and secondary data.
- 4) Data from part time frame i.e. latter six years will be used.
- 5) The research will be concerned with certain listed commercial banks only.
- 6) Sufficient and needed information are not timely available.
- 7) Time and financial constraints are also major limitation of the study.

1.7 Organization of Study

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

Chapter-One: Introduction

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

Chapter-Two: Review of Literature

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

Chapter-Three: Research Methodology

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

Chapter-Four: Presentation and Analysis of Data

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

Chapter-Five: Summary, Conclusion and Recommendation

This chapter is for summary, conclusion and recommendation for further important.

Bibliography and Appendices is incorporated at the end of the study.

CHAPTER II

REVIEW OF LITERATURE

This chapter is divided into two parts. One is conceptual review and another is review of previous related studies. In this regard, basic academic course books on finance recently published books of finance and related to the topics, journals, and other related studies/research reports were reviewed.

2.1 Conceptual Review

Central focus of the finance is tradeoff between risk and return. This study has focused on the risk and return analysis in the investment on common stock. This section of the chapter reviews the meaning and definitions of different concepts and terms used in this study.

2.1.1 Common Stock

Literally common stock is an ownership security. It is a source of long term financing. The common stock certificates are legal documents that give an evidence of ownership in a company that is organized as a corporation. Common stocks are marketable financial instruments. Sole proprietorships and partnerships are other forms of business organization, but only corporations can issue common stock.

Common stock is the recipient of the residual income of the corporation. Through the right to vote, holders of common stock have legal control of the corporation. An element of risk is also involved in equality ownership due to its low priority of claims at liquidation. In case, if the firm is Bankrupted, common stock holders will be, in the principal entitled to any value remaining after all other climates have been satisfied. Thus risk is highest with common stock and so must be in its expected return. Common equality provides a cushion for creditors if losses occur on dissolutions. Common stocks are generally "fully paid and non assessable", meaning that common stock holder may lose their initial investment. If the corporation fails to meet its

obligation, the stockholders cannot be forced to give the corporation the funds that are needed to pay off the obligations.

"Of all the forms of securities common stock appears to be the most romantic while fixed income investment revenue may be more important to most of the investor. Common stock seems to capture their interest the most. The potential reward and penalties associated with common stock make them an interesting even exciting proposition, no wonder, and common stock investment is a favorite's topic for conversation in parties and gets together". (*Chandra; 1999:67*)

"Common stockholders of a corporation are its residual owners, their claim to income and assets comes after creditors and preferred stock holders have been paid full. As a result, stockholders return on investment is less certain than the return to lender or to a preferred stockholder. On the other hand, the share of a common stock can be authorized either with or without par value. The par value of a stock is merely a stated figure in the corporate charter and is of little economic significance". (*Van Horne; 1997:560*)

A corporation exists only when it has been granted a charter, or certificate of incorporation by a state/government. This document specifies a right and obligation of stockholders. It may be amended with the approval of the stockholders, perhaps by a majority or a two-third vote, where each share of stock generally entitles its owner to one vote. Both the initial term of charter and term of any amendment must also be approved by the state/government in which the corporation is chartered. The main characteristics of common stock are as follows.

Ñ **Priority to Assets and Earning**

Common stockholders have a residual claim on the earnings and assets of their corporation.

Ñ **Authorized, Issued and Outstanding Share**

The corporate of a company specifies the number of authorized shares of common stock that the company can issues maximum without amending its charter.

Ñ **Voting Rights**

The common shareholder's right to vote in the affairs of the company. In most of the common stock each shareholders costs one vote in one share. A proxy is a temporary transfer of the right to vote.

Ñ **Maturity**

The capital obtained from this source is called as fixed capital. This cannot be redeemed in the mid life of the organization.

Ñ **Capital in Excess of Par Value**

Capital in excess of par value often called capital surplus or additional paid in capital usually refers to the amounts directly contributed to equity capital in excess of the par value.

Ñ **Retained Earning**

Retained earnings are the balance sheet account that indicates the total amount of earnings that is retained in the business. These earnings have been reinvested in the firm.

Ñ **The Book Value Per Share**

The book value of each common stock is equal to the net worth or common equity, consisting of sum of common stock, retained earnings and paid in capital, divided by the number of shares of common stock outstanding.

Ñ **Stock Certificate**

Stock certificate is usually registered with the name address and holding of the investor included on the corporation books, which represented the ownership of a firm's stock.

Ñ **Ownership Right**

Common stockholders are owners of the firm they often have voting right that permits them to select the firm's director and to vote on special issue.

Ñ **Tax Treatment**

Interest payments to the debt holders are treated as tax-deductible expenses on the firm's income statement, where as dividend payment to the common stock holders are non-tax deductible. The tax-deductibility of interest primarily accounts for the fact that the explicit cost of debt is generally less than the explicit cost of equity. Thus stockholders are the last to receive any distribution of assets during Bankruptcy proceedings.

"An equity share is one, which is not a preference share. These are normally risk-bearing shares. In lean years equity shareholders do not receive any dividends. During liquidation of a company they are paid out but are usually entitled to all the surplus assets after the payment of creditors and preference shareholders. The value of these shares in the market fluctuates with the fortunes of the company. A wise inventor in equality share does not receive regular dividend but is also assured of capital appreciations. "Deferred shares" are also known as founders' shares or management shares. These are usually allotted to promoters and their friends at the time of formation of the company. These shares usually carry disproportionate voting rights and right to substantial dividends from the profits left after paying off preference and equality dividend. Public limited companies, subsidiaries of such companies and private companies cannot issue such shares after the commencement of the companies Act." (*Gupta and Radhaswamy; 1997:49*)

2.1.1.1 General Right of the Common Stockholder

There are two types of rights of common stockholders.

1. Collective rights: Certain collective rights are usually given to the common stockholders. They are as follows:
 - a) Right to formulate and amend the memorandum and the articles of association.
 - b) Right to elect directors.
 - c) Right to authorize the sales of fixed assets.
 - d) Right to authorize the merges.
 - e) Right to issue preferred stock, debentures, bonds, and other securities.
 - f) Right to change the amount of authorized common stock.
2. Specific rights: Common stockholders also have specific rights as individual owners. They are as follows:
 - a) Right to income.
 - b) Right to inspect the corporate books.
 - c) Right to vote.
 - d) Right to sell their stock certificates.
 - e) Preemptive right.

2.1.2 Investment

An investment involves sacrifice of current rupees for future rupees. The sacrifice takes place in the present and is certain while the reward comes late and it is uncertain. Investment is always associated with return and risk. People invest with an aim of earning some profits in addition to the initial amount. Investment generally involves real asset or financial assets. Financial assets are piece of paper representing an indirect claim to real assets held by someone else. Real assets are generally less liquid than financial assets. Investment is an exchange of financial clans such as stocks and bonds etc.

There are various types of alternatives for investments. Out of the, this study deals with the common stock investment. Common stock has one important investment characteristics and one important speculative characteristics. As the common stock is riskier it will yield higher return. Common stock is an ownership security. People typically buy common stock expecting to earn dividends plus a capital gain when they sell their shares at the end of some holding period.

Higher the risk of security, higher the rate of return

Financial assets are pieces of paper representing an indirect claim to real assets held by some one else. Real assets are generally less liquid than financial assets. Returns on real assets are frequently more difficult to measure accurately. But our principal concern is with financial assets. Investment is an exchange of financial claim stocks and bonds etc. Investment is the employment of funds with the aim of achieving additional income or growth in value. It involves the commitment of resources that have been saved or put away from current consumption in the hope that some benefits will accrue in future. Investment involves long-term commitment and waiting for a reward.

Investment may be defined as the purchase by an individual or institutional investor of a financial or real asset that produces a return proportional to the risk assumed over some future investment period. It is an investment is a commitment of funds made in the expectation of some positive rate of return. If the investment is properly undertaken, the return will be commensurate with the risk the investor assumes.

“Investing or speculating in the stock market has all the characteristics of a game. The purpose of the stock market game is to win” (*Grewal; 1995:56*). define the investment in the broadest sense as he sacrifice of current rupees for future rupees in which two different attributes are involved: Time and risk. The sacrifice takes place in present and is certain. The reward comes later if at all and the magnitude is generally uncertain.

2.1.3 Risk

Risk is defined as the variability of the returns of a period. The one-period rate of return is the basic random variable used in measuring and investment's risk. The greater the variability of the return's the riskier the project for example, a government bond that guarantees its holders NRs 30 interest after 30 days has no risk, since there is no variability associated with the return. An equivalent investment in a firm's common stock the may earn over the same period anywhere from NRs 00 to NRs 300 is very risky due to the high variability of return. The more certain the return from an asset's the less variability and therefore the less risk.

"Risk and return are the determinant for the valuation of securities. When the firm should recognize that the forecast return may or may not be achieved. The taught part of decision-making under uncertainty is deciding how much extra return should be required to accept a measurable risk. Therefore, risk may be defined as the likelihood that the actual return from an investment will be less than the forecast return. Stated differently, it is the variability of return from an investment." (*Hampton; 1996:340-345*)

In the financial term, risk can be defined as the probability of the occurrence of unfavorable outcomes. In our context two measures developed from the probability distribution have been used as initial measures of return and risk. They are the mean and standard deviation of the probability distribution.

“Risk is the variability of possible returns around the expected returns of an investment. Each investor has his/her own attitudes towards risks and how much he/she can tolerate. Since, investment have risks associated with them, the investors must determine combination of alternatives matches that tradeoff the risks and compensation for percept risks”. (*Thapa,Bhattarai,Basnet,2006*)

The Webster's dictionary defined risk as a hazard: a peril; exposure to loss or injury". Thus, risk refers to the chance that some unfavorable event will occur. In real sense, if someone wishes to invest in speculative stocks, he/she is taking a risk in the hope of

making an appreciable return. Risk in a simple language is an uncertainty. "Risk is typically defined as uncertainty. It arises from imperfect knowledge or from incomplete data". Risk in financial analysis is the variability in returns. The deviation between expected and real return is the variability and this variability is higher will be risk and vice versa. If there is chance of more than one outcomes uncertainty there is risk and if there is certainty for sure value there is no risk. Risk can be carrying meanings to different parties. thea risk can be classified it as stand alone risk and portfolio risk. Portfolio means to invest more than single security as to minimize the and maximized the return by constructing or by maintaining portfolio, the potential loss of one security can be covered from the benefits of another security . therefore overall risk can be minimized . When an investor invest in Treasury bill , the investment is considered risk free and the asset (Treasury bill) is known as risk free asset.

Higher the risk of security, higher the rate of return demanded by the investor. Since ordinary share is more risky, investor will require highest rate of return on their investment in common stock performance share is more risky than debt. Therefore risk return relationship for various securities is different.

"Risk plays a central role in the analysis of investments. Investors often ask about the total risk they will be assuming in an investment and like to know whether the risk premium provided to them is enough or not. But they are also concerned about many other issues. First of all, it is necessary to see the total risk associated with a single asset is relevant for them. Second, they need to knew the actual contribution of an assets risk to portfolio risk". (Pradhan; 2001:334)

Risk presents in virtually every decision. Assessing risks and incorporating the same in the final decision is an integral part of financial analysis. The objectives in decision making is not to eliminate or avoid risk often it may be neither feasible nor necessary to do so but to property assess it and determine whether it is worth bearing". (Chandra; 1999:67)

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

Risk cannot be avoided if investor is seeking higher rate of return. Investor will require different rate of return on various securities. Since they have risk difference, higher the rate of return demanded by the investor. Since ordinary share is more risky, investor will require highest rate of return on their investment in common stock: preference share is more risky than debt therefore risk-return relationship for various securities is difference.

"Investor generally does not invest their money in only one risky asset instead; they hold a portfolio of many in the hope of diversifying the investment risk. The relevant risk of an asset is defined as the portion of its total risk that changes proportionately with the market risk. In the context of portfolio, the contribution of each asset to the portfolio risk is the portion of relevant risk of the asset. Therefore, an investor is concerned with the portfolio risk, which is the sum of the relevant risk of individual assets included in portfolio" (Pradhan; 2001:114)

The market risk depends on the degree of variability in the market return. The relevant risk of an asset depends on how sensitive the asset return is to the changes in the market returns. The relevant risk of individual assets is measured in term of the sensitivity of its returns to changes in the market return. It is known as systematic or beta risk. The term beta is used to measure the sensitivity of asset returns to the changes in the market returns. The total risk of an investment project is the absolute risk and it is measured in various or standard deviation. The variability of returns is one and only the cause of risk.

