RISK AND RETURN ON COMMON STOCK INVESTMENT OF COMMERCIAL BANKS IN NEPAL

(Himalayan Bank, Everest Bank, Bank of Kathmandu & Nabil Bank Limited)

By

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(Humanities, Management & Education)

RECOMMENDATION

This is to certify that the thesis:

Submitted by:

RAJU BASNET

Entitled

RISK AND RETURN ON COMMON STOCK INVESTMENT OF COMMERCIAL BANKS IN NEPAL

With reference to (Himalayan Bank, Everest Bank, Bank of Kathmandu & Nabil Bank Limited)

has been prepared as approved by this department in the prescribed format of the Faculty of Management. This thesis is forwarded for Examination.

…….	……	……..
Mr. Rajan Bhattarai	Mr. Santiram Khanal	Mr. Narad Upreti
(Supervisor)	(Head of Research Department)	(Campus Chief)

Date:

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VIVA-VOCE SHEET

We have concluded the viva-voice examination of the thesis Presented

Submitted By:
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Entitled

RISK AND RETURN ON COMMON STOCK INVESTMENT OF COMMERCIAL BANKS IN NEPAL

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and found the thesis to be the original work of the student and written according to the prescribed format. We recommend the thesis to be accepted as partial fulfillment of the requirement for the degree of Master of Business Studies (M.B.S)

Viva-voce committee

Chairman, Research committee .....

Member (Thesis Supervisor) .....

Member (External Expert) .....

Date:

DECLARATION

I hearby declare that this thesis entitled, Investment Policy of Commercial Banks in Nepal (With reference Himalayan Bank, Bank of Kathmandu, Everest Bank and Nabil Bank Limited) Submitted to Janta Multiple Campus, is my original work done in the form of partial fulfillment for the requirement of Master of Business Studies (M.B.S) under the supervision of Mr. Rajan Bhattarai, Lecturer- Janta Multiple Campus, Itahari.

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Thesis is really an appreciable curriculum of T.U. because it helps the students to express their theoretical concept gained during the study period into the practical field. So, being concerned to thesis, I got a chance to express my theoretical concept gained from class and library study into this practical field.

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LIST OF ABBREVIATION

BOKL	:	Bank of Kathmandu Limited.
CAPM	:	Capital Assets Pricing Model.
Cov	:	Covariance
Corr	:	Correlation
C.S.	:	Common stock
C.V.	:	Coefficient of Variation
Div.	:	Dividend
Dps	:	Dividend per share
EBL	:	Everest Bank Limited
Eps	:	Earning per share
ERR	:	Expected Rate of Return
F.Y.	:	Fiscal Year
HBL	:	Himalayan Bank Limited
j.v.	:	Joint venture
Mps	:	Market price per share
NABIL	:	Nepal Arab Bank Limited
NEPSE	:	Nepal Stock Exchange
NRB	:	Nepal Rasta Bank.
PVT	:	Private Limited
Rs	:	Rupees
RRR	:	Required Rate of Return
S.D.	:	Standard deviation
SML	:	Security Market line
S.N.	:	Serial Number
T.U.	:	Tribhuvan University

Executive Summary

The commercial bank plays a vital role in accelerating the temps of growth in developing country like Nepal. It mobilizes the saving of people and then drives them into productive channels. It is through this function that it seems as an index of commercial, industrial and financial stability and growth of the nation. The risk and return on common stock of the banks has to be considered in this respect. But the risk and return on the commercial bank is affected by central bank. So the risk and return is laid down and make more liberal for taking risk in productive sector.

The specific objectives are as follows:

- To examine risk and return on common stock of commercial Banks i.e Himalayan Bank, Everest Bank, Bank of kathmandu and Nabil Bank limited in Nepal.
- To assess the volatility of individual stock.
- To determine the effect of portfolio on risk and return.
- To identify which's bank's stock price is overpriced, under priced and correctly priced.
- To test the relationship between risk and return.
- To provid relevant suggestions and practical ideas on the basis of finding of the study.

Expected return and standard deviation of BOKL is higher than other sample banks with value of 118.53% and 114.63% respectively. Expected return of NABIL is lower than others with the value of 56.78%, Standard of EBL is lower than others with the value of 45.80%. Coefficient of variation measures the risk per unit. CV of common stock of EBL is minimum than

other. The minimum CV, the lesser the risk. To earn one unit of return on investor has to bear 0.7452 unit of risk, by investing in EBL. EBL and HBL both banks have more return and less risk in their own inter bank comparison.

In the view point of portfolio risk and return HBL and EBL has highest return of 0.669 and risk an rate of return of BOKL and EBL has low. Investor can earn highest return by holding optimal portfolio of HBL and EBL. Covariance indicates that relationship between stock and market rate of return. In analyses all the covariance between stock of banks market are positive. It indicates that rate of return of all banks are in increasing trend. Beta coefficient of NABIL bank is less than other bank, but more than market beta. All banks expected rate of return is more than required rate of return so the stock is under priced and investor can gain from buying this stock.

CHAPTER I

INTRODUCTION

1.1 Background

Nepal is a land locked mountainous country. It is located on the southern part of the Himalaya range and covers an area of 1,47,181 sq. km. Nepal is one of the least developed and the ninth poorest country in the world and has many implicit and explicit obstacles for the development. Agriculture is the largest sector and backbone of the Nepalese economy. The agriculture sector is also not modernized and the people of this country follow traditional farming technique. Majority of the people are economically and financially immobile. So the country is facing a great problem to get economic prosperity.

Integrated and speedy development of the country is a possible only when competitive banking service research the nook and corner of the country commercial Bank occupies an important place in the framework of every economy because it provides capital for the development of industry, trade and business by investing the saving collections as deposits. Besides, commercials Banks render numerous services to their customers in view of facilitating their economy and social life.

Banks are the essential parts of the business activities which is established to safeguard people's money and thereby using the money in making loans and investment. There are several commercial banks operating in the country. Every bank invests lots of money in some profitable business in long run. An investment is the commitment of money.

Human nature does not satisfy for whatever he /she tends to have more than whatever he/she has, so expecting the additional return he/she tends to sacrifice the current resources . Whatever we talk about return, risk too must not be avoided because in every type of return risk is involved. Every investment entails some degree of risk it required at present certain sacrifice for future uncertain benefits. The growth of an individual's or firm's resources is not possible unit and unless we invest it in some profitable sector.

Thus investment is the sacrifice of existing resources to generate return in future involving risk. It can be real as well as financial investment. Real investment involves kind tangible assets such as lands, machineries, factories, building etc. Where as financial investment involves contracts written in piece of paper such as common stock, bond etc.

In general, when a financial decision is being made the answer to the following question must be looked for: What is the expected return? What is the risk expected ? Given the risk return characteristics of the decision? How would it influence the market value of the firm?

Therefore, in the term of Investment, the fundamental aspects i.e. risk and return is associated with it. Since an investor always analysis the risk and return thoroughly before investing there wealth. Risk can be considered as the possibility that the actual return from the investment will deviate from an expected return. In this uncertain world, the investor can not exactly estimate what rate of return on investment will yield. Normally, an investor seeks a higher return with a lower risk. But theoretically we know the fact that higher return has higher risk associated with it and lower risk remains satisfied with a lower return.

Return is the reward for uncertainty of risk. It is the income received in investment. Investment is made on either financial assets or other non-financial assets. People invest their belongings with an expectation of getting some rewards for leaving its liquidity; they only invest those opportunities where they can get higher return. Return is the, main attraction for investor to invest in risky securities as stock accepting a varying degree of risk tolerance.

There are various alternatives for investment out of the various type of alternatives. This study will deals with the common stock as on important investment characteristics and one speculative characteristic .common stock is the most risky securities. As the common stock is risky, it will yield high return. People typically buy common stock expecting to earn dividends plus capital gains when they sell their share at the end of some holding periods. The study will focused on the risk and return analysis of listed commercial banks in Nepal.

1.2 Focus of the study

In the contents of Nepal, the capital market is growing very slowly. The market is not efficient, there are very few magazines or articles related to capital market and very few studies are made on the topic 'risk and return' . Because of these all things most of the investors are investing on capital market without any proper knowledge and information. So investment on the capital market is just like "shooting in the dark ". The study will give information about Nepalese capital market by analyzing risk and return and will definitely contribute to increase the analytical power of the investors in capital market.

This study will focused on the analysis of risk and return of Himalayan Bank, Everest Bank, Bank of kathmandu and Nabil Bank limited in Nepal. Analysis will have focused price movement of share of single stock, risk and return associated

with them, risk and return on portfolio and movement of market. This study will also focus on the comparative study on risk and return of joint ventures with commercial banks from government.

1.3 Statement of the problem

Due to the lack of information and poor knowledge, individual investor is manipulated or exploited by the financial institutions or other market intermediaries to such an extent that investing in common stock is intolerance hazardous. There is another problem for financial sector to earn goodwill among the public because some financial companies' have collapsed due to improper use of public funds. Investors are responsible to make rational investment decision rather then switching blame to others. In Nepal most of the investor invests their fund in single security rather they can be benefited by investing in portfolio of securities though diversification of risk. Most of the rational investors hold portfolio of stock and they are more concerned with the risk of portfolio than with risk of individual security.

At the same time there are no any separate institution which provides information required to rational decision that can be accelerate the stock investment and market efficiency. Government policy is less encouraging in promoting common stock investment. The Nepalese market is characterized by a low trading volume absence of professional brokers, early stage of growth, limited movement of share price and limited information available to investors. About the common stock investment, it is not wholly rational or logical processes which can be understood in terms of conventional reason and logic, since it involves the use of intuition, imagination, guesswork, conscious judgment based on little understood statistical probability. The most investors use linear logic to formulate their investment

strategies and to make investment decisions whereas liner logic is based on assumption that the future will reuse the past in a predictable fashion.

The most of the Nepalese people strive for food and shelter and who are able to invest on long term investment feel more risk in stock investment then its real risk. To over come this problem the public as well as government should initiate new programmed. The information essential to investment decision should be disseminated properly and timely. In addition idea of portfolio should be developed in potential investors mind. Stock returns are determined not only by single factors rather than these are the functions of different fundamental variables. However these past findings are relevant in the present day context but other questions may also arise due to many changes taken place after the completion of these studies. In order to verify these findings, this study will also try to deal with following issues:

- How much return does the common stock of commercial banks provides to their investor?
- Which bank is the best among the selected commercial bank under the study?
- How much risk associated with the return?
- How can one make higher return through lower risk?
- Does the relation between risk and return support the theory of CAPM?
- What is the systematic risk position in relation to total risk?
- What should be the compensation for bearing the risk?

1.4 Objective of the study

The basic objective of the study is to assess the risk associate with return in the common stock investment on the basis of selective tools. So, basically this study deals risk and return of securities as well as stock market. The specific objectives of this study are mentioned as follows:

- To examine risk and return on common stock of commercial Banks i.e Himalayan Bank, Everest Bank, Bank of kathmandu and Nabil Bank limited in Nepal.
- To assess the volatility of individual stock.
- To determine the effect of portfolio on risk and return.
- To identify which's bank's stock price is overpriced, under priced and correctly priced.
- To test the relationship between risk and return.
- To provide relevant suggestions and practical ideas on the basis of finding of the study.

