Study on
"Portfolio Analysis on Common Stock Investment of joint venture bank
(With reference to NABIL, SCBNL, EBL, HBL, NBBL & NSBIL)"

BY:
Dipendra Shrestha
Shanker Dev Campus
Campus Roll No. : 2023/063
T.U. Regd. No. : 7-1-218-421-2000
Second Year Symbol No.: 391963

A Thesis Submitted to:

Office of the Dean
Faculty of Management
Tribhuvan University

In Partial Fulfillment of the Requirements of the Degree of Master of Business Studies (M. B. S.)

September, 2011

RECOMMENDATION

This is to certify that the Thesis

Submitted by:

DIPENDRA SHRESTHA

Entitled:

PORTFOLIO ANALYSIS ON COMMON STOCK INVESTMENT OF JOINT VENTURE BANK

(With reference to NABIL, SCBNL, EBL, HBL, NBBL & NSBIL)

has been prepared as approved by this Department in the prescribed format of the Faculty of Management.

This thesis is forwarded for examination.

_____	_____	_____
Asso. Prof. Ruchila Pandey	**Prof. Bisheshwor Man Shrestha**	**Prof. Dr. Kamal Deep Dhakal**
(Thesis Supervisor)	**(Head of Research Department)**	**(Campus Chief)**

VIVA-VOCE SHEET

We have conducted the viva –voce of the thesis presented

by

DIPENDRA SHRESHTHA

Entitled:

PORTFOLIO ANALYSIS ON COMMON STOCK INVESTMENT OF JOINT VENTURE BANK

(With reference to NABIL, SCBNL, EBL, HBL, NBBL & NSBIL)

and found the thesis to be the original work of the student and written according to the prescribed format. We recommend the thesis to be accepted as partial fulfillment of the requirement for the Degree of

Master of Business Studies (MBS)

Viva-Voce Committee

Head, Research Department ————————————

Member (Thesis Supervisor) ————————————

Member (External Expert)————————————

TRIBHUVAN UNIVERSITY

Faculty of Management

Shanker Dev Campus

DECLARATION

I hereby declare that the work reported in this thesis entitled **"PORTFOLIO ANALYSIS ON COMMON STOCK INVESTMENT OF JOINT VENTURE BANK**

(With reference to NABIL, SCBNL, EBL, HBL, NBBL & NSBIL)"

submitted to Office of the Dean, 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 (MBS) under the supervision **Asso. Prof. Ruchila Pandey** of Shanker Dev Campus.

……

Dipendra Shrestha
Researcher

ACKNOWLEDGEMENT

I express my profound gratitude to my supervisor Asso. Prof. Mrs. Ruchila Pandey of Shanker Dev Campus for the valuable comments with continuous guidance and kind support to me all the way in this thesis and thankful to all my friends and well- wishers especially for their advice, constant support and motivation to finish the research.

My thanks also goes to all the librarian staffs of Shanker Dev Campus, Tribhuvan University who generally provided required books and other materials which help me in preparing this thesis report. I am also thankful to the staffs of concern banks for their kind support. I would like to give heartfelt thanks to my friends for helping me in preparing this report and providing suggestion as well. Let me offer my profound gratitude to my parents, for their continuous support and help without which this work would be impossible. I am equally thankful to all those personalities who are directly and indirectly involved in conduction this research and associated with me in different capacities for their help, suggestion and encouragement.

I have tried to cover all the possible matters that I felt, important to sum up the Portfolio Analysis on Common Stock Investment of joint venture bank (With reference to NABIL, SCBNL, EBL, HBL, NBBL & NSBIL). I am hopeful that this task will be helpful to the students of business studies and to those who want to make further researchers under this topic.

Dipendra Shrestha

Kathmandu, Nepal.

TABLE OF CONTENTS

CHAPTER – IV

LIST OF TABLES

LIST OF FIGURE

ABBREVIATIONS

B.S.	Bikram Sambat
C.V.	Coefficient of Variation
CAPM	Capital Assets Pricing Model
Co.	Company
Cor	Correlation
Cov	Co-Variance
e.g.	For example
EBL	Everest Bank Limited
HBL	Himalayan Bank Limited
NABIL	NABIL Bank Limited
SCBNL	Standard Chartered Bank Nepal Limited
NBBL	Nepal Bangladesh Bank Limited
NSBIL	Nepal SBI Bank Limited
EPS	Earning Per Share
etc.	Etcetera
FY	Fiscal Year
i.e.	That is
JVBs	Joint Venture Banks
M.B.S.	Master of Business Studies
NEPSE	Nepal Stock Exchange
No.	Number
NRB	Nepal Rastra Bank
RRR	Realized Rate of Return
Rs.	Rupees
S.D.	Standard Deviation
S.No.	Serial Number
SEBON	Security Board Of Nepal
SML	Security Market Line

T. U.	Tribhuwan University
VAR	Variance
β	Beta
SR	Systematic Risk
USR	Unsystematic Risk

CHAPTER - I

INTRODUCTION

1.1 Background of the Study

Nepalese joint venture banks play the significant role in the economic development of the country. Without economic development, the country has fearsome of losing its existence and identify. Primary need of the country is to boost up its economy development to promote the welfare of the people and the country as well as. Economy is the indicator of measuring the country's development and progress. Hence, country should be economically developed. There should be proper investment in productive activities to enhance the country's economic development. The development of the modern age is going through the banking system. It requires huge amount of capital to invest in the productive sectors. So in this banking age, it is being easier to generate the sources of capital through the banking activities.

In the Nepalese context, commercial banks, joint venture banks and financial institutions are playing vital role to boost up the economy of the nation by collecting the capital and investing them in industry line as well as in trade lines. They are the sources of capital generator in the Nepalese economy. Commercial banks are the major forces of financial systems. They change and mobilize the domestic sources into the productivity line i.e. industry sector, trade and business sectors etc. Joint venture banks are playing the leading role in the banking sector of Nepal. Their role is remarkable in capital formation, foreign capital flows, and transfer of technology, enhancement in management skills, productivity, and access in global market. This is the age of global economy and functions and concepts of globalization have been spreading up in the worldwide. So, Nepal should exist with the global environment to make economic net working relationship through the joint venture banking system with the world. The reason behind Nepal underdeveloped economy is not due to the lack of resources but due to not proper utilization of the available resources. From the past few years, due to the overseas employment facilities for Nepalese citizen, Nepal

is gaining inward remittance through foreign currency and nation economy is being stronger in the reserve fund. That means there is investment capacity in the selective industries sectors. Commercial banks as well as joint venture banks should mobilize this reserve funds in the field of productive sectors. Nepal has vast potential for hydroelectric power from its rushing waters, so Nepal can acquire the energy essential for industrial development. In additional, Nepal is blessed with the magnificent environment with the Himalayas forming the "Roof of the World". This means there is a various potential for the growth of the tourism industry. Thus, the mobilization and utilization of domestic resource is the key factor to development the economic sector of the nation which can achieve through the help of the commercial banks. Because the commercial banks are major financial institution which occupy quite an important place in the framework of every economic because of they provide capital for the development of industries, trade and business. So countries all the economic development mainly depends upon the commercial banks of the nation. So, all units of related and perspective organization should invest with sound knowledge of investment policy.

History tells us that it was the merchant who first evolved the system of banking by trading in commodities than money. Banking has come to the present advanced through various stages. The evolution of banking industry has started a long time back, during ancient times. Reviewing the history, we can find that the merchant, goldsmith and moneylenders are the ancestors of modern banking. As a public enterprise, banking made its first beginning around the middle of the twelfth century in Italy and the bank of Venice, founded in 1157, was the first public banking institution. Subsequently, The Bank of Barcelona and The Bank of Genoa were established in 1401 and 1407 respectively. The Bank of Venice and the Bank of Genoa continued to operate until the 18^{th} century. The Lombard migrated to England and other parts of Europe from Italy regarded for the development and expansion of the modern banking. Bank of Amsterdam was set up in 1609, was very popular, This modern banks gradually replaced goldsmith and moneylender. Through, Bank of England was established in 1694, the growth of banks accelerated only after the introduction of banking Act-1833 in United Kingdom as it allowed opening the joint

stock commercial Banking system development in the lending countries of the world.

Systematic banking system is a very recent origin in Nepal to compare to other development nations of the world. As in other countries, merchants, moneylenders and goldsmiths were the ancestors of modern banking system. At the preliminary stage of the development of banking system in Nepal, there were TANKADHARIES groups who used to deal with money, gold and silver transaction. Then, "TEJARATH ADDA" established during the tenure of Prime Minister Ranodip Singh (B.B.1933), was the first step towards the institutional development of banking in Nepal.

TEJARATHA ADDA did not collect deposit from the public but gave the loan to employees and public against the bullion.

The history of modern financial system in Nepal began after establishment of Nepal Bank Ltd in 1994 B.S. which is the first systematic bank of Nepal. It is found as 1st commercial bank of Nepal later in 2013B.S. It was established under the special banking Act 1936, having elementary function of commercial banks as a semi government organization without existence of a Central Bank named as the Nepal Rastra Bank(NRB) was established in 26th April 1995 objectives of supervising, protecting and directing the function of commercial banking activities. Another commercial bank fully owned by the government known as the Rastriya Banijya Bank, which is established in 1966. Then an act passed for the modern commercial banks (joint venture Bank) in 2041 B.S. His majesty Government introduced the financial liberalization policy in 2041, which becomes as vital revolutions in Nepalese financial sector for its rapidly growth. As a result various financial institutions have been established to serve the financial services to the public.

1.2 Investment

The common definition of investment is, "the sacrifice of certain present value for future value" (Sharp and Alexander, 1999; 217). Investment is not a gamble rather it is the systematic and scientific way of using the excess fund to get the maximums return at minimum level of risk. Investment made to obtain some expected profit,. Investment forgives the present return for future return. Present investment is

contribution to the future return. Investment is not gambling rather than it is systematic and scientific way of using excess fund from income to gain expected return with lower level of risk. While investing future return of should not forget that the amount s/he investing i.e. capital, a collective form of surplus. The surplus is that part of money deducting all the expenses from income. A person spends his/her years in capital formation process. That is why each one should be rational while investing. Since most of investors are risk averters, they require additional unit of return of bearing one more level of risk. People always try to reduce the risk factor. Common definition say us that contribution of present value for future return is investment of it's a search of certainty within the uncertainty. An investment is a commitment of money that expects to generate additional money. Every investment entitles some degree of risk; it required a present sacrifice for a future uncertain benefit. The motivating factor of investment is collective form of saving, expectation of future return and wealth position maximization.

1.3 Investment process

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

a. Set the investment policy

b. Perform security analysis

c. Construct a portfolio

d. Revise the portfolio

e. Evaluate the performance of the portfolio

a. Set the Investment Policy

The initial step in setting an investment policy involves determining the investment

objectives and the amount of one's investable wealth. Investment is always related with risks and returns. Making money alone cannot be an appropriate objective. It is appropriate to state that the objective is to make a lot of money by recognizing the possible losses. Therefore, investment objectives should be stated in terms of both risks and returns.

Setting a clear investment policy also involves the identification of the potential categories of financial assets for consideration in the ultimate portfolio. The identification of assets depends upon many things, such as investment objectives, investable wealth, tax considerations etc.

b. Perform security Analysis

The second stage of an investment process involves the analysis of securities, which are identified in the previous stage of the process. The main purpose of analyzing securities in to find out the miss-priced securities.

Many approaches can be used to analyze the securities. This approach in a broad sense can be classified into two types.

a. Technical analysis : Technical analysis is a security analysis discipline for forecasting the future direction of prices through the study of past market data, primarily price and volume.

b. Fundamental analysis: Fundamental analysis involves analyzing its financial statements advantages, and its competitors and markets. When analyzing a stock, futures contract. or currency using fundamental analysis there are two basic approaches one can use; bottom up analysis and top down analysis.

c. Portfolio Construction

Portfolio construction is the third step of our investment process. At this stage, we identify assets in which to invest and what proportion of the investor's wealth to put in each one. While constructing a portfolio, the selectivity, timing and diversification need to be addressed by the investor.

d. Portfolio Revision

Portfolio revision means reputing the previous three steps of the process. Over the period of time, the objectives of the investor may change and the current portfolio amy no longer be optimal.

- The investor can sell some unattractive securities and introduce attractive ones to form a new optimal portfolio.
- Some securities that are initially unattractive may turn out to be attractive later and vice versa.

e. Portfolio Performance Evaluation

The last step of the investment process is to evaluate the investment performance. The performance should be evaluated not only in terms of the returns but also the risks experienced. To evaluate the performance, appropriate measures and standards are needed.