The homogenous stock risk of individual stocks can be eliminated if they are included in a well-diversified portfolio. When individual stocks with imperfect correlations are combined in to a portfolio the lower the return on a stock caused by the factors specific to a company or groups of homogenous stocks is usually offset by the higher return on the stocks. Thus, this part of the risk is eliminated and the portfolio risk is reduced.

2.1.3.1 Sources of Investment Risk (*Rabindra Bhattarai,(2009:107,108,109)*)

Every investment has uncertainties. Uncertainties make future investment returns risk. The sources of uncertainty that contribute to investment risk are as follows:

Ñ Interest Rate Risk

It is the potential variability of return caused by changes in the market interest rates. If market interest rates raise, then investments values and market prices will fall, and vice versa. The variability of return that results is interest rate risk. This interest rate risk affects the prices of bonds, stocks etc.

Ñ Purchasing Power Risk

It is the variability of return an investor suffers because of inflation. Inflation (or a rise in general prices over time) seems to be the normal way of life in most countries today. However, when inflation takes place, financial assets (such as cash, stock and bonds) may lose their ability to command the same amount of real goods and services they did in the past. To put this way, the real rate of return on financial assents may not adequately compensate the holder of financial assets for inflation.

Ñ Bull-Bear Market Risk

This risk arises from the variability in market returns resulting from alternating bull and bear market forces. When a security index rises fairly consistently from a low point, called a trough, for a period of time, this upward trend is called bull market. The

bull market ends when the market index reaches a peak and starts a downward trend. The period during which the market declines to the next trough is called bear market.

Ñ **Default Risk**

It is the portion of an investment's total risk that results from changes in the financial integrity of the investment.

Ñ **Liquidity Risk**

It is the portion of an asset's total variability of return that results from price discounts given or sales commission paid in order to sell the asset without delay. Perfectly liquid assets are highly marketable and suffer no liquidation costs. Illiquid assets are not readily marketable either price discounts must be given or sales commissions must be paid, or both of these costs must be increased by the seller.

Ñ **Callability Risk**

Some bonds and preferred stocks are issued with a provision that allows the issuer to call them in for repurchase. The portion of security's total variability of return that derives from the possibility that the issue may be called is the callability risk.

Ñ **Convertibility Risk**

Convertibility risk is that portion of the total variability of return from a convertible bond or a convertible preferred stock.

Ñ **Political Risk**

The portion of an asset's total variability of return caused by changes in the political environment (for example, a new tax law) that affect the asset's market value.

Ñ **Industry Risk**

An industry is a group of companies that compete with each other in the market for a homogeneous product. Industry risk is that portion of an investment's total variability of return caused by events that affect the products and firms that make up an industry.

2.1.3.2 Systematic and Unsystematic Risk

Systematic risk is also known as undiversifiable risk. It cannot be diversified away. This risk is that portion of total variability in return caused by market factors that simultaneously affect the price of securities. Systematic risk occurs due to changes in the macroeconomic factors like interest rate, inflation, investors' expectations, gross domestic product, etc. Moreover, it is the cause of the external environment like political, economic, sociological, and technological of the firm. This type of risk cannot be diversified through the creation of a portfolio.

Unsystematic risk is also known as diversifiable risk. The level of this type of risk is unique in different companies. Unsystematic risk arises from project-specific factors, for example, inefficiency of management, failure in new product production, employee strikes, lawsuits, and any other event that is unique to the company. It is inherent to individual companies or projects. It occurs due to internal management factors. This type of risk can be diversified through the creation of a portfolio.

2.1.4 Return

Return is the reward for uncertainty of risk. The concept of return has different meanings to different investors. Return is the main attraction for investors to invest in risky securities as stocks, accepting a varying degree of risk tolerance. Return is the total gain or loss experienced on an investment over a given period of time.

Some investors seek near-term cash inflows and give less value to more distant returns. Such an investor might purchase the stock of another firm that pays large cash dividends. Other investors are concerned primarily with growth. They would seek projects that

offer the promise of long term, higher than average growth of sales, earning and capital appreciation.

"The return is the total gain or loss experienced on an investment over a given period of time. It is commonly measured as the change in value plus any cash distributions during the period, expressed as a percentage of the beginning of period investment value." (*Gitman; 2001:237*). The return better known as reward for investments includes both current income and capital gains or losses that arise by the increase or decrease of the security prices.

The expected rate of return for any asset is the weighted average rate of return, using probability of each rate of return as the weight. The expected rate of return is calculated by summing the products of the rates of the return and their respective probabilities.

$$\begin{aligned} \text{Expected value/return } E(r) &= \sum_{t=1}^T r_t P_t \\ &= P_1 r_1 + P_2 r_2 + \dots + P_t r_t \end{aligned}$$

Where as,

r_t = the t^{th} rate of return from a probability distribution

P_1 = the probability that the t^{th} rate of return will take place

T = Possible rates of return

When historical return are used, the following formula is used to calculate on average return.

$$\text{Expected value/return } E(r) = \frac{\sum_{t=1}^T r_t}{T}$$

Where $E(r)$ is the average or mean return and T is the number of observed returns.

2.1.4.1 Single-Period Rate of Return (*Van Horne and Wachouiez; 1995:90*)

Single period return may be defined as the change in value plus any cash distributions expressed as a percentage of the beginning of period investment value. An investor can obtain two kinds of income from an investment in a share of stock or a bond. They are as follows.

-) Income from price appreciation (or losses from price depreciation). Sometimes called capital gains (or losses). This quantity is denoted $P_t - P_{t-1}$.
-) Cash flow income from cash dividend or coupon interest payments, represented by the convention D_t .

Sum of these two sources of income (or loss) equals the total return and can express in percentage of follows:

Single period rate of return, r_t

$$\begin{aligned} &= \frac{(\text{Price change}) + \text{cash dividend}}{\text{Purchase price at start of the period}} \\ &= \frac{(P_t - P_{t-1}) + D_t}{P_{t-1}} \end{aligned}$$

Where,

- P_{t-1} = Starting stock price
- P_t = Ending stock price
- D_t = Cash dividend for time t .

This formula can be used to determine both actual one period returns (when based on historical figures) as well as expected one-period returns (when based on expected dividends and prices). Also note that the term in parenthesis in the numerator of the above equation represents the capital gain or loss during the period.

2.1.5 Portfolio Analysis

Portfolios of assets usually offer the advantage of reducing risk through diversification. A portfolio is a combination of investment assets. The portfolio is the

holding of securities and investment in financial assets i.e. bond, stock. Portfolio management is related to the efficient portfolio investment in financial assets.

A portfolio is defined as a combination of assets. Portfolio theory deals with the selection of optimal portfolio that is a portfolio that provides the highest possible return for any specified degree of risk on the lowest possible risk for any specified rate of return. Since portfolio theory has been developed most thoroughly for financial assets-stocks and bonds. However, extensions of financial asset portfolio theory to physical assets are readily made, and certainly the concepts are relevant in capital budgeting.

"The rate of return on a portfolio is always a weighted average of the returns of the individual securities in the portfolio. A fundamental aspect of portfolio theory is the idea that the riskiness inherent in any single asset held in a portfolio is different from the riskiness of that asset held in isolation. The portfolio analysis is performed to develop a portfolio that has the maximum return at whatever level of risk and investor thinks appropriate. If portfolio is being constructed they can reduce unsystematic risk without losing considerable return. Therefore, we need to extend our analysis of risk and return to portfolio context. Portfolio theory shows an investor can reach his optimal portfolio position. Portfolio theory, originally proposed by Harry M. Markowitz is based on the assumption that the utility of the investor is a function of two factors: mean return and variance or its square root, the standard deviation of return. Hence it is also referred as the mean variance portfolio theory or two-parameter portfolio theory." (*Chandra; 1994: 71*)

A portfolio is a combination of investment assets. The portfolio is the holding of securities and investment in financial assets i.e. bond, stock. Portfolio management is related to the efficient portfolio investment in financial assets. The primary objective of portfolio is to maximize return and to minimize risk

Three influences reduce portfolio risk in relation to the standard deviation of individual securities in isolation:

-) Extend to which the correlation between the returns from the individual securities is less than one.
-) Number of the securities in the portfolio and
-) Proportion or weights of the individual securities in the portfolio in relation to their correlation among one another.

2.2 Reviews from related studies

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

2.2.1 Review from Journals and Articles

Enally and Ravenscraft (2002) Published an article on "*The performance of Hedge Funds: Risk Return, and Incentives*" examined Hedge funds may be enhancing returns by taking on extra risk. Many hedge funds use tools designed to reduce systematic rather than total risk. Though this is obviously true for short sellers and market neutral funds techniques such as short sales are employed by most hedge funds. Combination of incentives alignment and investment flexibility gives hedge funds a clear performance advantage over funds. Incentive funds are the most important and significant determinants of risk adjusted return. Using 2,4,6 and 8 year sample all ending in December 1999 with 547, 272, 150 and 79 hedge fund observations, main findings of this study are the average hedge fund sharp ratio is higher than comparable mutual fund sharp ratio and this performance advantage increases when we match fund by reign Hedge funds achieve this sharp ratio superiority despite their higher total risk. In this study, the average total risk is higher for hedge funds. Thus, some of the characteristics that enhance hedge fund performance may not be appropriate for mutual funds that attract undiversified, risk-averse clients.

This hedge fund concluded that the Flexible investment options employed by hedge funds make it difficult to classify hedge funds, identify the correct benchmark, and

thus measure relative performance. Standard deviation of returns measure of total risk may not fully capture the complex risk taking from hedge funds dynamic, highly levered strategies. Monthly incentive fees, therefore, contain an unknown reporting bias that may be as important as depreciation rates, common cost allocation, and transfer pricing issues in accounting profits.

Bowman (1998) in *"The theoretical relationship between systematic risk and financial variable"* examined the relationship between risk and financial variables. Systematic risk of levered firm is equals to the systematic risk of the same firm without leverage. There is no direct relationship between earning variability and market risk. Systematic risk is directly related to the accounting beta. There is no theoretical basis for relationship of dividend payout and beta. There is not only theoretical relationship between dividends and systematic risk but also size and growth of the firm and systematic risk.

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

2.2.2 Review from Thesis

Review of thesis is a section of review of literature where various thesis are reviewed which are related its topic and which may be helpful for this study. In this section some thesis are reviewed which have done on risk and return topic and the objective of this section is to know how the relation between risk and return is described and measured by different thesis.

Tuladhar (2002), Conducted a study on *"A study on risk and return analysis of common stock"*.

Following are the specific objective

-) To describe the risk return and other relevant variable those are very importation in making decision on stock investment.

-) Identify the problems faced by the individual investors in stock market.
-) To analyze the risk and return of common stock and their portfolio.
-) To access the past and present states of investment of common stock.
-) The study will provide some of the strong recommendation based on the analysis of the data.

Findings of the study are:

- 1) There is a positive correlation between risk and return character of the company.
- 2) Nepalese capital market being inefficient, the price index itself sufficient to give the information about prevailing market.
- 3) Investors do not have any idea about the procedures of the securities issuance.
- 4) Investors should get regular information about the systematic risk (Beta), return on equity (ROE) and P/E ratio of various listed companies.
- 5) An analysis of risk and return shows that many companies have higher unsystematic or specific risk.

Tamang (2003), conducted a study on '*Study on Risk and Return analysis of Commercial Banks in Nepal*'. The main objectives of the study is to determine whether the share of the commercial banks are correctly priced or not by analyzing the required rate of return using the capital asset pricing model also to measure the systematic and unsystematic risk of the commercial banks. in this study, in the researcher has used mathematical tools i.e. market model, single period return, expected rate of return, standard deviation, coefficient of variation beta coefficient (B). The period of the study has taken 5 years data from 1996-2001. The major finding of the study, the systematic risk of Nepal Arab bank has the highest unsystematic risk but total risk or variance of Bangladesh is the highest i.e. 10 percent.

From the study, it was also found that the shares of Nepalese commercial banks are heavily traded in NEPSE none of the bank's shares price are correctly priced.

Manandhar (2006), conducted a study on "*A study on Risk and Return analysis on Common Stock of listed Commercial Bank in Nepal*". The main objective of the study is to analyze the risk and return and other relevant variables that help in making decision about investment on securities of the listed commercial banks. The other specific objectives of this study are as follows:

1. To evaluate common stocks of listed commercial bank in terms of risk and return and to perform sector wise comparison on the basis of market capitalization.
2. To identify whether the share of commercial banks are overpriced, underpriced or at equilibrium price.
3. To identify the correlation between returns of commercial banks.
4. To construct optimum portfolio from listed common stock.
5. To make relevant suggestion and practical idea and materialize recommendations based on findings.