1.5 Significance of the study

This research study will provide actual information about the Nepalese stock market and contribute in the analytical power of the investors. In Nepalese context, there are very few magazines or articles related to capital market and very few studies are made on the topic "Risk and Return". So, the study will be more significant for exploring and increasing stock investment. The main significant of the study are:

- This study will be a matter of interest for academician's students and investor.
- This study will give information about Nepalese capital market by analyzing risk and return and will definitely contribute to increase the analytical power of investors in capital market.

- This study might have the dear conception over their investment among all investment. They will able to distinct the right investment among all investment opportunities.
- This study will be beneficial for all the persons who are directly and indirectly related to Nepal stock market.
- This study may provide significant information to Nepalese stock exchange market where securities of the companies are traded.
- This study will provide some knowledge about the stock market development along with ideas to minimize the risk on the stock investment.

1.6 Limitation of the study

As every research has its own limitation, this study will not bias. Basically the research will be done for the partial fulfillment of MBS. So this will have some limitations, which are listed bellow:

- It only focuses on the selected commercial banks covering the period of last five years. (From 2007/08 to 2011/12)
- All the data taken into analysis are from secondary sources. So, the consideration of findings and conclusions are strictly dependent upon the reliability of secondary data and information provided by concerned banks.
- The study only focuses the analysis of risk and return associated with common stock investment of selected commercial banks.
- Only selected financial and statistical tools are used for analysis.
- The study has been conducted to fulfill the requirement of MBS programmed of TU for a prescribed time for generalization propose .

1.7 Organization of the study

The whole study will organized in to five different chapters. Those will be as follows:

Chapter 1: Introduction

"Introduction" provides the brief introduction of this study. The historical background of the listed commercial banks in Nepal shows the contribution of Nepalese business organization for the development of industrial sector in Nepal. Evaluation of risk and return can be taken as a reliable study in the field of financial management. The study mainly aims to analyze the risk and return of Himalayan Bank, Everest Bank, Bank of Kathmandu and Nabil Bank Limited of Nepal.

Chapter 2: Review of literature

This chapter will deal the review of related literatures and available studies return and prepared by different experts and researchers in the field of risk and return analyses.

Chapter 3: Research methodology

This chapter will focus on research design, population and sample, sources of data, procedure of data collection, tools for analysis, limitation of the methodology, method of analysis and presentation.

Chapter 4: Presentation and data analysis

This chapter will fulfill the objectives of the study by presenting the data and analyzing them with the help of various financial and statistical tools followed by methodology.

Chapter 5: summary, conclusion and recommendation

This chapter will summarize the whole study. Moreover, it will draw the conclusion and forward the recommendation for the improvement of risk and return analysis of commercial bank.

CHAPTER II

2. REVIEW OF THE LITERATURE

Review of the literature provides basic foundation to this study. the various approaches employed in the study are in fact derived from the different survey. The propose of this literature review is to get acquainted with what has been accomplished in the concerned subject matter and what is yet to be accomplished. It also gives the knowledge about the study being undertaken.

Review of the literature refers to the reviewing past studies in the concern subject matters that may be books, articles, journals, thesis / dissertation or any types of publications concerning the banks and the related topic. Review of literature helps to get enough information about the subject matter that is going to be researched. This chapter clears the history of risk and return and its development.

Risk and return analyses of the stock in the present days has been the focal point in the capital market area in relation with portfolio management. In the investment process, risk and return aspect the formation of an optimal portfolio are the major two task. The basic essential of the modern portfolio theory are to avoid risk and to calculate the risk premium that investors needs for involving in the risky investment. The objective of this section is to know how various writers have described about risk and return.

2.2 Conceptual Framework

Various books which deal with theoretical aspects of risk and return are taken in to consideration. Major focus is given on the investment of common stock and its impact on individual risk and return.

2.3 Common stock & its fundamentals

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

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

Among all the forms of securities, common stock appears to be the most romantic. While fixed income investment revenue may be more important to most of the

investor, common stock seems to capture their interest the most the potential reward and penalties associated with common stock make them an interesting and exciting proposition and common investment is a favorite topic for conversation in parties and get together. (Securities board Nepal, Annual report, 1999／2000, may 2001:5)

Common sock holders of a corporation are its residual owner. Their claim to income and assets comes after creditors and preferred stocks holders have been paid fully. As a result stockholder return on investment is less certain than the return to lenders or to preferred stockholder. The share of the common stock can be authorized either with or without par value. The par value of this is merely a stated figure in the corporate charter and is of little economic significance.

Common stock are generally regarded as "fully paid and non assessable ". Which means that common stock holders may not lose their initial investment. That is, if the corporation falls to meet its obligation, the stockholder cannot be forced to give the corporation the funds that are needed to payoff the obligation. However as a result of such a failure, it is possible that the value of a corporation share will be negligible. This will result in the shareholder having listed on amount equal to the price previously paid to buy the shares. The true owner of business firms is the common stock holders to invest their money in the firm because of their expectation of future returns. A common stock holder is sometimes referred as a residual owner, since in essence he／she receive what is left after all other claim on the firm's income and assets has been satisfied. Here are the fundamental aspects of common stock.

Control

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

- Any issue that will have an effect on the corporation.
- Any proposal that will change their individual percentage ownership.
- Any significant contract or financial arrangement.

Pre- Emptive right

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

Liquidation Right

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

Dividend

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

Common stock values

Terms that are frequently used to refers to common stock values include par value, book value and the market values

Par value

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

Market value

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

Distribution of Earning and assets

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

Voting Right

Generally each share of common stock entitles the folders to one vote in the election of director and in order special election votes are generally assignable and most be cost of the annual stockholder meeting.

2.4 Meaning of Returns

The concept of return has different meaning to different investor. Investor might purchase the stock of those firms that pays large cash dividends. Other investors are concerned primarily with growth. They would see project that offer the promises of long term, higher than average growth of sales earning and capital appreciation with most investment an individual or a business organization spend money today with an expectation of earning even more money in the future. Thus, the concept of return provides investor with a convenient way of expressing the financial performance of an investment.

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

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

Return on common stock is consists of dividend yield and capital gain yield. An example derived from the book of Bready and Mayers 1998:68 is taken in to consideration to make it clearer. According to them "if current price of share is Po and excepted price at the end of the year is P, and the excepted dividend per share is div1. the rate of return that investor expect from share over the next year is define as the expected price appreciation per share P1-P0,all dividend by the beginning price P0.

$$R \quad \mathrm{X} \quad \frac{D1\,\Gamma\, P1\,\Gamma\, P0}{P0}$$

Most of the investment decisions are made for future event. Hence it is necessary to predict the future return than the past return. But future is always uncertain for the common stock holder. There fore it leads to find expected rate of return of a security is the sum of the product of possible rate of return and there probabilities.

$$E(R) = \sum_{J=1}^{n} rjpj = r1p1+r2p2+.....+rnpn$$

where,

Rj = Rate of return on jth out come or event.

Pj = Probabilities of occurrence of jth outcomes or event.

N= No of probabilities.

Expected rate of return based on the historian data can be calculated as follows:

$$\text{Expected Rate of return (R)} = \frac{rj}{n}$$

Where,

$\sum$ rj = sum of the return of the stock j.

n = no of year that the return are taken.

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

$$R\ X \frac{D_1\ \Gamma\ (P_t - P_t - 1)}{P_t - 1}$$

Where,

R = Expected return.

Dt = Dividend received at the time t.

Pt-1 = Starting stock price.

Pt = Ending stock price.

"Holding period return mention above is useful with an investment horizon of one year or less for longer period it is better to calculate rate of returns as investment yield. The yield calculation is present value based and this considerations the time value of money". (Van Horn and watchtowers, 1997:10)

2.5 Meaning of risk

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

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

Risk can be defined as the variability of possible returns around the expected return of an investment. For some investment is variability can be quite small. Each investor has his or her own attitude about risk and how much he ⁄ she

tolerate. Since investment alternative have different type of risk associated with them. The investor must determine which combination of alternative matches his or her particular risk tolerance.

Investment on common stock is risky investment. Many investor consider risk as a chance of occurring some unfavorable event of danger of losing some value. Those investors who can tolerate higher level of risk should be rewarded with higher value of return. Intelligent investing involves combining investment alternatives in a portfolio that offer a fair return for the risk you are willing to assume.

Uncertainty and risk are treated separately in financial analyses. Risk is the unlooked and unwanted event in the future. Some one has said that risk is the sugar and salt of the life. Although, risk arises from uncertainty it magnitude depends up on the degree of variability is uncertain cash flow is translated in to a mathematical value by calculating the expected value of all possible uncertain outcomes.

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

2.6 Measuring Risk:

We have already discussed about that the risk is a difficult concept of grasp and great deal of the controversy has surrounded attempt to define and measure it. To be most useful, any measure of risk should have definite value we need a measure of the lightness of the probability distribution. One such measure is the standard

deviation, the symbol for which is (σ) pronounced sigma. To calculate standard deviation, following steps should be taken:

Calculation of expected value:

$$\text{Expected value } E(r) = \sum_{t=1}^{n} r1p1$$

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

Square each deviation and multiply it by the probability occurrence of the applicable state of the economy, and then sum this product to obtain the variance (σ2)

$$\sigma 2 = \text{Variance} = \text{var}(r) = \sum_{t=1}^{n} Pt\,[r1 - E(r)]\,2$$

The variance of return (σ2) for assets using historical returns is calculated.

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

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

$$\text{Standard deviation } (\sigma) = \sqrt{\frac{(x\,Z\,\bar{x})^2}{n\,Z1}}$$

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

2.7 Coefficient of Variation:

The other useful measure of risk is the coefficient of variation (C.V.). It is the standard deviation dividend by the mean expected return, which measures risk per unit of return. The coefficient of variation should be used to compare investments when both the standard deviation and the expected values differ.

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

When,

σ = Standard deviation.
E(r) = Expected rate of return.

2.8 Portfolio Theory:

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

The base of portfolio is a well diversification. Efforts to spread and minimize risk taken the form of diversification, However it is always the difficulty to find the right kind of diversification and the right reason. There were three types of

diversification techniques before the Markowitz diversification technique came in to scenario. One is simple diversification, second is superfluous diversification and third is diversification across industries.

Markowitz diversification is the combining of assets. Which are less than perfectly positively correlated in order to reduce portfolio risk. It can sometimes reduce risk below the undiversifiable level. Markowitz diversification is more analytical than simple diversification and considers assets correlation or co-variance. The lowest the correlation between assets, the more the Markowitz diversification will be able to reduce the portfolio's risk.

2.9 Return on Portfolio

The expected return on a portfolio, E(Rp) is simply the weight average of the expected returns on the individual assets in the portfolio with the weights beings the fraction of the total portfolio invested in each assets.

The expected return on portfolio consisting of two securities will be .

$E(R_p) = W_A.E(r_A) + W_B.E(r_B)$

Where,

E(Rp) = Expected return on portfolio

$E(r_A)$ = Expected return on security "A"

$E(r_B)$ = Expected return on security "B"

W_A = proportion of portfolio invested in security "A"

W_B proportion of portfolio invested in security "B"

2.10 Risk on Portfolio:

Expected risk on a portfolio is a function of the proportion invested in the component, the risky ness of the component and correlation of returns on the component securities. It is measured by the standard deviation.

