

**RISK AND RETURN ANALYSIS AND OPTIMAL PORTFOLIO
CREATION OF SAMPLE COMMERCIAL BANKS
(WITH REFERENCE TO NIBL, EBL AND SCBL)**

Submitted by:

Anju Gwachha

Bhaktapur Multiple Campus

Campus Roll No: 19

T.U. Registration No.7-2-408-55-2004

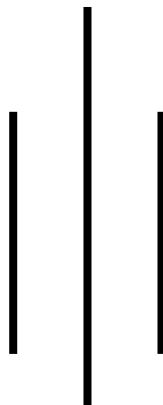
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VIVA VOCE SHEET

We have conducted the viva voce examination of this thesis presented by

Anju Gwachha

Entitled:

RISK AND RETURN ANALYSIS AND OPTIMAL PORTFOLIE CREATION OF SAMPLE COMMERICAL BANKS

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 master Degree of Business studies (M.B.S.).

Viva-Voce Committee

Head, Research Department (Thesis Supervisor)

Member (External Expert)

RECOMMENDATION

This is to certified that the thesis

Submitted by:
Anju Gwachha

Entitled:

**RISK AND RETURN ANALYSIS AND OPTIMAL PORTFOLIE CREATION OF
SAMPLE COMMERICAL BANKS**

has been prepared as approved by this Department in the prescribed format of faculty of
management. This thesis is forwarded for examination.

.....

Dilip Parajuli

(Head Research Department &

Thesis Supervisor)

.....

Dr. Shankar Kumar Upadhyaya

(Campus Chief)

TRIBHUVAN UNIVERSITY

Faculty of Management

Bhaktapur Multiple Campus

DECLARATION

I hereby declare that the work reported in this thesis entitled "Risk and Return Analysis and Optimal Portfolio Creation of Sample Commercial Banks (with reference to NIBL, EBL and SCBL) submitted to Research department of Bhaktapur Multiple Campus, Dudhpati, Bhaktapur, Faculty of Management, Tribhuvan University, is my original work done in the form of partial fulfillment of the requirement for the degree of Master of Business Studies under the supervision of **Mr. Dilip Parajuli**, Head of Research department of Bhaktapur Campus, T.U.

Date:.....

.....

Anju Gwachha

Bhaktapur Multiple Campus

Campus Roll No: 19/2064

T.U. Regd. No. 7-2-408-55-2004

Exam Roll No.20020

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This thesis entitled with "Risk and Return Analysis and Optimal Portfolio Creation of Commercial Banks" has been prepared in partial fulfillment for the degree of Master of Business Studies (MBS). This thesis has attempted to explore the risks and returns of sample commercial banks and tried to compare them with the risk and return of the commercial banking sector and also with that of the Industry risk and return for deriving the conclusions.

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Date:.....

Anju Gwachha
Bhaktapur Multiple Campus

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ABBREVIATIONS

• ABBS	Any Branch Banking Service
• A.D	After Death
• AGM	Annual General Meeting
• ATM	Automated Teller Machine
• BI	Banking Index
• B.S	Bikram Sambat
• CB	Commercial Bank
• Co.	Company
• CPI	Consumer Price Index
• CS	Common Stock
• CV	Coefficient of Variation
• DPS	Dividend Per Share
• EBL	Everest Bank Limited
• EPS	Earning per share
• ERR	Expected Rate of Return
• F/Y	Fiscal Year
• GDP	Gross Domestic Production
• i.e.	That is
• IPO	Initial Public offering
• Ltd.	Limited
• MBS	Master of Business Studies
• MPS	Market Price per Share
• NABIL	Nabil Bank Limited
• NEPSE	Nepal Stock Exchange
• NIBL	Nepal Investment Bank Limited
• NRB	Nepal Rastra Bank
• NYSE	New York stock Exchange
• POT	Point of Transaction
• Pvt.	Private
• R	Expected Return
• ROA	Return on Asset
• ROE	Return on Equity
• RRR	Realized Rate of Return
• Rs.	Rupees
• SCBL	Standard Chartered Bank Limited
• SD	Standard Deviation
• SR	Systematic Risk
• T.U.	Tribhuvan University
• USR	Unsystematic Risk

CHAPTER I

INTRODUCTION

1.1 Background of the study

The Investment environment and security market are in the process of an ongoing revolution in our country. Investment is the present sacrifice or commitment of money and other resources for the sake of generating additional money and other resources in the future. Investors purchase financial assets such as shares of stocks or bonds because they desire to increase their wealth. The investment decision always depends upon the two factors i.e. risk and return. The present decision about selecting the best alternative should always take future risks into consideration because the future is definitely uncertain. The investment alternatives are now expanded than it used to be in past in our country. With the increase in the financial markets, concepts and principles, a lot of other financial alternatives have mushroomed. The financial investment alternatives are common stocks, bonds, preferred stocks, convertibles, warrants, rights, commodity futures, financial futures, option etc. The investors always have the objective of making maximum return from his investment at the lowest risk. It is only possible through portfolio which means combinations of securities. For selecting the best alternatives and constructing an efficient portfolio a wise analysis and decision is required. This study aims to have wise analysis of investment alternatives for the proper selection of best alternatives. The financial investment is the comparatively new concept in our country.

The study of risk and return analysis and optimal portfolio selection of common stock investment has special relevance in a country like Nepal where investment is narrowly meant to buying and selling of real assets. Common stock represents commitment on the part of a corporation. Investors of common stock are the ultimate owners of the company collectively, they own the company and ultimate risk is associated with ownership. So, the common stock is known as risky security. Thus, before investment made in common stock, investor must consider the risk associated with their investment and return.

Most of the Nepalese investors are not clear in making investment decisions. They seem unclear in what securities to invest, how extensive the investment should be and when they should be made. Most of the investors invest in the single security. Some other investors have been found investing in two or more securities but without making analysis of portfolios. They are found investing their funds in different securities on the basis of expectation and assumption of individual security rather than on the basis of effective portfolio or optimal portfolio. So, it is necessary to make them well acquainted with the tools along with their practical implications on investment decision and evaluation. An investor should make clear investment policy, perform technical and fundamental analysis, identify and revise the portfolio and finally evaluate the portfolio performance keeping in considerations with appropriate measures and standards. Then, only an investor can come to a conclusion to develop a portfolio that has the maximum return of whatever level of risk the investor seem appropriate.

Risk

Risk is a term carrying different meaning to different parties. In Finance, the risk is defined as variability in return. risk is the variability of return from an investment. (Hampton, 1998:158). Risk is defined in the Webster's dictionary as "a Hazard a Peril; Exposure to loss of injury". Thus risk refers to chance that some unfavorable events may occur. If we invest in speculative stocks, we are taking a kind of risks in hope of making appreciable returns. (Brigham, Capeskin and Erhards, 2001:160). Risk can be thought of as the possibility that the actual returns from holding a security will deviate from the expected return. The greater the magnitude of deviation and the greater the probability of its occurrence, the greater is said to be risk of the security. (James C. Van Horne, 2000:25) In reality, risk occurs when we cannot be certain about the possible future outcomes of particular activities or events. So, we are not sure that risk will occur in the future consequently. Risk result from the fact that the action such as investment can provide more than one outcome in future. (Western Besley and Brigham, 1996: 182) The effective management of this risk is central to a financial institution's performance. Indeed, it can be argued that the main business of financial institution is to manage the risk for the purpose of maximization

of return. So, financial institution's manager must devote the significant time to understanding and managing the various risks to which their financial institution are exposed. In real sense risk is the chance of losing future return and investment amount in future. Assets having great chance of loss are viewed as more risky than lesser chance of loss. More formally, the term 'risk' is used interchangeably with uncertainty to refer the variability of return associated with the given assets.

Return

The rate of return from capital investment is a concept that has different meaning to different investors. Return is what an investor earns in his investment. Some investors seek near cash inflow and give less value to more distant returns. Return can be expressed by cash dividend or capital gain or loss. Still some investors measure return using financial ratios. Single holding period may be defined as all possible future cash flows that can be earned holding securities up to holding period. It can be also defined as the changes in the value plus any cash distribution expressed as a percentage of the beginning of the period of investment value. An investor can obtain two kinds of income from the investment i.e. share or bonds. They are as follows:

1. Income from price appreciation or losses from price depreciation. It is called capital gain or loss.
2. Cash flows income from cash dividend or coupon interest payment.

Return shows financial position of any organization. The position of company or organization may be better if it has higher return. Return is the rewards for investors from his or her organization. Investors always want to have maximum return subject to their tolerance to risk. Return is motivating forces and it is key method available to investors in capturing investment alternatives. Realized rate of return and expected rate of return that are often used in language of investment. Realized rate of return is the return that is earned earlier or historical return. The return on investment can be measured as the total gain or losses expressed on behalf of owner over the given period of time. It is commonly stated as the change in value plus any cash distribution expressed as percentage of the beginning period investment value.

1.2 History of banking development

Reviewing the history, we can find that the present day, banker has three ancestors of particular note. One, the merchant and the two others were lender and the goldsmith of medieval Italy. History tells us that it was the merchant who first evolved the system of the banking by trading in commodities than money. The bank of Venice founded in 1157 A.D. was the first public banking institution. Subsequently, bank of Barcelona in 1401 A.D. and bank of Genoa in 1407 A.D. were established. The growth of bank accelerated only after the introduction of Banking Act 1833 A.D. in the United Kingdom as it allowed to open Joint Stock Commercial Banking system in the lending countries of the world. In context of Nepal, Nepal Bank limited is the first organized financial institution which is established in 1937 A.D. Prior to the establishment of the Nepal Bank limited there was no organized financial institutions. During the prime minister ship of Rannoddip Singh around 1877 A.D., a number of economic and financial reforms were introduced. The establishment of the “Tejarathadda” fully subscribed by the govt. in the Kathmandu valley was one of them. In the overall development of the banking system in Nepal “Tejarathadda” may be regarded as the father of the modern banking institution and quite for a long time, it tended to be a good service to govt. staffs as well as to the general public. However, the installation of “Kausitoshakhana” as a banking agency during the reign of king Prithvinarayan Shah could also claim to be regarded as the first step towards initiating banking development in Nepal.

The inception of Nepal bank limited in 1937 A.D. was a landmark in the field of banking and financial sectors in Nepal. It was established under the field of banking act 1936 A.D having elementary function of commercial bank as a semi-govt. organization without the existence of central bank in the country. Nepal Rastra bank, the central bank of Nepal, was established on 26th April, 1956 under the Nepal Rastra Bank Act 1955, with an authorized capital of Rs. 10 million. The main objective was to help the govt. in formulating monetary policies with the other objectives of supervising, protecting and directing the function of commercial banking activities. It has acted as a government agent and has contributed in the financial growth of the country’s economy. In order to facilitate people all over the

country, the govt. established the second commercial bank named Rastriya Banijya Bank in 2022 B.S., which is fully owned and controlled by Nepal govt. NABIL Bank initially known as a first joint venture bank in Nepal with Dubai Bank Limited on 12th July 1984 under a technical service agreement. During the mid 80s, the govt. adopted the policy of liberalization which attracted the foreign banks to come in Nepal. In 1984, NABIL bank Limited was established as the first joint venture bank. After the restoration of democracy in 1990, Nepal adopted democratic constitution that was lauded as the best social-legal document in the world. Further the economy was liberalized with a view of enhancing private sectors participation in various spheres. Nepalese financial sector is largely dominated by the banking sectors. Under the commercial banking sphere, majority is occupied by large number of joint venture banks.

1.3 Brief Profile of the Selected Commercial Banks

1.3.1 Standard Chartered Bank Nepal Limited

Standard Chartered Bank Nepal Limited has been in operation in Nepal since 1987 when it was initially registered as a joint venture operation. Today, the bank is an integral part of standard Chartered Group having an ownership of 75% in the company with 25% shares owned by the Nepalese public.

With 18 points of representation, 23 ATMs across the country and with more than 429 staffs, SCBL is in a positive stand to serve its costumer through an extensive domestic network. It has offered a full range of banking product and services in wholesale and consumer banking, catering to a wide range of costumers encompassing individuals, mid-market local corporate, multinationals, large public sector companies, government corporations, airlines, hotels etc. The authorized capital, issued capital and paid-up capital of the bank at the end of the fiscal year 2009/10 were Rs.2,00,00,00,000., Rs. 1,39,84,83,600. And Rs. 1,39,84,83,600. respectively. Its financial highlights in the fiscal year 2009/10 are given here below:

Operating income = 2,298 million

Total assets = 1,612 million

Capital adequacy = 14.6%

Return on Equity = 32.22%

Dividend = 70% (including bonus)

1.3.2 Nepal Investment Bank Limited

Nepal Investment Bank Ltd. (NIBL), previously Nepal Indosuez Bank Ltd., was established in 1986 as a joint venture between Nepalese and French partners. The French partner (holding 50% of the capital of NIBL) was Credit Agricole Indosuez, a subsidiary of one the largest banking group in the world. The name of bank was changed to Nepal Investment Bank Ltd. Upon approval of bank's Annual General Meeting, Nepal Rastra Bank and Company Registrar's office with the following shareholding structure.

- A group of companies holding 50% of the capital
- Rashtriya Banijya Bank holding 15% of the Capital.
- Rastriya Beema Sansthan holding the same percentage.
- The remaining 20% being held by the General Public (which means that NIBL is a Company listed on the Nepal Stock Exchange).

Nepal Investment Bank was listed in NEPSE in 1987 A.D. Its authorized capital, issued capital and paid up capital is Rs. 4,00,00,00,000., Rs. 2,40,90,97,700. And Rs. 2,40,90,97,700. Respectively in fiscal year 2009/10. NIB has a network of 41 branches and 67 ATMs throughout the country.

1.3.3 Everest Bank Limited

Everest Bank Limited (EBL) started its operations in 1994 with a view and objective of extending professionalized and efficient banking services to various segments of the society.

The authorized capital, issued capital, and paid-up capital of the bank at the end of the fiscal year 2009/10 were Rs.1,25,00,00,000., Rs.1,05,00,00,000., and Rs.1,03,04,67,300 Respectively. The current shareholders pattern of the bank constitutes of promoters holding 50% of the shares, 30% general public and 20% Punjab National Bank. In order to cater banking needs of large and well spread sections of the society, it has strived to establish 43 branches, 43ATMs, 19 extension counters and many correspondents across the globe. It is pioneer in introducing branchless banking (Everest Ghar-Dailo Banking Sewa) and mobile vehicle banking services, Everest Ghar-Dailo Banking Sewa, is a unique delivery channel in banking

services to facilitate rural people in banking with the help of sophisticated technology. These branches' services can be used through point of Transaction (POT) machine by using smart cards. It is the first bank to introduce Any Branch Banking System (ABBS) in Nepal. At present, this very service is provided by its Baglung, Bhaktapur, Nepalgunj and Birtamod branches through 29 business correspondents.

1.4 Statement of the problems

The investors should make rational decision. With the development and growth of capital market, the investor's attitude and knowledge does not seem to have changes significantly. They are not aware of making investment decision by analyzing risk and return. They seem unclear in what securities to invest, how extensive the investment should be and when they should be made. Many investors are manipulated and exploited by the financial institutions and other market intermediaries since they are unknown about the norms of security market. Not only the general people but also the university graduates and post graduates do not make the analysis of risk and return while making stock investment decision. In the context of Nepal, there is no separate institution to provide required information to make rational decision and on the other hand, lack of proper policy in investment has discouraged the investors. There is no strong commitment towards increasing public investment in policy makers and the government. Investors are the base for the stockholders and the financial institution and ultimately they are the backbone of economic development of the nation. For an instance, after the emergence of NEPSE in 1933 A.D., most of the problems of the investors have been solved but a new problem has been arisen. Investors feel more risky than before in stock investment than its real risks firstly due to lack of the proper knowledge about the stocks and secondly because of the false presentation of stock prices in the secondary market. To build their confidence, unbiased analysis and information about it, is very important. Unavailability of a simple and clear way or technique to analyze the risk and return of individual stock and portfolio is therefore, being a major weakness to increase stock investment and stock market efficiency as well. The research problems are given below:

- How can investor make higher return on lower risk?
- How can investor diversify risk?

- How the optimal portfolio can be created using selected bank's asset?
- Does risk and return of investment in the selected banks' stock suitable?
- Which bank can be selected on the basis of measurement of risk and return?
- Which bank is better to invest among the selected banks?

1.5 Objectives of the study

Investors require proper knowledge of investment alternatives. The main objective of this study is to assist the investors to select the bank and to create the optimal portfolio among the selected commercial banks. The objectives of the study are as follows:

- To analyze the risk and return of the sample banks,
- To analyze the diversifiable and undiversifiable risk of the sample banks
- To analyze how to create the optimal portfolio from among the sample banks.