Findings of the study are:

1. Among all the securities common stock is known to be most risky security.
2. Higher the risk higher will be the return.
3. Most of investors attached to common stock securities because of its higher expected returns.
4. As for the investors it is important to analyze each investment, company to pentagonal returns with the risk and average the potential returns from an investment should compensate for the level of risk undertaken.

Gyawali (2009), Conducted a study on "*Risk and Return on Common Stock*"

Following are the specific objectives:

-) To determine the risk return and other relevant factors that directly affect the investment in common stock .
-) To evaluate the common stock of the listed commercial banks in terms of risk and return to perform sector wise comparison on the basic of the market capitalization.

Findings of the study are:

-) Among five commercial banks, standard chartered bank and Himalayan bank are the continuous dividend payer.
-) Among sample banks Nepal Bangladesh bank ltd has lowest expected return.
-) Nepal Bangladesh bank is high risky and standard chartered bank is low risky.

Giri (2011), conducted a study on “ *A study on the performance of Investment in Common Stock including Risk and Return Analysis of the Listed Commercial Bank*”.

Following are the specific objectives:

1. To provide o brief view of the present Nepalese stock market.
2. To depict the detail about the share price behavior of the commercial banks listed in NEPSE.
3. To compute and analyze the risk involved in the common stock investment of the sampled commercial banks.
4. To evaluate return and risk proportion of investments on stock of sampled commercial banks.
5. To provide suggestions, some practical ideas and recommendations based on the analysis of the data.

Findings of the study are:

-) Number of listed companies under NEPSE, shows the increasing trend with positive percentage change, which indicates increasing interest of public towards the establishment of companies in the country.
-) On the basis over all NEPSE index all the market risk and return can be accessed. Corresponding to the fluctuation in individual industries the overall market index has also moved accordingly.

-) Nepal stock exchange is analyzing stock market behaviour in less number of area. It is recommended that Nepal stock exchange should recruit those professional and expert who can analysis the market behaviour in efficient way and in wider area. NEPSE should conduct the awareness program about investment and its procedure for the general public.

Singh (2011), conducted a study on “*A Study on Risk and Return Analysis on Common Stock Investment*”.

Following are the specific Objectives:

-) To estimate risk and return of a common stock and their portfolio.
-) To analyze risk and return relationship of individual stock with that of market.
-) To examine risk and return in common stock of listed commercial
-) To provide information to the investors on investing in stocks

Findings of the study are:

-) NABIL’s common stock consists of the highest 75.75% risk which is the riskiest where as it is the lowest of SBI.
-) The higher risk of common stock may have greater possible return.
-) With the coefficient of variation shows the risk per unit of return and it provides meaningful basics for comparison. While considering the C.V. of commercial banks it is found that three banks per unit risk is much higher.
-) All the commercial banks required rate of return is less than expected, which means that they are underpriced, therefore it me be beneficial to the investors who are going to purchase the selected companies common stock.

2.3 Research Gap

Different from others previous research works, this study has analyzed risk and return of common stock. Present researcher has used data from 2006/2007 to FY 2011/2012 Among the reviewed thesis all researcher are analyzed risk and return of common stock. Major concentration of present thesis is analysis of risk and return of common stock of listed commercial banks by using different technique such as T-test for analysis of portfolio.

CHAPTER III

RESEARCH METHODOLOGY

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

3.1 Research Design

Research design is necessary to fulfill the objectives of well-set research. Research design may be defined as framework, plan and structure for collecting, analyzing and evaluating data. It is a procedure and techniques, which provide ways for research viability. This research is belongs to risk and return analysis of common stock, so that this research is based on recent historical data, which covers the six years period data from the FY 2006/2007 to FY 2011/2012. It deals with the common stocks of commercial banks on the basis of available information. As the title of the study suggests, it is more analytical and empirical but less descriptive.

3.2 Sources of Data

All the data necessary for the research will be collected from secondary sources. Data related to market prices of shares (MPS), market capitalization, movement of NEPSE index and etc will be taken from the trading report published by NEPSE, other relevant data will be collected from individual banks, Security Board of Nepal (Thapathali) and from their websites

The collection procedure is summarized below: -

- Financial document and summary sheets provided by companies.
- Trading manual published by Nepal Stock Exchange Limited.
- Related URL
- Materials published in Newspapers and Magazines.
- Other related journals, periodicals, books and booklets.
- Central library T.U., Shanker Dev Campus library.

3.3 Population and Samples

This study is based on the comparative study of risk and return on the basis of common stock investment of three commercial banks listed in NEPSE. Population is all the listed companies in NEPSE. Concentration of this study is listed commercial banks only. There are a total of 32 commercial banks registered under Nepal Rastra Bank. The number of listed commercial banks in NEPSE is twenty eight. For this, study three commercial banks Himalayan Bank Limited (HBL), Everest Bank limited (EBL) and Nepal Investment Bank Limited (NIBL) are taken as sample.

1) Himalayan Bank Ltd. (HBL)

Himalayan Bank Ltd is a joint venture bank with Habib bank Ltd. of Pakistan was . established in 2049 B.S. under the company Act. This is first joint venture bank managed by Nepali chief executive. The operation of the bank started from 2049/10/5. Bank's authorized capital, issued capital and paid up capital is Rs, 3,00,00,00,000, Rs. 240,00,00,000 and Rs240,00,00,000 respectively. The main objectives of the bank is to provide modern banking facilities like tale banking to the businessman, industrialists, other professional

and to provide loans on agriculture and industrial sectors. Now its 20 percent equity share hold by Habib Bank and 80 percent equity hold by Nepali Promotes, Financial institutions organized institutions, General public and others.

2) Everest Bank Ltd. (EBL)

Everest Bank Ltd. was established in 2051 B.S. under the company act with an objective of carrying out commercial banking activities under the commercial bank Act. 1974. United Bank of India Ltd under technical services agreement signed between it and Nepali Promoter was managing the bank till November 1996. Later on it handed over the management to the Panjab National Bank Ltd, India which holds 20 percent equity on the bank's shares capital, 50 percent equity hold, by Nepali promoter and 30 percent hold by the general public investors. Authorized capital, issued capital and paid up capital are Rs. 200, 00, 00,000, Rs. 139,16,35,700 and Rs. 139,16,35,700 respectively.

3)Nepal Investment Bank Ltd. (NIBL)

Previous Nepal Indosuez Bank Ltd. in known as Nepal Investment Bank now. It is another joint venture bank was established on 2042 B.S. under the company Act . The bank is managed by Banque Indosuez, Paris in accordance with joint venture and technical services agreement signed between it and Nepalese promoters. Now, this bank is operating under the full ownership of Nepalese promoters and shareholders. Authorized capital, issued capital and paid up capital of this bank is Rs. 4,00,00,00,000 Rs. 301,29,24,200 and Rs. 301,29,24,200 respectively.

3.4 Data Analysis Tools

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

3.4.1 Market price of Stock (P)

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

3.4.2 Dividend (D)

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

Total dividend amount = Cash dividend + Stock dividend

3.4.3 Return on Common Stock (R_j)

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

Symbolically

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

Where,

R = annual rate of return

D_t = Cash dividend received at time t.

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

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

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

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

Symbolically,

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

Where,

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

R_j = Return on stock j.

n = number of years that the return is taken.

∑ = Sign of summation.

3.4.5 Return on market

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

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

Where,

R_m = Return on Market

NI_t = NEPSE index at time t

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

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

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

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

Where,

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

R_m = Summation of market return.

N = Number of samples period.

3.4.7 Standard Deviation (S.D)

Standard deviation is a statistical measure and is widely used to measure risk from holding a single asset. It is also a statistical measure of the variability of a set of observations. The standard deviation represents a large dispersion of return and is a high risk and vice versa. It is measure the total risk on stock investment.

If data given as time series

$$\sigma_j = \sqrt{\frac{\sum R_j^2 - \frac{(\sum R_j)^2}{n}}{n-1}}$$

If data is probability distribution

$$\sigma_j = \sqrt{\sum P_j (R_j - E(R_j))^2}$$

Where,

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

P_j = Probability distribution of the observation.

R_j = Single period rate of return on stock j.

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

n = Number of years that the returns are taken.

3.4.8 Coefficient of Variation (C.V.)

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

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

Where,

C.V. = Coefficient of variation of stock.

σ_j = Standard deviation of return on stock j.

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

3.4.9 Beta Coefficient (β)

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

$$\beta = \frac{Cov(R_j, R_m)}{\sigma_m^2}$$

Where,

β = Beta coefficient of stock j.

$Cov(R_j, R_m)$ = Covariance between return on stock j and return on market .

$$= \frac{\sum R_j \sum E(R_j)' \sum R_m \sum E(R_m)'}{n \sum 1}$$

σ_m^2 = Variance of market return.

3.4.10 Correlation Coefficient (ρ_{ij})

Two variables are correlated when they are related that the change in the value of one variable is accompanied by change in the value of other. Correlation may be positive or negative. If return on two securities is negatively correlated which combined in portfolio reduces the risk. If securities are positively correlated risk cannot be reduced. Correlation coefficient is negative or positive which ranges from +1 to -1. It can be calculated as.

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

Where,

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

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

$\sigma_i \sigma_j$ = Standard deviation of returns for securities i and j.

i) Perfectly Positive Correlation ($\rho = +1$)

Return on two perfectly positive correlated stocks would move up and down together and a portfolio of two such stocks would be exactly as risk if the portfolio consists of perfectly positive correlated stocks.

ii) Perfectly Negative Correlation ($\rho = -1$)

Returns on two perfectly negative correlated stock would move perfectly together put in exactly opposite in directions. In this condition, risk can be completely eliminated perfect negative correlation almost never found in the real world.

iii) No Relation between Return ($\rho = 0$)

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

iv) Intermediate Risk ($\rho = 0.5$)

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

3.4.11 Portfolio Risk and Return

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

Portfolio Return, $E(R_p)$

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

Symbolically,

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

Where,

$E(R_p)$ = Expected return on portfolio

W_i = Proportion of wealth invested in i assets.

W_j = Proportion of wealth invested in j assets.

$E(R_i)$ = Expected return on i assets

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

Portfolio Risk,

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

$$\sigma_P = \sqrt{\sigma_i^2 w_i^2 + \sigma_j^2 w_j^2 + 2w_i w_j \text{Cov}(R_i, R_j)}$$

Where,

σ_P = Standard deviation of stock i & j.

σ_i^2 = Variance of assets i.

w_i = proportion of assets i.

σ_j^2 = Variance of assets j.

w_j = Proportion of assets j.

$\text{Cov}(R_i, R_j)$ = Covariance between the return of assets i & j.

3.4.12 Risk Minimizing Portfolio

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

$$W_i = \frac{\sigma_j^2 \text{Cov}(R_i, R_j)}{\sigma_i^2 \sigma_j^2 + 2 \text{Cov}(R_i, R_j)}$$

$$W_j = 1 - W_i$$

Where,

w_i = optimal weight to invest in stock i.

w_j = optimal weight to invest in stock j.

σ_j^2 = Variance of stock j.

σ_i^2 = Variance of stock i.

$\text{Cov}(R_i, R_j)$ = Covariance of returns between stock i and j.

3.4.13 Partitioning of Total Risk

$$\text{Systematic risk proportion } (\beta^2) = \frac{S_j^2 \beta_m^2}{\sigma_j^2}$$

$$\text{Unsystematic risk proportion } (1-\beta^2) = \frac{\text{Var}(e)}{\sigma_j^2}$$

Where,

σ_j^2 = Variance of stock j.

β^2 = Square beta of stock j.

σ_m^2 = variance of market return.

Var(e)=residualvariance.

3.4.14 Statistical Tools

Test of Hypothesis (T-test)

All the companies listed in the NEPSE index is population of this study, which in other words can be said market. The sample is the selected companies. At the sample for the study is less than 30, t-test is the study is less than 30, t-test is the best way for testing the hypothesis.

(a) Testing of Hypothesis

The first hypothesis is based on the test of significance for difference of mean (t-test)

Null Hypothesis (H_0):

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

Alternative Hypothesis (H_1):

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

Under the H_0

$$\text{The test statistics (t) is } t = \frac{\bar{R}_j - \bar{R}_m}{\sqrt{S_2 \left(\frac{1}{n_1} + \frac{1}{n_2} \right)}}$$

$n_1 = n_2$ = Number of observation.

s_1^2 = Variance returns of selected banks.

s_2^2 = Variance of market returns.