Risk on portfolio is a weighted average risk. Therefore, the portfolio risk also accounts for co-variance between the returns of securities. Co-variance is the product of the standard deviation of individual securities. The portfolio risk in the case of two- securities portfolio can be computed as follows:

$$\exists p = \sqrt{\pm A^2 WA^2 \ \Gamma \pm B^2 WB^2 \ \Gamma \ 2WAWB¢AB \pm A \pm B}$$

Where,

σ_p= Portfolio standard deviation

W_A= Proportion of the portfolio devoted by security "A"

σ_A^2= Variance of security "A"

σ_B^2= Variance of security "B"

Cov $_{AB}$= covariance of stock A & B

W_B= Proportion to the portfolio devoted by security "B"

2.11 Systematic and Unsystematic Risk

A security (or assets) risk consists of to components diversifiable and non-diversifiable risk. Diversifiable risk which is called unsystematic risk or avoidable risk or company –specific risk or non-market risk. it is caused by events particular to the firm. For e.g.-Labor strikes, management error, inventions, advertising campaigns, shifts in consumer taste etc.

Non diversifiable risk, which is also called systematic risk, is attributed to forces that affect all firms. It can not be diversified away. It is also called market risk or unavoidable risk or beta risk. It is caused due to war inflation, recession, high interest rates, depressions, and long term changes in consumption in the economy.

Thus the total risk can be divided in to two parts:

Total risk= Systematic risk + Unsystematic risk

Var(rj)= bj2var(rm) +var (re)

Where,

Var(rj)= Total Risk

Bj2var(rm)= Market risk or systematic risk

Var (re)= Unsystematic or unique risk of the security.

2.12 Review from Capital Assist Pricing Model (CAPM)

The relevant risk for an individual asset is systematic risk (market related risk) because non-market risk can be eliminated by diversification. The relationship between an asset's return and its systematic risk can be expressed by the CAPM, which is also called the security market line (SML). The equation for the CAPM is

E(Rj)= Rf +[E(Rm)-Rf] Bj

Where,

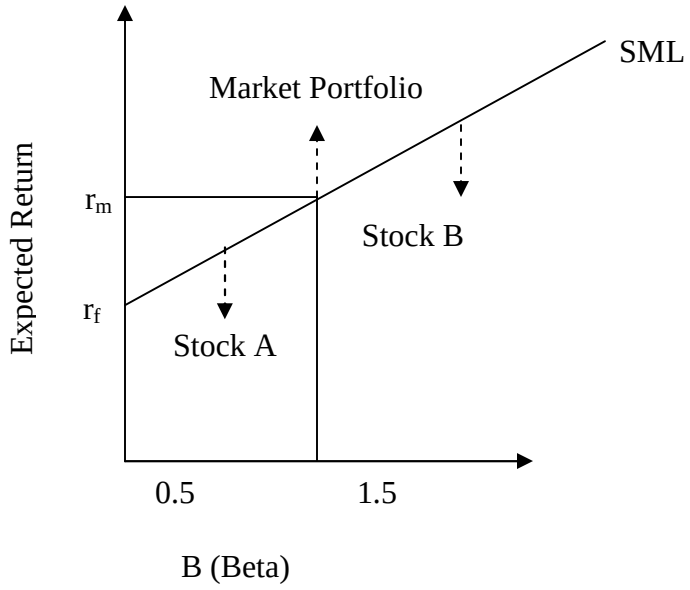
E(rj) = Expected return for an asset.

Rf= Risk free rare of return

Bj= Asset's beta.

The CAPM is an equilibrium model for measuring the risk- return trade off for all assets including the both inefficient and efficient portfolios. A graph of the CAPM is given in the figure.

That what's CAPM says:



2.13 Review of previous Thesis:

However, risk and return is not a new concept of financial analyses, in context of Nepal and it's very slow growing capital market, very little studies are made regarding this topic. In this section some thesis are reviewed which have done on risk and return topic and the objective of this selection is to know how the relation between risk and return is described and measured by different thesis.

"Mr. Sudeep Upadhaya " has conducted the study in the title of "Risk and Return on common stock Investment of commercial Bank in Nepal " (2001).

With the objectives to evaluate the common stock of the listed commercial banks in terms of risk and return and to perform sector wise comparison on the basis of market capitalization from the study. **Mr Upaadhaya** has find out that the

common stock of Nepal Grindlays Bank (now standard chartered bank) bears the maximum rate of return (127.84%) and SBI Bank has minimum (7.77%) rate of return. In the contest of industries return of other sector is highest and manufacturing and production sector is found least performer.

The study has proved that "High Risk High Return" because in this study it has found common stock of NGBL is most risky in Nepal. SBI is least risky. Common stock of Everest bank is most volatile. Common stock of Nepal Indosuez Bank is the least volatile and common stock of all the commercial banks are overpriced. **Mr. Upadhyay** has recommended for the portfolio construction, to select the stock that has higher return with not correlated or negatively correlated stocks otherwise stock can not be diversify risk properly. (Upadhyay,2001: 38).

"**Miss Nisha Shakya",** has done study in risk and return analysis in common stock investment which may helps in decision making about stock investment. The specific objective of this study is to assess the general investor's perception, attitude and awareness towards risk associated with return, to calculated risk and return of selected securities and their portfolio and to analyze the volatility of common stock and their valuates. Researcher find out that, 58.3% investor consider return and 33.3% investor consider risk before investing. To invest in common stock 50 percent prefer primary market, 21.67 percent prefer secondary market and 28.3percent of total investor prefers both markets. 71.7 percent of total investors give first preference to the banking sector. 46.7 percent investors have knowledge about correlation coefficient. 48.3 percent of total investor prefers CV and 36.7 percent prefer S.D. for measuring risk.

Miss Shakya recommended that, if negatively correlated assets are combined in portfolio then risk can be minimized to some extent. Only negatively correlated assets are favourable with view point of diversification. (Shakya: 2003:28)

Another study by **Mr. Jeet Bahadur Sapkota**, entitled "Risk and Return Analysis in Common Stock Investment" is very closely related to this study. Researcher's main objective of the study is to analyze the risk and return of the common stock in Nepalese stock market. This study is focused on the common stock of commercial banks. **Mr. Sapkota** in this study has concluded that "Commercial stock is the most risky security and life blood of stock market because of the highest expect so it attracts more investors. Private Cs holders are the passive owners of the company. But the private investor's plays a vital role in economic development of nation by mobilizing the dispersed capital remained in different form in the society. But lack of information and poor knowledge, Nepalese private investors cannot analyze the securities as well as market property. (Sapkota, 2001)

Miss Sabina shrestha has done study on the topic of "Risk and Return Analysis of Commercial Bank in Nepal", so this study is closely related and helpful to this study. According to her, the relationship between risk and return is described by investor's perception about risk and their demand for compensation. No investors will like to invest in risky assets unless he/she is assured of adequate compensation for the acceptance of risk. Hence risk plays a central role in the analysis of investment. Investor often asks about an investment and like to know if the risk will command higher premium.

Miss Shrestha has recommended that in comparison with inter industry, banking sector is more profitable. So, stock of banking sector is found to have the highest return when it has the medium risk where as manufacturing and processing sector is found to have the lowest return and lowest risk. Therefore, the investor may buy the stocks of banking sectors considering risk and return factor .

CHAPTER III

RESEARCH METHODOLOGY

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

3.1 Research Design

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

3.2 Population and Samples

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

believed to be representative of the population. Theirs sub-group is done by sampling.

This study is concerned with the risk and return analyses of listed Commercial Banks. So it is obvious that all the Banks listed in stock market are population for this study. However, the stock market population is neither feasible nor desirable. Therefore, a sub group of the population is selected which is called sample and it is believed that the sample represents the population in true sense. In this study convenience sample is used. Of total 14 Banks enlisted in NEPSE, four Commercial Banks have selected for the study area, They are: Himalayan Bank Ltd (HBL), Nabil Bank Ltd (NABIL), Everest Bank Ltd (EBL), Bank of Kathmandu Ltd (BOKL).

To study financial data from each sampled Bank, data were taken for period of five years from 2007/08 to 2011/12

3.3 Sources of Data

Data can be obtained from either primary or secondary source. But the data used in this study were basically secondary in nature. The following were the sources of secondary data, which we had used in this study.

Annual reports of concerned Commercial Banks.

Trading report of published by NEPSE.

Material published by magazines and papers.

Related web sites (i.e. www.nepalstock.com)

3.4 Data Collection Techniques.

In order to gather required information and data for the study under taken, following processes had been employed.

- Nature of the data hadbeen identified in light of need of study.
- Related organization and web site had been identified to collect the data and information.
- Personal approach had been made to collect the required data and information.
- Finally presentation, interpretation and analysis of data had been done.
-

3.5 Data Analyses tools:

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

Dividend (D)

Dividend is the reward for waiting to the investors. The dividend decision is the decision of financial manager that out of earning how much portion of earning should be paid as dividend and how much portion of earning should be retained. The dividend decision is the crucial decision because it directly affects to the market price of share. Dividends are of two types cash dividend and stock dividend. If only cash dividend are paid there will be no problem in calculation of total gain to the stock holders. If stock dividend is paid, stock holder gets extra no of shares as dividend and simultaneously price of the stock decline due to

increased no of shares. To get the real amount of dividend there are no any model or formula. So the model has been developed considering practical as well as theoretical aspects after several discussions with NEPSE staff investors.

The model is:

Total dividend amount = cash dividend + stock dividend % × next years MPS.

Market Price of Stock (MPS)

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

Return on Common Stock (R_j)

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

Symbolically,

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

Where,

Div_1 = Expected dividend per share.

P_1 = price of the stock at time 1 year.

P_0 = Current price of the stock.

Expected Rate of Return on Common Stock E(R_j)

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

$$\text{Expected rate of return } \sum (Rj) = \frac{rj}{n}$$

Where,

E(Rj) = Expected rate of return on stock j

Rj = Return of stock j

n = Number of years that the return is taken .

$\sum$ = Sign of summation.

Standard Deviation (S.D. or σ)

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

$$\text{Standard deviation } (\sigma) = \sqrt{\frac{(x \, Z \bar{x})^2}{n \, Z 1}}$$

where,
σ = Sigma, denoted for standard deviation.

X= Return

$\bar{X}$ = Expected rate of return

N = No of observation/no of years.

Coefficient of Variation (C.V.)

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

Coefficient of variation (C.V.) = $\frac{\pm}{\int RA}$

Where,

σ = standard deviation

$\int RA$ = Expected Return

Portfolio Risk and Return

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

The expected return of a portfolio is simply a weighted average of the expected return of the securities comprising that portfolio. The weights are the proportions of total funds invested in each securities and the sum of weight equals to 100%.

The return on the portfolio in case of only two assets portfolio is given by

$R_P = W_A R_A + W_B R_B$

Where,

R_P = Expected Return on portfolio of stock A and B.

W_A = Weight on investment on stock A

W_B = Weight on investment on stock B

$W_A + W_B = 1$ or 100%

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

$$\sigma_p = \sqrt{\pm A^2 WA^2 \Gamma \pm B^2 WB^2 \Gamma 2WAWB¢AB \pm A \pm B}$$

where,

σp = Portfolio Standard deviation

σA = Standard Deviation of Security A

σB = Standard Deviation of Security B

WA = The portion of the portfolio devoted by assets A

WB = The proportion of the portfolio devoted by assets B

AB = Correlation Between the assets, A and B.

Minimum Variance portfolio

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

$$WA = \frac{\pm B^2 \; Z \; pAB \pm A \pm B}{(\pm A^2 \; \Gamma \pm B^2 \; Z 2 \, pAB \pm A \pm B)}$$

WB =1- WA

Where.