1.6 Significance of the study

This study has been prepared with the objective of analyzing risk and return and optimal portfolio creation for the sound investment decision. So this study will be expected to be helpful to the investors. Analysis of comparative study among various banks will help investors to know about the financial position of financial performances. Risk-Return analysis and portfolio theory will create awareness to utilize their scarce resources with optimization. This study will be helpful to know an idea about the optimum portfolio creation for Nepalese investors and financial institutions.

In Nepalese context, concept of security market began with the set up of Nepal stock exchange formerly known as "Securities Exchange Center" in 1976 A.D. This is only the stock market in Nepal. Many investors are still afraid to invest in securities because of inadequate knowledge in this field and most of the investors are exploited from the market intermediaries. On the other hands, there's also unhealthy competition among the financial institutions and fake status and information is prevalent in the market. The potential investors must be able to analyze risk and returns of individuals stocks to increase market efficiency and consequently speed up

the economic development. So, this study is supposed to be the guideline to the potential investors in reaching their sound investment decision.

1.7 Limitation of the study

This study holds some methodological and conceptual limitations, which are as follows:

- The data will be collected from listed companies, which have data available for at least 5 consecutive years during the sample period from 2006/07 to 2010/11.
- The study is concerned on only three commercial banks. So the conclusion drawn may not show the real financial position of all the commercial banks.
- The study will be based on Secondary Data.

1.8 Organization of the study

This study is carried out in different stages and procedures. It is mainly divided into five chapters.

Chapter I: - Introduction

It includes background of the study, history of banking development, brief profile of sample commercial banks, statement of the problem, objectives of the study, significance of the study, limitation of the study and organization of the study.

Chapter II: - Review of Literature

The second chapter deals with the review of available literature. In this chapter both conceptual and theoretical review is done. It includes reviews of books, reports, journals, websites etc

Chapter III: - Research methodology

The third chapter will explain the research methodology used in the study, which includes research design, source of data, population and samples, tools for analysis, methods of data analysis and presentation etc.

Chapter IV: - Data presentation and analysis

The fourth chapter includes presentation of data collected from different sources and analysis of the result.

Chapter V: - Summary, Conclusion and Recommendations

The last chapter summarizes the main conclusion that follows from the study and offer suggestion for further improvements and conclusions of the study.

CHAPTER II

REVIEW OF LITERATURE

Review of literature is a basic requirement for any research. Review of literature means reviewing research studies or other relevant proposition in the related area of the study so that all the past studies, their conclusions and deficiencies may be known and further research can be conducted. It is an integral and mandatory process in research works. The review of literature helps the researcher to avoid repetition in the same task or dead end task in the area.

The method of reviewing the collective body of works done by earlier researcher or scholars is called literature review. It helps in identifying variables related for research. It is the documentation of a comprehensive review of published and unpublished works from secondary sources of data. Review of literature means to collect the information about the selected topic of the research through the different sources. It gives the framework of the research process. It is called stock taking of available literature in one's field of research.

Under this research, different journals, research articles, thesis, periodicals, newspapers, published or unpublished bibliographies, books etc will be studied to collect or gather the information about the selected topic of the research. It is the critical summary of previous research report on a specific topic.

2.1 Conceptual Review

In general sense, Investment means to pay out money to get more but in the broadest sense, it means present commitment for the future benefits. While the commitment takes place with certainty, the future benefits are shrouded in uncertainty. The uncertainty creates risk to investors and they desire to minimize return by minimizing such risk. Therefore, taking decision about proper investment is crucial to the investor and it requires a specific investment decision process, analysis of securities, identification of overpriced, underpriced securities, making appropriate investment strategies as well as construction of efficient portfolio. Return is the motivating factor in the investment process i.e. the reward for undertaking the investment. Therefore, it has crucial importance to the investors. The investor should be well known about the various factors of the financial markets.

2.1.1 Capital market

The capital market is a financial relationship created by a number of institutions and arrangements that allows suppliers and demanders of long term funds(i.e. funds with maturities exceeding one year) to make transactions. It is a market for long term funds. The backbone of the capital market is formed by the various securities exchanges that provide a forum for equity (equity market) and bond (debt market) transactions. Mechanisms for efficiently offering and trading securities contribute to the functioning of capital market which is important to the long term growth of business. Thus the capital market comprise of (1) stock/security exchange market (secondary market) and (2) new issue/primary market [initial public offering (IPO) market].

2.1.2 Security

In finance, securities are the instruments giving to their legal holder's rights to money or other property. Securities include stocks, bonds, notes, mortgages, bills of lading and bills of exchange.

2.1.3 Common stock

In finance, common stock is instrument certifying to shares in the ownership of corporation. Bonds are similar evidences of shares in a loan to a corporation. Stock yields no dividends until claims of bondholders have been met. Preferred stock is entitled to dividends of a specified percentage per annum before common stock is entitled to no dividends; the common stock is then usually entitled to the rest of the profits. In case of liquidation of the company, holders of the bonds and preferred stock take preference over holders of common stock in the division of the assets. Holders of common stock usually have voting rights in the management of the corporation; bondholders and usually holders of preferred stock have no voting rights. Since, the value of common stock depends largely on its earning; it is often issued with on par value. Public demand for securities and the need of corporations for ready

capital have led to the development of stock exchanges in most of the major cities of the world.

2.1.4 Stock exchange

It is organized market for the trading of stock and bonds. Such markets were originally open to all, but at present only members of the owning association may buy and sell directly. Members, or stock brokers, buy and sell themselves or for others, charging commissions for their services. A stock may be bought or sold only if it is listed on an exchange, and it may not be listed unless it meets certain requirements set by the exchange's board of governors. There are stock exchanges in all important financial centers of the world; the New York Stock Exchange (NYSE) is the largest in the world. Tokyo, London and Frankfurt also have major facilities, by providing a centralized, ready market for the exchange of securities; stock exchanges greatly facilitate the financing of business through valuation of stocks and bonds.

2.2 Risk

Risk refers to the chances that some unfavorable event will occur. (Weston & Brigham, 1996:182). Oxford dictionary define risk as possibility or chance of meeting danger, suffering loss, injuring etc. the chance of loss on an investment due to many factors including inflation, interest rate, default politics, foreign exchange, call provision etc. In other words risk was defined as the variability of the possible outcome from that which was expected. (Van Horne, 2006:165)

In the financial world, a fundamental risk is volatility. Volatility is the size and frequency of changes in a stock, bond or the security or in a stock or other market as a whole. How far and how fast does a stock or the stock market rise or fall in a given period? The answer to this question describes the degree or volatility involved. The risk on common stock is generally interpreted as the possibility of being negative return. Risk can be taken as the possibility that the actual return from holding a security will deviate from the expected return. The greater the magnitude of deviation and the greater the probability of its occurrence, the greater is said to be the risk of the

security (Van Horn 2000:35). Every investment involves opportunities that make future investment returns risky.

2.2.1 Beta coefficient

This is mathematical value that measures the risk of one asset in term of its effects on the risk of a group of assets, as would be the concern for an investor holding stocks and bonds. It is derived mathematically so that high beta indicates a high level of risk whereas a low beta represents a low level of risk. Mathematically, it's defined as:

$$\text{Beta coefficient } (\beta_j) = \frac{\text{Cov}(r_m, r_j)}{\sigma^2_m}$$

2.2.2 Standard deviation

This is a measurement of the dispersion of forecast returns when such returns approximate a normal probability distribution. It is a statistical concept and is widely used to measure risk from holding a single asset. The standard deviation is derived so that a high standard deviation represents a large dispersion of return and is a high risk and vice versa.

2.2.3 Sources of Investment Risk

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

a) Interest rate risk

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

b) Purchasing power risk

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

c) Bull- Bear Material Risk

This risk arises from the variability in market returns resulting from alternating bull and bear market forces. When a security index rises fairly consistently from a low point, called a trough, for a period of time, this upwards trend is called bull market. The bull market ends when the market index reaches a peak and starts a downward trend. The period of during which the market declines to the next trough is called bear market.

d) Default Risk

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

e) Liquidity Risk

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

f) Call Ability Risk

Some bonds and preferred stocks are issued with a provision that allows the issuer to call them in for repurchase. The portion of a security's total

variability of return that derives from the possibility that the issue may be called is the call ability risk.

g) Convertibility Risk

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

h) Political Risk

The portion of an asset's total variability of return caused by changes in the political environment that affects the asset's market value is called political risk.

i) Industry Risk

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

2.3 Return

Generally return is the benefit or income received on an investment over a given period of time. Investment return is defined as the increase in the value of initial investment. Francis justifies this statement through "the increase in the value of assets can come from two sources: a direct cash payment to the investor or an increase in the market value of the investment relative to the original purchase price. Therefore, the rate of return is the relative value of benefit on investment which is important to measure the speed at which the investors wealth increases or decrease"(Francis 1992:1). Return of a typical investment consists of two components. The first component that usually comes to mind is the periodic cash receipts (either interest or dividends). This cash receipt is also known as an ordinary gain on investment. The second component is the appreciation (or depreciation) in the price of the asset and this is commonly called a capital gain or loss. Capital gain or loss is the difference between the purchase price and the price at which the asset can be or is sold.

Therefore, the total return in investment is the sum of the ordinary gain and the capital gain or loss. Mathematically,

Total return = Capital gain(loss) + Ordinary gain (Bhattarai, Rabindra, 2005:85)Shape et al expressed that the rate of return is the rate of change in wealth over a period of time. By applying the following, return can be calculated as:

$$\text{Return} = \frac{\text{Ending wealth} - \text{Beginning wealth}}{\text{Beginning wealth}}$$

The writer further adds an investor can obtain two kinds of income from an investment in a share of stock or a bond:

- a. Income from price appreciation (or loss from price depreciation)
- b. Cash flows income from cash dividend or coupon interest payment.

By considering both of these two sources of income the rate of return formula can be restated in a form appropriate for almost any investment.

$$r_t = \frac{\text{price change} + \text{cash flow (if any)}}{\text{price at the beginning of the period}}$$

$$= \frac{\{p_t - p_{t-1}\} + C_t}{p_{t-1}}$$

Where, r_t = Rate of return during the period of t

p_t = Market price at the end of period t

p_{t-1} = Market price at the end of period (t-1)

C_t = Cash flow income received during the t^{th} period

Above formula can be used to determine both actual one period return (when based on historical figure) as well as expected one period return (when based on expected dividends and prices). The return in the parenthesis is the number of the above equation represents the capital gain or loss during the period. For longer periods, It is better to calculate rate of return as an investments yield. The yield calculated is present value based and this considers the time value of money. Annualized rate of

return over special periods can be calculated in two ways. The first one is simply to take the arithmetic average of the annual holding period returns over a given period and the second one, which also takes account the compounding effects of cash receipts over different time intervals is the geometric mean rate of return. The geometric mean rate of return for an investment can be calculated with the following equation:

$$\text{Geometric Mean Return (GM)} = \frac{[(1+r_1)(1+r_2)\dots(1+r_n)]^{1/n}}{1}$$

Where, GM= the Geometric Mean Return

r_1 = the return for time period 1

r_2 = the return for time period 2

r_n =the return for time period n

n= the total number of time periods

2.4 Relationship between Risk and Return

Generally there is positive relationship between risk and return. The relationship between risk and return is one of the essential concepts to understand when investing and it's unique for every investor. The risk and return relationship is a fundamental concept is not only financial analysis but in every aspect of life. If decisions are to lead to benefit maximization, it is necessary that individual's institution consider that combined influence on expected (future) return as benefit as well as risk/cost. The investors can usually attain more return by selecting dominant assets that involve more risk. While it is not always true that a riskier asset will pay a higher average rate of return. The reason is that investors are risk averse. As a result, high-risk assets must offer investor's high return to induce them to make the riskier investment normally; investors are likely to prefer more return and less risk. It means investors will not choose an investment that guarantees less return when investments promising higher returns in the same level of risk class are readily available.

2.5 Portfolio management

Portfolio management means investing money in number of securities and also of different types rather than one and changing over the mix as per the economic environment so that the investor get the maximum return with the minimum investment also paying with the least risk. Portfolio management refers to the selection of securities and their continuous shifting in the portfolio to optimize return to suit the objectives of an investor. The idea is catching in with the boom in the capital market and an increasing number of people are inclined to make profit out of their hard earned savings. “A portfolio is collection of investment securities. Portfolio Theory deals with the selection of optimal portfolios, i.e. portfolio that provides the highest possible return or the lowest possible risk for any specified rate of return” (Western & Copland; 1992:302). “Portfolio management is the art of handling a pool of funds so that it not only preserves its original worth but also over time appreciates in value and yields an adequate return consistent with the level of risk assumed” (Cohen, Zinbarg & Zeinkal; 1997:591). One of the safest ways an investment portfolio generates money is through fixed income investments. These are usually in the form of bonds issued by corporations or governments or from dividends paid to shareholders by corporation. Issues affecting fixed income are the credit worthiness, or default risk, of the issuer, and the yield earned by the bondholder. Safer lenders, such as those of governments or blue-chip companies, typically pay a lower yield at times, so low that the real return after inflation is at or below zero! On the other hand, a company or government that goes bankrupt will be unable to pay its high dividends or service its debts. Yields Between 3% to 7% are generally considered safe. When an investor sells something for more than they paid for it, they’re said to have realize a capital gain. This sort of buying and selling high is, of course, the goal of the most investors. To do this successfully, however, requires patience, discipline and a deep knowledge of macroeconomic trends. In an environment when an economy is growing, most assets will tend to rise in value, making capital gains relatively easy to come by. Capital gains can be realized over long period of time, which is recommended for most investors, or over a very short period of time, as little as a few minutes or hours for risk-taking day traders.

2.6 Review of previous thesis

S. k. Mishra (2002) in his study “Risk and Return on Common Stock Investment of Commercial Bank in Nepal” concluded that the relationship between risk and return is described by investor’s perception about risk and their demand for compensation. No investor will like to invest in risky assets unless s/he is assured of adequate compensation for the acceptance of risk. He further concluded that banking sector is the best for the investment in common stock.

Lila NathPandey (2003) in his study “A study on Risk and Return Analysis of Common Stock Investment” concluded that without proper analysis of individual security, industry and overall market, it is almost impossible to beat the stock market. From his analysis, Kathmandu Finance Ltd. Seems undoubtedly the best for investment from the viewpoint of expected return and coefficient of variation and Citizen Investment Trust has a lesser beta coefficient from the viewpoint of market sensitivity.

J.BSapkota (2004) in his study “Risk and Return Analysis of Common Stock Investment” concluded that banking industry is the biggest one in terms of market capitalization and turnover. He had performed an analysis of risk and return on common stock investment with special reference to banking industry. The study is focus on common stock investment of commercial banks the main objective of the study is to analysis the risk and return of the common stocks on Nepalese stock market.

Gupta (2010) has conducted yet another research entitled with “Risk and return Analysis of common stock investment of listed Commercial Bank” (with reference to NIBL, HBL, and EBL). His objective of the study is to assess the risk and return on common stock investment of listed commercial bank. It has also the objective of to analyze the common stock in terms of risk and return, to identify the whether stock of selected commercial banks are overpriced, underpriced and equilibrium price to construct optimum portfolio of the banks. He has concluded that all the banks, which are under study, are very much risky with fluctuated rate of return.

Adhikari (2010) has conducted research entitled with “risk and return analysis of Common Stock Investment of commercial Banks of Nepal (with reference to SCBNL, EBL and HBL). She has the objectives of her study are to analyze the common stock in terms of risk and return, to identify whether stock of the selected commercial bank is overpriced, underpriced and equilibrium price, to identify optimum portfolio of the banks and to analyze the diversifiable and undiversifiable risk of the selected banks. The study has shows that EBL has the highest proportion of unsystematic risk which cannot be minimized from internal management.

2.7 Research Gap

A lot of studies in the topic I’ve chosen has already been conducted in the past. There is fundamental difference between previous researchers have focused only on the risk and return aspect of the selected commercial banks from investor’s perspectives. This study has further tried to identify the correlation among returns of the commercial banks under study which plays a significant role in risk reduction by portfolio construction and systematic and unsystematic risk has been identified for each bank which is not done by previous researchers. Most of the previous researchers reviewed have been carried out in numerous sample banks which give the clear vision for all the investors who invest in commercial banks listed in NEPSE. The previous researchers had randomly chosen two banks and calculated return portfolio and standard portfolio but failed to analyze all the sample banks’ return portfolio and standard portfolio. In this study I have done the calculation of return portfolio and standard portfolio of three sample banks with three different portfolios separately.