Test result: If t calculated value is less or equal to tabulated value, the null hypothesis is accepted and vice versa.

3.5 Method of Analysis and Presentation

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

CHAPTER - IV

DATA PRESENTATION AND ANALYSIS

This chapter includes analysis of data collected and their presentation. In this chapter the effort has been made to analyze “Risk and Return on Common Stock Investment of Commercial Banks”. Detail data of MPS, EPS, P/E ratio and dividend of each bank NEPSE index and their interpretation and analyses is done with reference to the various reading and literature review in the preceding chapter effort is made to analyze and diagnose the recent Nepalese stock market movement, with a special reference to the listed commercial banks. The analysis of data consists of organizing tabulating and assessing financial and statistical result from different tables and diagrams are drawn to make the result more simple and understandable.

4.1 Analysis of Individual Commercial Banks

The study is focused on analyzing the common stock of listed commercial banks separately as the scope of the study concentrated only on listed commercial banks of Nepal. There are currently twenty nine commercial banks in operation in Nepal and among them only twenty three are listed in NEPSE. Among them three commercial banks are taken as a sample for the study. They are Nepal Investment Bank Ltd. (NIBL), Himalayan Bank Ltd. (HBL) and Everest Bank Ltd. (EBL). Common stock of each listed commercial banks, their risk and return are analyzes are included in this study.

4.1.1 Nepal Investment Bank Ltd. (NIBL).

4.1.1.1. Analysis of total Dividend.

Table 4.1

MPS, EPS, DPS & P/E Ratio of NIBL

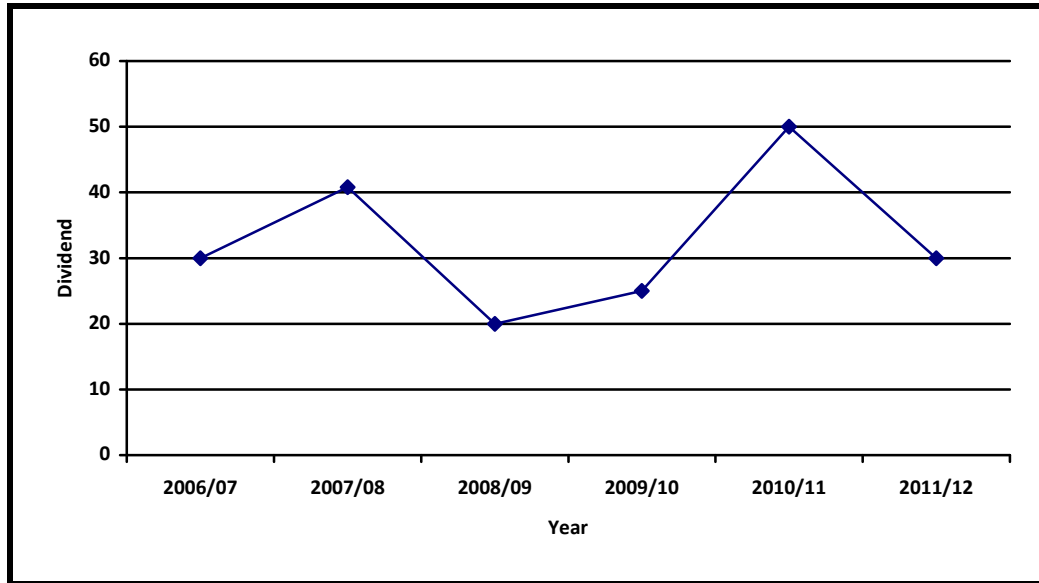
Fiscal Years	Closing MPS	Cash DPS (Rs)	Stock Div (%)	Total div.	EPS	P/E ratio
2006/07	1729	5	25	30	62.57	27.63
2007/08	2450	7.5	33.30	40.8	57.9	42.3
2008/09	1388	20	-	20	37.4	37.1
2009/10	705	25	-	25	52.5	13.4
2010/11	515	25	25	50	39.1	10.5
2011/12	511	5	25	30	27.6	18.5

Source: Annual Report of NIBL

Above table shows that NIBL is paying cash dividend every year and stock dividend is not paid continuously. In year 2007/08 and 2011/12, the bank paying both cash and stock dividend. In year 2008/09 and 2009/10 bank paid only cash dividend. Highest total dividend is paid in year 2007/08 Rs 40.8. P/E ratio of NIBL is maximum in the year 2007/08 i.e. 42.3 and minimum in the year 2010/11 i.e. 10.54. The maximum closing MPS is Rs 2450 is the year 2007/08 and minimum is Rs 511 in the year 2011/12

Figure 4.1

Year and Dividend of the common stock of NIBL.



The figure shows the trend line of dividend in several year of NIBL. It can be seen that the Bank paid dividend every year. The highest dividend is paid in a year 2010/11.

4.1.1.2. Expected Return (R_j) Standard Deviation(σ_j) and coefficient of variation (c.v) of c.s. of NIBL:

Table 4.2
Expected return, S.D. and C.V. of C.S. of NIBL

Fiscal Years	Closing MPS	Total div.	$R_j = \frac{P_t Z P_{tZ} \Gamma D_t}{P_{tZ}}$	$(R_j - \bar{R}_j)$	$(R_j - \bar{R}_j)^2$
2006/07	1729	30	0.8623	0.7290	0.5313
2007/08	2450	40.8	0.6890	0.5556	0.3086
2008/09	1388	20	-0.4245	-0.5579	0.3112
2009/10	705	25	-0.4740	-0.6074	0.3683
2010/11	515	50	-0.0528	-0.1862	0.0346
2011/12	511	30	0.20	0.067	0.0045
			$\phi R_j = 0.80$		$\phi (R_j - \bar{R}_j)^2$

$$\text{Expected Return } (\bar{R}_j) = \frac{\phi R_j}{n} = \frac{0.80}{6} = 0.1334$$

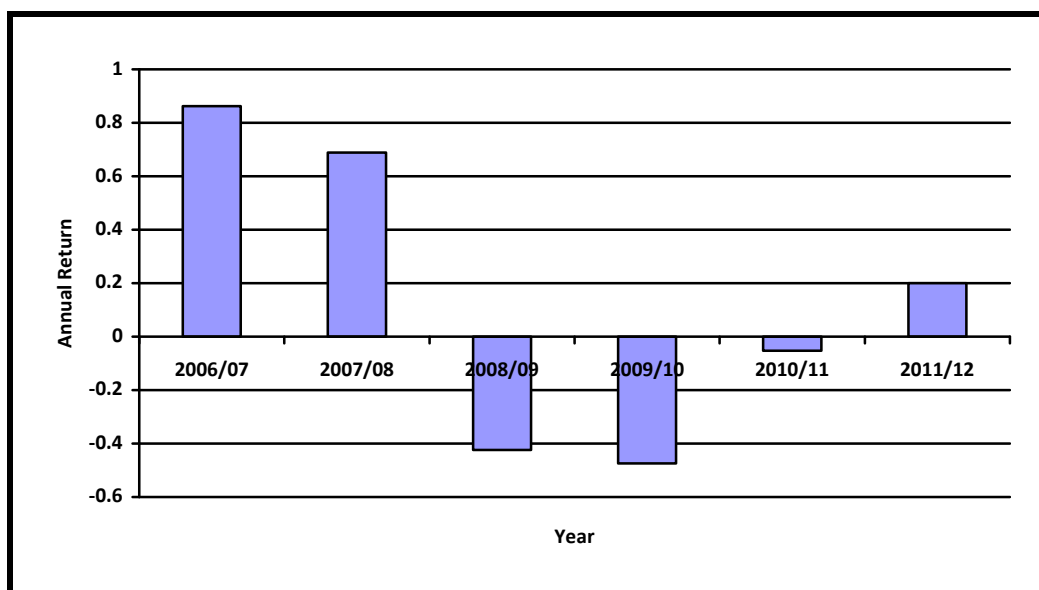
$$\text{Standard Deviation } (\Xi_j) = \sqrt{\frac{\phi(R_j - \bar{R}_j)^2}{n-1}} = \sqrt{\frac{1.5585}{6-1}} = 0.5583$$

$$\text{Coefficient of Variation} = \frac{\Xi_j}{\bar{R}_j} = \frac{0.5583}{0.1334} = 4.1851$$

Expected return of NIBL is 0.1334 with the total risk (measured by S.D.) of 0.5583. The C.V. NIBL is 4.1851, which denotes that to per unit return 4.1851 risk must be sacrifice. So, higher cv, higher will be the risk

Figure 4.2

Annual Rate of Return of C.S. of NIBL.



The figure 4.2 shows the annual rate of return of common stock of NIBL in several years. The rate of return is maximum in 2006/07 i.e 0.8623 which shows highest return profitable. The rate of return is negative in the year 2008/9,9/10 and 10/11 i.e - 0.4245,- 0.4740 and - 0.0528 respectively.

4.1.2. Himalayan Bank limited.

4.1.2.1. Analysis of Total Dividend:

Table 4.3.

MPS, Dividend, EPS & P/E ratio. of HBL

Fiscal Years	Closing MPS	Cash DPS (Rs)	Stock Div (%)	Total div.	EPS	P/E ratio
2006/07	1740	15	25	40	60.66	28.69
2007/08	1980	25	20	45	62.74	31.56
2008/09	1760	12	31.56	33.56	61.90	28.43
2009/10	816	11.84	25	36.84	31.80	25.66
2010/11	575	16.84	20	36.84	44.66	12.58
2011/12	653	13.42	15	28.42	39.94	16.35

Source: Annual Report of HBL

Above table shows that HBL is paying both cash and stock dividend every year . In year 2007/08 HBL paid higher total dividend i.e, Rs 45 and lowest Rs 28.42 in year 2011/12 P/E ratio of HBL is maximum in the year 2007/08 i.e, 31.56 and minimum in year 2010/11 i.e, 12.88. The closing MPS of HBL is maximum Rs 1980 in the year 2007/08 and minimum of Rs 575 in the year 2010/11.

Figure 4.3.
year and Dividend of C.S. of HBL

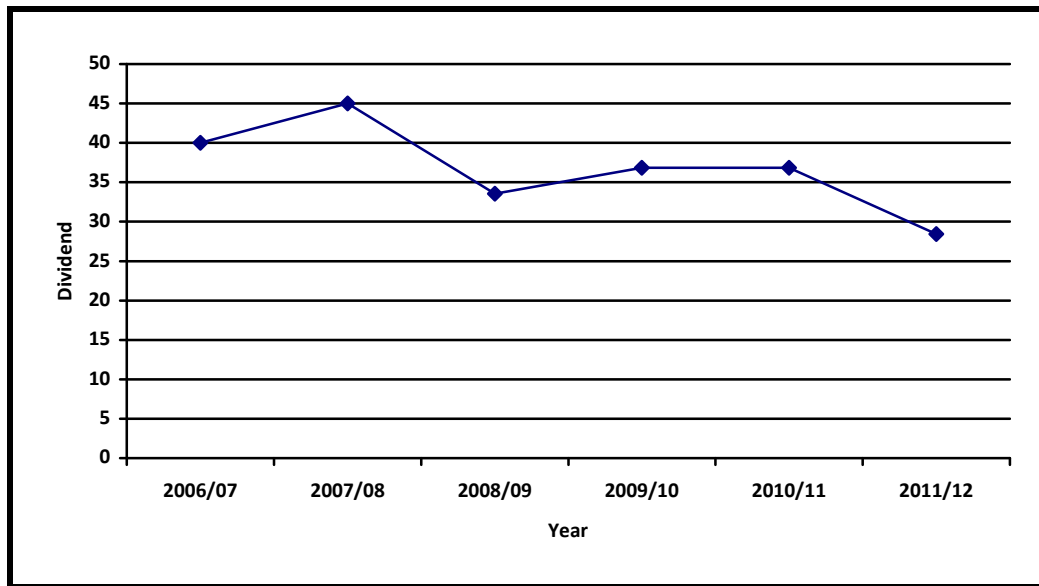


Figure 4.3 shows the trend line of dividend of HBL in the fluctuating trend. The Bank paid higher dividend in year 2007/08 and lower in year 2011/12.