WA = optimal weight to invest in stock A

WB = optimal weight to invest in stock B

σ2A = Variance of Stock A

σ2B = Variance of Stock B

p_{AB} = Correlation between stock A and stock B

Correlation Coefficient

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

Case: 1 Perfectly Positive Correlation (r= 1)

If a portfolio consists of perfectly positively correlated stock, then the risk of a portfolio does not diversify or diversification does nothing to reduce risk.

Case: 2 perfectly negative correlation (r = -1)

Risk can be completely diversified if portfolio consists of perfectly negatively correlated stock.

Case: 3 No relationship between returns (r = 0)

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

Case: 4 Intermediates Risk (r = +0.5)

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

The formula to calculate correlation coefficient is given by :

$$p = \frac{COV_{AB}}{\pm A \pm B}$$

Where,

p = correlation coefficient.

Cov_{AB} = Covariance between stock A and B.

σA = Covariance between stock A.

σB = Covariance between stock B.

Beta (B)

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

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

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

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

$$Bj = \frac{Rjm \pm j \pm m}{\pm m^2} \quad \text{or} \quad \frac{COV(rjrm)}{\pm m^2}$$

Where,

Bj = beta coefficient of stock j .

Cov(rj rm) ⁄ (Rjmσjσm) = covariance of return for security "j" with those of the market.

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

Market Return (R_m)

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

Mathematically,

$$Rm = \frac{NI_t \; Z \; NI_{tZ1}}{NI_{tZ1}}$$

Where,

NIt = NEPSE index at time "t"

NIt-1 = NEPSE at time t-1.

RM = Return of market.

Expected Return on Market E(RM)

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

$$fRM = \frac{Rm}{n}$$

Where,

fRM = Summation of market return

n = Number of sample period.

Systematic Risk and Unsystematic Risk

Total risk can be divided in to two parts. They are systematic risk and systematic risk.

Total risk (σ) = Systematic Risk + Unsystematic Risk

Systematic risk is the portion of total risk of an individual security caused by market factor that simultaneously affects the prices of all securities. It can not be diversified away. The systematic risk is the changes of interest rate, inflation, investors' expectation above the over all performance of the economy e.t.c

$$\text{Systematic Risk} = \frac{COV_{Am}}{\pm m}$$

$$= \frac{pAm \pm A \pm m}{\pm m}$$

$$= pAm \text{¢} A$$

Where,

Cov_{AM} = Covariance of return of assets A with Market

p_{AM} = Correlation of assets A with Market

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

$$\text{Unsystematic risk} = \pm A \text{Z} \frac{COV\ Am}{\pm m}$$

$$= \sigma A - pAM\ \sigma A$$

$$= \sigma A\ (1 - pAM\ \sigma A)$$

Proportion of systematic risk and unsystematic risk.

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

$$P^2 = \frac{Bj^2 \pm m^2}{\pm j^2}$$

$$1 - P^2 = \frac{\text{Var}(e)}{\exists j^2}$$

Where,

P_2 = proportion of systematic risk

$1\text{-}p_2$ = proportion of unsystematic risk.

Σj_2 = variance of stock j.

Required rate of return

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

Rj = Rf+(RM-RF)Bj

Where,

Rj = required rate of return on stock j.

Rf = Risk free rate of return.

RM = Market rate of return.

Bj = Beta coefficient of stock

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

CHAPTER IV

DATA PRESENTATION AND ANALYSIS

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

4.1 Return of Common Stock of Commercial Banks

Four commercial banks were taken as sample for study among many banks listed in NEPSE. For every bank common stock on risk and return are analyzed properly. Market price per share (MPS) and dividend per share (DPS) of each selected banks were shown in the table 4.1.

Risk and return is considered to be one of the best ways to analyze the behaviour of changing market price of common stock. In this analysis it is attempted to find out periodical realized rate of return, its expected return or average rate of return, standard deviation, coefficient of variation. In the following paragraph each banks are introduced and their common stocks risk and return are analyzed here.

Himalayan Bank Ltd.

Table 4.1

MPS and DPS of HBL

Fiscal Year	Closing Price (31st Dec)	Cash Dividend	Stock Dividend	Total Dividend
2007/08	920	11.58	31.58	43.13
2008/09	1100	30	35	65
2009/10	1760	15	40	55
2010/11	1980	25	45	70
2011/12	1760	12	43.56	55.56

Source: Annual Report of HBL

Table 4.2

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

Fiscal Year	Closing Price	Total Dividend	$R X\frac{P_t Z P_{tZ1} \Gamma D_1}{P_t Z1}$	$R Z\overline{R}$	$\bullet R Z R'^2$
2007/08	920	358.96	-	-	-
2008/09	1100	646	0.8978	0.2189	0.04791
2009/10	1760	807	1.3336	0.6547	0.4286
2010/11	1980	817	0.5892	-0.0897	0.00805
2011/12	1760	12	-0.1051	-0.784	0.61466
Total			2.7155		1.09922

Source: Table 4.1

Expected Return =

$$\overline{R} X\frac{ER}{N} X\frac{2.7155}{4} X0.6789$$

Standard Deviation: (∃)

$$= \sqrt{\frac{\int R\ Z \bar{R} \AA}{N\ Z1}}$$

$$= \sqrt{\frac{1.09922}{4\ Z1}} = 0.60532$$

Coefficient of Covariance (C.V)

$$= \frac{\exists}{\bar{R}}$$

$$= \frac{0.60532}{0.6789} = 0.8916$$

Nepal Everest Bank Ltd.

Table 4.3

MPS and DPS of EBL

Fiscal Year	Closing Price (31^{st} Dec)	Cash Dividend	Stock Dividend	Total Dividend
2007/08	870	-	20	20
2008/09	1379	25	-	25
2009/10	2430	10	30	40
2010/11	3132	20	30	50
2011/12	2455	30	30	60

Source: Appendix VI

Table 4.4

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

Fiscal Year	Closing Price	Total Dividend	$R X\frac{P_t Z(P_{tZ1} \Gamma D_1)}{P_t Z1}$	$R Z\overline{R}$	$\bullet R Z R'^2$
2007/08	870	275.8	-	-	-
2008/09	1379	25	0.6138	0.0008	0.00000064
2009/10	2430	949.6	1.4508	0.08362	0.6992
2010/11	3132	756.5	0.6002	-0.0144	0.00021
2011/12	2455	30	-0.2066	-0.8212	0.6744
Total	-		2.4582		1.3738

Source: Table 4.3

Expected Return

$$\overline{R} X\frac{ER}{N}X\frac{2.4582}{4}X0.6146$$

Standard Deviation: ($\exists$)

$$= \sqrt{\frac{\int R Z\overline{R}\AA}{N Z1}}$$

$$= \sqrt{\frac{1.3738}{3}} = 0.4580$$

Coefficient of Covariance (C.V)

$$= \frac{\exists}{\overline{R}}$$

$$= \frac{0.4580}{0.6146} = 0.7452$$

Bank of Kathmandu Ltd.

Table 4.5

MPS and DPS of BOKL

Fiscal Year	Closing Price (31^{st} Dec)	Cash Dividend	Stock Dividend	Total Dividend
2007/08	430	15	15	30
2008/09	850	18	48	63
2009/10	1375	20	20	40
2010/11	2350	2.11	42.11	44.22
2011/12	1750	7.37	47.37	54.74

Source: Appendix VI

Table 4.6

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

Fiscal Year	Closing Price	Total Dividend	R X$\frac{P_t Z(P_{tZ1} \Gamma D_1)}{P_t Z1}$	R Z$\overline{R}$	•R ZR′2
2007/08	430	142.5	-	-	-
2008/09	850	678	2.5535	1.368	1.8714
2009/10	1375	490	1.1941	0.0086	0.000074
2010/11	2350	739.04	1.2466	0.0611	0.0037
2011/12	1750	7.37	-0.2522	-1.4377	2.067
Total		-	4.742		3.9422

Source: Table No. 4.5

Expected Return

$$\overline{R}\ \mathrm{X}\frac{R}{N}\mathrm{X}\frac{4.742}{4}\mathrm{X}1.1855$$

Standard Deviation: (∃)

$$= \sqrt{\frac{\int R \, Z \bar{R} \AA}{N \, Z1}}$$

$$= \sqrt{\frac{3.9422}{3}} = 1.1463$$

Coefficient of Covariance (C.V)

$$= \frac{\exists}{\bar{R}} = \frac{1.1463}{1.1855} = 0.9670$$

Nepal Arab Bank Ltd. (NABIL)

Table 4.7

MPS and DPS of NABIL

Fiscal Year	Closing Price (31^{st} Dec)	Cash Dividend	Stock Dividend	Total Dividend
2007/08	1505	70	-	70
2008/09	2240	85	-	85
2009/10	5050	100	40	140
2010/11	5275	60	40	100
2011/12	4899	35	50	85

Source: Appendix VI

Table 4.8

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

Fiscal Year	Closing Price	Total Dividend	$R = \frac{P_t + (P_{t+1} - D_1)}{P_{t-1}}$	$R - \bar{R}$	$(R - \bar{R})^2$
2007/08	1505	70	-	-	-
2008/09	2240	85	0.5448	-0.023	0.000529
2009/10	5050	140	1.3170	0.7492	0.5613
2010/11	5275	2170	0.4743	-0.0935	0.0087
2011/12	4899	35	-0.0646	-0.6324	0.3999
Total			2.2715		0.9704

Source: Table No. 4.7

Expected Return

$$\bar{R} = \frac{R}{N} = \frac{2.2715}{4} = 0.5678$$

Standard Deviation: (σ)

$$= \sqrt{\frac{\sum (R - \bar{R})^2}{N - 1}}$$

$$= \sqrt{\frac{0.9704}{3}} = 0.5687$$

Coefficient of Covariance (C.V)

$$= \frac{\sigma}{\bar{R}} = \frac{0.5687}{0.5678} = 1.00$$

4.2 Inter Firm Comparison

After analyzing the expected return and total risk and risk per unit, results are shown in table no. 4.9.

Table 4.9

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

Commercial Bank	Expected Return (R)	Standard Deviation (S.D)	Coefficient of Variation (C.V)
HBL	67.89%	60.532%	8916
EBL	61.46%	45.80%	7452
BOKL	118.55%	114.63%	9670
NABIL	56.78	56.87	100

The above table shows that expected return and standard deviation of BOKL is higher than other sample banks with value of 118.53% and 114.63% respectively. Expected return of NABIL is lower than others with the value of 56.78%, Standard of EBL is lower than others with the value of 45.80%. Coefficient of variation measures the risk per unit. CV of common stock of EBL is minimum than other. The minimum CV, the lesser the risk. To earn one unit of return on investor has to bear 0.7452 unit of risk, by investing in EBL.

4.3 Analysis of Market Risk and Return

In Nepal there is only one stock market, namely Nepal Stock Exchange Ltd. (NEPSE). Overall market movement is represented by NEPSE index. To calculate expected return of market, market risk, closing index of particular year is

considered. Annual return, expected return, S.D. and C.V. or overall market is presented below.