CHAPTER-III

RESEARCH METHODOLOGY

Research is a systematic and in-depth study or search for any particular topic by formulating hypothesis, collecting information, analyzing and interpreting them through the valid results. It is also called a creative inquiry (investigation) to search new insight to phenomena. “Research is essentially a systematic inquiry seeking facts through objectives verifiable methods in order to discover the relationship among them and to deduce them broad principles or laws” (Joshi; 2002:3). Research methodology is a systematic way to solve the research problem. Research methodology concerns to the population and sample, sources of data, data collection techniques, data presentation, data interpretation and analysis. For this various financial and statistical tools are used to analyze the data and conclude to the finding. Research methodology has been used to fulfill the objectives of the study.

3.1 Research Design

A research design is a plan or blueprint of investigation for the collection and analysis of data. It helps the researchers in the right direction in order to achieve the goal. This is an empirical study on investor’s problem regarding selection of most profitable stock of NEPSE. The research is based on historical data, so it simply is a historical research. It covers the data from 2006/07 – 2010/11. It deals with the common stock of commercial banks on the basis of available information. For the portfolio analysis, the common stock of the selected commercial banks of the selected commercial banks is taken into consideration. This study is based on descriptive and analytical research design. The data are analyzed by using various statistical tools and techniques, such as return, standard deviation, coefficient of variation, correlation of coefficient etc. The results are explained in descriptive form.

3.2 Population and Sample

The population of the study is the commercial banks of Nepal which has been listed in the Nepal Stock Exchange (NEPSE). There are 32 commercial banks

operating in Nepal; only 26 commercial banks are listed in NEPSE as on 25th November 2012. These banks are considered as population. But for this study, three listed commercial banks have been conducted as samples. Name of sample banks are as follows:

1. Standard Chartered Bank Nepal Limited (SCBL)
2. Nepal Investment Bank Limited (NIBL)
3. Everest Bank Limited (EBL)

3.3 Sources of data

This study is based on the secondary data. Secondary data have totally been used in the study. The secondary sources of data are as follows.

- Annual report of selected banks approved by an AGM
- Newspapers, journals, magazines and books
- Websites of related banks and Nepal Rastra Bank
- Government reports, bulletin and other published statement of related field
- Previous studied made in the field.

3.4 Data collection techniques

Almost the data, which are necessary for the research is, collected from secondary sources. The information has been collected by financial documents provided by commercial banks, NRB (Nepal Rastra Bank), trading manual published by NEPSE, NEPSE periodical articles, related websites and previous research reports.

3.5 Tools for Analysis

The collected data are analyzed by using various financial tools which are briefly profiled below:

3.5.1 Market Price of Stock (P)

One of the major data of this study is market price of the stock. Market price of stock for a particular year should have represented the average price of the year but for the sake of simplicity, prices of the stock in the closing data of the fiscal years are

taken as the market price of the stocks for the particular years and these data are taken from the annual reports of the respective banks. Here in this study, each year closing price is taken as the market price of stock which has specific time period of one year and the study has focused in annual basis. To get the real average volume and price of each transaction in the whole year are essential which is tedious and impossible too, considering the data availability and maintenance. Market value in the secondary market is determined by the supply and demand factors and reflects the opinion of investors and trader concerning the values of the stock. Closing price is used as market price and includes these all information and average of reliable and representative information. There are three price records available: High, low and closing price. So, two approaches either average price (of high and low) or closing price can be used. Closing price is used as market price of stock for his study.

3.5.2 Dividend

Dividend per share (including bonus) provided under the major indicator section of the respective banks have been used for the study. Dividend is the part of earning that is distributed to the shareholders as a part of their investment. Dividend is return to equity capital that consists price of time and price of risk taken by the investors. The total amount of dividend out of earning available to the shareholder if distributed, the common stock's portion is said Dividend per share (DPS). Symbolically DPS can be expressed as:

$$DPS = \frac{\text{Total amount of dividend}}{\text{No. of common shares outstanding}}$$

If company declares only cash dividend, there is no problem while taking the exact amount of dividend that is relevant. But if the company declares stock dividend (bonus share), it is difficult to obtain the amount that really shareholders have gained. In this case, they get extra numbers of shares as dividend and simultaneously price of stock declines as a result of increased number of stocks. To get a real amount of dividend, following model had been used throughout.

Total Dividend Amount= Cash dividend+ Stock Dividend %× next year MPS

3.5.3 Return on Common Stock Investment (R)

Return is income received on an investment plus any changes in the market price, usually expressed as a percent of the beginning market price of the investment.

Symbolically,

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

Where;

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

D_t= Cash dividend received at time t.

P_t= Price of a stock at time.

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

3.5.4 Expected Return of Common Stock (R)

One of the main aims of the study is to determine the expected return on the investment in the sample banks. Generally, this rate is obtained by arithmetic mean of the past year's return.

Symbolically, Using Ex-post Data,

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

Where,

E(r) = Expected rate of return

N = Number of observation or returns.

Using Probabilities,

$$E(r) = P_1r_1 + P_2r_2 + P_3r_3 + \dots + P_nr_n$$

Where,

E(r) = Expected return,

P_t = Probability of event t,

R_t = Rate of return at event t,

N = nth event

3.5.5 Standard deviation

It is a statistical measure of the variability of a distribution of return around its mean. It is the square root of the variance and measures the unsystematic risk on stock investment. It is widely used to measure risk from holding a single asset. It is also a statistical measure of the variability of a set of observations. The standard deviation represents a large dispersion of return and is a high risk and vice versa. The symbol is called (σ) sigma. It measures the total risk on investment.

$$\text{Standard Deviation } (\sigma_j) = \sqrt{\frac{\sum (r_j - \bar{r}_j)^2}{n-1}}$$

Where,

σ_j = standard deviation of return on stock j during the time period j

r_j = rate of return of stock j

\bar{r}_j = Average rate of return of stock j

N = number of years that the return are taken

$$\text{Variance} = \text{Var}(r_j) = \sigma_j^2$$

3.5.6 Coefficient of Variance (CV)

It is the ratio of standard deviation of returns to the mean of that distribution. It is a measure of relative risk and return. It measures the risk per unit of return. It is defined as the standard deviation divided by the mean of expected return. It is used to standardize the risk per unit of return i.e. measure the risk per rupee. The coefficient of variation should be used to compare investments when both the standard deviations and the expected values differ. The higher of the coefficient of variation is the higher in the risk and viceversa. Symbolically,

$$\text{Coefficient of Variance (CV)} = \frac{\sigma_j}{E(r)}$$

Where,

CV = coefficient of variance

σ_j = standard deviation of return on stock j

$E(r)$ = Expected rate of returns on stock j

3.5.7 Beta Coefficient (β_j)

The beta coefficient is an idea of systematic risk. It is used for ranking the systematic risk of different assets. It is an index of the degree of movement of an assets return in response to a change in the market return. Market sensitivity of stock is explained in terms of the beta coefficient. Higher the beta the sensitivity and reaction to the market movement is greater. Beta coefficient of a particular stock will be less, equal or more than 1, but the beta for market will always be 1. Symbolically,

$$\text{Beta Coefficient } (\beta_j) = \frac{\text{Cov}(r_m, r_j)}{\sigma^2_m}$$

Where,

σ^2_m = Variance of market return

$\text{Cov}(r_m, r_j)$ = Covariance between the returns of security j
and market

It can be calculated as follows:

$$\text{Covariance of } (r_m, r_j) = \frac{1}{n} \sum_{i=1}^n [r_m - \bar{r}_m][r_j - \bar{r}_j]$$

3.5.8 Correlation Coefficient

Correlation coefficient is the relationship between two variables where one variable is independent and other variable is dependent. Correlation coefficient always lies in the range of +1 to -1. Karl Pearson's method is used to calculate correlation coefficient. A positive correlation coefficient indicates that the returns from two securities generally move in the same direction or vice-versa. Correlation is used to test the significant relationship between risk and expected return. The following formula can be used to calculate the correlation. Correlation coefficient between security 'i' and market 'j' is represented as:

$$\rho_{ij} = \frac{\text{cov}_{ij}}{\sigma_i \sigma_j}$$

where,

σ_i and σ_j are the standard deviation of returns for assets i and j and ρ_{ij} is correlation coefficient for asset i and j.

3.5.9 Portfolio

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

An investor's main objective is to make maximum return from his or her fund at the lowest risk. By investing in a single asset, investor can't achieve his objective. But it is only possible through portfolio. By the help of portfolio, risk can be diversified. The objective of portfolio analysis is to develop a portfolio that has the maximum return at whatever level of risk, the investors seem appropriate.

3.5.9.1 Portfolio return

The expected return on a portfolio is simply the weighted average of expected returns on the individual assets in the portfolio with weights being the fraction of the total portfolio invested in each asset. It can be calculated as follows:

$$E(r_p) = W_i E(r_i) + W_j E(r_j) + \dots + W_n E(r_n)$$

Where,

$E(r_p)$ = Expected rate of return of portfolio

W_i = proportion of wealth invested in i assets.

W_j = proportion of wealth invested in j assets

$E(r_i)$ = the expected rate of return from the i assets

$E(r_j)$ = the expected rate of return from the j assets

3.5.9.1 Portfolio Risk

It is the combined standard deviation of individual stock return. It is the risk of individual securities plus covariance between the securities. It can be calculated as follows:

If portfolio is formed by two securities,

$$\sigma_p^2 = W_A \sigma_A^2 + W_B \sigma_B^2 + 2 \text{COV}_{AB} W_A W_B$$

if portfolio is formed by three securities,

$$\sigma_p^2 = W_A \sigma_A^2 + W_B \sigma_B^2 + W_C \sigma_C^2 + 2\rho_{AB} \sigma_A \sigma_B W_A W_B + 2\rho_{AC} \sigma_A \sigma_C W_A W_C + 2\rho_{BC} \sigma_B \sigma_C W_B W_C$$

Where,

σ_p = standard deviation of portfolio's return

W_A = proportion of asset A

W_B = proportion of asset B

σ_A^2 = variance of asset A

σ_B^2 = variance of asset B

CHAPTER-IV

DATA PRESENTATION AND ANALYSIS

This is an analytical chapter, where an attempt has been made to analyze and evaluate major financial items. It focuses on the data analysis and data presentation of the sampled banks. This chapter is mainly concentrated in analyzing “Risk and Return of sampled banks and creating optimal portfolio from among sample banks.” Detail data of MPS and total dividend of each bank and their interpretation and analysis is done with reference to the various reading and literature review in the preceding chapter. Efforts are made to analyze and diagnose the recent banking index movement. This chapter is core of the study that is fully related to analysis and interprets various outcomes. The chapter consists of historical return, average return, coefficient of variation, standard deviation, correlation coefficient and beta coefficient of sampled banks. Beta coefficient is used to measure market sensitivity. The standard deviation is used to measure diversify risk. Similarly, year and average return are used to evaluate the return position of sampled banks. it has demonstrated the figures and table to analyze the present data.

4.1 Analysis of Market Movement

Index is one of the most important indicators of secondary market which is considered as mirror of country’s economic trend. NEPSE index group consists of various indices and they are calculated on the basis of market capitalization. Out of them, overall NEPSE index is the oldest one which is being calculated from the initial days of NEPSE. Similarly the other indices are sensitive index, group wise index and Float index.

Table: 4.1
NESE Index Movement

Fiscal Year	Index (in point)
2006/2007	683.95
2007/2008	963.36
2008/2009	749.10
2009/2010	477.73
2010/2011	362.85
08-08-2012	404.93

(Sources: www.nepse.com.np)

NEPSE Index is calculated by considering all listed share including that of promoter share of all listed companies at NEPSE. NEPSE index was in increasing trend reached the maximum point at 963.10 in the F/Y 2007/2008. Then after the index went on drooping and reached at 362.85 in the F/Y 2010/2011. But it is slightly increase to 404.93 in 8th August, 2012. It shows that the market is very sensitive and liquidates in current days.

Figure: 4.1
Movement of NEPSE Index

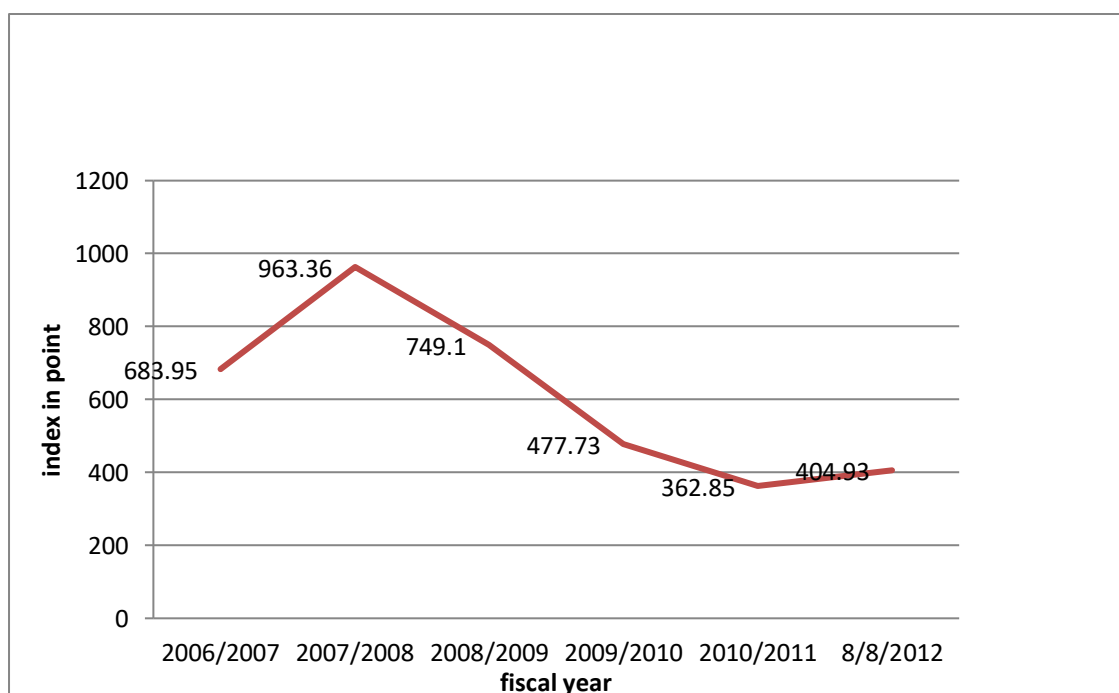


Figure 4.1 shows the trend line of NEPSE Index movement from 2006.07 to current date 3rd June, 2012. This shows the increasing upwards NEPSE index 2007/08 but then after, the market movement went downward and NEPSE index falls to 362.85 points in 2010/2011. It is slightly gone upwards to the points 404.93 in 8th August, 2012. It shows that the market is very sensitive and liquidates in current days.

4.2 Movement of Industry Index

Commercial Banking Index is a sub index of NEPSE, which is based on only Banking sectors, the number of listed commercial bank operating in Nepal increased to 32. The study takes three sampled commercial banks for analysis. Banking Index represents the banking sector i.e. mirror of banking sector development and growth. This has a great impact in investment environment in banking assets.

Table: 4.2
Commercial Banking Index movement

Fiscal Year	Index (in point)	Annual rate from Banking Sector (R)
2006/2007	639.93	0.4627
2007/2008	1143.62	0.7871
2008/2009	772.7	-0.3243
2009/2010	456.93	-0.4086
2010/2011	328.70	-0.2806

Source: www.nepse.com.np and Annex-1

Figure: 4.2

Movement of Commercial Banking Index

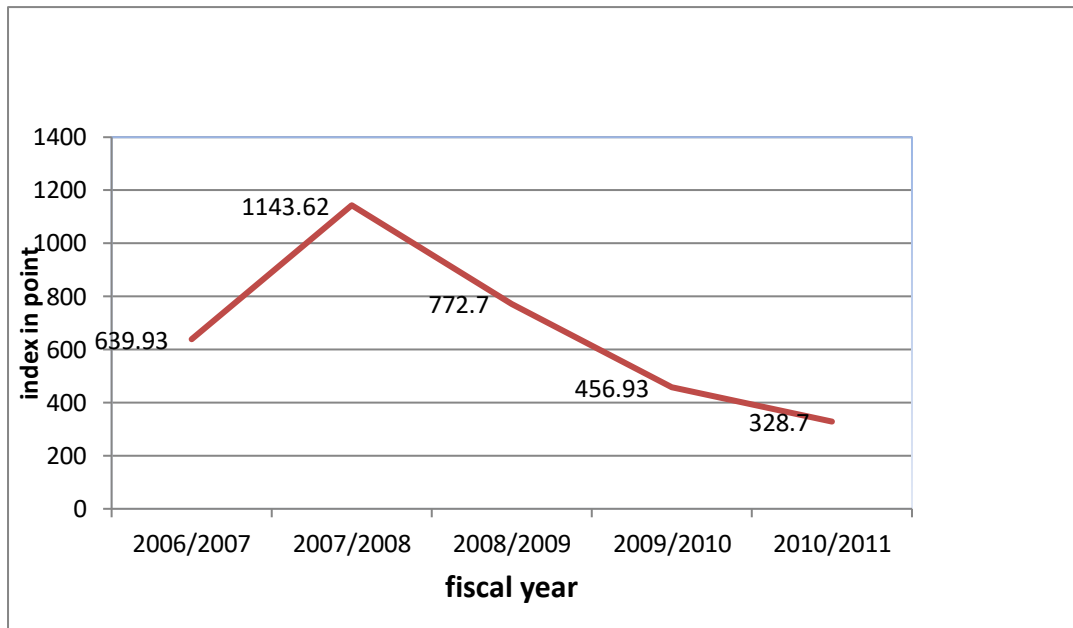


Figure 4.2 shows the Industry Movement or Commercial Banking Index Movement has fluctuated tremendously from 2006/2007 to 2010/2011. The index increases in the F/Y 2007/2008 when the NEPSE index at Boom point but then after when NEPSE index falls downward, it has affected all sub-indexes. Current stock market situation is very critical.