4.1.2.2. Return (\bar{R}_j), standard deviation (σ_j) and coefficient of variation (C.V) of C.S. of HBL.

Table 4.4
Expected Return S.D and C.V of C.S. of HBL

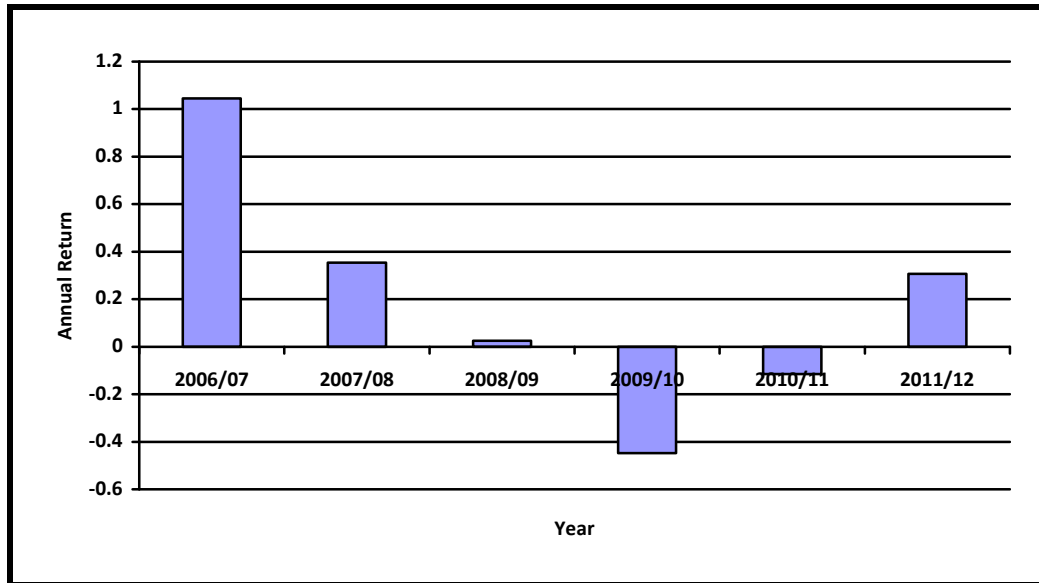
Fiscal Years	Closing MPS	Total div.	$R_j = \frac{P_t Z P_{tZ} \Gamma D_t}{P_{tZ}}$	$(R_j - \bar{R}_j)$	$(R_j - \bar{R}_j)^2$
2006/07	1740	40	1.045	0.8502	0.7228
2007/08	1980	45	0.3545	0.1597	0.0255
2008/09	1760	33.56	0.0252	- 0.1696	0.0287
2009/10	816	36.84	- 0.4480	- 0.16428	0.4132
2010/11	575	36.84	- 0.1146	- 0.3094	0.0957
2011/12	653	28.42	0.3071	0.1123	0.0126
			$\phi R_j = 1.1692$		$\phi (R_j - \bar{R}_j)^2$

$$\text{Expected Return } (\bar{R}_j) = \frac{\phi R_j}{n} = \frac{1.1692}{6} = 0.1948$$

$$\text{Standard Deviation } (\Xi_j) = \sqrt{\frac{\phi(R_j - \bar{R}_j)^2}{n-1}} = \sqrt{\frac{1.2985}{6-1}} = 0.5096$$

$$\text{Coefficient of Variation} = \frac{\Xi_j}{\bar{R}_j} = \frac{0.5096}{0.1948} = 2.6160$$

The expected return of HBL is 0.1948 and standard deviation is 0.5096 . C.V. of HBL is 2.6160. Which indicates that 2.6160 risk must be beared to get per unit return . It can be shown clearly is the figure



4.1.3. Everest Bank Ltd

4.1.3.1. Analysis of total dividend

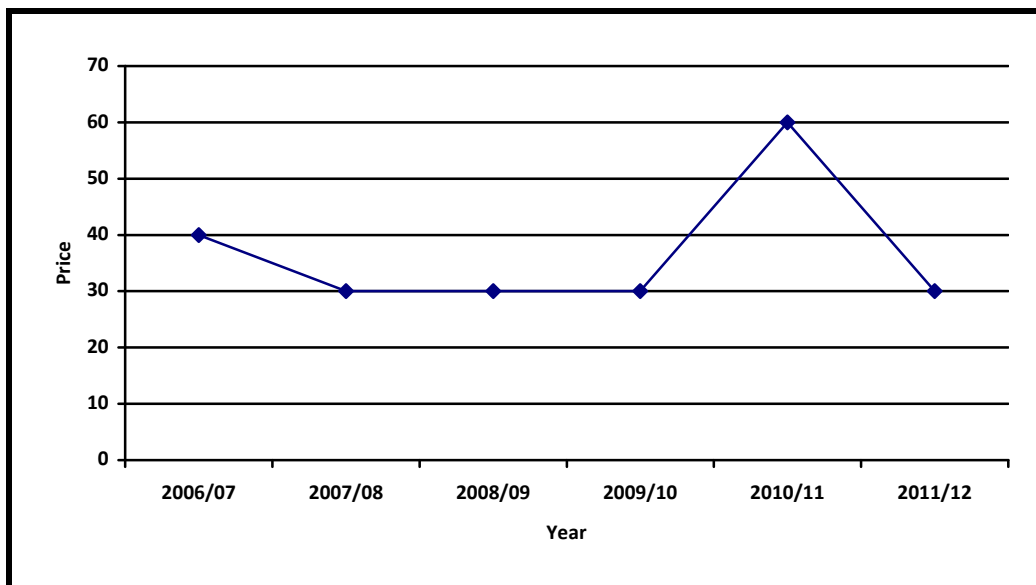
Table 4.5
MPS, Dividend EPS & P/E ratio of EBL.

Fiscal Years	Closing MPS	Cash DPS (Rs)	Stock Div (%)	Total div.	EPS	P/E ratio
2006/07	2430	10	30	40	78.40	31.00
2007/08	3132	20	10	30	91.82	34.11
2008/09	2455	30	-	30	99.99	24.55
2009/10	1630	30	-	30	100.16	16.27
2010/11	1094	50	10	60	83.18	13.15
2011/12	1033	1.58	28.42	30	88.55	11.67

Source: Annual Report of EBL

According to table EBL is not paid stock dividend is year 2008/09 and 2009/10 . In other year bank paid both cash and stock dividend . Higher total dividend is paid in the year 2010/11 i,e Rs 60. P/E ratio of EBL is maximum in the year. 2007/08 i,e 34.11 and minimum in the year 2010/11 i,e 34.11 and minimum in the year 2010/11 i,e 13.15.

Figure 4.5
year and market price movement of the c.s. of EBL



The figure shows trend line of dividend of EBL. Which is higher in year 2010/11.

4.1.3.2 Expected return (\bar{R}_j), Standard deviation (σ_j) and coefficient of variation (cv) of common stock of EBL.

Table 4.6

Expected return (\bar{R}_j), Standard deviation (σ_j) and coefficient of variation (cv) of common stock of EBL.

Fiscal Years	Closing MPS	Total div.	$R_j = \frac{P_t Z P_{tZ} \Gamma D_t}{P_{tZ}}$	$(R_j - \bar{R}_j)$	$(R_j - \bar{R}_j)^2$
2006/07	2430	40	1.2236	1.0316	1.0642
2007/08	3132	30	0.3981	0.2061	0.0424
2008/09	2455	30	- 0.2065	- 0.3985	0.1588
2009/10	1630	30	- 0.3238	- 0.5158	0.2660
2010/11	1094	60	- 0.1288	- 0.3208	0.1023
2011/12	1033	30	0.1894	- 0.0026	0.0006
			$\phi R_{j=1.152}$		$\phi(R_j - \bar{R}_j)^2$

$$\text{Expected Return } (\bar{R}_j) = \frac{\phi R_j}{n} = \frac{1.152}{6} = 0.192$$

$$\text{Standard Deviation } (\sigma_j) = \sqrt{\frac{\phi(R_j - \bar{R}_j)^2}{n-1}} = \sqrt{\frac{1.6343}{6-1}} = 0.5717$$

$$\text{Coefficient of Variation} = \frac{\sigma_j}{\bar{R}_j} = \frac{0.5717}{0.192} = 2.9776$$

The expected return of EBL is 0.192 with total risk of 0.5717. The cv of EBL is 2.9776. Which indicated the investor needs to sacrifice 2.9776 unit of risk for per unit return .

Figure 4.6
Annual return of C.S. of EBL

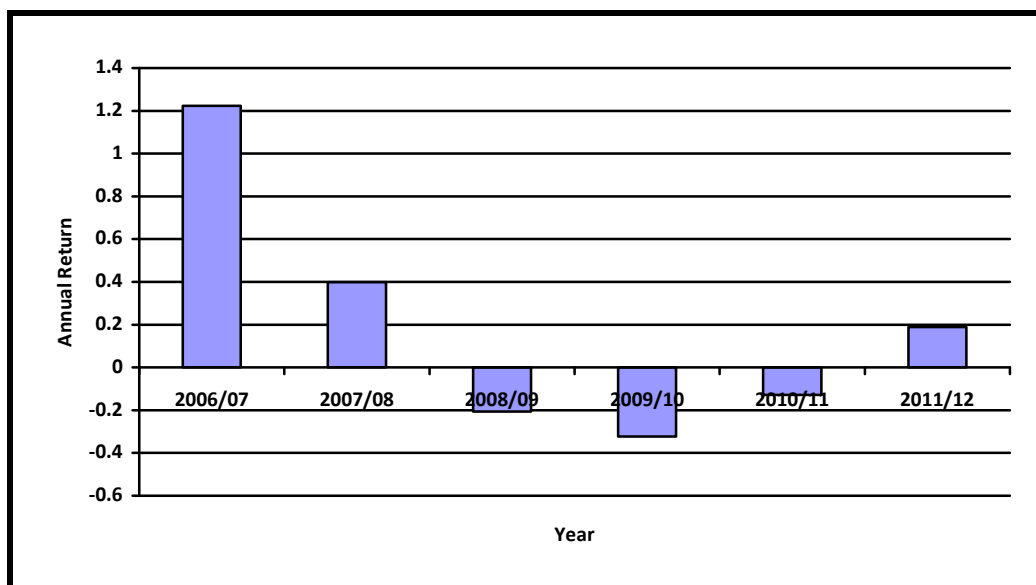


Figure 4.6 shows the return of EBL which is negative from the year 2008/09 and positive in 2006/07, 07/08 and 11/12. There is highest return of 1.23 in the year 2006/07 and lowest return of -0.3238 in the year 2009/10. There is fluctuation of returns.

4.2 Inter Bank Comparison

According to the result from the analysis part, a comparative analysis of return , total risk and risk per unit performed here. Expected return, standard deviation and coefficient of variation of each bank for the year 2006/07 to 2011/12 are given in the table.

Table 4.7
Expected Return,S.D. and C.V. of C.S. of each Bank

Banks	Expected return(\bar{R}_j)	standard deviation (\dagger_j)	C.V.	Risk
NIBL	0.1334	0.5583	4.1851	Highest
HBL	0.1948	0.5096	2.6160	Lowest
EBL	0.192	0.5717	2.9776	

Source: Table 4.2,4.4 and 4.6

Table 4.7 shows the overall risk of the individual banks . Higher the cv higher the risk and cv of NIBL is very higher than other commercial banks.

So, common stock of NIBL is more risky than other banks. Investment in common stock of HBL is desirable because it's risk is lowest and return is highest compare to other banks common stock.

To make comparison easily understandable figure 4.7 is presented below:

Figure 4.7
Expected return ,S.D. and c.v. of each commercial banks

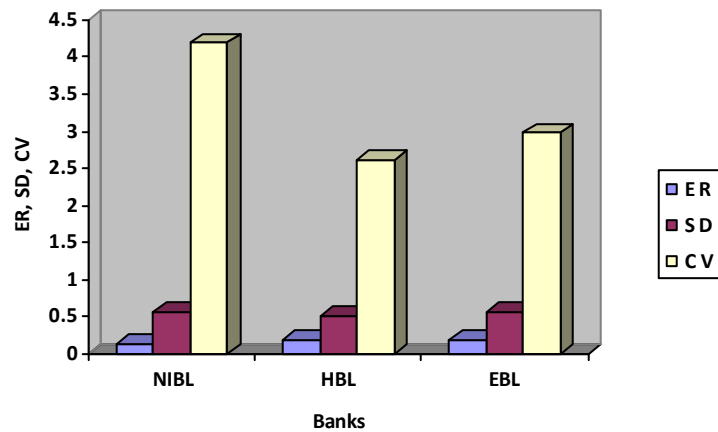


Figure 4.7 clarify the expected return, standard deviation and coefficient of variation of each individual bank. It is showing the comparison of these banks in terms of risk and return.