Table 4.10

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

Fiscal Year	NEPSE Index (NI)	$R X \frac{P_t Z (P_{tZ1} \Gamma D_1)}{P_t Z1}$	$R_M Z \overline{R_M}$	$\int R_M Z \overline{R}_M \AA^2$
2007/08	286.67	-	-	-
2008/09	386.83	0.3494	0.0235	0.000552
2009/10	683.95	0.7681	0.4422	0.1955
2010/11	963.36	0.4085	0.2173	0.0472
2011/12	749.10	-0.2224	-0.5483	0.3006
Total		1.3036		0.5438

Expected Return

$$(\overline{R}_M) X \frac{R_M}{N} X \frac{1.3036}{4} X 0.3259$$

Standard Deviation: ($\exists$)

$$= \sqrt{\frac{\int R_M Z \overline{R}_M \AA^2}{N Z1}}$$

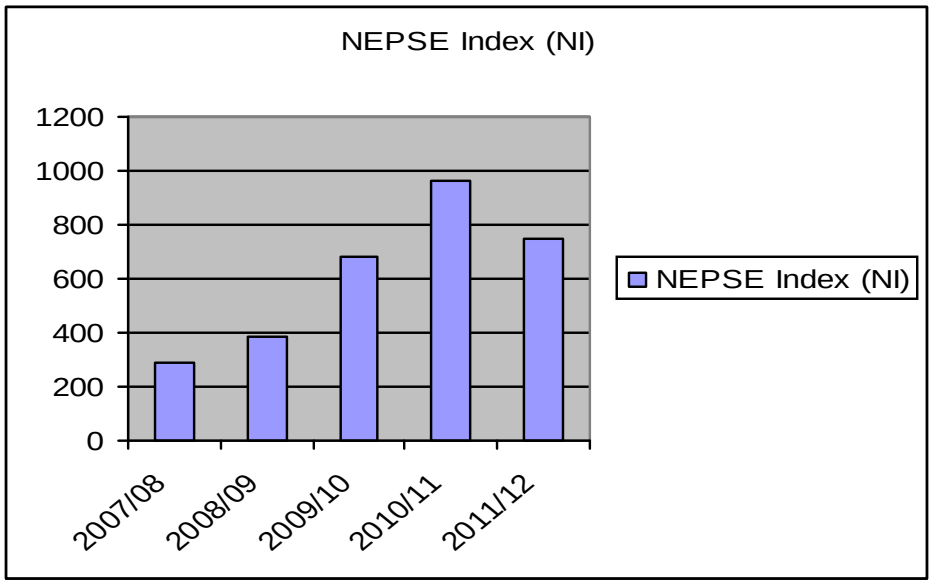
$$= \sqrt{\frac{0.5438}{4 Z1}} = 0.4258$$

Coefficient of Covariance (C.V)

$$= \frac{\exists}{\overline{R}}$$

$$= \frac{0.4258}{0.3259} = 1.3065$$

Diagram 4.1 Movement of NEPSE Index.



Index of Nepal Stock Exchange of various years are shown in diagram 4.6 Above diagram shows that NEPSE index is in increasing trend up to year 2007/08 than it is in decreasing trend and index is highest in year 2007/08 among observed period lowest index is in year 2004/05 among sample period.

4.4 Portfolio and Diversification Analysis

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

To calculate portfolio return and risk, we have to calculate co-variation between two securities. Table no. 4.11 shows the calculation of covariance of return of common of Himalayan Bank Ltd. (HBL). and Everest Bank Ltd. (EBL).

Table 4.11

Calculation of COV, HBL, EBL

Fiscal Year	$R_{HBL} - \bar{R}_{HBL}$	$R_{EBL} - \bar{R}_{EBL}$	$(R_{HBL} - \bar{R}_{HBL})(R_{EBL} - \bar{R}_{EBL})$
2007/08	-	-	-
2008/09	0.2189	0.0008	0.0002
2009/10	0.6547	0.8362	0.5475
2010/11	-0.0897	-0.0144	0.0013
2011/12	-0.784	-0.8212	0.6438
Total			1.1928

Source: Table 4.2 and 4.4

We have,

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

$$CoV_{HBL,EBL} = \frac{1.1928}{4 - 1}$$

$$= 0.3976$$

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

$$W_{HBL}\ X\frac{\exists^{2}EBL\ Z COV\ HBL.EBL}{\exists^{2}HBL\ \Gamma\exists^{2}EBL\ Z 2COV\ HBL.EBL}$$

$$W_{EBL}\ X1 Z W_{HBL}$$

Where,

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

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

$$W_{HBL}\ X\frac{0.4580^{2}\ Z 0.3976}{0.60532^{2}\ \Gamma 0.4580^{2}\ Z 2\ x\ 0.3976}$$

$$= \frac{Z 0.1878}{0.5762\ Z 0.7952}$$

$$= \frac{Z 0.1878}{Z 0.2190}$$

$$= 0.8575$$

OR,

W_{EBL} = 1- W_{HBL}

= 1- 0.8575

= 0.1425

Since the optimal weight of stock HBL is 0.8575 and stock of EBL is 0.1425 when holding portfolio of HBL and EBL.

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

$$\overline{R}\,XW_{HBL}\ x\,\overline{R}_{HBL}\ \Gamma\,W_{EBL}\ x\,\overline{R}_{EBL}$$

$$= (0.8575 \times 0.6789) + (0.1425 \times 0.6146)$$

$$= 0.6697$$

Where,

$\overline{R}P$ = Expected return on portfolio of stock of HBL & EBL.

$\overline{R}_{HBL}$ X Expected return on Himalayan Bank (as per table).

$\overline{R}_{EBL}$ X Expected return on Everest Bank (as per table).

W_{HBL}= Optimal weight of HBL.

W_{EBL} = Optimal weight of EBL.

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

$$\exists P\,X\sqrt{W^2_{HBL}\exists^2_{HBL}\ \Gamma\,W^2_{EBL}\exists^2_{EBL}\ \Gamma\,2W_{HBL.}W_{EBL}.COV_{HBL.EBL}}$$

$$= \sqrt{0.2694\,\Gamma\,0.0043\,\Gamma\,0.0972}$$

$$= 0.6090$$

$$C.V. = \frac{\exists P}{Rp}$$

$$= \frac{0.6090}{0.6697} \qquad = 0.909$$

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

Table 4.12

Portfolio risk and return of HBL and EBL

	In Isolation			In Portfolio			COV.	Corr.
	Return	S.D.	C.V.	Return	S.D.	C.V.		
HBL	0.6789	0.60532	0.8916	0.6699	0.6090	0.909	0.3976	1.4342
EBL	0.6146	0.4580	0.7452					

Data is taken from Table 4.9 Table 4.11 and Appendix-1

Return and risk of the HBL and EBL are shown in table no. 4.13. We can see that total risk of HBL and EBL are 0.60532 and 0.4580 respectively in isolation. And total risk of S.D. of HBL and EBL in portfolio is only 0.6090.

$$\text{Corr.}_{\text{HBL, EBL}} = \frac{\Omega P}{RP} = \frac{COV.HBL,EBL}{\Omega HBL.\Omega EBL}$$

$$= \frac{0.3976}{0.60532 \text{ x } 0.4580} = 1.4342$$

Comparison of risk and return of HBL and BOKL

Table 4.13

Portfolio risk and return of HBL and BOKL

	In Isolation			In Portfolio			COV.	Corr.
	Return	S.D.	C.V.	Return	S.D.	C.V.		
HBL	0.6789	0.60532	0.8916	0.6029	0.5393	0.8944	0.4756	0.6854
BOKL	1.1855	1.1463	0.9670					

Source: Table 4.9 and Appendix-1

Return and risk of HBL and BOKL are shown in above table 4.14. Above table shows investing in portfolio of HBL and BOKL is not profitable.

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

Table 4.14

Portfolio risk and return of BOKL and EBL

	In Isolation			In Portfolio			COV.	Corr.
	Return	S.D.	C.V.	Return	S.D.	C.V.		
BOKL	1.1855	1.1463	0.9670	0.4604	0.4049	0.8794	0.3938	0.7500
EBL	0.6146	0.4580	0.7452					

Source: Table 4.9 and Appendix-II

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

Comparison of risk and return of HBL and NABIL

Table 4.15

Portfolio risk and return of HBL and NABIL

	In Isolation			In Portfolio			COV.	Corr.
	Return	S.D.	C.V.	Return	S.D.	C.V.		
HBL	0.6789	0.60532	0.8616	0.5442	0.847	1.56	0.3298	0.9580
NABIL	0.5678	0.5687	1					

Source: Table 4.9 and Appendix-II

Above data shows that risk can be minimized by holding optimal portfolio in HBL and NABIL. Risk or S.D. is 0.60532 and 0.5687 of HBL and NABIL respectively.

Comparison of risk and return of EBL and NABIL

Table 4.16

Portfolio risk and return of EBL and NABIL

	In Isolation			In Portfolio			COV.	Corr.
	Return	S.D.	C.V.	Return	S.D.	C.V.		
HBL	0.6146	0.4580	0.7452	0.5796	0.58	1	0.3823	1.4677
NABIL	0.5678	0.5687	1					

Source: Table 4.9 and Appendix-III

Above table no. 4.16 shows that holding portfolio EBL is acceptable. Because return is more in portfolio than isolation and S.D. of portfolio is less than both bank's S.D. and C.V. of portfolio is high in isolation.

Comparison of risk and return of BOKL and NABIL

Table 4.17

Portfolio risk and return of BOKL and NABIL

	In Isolation			In Portfolio			COV.	Corr.
	Return	S.D.	C.V.	Return	S.D.	C.V.		
BOKL	1.1855	1.1463	0.9670	0.5857	0.5678	0.9695	0.2928	0.4491
NABIL	0.5678	0.5687	1					

Source: Table 4.9 and Appendix-IV

Return and risk of BOKL and NABIL are shown in above table 4.17. Above table shows investing in portfolio of BOKL and NABIL is not profitable.

Table 4.18

Comparative analysis of portfolio risk and return

Portfolio	Portfolio Return	Portfolio Risk	C.V.	Covariance
HBL & EBL	0.6699	0.6089	0.909	0.3975
HBL & BOKL	0.6029	0.5917	0.9814	0.4756
BOKL & EBL	0.4696	0.4030	0.8582	0.396
HBL & NABIL	0.5442	0.847	1.56	0.3298
EBL & NABIL	0.5796	0.5816	1	0.3823
BOKL & NABIL	0.5857	0.5678	0.9695	0.2328

Above table shows the portfolio return, portfolio risk and covariance between four joint venture banks portfolio of HBL and EBL has highest return of 0.6699. Portfolio of BOKL and EBL has lowest standard deviation of 0.4030 but it also has lowest return of 0.4696. Investor can earn highest return by holding optimal portfolio of BOKL and EBL. But risk per unit of C.V. is lowest with portfolio of BOKL and EBL i.e. 0.8582 among six portfolio opportunity.

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

Table 4.19

Correlation Matrix

	HBL	EBL	BOKL	NABIL
HBL	1	1.4338	0.6854	0.9580
EBL		1	0.7543	1.4677
BOKL			1	0.4491
NABIL				1

Above table 4.19 shows the correlation between banks stock. Investors cannot obtain gain by constructing portfolio, which has positive correlation. Correlation between EBL and NABIL or HBL and EBL is greater than +1 (1.4677 and 1.4338) respectively.

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

4.5 Market Sensitivity Analysis

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

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

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

$$Bj = \frac{COVjm}{\Omega m^2}$$

Beta coefficient of stock of HBL.