Figure: 4.3

**Annual Realized Rate of
Return from Banking Index**

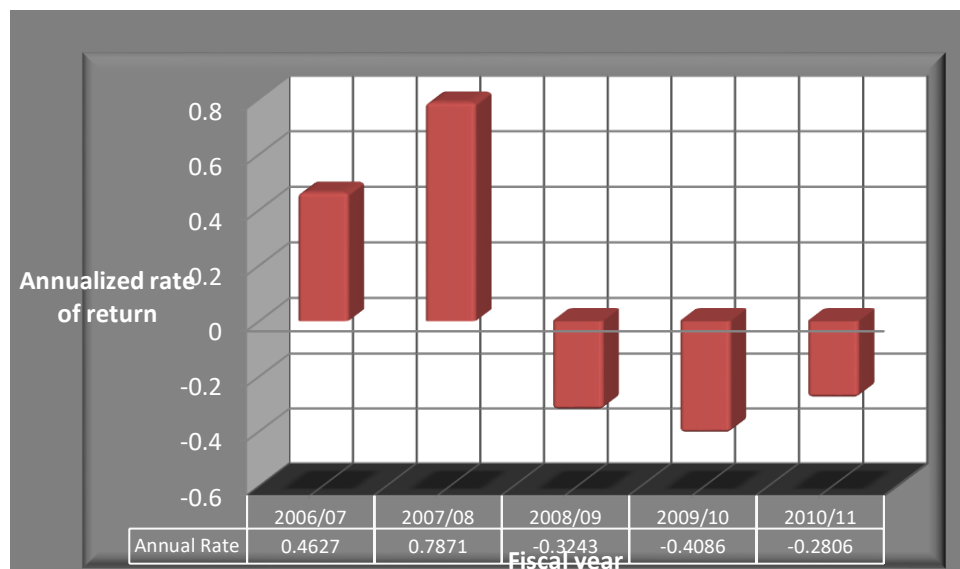


Figure 4.3 shows that annual Realized Rate of Return of Commercial Banking Sector, the highest RRR of Banking sector is in the 2007/2008 i.e. 0.7871 which shows that in this year, investors have received profit from Commercial Banking sector's Common Stock but then after the RRR of banking Sector is negative.

Table: 4.3

Tabulation of Results of Banking Sectors

Expected Rate of Return (R)	0.0473
Standard Deviation (σ)	0.5416
Co-efficient of Variation (C.V)	11.45

Source: Annex-1

Table 4.3 shows 3 results of banking sector i.e. Expected Rate of Return, Standard deviation and coefficient of variation of banking index as 0.0473, 0.5416 and 11.45 respectively. This denotes that to get per unit return, the investor should pass 11.45 risks.

4.3 Risk and Return Analysis of Sample banks

There are 32 commercial banks operating on Nepal; only 24 commercial banks are listed in NEPSE as on 14th June 2011. For this study, three commercial banks have been taken as samples which are as follows:

1. Standard Chartered Bank Nepal Limited (SCBL),
2. Nepal Investment Bank Limited (NIBL) and
3. Everest Bank Limited (EBL).

4.3.1 Nepal Investment Bank Limited (NIBL)

Nepal Investment Bank Ltd. (NIBL), previously Nepal Indosuez Bank Ltd., was established in 1986 as a joint venture between Nepalese and French partners. The French partner (holding 50% of the capital of NIBL) was Credit Agricole Indosuez, a subsidiary of one the largest banking group in the world. The name of bank was changed to Nepal Investment Bank Ltd. Upon approval of bank's Annual General Meeting, Nepal Rastra Bank and Company Registrar's office.

Nepal Investment Bank was listed in NEPSE in 1987 A.D. Its authorized capital, issued capital and paid up capital is Rs. 4,00,00,00,000., Rs. 2,40,90,97,700. And Rs. 2,40,90,97,700 respectively in fiscal year 2009/10. NIB has a network of 41 branches and 67 ATMs throughout the country.

Table 4.4
Analysis of Total Dividend of NIBL

Fiscal Year	MPS	Cash dividend	Stock dividend	Total Dividend	Annual RRR
2006/2007	1729	5	25	617.5	0.8623
2007/2008	2450	7.5	33.33	470.12	0.6889
2008/2009	1388	20	-	20	-0.4253
2009/2010	705	25	-	25	-0.4741
2010/2011	515	25	25	163..5	-0.0376

Source: 5 F/Y AGM Reports of EBL and annex 2 and 3

According to table 4.4, NIBL has paid cash dividend each year from 2006/2007 to 2010/2011. The highest total dividend is paid in the F/Y 2006/2007 i.e. Rs. 617.5 and minimum in the F/Y 2008/2009 i.e. Rs.20. MPS of NIB is maximum in the F/Y 2007/2008 i.e. 2450 and minimum in the year 2010/2011 i.e. 515. In the same way, the annual rate of return is maximum i.e. 0.8623 in the year 2006/2007 while it is the least i.e.-0.0376 in the year 2010/2011.

Figure: 4.4
Year and Price Movement of NIBL

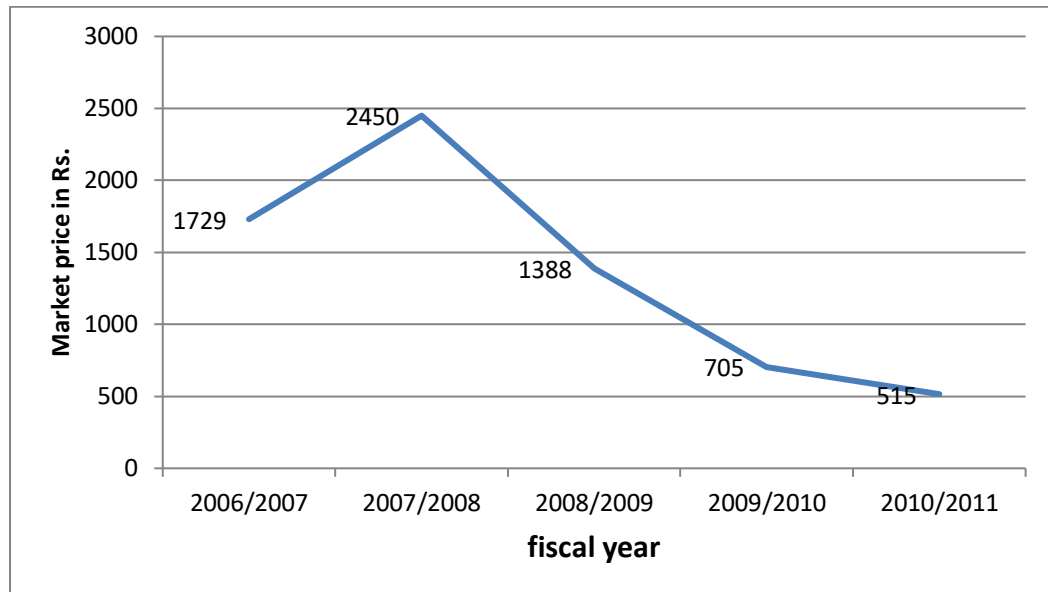


Figure 4.4 shows the trend line of Market price in Rs. of several years of NIBL. It can be seen that there is fluctuation of market price from year 2006/2007 to 2010/2011. The trend line shows the rapid growth in year 2007/2008 and starts decreasing then after. There is maximum price in the year 2007/2008 i.e. Rs. 2450. The trend line shows the current market price of NIBL still falling down at Rs.515 as on 2010/2011.

Figure 4.5
Annualized Rate of Return of NIBL

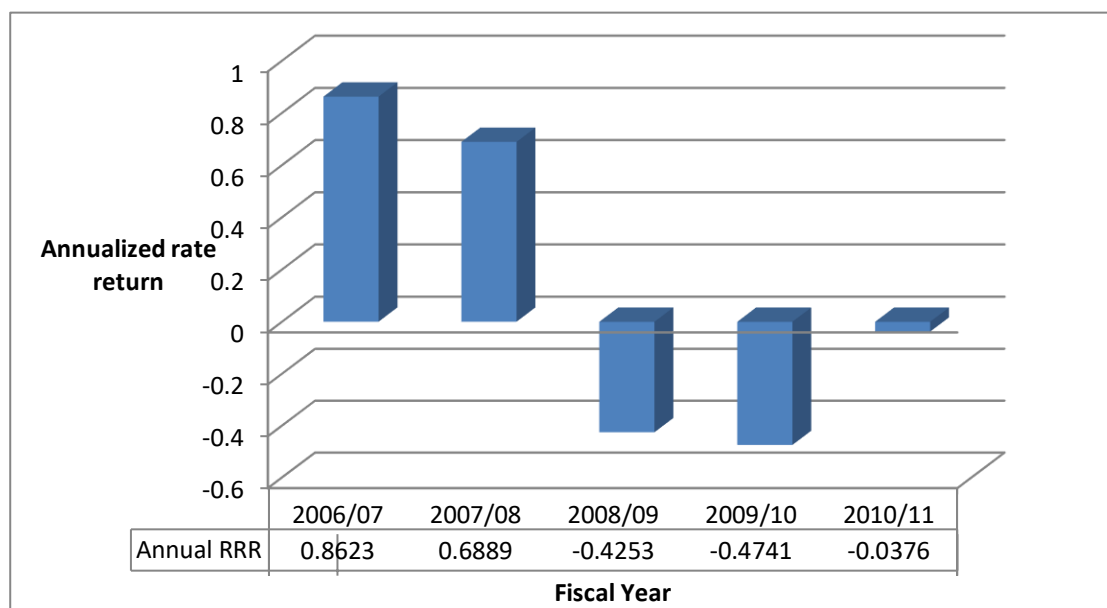


Figure 4.5 shows that the annual rate of return NIBL in several Fiscal years. The rate of return is maximum in 2006/2007 i.e. 0.8623 which shows the highest return profitable while the return is the lowest in the year 2010/2011 i.e. -0.059.

Table 4.5

Tabulation of calculated Expected Return, Standard Deviation and Coefficient of Variation of NIBL

Expected Rate of Return (R)	12.20%
Standard Deviation (σ)	62.25%
Co-efficient of Variation(C.V)	3.3913

Source: Annex 3, 4 & 5

According to table 4.5, the Expected Rate of Return of NIB is 18.40% with the standard deviation of 62.25% and Coefficient of Variation of NIB is 3.3913. This denotes that to get per unit return, the investor has to undergo with 3.3913 risk.

Table: 4.6

Tabulation of all results of Nepal Investment bank Limited

Correlation Co-efficient (r)	0.9332
Beta Co-efficient (β)	1.0752
Variance (σ^2)	0.3894
Systematic Risk	33.91%
Unsystematic Risk	5.02%
Proportion of systematic Risk in total Risk	87.09%
Proportion of Unsystematic Risk in total Risk	12.91%

Source: Annex 4, 5, 6, 7 & 8

According to table 4.6, the Beta coefficient of NIB is found 1.0752 which is more than one. Therefore it is aggressive types of assets. That mean stock of NIBL is more volatile than the industry. Beta is an indicator of systematic risk and that is found to be maximum. So, this is aggressive type of

asset and found to be more risky. Correlation coefficient between industry and Nib is 0.9332. This shows the positive relationship between industry and NIBL's stock. NIBL has 87.09% systematic risk which is diversifiable but it has 12.91 % unsystematic risk from the total risk.

4.3.2 Everest Bank Limited (EBL)

Everest Bank Limited (EBL) started its operations in 1994 with a view and objective of extending professionalized and efficient banking services to various segments of the society.

The authorized capital, issued capital, and paid-up capital of the bank at the end of the fiscal year 2009/10 were Rs.1,25,00,00,000., Rs.1,05,00,00,000., and Rs.1,03,04,67,300 Respectively. The current shareholders pattern of the bank constitutes of promoters holding 50% of the shares, 30% general public and 20% Punjab National Bank. In order to cater banking needs of large and well spread sections of the society, it has strived to establish 43 branches, 43ATMs, 19 extension counters and many correspondents across the globe. It is pioneer in introducing branchless banking (Everest Ghar-Dailo Banking Sewa) and mobile vehicle banking services, Everest Ghar-Dailo Banking Sewa, is a unique delivery channel in banking services to facilitate rural people in banking with the help of sophisticated technology. These branches' services can be used through point of Transaction (POT) machine by using smart cards. It is the first bank to introduce Any Branch Banking System (ABBS) in Nepal. At present, this very service is provided by its Baglung, Bhaktapur, Nepalgunj and Birtamod branches through 29 business correspondents.

Table: 4.7

Analysis of Total Dividend of EBL

Fiscal Year	MPS	Cash dividend	Stock dividend	Total Dividend	Annual RRR
2006/2007	2430	10	30	949.6	1.4508
2007/2008	3132	20	30	756.5	0.6002
2008/2009	2455	30	30	519	-0.0504
2009/2010	1630	30	30	139.4	-0.2793

2010/2011	1094	50	10	157.7	-0.2321
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Source: 5 F/Y AGM Reports of EBL and annex 2 and 3

According to table 4.7, EBL has paid cash dividend each year from 2006/2007 to 2010/2011. The highest total dividend is paid in the F/Y2006/2007 i.e. Rs. 949.6 and minimum in the F/Y 2010/2011 i.e. Rs.145.8. MPS of EBL is maximum in the F/Y 2007/2008 i.e. 3132 and minimum in the year 2010/2011 i.e. 1094. In the same way, the annual rate of return is maximum in the year 2006/2007 i.e. 1.4508 while it is least in the year 2010/2011 i.e. -0.2321.

Figure 4.6

Year and Price Movement of EBL

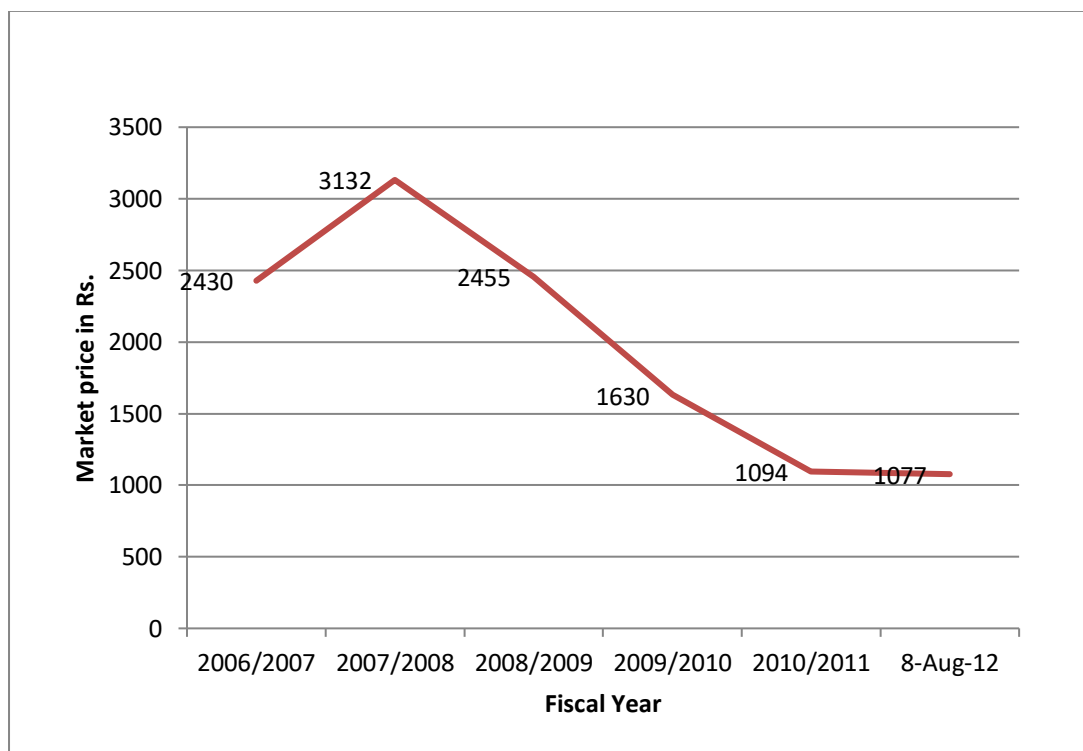


Figure 4.6 shows the trend line of Market price in Rs. of several years of EBL. It can be seen that there is fluctuation of market price from year 2006/2007 to 2010/2011. The trend line shows the growth in the year 2007/2008 then starts decreasing the market price of EBL. There is minimum price in the year 2010/2011 i.e. Rs.1094 and maximum in the year 2007/2008 i.e. Rs 3132. The trend line shows the current market price of EBL still falling down at Rs.1077 as on August 8, 2012.