4.3 Comparison with Market

4.3.1. Market risk and return Analysis:

Nepal stock exchange (NEPSE) is only stock market in Nepal. Overall market movement is represented by market index (i.e. NEPSE index). The NEPSE index is adjusted and changed continuously with the NEPSE based market portfolio return it S.D. and C.V. is presented below.

Table 4.8
Calculation of return, S.D and C.V. of Overall Market

Fiscal Year	Market Index	$R_m = \frac{NI_t - NI_{t-1}}{NI_t}$	$(R_m - \bar{R}_m)$	$(R_m - \bar{R}_m)^2$
2005/06	386.83	-	-	-
2006/07	683.95	0.7680	0.7298	0.5326
2007/08	963.36	0.4085	0.3703	0.1372
2008/09	749.10	- 0.2224	- 0.2606	0.0673
2009/10	444.76	- 0.4562	- 0.4445	0.1975
2010/11	373.20	- 0.1602	- 0.1984	0.0394
2011/12	313.90	- 0.1589	- 0.1971	0.0388
	$\phi R_m = 0.2288$			$\phi(R_m - \bar{R}_m)^2 = 1.0128$

$$\text{Expected return } (\bar{R}_m) = \frac{\phi R_m}{N} = \frac{0.2288}{6} = 0.0382$$

$$\text{Standard deviation } (\Xi) = \sqrt{\frac{\phi R_m - \bar{R}_m^2}{n-1}} = \sqrt{\frac{1.0128}{5}} = 0.45$$

$$\text{C.V.} = \frac{\Xi_m}{R_m} = \frac{0.45}{0.0382} = 5.3010$$

Table 4.9 shows the return of market is several years. There is higher return of market in the year 2006/07 i.e 0.7680 and there is negative return of market from the year 2008/09 . The expected return of the market is 0.0382 with the total risk 0.2025 cv of market is 5.3010 which means 5.3010 risk must be sacrificed to get per unit market return.

4.3.2 Market sensitivity analysis:

Table 4.9

Beta coefficient of common stock of NIBL

Fiscal Year	$(R_m - \bar{R}_m)$	$(R_j - \bar{R}_j)$	$(R_m - \bar{R}_m) (R_j - \bar{R}_j)$
2006/07	0.7298	0.7290	0.5320
2007/08	0.3703	0.5556	0.2058
2008/09	- 0.2606	- 0.5379	0.1454
2009/10	- 0.4445	- 0.6074	0.2690
2010/11	-0.1984	- 0.1862	0.0369
2011/12	- 0.1971	0.067	- 0.0132
			$\phi(R_m - \bar{R}_m) (R_j - \bar{R}_j) =$ 1.1760

Source: Table 4.2 and 4.8

$$\text{Cov, } (r_m, r_j) = \frac{\phi(R_m - \bar{R}_m) (R_j - \bar{R}_j)}{n - 1}$$

$$= \frac{1.1760}{5} = 0.2352$$

$$\beta_m = \frac{\text{cov}(r_m, r_j)}{\sigma_m^2} = 0.2352 = 1.0355$$

From sensitivity analysis of NIBL the beta coefficient is 1.0355, which is more than 1.0. This shows that NIBL is very much volatile and aggressive investor can purchase this type of investment. From the view of investment it is riskier securities.

Systematic and Unsystematic Risk

$$\text{SR} = \frac{\text{COV}(r_j, r_m)}{\sigma_m^2} = \frac{0.2352}{0.45} = 0.5226$$

$$\text{USR} = \sigma_j - \text{SR} = 0.5583 - 0.5226 = 0.0357$$

Proportion of Systematic and Unsystematic Risk

$$\text{Proportion of SR} = \frac{\text{SR}}{\text{TR}} = \frac{0.5226}{5583} = 0.9360 = 93.60\%$$

$$\text{Proportion of USR} = \frac{\text{USR}}{\text{TR}} = \frac{0.0357}{05583} = 0.640 = 6.4 \%$$

Out of total risk in stock of NIBL : 93.60% is un-diversifiable risk and created from systematic factor or market factor and the remaining 6.40% is diversifiable risk and created from company related factor.

Table 4.10
Beta Coefficient of the common stock of HBL

Fiscal Year	$(R_m - \bar{R}_m)$	$(R_j - \bar{R}_j)$	$(R_m - \bar{R}_m) (R_j - \bar{R}_j)$
2006/07	0.7298	0.8502	0.6204
2007/08	0.3703	0.1597	0.0590
2008/09	- 0.2606	-0.1696	0.0441
2009/10	- 0.4445	-0.6428	0.2858
2010/11	-0.1984	-0.3094	0.0614
2011/12	- 0.1971	0.1123	-0.0221
			$\phi(R_m - \bar{R}_m) (R_j - \bar{R}_j) = 1.0486$

Source: Table 4.4 and 4.8

$$\begin{aligned} \text{Cov, } (r_m, r_j) &= \frac{\phi(R_m - \bar{R}_m) (R_j - \bar{R}_j)}{n - 1} \\ &= \frac{1.0486}{5} = 0.2097 \end{aligned}$$

Again

$$\rho_m = \frac{\text{cov}(r_m, r_j)}{\sigma_m^2} = \frac{0.2097}{(0.45)^2} = 1.0355. |$$

From sensitivity analysis of HBL the bate coefficient is more than 1. Since the beta of the stock is greater that of market. So the stock is riskier than market.

Systematic and Unsystematic Risk

$$SR = \frac{COV(r_j, r_m)}{\Xi_m} = \frac{0.0.2097}{0.45} = 0.466$$

$$USR = \Xi_j - SR = 0.5096 - 0.466 = 0.0436$$

Proportion of Systematic and Unsystematic Risk

$$\text{Proportion of SR} = \frac{SR}{TR} = \frac{0.466}{0.5096} = 0.9145 = 91.45\%$$

$$\text{Proportion of USR} = \frac{USR}{TR} = \frac{0.0436}{0.5096} = 0.0855 = 8.55\%$$

Out of total risk in stock of HBL: 91.45% is un-diversifiable risk and created from systematic factor or market factor and the remaining 8.55% is diversifiable risk and created from company relate

Table 4.11

Beta Coefficient of the common stock of EBL

Fiscal Year	$(R_m - \bar{R}_m)$	$(R_j - \bar{R}_j)$	$(R_m - \bar{R}_m) (R_j - \bar{R}_j)$
2006/07	0.7298	1.0316	0.7528
2007/08	0.3703	0.2061	0.0763
2008/09	- 0.2606	-0.3985	0.1038
2009/10	- 0.4445	-0.5158	0.2298
2010/11	-0.1984	-0.3208	0.0636
2011/12	- 0.1971	-0.0026	-0.0006
			$\phi(R_m - \bar{R}_m) (R_j - \bar{R}_j) = 1.2270$

Source: Table 4.6 and 4.8

$$\begin{aligned} \text{Cov, } (r_m, r_j) &= \frac{\phi(R_m - \bar{R}_m) (R_j - \bar{R}_j)}{n - 1} \\ &= \frac{1.2270}{5} = 0.2454 \end{aligned}$$

Again

$$\beta_m = \frac{\text{cov}(r_m, r_j)}{\sigma_m^2} = \frac{0.2054}{(0.45)^2} = 1.2118$$

From sensitivity analysis of EBL the beta coefficient is 1.2118, which is more than 1, shows that EBL is very much volatile and aggressive investor can purchase this type of investment. From the view of investment, it is risky.

Systematic and Unsystematic Risk

$$SR = \frac{\text{COV}(r_j, r_m)}{\sigma_m} = \frac{0.2454}{0.45} = 0.5453$$

$$USR = \sigma_j - SR = 0.5757 - 0.5453 = 0.0264$$

Proportion of Systematic and Unsystematic Risk

$$\text{Proportion of SR} = \frac{SR}{TR} = \frac{0.5453}{0.5757} = 0.9539 = 95.391\%$$

$$\text{Proportion of USR} = \frac{USR}{TR} = \frac{0.0264}{0.5757} = 0.0461 = 4.61\%$$

Out of total risk in stock of EBL: 95.39% is un-diversifiable risk and created from systematic factor or market factor and the remaining 4.61% is diversifiable risk and created from company related factor.

Table 4.12

Beta coefficient of each bank

Banks	Beta coefficient	Remark
NIBL	1.1615	-
HBL	1.0355	least Aggressive
EBL	1.2118	most Aggressive

Source : Table 4.9, 4.10 and 4.11

Here, as shown in the table 4.12 EBL and HBL have higher beta coefficient than the beta coefficient of market. The stock of these banks is aggressive and NIBL has lower beta coefficient than market so it is a defensive stock. The

stock of EBL seems most aggressive than other stocks where as NIBL seems least aggressive.

4.3.3 Required Rate of Return [E(R_j)] Expected rate of return (\bar{R}_j) and price Evaluation analysis

CAPM is model that assumes stock's required rate of return is equal to the risk free rate plus its risk premium where risk is measured by the Beta Coefficient. Beta Coefficient plays a vital role in CAPM approach. If the required rate of return is greater than expected rate of return: the stock is said to be over priced and investors trend to sell this type of stock. For this analysis the risk free rate of return is needed which is taken from the interest rate of Treasury bill issued by NRB. NRB issued Treasury bill, 91 days duration Treasury bill rate of rate is taken as a risk free rate from website of NRB. This is approximately 8.13%.

Table 4.13
Required Rate of return, Expected return and price evaluation.

Banks	R _f	E(R _m)	Beta (β)	E(R _j) = R _f + [E(R _m) - R _f] β	(R _j)	price evaluation
NIBL	0.0813	0.0382	1.1615	0.6821	0.1334	overpriced
HBL	0.0813	0.0382	1.0355	0.0366	0.1948	underpriced
EBL	0.0813	0.0382	1.2118	0.0290	0.1920	underpriced

In the table 4.13, the expected rate of return is higher than the required rate of return, so the stocks of HBL and EBL are underpriced. It shows that these banks have stock with good investment opportunity and all the stocks are in the demand. Their stock value may increase in the near future providing the investors a higher return. Since all stocks are underpriced, investor can gain profit from buying those stocks. These stocks are recommended to buy.

4.4 Portfolio Analysis

A portfolio is a combination of investment assets. Portfolio theory was proposed by Harry M. Markowitz which gives the concept of diversification of risk by investing total funds in more than a single asset or single stock.

Markowitz diversification helps the investor to attain a higher level or expected utility than with any other risk reduction technique. In a very simple way we can understand it as not keeping all the eggs in a single basket. The risk of individual securities can be reduced without losing considerable return. The main objective of portfolio is reduction of unsystematic risk from which investors can take more benefit by making efficient portfolio. Therefore a brief analysis of risk and return is extended in portfolio context. The portfolio expected return is straight forward weighted average of return on the individual securities. The weight is equal to the proportions of the total funds invested in each security (the weight must sum to 100%).

4.4.1 Analysis of Risk diversification

The analysis is based on two assets portfolio and the tools for analysis are presented in the third chapter (research methodology). Here the portfolio of common stock of NIBL (say stock A), HBL (say stock B), and EBL (Say stock C) is analyze

4.4.1.1 Portfolio of stock NIBL (A) and HBL (B)

$$W_A = \frac{\sigma_B^2 - \text{Cov}(r_A, r_B)}{\sigma_A^2 + \sigma_B^2 - 2 \text{Cov}(r_A, r_B)} \text{ and } W_B = 1 - W_A$$

Now,

$$W_A = \frac{0.50692 - 0.25175}{0.5583^2 + 0.5096^2 - 2 \times 0.2517} = 0.1085$$

$$W_B = 1 - W_A$$

$$= 1 - 0.1085$$

$$= 0.8915$$

Portfolio return

$$\text{Expected return on portfolio } E(R_P) = W_A \cdot E(R_A) + W_B \cdot E(R_B)$$

$$= 0.1085 \times 0.13.34 + 0.8915 \times 0.1948$$

$$= 0.1882$$

$$= 18.82\%$$

Portfolio Risk .

$$\begin{aligned} \sigma_p &= \sqrt{W_A^2 \cdot \sigma_A^2 + W_B^2 \cdot \sigma_B^2 + 2 \text{Cov}_{AB} \cdot W_A \times W_B} \\ &= \sqrt{0.1085^2 \times 0.5583^2 + 0.8915^2 \times 0.5096^2 + 2 \times 0.02517 \times 0.108 \times 0.8925} \end{aligned}$$

| $\sigma_p = 0.4381$ |

| $\sigma_p = 43.81\%$ |

4.4.1.2 Portfolio of stock of HBL (B) and EBL (C).

$$\begin{aligned} W_B &= \frac{\sigma_C^2 - \text{Cov}(r_B, r_C)}{\sigma_B^2 + \sigma_C^2 - 2 \text{Cov}(r_B, r_C)} \text{ and } W_C = 1 - W_B \\ &= \frac{0.5717^2 - 0.2817}{0.5096^2 + 0.5717^2 - 2 \times 0.2817} \\ &= \frac{0.0451}{0.3048} = 0.1480 \end{aligned}$$

$$W_C = 1 - 0.1480$$

$$= 0.8520$$

Portfolio Return:

$$\begin{aligned} \text{Expected return on portfolio } E(R_p) &= W_B \times E(R_B) + W_C \times E(R_C) \\ &= 0.1480 \times 0.1948 + 0.8520 \times 0.192 \\ &= 0.1925 \end{aligned}$$

Portfolio Risk

$$\begin{aligned} \sigma_p &= \sqrt{W_B^2 \cdot \sigma_B^2 + W_C^2 \cdot \sigma_C^2 + 2 \text{Cov}_{BC} \cdot W_B \times W_C} \\ &= \sqrt{0.1480^2 \times 0.5096^2 + 0.8520^2 \times 0.5717^2 + 2 \times 0.02817 \times 0.1480 \times 0.8520} \end{aligned}$$

| $\sigma_p = 0.4381$ |

| $\sigma_p = 43.81\%$ |

From the above calculation the portfolio return and risk for HBL and EBL are 19.25% and 43.81% respectively.