Table 4.20

Covariance between Stock of HBL and Market

Fiscal Year	$R_{HBL} - \bar{R}_{HBL}$	$R_M - \bar{R}_M$	$(R_{HBL} - \bar{R}_{HBL})(R_M - \bar{R}_M)$
2007/08	-	-	-
2008/09	0.2189	0.0235	0.0514
2009/10	0.6547	0.4422	0.2895
2010/11	-0.0897	0.2173	0.0195
2011/12	-0.784	0.5483	0.4299
Total			0.7903

Source: Table 4.2 and 4.10

We have,

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

$$\text{COV HBL, M} = \frac{0.7903}{4 - 1}$$

$$= 0.2634$$

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

$$B_{HBL} = \frac{\text{COV HBL, M}}{\sigma_m^2}$$

$$= \frac{0.2634}{(0.4285)^2} = 1.4528$$

Where,

σ_m^2 = *Variance of Market Return*

Beta coefficient of stock of EBL

Table 4.21

Covariance between stock of EBL and Market

Fiscal Year	$R_{EBL} - \bar{R}_{EBL}$	$R_M - \bar{R}_M$	$(R_{EBL} - \bar{R}_{EBL})(R_M - \bar{R}_M)$
2007/08	-	-	-
2008/09	0.0008	0.0235	0.00002
2009/10	0.8362	0.4422	0.3698
2010/11	-0.0144	0.2173	-0.0031
2011/12	-0.8212	-0.5483	0.4503
Total			0.81702

Source: Table 4.4 and 4.10

We have,

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

$$\text{COV EBL, M} = \frac{0.81702}{4 - 1} = 0.2723$$

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

$$B_{EBL} = \frac{\text{COV HBL, M}}{\sigma_m^2}$$

$$= \frac{.2723}{(0.4258)^2} = 1.5019$$

Where,

σ_m^2 = Variance of Market return.

Beta Co-efficient of Stock of BOKL

Table 4.22

Covariance between stock of BOKL and Market

Fiscal Year	$R_{BOKL} - \bar{R}_{BOKL}$	$R_M - \bar{R}_M$	$(R_{BOKL} - \bar{R}_{BOKL})(R_M - \bar{R}_M)$
2007/08	-	-	-
2008/09	1.368	0.0235	0.0321
2009/10	0.0086	0.4422	0.0038
2010/11	0.0611	0.2173	0.0133
2011/12	-1.4377	-0.5483	0.7883
Total			0.8375

Source: Table 4.6 and 4.10

We have,

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

$$COV_{BOKL,\,M} = \frac{0.8375}{4 - 1}$$

$$= 0.2792$$

Beta co-efficient of Bank of Kathmandu (BOKL)

$$B_{EBL} = \frac{COV_{HBL,M}}{\sigma_m^2}$$

$$= \frac{0.2792}{(0.4258)^2} = 1.5399$$

Where,

σ_m^2 = Variance of Market return.

Beta Co-efficient of Stock of NABIL

Table 4.23

Covariance between stock of NABIL and Market

Fiscal Year	$R_{NABIL} - \bar{R}_{NABIL}$	$R_M - \bar{R}_M$	$(R_{NABIL} - \bar{R}_{NABIL})(R_M - \bar{R}_M)$
2007/08	-	-	-
2008/09	-0.023	0.0235	-0.00054
2009/10	0.7492	0.4422	0.3313
2010/11	-0.0935	0.2173	-0.02032
2011/12	-0.6324	-0.5483	0.34674
Total			0.6572

Source: Table 4.8 and 4.10

We have,

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

$$\text{COV NABIL, M} = \frac{0.657}{4 - 1}$$

$$= 0.219$$

Beta co-efficient of common stock of NABIL (B_{NABIL})

$$B_{NABIL} = \frac{\text{COV}_{NABIL, M}}{\sigma_m^2}$$

$$= \frac{0.219}{(0.4258)^2} = 1.2079$$

Where,

σ_m^2 = Variance of Market return.

Calculation of beta-coefficient of selected sampled joint venture bank are shown below.

Table 4.24

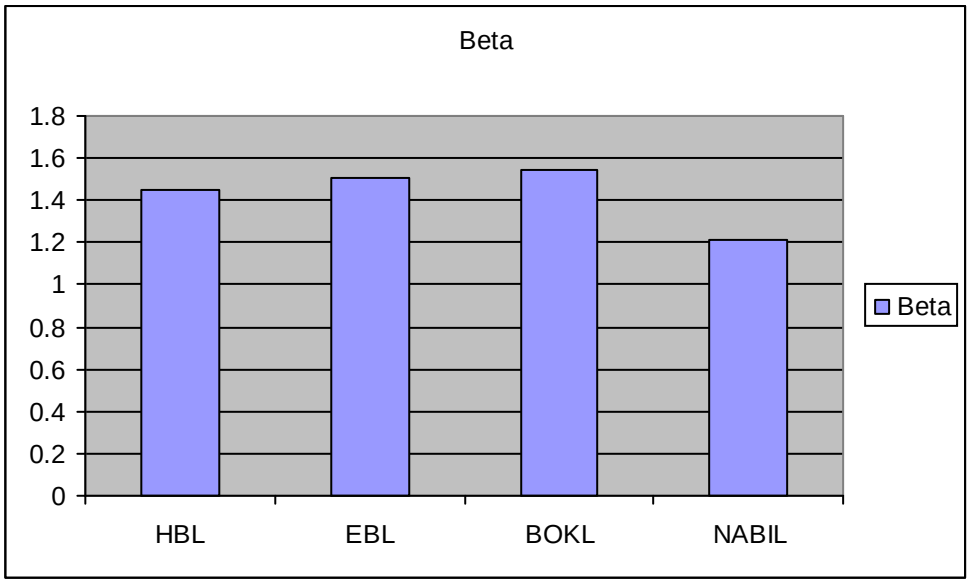
Beta coefficient of four joint venture banks

S.N.	Name of Banks	Beta
1.	HBL	1.4528
2.	EBL	1.5019
3.	BOKL	1.5399
4.	NABIL	1.2079

Above table shows the beta coefficient of Four Joint Venture banks. Beta of NABIL is less than other banks, which indicates that stock return of NABIL is

more volatile than Market return. 1% change in Market return will course 1.2079% change in NABIL stock's return and so on.

Diagram 4.2 Beta of Sampled Banks.



Above diagram shows that beta of all observed joint venture banks are positive that means return of stock of these banks moves to same direction where the market return moves. Beta coefficient of BOKL is higher among observed banks. If market return rises, all sample bank's return rises and vice versa.

4.6 Price valuation of CS of selected banks

Beta plays major role in CAPM. CAPM is Model the assumes stock's required rate of return (RRR) is equal to the risk free rate plus its premium. Where risk is measured by the beta coefficient. Comparison of RRR with expected rate of return (ERR) determines whether that stock is over priced or under priced.
IF RRR is less than ERR stock is said to be under priced.

IF RRR is more than ERR stock is said to be overpriced.

Table 4.25

RRR, ERR and Price Valuation

S.N.	Banks	RF	Beta(B)	$\overline{RM}$	ERR	RRR	Price Valuation
1.	HBL	3.8	1.4528	0.3259	0.6789	0.4183	Under priced
2.	EBL	3.8	1.5019	0.3259	0.6146	0.4704	Under priced
3.	BOKL	3.8	1.5399	0.3259	1.1855	0.4813	Under priced
4.	NABIL	3.8	1.2079	0.3259	0.5678	0.3857	Under priced

Required rate of return (RRR) = RF + (RM-RF) B

Where,

RF = Risk free rate of return = 3.8% source: NRB (2060/11, Treasury Bill)

RM = Market rate of return = 32.59%

Beta plays a significant role in stock's RRR. Other Major Factor, which affects RRR, are expected return on Market (RM) and risk free rate (RF). Above table shows the price situation of four selected J.V. banks. Results Indicates that common stock of all banks are under priced and investor can gain from buying these stocks. So new investor should buy these stocks and who are holding they should not sell.

4.7 Partitioning Risk

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

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

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

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

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

Partitioning of risk of stock of HBL

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

Variance of Stock of HBL	=	Total risk of HBL
Ω^2 HBL	=	B^2_{HBL} x Ω^2 m + Var (e)
$(0.60532)^2$	=	$(1.4528)^2$ x $(0.4258)^2$ + Var(e)
0.3664	=	0.3827 + Var(e)
Var(e)	=	0.0162

Systematic risk of HBL = 0.3827

Unsystematic risk of HBL = 0.0162

Promotion of undiversifiable risk

$$P^2 = \frac{\text{Systematic Risk}}{\text{Total Risk}} X \frac{B^2 HBL \exists m^2}{\exists^2 HBL}$$

$$P^2 = \frac{0.3827}{0.3664}$$

= 1.0444 or 104.44%

Diversifiable proportion of risk of stock of HBL

$$= \frac{\text{Unsystematic Risk}}{\text{Total Risk}} \qquad = \frac{\text{Var(e)}}{\Omega^2_{HBL}}$$

$$= \frac{0.0162}{0.3664}$$

= 0.0442 or 4.42%

Partitioning of risk of Stock of EBL

Variance of Stock of EBL	=	Total risk of Stock of EBL
Ω^2 EBL	=	B^2_{EBL} x Ω^2 m + Var (e)
$(0.4580)^2$	=	$(1.5019)^2$ x $(0.4258)^2$ + Var(e)
0.2098	=	0.4089 + Var(e)
Var(e)	=	0.1991

Systematic risk of EBL = 0.4089

Unsystematic risk of EBL = 0.1991

Promotion of undiversifiable risk.

$$= \frac{\text{Systematic Risk}}{\text{Total Risk}} X \frac{B^2 EBL \exists m^2}{\exists^2 EBL}$$

$$= \frac{0.4089}{0.2098}$$

= 1.9489 or 194.89%

Diversifiable proportion of risk of stock of EBL

$$= \frac{\text{Unsystematic Risk}}{\text{Total Risk}} \qquad = \frac{\text{Var(e)}}{\Omega^2_{EBL}}$$

$$1\text{-}P^2 \qquad = \frac{0.1991}{0.2098}$$

= 0.9489

= 94.89%

Portioning of risk of Stock of BOKL

Variance of Stock of BOKL = Total risk of Stock of BOKL

Ω^2 BOKL = B^2_{BOKL} x Ω^2 m + Var (e)

$(1.1463)^2$ = $(1.5399)^2$ x $(0.4258)^2$ + Var(e)

1.3140 = 0.4299 + Var(e)

Var(e) = 0.8841

Systematic risk of Stock of BOKL = 0.4299

Unsystematic risk of Stock of BOKL = 0.8841

Promotion of undiversifiable risk.

$$P^2 = \frac{\text{Systematic Risk}}{\text{Total Risk}} X \frac{B^2 BOKL \exists m^2}{\exists^2 BOKL}$$

$$P^2 = \frac{0.4299}{1.3140}$$

$= 0.3272$ or 32.72%

Diversifiable proportion of risk of stock of BOKL

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

$$1\text{-}P^2 \qquad = \frac{0.8841}{1.3140}$$

$= 0.6728$ or 67.28%

Partitioning of risk of Stock of NABIL

Variance of Stock of NABIL	=	Total risk of Stock of NABIL
Ω^2 NABIL	=	B^2_{NABIL} x Ω^2m + Var (e)
$(0.5687)^2$	=	$(1.2079)^2$ x $(0.4258)^2$ + Var(e)
0.3234	=	0.2645 + Var(e)
Var(e)	=	0.0589
Systematic risk of Stock of NABIL	=	0.2645
Unsystematic risk of Stock of NABIL	=	0.0589

Promotion of undiversifiable risk.

$$P^2 = \frac{\text{Systematic Risk}}{\text{Total Risk}} X \frac{B^2 NABIL \exists m^2}{\exists^2 NABIL}$$

$$P^2 = \frac{0.2645}{0.3234}$$

$$= 0.8179 \text{ or } 81.79\%$$

Diversifiable proportion of risk of stock of NABIL

$$= \frac{\text{Unsystematic Risk}}{\text{Total Risk}} \qquad = \frac{\text{Var(e)}}{\Omega^2_{NABIL}}$$

$$1\text{-}P^2 \quad = \frac{0.0589}{0.3234}$$

$$= 0.1821 \text{ or } 18.21\%$$

Table 4.26

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

S.N.	Banks	Total Risk ($\exists^2$)	Sys. Risk	Proportion	Unsyst. Risk	Proportion
1.	HBL	0.3664	0.3827	1.0444	0.0162	0.0442
2.	EBL	0.2098	0.4089	1.9489	0.1991	0.9489
3.	BOKL	1.3140	0.4299	0.3272	0.8841	0.6728
4.	NABIL	0.3234	0.2645	0.8179	0.0589	0.1821

4.8 Test of Hypothesis

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

Table 4.27

Calculation of Expected Return, Standard Deviation and Coefficient of Variance.