1.4 Introduction of Sample Joint Venture Banks

1.4.1 Standard chartered Bank Nepal Limited (SCBNL)

Standard Chartered Nepal Limited (SCBNL), which was incorporated in 1985 with the name of Grindlays Bank Ltd, as a second Joint Venture Bank of Nepal after NABIL, under the company Act 1965(B.S.) and the Commercial Bank Act 1974 (B.S. 2031). ANZ Grindlays Bank PLC is the foreign joint venture partner with 50% equity investment. Now, SCB group had taken over ownership from ANG Grindlays Bank in 17th Shrawan 2057 (2000). Due to change in 50% ownership, its name changed to Standard Chartered Bank Nepal Limited.

The main objective of the bank is to collect deposits and provide loan to agriculture, commerce and industry and to provide modern banking services to the customer and people. Authorized capital & paid up capital is Rs. 1000 million & 931.9664 million respectively.

1.4.2 Himalayan Bank Limited (HBL)

Himalayan Bank Ltd (HBL) was incorporated in 1992 A.D. as a Joint Venture Bank under the company act 1964 A.D. Joint venture partner of HBL is Habib Bank Ltd, which is one of the largest commercial bank of Pakistan. HBL is the first commercial bank of Nepal with maximum shareholding by the Nepalese private sector. Operation of HBL was started from February and it is first joint venture bank, which is managed by Nepali Chief Executives in Nepal. Himalayan Bank Ltd was listed in NEPSE on 05/07/1993 as mentioned in NEPSE annual report. Main objectives of the bank is to provide modern banking facilities like Tele banking to the business, industrialists and other professionals and to provide loans on agriculture, commerce and industrial sectors. Its major shares like 80% of the investment are made from Nepalese investors and remaining 20% in invested from foreign investors. The bank's authorized capital is 2000 million, issued capital is 1216.215 million & paid-up capital is also 1216.215 million.

1.4.3 NABIL Bank Limited (NABIL)

Nepal Arab Bank Limited (NABIL) is the first Joint Venture Bank of Nepal which was incorporated in 1984 A.D. under the commercial bank Act 2031(1974) and the company Act 2021(1965) and it was listed in NEPSE in 1986 A.D. (08/09/2042, B.S.). Dubai bank Ltd (DBL) was the initial foreign joint venture partner with 50 percent of equity share of NABIL. The shares owned by DBL were transferred to Emirates Bank International Ltd (EBIL), Dubai. Later on EBIL sold its entire 50% equity holding to National Bank Ltd. Bangladesh (NBLB). Now, NBLB is managing the bank in accordance with the technical service agreement signed between both banks on June 1991. Authorized Capital is 1600 million and issued & paid up capital both are 965.747 million.

1.4.4 Everest Bank Limited (EBL)

Everest bank Limited was established in 1992 A.D. under the company act 1964 A.D. with an objective of extending efficient banking services to various segments of the society under the commercial bank Act 1974. It is a joint venture between Punjab National Bank (PNB) is the largest Public Sector Bank of India having 109 years of banking history with more than 4400 offices all over India and is known for its strong procedures and a distinct work culture. Everest Bank was listed in NEPSE on 07/04/1996 AD).The corporate office of Everest Bank Limited is in New Baneshwor of Kathmandu. The local Nepalese promoters hold 50% stock in the bank's equity, while 20% of equity is contributed by joint Venture partner PNB and remaining 30% is held by the public sector. The banks Authorized capital is Rs. 1,000 million.

1.4.5 Nepal SBI Bank Limited (NSBIL)

Nepal SBI Bank Limited was incorporated in 1993 A.D. and operation of the bank was started on July 1993 as a foreign Joint Venture Bank which is managed by foreign Partner State Bank of India with holding the 50% of equity share under the Joint Venture and technical services agreement assigned between it and Nepalese promoters. SBI Bank was listed in NEPSE on 17/01/1995 A.D. The bank provides loans to agriculture, commerce and industrial sectors. As mentioned in the NEPSE

annual report, the main objective of this bank is to carry out the modern banking business in the country under the commercial bank act 1974. Authorized capital is 1000 million, Paid up capital is 426.8759 million & Issued capital is 500 million.

1.4.6 Nepal Bangladesh Bank Limited (NBBL)

Nepal Bangladesh Bank Ltd incorporated in 1992 A.D. as a foreign Joint Venture Bank with IFIC Bank Limited of Bangladesh, under the company act 1964 A.D. The main objective of this bank is to carry out commercial banking activities under the commercial bank act 1974. The bank is managed by IFIC Bank Limited Bangladesh in accordance to the Joint Venture and technical services agreement between it and Nepali promoters. Authorized capital is Rs. 1500 & paid up capital is Rs. 500 million.

1.5 Focus of the Study

In this study, Investment decision depends upon two factors i. e. risk and return. The return we can define as the reward for bearing risk and return is the most important outcome from an investment. Return form stock can be of holding period return; return from speculation or from stock can be of holding period return, return from speculation or from short sell, capital gain and dividend gain etc. But return to investor is ever followed by risk, which is known as the occurrence of unfavorable outcomes and is ever followed by risk, which is known as the occurrence of unfavorable outcomes and is ever harmful for the business.

In Nepal many times, investor invests their money without analyzing risk and return on common stock due to lack of knowledge about risk and return. On the other hand the increasing number of the banks and financial institution has created a competitive environment in financial sectors. Those to get maximum return from a minimum level of risk , the investor should diversify its investment by the means of the study is to measure and analysis the financial performance of joint Venture Banks, their risk and return, and portfolio pattern etc. to make sound and suitable investment decision.

1.6 Statement of the Problem

Every investor should make rational investment decision. For this purpose, knowledge of analysis of common stock with using risk, return and portfolio analysis tools are

very essential. Risk, return and portfolio analysis tools are very essential. Risk, return and portfolio analysis is the most important and essential tools in the area of investment because by using risk, return and portfolio analysis, a rational investor can find the less risky and the higher profitable investment of the different investment alternatives from the security market. Similarly, investor's attitude and perceptions are also play vital role for rational investment decision, which are influenced by the knowledge and access to the data required for analysis. Whenever, the investors cannot analyze risk, return and portfolio while making stock investment decision, they should not be secured from the risk.

In the Nepalese context, many investors are interested to invest their valuable money on the common stock of financial institution like joint venture Banks. But due to the lack of proper information about the norms of security market, process of selling and buying of stock, price fluctuation and risk and return analysis, the potential investors are manipulated or exploited by the financial institution and other intermediaries. Sometimes, they think that investing in common stock is intolerably hazardous. Due to this, many investors afraid to invest into stocks. This is the main problem that does not allow gearing up the capital market of the nation. In the Nepal, we look that the most of the investors invest their funds in a single securities with using their own guess, hunches and on the basis of looking past trends of stock price which may creates maximum risk and uncertainty of profit for the invest. So every investor has to diversify his or her investment in the different bank's common stock with estimating optimal portfolio to minimize the risk and to maximize the return. Without diversify their investable fund into different sectors, they could not make the regular income. The main problem is that the general public cannot perfectly analyze the risk, return and portfolio analysis of common stock of commercial banks in Nepal.

Theory says that the stock price in market is guided by the intrinsic value, which is calculated aid of company's required rate of return and growth. In the efficient market condition, stock price is equal to intrinsic value since the buyer and seller are fully aware of the facts and figures of the company. Therefore, one can say that market price and financial performance are correlated but condition here is totally different

from that. Whatever the theory depicted that is not applicable in our context, where most of the investors do not know to interpret the information so they can make an irrational decision, regarding transaction of stocks. People assume more risk in stock investment than its real risk. Therefore, the stock price in Nepal is determined more by others factors like courage and faith. Thus, to boost the confidence of the investors, there are necessary to available clear & simple technique to analyze risk, return and optimal portfolio in the investment time to make sound decision.

Considering the above in mind, following problems are identified which are to be researched.

1. How the investment decisions are to be taken?
2. Does the risk and return of JV banks vary significantly?
3. What are the comparative risk positions of JV banks?
4. Would portfolio construction with in the JV banks be profitable?
5. What are the existing situations of financial position of the JV banks in Nepal?
6. How can investors diversify the risk within JVBs?

Investment on common stock is the main sources of fund for the companies. The investors are the sources of the revenue as a customer for the stockbrokers and financial institutions and ultimately they are the backbone of the economic development of the nation. Thus, the financial institutions should make every policy and plan to encourage potential investors for invest in common stock. For this, there is great need of such institutions, which can provide valuable information that accelerates the stock investment and market efficiency.

1.7 Objective of the Study

In our country Nepal lots of investors are facing day to day problems in setting their investment policies, evaluating financial assets, constructing portfolio and revising and analyzing their portfolio performance. Thus the main objectives of this study will be as follows:

1. To evaluate the common stocks of Joint Venture Banks in terms of risk and return and perform sector wise comparison on the basis of market capitalization.
2. To study Systematic and unsystematic risk associated with securities.
3. To explore the financial performance of joint Venture Banks through common stocks portfolio investment strategies.
4. To determine whether the share of joint venture banks in Nepal is overpriced, Underpriced or correctly valued by analyzing the risk and return characteristics of the individual bank.
5. To provide the suggestions, practical ideas and recommendations on the basis of major findings.

1.8 Significance of the Study

In the investment world, the investment analysis of any organization flashes its investment policy. The sound investment policy makes a good impact on the economy of the country. The success and the prosperity of any investors rely heavily upon the successful investment policy if its available resources in to the profitable sectors. But due to lack of knowledge investors are investing their valuable funds through trial and error approach.

So it is necessary to establish clear Vision about the return from investing in securities.

This study is focused on the risk and returns analysis of individual joint Venture Bank and estimates an optimal portfolio performance among the common stock investment of Joint Venture Banks. Therefore, to provide basic and necessary information about investment and investment process, the current study is forwarded. This current study is help to analyze and evaluate the investment worthwhile over the different time period. Not only that, the focus of the study is on the analysis of risk, return and portfolio, which is enable all the related investors to guide the investment, related activities.

1.9 Limitation of the Study

This study is simply a partial study for the fulfillment of M.B.S. degree, which is finished within limited period. Hence, this study is not far from several limitations of its own kind, which weakens the heart of the study. It contains certain limitations.

1. This study is mainly based on secondary data published by and collected from joint Venture banks. In necessary condition, primary data are also used.
2. Only joint Venture banks are taken under this study.
3. This study covers only the period of ten fiscal years from 2000/2001 to 2009/2010 years.
4. According to the nature of this study, time factor is main constraints. Thus, the analysis of this study is confined only based on risk, return and portfolio of Joint Venture banks.
5. As the investment environment is irrational, the portfolio construction and market may lead to false decision.
6. This study has been conducted to fulfill the requirement of the M.B.S. programs of T.U. for a prescribed, not for a generalization purpose.
7. The accuracy of the research work depends on data provided by concerned organization.

1.10 Organization of the Study

This study is organized in to five chapters. A brief outline of this chapter has outlined as under.

Chapter I introduced the general background of the study, statement of the problem, objectives of the study, significance of the study, focus of the study, limitation of study and organization of the study are considered.

The chapter 2 discussed the brief review of literature available. It covers review of related books, articles, previous thesis etc. conceptual framework about risk, return

and portfolio is defined in this chapter.

The research design, population and sample, data collection techniques, tools for analysis and methods of presentation and analysis are discussed in chapter 3.

The Chapter 4 is the main body of the research work. In this section, data has been collected from various relevant sources are present and analyze by using various statistical and financial methods.

At last Chapter 5 followed by the basic findings from the research work, summary, conclusion and recommendation.

CHAPTER - II

REVIEW OF THE LITERATURE

Review of literature is an essential part of all studies. It is a way to discover what other research in the area of our problem has uncovered. A critical review of the literature helps the researcher to develop through understanding and insight into previous research works that relates to the present study. Research is continuous process, which never ends. Research is continuous process, which never ends. The continuity in research is ensured by linking the present study with the past research studies. It means, research is ensured by linking the present study with the past research studies. It means, research must be based on past knowledge. The main purpose of reviewing the literature is to develop some ideas for developing a research design. Thus, the previous study cannot be ignored because they are foundation to present study. Generally, review of literature is that chapter where the researcher reviews the books, journals, magazines and other types of study, which are related to his field of study.