4.4.1.3 Portfolio of Stocks NIBL (A) and EBL (C)

$$W_A = \frac{\sigma_C^2 - \text{Cov}(r_A, r_C)}{\sigma_A^2 + \sigma_C^2 - 2\text{Cov}(r_A, r_C)} \text{ and } W_C = 1 - W_A$$

Now,

$$\begin{aligned} W_A &= \frac{0.5717^2 - 0.2923}{0.5583^2 + 0.5717^2 - 2 \times 0.2923} \\ &= \frac{0.0345}{0.0534} = 0.6460 \end{aligned}$$

$$\begin{aligned} W_C &= 1 - W_A \\ &= 1 - 0.6460 = 0.3540 \\ &= 35.40\% \end{aligned}$$

As we know that the proportion of stock in the portfolio is constructed with 64.60% of NIBL and 35.40 of EBL common stock that will minimize risk and ideal proportion. In above proportion, equity shareholder can minimize risk to get maximum return.

Portfolio Return

$$\begin{aligned} \text{Expected return on portfolio } E(R_p) &= W_A \times E(R_A) + W_C \times E(R_C) \\ &= 0.6460 \times 0.1334 + 0.3540 \times 0.192 \\ &= 0.1541 \\ &= 15.41\% \end{aligned}$$

Portfolio Risk

$$\begin{aligned} \sigma_p &= \sqrt{W_A^2 \cdot \sigma_A^2 + W_C^2 \cdot \sigma_C^2 + 2\text{Cov}_{AC} \cdot W_A \times W_C} \\ &= \\ &= \sqrt{0.6460^2 \times 0.5583^2 + 0.3540^2 \times 0.5717^2 + 2 \times 0.2923 \times 0.6460 \times 0.5583} \\ &= 0.6178 \\ &= 61.78\% \end{aligned}$$

From the above calculation the portfolio return and risk for NIBL and EBL are 15.41% and 61.78% respectively.

Table 4.14
Portfolio risk and return

Banks	E(R _p)	∑P	Return	Risk
NIBL & HBL	18.82%	50.86%	-	-
HBL & EBL	19.25%	43.81%	Highest	lowest
EBL	15.41%	61.78%	Lower	Higher

Above table shows the portfolio risk and return. Combination between the stock of HBL and EBL are better than other combination, whose return is higher and risk is lower than other.

4.5 Correlation Analysis of Return

Two variables are correlated when they are related that the change in the value of one variable is accompanied by change in the value of other. Correlation may be positive or negative. If return on two securities is positively correlated then risk cannot be reduced.

Correlation coefficient measures the relationship between two variables in quantitative terms. Correlation coefficient indicated that the return from two securities generally move in the same direction and vice versa.

Table 4.15 shows presented below shown the various consolations between each sample banks.

Table 4.15
Correlation Matrix of Return

Sample	NIBL	HBL	EBL
NIBL	1	0.8846	0.9257
HBL		1	0.9670
EBL			1

Source: Appendix

Since, table 4.15 (correlation matrix) has shown the positive correlation between the banks. If correlation between stock is +1, any part of risk cannot be reduced by diversification. On the other hand, if correlation between stocks is -1" the proper combination of two stocks can be reduces all the risk. In

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

Among the above correlation combination, combination between NIBL and HBL is much better than any other combination because the combination has the lowest correlation.

4.6 Testing of Hypothesis

The hypothesis is based on the test of significance for difference of mean (t-test). For the expected return of selected banks are calculated in follows.

4.6.1 Testing hypothesis expected return of NIBL with overall Market Return

For NIBL

Sample size (n_1) = 6 year

Expected Return (\bar{R}_j) = 0.5334

Standard Deviation (S_1) = 0.5583

For Market

(n_2) = 6 year

(\bar{R}_m) = 0.0382

(S_2) = 0.45

Null Hypothesis (H_0)

$\bar{R}_j = \bar{R}_m$ i.e. there is no significance difference between the expected return of NIBL and overall market return.

Alternative Hypothesis (H_1)

$\bar{R}_j \neq \bar{R}_m$ i.e. there is significance difference between the expected return of NIBL and overall market return.

The test statistics (t) is:

$$t = \frac{\bar{R}_j - \bar{R}_m}{\sqrt{S^2 (1/n_1 + 1/n_2)}}$$

$$t = \frac{0.1334 - 0.0382}{\sqrt{0.2857 (1/6 + 1/6)}} = \frac{0.0952}{0.3085} = 0.3085$$

Degree of freedom = $n_1 + n_2 - 2 = 6 + 6 - 2 = 10$

Level of significance = 5%

Critical Value

The tabulated value of t at 5% level of significance and 10 degree of freedom is 2.228.

Decision:

Since the calculated value of 't' is less than tabulated value. The null hypothesis (H₀) is accepted i.e. there is no significance difference between the expected return of NIBL and overall market return.

4.6.2 Testing hypothesis expected return of HBL with overall Market Return

For HBL

Sample size (n₁) = 6 year

Expected Return (\bar{R}_j) = 0.1948

Standard Deviation (S₁) = 0.5096

For Market

(n₂) = 6 year

(\bar{R}_m) = 0.0382

(S₂) = 0.45

Null Hypothesis (H₀)

$\bar{R}_j = \bar{R}_m$ i.e. there is no significance difference between the expected return of HBL and overall market return.

Alternative Hypothesis (H₁)

$\bar{R}_j \neq \bar{R}_m$ i.e. there is significance difference between the expected return of HBL and overall market return.

The test statistics (t) is:

$$t = \frac{\bar{R}_j - \bar{R}_m}{\sqrt{S^2 (1/n_1 + 1/n_2)}}$$

$$t = \frac{0.1948 - 0.0382}{\sqrt{(0.234)^2 (1/6 + 1/6)}} = \frac{0.1566}{0.1334} = 1.1380$$

Degree of freedom = n₁ + n₂ - 2 = 6 + 6 - 2 = 10

Level of significance = 5%

Critical Value

The tabulated value of t at 5% level of significance and 10 degree of freedom is 2.228.

Decision:

Since the calculated value of 't' is less than tabulated value. The null hypothesis (H_0) is accepted i.e. there is no significance difference between the expected return of HBL and overall market return.

4.6.3 Testing hypothesis expected return of EBL with overall Market Return

For EBL

Sample size (n_1) = 6 year

Expected Return (\bar{R}_j) = 0.192

Standard Deviation (S_1) = 0.5717

For Market

(n_2) = 6 year

(\bar{R}_m) = 0.0382

(S_2) = 0.45

Null Hypothesis (H_0)

$\bar{R}_j = \bar{R}_m$ i.e. there is no significance difference between the expected return of HBL and overall market return.

Alternative Hypothesis (H_1)

$\bar{R}_j \neq \bar{R}_m$ i.e. there is significance difference between the expected return of EBL and overall market return.

The test statistics (t) is:

$$t = \frac{\bar{R}_j - \bar{R}_m}{\sqrt{S^2 (1/n_1 + 1/n_2)}}$$

$$t = \frac{0.192 - 0.0382}{\sqrt{(0.2646)^2 (1/6 + 1/6)}} = \frac{0.1538}{0.1516} = 1.0145$$

Degree of freedom = $n_1 + n_2 - 2 = 6 + 6 - 2 = 10$

Level of significance = 5%

Critical Value

The tabulated value of t at 5% level of significance and 10 degree of freedom is 2.228.

Decision:

Since the calculated value of 't' is less than tabulated value. The null hypothesis (H_0) is accepted i.e. there is no significance difference between the expected return of EBL and overall market return.

4.7 Major Findings of the Study

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

) The return is the income received on a stock investment, which is usually expressed in percentage. Expected return on common stock HBL is maximum 19.48%. Similarly expected return of C.S. of NIBL is (13.34%) and EBL is 19.24%

) Risk is the variability of return which is measured in terms of standard deviation. On the basis of S.D., common stock of EBL is most risky since it has high S.D. i.e. 0.5757 C.S. HBL is least because of its lowest S.D. of 0.5096, on the other hand we know that C.V. is more rational basis of investment decision, which measures the risk per unit of return. On the basis of C.V., C.S. of HBL is best among all other banks. HBL has 2.6160 unit of risk per 1 unit of return. But C.S. of NIBL has the highest risk per unit of return.

) Beta coefficient explains the sensitivity or volatility of the stock with market. Higher the beta, higher the volatility in the contest, common stock of EBL is most volatile i.e. $\beta = 1.2111$ and common stock of HBL is least volatile i.e. 0.0355. The bank's stock, having the beta less than beta coefficient of market i.e. defensive stock. We find NIBL and EBL have aggressive type of commons stock. Among them, most aggressive

seems to be EBL with highest beta and least aggressive is HBL with lowest beta among three bank's common stock.

-) The required rate of return of stocks of three banks is less than expected rate of return. Therefore, these stocks are underpriced.
-) Portfolio is a combination of assets. It is used to maximize the return while minimizing the risk. From the analysis of portfolio risk and return. The combination HBL & EBL in highest rerun i.e. 19.25% and lowest risk 43.81% compare to other. So the investor invest in combination of HBL & EBL for maximize the return and minimizing the risk.
-) Correlation is a relative measure of relationship of movement of securities return. The correlation between NIB and HBL is 0.8846, HBL and EBL is 0.9670 and NIBL and EBL is 0.9157. The portfolio of asset that is less correlated will have less portfolio risk than the portfolio of asset with a highly positive correlation. Hence, the combination between NIBL and HBL is much better than other combination because the combination has the lowest correlation.

CHAPTER V

SUMMARY, CONCLUSION AND RECOMMENDATION

This chapter is dedicated to provide conclusion after comparatively analyzing the common stock of three commercial banks named as NIBL, HBL and EBL. It also tries to provide some recommendations to the concerned banks from the conclusion derived from the study.

5.1 Summary

Banks, which deal with commercial activities, are known as commercial banks. These financial institutions help to integrate every financial activities of the community. The main objectives of commercial banks is to play a vital role in development of good trade.

Commercial banks are mechanism of mobilizing funds. In returnable resources. They offer financial support to all types of business through providing various types of loans and other financial services. Commercial banks aid the economics development of the nations.

Commercial banks pool together the savings of the community and use the funds productively thought prudent investments. The commercial act defines a commercial bank is a bank which deals in exchanging currency, accepting deposit, giving loans and is involved in commercial activities.

The commercial banking in Nepal started from 1937 A.D. (B.s. 1994) the establishment of Nepal Bank Limited, it was established with 51% ownership of Nepal government and 49% of equity participation from private sector.

Having felt the need of development of banking sector and to help the government to formulate monetary policies, Nepal Rastra bank with set up in 14th Baisakh, 2013 B.S. Since then, it has been functioned as government bank and has contributed to the growth of financial sector. Though Nepal Rastra Bank has at present adopted a deregulatory approach, it requires continuous modification in view of fast changing world.

Integrated and speedy developed of the country is possible only when competitive banking service reach every nooks and corners of the country. Today number of commercial bank are concentrated in only few places because lack of development of infrastructure in remote places. Government must give attention toward remote places.