Figure 4.7
Annualized Rate of Return of EBL

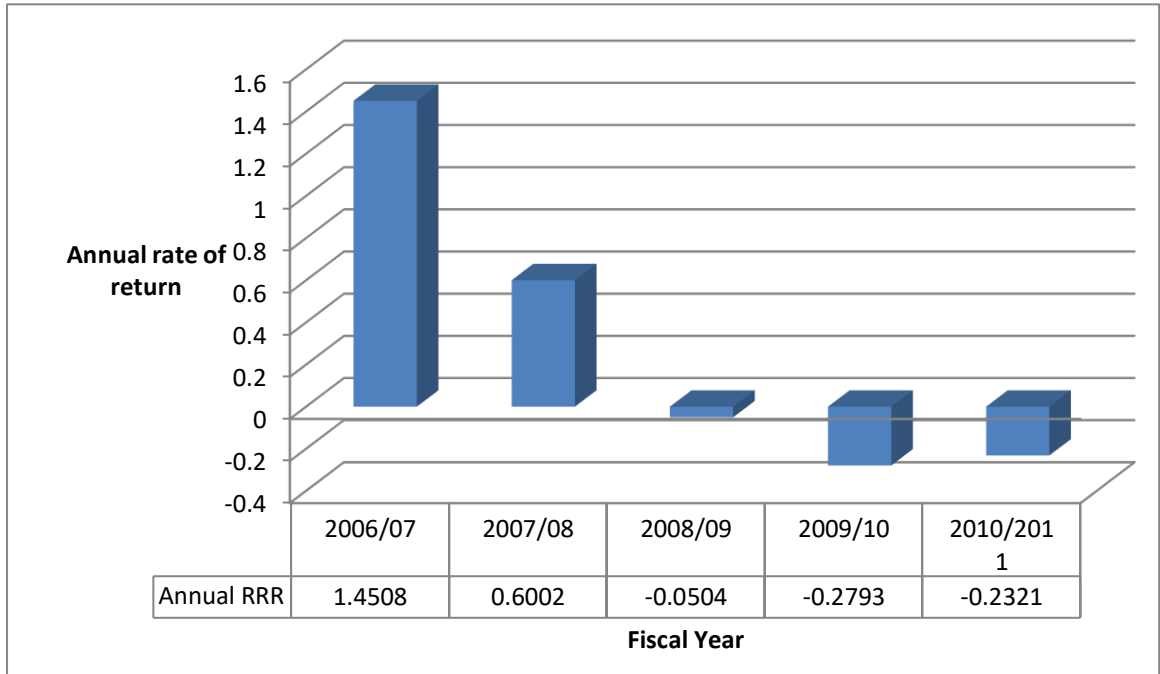


Figure 4.7 shows that the annual rate of return of EBL in several Fiscal years. The rate of return is maximum in 2006/2007 i.e. 1.4508 which shows the highest return profitable while the return is the lowest in the year 2009/2010 i.e. -0.2793.

Table 4.8
Tabulation of Expected Return, Standard Deviation and
Co-efficient of Variation if EBL

Expected Rate of Return (R)	29.78%
Standard Deviation (σ)	73.41%
Co-efficient of Variation (C.V)	2.4814

Source: annex 2, 3 & 4

According to table 4.8, The expected rate of return of EBL is 29.64% with the standard deviation of 73.54% and Coefficient of Variation of EBL is 2.4814. This denotes that to get per unit return, the investor has to undergo with 2.4814 risk.

Table 4.9**Tabulation of all results of Everest Bank Limited**

Correlation Coefficient (r)	0.7980
Beta Coefficient (β)	1.0834
Variance (σ^2)	0.5408
Systematic Risk (SR)	34.43%
Unsystematic Risk (USR)	19.65%
Proportion of systematic Risk in total Risk	63.66%
Proportion of Unsystematic Risk in total Risk	36.34%

Source: annex 4, 5, 6, 7 & 8

According to table 4.9, the Beta Co-efficient of EBL is found 1.0834 which is more than one. So, it is known as aggressive assets. That means the stock of EBL is more volatile than the industry. Beta coefficient is an index of systematic risk. The assets are found to be more risky. Correlation coefficient between the industry and EBL is 0.7980. This shows the positive relationship between the industry and EBL's stock. EBL has 34.43% systematic risk which is diversifiable but it has 19.65% unsystematic risk from the total risk.

4.3.3 Standard Chartered Bank Nepal Limited (SCBL)

Standard Chartered Bank Nepal Limited has been in operation in Nepal since 1987 when it was initially registered as a joint venture operation. Today, the bank is an integral part of standard Chartered Group having an ownership of 75% in the company with 25% shares owned by the Nepalese public.

Table 4.10
Analysis of Total Dividend of SCBL

Fiscal Year	MPS	Cash dividend	Stock dividend	Total Dividend	Annual RRR
2006/2007	5900	80	50	3495	1.4887
2007/2008	6830	80	50	3085	0.6805
2008/2009	6010	80	50	1719.5	0.1317
2009/2010	3279	55	15	325	-0.4003
2010/2011	1800	70	10	256.9	-0.3727

Source: 5 F/Y AGM Reports of SCBL and annex 2 and 3

According to table 4.10, Standard Chartered Bank Nepal Limited has paid cash dividend each year from 2006/2007 to 2010/2011. The highest dividend is paid in the F/Y 2006/2007 i.e. Rs 3495 and minimum in the F/Y 2010/2011 i.e. 256.9. MPS of SCBNL is maximum in the F/Y 2007/2008 i.e. Rs. 6830 and minimum in the year 2010/2011 i.e. Rs 1800. In the same way annual rate of return is high in the year 2006/2007 while it is least in the F/Y 2009/2010.

Figure 4.8
Year and Price movement of SCBL

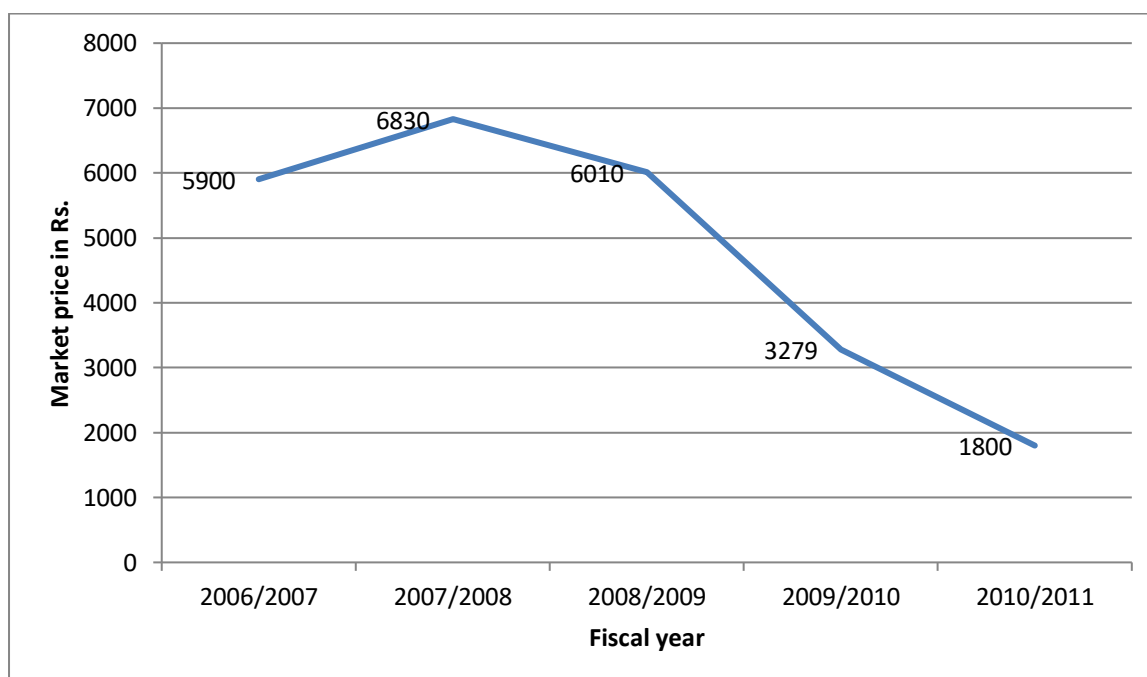


Figure 4.8 shows the trend line of the market price in several years of SCBL. It shows the great fluctuations of market price from F/Y 2006/2007 to 2010/2011. There is

maximum price of Rs. 6830 in the year 2007/2008 while it falls minimum to Rs. 1800 in the F/Y 2010/2011.

Figure 4.9
Realized Rate of Return of SCBL

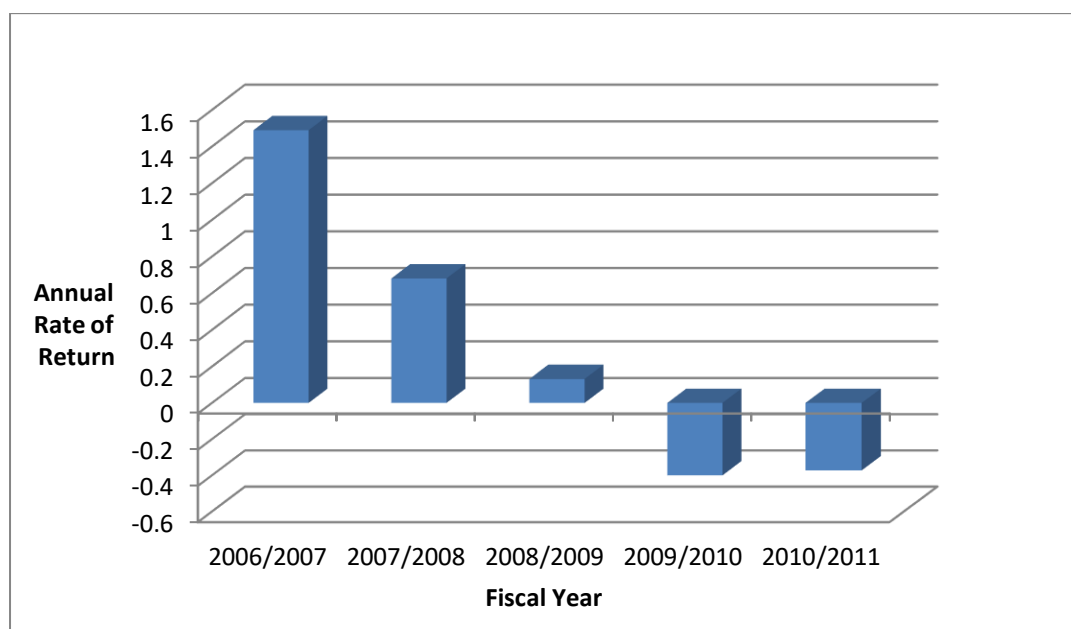


Figure 4.9 shows that annualized rate of return of SCBL in the different sample periods. The rate of return is positive in 3 fiscal years while negative in last two years. The rate of return is maximum in the F/Y 2006/2007 i.e. 1.4887 which clearly shows that investors earned the highest profit in that year while minimum rate of return is - 0.4003 in the year 2009/2010.

Table 4.11
Tabulation of Expected Return, Standard Deviation and
Co-efficient of Variation of SCBL

Expected Rate of Return (R)	30.56%
Standard Deviation (σ)	79.52%
Co-efficient of Variation (C.V)	2.6124

Source: annex 2, 3 & 4

According to table 4.10 the expected rate of return of SCBL is 30.47% with the standard deviation of 79.60% and its co-efficient of variation is 2.6124. it denotes that to get per unit of return, 2.6124 risk must be added.

Table 4.12

Tabulation of all results of Standard Chartered Bank Limited

Correlation Coefficient (r)	0.7998
Beta Coefficient (β)	1.1755
Variance (σ^2)	0.6336
Systematic Risk (SR)	40.53%
Unsystematic Risk (USR)	22.83%
Proportion of systematic Risk in total Risk	63.97%
Proportion of Unsystematic Risk in total Risk	36.03%

Source: annex 4, 5, 6, 7 & 8

According to table 4.11, the Beta Coefficient of SCBL is found 1.1755 which is greater than one. Therefore, it is aggressive type of assets. That means stock of SCBL is more volatile than the industry. Beta is an indicator or index of systematic risk. The assets are found to be more risky. Correlation coefficient between the industry and SCBL is 0.7998. This shows the positive relationship between the industry and EBL's stock. EBL has 40.53% systematic risk which is diversifiable but it has 22.83% unsystematic risk from the total risk.

4.4 Comparative Analysis of Sample Commercial bank Based on Risk and Return

The study is made on the 3 sampled banks i.e. Standard Chartered Bank Limited, Everest Bank Limited and Nepal Investment Bank Limited. Here, the comparative analysis of 3 commercial sampled banks in term of Expected Rate of Return is done so as to attain the goal of the study.

Table 4.13**Expected Rate of Return of 3 Commercial Sampled Banks**

S. No.	Banks	Expected Rate of Return (R)
1.	NIBL	12.28%
2.	EBL	29.78%
3.	SCBL	30.56%

Source: annex 3

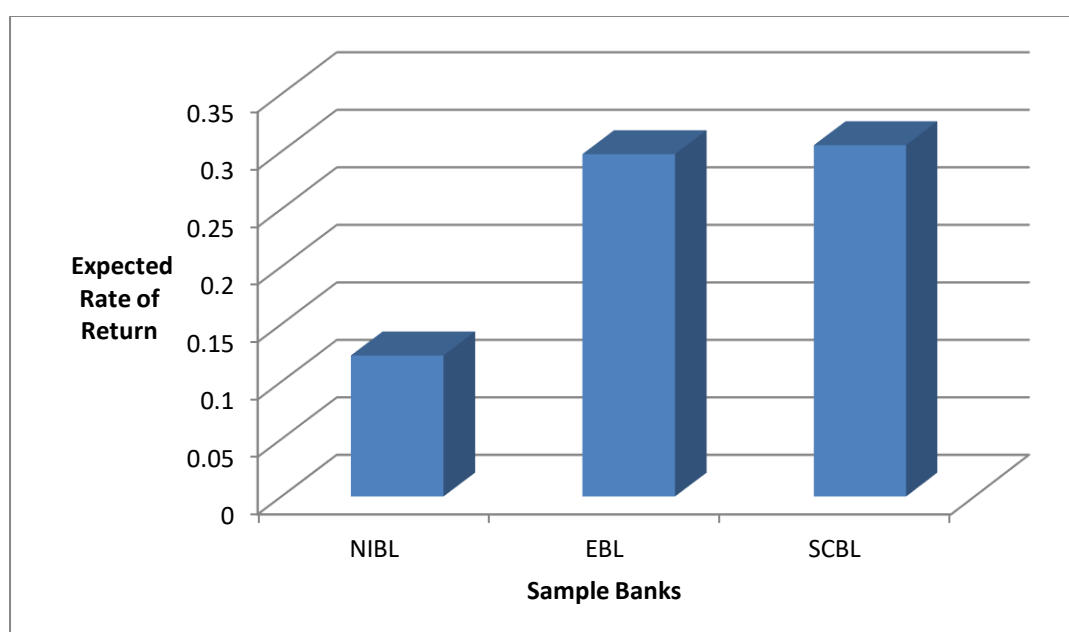
Figure 4.10**Expected Rate of Return of Sampled Banks**

Figure 4.10 and table 4.12 shows the Expected Rate of Return of all 3 commercial sampled banks. The SCBL has the highest expected return i.e 30.56%. Those investors, who have invested in SCBL stock for the period 2006/07 to 2010/11, they have earned 30.47% expected return and NIBL has the lowest expected return i.e. 10.30%. Overall, all investors get profit from banking assets.

The following table shows the expected returns, standard deviation and co-efficient of variation of all the sampled banks in various fiscal years under study.