Name of Bank	R	$(R - \bar{R})$	$\int R Z \bar{R} Å$
HBL	0.6789	-0.0828	0.0069
EBL	0.6146	-0.1471	0.02163
BOKL	1.1856	0.4239	0.1797
NABIL	0.5678	-0.1939	0.03759

Expected Return:

$$\bar{R} \; X \frac{R}{N}$$

$$= \frac{3.0469}{4}$$

$$= 0.7617$$

Where N = Number of observation.

Standard deviation (∃) = $\sqrt{\frac{\int R Z \bar{R} Å}{N Z 1}}$

$$= \sqrt{\frac{0.24582}{4 Z 1}}$$

$$= 0.2863$$

Coefficient of Variance (C.V) = $\frac{0.2863}{0.7617}$ = 0.3758

Null Hypothesis (Ho) = $\mu = \mu o$ i.e. there is significant difference between the average return of common stock of listed commercial banks and overall market (population) return.

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

Test Statistics

$\sim X0.05$

$$t = \frac{\overline{X} Z\mu}{\frac{\exists}{\sqrt{n}}}$$

$$= \frac{0.7617 Z0.3259}{\frac{0.2863}{\sqrt{4}}}$$

$$= \frac{0.4358}{0.14315}$$

$= 3.044$

Where,

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

$\overline{X} = \overline{R} = 0.7617$

μ = Average return of market portfolio

n = Number of banks.

$\exists$ = Standard deviation of return of common stock of listed commercial banks

d = Level of significant

The tabulated value of t at 5% level of significance for 3 degree of freedom is 3.182

Decision

Since the calculated value of t(3.044) is more than the tabulated value (3.182) at 5% level of significance for 5 degree of freedom, the null hypothesis (H0) is not accepted which means there is not significant difference between the average return of the commercial banks common stock return and overall market return. In other words, average return on the common stock of commercial banks is not equal to market return.

4.9 Major Findings of the Study

Having completed the basic analysis required for this study, the final and the most important task of the researcher is to enlist the findings. This will give meaning to the desired result. A comprehensive summary of the major findings of this study is presented below.

1. In this analysis mainly four commercial Banks are taken as sample for study. Every Banks common stock on risk and return are analyzed properly.
2. In this analysis it is attempted to find out periodical realized rate of return, its expected return or average rate of return, standard deviation, coefficient of variation.
3. Expected return and standard deviation of BOKL is higher than other sample banks with value of 118.53% and 114.63% respectively. Expected return of NABIL is lower than others with the value of 56.78%, Standard of EBL is lower than others with the value of 45.80%. Coefficient of variation measures the risk per unit. CV of common stock of EBL is minimum than other. The minimum CV, the lesser the risk. To earn one unit of return on investor has to bear 0.7452 unit of risk, by investing in EBL.

4. After analyzing it can be concluded that if investor is risk taker he/ she invest in BOKL because BOKL risk and return both of BOKL are higher than other sample banks and if investor is risk avatar he/ she invest in EBL because EBL has low risk and low return in comparison to other sample banks
5. EBL and HBL both banks have more return and less risk in their own inter bank comparison.
6. Market expected rate of return, standard deviation of market, and coefficient of variation of market (C.V) are 0.3259, 0.4258 and 1.3065 respectively.
7. In the view point of portfolio risk and return HBL and EBL have highest return of 0.669 and BOKL and EBL have low portfolio risk.
8. Investor can earn highest return by holding optimal portfolio of HBL and EBL.
9. Covariance indicates that relationship between stock and market rate of return. In analyses all the covariance between stock of banks market are positive. It indicates that rate of return of all banks are in increasing trend.
10. Beta coefficient of NABIL banks is less than other bank, but more than market beta.
11. All banks expected rate of return is more than required rate of return so the stock is under priced and investor can gain from buying this stock.
12. After analyzing t-test calculated value of 't' is less than tabulated value of 't' at 5% level of significance for 3 degree of freedom.

CHAPTER IV

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

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

5.1 Summary

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

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

- To examine the relationship between risk and return.
- To analyze comparative risk and return position listed commercial banks in Nepal.

- To analyze the risk of these sector those can be eliminate through diversification without any cost.
- To provide the useful suggestion to the different sector.

Even though this study cannot deprive from some limitation.

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

Third Chapter explains about the Methodology of this study. Mostly and secondary data are used in this study. This study covers the five years data of listed commercial banks in Nepal. Descriptive and Analytical research design has been used in this study. Financial as well as statistical tools are used.

This study includes risk an return analysis, portion of systematic and unsystematic risk, beta coefficient, mean, standard deviation, hypothesis, test analysis, correlation analysis and CAPM analysis.

Data are presented and analyzed in the Fourth Chapter. Data analysis tools mentioned in the third chapter is used to analyze the data in this chapter. The study of relationship between risk and return was accomplished by collecting the data on market price per share, dividend per share and NEPSE index. For analysis, the

data were rearranged for various financial and statistical tools. In the financial tools, capital assets price model and shape performance index is used. In the statistical tools, expected return (mean), standard deviation, variance, coefficient of determination, portion of systematic risk and unsystematic risk, hypothesis t-test was done and result was tested at 5% level of significance were used. From this chapter, results were tested and analyzed to get the solution according to objectives of the study.

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

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

5.2 Conclusions

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

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

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

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

D. Coefficient of variation is the best ways to make investment decision in common stock, which measures the risk per unit of return. NABIL has highest C.V. of 1 and EBL has lowest coefficient of variations of 0.7452. So, considering this fact the best decision would be to invest in the share of EBL.

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

F. Coefficient of determination is the portion of systematic risk of assets. Coefficient of determination of EBL is highest (i.e. 152.3%) where as coefficient of determination of BOKL is lowest (i.e.56.63%). Alternatively, lower the coefficient of determination means higher the portion of unsystematic risk. That means BOKL common stock risk is highly diversifiable risk while EBL common stock risk is highly undiversifiable and higher unsystematic risk can be avoided through diversification. From the above analysis investors are recommended to buy

those stocks which have higher expected return with lower portion of undiversifiable risk to make portfolio investment.

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

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

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

5.3 Recommendations

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

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

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

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

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

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

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

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

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

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APPENDIX – I

Table No. 1 Calculation of Cov and Corr. Between stock of HBL and BOKL

Fiscal Year	$R_{HBL} - \bar{R}_{HBL}$	$R_{BOKL} - \bar{R}_{BOKL}$	$(R_{HBL} - \bar{R}_{HBL})(R_{BOKL} - \bar{R}_{BOKL})$
2007/08	-	-	-
2008/09	0.2189	1.368	0.2995
2009/10	0.6547	0.0086	0.0056
2010/11	-0.897	0.611	-0.0054
2011/12	-0.784	-1.4377	1.1272

Annual Report

We have,

$$COV_{HBL,\ BOKL} = \frac{(R_{HBL} - \bar{R}_{HBL}) \int R_{BOKL} - \bar{R}_{BOKL} A}{N - 1}$$

$$= \frac{1.4269}{4 - 1}$$

$$= 0.4756$$

$$Corr._{HBL,\ BOKL} = \frac{COV_{HBL,\ BOKL}}{\exists_{HBL,} \exists_{BOKL}}$$

$$= \frac{0.4756}{0.60532 \times 1.1463}$$

$$= 0.6854$$

Optimum Portfolio weight

$$W_{HBL} = \frac{\exists_{BOKL}^{\ 2} - COV_{HBL,\ BOKL}}{(\exists_{HBL}^{\ 2} + \exists_{BOKL}^{\ 2} - 2COV_{HBL,\ BOKL})}$$

$$= \frac{1.1463^2 \; Z 0.4756}{.60532^2 \; \Gamma 1.1463^2 \; Z 2 \, x \, 0.4756}$$

$$= \frac{0.8384}{0.7292}$$

$$= 1.1497$$

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

$$= 1 - 1.149$$

$$= -0.15$$

$\overline{RP} = \int W_{HBL} \, x \, \overline{R}_{HBL} \, A\Gamma \int W_{BOKL} \, x \, \overline{R}_{BOKL} \, A$

$= (1.15 \text{ x } 0.6789) + (0.15 \text{ x } 1.1855)$

$= 0.6029$

$\exists p = \sqrt{W_{HBL}{}^2 . \exists_{HBL}{}^2 \; \Gamma \, W_{BOKL}{}^2 . \exists_{BOKL}{}^2 \; \Gamma \, 2 W_{HBL.} W_{BOKL.} COV_{HBL, BOKL}}$

$$= \sqrt{(1.15^2 \text{ x } 0.60532^2) \, \Gamma \, (Z 0.15^2 \, x \, 1.1463^2) \, \Gamma \, (2 \, x \, 1.15 \, x \, Z 0.15 \, x \, 0.4756)}$$

$$= \sqrt{0.4845 \, \Gamma \, (Z 0.0296) \, Z 0.16408}$$

$$= \sqrt{0.29082}$$

$= 0.5393$

$$C.V = \frac{\exists p}{\overline{\overline{Rp}}}$$

$$= \frac{0.5393}{0.6029}$$

$= 0.8944$

APPENDIX – II

Table No. 2 Calculation of Cov and Corr. Between stock of BOKL and EBL

Fiscal Year	$R_{BOKL} - \bar{R}_{BOKL}$	$R_{EBL} - \bar{R}_{EBL}$	$(R_{BOKL} - \bar{R}_{BOKL})(R_{EBL} - \bar{R}_{EBL})$
2007/08	-	-	-
2008/09	1.368	0.0008	0.0011
2009/10	0.0086	0.08362	0.00072
2010/11	0.0611	-0.0144	-0.00087
2011/12	-1.4377	-0.8212	1.18063
Total			1.18158