Banks plays vital role in the economic development of nations. So today it is challenging for government to formulate the new banking policy rationally in remote area. Actually more than 60% of total areas of Nepal is covered with rural areas. From the economic upliftment of rural areas it is necessary to provide Banking Services in rural areas.

The research work entitled the comparative study on common stock analysis of commercial banks include the following banks:

- 1) Nepal Investment Bank Ltd.
- 2) Himalayan Bank Ltd.
- 3) Everest Bank Ltd.

The research work should have reached the destiny where we satisfy with the queries of research. Problems which were specified in the statement of the problem in the introductory chapter. To conduct a research work, the researcher consulted mainly the secondary sources such as documents published by concerned banks and also consulted the personalities of the related bank as primary sources where as necessary. Before presenting and analyzing the data, there was also need to review of related books, prior research on the topic. Obviously, it helped the research to construct conceptual framework and to analyze and interpret the secondary data according to objective set forth previously. Then the research work was analyzed and interpreted by financial and statistical tools such as MPS, P/E ratio, EPS, mean, standard deviation, coefficient of variation and t-test.

In this way, the researcher analyzed and presented the 4th chapter, which was the main body of the research work. On the basis of data analysis and presentation, the researcher extracted some major findings. It has been explained along with the data analysis and presentation. So, on the basis of

major findings, the research reached. In the conclusions keeping in the previously. Set objectives in mind. Ultimately, the researcher will recommend on the research problem to its stakeholders.

5.2 Conclusions

The returns of the studied commercial banks are highly fluctuating, which shows highly risk in absolute term. The beta of all bank are greater than one and hence their respective stocks are aggressive stock. Correlation coefficients of returns among the studied banks are positive and other side using diversification. Portfolio construction is in comparison before diversification is more than after Portfolio construction which is lower than risk before diversification. There is less risk with comparison to its return. All the studied banks expected return (Average return) is higher than the required rate of return therefore the stock is underpriced security. So, an investor makes buying strategy for this type of stock.

5.3 Recommendations

The recommendations of the study may be important information for those who are directly and indirectly concerned with the common stock investment thus the following recommendations are as follows:

-) Proper analysis of individual security, industry and overall market is always essential to make Possible to conquer the stock market. General knowledge about economic, political as well as Technological trend will be advantageous which is proved by the present political situation of Nepal. It caused a great deterioration is share priced? To win the market, sell share when market is rising and buy share when market is falling and hold share, which will perform better than market.
-) Investors have to focus their mind also on risk and not only on return. Before thinking about higher return they also have to think about risk associated with return. If there is higher return there will be higher risk definitely. So risk averse investor can invest on moderate types of stock having average risk and return.

-) Different financial and statistical tools are considered to analyse the data in this study while analyzing the CV of studied banks, the C.S. of HBL may best investment opportunity of the investors. Therefore, HBL is the best in managing the risk in efficient way among the studied banks.
-) Standard deviation is only the measure of unsystematic risk which is not defined by the market. Another major aspect of the risk is systematic risk, which is defined by the market risk and measured by beta coefficient (β). Beta coefficient explains the sensitivity or volatility of the stock with market. Beta coefficient of all Banks are greater than one so these are aggressive type of common stock. Therefore such bank's common stock are volatile than markets and hence the investors should think about external factor, risk taking capacity, investment objectives, before investment. Correlation coefficient (Homogeneous) between banks and banks is positive, which indicates that there is high degree of positive correlation between them therefore the investors should try to formulate portfolio with other trading and manufacturing firms.
-) Investors need to diversify their fund to reduce risk, proper construction of portfolio will reduce considerable potential loss which can be defined in terms of risk. By optimal portfolio construction is dynamic job. Portfolio construction, select the stock that have higher return with not correlated or negatively correlated stock, similar stock cannot diversity the risk properly. So the construction of portfolio between the common stock of HBL and EBL is recommended.
-) All the studied commercial Banks stocks are underpriced therefore it is recommended that the investors need to buy these stocks. In the underprice expected return (Average return) is greater than required rate of return so buyer get profit.
-) One of the most important things to consider when choosing investment strength is the balance between risk and return that you are comfortable.

-) NEPSE needs to initiate to develop different program for private investor such as investors meeting and seminars in different subject efficient and effective information channel and to provide up to date data.
-) The corporate firms should communicate about the rules and regulations regarding stock market time and to make the policy that protects the individual investor's right. On the other hand, government needs to implement such rules properly and to monitor in time to time.
-) Investors should diversity their fund to reduce risk with the help of optimal portfolio concept. It is said that "beware of one product companies" that means things can change do not put all your eggs in one basket.

Risk and return analysis is completely untouched area in Nepalese context. It is strongly suggested that further studies should be conducted on this topic and research should include maximum number of sample.

BIBLIOGRAPHY

A. Books

- Bhattarai, R.(2009). "*Investment Theory and Practice*". Kathmandu: Buddha Academic publishers and Distributors pvt.ltd.
- Bradford, F.A. (1995). "*Money and Banking*". New York: Longman.
- Chandra, P. (1994). "*Financial Management*". New Delhi: Tata McGrew Hill.
- Chandra, P. (1999). "*Financial Management Theory and Practices*". New Delhi: Tata McGrew Hill.
- Gitman, L.J. (2001). "*Principles of Managerial Finance*". Singapore: Addison Wesley Longman.
- Grewal, S.S. (1995). "*The Thinking Investor*". New Delhi: Vision Books.
- Gupta, R.L. and Radha Swamy, M. (1997). "*Advanced Accounting*". New Delhi: Sultan Chand and Sons Educational Publishers.
- Hampton, J.J. (1996). "*Financial Decision Making Concept, Problem and Cases*". New Delhi: Prentice Hall
- Joshi, P. R .(2002). "*Research Methodology*" . Kathmandu: Budhha Academic Publisher and Distributers Pvt. Ltd.
- Pradhan,S. (2001). "*Basic of Financial Management*". Kathmandu: Educational Enterprises.
- Sharpe, W.F., Alexander, G.J. and Bailey, J.V. (1995). "*Investment*". New Delhi: Prentice Hall of India.
- Shrestha, S. and Siwal, D.P. (2001). "*Statistical Methods in Management*". Kathmandu: Taleju Prakashan.

Thapa, K.,Bhattarai,R.,Basnet D.(2006). "*Investment Theory and Solution(1st Edition)*". Kathmandu: Asmita Books and Publishers.

Van Horne, J. (1997). "*Financial Management and Policy*". New Delhi: Prentice Hall of India Private Limited.

Van Horne, J and Wachowicz Jr.,J.M.(2001). "*Fundamental of Financial Management*".New Delhi:Pearson Education Inc.

B. Journals, Articles and Reports

Bowman(1998)."*The Theoretical Relationship between Systematic Risk and Financial Variable*".The Journal of Finance, New york:34,3:711-715

Everest Bank Limited,(2011/12). *Annual Report*.Kathmandu:EBL

Ghimire, A.K. (2001). "*Nepal Share Market, an Investor's Prospective*". Business Age.Kathmandu:3,3:13-22.

Himalyan Bank Limited, (2011/12). *Annual Report*.Kathmandu:HBL

Lewellen, J. and Shanken J. (2002). "*Learning Assets Pricing Tests, and Market Efficiency*". The Journal of Finance, New york:57,3:1113-1145

Nepal Investment Bank Limited, (2011/12).*Annual Report*.Kathmandu:NIBL

Pokharel, N. (1999). "*Stock Market Doing Pretty Well*". Business Age.,Kathmandu:2,2: 24-35.

Venally R. Revenscraft D. (2002),"The Performance of Hedge Fund: Risk and Return and Intensities" The Journal of Finance, New York: 54,3:833-879.

C. Thesis

Giri, S. (2011). "*A Study on the Performance of Investment in Common Stock including Risk and Return Analysis of the Listed Commercial Bank*". Kathmandu, Shanker Dev Campus, T.U.

- Gyawali,R (2009). “ Risk and Return on common stock” .Kathmandu, Shanker Dev Campus T.U.
- Manandhar, S., (2006)."*A Study on Risk and Return Analysis on Common Stock Investment of Listed Commercial Bank in Nepal*". Kathmandu, Shanker Dev Campus, T.U.
- Singh, L.(2011)."*A Study on Risk and Return Analysis on Common Stock Investment*". Kathmandu, Shanker Dev Campus, T.U.
- Tamang,B.R.(2003). “ *Study on Risk and Return Analysis of Commercial Banks in Nepal.*”. Kathmandu, Shanker Dev Campus T.U.
- Tuladhar, P.(2002). " *A Study on Risk and Return Analysis of Common Stock*". Kathmandu, Shanker Dev Campus T.U.

APPENDICES

Appendices I

Calculation of Covariance of NIBL and HBL

Fiscal Year	($R_A - \bar{R}_A$)	($R_B - \bar{R}_B$)	($R_A - \bar{R}_A$)($R_B - \bar{R}_B$)
2006/07	0.7290	0.8502	0.6197
2007/08	0.5556	0.1597	0.0887
2008/09	-0.5579	-0.1696	0.0946
2009/10	-0.6074	-0.6428	0.3904
2010/11	-0.1862	-0.3094	0.0576
2011/12	0.067	0.1123	0.0075
			($R_A - \bar{R}_A$)($R_B - \bar{R}_B$) =1.2585

Source: Table No. 4.2, Table No. 4.4

We have,

$$\text{Cov. } (r_A, r_B) = \frac{\sum (R_A - \bar{R}_A)(R_B - \bar{R}_B)}{N}$$

$$= \frac{1.2585}{5} = 0.2517$$

$$\dots \text{Correlation Coeff. of NIBL and HBL } (\rho_{AB}) = \frac{\text{Cov}(r_A, r_B)}{\sigma_A \cdot \sigma_B}$$

$$= \frac{0.2517}{0.5583 \cdot 0.5096}$$

$$= 0.8846$$

Appendices II

Calculation of Covariance of HBL and EBL

Fiscal Year	$(R_B - \overline{R_B})$	$(R_C - \overline{R_C})$	$(R_B - \overline{R_B})(R_C - \overline{R_C})$
2006/07	0.8502	1.0316	0.8770
2007/08	0.1597	0.2061	0.0330
2008/09	-0.1696	-0.3985	0.0675
2009/10	-0.6428	-0.5158	0.3315
2010/11	-0.3094	-0.3208	0.0992
2011/2012	0.1123	-0.0026	0.0003
			$(R_B - \overline{R_B})(R_C - \overline{R_C}) = 1.4085$

Source: Table No. 4.2, Table No. 4.6

We have,

$$\begin{aligned}
 \text{Cov.}(r_B, r_C) &= \frac{\sum (R_B - \overline{R_B})(R_C - \overline{R_C})}{N} \\
 &= \frac{1.4085}{5} \\
 &= 0.2817
 \end{aligned}$$

$$\begin{aligned}
 \dots \text{Correlation Coeff. of HBL and EBL, } (\rho_{BC}) &= \frac{\text{Cov}(r_B, r_C)}{\sigma_B \cdot \sigma_C} \\
 &= \frac{0.2817}{0.5096 \cdot 0.5717} \\
 &= 0.9670
 \end{aligned}$$

Appendices III

Calculation of Covariance of NIBL and EBL

Fiscal Year	$(R_A - \overline{R_A})$	$(R_C - \overline{R_C})$	$(R_A - \overline{R_A})(R_C - \overline{R_C})$
2006/07	0.7290	1.0316	0.7520
2007/08	0.5556	0.2061	0.1145
2008/09	-0.5579	-0.3985	0.2223
2009/10	-0.6074	-0.5158	0.3130
2010/11	-0.1862	-0.3208	0.060
2011/12	0.067	-0.0026	-0.0002
			$(R_A - \overline{R_A})(R_C - \overline{R_C})=1.4616$

Source: Table No. 4.2, Table No. 4.8

We have,

$$\begin{aligned}
 \text{Cov. } (r_A, r_C) &= \frac{\sum (R_A - \overline{R_A})(R_C - \overline{R_C})}{N} \\
 &= \frac{1.4616}{5} \\
 &= 0.2923
 \end{aligned}$$

$$\begin{aligned}
 \dots \text{Correlation Coeff. of NIBL and EBL, } (\rho_{AC}) &= \frac{\text{Cov}(r_A, r_C)}{\sigma_A \cdot \sigma_C} \\
 &= \frac{0.2923}{0.5583 \cdot 0.5717} \\
 &= 0.9157
 \end{aligned}$$