Table 4.14

**Expected returns, Standard Deviation and Co-efficient of variation
of the sampled banks.**

S.No.	Banks	Expected Rate of Return (R)	Standard Deviation(σ)	C.V
1.	NIBL	12.28%	62.25%	6.3933
2.	EBL	29.78%	73.54%	2.4814
3.	SCBL	30.56%	79.60%	2.6124

Source: annex 3, 4 & 5

Table 4.13 shows the comparison of Expected Returns, Standard Deviation and the Co-efficient of variation between 3 Commercially sampled banks. The statistical results imply that over the study period, SCBL has the highest expected return i.e. 30.47%. The lowest expected return is 10.30% which is observed in NIB. Based on Standard deviation (risk) securities of sample banks, the standard deviation of the return on the shares of NIBL is the lowest one. Looking at the coefficient of variation, the share of the EBL has the lowest risk per unit of return; the highest is at NIBL. Investment in EBL is the most desirable among 3 because for 1 unit of return, investors should bear only 2.4814 unit of risk.

4.5 Market Sensitivity (Beta Co-efficient)

Market sensitivity of the stock is explained by its beta coefficient. Beta Co-efficient (β) measures how much systematic risk on the assets has. It measures the responsiveness of a security to a movement in the market and shows the volatility of the stock which cannot be diversifiable. Beta coefficient of the market is always equal to 1.

Table 4.15

Beta Co-efficient of 3 commercial banks

S. No.	Sampled Banks	Beta (β)	Types of stock
1.	NIBL	1.1584	Aggressive
2.	EBL	1.0834	Aggressive
3.	SCBL	1.1755	Aggressive

Source: annex 6

Table 4.14 shows the beta coefficient of 3 sampled banks which are greater than 1. These are highly sensitive with industry as the beta is positive. It means if the banking sector return rises, the stock return of all three sampled banks i.e. NIBL, EBL and SCBL will also increase. If the banking sector return rises by 1%, then the stock return of NIBL will increase by 1.1584%, EBL will increase by 1.0834 and SCBL will increase by 1.1755% and vice versa. SCBL has the highest beta coefficient with the banking sector. That means its stock moves is more sensitive than other 2 sampled banks' beta. The EBL has the lowest beta coefficient with banking sector which means that its stocks are less sensitive than others. Thus, comparing the beta coefficient of 3 commercial banks, we can say that the stock of SCBL is more risky and the stock of EBL is less risky than the banking sector.

4.6 Analysis of Systematic and Unsystematic Risk of Sampled Banks

Total risk or total variability of returns of an asset is measured by variance and standard deviation. The total risk can be divided into two parts: diversifiable and undiversifiable risks.

Diversifiable Risk:

Diversifiable risk is also known as unsystematic risk. This type of risk is unique to an organization and can be largely eliminated by holding a diversified portfolio of investment. Diversifiable risk occurs through the events like, labour strikes, management errors, inventions, advertising campaigns, unavailability of raw materials etc. More precisely, the unsystematic risk is unique to each firm; an efficiently

diversified portfolio of securities can successfully eliminate most of the unsystematic risk inherent in individual securities.

Undiversifiable Risk:

Undiversifiable Risk is also known as systematic risk. This risk is that portion of total variability in return caused by market factors (also called market risk) that simultaneously affect the prices of all securities. Undiversifiable risk occurs due to the changes in the macro-economic factors like interest rate, inflation, investor's expectation, GDP etc. Undiversifiable risk is that part of the total risk that cannot be eliminated by allocating capital to a diversified portfolio of investments.

Table 4.16
Partition of SR and USR in Total Risk of 3 sample Banks

S. No.	Sampled Banks	Portion of SR (%)	Portion of USR (%)
1.	NIBL	87.34	12.66
2.	EBL	63.66	36.34
3.	SCBL	63.97	36.03

Source: annex 8

Table 4.15 shows that partition of Total risk into two part i.e. systematic risk and unsystematic risk, EBL stock has lowest SR and more portion of USR which shows its poor management capability because unsystematic risk arises from internal factor which can be eliminated. All 3 sampled banks have more SR than USR. The table shows clearly that all sampled commercial banks are efficient enough to manage and diversify its internal affairs and hence their unsystematic risk is less compared to systematic risk but because of market risk or macro-economic factors like inflation, interest rate, severe political instability, etc. their systematic risk which cannot be diversified, is more. In terms of internal management capability, NIBL is the best among 3 sampled banks because its unsystematic risk is least i.e. only 12.66%.

Figure 4.11
Partition of SR and USR in Total Risk of 3 sample Banks

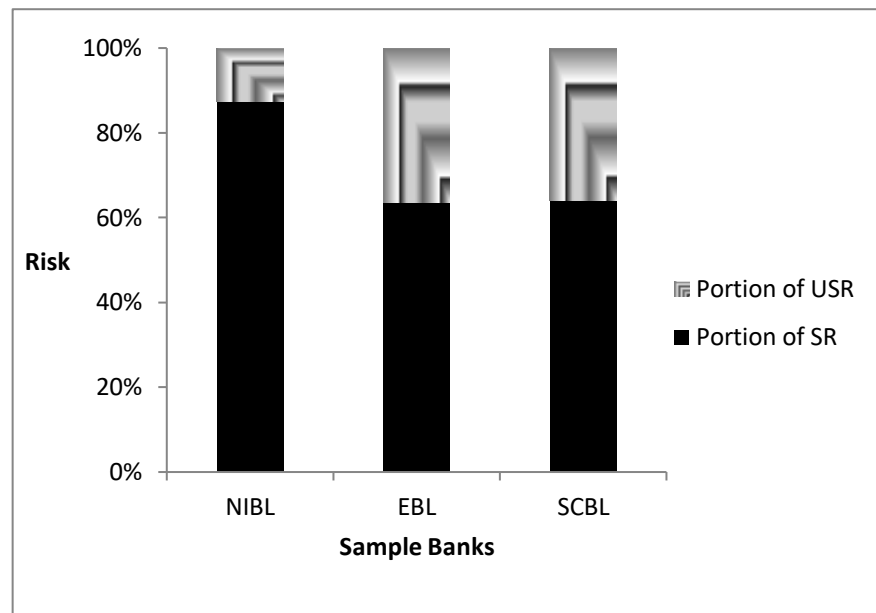


Figure 4.11 shows that selected three sampled banks have greater SR than USR. The Unsystematic risk can be eliminated from portfolio creation at investment but systematic risk cannot be diversifiable. EBL's stock has the lowest SR i.e. 63.66% and greatest USR but NIBL has the greatest SR i.e. 87.34% with the lowest USR i.e. 12.66%.

4.7 Analysis about Creating Optimal Portfolio

The portfolio is the holding of securities and investment in different financial assets. Portfolio management is related to efficient portfolio investment in financial assets. If portfolio is being constructed, they can reduce unsystematic without losing considerable return. The portfolio analysis is performed to develop a portfolio that has the maximum return at whatever level of risk an investor thinks appropriate. Therefore, we need to extend our analysis about creating an optimal portfolio. The study takes into consideration of 3 portfolio creation between two banks separately: NIBL and SCBL, NIBL and EBL and EBL and SCBL.

Table 4.17
Tabulation of Portfolio Risk and Return on Different
Weight Invested in NIBL and SCBL

Investment proportion in NIBL (WA)	Investment proportion in SCBL (WB)	Return Portfolio (Rp)	Standard Deviation Portfolio (σp)
1	0	0.1184	0.6240
0.75	0.25	0.1649	0.6485
0.50	0.50	0.2116	0.6868
0.25	0.75	0.2581	0.7367
0	1	0.3047	0.7960

Source: annex 10

According to table 4.16, we get return portfolio and standard deviation portfolio from investing different proportions in NIBL and SCBL. The maximum return portfolio is 30.47%, if all investment is made into SCBL. The minimum standard deviation is 67.13% if all investment is made on the NIBL stock. Once we know that which securities are to be included in the optimal portfolio we must calculate the percent to be invested in each security.

For optimal portfolio, the percentage invested in each security is calculated by using the following formula:

Let,

A= NIBL, B= SCBL

$$W_A = \frac{\sigma_B^2 - Cov(R_A, R_B)}{\sigma_A^2 + \sigma_B^2 - 2Cov(R_A, R_B)}$$

$$W_B = 1 - W_A$$

Where,

WA= weighted of NIBL that minimizes portfolio risk of stock A & B.

σA = Standard deviation of stock NIBL

σB = Standard deviation of stock SCBL

Cov(RA, RB)= Covariance between NIBL and SCBL

Table 4.18

**Investment Proportion,
Return Portfolio and Standard Deviation between NIBL and SCBL**

Weight of NIBL	Weight of SCBL	Return Portfolio (Rp)	Standard deviation (σ)
72.23%	27.77%	17.37%	58.74%

**Investment Proportion,
Return Portfolio and Standard Deviation between NIBL and EBL**

Weight of NIBL	Weight of EBL	Return Portfolio (Rp)	Standard deviation (σ)
78.16%	21.84%	16.10%	61.21%

**Investment Proportion,
Return Portfolio and Standard Deviation between EBL and SCBL**

Weight of EBL	Weight of SCBL	Return Portfolio (Rp)	Standard deviation (σ)
68.74%	31.26%	30.02%	72.71%

Source: annex 11

Table 4.17 shows that the return Portfolio and Standard deviation portfolio. If 72.23% investment made in NIBL and 27.77% in SCBL, the portfolio return is 17.37% and standard deviation is 58.74%. Similarly, if 78.16% is invested in NIBL and 21.84% in EBL, the portfolio return is 16.10% and standard deviation is 61.21%. The last portfolio combination of the study is between EBL and SCBL Bank. If investment is made of 68.74% in EBL and 31.26% in SCBL, its portfolio return is 30.02% and standard deviation is 72.71%. This portfolio combination yields the highest portfolio return i.e. 30.02%. In comparison to three portfolio combination created above, the best portfolio is made between EBL and SCBL.

In conclusion, to be optimal portfolio 68.74% should be invested in EBL and 31.26% should be invested in SCBL that yield the optimal portfolio return as 30.02% with risk or standard deviation of 72.71%.

Table 4.19
Tabulation of Major Findings

Result \ Bank	NIBL	EBL	SCBL	Remarks
<i>Expected Rate of Return (R)</i>	12.28%	29.78%	30.56%	<i>Highest Return = SCBL</i> <i>Lowest Return = NIBL</i>
<i>Standard Deviation (σ)</i>	62.25%	73.41%	79.52%	<i>Highest Risk = SCBL</i> <i>Lowest Risk = NIBL</i>
<i>Coefficient of Variation (C.V.)</i>	3.3913	2.4814	2.6124	<i>Highest C.V=NIBL</i> <i>Lowest C.V= SCBL</i>
<i>Correlation of coefficient (ρ_{ij})</i>	0.9332	0.7980	0.7998	<i>Highest Correlation = NIBL</i> <i>Lowest Correlation = EBL</i>
<i>Beta Coefficient (β)</i>	1.0752	1.0834	1.1755	<i>Highest Beta = SCBL</i> <i>Lowest Beta = NIBL</i>
<i>Proportion of SR</i>	87.09%	63.66%	63.97%	<i>Highest SR = NIBL</i> <i>Lowest SR = EBL</i>
<i>Proportion of USR</i>	12.91%	36.34%	36.03%	<i>Highest USR = EBL</i> <i>Lowest USR = NIBL</i>

Source: annex 3, 4, 5, 6 & 8

4.8 Major Findings of the Study

On the basis of the above analysis and presentation of data, the major finding of the study is as follows:

- SCBL has the highest rate of return with 30.56% while it is the lowest of 12.28% in case of NIBL. The EBL has the moderate rate of return i.e. 29.78%.
- SCBL has the highest risk of 79.52% or standard deviation while NIBL is the least risky as it contains 62.25% and EBL stock contain of 73.41% risk.
- Co-efficient of Variation Analysis has resulted that the highest risk id borne by investor of NIBL where for one unit of return, the risk is

3.3913 while it is the lowest for EBL i.e. 2.4814 and moderate of 2.6124 of SCBL stock.

- All three sampled banks' relation with banking index shows positive relation. In terms of correlation of co-efficient, NIBL has the highest positive relation i.e. 93.32% and EBL has the minimum positive relation i.e. 79.80% with the industry and business index.
- All the 3 sample commercial banks have Unsystematic Risk which can be diversifiable. the highest USR is 36.03% of SCBL where the USR of NIBL is 12.91%. the highest SR is 87.09% of NIBL from total risk whereas the lowest of EBL is 63.66%.
- SCBL, the first and EBL, the second, both are aggressive (i.e. market sensitive), to the market changes as evaluated by the highest beta co-efficient of 1.1755 of SCBL, 1.0834 of EBL as second and 1.0752 of NIBL as third in beta co-efficient.
- If 72.23% investment is made in NIBL and 27.77% in SCBL, the portfolio return is 17.37% and standard deviation is 58.74%. Similarly, if 78.16% is invested in NIBL and 21.84% in EBL, the portfolio return is 16.10% and standard deviation is 61.21%. And the last portfolio combination of the study is between SCBL and EBL bank. If investment of 68.74% is made on EBL and the rest i.e. 31.26% in SCBL, its return portfolio is 30.02% and 72.71% standard deviation. In comparison to three portfolios so created above, the best portfolio so far made is between SCBL and EBL.
- For optimal portfolio, 68.74% should be invested in EBL and rest 31.26% should be invested in SCBL having the optimal portfolio return as 30.02% with standard deviation of 72.71%.

In conclusion, the major finding of this very study is of course! about optimal portfolio creation between two assets i.e. EBL and SCBL.

CHAPTER- V

SUMMARY, CONCLUSION & RECOMMENDATION

The study is focus on the risk and return relationship and portfolio creation of the sample commercial banks. Core of the study is all what this chapter deals with. The effort that I posses has been utilized to present summary of major findings and conclusion drawn from the analysis. Last but not the least, it proceeds with the recommendations.

5.1 Summary

Commercial banks are major financial institutions, which occupy quite an important place in the framework of every economy because they provide capital for the development of industry, trade and business and other resources deflect sector investing the saving collected as deposit from public. Commercial banks held dominant share on the major balance sheet of financial system. They provide various services to their customers facilitating their economic and social life. Their top most priority is to maintain and deliver their superior financial performance. That's why; they are the most important ingredients for integrated and speedy development of the country. Therefore, a comparative and reliable banking system is essential to every country for the development and economic upliftment. Investorshold shares with an intention to earn money. Fiancé theory states that in every investment, there is some risk associated with it. While an investment in share has the prospectus of earning good return, it does have risk of losing large amount of money. A stock market can be risky place for investors if they fail to know how to protect themselves from potential losses.

The Present study has analyzed the risk and return parameter of the three sampled banks. The major objective of this research study is to analyze the risk and return of commercial banks. Risk and Return analysis is getting highlight in financial management. Investors have varying perceptions towards risk and enterprising activities. Investors would want their investment to yield favorable return. Hence they invest in those opportunities which have certain degree of risk associate with it.

Investors sacrifice their current cash in securities in anticipation of higher benefits than risk of free sector. An investor seeking common stock investment usually pays the price of stock based on his estimation about future dividends and growth in stock price. Three listed commercial banks in NEPSE have been taken as sample and their individual risk and return are calculated and analyzed as whole to find out the performance of each bank. While analyzing the risk and return, in brief review of literature for the study, has been made theoretical review and related studies to facilitate the study more accurate and effective. The study has also included research methodology to fulfill the objective of the present study. To analyze the standard deviation, beta coefficient, expected rate of return, coefficient of variation have been calculated on the basis of major findings. The result obtained from secondary data has been analyzed and conclusion has been derived regarding the risk and return of commercial banks from the investor's perspective. Based on the derived conclusion, a very useful recommendation has been made.

The study has adopted historical and analytical research design. The secondary are used in the study. Various financial tools are applied to analyze and present the data. The 3 sample banks are taken for the study. Data of the last five years are used for the study. Market price per share and dividend per share of the banks are used to analyze the risk and returns of the banks together with the commercial banking index. The portfolio is created using two sample banks i.e. NIBL and SCBL, NIBL and EBL and EBL and SCBL which are used for creating minimum variance portfolio. This study is divided into five chapters. The first chapter is Introduction chapter. Introduction chapter includes background of the study, history of development of banks, brief profile of the sample banks, statement of the problem, objectives of the study, focus of the study, significance of the study, limitation of the study and organization of the study. Second chapter is review of literature. This chapter includes conceptual review and review of thesis. Third chapter is research design. This chapter includes population and sample, sources of data, data collection techniques and analysis tools. Fourth chapter is presentation and analysis of data, this chapter shows related table, figure and describes about the study. Fifth, the last chapter is summary, conclusion and recommendation and bibliography, annexure presented at the end of the study.