This chapter is considered of the major related theoretical aspect of the topic on risk, return and about the portfolio analysis on common stock investment in joint venture banks comprehensive, detail and descriptive manner. Every possible effort has been made to grasp knowledge and information that are available from libraries, journals, articles, annual reports documents, collection center, Nepal Rastra Banks, Nepal stock exchange center, security board, other information managing bureaus and concerned JVBs. Similarly it provides the foundation for developing a comprehensive theoretical framework and knowledge of the status of the relevant to the field of research in order to explore the relevant and true facts for the reporting purpose. Since, there are not so much adequate study materials related with this topic published in Nepal. This study has to refer almost all the books related with this topic published in Countries and other countries than Nepal. The concept of this portfolio analysis on common stock investment of joint venture banks and its analysis is clear from the following studies:

There is no any special book and research work related to this topic has been

published in Nepal. On other hand, Nepalese stock market is still in creeping stage. So, there are not sufficient materials that provided basic guidelines for this study. Some Master Degree Thesis that is available in TU which are related with the thesis has been reviewed. In additional, some independent studies carried out by well known financial exports are taken in to consideration.

2.1 Conceptual Framework

Portfolio management is the process of selecting a bundle of securities that provides the investing the organization a maximum yield for a given level of risk or alternatively ensuring minimum level of risk for given level of return. It can be also taken as risk and return management. Its aims to determine an appropriate asset mix which attains optimal level of risk and return. Various books which are either dependent or independent deals with theoretical aspects of risk, return and portfolio are taken into consideration in this chapter. Major focus is on the investment of common stock and its impact on individual risk, return and portfolio.

2.1.1 Common Stock:

Common stock is an ownership share in a corporation. Therefore the common stock holders are true owners of the corporation. Each share of common stock represents a fractional ownership interest in the firm. For example, one share of common stock in a corporation that has 100 shares outstanding would represent 10/1,000 ownership interest. The return on common stock investment comes from either of two sources- the periodic receipt of dividend and capital gains. Common stock holders enjoy a No. of rights such as is dividend right. Assets right, preemptive right, voting right etc. Common stock is the recipient of the residual income of the corporation. Common stock holders are an uncertain position about dividend, capital gain, and residual claim. Therefore, common stock holder musts bear greatest risk. Common stock is suitable for the investor who wants to take high risk and return for a long period too. Common stocks are traded in stock exchanges and over the counter market (OTC) (Thapa, Bhattarai, & Basnet 2006).

Common stock represents ownership of a firm. Owners of the common stock of a firm

share in the company prospects, the investors receives high rates of return and can become wealthy. In contrast, the investor can lose money if the firm does not do well or even goes bankrupt, as the once formidable K-Mart, Enron, W.T. Grant**,** and Interested Department stores all did. In these instances, the firm is forced to liquidate its assets and pay off all its creditors. Notably, the firm's preferred stockholders and common stocks all the advantages and disadvantages of ownership and is a relatively risky investment compare with fixed- income securities (Reilly & Brow 2004).

Common stocks are easier to describe than fixed- income securities such as bonds, but they are harder to analyze. Fix- income almost always has a limited life and an upper dollar limit on cash payments to investors. Common stocks have neither. Although the basic principles of valuation apply to both, the role of uncertainty is larger for common stocks. So much so that often dominates all other elements in their valuation.

Common stocks represent equity, or an ownership position in a corporation. It is a residual claim, in the sense that creditors and preferred stockholders must be paid as scheduled before common stockholders can receive any payments. In bankruptcy, common stockholders are in principle entitled to any value remaining after all other claimants have been satisfied. However, in practice, course sometimes violate this principle.

State that the great advantage of the corporate firm of organization is the Limits Liability of its owners. Common stocks are generally *"fully paid and no assessable",* meaning that common stockholders may lose their initial investment but no more. That is, if the corporation fails to meet its obligations, the stockholders cannot be forced to give the corporation the funds that are needed to pay off the obligations. However, as a result of such as a failure, it is possible that the value of a corporation's shares will be negligible. This outcome will result in the stockholders' having lost and amount equal to the price to buy the shares. (Sharpe, Alexander & Bailey 2003)

Documented that the common stock is an ownership security. Common stock holders will get the return from common stock. People typically buy common stock expecting to earn dividend plus a capital gain when they sells their shares at the end of some holding period. Common stock holders cannot claim on whole earnings of the

company. It is a residual claim only. When all the creditors and preference shareholders are satisfied. As expressed above, common stock is the most risky security so must be in its expected return as well. When investors buy common stocks they receive certificate of ownership as a part of they're being part owners of the company. The certificate states the number of shares purchased and their par value. (Another study by Bhalla 2000)

Common stock has one important investment characteristics and one important speculative market policies tend increase irregular but persistently over the decades as their net worth builds through the reinvestment of undistributed earnings. However, most of the time common stocks are subject to irrational and excessive price function. However, most of the time common stocks are subject to irrational and excessive price function in both directions, as consequences of the ingrained tendency of most people to speculative or gamble, i.e. to give way to hope fear and greed (Western & Brigham, 1999).

"Common stock holders of corporation are its residual owners, their claim to income and assets comes after creditors and preferred stock holders have been paid in full. As a result, a stockholders return on investors is less certain than the return to lenders or to a preferred stock holder. On the other hand, the shares of a common stock can be authorized either with or without par value. The par value of a stock is merely a stated figure in the corporate charter and is of little economic significance. A company shouldn't issue stock at price less than par value because stock holders who bought stocks for less than par value would be liable to creditors for the difference between the below par price they paid and the par value (Horne & James ,1997).

Off all the other forms of securities, common stock appears to most of romantic whole fixed income investment revenue may be more important to most of the investors, equity shares seems to capture their interest the most. The potential reward and penalties associated with the equity investment is a favorite topic for conservation in parties and get together (Prassna & Chandra; 1995).

2.1.2 The Expected Rate of Return on Common Stock

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

$$\text{Expected return, } E(rj) = \sum_{t=1}^{n} r_j p_j = r_1 p_1 + r_2 p_2 + \ldots\ldots\ldots + r_n p_n.$$

E(rj) = Rate of return on j^{th} outcome or event

P_j = Probability of occurrence of j^{th} outcome or event

When historical returns are used, the following formula is used to calculate and average return

Expected Value, E(r) = **Error! Objects cannot be created from editing field codes.**

Here E (r) is the average or mean return and n is the number of observed returns. (Thapa, Bhattrai & Basnet; 2006)

Investors main objective is to maximize concept of value by investing money in product and project. A Company creates value of if the expected return exceeds the return required by the financial market for the risk involved. If someone buy a bond, he expects to receive interest on the bond and those interest payments provides him with the rate of return on his investment. If we multiply each possible outcome and then sum these products, we have a weight average of outcomes. The weights are the probabilities and the weighted average is the expected rate of return." (Sharma; 2001).

"The expected rate of return is the increase in the expected after tax value of the initial investment over the holding period. The cash payroll to owner of common stock can be described as two type's i.e.

- Cash dividend (dividend component)
- Capital gain (loss) [capital appreciation]

Capital appreciation is the different between ending and beginning value of investment. Returns are defined as the dividend yields plus capital gain/loss. Thus return comes from two sources, income and price appreciation.

Return is the main attraction for investors' to invest. In a risky security as stock (equity share) accepting a varying degree of risk tolerance. "The return from holding an investment over some period, say a year is simply any cash payment received due to ownership plus the change in market price, derived by beginning price. From common stock we can define single period return as:

$$\text{Single Period Return}(R) = \frac{\text{Ending price } (p_t) - \text{Beginning Price } (P_{t-1}) + \text{Dividend } (D_t)}{\text{Beginning price } (p_{t-1})}$$

This 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 dividend and prices). Also note that the term is parenthesis in the number of above equation represents the capital gain or loss during the year." (Van Horne, Wachowicz & John M; 1995)

"Annualized rate of return over several periods can be calculated in two ways. The first one is simply to take the arithmetic average of the annual holding period return (HPR) over a return period and the second one, which also takes in to account the compounding effects of cash receipts over different time intervals, is the geometric mean rate of return.

Simple Arithmetic Mean

$$HPR = \sum_{t=1}^{n} HPR_t/n$$

The geometric mean

$$HPRg = \sum_{t=1}^{n}(HPR)^{1/n}-1$$

Where, HPR (holding Period Return), n=No. of periods, HPRg = Geometric mean

Holding period return." (Cheney & Moses; 1992)

2.1.3 The Risk on Common Stock

"Risk is defined as the variability of the returns of a period. The one-period rate of return is the basic random variable used in measuring an investment's risk. The greater the variability of the returns, riskier the project."(Thapa, Bhattarai & Basnet, 2006)

"Risk is defined in Webster's dictionary as a 'hazard: a peril: exposure to loss or injury', thus for most, risk refers to the chance that some unfavorable event will occur. If u invest in speculative stock (or, really, any stock), you are taking a risk in the hope of making an appreciable return." (Weston & Brigham; 1995).

"Although there is difference in the specific definitions of risk and uncertainty, for our purposes and in most financial literature the two terms are used interchangeably. IN fact, one way to define risk is the uncertainty of future outcomes. And alternative definitions might be the probability of an adverse outcome subsequently, in our discussion of portfolio theory; we will consider several measures of risk that are used when developing the theory." (Reilly & Brown; 2004)

"Risk defined as the variability of the returns of a period. The basic random variable that measures an investment risk is one period rate of return. The greater variable of the returns, the riskier the project and vice versa. "Risk may be defined as the likelihood that the actual return from an investment will be less than the expected return. It refers to the chances that some unfavorable events will occur. Risk exists

because of the inability of the decision-maker to make perfect forecast. Risk arises on investment evaluation because we can't anticipate the occurrence of the possible future events with certainty, and consequently cannot make any correct predictions about the cash flow sequences." (Basu; 2001)

"Risk is defined is Webster's Dictionary as 'a hazard: a peril: exposure to loss or injury': thus, or most, risk refers to the chance that some unfavorable event will occur. If you invest in speculative stocks (or, really, any stock), (Weston, Besley & Brigham; 2003)

"It is said that risk refers to the chance that some unfavorable event will occur. If someone invest in speculative stock (really, any stock), he/she is taking a risk in the hope of making an appreciate return. So if one is going to invest in common stock for future return. High return on common stock involves high risk and vice versa. "Risk defined more generally, is a probability the occurrence o unfavorable outcome. But risk has different meaning in different contexts. In our context two measures developed from the probability distribution have been used as initial measures of return and risk. They are the mean and standard deviation of probability distribution." (Weston & Brigham; 2000).

2.1.4 The Range

"The range (maximum return-minimum return) is known as one of the traditional way of measuring risk. It simply shows the difference between the best possible return and the worst possible return but does not provide information about the distribution of the rates of return between the extremes." (Cheney & Moses; 1992)

"The range is one of the traditional methods of measuring risk, which simply communicates the difference between the best possible returns and the worst possible return; it does not provide information about distribution of the rates of return between the extremes.

The Range = Best possible Rates of return - worst possible rate of return.

The degree of risk of an underlying security is reflected in the magnitude of the differences. The smaller the difference the lower will be degree of risk." (Pokharel; 2004)

"Another measure risk is the range of returns. It is assumed that a larger range of expected returns, from the lowest to the highest return, means greater uncertainty and risk regarding future expected returns." (Reilly & Brown; 2004).

2.1.5 Standard Deviation

Standard deviation is a statistical measure of the variability of a set of observations. It is the measure of total risk. The smaller the variance, lower the riskiness of the stock and vice versa. The risk or standard deviation is denoted by the symbol sigma (σ). The square root of variance of the rate of return is known as standard deviation of the rate of return." (Thapa, Bhattarai & Basnet; 2006).

"Standard deviation is another parameter of rate of return distribution measurement. It measures the tightness or variability of set of outcomes. In another words, standard deviation measures the magnitude of the difference between best possible return and worst possible return. Thus, it measures the degree of risk of common stock, because the tightness of the probability distribution associated with possible outcomes. In general, the width of a probability distribution indicates the amount scatter, or variability, of possible outcomes. Therefore, the higher the probability distribution of expected returns, the less is its variability. Thus, the smaller the risk associated with the investment." (Brighan, Besley & Brigham; 1996).