Annual Report

We have,

$$COV_{BOKL, EBL} = \frac{\int R_{BOKL} - \bar{R}_{BOKL} \int R_{EBL} - \bar{R}_{EBL}}{N - 1}$$

$$= \frac{1.1816}{4 - 1}$$

$$= 0.3938$$

$$Corr._{BOKL\ ,\ EBL} = \frac{COV_{BOKL, EBL}}{\sigma_{BOKL,} \sigma_{HBL}}$$

$$= \frac{0.3938}{1.1463 \times 0.4580}$$

$$= 0.7500$$

Optimum Portfolio weight

$$W_{HBL} = \frac{\sigma_{EBL}^{\ 2} - COV_{BOKL, EBL}}{(\sigma_{BOKL}^{\ 2} + \sigma_{HBL}^{\ 2} - 2COV_{BOKL, EBL})}$$

$$= \frac{0.4580^2 \; Z0.3938}{1.1463^2 \; \Gamma \, 0.3938^2 \; Z2 \, x \, 0.3938}$$

$$= \frac{Z0.1840}{0.6814}$$

$$= -0.27$$

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

$$= 1 - (-0.27)$$

$$= 1 + 0.27 \quad = \quad 1.27$$

$\overline{RP} = \int W_{BOKL} \, x \, \overline{R}_{BOKL} \, A\Gamma \int W_{EBL} \, x \, \overline{R}_{EBL} \, A$

$$= (-0.27 \text{ x } 1.1855) + (1.27 \text{ x } 0.6146)$$

$$= 0.4604$$

$$\exists p = \sqrt{W_{BOKL}{}^2 . \exists_{BOKL}{}^2 \; \Gamma \; W_{EBL}{}^2 . \exists_{EBL}{}^2 \; \Gamma \; 2W_{BOKL.} . W_{EBL.} COV_{BOKL, HBL}}$$

$$= \sqrt{\{(Z0.27^2 \, x 1.1463^2) \, \Gamma \, (1.27^2 \, x \, 0.4580^2) \, \Gamma \, (2 \, x \, Z0.27 \; x1.27 \, x \, 0.3938)\}}$$

$$= \sqrt{\Gamma \, 0.0957 \, \Gamma \, 0.3383 \, Z0.27}$$

$$= \sqrt{0.164}$$

$$= 0.4049$$

$$C.V = \frac{\exists p}{\overline{Rp}}$$

$$= \frac{0.4049}{0.4604}$$

$$= 0.8794$$

APPENDIX – III

Table No. 3 Calculation of Cov and Corr. Between stock of HBL and NABIL

Fiscal Year	$R_{HBL} - \bar{R}_{HBL}$	$R_{NABIL} - \bar{R}_{NABIL}$	$(R_{HBL} - \bar{R}_{HBL})(R_{NABIL} - \bar{R}_{NABIL})$
2007/08	-	-	-
2008/09	0.2189	-0.023	-0.00503
2009/10	0.6547	0.7492	0.4905
2010/11	-0.0897	-0.0935	0.00838
2011/12	-0784	-0.6324	0.4958
Total			0.98965

Annual Report

We have,

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

$$= \frac{0.98965}{4 - 1}$$

$$= 0.3298$$

$$Corr._{HBL, NABIL} = \frac{COV_{HBL, NABIL}}{\sigma_{HBL}, \sigma_{NABIL}}$$

$$= \frac{0.3298}{0.60532 \times 0.5687}$$

$$= 0.9580$$

Optimum Portfolio weight

$$W_{HBL} = \frac{\sigma_{NABIL}^2 - COV_{HBL, NABIL}}{(\sigma_{HBL}^2 + \sigma_{NABIL}^2 - 2COV_{HBL, NABIL})}$$

$$= \frac{0.5687^2 \, Z 0.3298}{0.60532^2 \, \Gamma 0.5687^2 \, Z 2 \, x \, 0.3298}$$

$$= \frac{Z 0.0064}{0.03023}$$

$$= -0.212$$

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

$$= 1 - (-0.212)$$

$$= 1.212$$

$$\overline{RP} = \int W_{HBL} \, x \, \overline{R}_{HBL} \, A\Gamma \int W_{NABIL} \, x \, \overline{R}_{NABIL} \, A$$

$$= (-0.212 \text{ x } 0.6789) + (1.212 \text{ x } 0.5678)$$

$$= 0.5442$$

$$\exists p = \sqrt{W_{HBL}{}^2 . \exists_{HBL}{}^2 \, \Gamma \, W_{NABIL}{}^2 . \exists_{NABIL}{}^2 \, \Gamma \, 2 W_{HBL.} \, W_{NABIL.} COV_{HBL, NABIL}}$$

$$= \sqrt{(Z 0.212^2 \text{ x } 0.60532^2) \, \Gamma \, (1.212^2 \, x \, 0.5687^2) \, \Gamma \, (2 \, x \, Z 0.212 \, x \, 1.212 \, x \, 0.3298)}$$

$$= \sqrt{0.4113 \Gamma 0.4751 \Gamma (Z 0.1695)}$$

$$= 0.847$$

$$C.V = \frac{\exists p}{\overline{Rp}}$$

$$= \frac{0.847}{0.544}$$

$$= 1.56$$

APPENDIX – IV

Table No. 4 Calculation of Cov and Corr. Between stock of EBL and NABIL

Fiscal Year	$R_{EBL} - \bar{R}_{EBL}$	$R_{NABIL} - \bar{R}_{NABIL}$	$(R_{EBL} - \bar{R}_{EBL})(R_{NABIL} - \bar{R}_{NABIL})$
2007/08	-	-	-
2008/09	0.0008	-0.023	-0.00002
2009/10	0.8362	0.7492	0.6265
2010/11	-0.0144	-0.0935	0.0013
2011/12	-0.08212	-0.6324	0.5193
Total			

Annual Report

We have,

$$COV_{EBL, NABIL} = \frac{(R_{EBL} - \bar{R}_{EBL}) \int R_{NABIL} - \bar{R}_{NABIL} A}{N - 1}$$

$$= \frac{1.14708}{4 - 1}$$

$$= 0.3823$$

$$Corr._{EBL, NABIL} = \frac{COV_{EBL, NABIL}}{\exists_{EBL,} \exists_{NABIL}}$$

$$= \frac{0.3823}{0.4580 \times 0.0.5687}$$

$$= 1.4677$$

Optimum Portfolio weight

$$W_{EBL} = \frac{\exists_{NABIL}^{2} - COV_{EBL, NABIL}}{(\exists_{EBL}^{2} + \exists_{NABIL}^{2} - 2COV_{EBL, NABIL})}$$

$$= \frac{0.5687^2 \; Z0.3823}{0.4580^2 \; \Gamma \, 0.5687^2 \; Z2 \, x \, 0.3823}$$

$$= \frac{Z0.0588}{Z0.2314}$$

$$= 0.2541$$

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

$$= 1 - 0.2541$$

$$= 0.7459$$

$$\overline{R}P = \int W_{EBL} \; x \; \overline{R}_{EBL} \; A\Gamma \int W_{NABIL} \; x \; \overline{R}_{NABIL}$$

$$= (0.2541 \; x \; 0.6146) + (0.7459 \; x \; 0.5678)$$

$$= 0.5796$$

$$\exists p = \sqrt{W_{EBL}{}^2 . \exists_{EBL}{}^2 \; \Gamma \; W_{NABIL}{}^2 . \exists_{NABIL}{}^2 \; \Gamma \; 2 W_{EBL.} W_{NABIL.} COV_{EBL, NABIL}}$$

$$= \sqrt{(0.2541^2 \; x \; 0.4580^2) \; \Gamma \; (0.7459^2 \; x \; 0.5687^2) \; \Gamma \; (2 \, x \, 0.2541 \, x \, 0.7459 \, x \, 0.3823)}$$

$$= \sqrt{0.0135 \, \Gamma \, 0.1799 \, \Gamma \, 0.1449}$$

$$= 0.5816$$

APPENDIX – V

Table No. 4 Calculation of Cov and Corr. Between stock of BOKL and NABIL

Fiscal Year	$R_{BOKL} - \bar{R}_{BOKL}$	$R_{NABIL} - \bar{R}_{NABIL}$	$(R_{BOKL} - \bar{R}_{BOKL})(R_{NABIL} - \bar{R}_{NABIL})$
2007/08	-	-	-
2008/09	1.368	-0.023	-0.03150
2009/10	0.0086	0.7492	0.0064
2010/11	0.0611	-0.0935	-0.0057
2011/12	-1.4377	-0.6324	0.9092
Total			0.8784

Annual Report

We have,

$$COV_{EBL, NABIL} = \frac{(R_{BOKL} - \bar{R}_{BOKL}) \int R_{NABIL} - \bar{R}_{NABIL} A}{N - 1}$$

$$= \frac{0.8784}{4 - 1}$$

$$= 0.2928$$

$$Corr._{BOKL, NABIL} = \frac{COV_{BOKL, NABIL}}{\sigma_{BOKL,} \sigma_{NABIL}}$$

$$= \frac{0.2928}{1.1463 \times 0.5687}$$

$$= 0.4491$$

Optimum Portfolio weight

$$W_{BOKL} = \frac{\sigma_{NABIL}^{2} - COV_{BOKL, NABIL}}{(\sigma_{BOKL}^{2} + \sigma_{NABIL}^{2} - 2COV_{BOKL, NABIL})}$$

$$= \frac{0.5687^2 - 0.2928}{1.1463^2 + 0.5687^2 - 2 \times 0.2928}$$

$$= \frac{0.03062}{1.05182}$$

$$= 0.029$$

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

$$= 1 - 0.029$$

$$= 0.971$$

$\overline{R}P = \sum W_{BOKL} \times \overline{R}_{BOKL} + \sum W_{NABIL} \times \overline{R}_{NABIL}$

$$= (0.029 \times 1.1855) + (0.971 \times 0.5678)$$

$$= 0.5857$$

$$\sigma p = \sqrt{W_{BOKL}^2 . \sigma_{BOKL}^2 + W_{NABIL}^2 . \sigma_{NABIL}^2 + 2 W_{BOKL.} W_{NABIL.} COV_{BOKL, NABIL}}$$

$$= \sqrt{(0.029^2 \times 1.1463^2) + (0.971^2 \times 0.5687^2) + (2 \times 0.029 \times 0.971 \times 0.2928)}$$

$$= \sqrt{0.0011 + 0.3049 + 0.0165}$$

$$= 0.5678$$

$$C.V = \frac{\sigma p}{\overline{R}p}$$

$$= \frac{0.5678}{0.5857}$$

$$= 0.9695$$

APPENDIX – VI

Annual Report (Financial Indicator)

Annual Report

Company Name	Fiscal Year					
		2007/08	2008/09	2009/10	2010/11	2011/12
Himalayan Bank Ltd. HBL	Closing Price	920	1100	1760	1980	1760
	Cash Dividend	11.58	30	15	25	12
	Stock Dividend	31.58	35	40	45	43.56
Nepal Everest Bank Ltd.	Closing Price	870	1379	2430	3132	2455
	Cash Dividend	-	25	10	20	30
	Stock Dividend	20	-	30	30	30
Bank of Kathmandu Ltd.	Closing Price	430	850	1375	2350	1750
	Cash Dividend	15	18	20	2.11	7.37
	Stock Dividend	15	48	20	42.11	47.37
Nepal Arab NABIL Bank Ltd.	Closing Price	1505	2240	5050	5275	4899
	Cash Dividend	70	85	100	60	35
	Stock Dividend	-	-	40	40	50