5.2 Conclusion

Based on the analysis and interpretations of various financial indicators of all the sampled banks in chapter four, the following conclusions have been drawn which are summarized below:

Comparing the expected rate of return, SCBL has the highest rate of return with 30.56 %. While it is lowest of 12.28% of incase of NIBL. SCBL is also the highest risky asset having 79.52% of risk while NIBL is the least risky as it consists 62.25%. EBL is the best security in terms of co-efficient of variation while NIBL is the worst security in terms of CV. All 3 samples commercial banks' relation with banking Index shows positive relation. In terms of Co-relation of Co-efficient, NIBL has the highest positive relation i.e.93.32% and EBL has the minimum positive i.e. 79.90% with the industry investment. All the three sampled commercial banks have unsystematic risk which can be diversifiable. The highest USR is 36.34% of EBL where the USR of NIBL is 12.91%. NIBL consists of 87.09% of SR from the total risk whereas it's the lowest of EBL is 63.66%. SCBL and EBL, both are aggressive (i.e. market sensitive), to the market changes as evaluated by the highest beta co-efficient of 1.1755 and 1.0834 respectively but the assets of NIBL is the least defensive due to its lowest beta coefficient i.e. 1.0752. Considering the banking sectors risk and return, expected return of overall banking index is 4.73% which is the lowest from the expected return of all 3 sampled banks. The risk found in banking index is 54.16%, which represents the sensitivity on investment in the banking sectors.

If 72.23% investment is made in NIBL and 27.77% in SCBL, the portfolio return is 17.37% and standard deviation is 58.74%. Similarly, if 78.16% is invested in NIBL and 21.84% is invested in EBL, the portfolio return is 16.10% and its standard deviation is 61.21%. And the last portfolio combination of the study is EBL and SCBL bank. If investment of 68.74% is made on EBL and the rest i.e. 31.26% in SCBL, its return portfolio is 30.02% and standard deviation is of 72.71%. in comparison to three portfolios created above, the best portfolio so far made is between EBL and SCBL.

In conclusion, to be optimal portfolio, 68.74% should be invested in EBL and rest i.e. 31.26% should be invested in SCBL having the Optimal Portfolio return as 30.2% with risk or standard deviation of 72.71%. therefore this study has created optimal portfolio using two assets i.e. EBL and SCBL.

5.3 Recommendation

As a matter of fact, the study I have carried is result oriented, stating the problem to the recommendation for the solution, it of course! has made a complete cycle of a well-organized thesis. The very study I've undergone is definitely useful for me and it has provided a pleasant insight into what investment is and how it should be planned and I do hope that it might be useful for those who are concerned with the investment in commercial bank directly or indirectly. In the basis of the analysis and major findings of this study, the following recommendations are presented separately for investors and institutions to overcome the weakness and inefficiencies as well as to improve present stock performance.

1. All investors are recommended to make two analysis: technical and fundamental analysis. Technical analysis gives result from market trend and price movement of common stock and fundamental analysis gives result from companies internal and external, all information and also recommends about rules and regulations of countries which impact directly and indirectly the market price of common stock where investors going to invest.
2. Expected return recommends that banking sectors' common stocks are the best options for the investment as they are providing attractive rate of return.
3. Risk and Return play vital role in banking sectors. Therefore, it is suggested to analyze risk and return with sincerity before investing in this sector. According to the analysis of individual asset of bank, investors should invest their money in the asset of EBL due to the lowest C.V (i.e. 2.4814).and expected return of 29.78% with medium risk.

4. Investors must concern with the portion of systematic risk which arises from external factors which cannot be diversifiable but Unsystematic risk can be diversified. This type of risk arises from internal factor. Asset of NIBL has the highest 87.09% systematic risk from the total risk. So NIBL is recommended and EBL has the lowest systematic risk but the highest unsystematic risk that shows weakness in management to deal with internal factors which have created unsystematic risk.
5. Analysis of personal risk, attitude, needs and requirements will be helpful before making an investment in stock market. Investors should make several discussions with stock holders before reaching in the decision. Investors should make their decision on the basis of reliable information rather than the imagination and rumors.
6. Brokers firms are good way to exchange and share investment ideas. Mutual fund is worth for people with little interest in investment. Investors are recommended to share experiences, ideas and take view of expert before investing in stocks of individual banks.
7. Investors need to diversify their fund to reduce the risk. Proper construction of portfolio will reduce considerable potential loss, which can be defined in terms of the risk but portfolio construction is dynamic and difficult job. Thus, investors should select the stock that have higher return and negative correlation or near to zero correlation between different banks and sectors. The portfolio revision is also necessary at certain interval time to get best return at lower risk. According to the study, created portfolio gives investor lower risk and considerable return. In this study, an optimum portfolio using two assets between EBL and SCBL is created. Investors should apply creating optimum portfolio before making investment strategy. Optimal portfolio gives maximum return in considerable risk.
8. Government should amend the rules and regulations regarding the stock market in time-to-time that insures the protection of an individual investors' right. Such amendment is essential to make the act effectiveness with the

pace of time and need to follow the implementation and supervision of rules and regulation to make sure the objective is achieved.

9. Before making an investment decision, it is recommended to visit and discuss with investment companies, with individual expert and researchers. Investors should make their investment decision because of reliable information or financial parameters of the related bank rather than imagination rumor.
10. The financial institutions and companies should provide the real financial statements. The data provided by NEPSE and the company itself are different in some cases. The other thing, there is also a great difference between the audited and unaudited financial reports of the financial institutions. It creates confusion to the potential investors about the actual financial condition of the company. So, they should only publish their audited annual statements.
11. It is recommended that for future researchers, they can prepare new thesis based on this study and they can get advance result by increasing sample size and study period.
12. It is recommended not to follow trend of buying and selling of the securities when it is going up and down because it is a risky strategy. The decision be based on fact and figures rather use intuition and go blindly.
13. Government's rules and regulation directly impact the market. So, every investor is suggested that they should make analysis about rules and regulations of government which affect the market movement.
14. Other investment alternatives availability also affects the market. Commodity market, real estate and gold are the investment alternatives. So, all the investors are recommended to make analysis about all alternative investment which affects the market return.
15. It is further recommended not to completely base on this very study as it only provides inferences based on five years data of selected 3 commercial

banks and only represents the small proportion of the market. But it does only provide the basis for logical judgment.

16. The financial institutions are recommended to invest the sum in productive sectors rather than housing and building apartment. In order to gauge the satisfaction level of the customers and to continuously improve the way they work, regular feedback and surveys which provide valuable insights about their product and services, should be undertaken. I do hope that this will of course! enable them to improvise and introduce various policies, procedures, products and value added services that help to meet their customers' needs.
17. Last but not the least, it is recommended to all the investors not to run after the financial institutions which provide maximum interest rate of return only. Some of them running at bad times. So, all the investors are recommended to invest in those institutions which guarantee the investors' investment though provided with low return. It is really a high time to focus on "Lower the risk, lower the return rather than higher the risk, higher the return".

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Annexure

Annex-1

Calculation of Annual Rate of Return of Commercial Banking Index

Fiscal Year	Index (in point)	Annual Rate from Banking Sector (R)
2006/2007	683.95	0.4627
2007/2008	963.36	0.7871
2008/2009	749.10	-0.3243
2009/2010	477.73	-0.4086
2010/2011	362.85	-0.2806
		$\Sigma R = 0.2363$

Expected Rate of Return = $\Sigma R / N = 0.2363 / 5 = 0.0473$ or 4.73%

Calculation of Annual rate of Return from banking index which is calculated with the help of following formula:

$$R = \frac{Dt + (Pt - pt - 1)}{pt - 1}$$

Fiscal Year

2006/2007 = $(639.93 - 437.49) / 437.49 = .4627$ or 46.27%

2007/2008 = $(1143.62 - 639.93) / 639.93 = .787$ or 78.70%

2008/2009 = $(772 - 1143.62) / 1143.62 = -0.325$ or -32.5%

2009/2010 = $(456.93 - 772.7) / 772.7 = -0.408$ or -40.8%

2010/2011 = $(328.70 - 456.93) / 456.93 = -0.2806$ or -28.06%

Calculation of $(R - R)^2$ of banking sector

fiscal year	return(R)	(R-R)	(R-R) ²
2006/2007	0.4627	0.4154	0.172557
2007/2008	0.7871	0.7398	0.547304
2008/2009	-0.3243	-0.3716	0.138087
2009/2010	-0.4086	-0.4559	0.207845
2010/2011	-0.2806	-0.3279	0.107518
			$\Sigma (R - R)^2 = 1.173311$

$$\text{Standard Deviation} = \sqrt{\frac{\Sigma(R-R)^2}{N-1}} = \sqrt{1.1733/(5-1)} = 0.5416 \text{ or } 54.16\%$$

-

$$\text{Coefficient of Variation (C.V.)} = \sigma/R = 0.5416/0.0473 = 11.45$$

Annex – 2

Calculation of Total Dividend

Total Dividend in Rs. = Cash Dividend + % of stock dividend * Next year's MPs

Nepal Investment Bank Limited (NIBL)

Fiscal Year	MPS	Cash dividend	Stock dividend	Total Dividend
2006/2007	1729	5	25	5+25% * 2450 = 617.5
2007/2008	2450	7.5	33.33	7.5+33.33% * 1388=470.12
2008/2009	1388	20	-	20+0%*705 = 20
2009/2010	705	25	-	25+0%*515=25
2010/2011	515	25	25	25+25% * 554=163.5

Everest Bank Limited (EBL)

Fiscal Year	MPS	Cash dividend	Stock dividend	Total Dividend
2006/2007	2430	10	30	10+30% * 3132 = 949.6
2007/2008	3132	20	30	20+30% * 2455 =756.5
2008/2009	2455	30	30	30+30% * 1630 =519
2009/2010	1630	30	30	30+30% * 1094 =139.4
2010/2011	1094	50	10	50+10% *1077 = 157.7

Standard Chartered Bank Limited(SCBL)

Fiscal Year	MPS	Cash dividend	Stock dividend	Total Dividend
2006/2007	5900	80	50	80+ 50% *6830=3495
2007/2008	6830	80	50	80+50% * 6010=3085

2008/2009	6010	80	50	80+50% * 3279=1719.5
2009/2010	3279	55	15	55+15% * 1800 =325
2010/2011	1800	70	10	70+10% * 1869 =256.9

Annex-3
Detail Calculation of R for each F/Y of NIBL

Fiscal Year	MPS	Total Dividend	Annual RRR
2006/2007	1729	617.5	0.8623
2007/2008	2450	470.12	0.6889
2008/2009	1388	20	-0.4253
2009/2010	705	25	-0.4741
2010/2011	515	163..5	-0.0376
			Σ R = 0.6142

Expected Rate of Return (\bar{R}) = $\Sigma R / N = 0.6142/5 = 0.1228$ or 12.28%

Where, Annual Rate of Return is calculated by using the following formula:

$$R = \frac{Dt + (Pt - pt - 1)}{pt - 1}$$

The detail calculation of R for each F/Y of NIBL

$$F/Y \ 2006/2007 = \frac{617.5 + (1729 - 1260)}{1260} = 0.8623$$

$$F/Y \ 2007/2008 = \frac{470.12 + (2450 - 1729)}{1729} = 0.6889$$

$$F/Y \ 2008/2009 = \frac{20 + (1388 - 2450)}{2450} = -0.4253$$

$$F/Y \ 2009/2010 = \frac{25 + (705 - 1388)}{1388} = -0.4741$$

$$F/Y \ 2010/2011 = \frac{163.5 + (515 - 705)}{705} = -0.03761$$

Everest Bank Limited (EBL)

Fiscal Year	MPS	Total Dividend	Annual RRR
2006/2007	2430	949.6	1.4508

2007/2008	3132	756.5	0.6002
2008/2009	2455	519	-0.0504
2009/2010	1630	139.4	-0.2793
2010/2011	1094	157.7	-0.02321
			$\Sigma R = 1.4892$

Expected Rate of Return (\bar{R}) = $\Sigma R / N = 1.4892/5 = 0.2978$

Where, Annual Rate of Return is calculated by using the following formula:

$$R = \frac{Dt + (Pt - pt - 1)}{pt - 1}$$

The detail calculation of R for each F/Y of EBL

$$F/Y \ 2006/2007 = \frac{949.6 + (2430 - 1379)}{1379} = 1.4508$$

$$F/Y \ 2007/2008 = \frac{756.5 + (3132 - 2430)}{2430} = 0.6002$$

$$F/Y \ 2008/2009 = \frac{519 + (2455 - 3132)}{3132} = -0.0504$$

$$F/Y \ 2009/2010 = \frac{139.4 + (1630 - 2455)}{2455} = -0.2793$$

$$F/Y \ 2010/2011 = \frac{157.7 + (1094 - 1630)}{1630} = -0.2321$$

Standard Chartered Bank Limited (SCBL)

Fiscal Year	MPS	Total Dividend	Annual RRR
2006/2007	5900	3495	1.4887
2007/2008	6830	3085	0.6805
2008/2009	6010	1719.5	0.1317
2009/2010	3279	325	-0.4003
2010/2011	1800	256.9	-0.3727
			$\Sigma R = 1.5279$

Expected Rate of Return (\bar{R}) = $\Sigma R / N = 1.5279/5 = 0.3056$

Where, Annual Rate of Return is calculated by using the following formula:

$$R = \frac{Dt + (Pt - pt - 1)}{pt - 1}$$

The detail calculation of R for each F/Y of SCBL

$$\text{F/Y } 2006/2007 = \frac{3495 + (5900 - 3775)}{3775} = 1.4887$$

$$\text{F/Y } 2007/2008 = \frac{3085 + (6830 - 5900)}{5900} = 0.6805$$

$$\text{F/Y } 2008/2009 = \frac{1719.5 + (6010 - 6830)}{6830} = 0.1317$$

$$\text{F/Y } 2009/2010 = \frac{325 + (3279 - 6010)}{6010} = -0.4003$$

$$\text{F/Y } 2010/2011 = \frac{256.9 + (1800 - 3279)}{3279} = -0.3727$$

Annex-4

Calculation of $(R - \bar{R})^2$ of sample Bank

NIBL

Fiscal Year	R	$(R - \bar{R})$	$(R - \bar{R})^2$
2006/2007	0.8623	0.7395	0.5469
2007/2008	0.6889	0.5661	0.3205
2008/2009	-0.4253	-0.4253	0.3004
2009/2010	-0.4741	-0.4741	0.3563
2010/2011	-0.0376	-0.0376	0.0257

$$\begin{aligned} \text{Standard Deviation } (\sigma) &= \sqrt{\frac{\Sigma(R - \bar{R})^2}{N - 1}} \\ &= \sqrt{\frac{1.5498}{4}} \\ &= 0.6225 \end{aligned}$$

Calculation of $(R - \bar{R})^2$ of sample Bank

EBL

Fiscal Year	R	$(R - \bar{R})$	$(R - \bar{R})^2$
2006/2007	1.4508	1.153	1.329409
2007/2008	0.6002	0.3024	0.091446
2008/2009	-0.0504	-0.3482	0.121243

2009/2010	-0.2793	-0.5771	0.333044
2010/2011	-0.02321	-0.5299	0.280794

$$\begin{aligned}
 \text{Standard Deviation } (\sigma) &= \sqrt{\frac{\sum(R-\bar{R})^2}{N-1}} \\
 &= \sqrt{\frac{2.1558}{4}} \\
 &= 0.7341
 \end{aligned}$$

Calculation of $(R - \bar{R})^2$ of sample Bank

SCBL

Fiscal Year	R	$(R - \bar{R})$	$(R - \bar{R})^2$
2006/2007	1.4887	1.1831	1.399726
2007/2008	0.6805	0.3749	0.14055
2008/2009	0.1317	-0.1739	0.030241
2009/2010	-0.4003	-0.7059	0.498295
2010/2011	-0.3727	-0.6783	0.460091

$$\begin{aligned}
 \text{Standard Deviation } (\sigma) &= \sqrt{\frac{\sum(R-\bar{R})^2}{N-1}} \\
 &= \sqrt{\frac{2.5295}{4}} \\
 &= 0.7952
 \end{aligned}$$

Annex- 5

Calculation of Co-efficient of Variation of Sampled Banks

$$\text{Co-efficient of Variation (C.V.)} = \frac{\sigma}{\bar{R}}$$

$$\text{NIBL (C.V.)} = 0.6240 / 0.184 = 3.3913$$

$$\text{EBL (C.V.)} = 0.7354 / 0.2964 = 2.4814$$

$$\text{SCBL (C.V.)} = 0.7960 / 0.3047 = 2.6124$$

Annex – 6
Calculation of Co-variance, Co-relation of Co-efficient and
Beta Co-efficient
of Sampled Banks with Banking Sector