"The measure we probability use most often is the standard deviation. The symbol for which is σ. To calculate the standard deviation, we proceed as shown in table, taking the following steps:

We calculate the expected rate of return:

$$E(k)= pr_1k_1+pr_2k_2+\ldots\ldots+pr_nk_n = \sum_{t=1}^{n} pr_ik_i$$

Where,

Pr= Probability

K= Expected rate of return

First, we subtract the expected rate of return [E(k)] from each possible outcome(ki) to obtain a set of deviations form (K):

$$Deviation_i = Ki - E(K)$$

Where,

E (k) = expected rate of return

Next, we square each deviation, multiply the result by the probability of occurrence for its related outcome, and then sum these products to obtain the variance of the probability distribution:

$$\sigma^2 = \sum_{t=1}^{n} [k_t\text{-}E(k)]^2 pri$$

E (k) = Expected rate of return
P(r) =Probability
Finally, we take the square root of the variance to obtain the standard deviation:

$$\sigma = \sqrt{\sigma^2} = \sqrt[n]{\sum [ki\text{-}E(k)]2pri}$$

$$i = 1$$

Where,
E (k) = expected rate of return

P(r) = Probability

σ = Standard deviation

Thus the standard deviation is a weighted average deviation from the expected value, and it gives an idea of how far above or below expected value and the actual value is

likely to be." (Weston, Besley & Brigham; 2003)

2.1.6 Systematic Risk and Unsystematic Risk

"Systematic risk is market related risk. It is also called market risk or un diversifiable risk. For example, inflation, interest rates and War etc. Unsystematic risk is non – market related risk. It is also called non- market risk or company unique risk or company specific risk or diversifiable risk. For example, winning a new contract, an industrial dispute, and the discovery of a new technology, Labor strikes etc. The systematic risk is rewarded in the form of risk premium. The unsystematic risk is not rewarded because it can be reduced to zero." (Thapa, Bhattarai & Basnet; 2006).

"Systematic risk has its source factors that affect all the marketable assets and thus can't be diversified away. The sources of systematic risk are market –pervasive. The measure if system risk permits an investor to evaluate an asset required rate of return relative to systematic risk of the stock. Unsystematic (Company specific/unique) risk can be reduced through diversification. The relationship among total, systematic & Unsystematic risk.

Relationship among systematic risk, unsystematic risk and total risk are shown below

Total risk = systematic risk + unsystematic risk

systematic risk and unsystematic risk can be written as;

$$\text{systematic risk (SR)} = \frac{Cov_{im}}{\sigma_m}$$

Where

Cov_{im} = covariance of stock i and market return

σ_m = standard deviation of market.

$$\text{unsystematic risk (USR)} = \sigma_i - \frac{Cov_{im}}{\sigma_m}$$

Where,

σ_i = standard deviation of stock i

Portion of Systematic risk = $\frac{SR}{TR}$

Portion of unsystematic risk = 1- portion of systematic risk

Where,

TR=Total risk

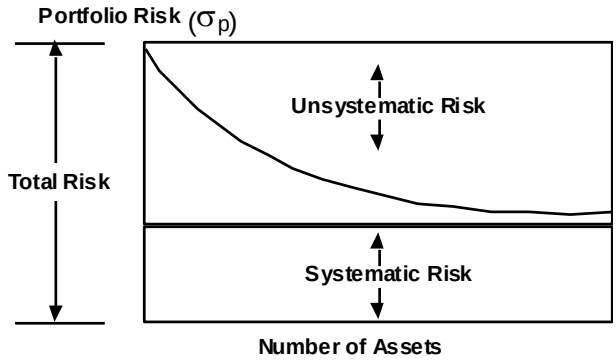
While Systematic risk = $\sigma_i (\rho_{im})$ and Unsystematic Risk = $\sigma_i (1-\rho_{im})$

In this equation ρ_{im} is the correlation between the return of given stock(i) and the return on market portfolio.

The relationship between systematic risk and unsystematic risk are shown in given Diagram below.

Relation between S.D. of Portfolio and Number of Securities in Portfolio

Figure 2.1



2.1.7 Capital Assets Pricing Model (CAPM)

"Capital assets pricing model (CAPM) is a modal that indicates what should be the expected or required rate of return on risky assets. This transition is important because it helps you to evaluate an asset by providing an appropriate discount rate to use in

any valuation model. Alternatively, if you have already estimated the rate of return that you think you will earn on an investment, you can compare this estimated rate of return to the required implied by the CAPM and determine whether the assets is undervalued, Overvalued or properly valued.

To accomplish the foregoing, we demonstrate the creation of security market line (SML) that visually represents the relationship between risk and expected or the required rate of return on an assets, The equation of this SML, together with estimates for the return on risk-free asset and so on the market portfolio, can generate expected of required rate of return to the rate of return that you estimate that you will earn on investment to determine if the investment is undervalued or overvalued. After demonstrating this procedure, we finish the section with demonstration of how to calculate the systematic risk variable for a risky assets."(Reilly & Brow; 2004).

"The capital assets pricing model states that the expected risk premium on each investment is proportional to its beta. This means that each investment should lie on the sloping security market line connecting Treasury bills and Market Portfolio." (Myers & Breaseley; 2003).

"The capital assets pricing model (CAPM) specifies the relationship between risk and required rate of return on assets when they are held in well diversified.

Basic Assumptions of the CAPM

- All investors focus on a single holding, and they seek to maximize the expected utility of their wealth by choosing among alternative portfolios on the basic of each portfolio's expected return and standard deviation.
- All investors can borrow and lend an unlimited amount are a given risk free rate of interest KRF, and there are no restrictions on short sales of any assets.
- All investors have identical estimates of the expected returns, variances and covariance among all assets; that is, investors have homogeneous expectations.
- All assets are perfectly divisible and perfectly liquid.
- There are no transaction costs.
- All investors are price takes (that is, all investors assume that their own buying

and selling activity will not affect stock prices)

- There are no taxes
- The quantities of all assets are given and fixed."(Thapa, Bhattarai & Basnet; 2006).

"CAPM is a modal that describes the relationship between risk and expected return. In this modal, a security's expected return is the risk free plus a premium based on the systematic risk of the security. The SML equation as suggested for the computation of expected rate of return on common stock. This model is as under:

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

Where,

R_j = required rate of return on stock j.

R_f = The nominal risk free rate of return (the real risk free rate of return plus risk premium for inflation)

(R_m) = The expected rate of return on the market portfolio.

β_j = Beta coefficient of stock j.

Hence, beta is the index of systematic risk. It means the sensitivity of a stock return to change in returns on the market portfolio. The beta of a portfolio is simply weighted average of the individual stock betas in the portfolio." (Van Horne & Wachowitcz, 1995).

"Beta measures un diversifiable risk. Beta shows how the price of a security responds to market forces. In effect, the more responsive the price of a security is to changes in the market, the higher will be its beta. Beta is calculated by relating the returns on a security with the returns for the market Market return is measured by the average return of a large sample of stocks, such as the S & P 500 stock index. The beta for the

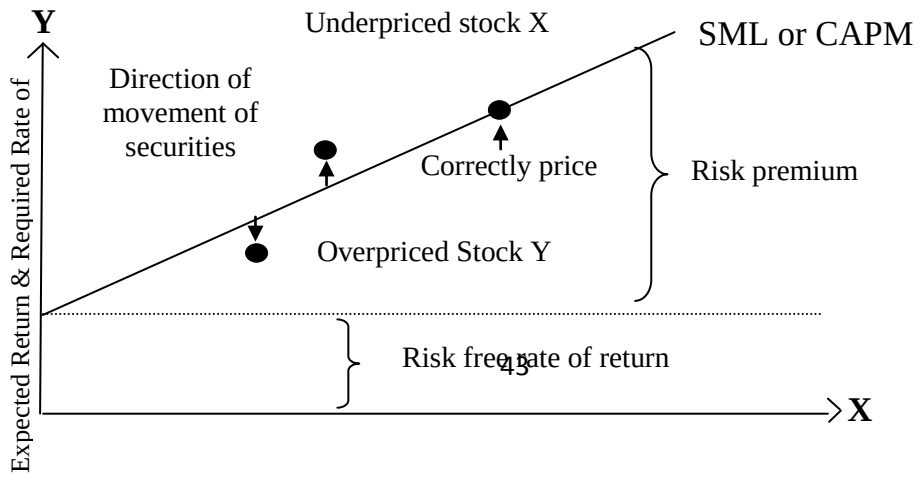
overall market is equal to 1.00 and other betas are viewed in relation to this value". Betas can be positive or negative. However, nearly all beta's are positive.

Most betas lies between 4 and 1.9 "The CAPM provides a means by which one can estimate the required rate of return of a security. On the basis of price and dividend data, expected return can be calculated. By comparing two or more than two returns, investors can analyze whether the stocks are overpriced or underpriced. "The capital assets pricing model allows us to draw certain implications about the expected return of a specific security. The key assumptions in the model are that the perfect capital markets exist and that investors have homogeneous expectations." (Van Horn; 1997).

"In market equilibrium, the required rate of return on stock equals its expected return. That is all stocks will lie on the security market line, what happens when this is not so? Suppose that in the given diagram the security market line is drawn on the basis of what investors as a whole know to be the approximately relationship between the required rate of return and systematic or unavoidable risk. For, some reason, two stocks call them X and Y is improperly priced. Stock X is under-priced relative to the securities market line, while stock y is over-priced.

Figure 2.2

Movement of Stock



As a result, stock X is expected to provide a rate of return greater than that required based on its systematic risk. In contrast stock Y is expected to provide a lower return than that required compensating for its systematic risk. Investors seeing the opportunity for superior returns by investing in stock X should rush to buy it. This action would and drive the price up and the expected return down. How long would this continue? It would continue until the market price was seen. The expected return would now lie on the security market line. In the case of stock y, investors holding this stock would sell it, recognizing that they could obtain a higher return for the same amount of systematic risk with other stocks. This selling pressure would drive Y's market price down and its expected return up until the expected return was on the SML. When the expected returns for those two stocks return to SML market equilibrium will again prevail." (Van Horne & Wachowicz; 1995).

2.1.8 Arbitrage Pricing Theory (APT)

"Arbitrage is the process of earning risk less profits by taking advantage of differential pricing for the same physical asset or security. As a widely applied investment tactic, arbitrage typically entails the sale of security at a relatively high price and the simultaneous purchase of the same security (or its functional equivalent) at a relatively low price.

Arbitrage activity is a critical element of modern, efficient security markets. Because arbitrage profits are by definition risk less, all investors have an incentive to greater resources and inclination to engage in arbitrage than others. However, it takes few of these active investors to exploit arbitrage situations and, by their buying and selling actions eliminate these profits opportunities." (Reilly & Brown; 2004).

"The basis foundation of Arbitrage pricing theory is 'Law of on price' Law of one price states that two identical goods cannot be sold at different process there will be

the presence of arbitrage opportunity. Arbitrage opportunity means zero additional investment, zero additional risk but presence of additional return.

"If two identical goods sold at different prices anyone could engage in arbitrage by simultaneous buying at low price and selling high price and make risk less profit. Arbitrage also applies to financial assets. If two financial assets have the same risk they should have the same expected return. If they don't have the same expected return, a risk less profit could be on by simultaneous issuing at low return and buying the high return assets. Arbitrage also applies to financial assets. Arbitrage causes prices to be revised as suggested by the law of one price". Arbitrage pricing process can be shown as below: - (Thapa, Bhattarai & Basnet; 2006).

$E(ri) = \lambda_0 + \lambda_1 b_{i1} + \ldots\ldots\ldots\ldots\ldots + \lambda_n b_{in}$

Where,

E (ri) = required rate of return on asset i or equilibrium rate of return.

λ_0 = risk free rate of return

$\lambda_1 \lambda_n$ = constant variables

b = systematic risk factor or independent variable"

"Arbitrage is the process of earning riskless profits by taking advantage of differential pricing for the same physical asset or security. As a widely applied investment tactic, arbitrage typically entails the sale of security at a relatively high price and the simultaneous purchase of the same security (or its functional equivalent) at a relatively low price.

Arbitrage activity is a critical element of modern, efficient security markets. Because arbitrage profits are by definition riskless, all investors have an incentive to take advantage of the whenever they are discovered. Granted, some investors have greater resources and inclination to engage in arbitrage than others. However, it takes relatively few these active investors to exploit arbitrage situation and, by their buying and selling actions, eliminate these profit opportunities." (Sharpe, Alexander & Bailey; 2003)

2.2. Portfolio

"An investor's objective is to make maximum return from his/her fund at the lowest risk. By investing in a single asset, investor cannot achieve his/her objective. But it is only possible through portfolio. A portfolio is a combination of securities. By the help of portfolio, risk can be diversified. In this context, it can be cleared through a proverb "do not put all the eggs in one basket." It means that one can lose all the egg if some unlikely event occurs. So we can diversify by forming portfolio. Thus, the objective of the portfolio analysis is to develop a portfolio that has the maximum return at whatever level of risk the investor's deems appropriate." (Thapa, Bhattarai & Basnet; 2006).

"Most financial assets neither are nor held in isolation; rather, they are held as parts of portfolios. Banks, pension funds, insurance companies, mutual funds, and other financial institutions are required by law to hold diversified portfolios. Even individual investors-at least those whose securities holding constitute a significant part of their total wealth-generally hold stock portfolios, not the stock of only one firm. This begin the case, from an investor's standpoint the fact that a particular stock goes up or down is not very important; what is important is the return on his or her portfolio, and the portfolio's risk. Logically, then, the risk and return of an individual security should be analyzed in terms of how that securities affects the risk and return of the portfolio in which it is held." (Weston & Brigham; 1992).

Portfolio is the combination on collection of assets. Portfolio investment is the investment in two or more than two assets. The primary objectives of portfolio are:

- To minimize the risk
- To maximize the return

Whereas it's Secondary objectives are as follows:

- Regular income
- Price appreciation/capital gain

- Tax advantages
- Easy marketability
- Safety of investment etc.

Investor usually diversifies their portfolio in order to maximize their risk given the rate of return. To minimize the risk of portfolio and individual invest in securities with different risk and return characteristics. This procedure is called diversification. The degree of diversification varies depending on how risk avert the investor is. This determines the level of risk and return of the portfolio. An efficient portfolio is that portfolio which maximizes return for given risk or minimizes risk for a given return. The efficient frontier may be defined as the collection of all possible portfolios that are not dominated or that have the maximum possible expected return, given a level of risk or standard deviation.

Portfolio can be classified as below:

- Growth Oriented portfolio and
- Income Oriented portfolio

Growth oriented portfolio is a part of portfolio whose primary objective is long-term price appreciation. Income oriented portfolio is a portfolio that stress current dividends and interest return.

2.2.1 Portfolio Return

Expected return on portfolio is the summation of the weighted return of individual security. It is calculated by using probability of each return as weight and summing the products of the rates of return and their respected probabilities.

"The expected return on a portfolio, E(rp) is simply the weighted average of the expected returns on the individual asset in the portfolio with the weights being the

fraction of the total portfolio investment in each asset.

$$E(r_p) = \sum_{i=1}^{n} w_i E(r_i)$$

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

W_i = The fraction of the total value of portfolio invested in the i^{th} assets or stock.

E(ri) = The expected return from the i^{th} assets or stock"

n = number of assets including portfolio.

(Thapa, Bhattarai & Basnet; 2006)

2.2.2 Portfolio Risk

Portfolio risk is a function of the proportional invested in the components. The riskiness of the components is correlation of returns on the component securities. It is measured by standard deviation. The risk of a portfolio is not a simple weighted average of the standard deviation of the individual securities. It depends on the investment weight on individual security. Risk on individual security and correlation between given securities.

"Portfolio risk is measured by statistical tool standard deviation and variance. It is a function of the proportions invested in the components. The riskiness of the components and the correlation of returns on the components securities. This risk is computed by using the following equations:

$$\text{Var (rp) or } \sigma_p^2 = \sum_{i=1}^{n} \sum_{j=1}^{n} W_i W_j Cov(r_i\, r_j) \text{ or } = \sum_{i=1}^{n} \sum_{j=1}^{n} W_i W_j \rho_{ij} \sigma_i \sigma_j$$

Where,

σp = Standard deviation of portfolio's return

Wi = Proportion of investment in asset i

Wj = Proportion of investment in asset j

Cov (ri, rj) = Covariance of the return between asset i and asset j

ρij = Correlation co-efficient between asset i and asset j"

(Thapa, Bhattarai & Basnet; 2006: 150)

2.2.3 Optimum portfolio Selection

There are three steps to select a portfolio by an investor

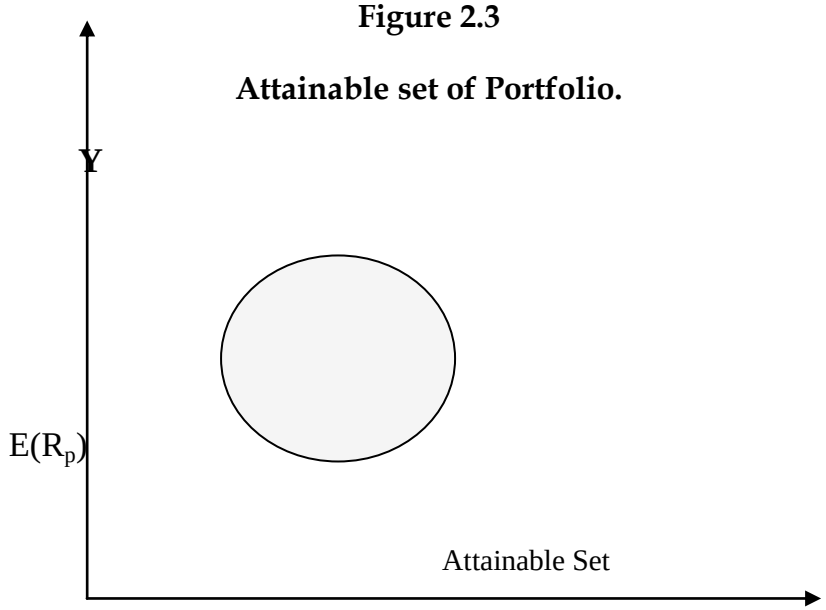
Step-I

Determination of Portfolio Opportunities or Attainable Set of Portfolio

It is the first step to select the optimum portfolio selection. From n-assets, we can combine limitless number of portfolios. Each possible portfolio will have an expectation rate of return and risk. The hypothetical set of all possible portfolios called the portfolio opportunity or attainable set.

Figure 2.3

Attainable set of Portfolio.



Step-II

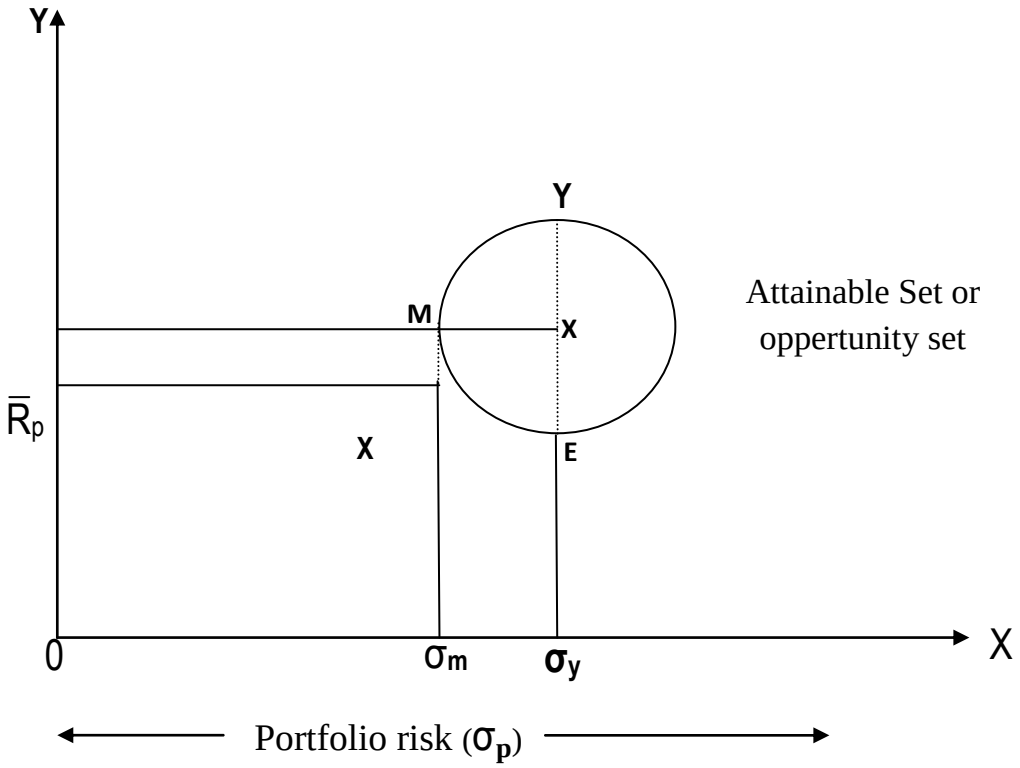
Determination of Efficient Frontier:

An efficient frontier or portfolio is a portfolio that provides the highest possible expected return for varying level of risk or the lowest possible degree of risk for

varying level of expected return. Portfolio to the left of the efficient frontier are not possible because they lie outside the attainable set whereas the right of the frontier are ineffective because some other portfolio could provider either a higher return with same degree of risk or a lower risk for the same rate of return as shown in figure below:

Figure 2.4

Efficient Frontier



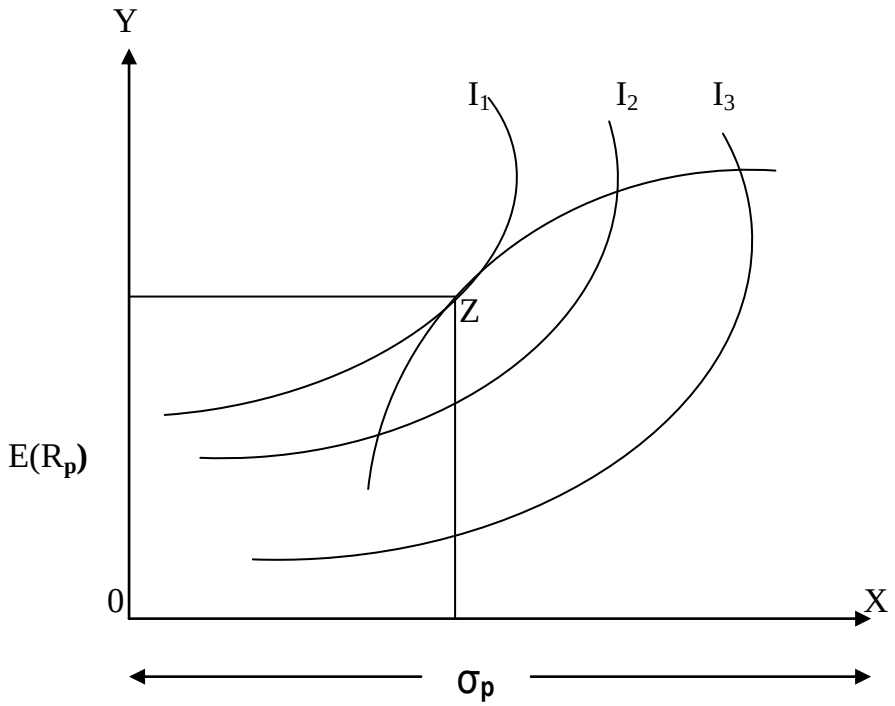
In figure, the efficient frontier is represented by the line from E to X. Portfolio along curve EX dominated all other investment possibilities.

Step- III
Selection of Optimal Portfolio

After finding the efficient frontier, select the optimal portfolio, which maximize the utility of investors with the help of indifference curve as shown in diagram 2.5.

Figure 2.5

Optimal Portfolio Selections



The indifference curve of the investor and the portfolio becomes optimal for him. Indifference curve I_1 tangent with efficient frontier at point Z. Here investor's optimal portfolio is Z. that's why this point Z makes a highest level of satisfaction an investor can achieve. (Thapa; 2005).

2.2.4 Correlation Coefficient and Portfolio Risk

"The risk of the portfolio can be measured by using covariance of the returns of assets in the portfolio. The covariance's simply means the degree to which the returns of the two assets vary together. In other words its measures how two variables co-vary. A positive covariance indicates that the returns of two assets move in the same direction where as a negative covariance indicates that the returns of two assets move in opposite direction. If the covariance is zero, it means the rate of return on assets is independent. The correlation coefficient is the covariance divided by the product of the standard deviation for the investments.

$$\text{Correlation Coefficient } \rho ij = \frac{\text{Cov (ri, rj)}}{\sigma_i \, \sigma j}$$

Where,

ρij = Correlation Coefficient between assets i and j

σ_i = Standard deviation of returns for asset i

σ_j = Standard deviation of return for asset j

The correlation coefficient between -1 and +1, if the value of correlation is 1, it is perfectly positively correlated. It indicates that the return on two assets move together exactly the same way. In additional, the value of correlation -1 means perfectly negatively correlated which indicates that the return on two assets move together perfectly opposite way. If the value of correlation 0 means that, there is no relationship between two assets return." (Thapa; 2005).