NIBL and BI

fiscal year	(R _{NIBL} - \bar{R}_{NIBL})	(R _{BI} - \bar{R}_{BI})	(R _{NIBL} - \bar{R}_{NIBL})(R _{BI} - \bar{R}_{BI})
2006/2007	0.7395	0.4154	0.3071883
2007/2008	0.5661	0.7398	0.41880078
2008/2009	-0.5481	-0.3716	0.20367396
2009/2010	-0.5969	-0.4559	0.27212671
2010/2011	-0.1604	-0.3279	0.05259516
			$\sum(R_{NIBL} - \bar{R}_{NIBL})(R_{BI} - \bar{R}_{BI})$ =1.25438491

$$\text{Cov. Between NIBL and BI} = \frac{\sum(R_{NIBL} - \bar{R}_{NIBL})(R_{BI} - \bar{R}_{BI})}{N-1} = \frac{1.2544}{4} = 0.3136$$

Correlation Coefficient between NIBL and BI

$$\rho_{NIBL, BI} = \frac{\text{covNIBL, BI}}{\sigma_{NIBL}\sigma_{BI}} = \frac{0.3136}{0.5416 \times 0.6240} = 0.9281$$

Beta Co-efficient between NIBL and BI

$$\beta_{NIBL} = \frac{\text{covNIBL, BI}}{\sigma_{BI}^2} = \frac{0.3136}{(0.5416)^2} = 1.0752$$

EBL and BI

fiscal year	(R _{EBL} - \bar{R}_{EBL})	(R _{BI} - \bar{R}_{BI})	(R _{EBL} - \bar{R}_{EBL})(R _{BI} - \bar{R}_{BI})
2006/2007	1.153	0.4154	0.4789562
2007/2008	0.3024	0.7398	0.22371552
2008/2009	-0.3482	-0.3716	0.12939112
2009/2010	-0.5771	-0.4559	0.26309989
2010/2011	-0.5299	-0.3279	0.17375421
			$\sum(R_{EBL} - \bar{R}_{EBL})(R_{BI} - \bar{R}_{BI})$ =1.268916

$$\text{Cov. Between EBL and BI} = \frac{\sum(R_{EBL} - \bar{R}_{EBL})(R_{BI} - \bar{R}_{BI})}{N-1} = \frac{1.2689}{4} = 0.3172$$

Correlation Coefficient between EBL and BI

$$\rho_{EBL, BI} = \frac{\text{covEBL, BI}}{\sigma_{EBL}\sigma_{BI}} = \frac{0.3172}{0.5416 \times 0.7354} = 0.7980$$

Beta Co-efficient between EBL and BI

$$\beta_{EBL} = \frac{\text{covEBL.BI}}{\sigma_{BI}^2} = \frac{0.3172}{(0.5416)^2} = 1.0834$$

SCBL and BI

fiscal year	(R _{SCBL} - \bar{R}_{SCBL})	(R _{BI} - \bar{R}_{BI})	(R _{SCBL} - \bar{R}_{SCBL})(R _{BI} - \bar{R}_{BI})
2006/2007	1.1831	0.4154	0.49145974
2007/2008	0.3749	0.7398	0.27735102
2008/2009	-0.1739	-0.3716	0.06462124
2009/2010	-0.7059	-0.4559	0.32181981
2010/2011	-0.6783	-0.3279	0.22241457
			$\sum(R_{SCBL} - \bar{R}_{SCBL})(R_{BI} - \bar{R}_{BI})$ =1.37766638

$$\text{Cov. Between SCBL and BI} = \frac{\sum(R_{SCBL} - \bar{R}_{SCBL})(R_{BI} - \bar{R}_{BI})}{N-1} = \frac{1.3777}{4} = 0.3448$$

Correlation Coefficient between SCBL and BI

$$\rho_{SCBL.BI} = \frac{\text{covSCBL.BI}}{\sigma_{SCBL}\sigma_{BI}} = \frac{0.3172}{0.5416 \times 0.7960} = 0.7998$$

Beta Co-efficient between SCBL and BI

$$\beta_{SCBL} = \frac{\text{covSCBL.BI}}{\sigma_{BI}^2} = \frac{0.3448}{(0.5416)^2} = 1.1755$$

Annex- 7

Calculation of Systematic and Unsystematic Risk

NIBL Bank

$$SR = \beta_{NIBL}^2 \sigma_{BI}^2 = (1.0752)^2 \times (0.5416)^2 = 0.3391 \text{ i.e. } 33.91\%$$

$$USR = \sigma_{NIBL}^2 - SR = (0.6240)^2 - 0.3391 = 0.0502 \text{ i.e. } 5.02\%$$

EBL Bank

$$SR = \beta_{EBL}^2 \sigma_{BI}^2 = (1.0834)^2 \times (0.5416)^2 = 0.3443 \text{ i.e. } 34.43\%$$

$$USR = \sigma_{EBL}^2 - SR = (0.7354)^2 - 0.3443 = 0.1965 \text{ i.e. } 19.65\%$$

SCBL Bank

$$SR = \beta_{SCBL}^2 \sigma_{BI}^2 = (1.1755)^2 \times (0.5416)^2 = 0.4053 \text{ i.e. } 40.53\%$$

$$USR = \sigma_{SCBL}^2 - SR = (0.7960)^2 - 0.4053 = 0.2283 \text{ i.e. } 22.83\%$$

Annex- 8

Calculation of Proportion of Systematic Risk and Unsystematic Risk

NIBL

Proportion of Systematic Risk from the total risk

$$= \frac{SR}{\sigma^2_{NIBL}} = \frac{0.3391}{(0.6240)^2} = 0.8709 \text{ i.e. } 87.09\%$$

Proportion of USR = 1- Proportion of SR

$$= 1 - 0.8709$$

$$= 0.1291 \text{ i.e. } 12.91\%$$

EBL

Proportion of Systematic Risk from the total risk

$$= \frac{SR}{\sigma^2_{EBL}} = \frac{0.3443}{(0.7354)^2} = 0.6366 \text{ i.e. } 63.66\%$$

Proportion of USR = 1- Proportion of SR

$$= 1 - 0.6366$$

$$= 0.3634 \text{ i.e. } 36.34\%$$

SCBL

Proportion of Systematic Risk from the total risk

$$= \frac{SR}{\sigma^2_{SCBL}} = \frac{0.3391}{(0.6240)^2} = 0.8709 \text{ i.e. } 87.09\%$$

Proportion of USR = 1- Proportion of SR

$$= 1 - 0.8709$$

$$= 0.1291 \text{ i.e. } 12.91\%$$

Annex- 9

Calculation of Covariance between NIBL and EBL

NIBL and EBL

fiscal year	$(R_{NIBL} - \bar{R}_{NIBL})$	$(R_{EBL} - \bar{R}_{EBL})$	$(R_{NIBL} - \bar{R}_{NIBL})(R_{EBL} - \bar{R}_{EBL})$
2006/2007	0.7395	1.153	0.8526435
2007/2008	0.5661	0.3024	0.17118864
2008/2009	-0.5481	-0.3482	0.19084842
2009/2010	-0.5969	-0.5771	0.34447099
2010/2011	-0.1604	-0.5299	0.08499596
			$\sum (R_{NIBL} - \bar{R}_{NIBL})(R_{EBL} - \bar{R}_{EBL})$

			=1.64414751
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$$\text{Cov. Between NIBL and EBL} = \frac{\sum(R_{\text{NIBL}} - \bar{R}_{\text{NIBL}})(R_{\text{EBL}} - \bar{R}_{\text{EBL}})}{N-1} = \frac{1.6441}{4} = 0.3288$$

NIBL and SCBL

fiscal year	$(R_{\text{NIBL}} - \bar{R}_{\text{NIBL}})$	$(R_{\text{SCBL}} - \bar{R}_{\text{SCBL}})$	$(R_{\text{NIBL}} - \bar{R}_{\text{NIBL}})(R_{\text{SCBL}} - \bar{R}_{\text{SCBL}})$
2006/2007	0.7395	1.1831	0.87490245
2007/2008	0.5661	0.3749	0.21274038
2008/2009	-0.5481	-0.1739	0.09531459
2009/2010	-0.5969	-0.7059	0.42135171
2010/2011	-0.1604	-0.6783	0.10879932
			$\sum(R_{\text{NIBL}} - \bar{R}_{\text{NIBL}})(R_{\text{SCBL}} - \bar{R}_{\text{SCBL}})$ =1.71310845

$$\text{Cov. Between NIBL and SCBL} = \frac{\sum(R_{\text{NIBL}} - \bar{R}_{\text{NIBL}})(R_{\text{SCBL}} - \bar{R}_{\text{SCBL}})}{N-1} = \frac{1.7130}{4} = 0.2346$$

EBL and SCBL

fiscal year	$(R_{\text{EBL}} - \bar{R}_{\text{EBL}})$	$(R_{\text{SCBL}} - \bar{R}_{\text{SCBL}})$	$(R_{\text{EBL}} - \bar{R}_{\text{EBL}})(R_{\text{SCBL}} - \bar{R}_{\text{SCBL}})$
2006/2007	0.7395	1.1831	1.3641143
2007/2008	0.5661	0.3749	0.11364192
2008/2009	-0.5481	-0.1739	0.06055198
2009/2010	-0.5969	-0.7059	0.40737489
2010/2011	-0.1604	-0.6783	0.35943117
			$\sum(R_{\text{EBL}} - \bar{R}_{\text{EBL}})(R_{\text{SCBL}} - \bar{R}_{\text{SCBL}})$ =2.30511426

$$\text{Cov. Between EBL and SCBL} = \frac{\sum(R_{\text{EBL}} - \bar{R}_{\text{EBL}})(R_{\text{SCBL}} - \bar{R}_{\text{SCBL}})}{N-1} = \frac{2.30511}{4} = 0.461$$

Annex – 10

Calculation of Return and Risk Portfolio of NIBL and SCBL

Let NIBL be A and SCBL be B

We Know that,

$$\text{Portfolio Risk}(\sigma_p) = \sqrt{W_A^2 \cdot \sigma_A^2 + W_B^2 \cdot \sigma_B^2 + 2 \text{cov}_{AB} \cdot W_A \cdot W_B}$$

$$\text{Portfolio Return} (\bar{R}_p) = W_A E(r_A) + W_B E(r_B) + \dots + W_n E(r_n)$$

If $W_A = 1$ and $W_B = 0$

$$\bar{R}_p = 1 \times 0.1184 + 0 \times 0.3047 = 0.1184$$

$$\sigma_p = \sqrt{1^2 (0.6240)^2 + 0 \times (0.7960)^2 + 2 \times 0.432 \times 1 \times 0} = 0.6240 \text{ i.e } 62.40$$

If $W_A = 0.75$ and $W_B = 0.25$

$$\bar{R}_p = 0.75 \times 0.1184 + 0.25 \times 0.3047 =$$

$$\sigma_p = \sqrt{(0.75)^2 (0.6240)^2 + (0.25)^2 (0.7960)^2 + 2 \times 0.432 \times 0.75 \times 0.25} \\ = \sqrt{0.219 + 0.0396 + 0.162} = 0.6485$$

If $W_A = 0.50$ and $W_B = 0.50$

$$\bar{R}_p = 0.50 \times 0.1184 + 0.50 \times 0.304 = 0.2116$$

$$\sigma_p = \sqrt{(0.50)^2 (0.6240)^2 + (0.50)^2 (0.7960)^2 + 2 \times 0.432 \times 0.50 \times 0.50} \\ = \sqrt{0.0973 + 0.1584 + 0.216} = 0.6868$$

If $W_A = 0.25$ and $W_B = 0.75$

$$\bar{R}_p = 0.25 \times 0.1184 + 0.75 \times 0.3047 = 0.2581$$

$$\sigma_p = \sqrt{(0.25)^2 (0.6240)^2 + (0.75)^2 (0.7960)^2 + 2 \times 0.432 \times 0.25 \times 0.75} \\ = \sqrt{0.0243 + 0.3564 + 0.162} = 0.7367$$

If $W_A = 0$ and $W_B = 1$

$$\bar{R}_p = 0 + 1 \times 0.3047 = 0.3047$$

$$\sigma_p = \sqrt{0 + 1 \times (0.6240)^2 + 0} = 0.7960$$

Annex- 11

Calculation of optimal Portfolio

Calculation of Proportion of Investment in NIBL & SCBL

Let NIBL be A and SCBL be B.

$$W_A = \frac{6_B^2 - Cov.(R_A.R_B)}{6_A^2 + 6_B^2 - 2.Cov(R_A.R_B)}$$

$$W_B = 1 - W_A$$

$$W_A = \frac{(0.7952)^2 - 0.2346}{(0.6225)^2 + (0.79562)^2 - 2 \times 0.2346}$$

$$= \frac{0.3977}{0.5506}$$

$$= 0.7223$$

i.e 72.23%

$$W_B = 1 - W_A$$

$$= 1 - 0.7223$$

$$= 0.2777$$

i.e 27.77%

Now Calculation of Return and Standard

$$\text{Deviation Portfolio } \bar{R}_p = \bar{R}_A \cdot W_A + \bar{R}_B \cdot W_B$$

$$= 0.1228 \times 0.7223 + 0.3056 \times 0.2777$$

$$= 0.1737$$

i.e 17.37%

$$6_p = \sqrt{W_A^2 6_A^2 + W_B^2 6_B^2 + 2Cov_{AB} W_A \cdot W_B}$$

$$=$$

$$\sqrt{(0.7223)^2 \times (0.6225)^2 + (0.2777)^2 \times (0.7952)^2 + 2 \times 0.2346 \times 0.7223 \times 0.2777}$$

$$= \sqrt{0.2022 + 0.0488 + 0.0941}$$

$$= 0.5874$$

i.e. 58.74%

Calculation of Proportion of Investment in NIBL & EBL

Let NIBL be A and EBL be B.

$$W_A = \frac{\sigma_B^2 - \text{Cov.}(R_A, R_B)}{\sigma_A^2 + \sigma_B^2 - 2 \cdot \text{Cov.}(R_A, R_B)}$$

$$W_B = 1 - W_A$$

$$W_A = \frac{(0.7341)^2 - 0.3288}{(0.6225)^2 + (0.7341)^2 - 2 \times 0.3288}$$

$$= \frac{0.32101}{0.2688}$$

$$= 0.7816$$

i.e 78.16%

$$W_B = 1 - W_A$$

$$= 1 - 0.7816$$

$$= 0.2184$$

i.e 21.84%

Now Calculation of Return and Standard

$$\text{Deviation Portfolio } \bar{R}_p = \bar{R}_A \cdot W_A + \bar{R}_B \cdot W_B$$

$$= 0.1228 \times 0.7816 + 0.2978 \times 0.2184$$

$$= 0.1610$$

i.e 16.10%

$$\sigma_p = \sqrt{W_A^2 \sigma_A^2 + W_B^2 \sigma_B^2 + 2 \text{Cov}_{AB} W_A \cdot W_B}$$

$$=$$

$$\sqrt{(0.7816)^2 \times (0.6225)^2 + (0.2184)^2 \times (0.734)^2 + 2 \times 0.3288 \times 0.7816 \times 0.2184}$$

$$= \sqrt{0.2367 + 0.0257 + 0.1123}$$

$$= 0.6121$$

i.e. 61.21%

Calculation of Proportion of Investment in EBL & SCBL

Let EBL be A and SCBL be B.

$$W_A = \frac{\sigma_B^2 - \text{Cov.}(R_A, R_B)}{\sigma_A^2 + \sigma_B^2 - 2 \cdot \text{Cov.}(R_A, R_B)}$$

$$= \frac{(0.7952)^2 - 0.461}{(0.7341)^2 + (0.7952)^2 - 2 \times 0.461}$$

$$= \frac{0.1713}{0.2492}$$

$$= 0.6874$$

i.e 68.74%

$$W_B = 1 - W_A$$

$$= 1 - 0.6874$$

$$= 0.3126$$

i.e. 31.26%

Now Calculation of Return and Standard

$$\text{Deviation Portfolio } \bar{R}_p = \bar{R}_A \cdot W_A + \bar{R}_B \cdot W_B$$

$$= 0.2978 \times 0.6874 + 0.3056 \times 0.3126$$

$$= 0.3002$$

$$\sigma_p = \sqrt{W_A^2 \sigma_A^2 + W_B^2 \sigma_B^2 + 2 \text{Cov}_{AB} W_A \cdot W_B}$$

$$=$$

$$\sqrt{(0.7542)^2 \times (0.6874)^2 + (0.3126)^2 \times (0.7952)^2 + 2 \times 0.461 \times 0.6874 \times 0.3126}$$

$$= \sqrt{0.2688 + 0.06179 + 0.1981}$$

$$= 0.727$$

i.e. 72.71%