2.2.5 Portfolio Performance Evaluation

Risk and return should be considered by giving important priority when considering a portfolio performance. Due to absence of either risk or return we cannot measure their performance of portfolio effectively. There are various methods applied to measure the portfolio performance. Among them, one of the important techniques that are Sharpe's Portfolio Performance Measure is considering here in this study:

2.2.6 Sharpe's Performance Measure:

It was developed by William Sharpe. Sharpe's measure divides average portfolio excess return over the sample period by the standard deviation of return over that period.

The Sharpe's measure of portfolio performance (designed Si) is stated as

$$Si = \frac{r_i - R_f}{\sigma i}$$

Where,

S_i = Sharpe's index of portfolio performance.

r_t = average return on portfolio 'i' during a specified time period.

rf = average risk free rate during the same period.

σi = Standard deviation of portfolio 'i'

Here, numerator is the risk premium (i.e excess of return of portfolio 'i' over the risk free rate) and denominator is the total risk of this portfolio. Hence, it is the risk premium return earned per unit of total risk. So, this rate is appropriately called

reward-to- variability ratio. A higher value of Si means a better performing portfolio as this indicates higher risk premium per unit of total risk.

(Thapa, Bhattarai and Basnet; 2006).

2.3 Reviews from Relevant Studies, Articles and Journals

2.3.1 Reviews from Journals

In the field of finance in Nepal it is very difficult to get advanced and research based journal. There are very limited numbers of journals available in the subject of management and it is also hard to find any article in the subject matter of finance. Almost no articles about the risk and return analysis on common stock investment are found. Hence some foreign well known recently published journals of finance has been reviewed here. However, it helps to build the conceptual framework on this topic.

An article entitled "*Expected Return, Realized Returns and Assets Pricing Tests*" by Edwin J. Elton as journal of finance in the year 1999 is relevant to this study. In this proper he points out the fundamental issues in finance like that what the factors are that affect expected return on assets, the sensitivity of expected return to those factors, and the reward for bearing this sensitivity. There is a long history of testing in this area and it is clearly one of the most investigated assess in finance.

Almost all of the testing being aware of using realized returns as a process for expected returns. The sue of a average realized relies on a belief that information surprises tent to out over the period of a study and realized returns are therefore an unbiased estimate of expected returns. However, he believes that there is ample evidence that there is ample evidence that this belief is misplaced. There are period's longer than 10 years during which stock market realized returns are one average less than the risk free rate (1973 to 1984, A.D.). There are periods longer than 50 years in which risk long term bonds on average underperform the risk free rate [1927 to 1981

(A.D.]. Having a risky asset with expected return above the risk less rate is an extremely weak condition for realized. Returns to be an appropriate process for expected return, and 11 and 50 years is an awful longtime for such a weak condition not to be satisfied. In the recent past, the United States has had stock market returns of higher than 30% per year while Asian Markets have had negative returns (Elton, 1999:26).

The journal of finance, published by American Finance Association for many decades is taken into account. In its recent volume of August 1999, an article "*Local Return factors and Turnover in Emerging Stock Markets*" by K Greet Rouwenhast. This paper examines the sources of return variation in emerging stock markets. Compared to the developed markets the correlation between most emerging market and stock market has been historically low and until recently many emerging country restricted investment by foreign investor.

He attempts two set of question to answer. The first set of three questions concern the existence of expected return premiums. (i) Do the factors that explain expected return difference in developed equity markets also describe the cross section or expected returns of emerging market firms?(ii) Are the returns factors in Emerging markets primarily local or they have global components as well? (iii) How does the emerging market evidence contribute to the international evidence form developed markets that similar return factors are present in markets around the world? The set of questions of the paper include, (iv) is there a cross sectional relation between liquidity and average, returns in emerging markets? Are the return factors in emerging markets cross sectional correlated with liquidity?

Total returns are calculated in the sum of the dividend return and price appreciation using prices scaled by a capital adjustment factor, which the IFC computers to correct for price effects associated with stock splits, stock dividends and rights issues. Many emerging market have firms with multiple share assess are treated as a single value weighted portfolio of the outstanding equity securities (Rouwenhorst, 1999:1442-1443).

In this proper Roowenhorst has been made detail analysis of the data and he interprets the result in each section. Lastly, he has concluded his findings as "The first conclusion is that the return factors in emerging markets are qualitatively similar to those in developed markets: Small stocks outperform growth stocks and emerging market stocks exhibit momentums. There is no evidence that local market betas are associated with average returns. The low correlation between the country return factors suggest that the premium have a strong local character. Furthermore, global exposure cannot explain the average factor returns of merging market. This is little evidence that the correlation between the local factor portfolios have increase, which suggests that the factors responsible for the increase of emerging market country correlation are separated from those drives the difference between expected return within these markets. A Bayesian analysis of Premiums in developed and emerging markets shows that unless one has strong prior belief to the contrary. The empirical evidence favors the hypotheses that size, momentum and values strategies are compensated for in expected returns around the world. Finally, the paper documents the relationship between expected returns and share turnover and examines the turnover characteristics of the local factors portfolios. There is no evidence of relation between expected returns and turnover, in emerging markets. However, beta, size momentum and value are positively cross sectionally correlated with turnover in emerging markets. This suggests that return premium do not simply reflect a compensation for liquidity (Rouwenhorst, 1999:1462).

After reviewing, an article entitled American Association of Individual Investors, Investing basis reveals importance to understand how personal circumstance affect investment decision. (If these factors make no difference we could simply publish one suggested portfolio for everyone to follow). Investment profile is the beginning of the asset allocation process, which consists of dividing portfolio among the major asset categories of stocks, bonds and cash. The asset allocation decision will have a far more effect on portfolio return.

Make allocation decision with the major categories. For instance stock portfolio can be divided among large capitalization stock, small capitalization stocks and international

stocks. Once these decisions are reached, you will be ready to make selection among the various investment options. Lastly, once you have set up your investment portfolio you must monitor it, making changes when appropriate.

Every investor wants the highest assured return possible. Both as we have seen, returns are not certain and different investors have varying degree of uncertainty that they are willing accept.

In order to reduce overall risk, it is the best to follow diversification of assets that are not related. "The technical term for this is not putting all your eggs in one basket". In that way if u trip, you won‟t break all the eggs. The creation of a portfolio by combining two assets that behave exactly the same way cannot reduce the portfolio's overall risk below the risk of the least risky asset.

Fluctuations expose you to wide uncertainty in your overall returns and even to the risk of permanent loss of principal. CAPM is an effective model in finance but it is not far off from argument. It has also got it good points as well as bad points.

It tells us where to invest, how to invest and what discount rate to use for project cash flows. Not only that, it is a disarmingly simple model. The expected return of a security depends upon a simple statistics. The relationship between risk and return is linear. Calculation of portfolio risk trivial at the sometime, the CAPM is revolutionary. It tells us that the variance of a project is not a factor in determining the appropriate risk adjusted rate. It turns financial research from roll-up-your sleeves fundamental analysis into a statistical problem. In short, the CAPM turned Wall Street on its head.

2.3.2 Review from relevant studies

In the Nepalese context, there are very limited numbers of articles can be found relating to management of commercial banks of Nepal. Specially, it is rare in the case

of this research topic. However, there are available some independent-studies which are related to the Nepalese Stock Market, Portfolio management and Shareholders democracy are summarized below in detail.

Shreastha, (1998), has given a short foretaste on the *"portfolio Management in Commercial Bank, Theory and Practice".* Shreastha has highlighted the following issues in his articles.

The portfolio management becomes very important for both individuals as well as institutional investors. Investors would like to select a best mix of investment assets subject to the following aspects.

- Higher return which is comparable with alternative opportunities available according to the risk class of investors.
- Good liquidity with adequate safety of investment.
- Certain capital gain.
- Maximum tax concession.
- Flexible investment
- Economic, efficient and effective investment mix.

In view of above aspects, following strategies are adopted:

- Do not hold any single security i.e. try to have a portfolio of different securities.
- Do not hold any single security i.e. to have a diversified investment (making investment in different sectors).
- Choose a such a portfolio of securities, which insures maximum return with maximum risk or lower of return but added objectives of wealth maximization. However, Shrestha also presented the following approaches to be adopted for designing a good portfolio and its investment:

- To find out the invisible assets(generally securities) having scope for better returns depending upon individual characteristics like age, health, need, disposition, liquidity, tax liability etc.
- To find out the risk of securities depending upon the attitude of investors toward risk.
- To develop alternative investment strategies for selecting a better portfolio this will ensure a trade-off between risk and return to attach the primary objective of wealth maximization at lowest risk.
- To identify securities for investment to refuse volatility of return and risk.

In this study, Shreastha has presented two types of investment analysis techniques i.e. fundamental analysis and technical analysis to consider any securities such as equity, debentures bond and other money and capital market instruments. He has further suggested that the banks having been international net work can also offer assess to global financial market. He has also point out the required skilled work force research and analysis and proper management information system in any type of commercial banks to get success in portfolio management information system in any type of commercial banks to get success in portfolio management and customer's confidence. (Shreastha; 2055).

Shrestha, (2000), in his article *"Commercial Banks Comparative Performance Evaluation"* concluded that the Joint Venture Banks are now operationally more efficient, having superior performance while comparing with local banks that are operating in Nepal. Better performance of joint venture banks is due to their sophisticated technology, modern banking method and skill. Their better performance is also due to the government's branching policy in rural areas. Local banks are efficient and expertise in rural sectors but having number of deficiencies. Thus, local banks are facing growing constraints of socio-economic, political system on one hand spectrum and that of the issues and challenge of joint venture banks commanding significant banking business on other spectrum.

Ghimire (2001) *"Nepal Share Market and Investors Prospect*". In this study he has

pointed out some important trends our capital market. He has concluded that the Nepalese share price is decreasing because of many unbalanced factors. The major reason behind the movement in the index is the domination of the banking sector script in the Nepalese stock market transactions.

Mismanagement practices cannot help the growth of share market. The general public has invested recklessly. They just believe what one broker or the investor says about scrip.

One of the prime motives for the investment is to earn return on it. Finally he concludes that the general investors should be alert and aware of the situation. They must receive the financial information before they make investment and act rationally.

Poudel, (2001) also carried out another study in a topic of "*Investing in shares of Return and Risk elements*". The study was based on the data collected for eight banks from mid July 2001. The main objectives of the study was to determine whether the shares of commercial banks in Nepal are over or under priced by analyzing risk and return characteristics of the individual share.

Poudel summarized the following finding:

- Most of the individual share's appeared to be defensive as beta coefficients were les that on low data shares were less volatile than market as a whole. Only the return of share of Bank of Kathmandu had beta coefficient of greater than one, indicating that the share was more risky than the market.
- Nepal Arab Bank Ltd., Nepal Indosuez Bank Ltd., Himalayan Bank Ltd. Had higher expected equilibrium return than expected rate or return. And standard Chartered Bank Ltd., Nepal SBI Bank Ltd., Nepal Bangladesh Bank Ltd., Bank of Kathmandu Ltd. Had lower equilibrium return than expected rate or return.
- From this study we get Nepal Arab Bank Ltd., Nepal Indosuez Bank Ltd. and Himalayan Bank Ltd. was overpriced and other were under priced.

2.3.3 Review of Master's Degree Thesis

In Nepal, some of the student has done independent study for the fulfillment of Master Degree in T.U. related to the topic *"Risk, Return and Portfolio Analysis on common stock investment"* of Nepalese Joint Venture Banks. Some of the related studies are reviewed here:-

Khaniya, (2003), in her thesis entitled with *"Investment Portfolio Analysis of Joint Venture Banks"* has following objectives:-

- To evaluate the common stock of joint venture banks in terms of risk and return.
- To estimate an optional portfolio among common stock investment of joint venture banks.
- To analyze comparative risk and return position of sample banks.

The major Tools used in the study were Market Price of Stock, Dividend, Return on common stock investment, Expected rate of return, Correlation coefficient, Standard deviation, Coefficient of variation and Beta.

The major findings of the study are as follows:

- The one of major findings of the study is among SCBNL and HBL have better position. NBBL and NABIL have a low position in the industry. But Everest Bank has a very low position in the industry because of having lowest mean return on shareholders' fund resulting from the negative returns in the fiscal years 1995/96 and 1996/97.
- SCBNL has the highest mean return and EBL has the lowest return. Expect EBL, all other four banks i.e.; NABIL, SCBNL, HBL and NBBL have good performance.
- Among other joint venture banks, SCBNL has the highest return and EBL has mean return than industry average. SCBNL and EBL mobilizes the funds in investment title is higher than the standard ratio.

- NABIL, SCBNL and HBL are investing low amount of deposits on loans and advances which is lower than industry average and NBBL & EBL have invested a high amount of deposits to loans and advances title which is higher than industry average.
- SCBNL has the highest EPS and EBL has the lowest EPS. Similarly, HBL also has above mean EPS than industry average and that of NBBL is lower than industry average.

The recommendations of the study are as follows:

He recommended that investors and institution should analyze risk and return. It is better to invest on such common stock, which has fewer betas and finally investors need to diversify their fund to reduce the risk.

Joshi, (2004), entitled with *"Risk and Return Analysis of common stock of five listed Commercial Banks".* The major objectives of the study are:

- To calculate and analyze the risk and return of banking sector.
- To evaluate common stock of listed commercial banks and to analyze whether the common stock of commercial banks are correctly priced or not etc.

The major Tools used in the study were Market Price of Stock, Dividend, Return on common stock investment, Expected rate of return, Correlation coefficient, Standard deviation, Coefficient of variation and Beta.

The major findings of the study are as follows:

- Regarding the market capitalization of selected companies, SCBL has the maximum market capitalization and NBBL has the minimum market capitalization.
- Regarding the market capitalization of the inter industry, Banking sector has 65%, Insurance& Finance has 14%, Manufacturing & Processing sector has 13%, Hotel sector has 7%, Trading sector has 1% and other sector has negotiable proportion of share in over - all market capitalization. Joshi further concludes that the considering returns, the return of SCBL is maximum (i.e. 73.30%) but its risk also maximum but if risk is taken into account for

consideration, NIBL has the minimum risk of 43.82%. In industry wise analysis, the expected return of finance and insurance has a maximum expected return (i.e. 27.70%), while other sector has a minimum expected return (i.e., 16.61%). If the risk is assessed in term of C.V., Banking sector has minimum C.V. like 1.66, which indicates that it is better to invest on the shares of banking sector.

The recommendations of the study are as follows:

- As analyzing the Coefficient of Variation, he suggests that the banking industry is the best one for investment. Similarly, while analyzing individual securities, SCBL is the best for investment due to highest return and lowest C.V.
- Based on the findings and conclusion of the study, then they should bear higher risk and invest in single assets, then they can invest in the share of NIBL or HBL because these two stocks have lower risk than that of portfolio risk.
- Portfolio analysis shows that the portfolio investment can reduce risk significantly. Thus, portfolio investment is recommended to receive high return at minimum risk.

Pokharel, (2005), entitled with *"Risk & Return on Common Stock Investment of Commercial Banks with reference to six Commercial Banks."*

Among various objectives of his study, some major basic objectives of his study, some major basic objectives of his research are:

- To analyze, whether the common stock of commercial banks are correctly priced or not, by analyzing the required rate of return.
- To study systematic and unsystematic risk associated with securities of the commercials banks.

The major Tools used in the study were Market Price of Stock, Dividend, Return on common stock investment, Expected rate of return, Correlation coefficient, Standard deviation, Coefficient of variation and Beta.

The major findings of the study are as follows:

- Among the six commercial banks, NABIL bank has highest expected rate of return on common stock (i.e. 14.03%) and NIB bank has negative expected rate of return on common stock (i.e. -3.9698%). Similarly, The common stock of BOKL is most risky asset, which has highest standard deviation (i.e. 52.15%) and HBL's stock is less risky due to lowest standard deviation (i.e. 19.49%).
- Regarding the market capitalization of six selected companies, SCBNL has the maximum market capitalization (i.e.31.36%) and the market capitalization of BOKL is low by 7.11%.
- Considering the different investment sectors, the expected return of other sector is maximum by 34.53% and the processing sector has very low expected return (-12.076%). Similarly, considering coefficient of variation of different sectors, the trading sector has maximum by 18.49 units, which indicate that to earn 1 unit of return, the investor has to bear 10.49 units of risk. The coefficient of variation on manufacturing & processing is -3.1349 and -3.28(negative) respectively.
- On the basis of required rate of return and expected rate of return, the study shows that RRR of NIBL, NABIL, SCBNL, HBL, EBL & BOKL is 0.0175,-0.0677, -0.0174, -0.0099, -0.0526 and -0.0903 respectively. The ERR of NIBL, NABIL, SCBNL, HBL & BOKL is -0.0396, 0.1403, 0.2264, 0.1158, 0.1312 and 0.0021 respectively. As his study shows that the common stock of NIBL is overpriced and rest of all's common stocks are under priced.

The recommendations of the study are as follows:

- Before making investment decision, the investor should visit the discussion with investment Companies, with export and researcher because sharing experience, idea and view of export will provide greater help. He also advices that the investor needed to diversify their investment to reduce risk. Proper construction of portfolio never takes any considerable loss.

Mainali, (2005), entitled with *"Risk and Return Analysis on Common Stock Investment".* The objectives of the study are:-

- ❖ To determine whether the shares of selected commercial banks are over-priced, under-priced or correctly valued by analyzing the risk and return.
- ❖ To evaluate the common stock
- ❖ To analyze the risk and return and to provide relevant suggestion to concerned authority based on analysis of data.

The major Tools used in the study were Market Price of Stock, Dividend, Return on common stock investment, Expected rate of return, Correlation coefficient, Standard deviation, Coefficient of variation and Beta.

The major findings of the study are as follows:

- ❖ Among the selected commercials banks, he writes that the SCBNL has highest (i.e. 32%) market capitalization which indicates that the size of the stock market of SCBNL is greater one.
- ❖ Regarding the expected rate of return among the selected commercial banks, the highest expected rate of return of SBI is 19.9% and lowest expected return on common stock of NBBL is 27.99%. So, it indicates that the investment in SBI will earn best return.
- ❖ Among the selected banks, the highest C.V. on common stock of NABIL is 12.23 and lowest C.V. common stock of SCBNL stock is less risky than other. Similarly, beta coefficient of SBI is highest (i.e.3.30) and the NIBL has lowest beta coefficient (i.e.0.5831). So, it means C.S. of SBI is most aggressive stock and C.S. of NABIL is most defensive stock than other.
- ❖ At the last, he writes at major finding of his study that the correlation between NIBL and SBI is in negative. It indicates making portfolio investment in these

two stocks will minimize risk without losing considerable return.

The recommendations of the study are as follows:

Investors should be rational. He or She should carefully look after risk and return before investment on common stock of joint venture banks. Political environment should be sound and government should static for long term.

Chhetry, (2007), entitled with *"Portfolio Analysis on Common Stock Investment of Joint Venture Banks in Nepal"*. The main and basic objectives of this study are:-

- ❖ To find out the condition of portfolio management.
- ❖ To estimate and optimal portfolio among the common stock investment of Nepalese JV banks.

The major Tools used in the study were Market Price of Stock, Dividend, Return on common stock investment, Expected rate of return, Correlation coefficient, Standard deviation, Coefficient of variation and Beta.

The major findings of the study are as follows:

- ❖ Considering the beta coefficient of mentioned banks, the beta coefficient of SBI is the highest one (1.8942), which is greater than 1 that indicates that the return of SBI is more volatile than that of market. That means, every 1% change in market return leads to 1.8942% change in SBI stock's return. Thus, it is most aggressive stock but the stock of NBBL is most defensive due to the lowest beta coefficient i.e. 0.4939.

- ❖ The systematic risk of HBL is the highest one among the mentioned joint venture bank of Nepal i.e. 0.9465 and the lowest is 0.7213 of the NBBL. In the case of unsystematic risk, the NBBL has the highest i.e. 0.2787 and the lowest is 0.0535 of HBL.

- Considering the market capitalization of six joint venture banks, the market capitalization of NABIL, SCBL, HBL, EBL, NBBL and SBI is 24.32%, 31.81%, 19.94%,11.88%, 9.89% and 9.71% respectively in the fiscal year 2005/06. The SCBL has capitalized greater amount of money in the market i.e. Rs 13487050000 and the lowest amount that is capitalized by NBBL is Rs 1223870000.

- Considering the total market capitalization of various industries in fiscal year 2005/06, Banking, Mfg/Processing, Hotel, Trading, Finance/Insurance and other is 72.59%, 5.65%, 2.42%, 0.78%, 10.29% and 8.27% respectively. Out of total market capitalization of various industries, categorized by NEPSE, Other industry sector has the highest expected return on common stock i.e. 51.74% and the lowest expected return is 6.27% of Trading industry but manufacturing and processing industry and Hotel industry is bearing negative expected return i.e. -0.64% and -8.60% respectively. On the basis of risk, the S.D. of other industry is maximum i.e. 111.86%, which indicates that the common stock of other industry is very risky. Similarly, due to the lowest risk (17.89%), trading industry is less risky among the mentioned industries.

- Considering the market risk and return, the expected return and S.D. of overall market is 5.55% and 28.67% respectively. Similarly, the coefficient of variation of the market is 5.1659.

- From the analysis of required rate of return and expected rate of return, it has become clear that NABIL, SCBL, HBL & EBL's common stocks are under priced and NBBL & SBI's stocks are overpriced.

- While creating the portfolio between the two assets of all the sample banks, the optimal portfolio of NBBL and EBL gives the maximum expected return that is 62.37% whereas, the portfolio of NABIL & EBL gives the lowest expected return i.e. 3.37%. Considering the portfolio risk, the portfolio of HBL & SBI has maximum S.D. that is 75.16% but the portfolio of HBL & NBBL has the lowest S.D. that is 35.79%.

The recommendations of the study are as follows:

He recommended that investors and institution should analyze risk and return. It is better to invest on such common stock, which has fewer betas and finally investors need to diversify their fund to reduce the risk.

Thapa, (2008), entitled with *"Portfolio investment in common stock of joint venture banks in Nepal".* The study has following objectives:-

- To analyze the risk and return of common stock investment of joint venture banks.
- To provide suggestions to general people.

The major tools used in the study were Market price of stock, Dividend, Return common stock investment, Expected rate of return, Correlation coefficient, Standard deviation and Coefficient of variation.

Major findings of this study are:

- The expected return on common stock of NABIL is maximum i.e. 72.63%, which is very high. The expected rate of return of the common stock of HBL is found minimum i.e. 37.51%.
- The S.D. of HBL is lower i.e. 0.2984 and that of NABIL is higher i.e. 0.7379. So NABIL's C.S. is high risky whereas HBL's is low risky.

Chhetry, (2009), in the study entitled with *"Risk and Returns Analysis on common*

stock investment with reference to listed commercials banks" where, he has taken six banks as a sample size from listed commercial banks of NEPSE.

The study has following objective:

- To evaluate the common stock of selected joint venture banks in terms of risk and return and to perform sector-wise comparison on the basis of market capitalization.
- To analyze the volatility of different stock and other relevant variable that should be considered while deciding investment in stock.

The major tools used in the study were Market price of stock, Dividend, Return common stock investment, Expected rate of return, Correlation coefficient, Standard deviation and Coefficient of variation.

Major findings of this study are:

- On the basis of market capitalization, he has found that size of SCBNL is the biggest one. (i.e. 6537.47). Out of the total market capitalization of various industries, banking sector covers most of the share i.e. 65.54%. NEPSE index shows that banking sector has higher return than others.

- On his study, he has found that EBL has highest expected return (i.e. 45.12%) where SCBNL has the lowest standard deviation (i.e. 31.30). Similarly, the EBL has least CV (i.e. 1.51). Thus, he recommends that the common stock of EBL is the best investment alternative as it has least risk per unit of expected return.

He has recommended that the investors need to diversify their fund to reduce risk. He further advice that for the portfolio construction, investor should select the stock that have higher return and negative correlation or moderate positive correlation between stocks of different companies and sector. He writes that common stock investment is

very risky. So, investors should learn about the operation of the security market, the characteristics or various investment revenues, concepts of the time value of money, the basic models of security evaluation, the approach of fundamental analysis, the tools and technique of analysis and the war of resolving the key issues relating to the process of portfolio management. After learning above topics and subject matter, investors should translate the knowledge and insight to gain from common stock investment.

2.4 Research Gap

Although some previous MBS students have conducted their thesis in the similar topic the present researcher has selected, there is fundamental difference between those and this present research one. The previous researcher focused only on the risk and return aspect of selected joint venture banks from investors perspectives. This research has further tried to identify the correlation among returns of the joint venture banks under study which plays a significant role in the risk reduction by portfolio construction and systematic and unsystematic risk has been identified for each bank which is not done by previous researchers and this research includes that financial performance of joint venture banks through common stock investment portfolio strategies and share of joint venture banks under price, over price or correctly value by analyzing the risk and return characteristic of individual bank.

Most of the previous researches reviewed have been carried out with less then seven years data. Here, in this research ten year's data has been taken for analysis. Similarly, the number of sample banks takes by the previous researchers is less than five years. But this research has been conducted with references to all Nepalese joint venture banks which give the clear vision for all the investors who invest in common stock investment of Joint venture banks listed in NEPSE. However, almost effort has been put upon to save it from allegation of being copy of previous research works done in the similar topic.

CHAPTER - III

RESEARCH METHODOLOGY

Research methodology is the process of arriving at the solution of the problem through planned and systematic dealing with the collection, analysis and interpretation of facts and figures. Research is a systematic method of finding right solution for the problem whereas research methodology refers to the various sequential steps to adopt by a researcher in studying a problem with certain objectives in view. In other words research methodology refers to the various methods of practices applied by the researcher in the entire aspect of the Study. In other hand, Research methodology is the science of systematic and organized method, which probes into depth the facts of the problem in order to discover new information of relationship and expand, verify existing knowledge for same specific purpose. In this study observed data which will be based on the historical data, will be analyzed with using both statistical and financial tools. Results will be presented in simple way by using graph, diagrams and tables.

The following details of research methodology used in the analysis of the study.

3.1 Research Design

The present study is mainly base on recent historical data which are collected from various secondary sources. The research study covers ten years of period. This study is use analytical, empirical and descriptive research design. It relates with the study of risk, return and portfolio analysis of Joint Venture Banks on the basis of available information.

This study is more analytical, empirical and less descriptive. Analytical in the sense that all the available data are analyzed by using various statistical tools and techniques. Such as: standard deviation, coefficient of variation, and regression model etc. All the data used in this study have been taken from related sources. The study is purely empirical due to purely historical data. The Risk, return and portfolio are main

subjects of the study that follow the numerical data. For explanation of result description has been also followed.

3.2 Population and Sample

Currently in our country, there are 31 commercial Banks are running out of them there are six joint venture banks. This study id based on the portfolio analysis on common stock investment of the all the Joint Venture Banks in Nepal. Thus this research is covered all the Joint Venture Banks.

Population size = 6 Sample size = 6

3.3 Data collection Procedure

This study is based on secondary data concerned joint venture banks, Nepal Rastra Bank, Securities Board of Nepal (SEBO), and different library are the providers of the data. The review of literature of the proposed study is based on the text books, journals, Websites. During the study period, informal opening survey are also taken with the individual investor, related joint venture banks of officials, Nepal Stock Exchange (NEPSE) etc.

3.4 Tools for Analysis

Various Financial and Statistical tools are used to analyze the data.

There are several tools which are applied in order to analyze the performance of Joint Venture Banks like Market price of stock (MPS), Dividend, Return on Common Stock Investment, Expected return on common stock, standard deviation, co-efficient of variation, Beta, correlation co-efficient, portfolio risk and return, systematic risk, unsystematic risk, minimum risky portfolio, Sharpe's portfolio performance measure respectively. This can be described one by one as follows:

3.4.1 Market Price of Stock (MPS)

Among the various major data of this study, market price of stock is the most

important tools because without market price, we cannot further calculation. There are three types of prices of the share, i.e. High price, low price & closing price of each year, which are summarized and published by Nepal Stock Exchange. For the analysis, single one needed. Therefore, two approach either average price (i.e. average of high and low price) or closing price can be used. It is denoted by symbol of "P". It may be very closer result if it is used average price that represents the price of whole year but it is very difficult to obtain the real average. To get the real average, volume and price of each transition of the stock and the duration of the time of each transaction in the whole year are necessary. But, it is very hard and difficult to include all the information. In this regard, it is very difficult to use average price as a market price of stock. Thus, the closing price of each year is used as the market price of the stock (MPS).

3.4.2 Dividend (DPS)

Dividend is the portion of net earning which are paid out to the shareholders as a reward for their investment. Normally there are two types of dividend i.e. cash dividend and stock dividend. If a company declares only the cash dividend, it is easy to calculate dividend amount. But, if company declares only the stock dividend (Bonus share), it is difficult to obtain the amount that really shareholders have gained. In such condition, they get extra numbers of shares as a dividend and simultaneous the price of stock declines due to increased numbers of outstanding stocks. So to get the real amount of dividend, there is no model of formula developed yet. But in this study, model is used which has been developed by considering practical and theoretical aspect after several discussing with NEPSE staffs & investors.

In case of stock dividend;

Total dividend = cash dividend + stock dividend% * next year's MPS

Where,

MPS = Market Price per Share

It is denoted by symbol as "D"

$$DPS = \frac{\text{The Total Amount of Dividend Paid}}{\text{No. of Common Shares Outstaning}}$$

3.4.3 Earning per share (EPS)

To know the earning capacity of shareholder common stock and to make comparison between concerned banks, earning per share is calculated EPS is the share profit after taxes and after preferred stock dividends that are available to common stock shareholders.

$$EPS = \frac{\text{Earning available to common stock holders}}{\text{No. of Common Shares Outstaning}}$$

3.4. 4 Return on Common Stock Investment (Rj)

Return is the income received in an investment plus any change in market price, usually expressed as a % of the beginning market price of the investment. It is denoted by "Rj"

Symbolically,

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

Where,

R= Return on common stock investment.

D_t = Cash dividend received at t period.

P_t = Price of stock at t period.

P_{t-1} = Price of stock at t-1 period.

3.4.5 Expected Return on Common Stock E(Rj)

One of the main objectives of the study is to determine the expected return on common stock investment. Thus, Expected return is one of the main tools to measure the performance of the company.

Expected rate of return is the average rate of return on common stock, which is calculated by the arithmetic mean of historical returns.

Symbolically,

$$E(R_j) = \overline{R}j = \frac{\sum Rj}{n}$$

Where,

$\overline{R}_j$ = Expected rate of return on stock 'j'.

n = Number of years that the return is taken.

$\sum$ = Sign of summation.

3.4.6 Standard Deviation (σ)

Standard Deviation is the statistical measurement of the variability of return around its mean. It is the square root of the variance and measures the total risk on stock investment. It is denoted by sigma sign (σ).

Symbolically,

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

Where,

σ_j = Standard deviation of returns on stock 'j' during the time period n.

3.4.7 Co-efficient of Variation (C.V.)

The coefficient of variation is defined as the standard deviation divided by the mean of expected return. It is used to standardize the risk per unit of return. In other word, it is the ration of standard deviation of returns to the mean of that distribution. It gives the result regarding the unit of risk to bear for earning 1 unit of return.

Symbolically,

$$\textbf{C.V.} = \frac{\sigma j}{\overline{R}_j}$$

3.4.8 Beta (β)

Market sensitivity of stock is explained in terms of beta coefficient. Higher the beta, greater the sensitivity and reaction to the market movement. Logically, the systematic risk is covariance between the returns of an individual asset or portfolio and the

returns of the market portfolio. The measure of systematic risk is represented by beta. It is an index of systematic risk, which cannot be eliminated through the means of diversification. It measures the sensitivity of a stock's return on the market portfolio.

Symbolically,

$$\beta_j = \frac{Cov_{Ri\ Rm}}{\sigma_m^2}$$

$$COV\ (R_j, R_m) = \frac{\Sigma(R_j - \overline{R_j})(R_m - \overline{R_m})}{n-1}$$

β_j = Beta co-efficient for stock 'j'.

3.5 Correlation Coefficient

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

Correlation coefficient measures the relationship between two variables in quantitative terms. Correlation coefficient always lies in the range of +1 to -1. A positive correlation coefficient indicates that the returns from two securities generally move in the same direction and vice versa.

Correlation coefficient and covariance are related by the following equation.

$$Cov_j = \sigma_i \sigma_j \rho_{ij}$$

$$P_{ij} = \frac{Covij}{\sigma_i \sigma_j}$$

Where,

σ_i and σ_j are the standard deviations of returns for assets i and j and P_{ij} is correlation oefficient for asset i and j. there are various cases of correlation and risk condition which are presented below.

i) Perfectly Positive Correlation (P_{ij} = +1)

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

ii) Perfectly Negative Correlation (P_{ij} = -1)

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

iii) No Relation between Return (P_{ij} = -0)

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

iv) Intermediate Risk (P_{ij} = +0.5)

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

3.6 Return on Market (R_m)

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

$$Rm = \frac{\sum R_m}{n}$$

Where,

$\sum$ = sign of summation

R_m = Market return

n = Number of samples period

3.7 Portfolio Risk and Return

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

a. 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.

$$E(R_P) = W_i\, E(R_i) + W_j\, E(R_j)$$

Where,

$E(R_P)$ = Expected return on portfolio.

W_i = Proportion of wealth invested in I assets.

W_j = Proporation of wealth invested in j assets.

$E(R_i)$ = Expected return on I assets.

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

b. 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 written as:

$$\sigma_p = \sqrt{\sigma_i^2 w_i^2 + \sigma_j^2 w_j^2 + 2 w_i w_j \text{cov}\, R_i\, R_j}$$

Where,

σ_p = Standard deviation of stock i & j

W_i = Proporation of asset i

W_j = Proporation of assets j

σ_i^2 = Variance of assets i

σ_i^2 = Variance of assets j

Cov $R_{i,}R_j$ = Covariance between the return of assets i & j

3.8 Portfolio Performance Evaluation

a. Sharpe's Performance Measure:

It was developed by William Sharpe. Sharpe's measure divides average portfolio excess return over the sample period by the standard deviation of return over that period.

The Sharpe's measure of portfolio performance (designed Si) is stated as

$$Si = \frac{r_i - R_f}{\sigma i}$$

Where,

S_i = Sharpe's index of portfolio performance.

r_t = average return on portfolio 'i' during a specified time period.

r_f = average risk free rate during the same period.

σ_i = Standard deviation of portfolio 'i'

3.9 Method of Data analysis and Presentation

The study mainly has used secondary data, high level of efforts and time has paid to get data. Mainly most of data are taken from Joint venture banks, library of securities Board of Nepal. In some cases, informal interview has scheduled and were conducted to obtain more information and reality about the various published data.

Due to poor data base, the data obtain from the various sources has not directly used in their original form. Further they have verified and simplified for the for the purpose of analysis. In this study the available data, information, figures and facts were checked, rechecked, edited and tabulated for computation. Similarly, according to the

need and objectives, the secondary data have compiled, processed tabulated and graphed where necessary for the better presentation.

CHAPTER - IV

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

This chapter reflects the full scenarios of research. It represents the data very clear and neat way. This chapter is heart of research. Analysis of collected data from various sources and their presentation with interpretation are included in this chapter to fulfill the objectives of the study which have been earlier mentioned in first chapter. This chapter is main body of the study. In this chapter, the effort has been made to analysis risk, return and portfolio behavior on the basis of common stock investment of joint venture banks of Nepal. The presentation and analysis of data consists of organizing, tabulating and accessing financial and statistical result. The detail data of market price per share (MPS), dividend per share (DPS) of each bank and NEPSE index of each sector with market is presented and their analysis and interpretation are included in this chapter. On the background of various reading and literature review, it is tried to analyze and diagnose the recent Nepal Stock Market movement with taking a special reference with Joint Venture Banks of Nepal. Different tables, diagrams, pie chart and trend line have drawn in separately for the same data to make simpler, readable and understandable.

4.1 **Analysis of Individual Joint Venture Bank**

As the study has been taken special reference to Joint Venture Banks, the common stock of each joint venture banks which are listed in NEPSE are analyzed here individually. It is already known that there are 31 commercial banks and among them there are only six Joint Venture Banks till date. The names of such Banks that are included under study are shown as follows in details.

S.N.	Name of Bank	Established Date
1	Nepal Arab Bank Ltd. (NABIL)	1984
2	Standard Chartered Bank Ltd.(SCBNL)	1985
3	Himalayan Bank Ltd.(HBL)	1992
4	Everest Bank Ltd.(EBL)	1992
5	Nepal Bangladesh Bank Ltd. (NBBL)	1992
6	Nepal SBI Bank Limited	1993

4.1.1 NABIL Bank Limited (NABIL)

4.1.1.1 Analysis of Data

Market price and dividend records of common stock of NABIL are shown in Table 4.1 and Closing MPS is shown in Diagram 4.1. MPS of NABIL was very lowest in 2000/01 i.e. Rs. 500 but in 2007/08, it was abnormally very high i.e. Rs. 5275.Then after it is in decreasing trend from 2007/08 to 2009/10.

Table: 4.1

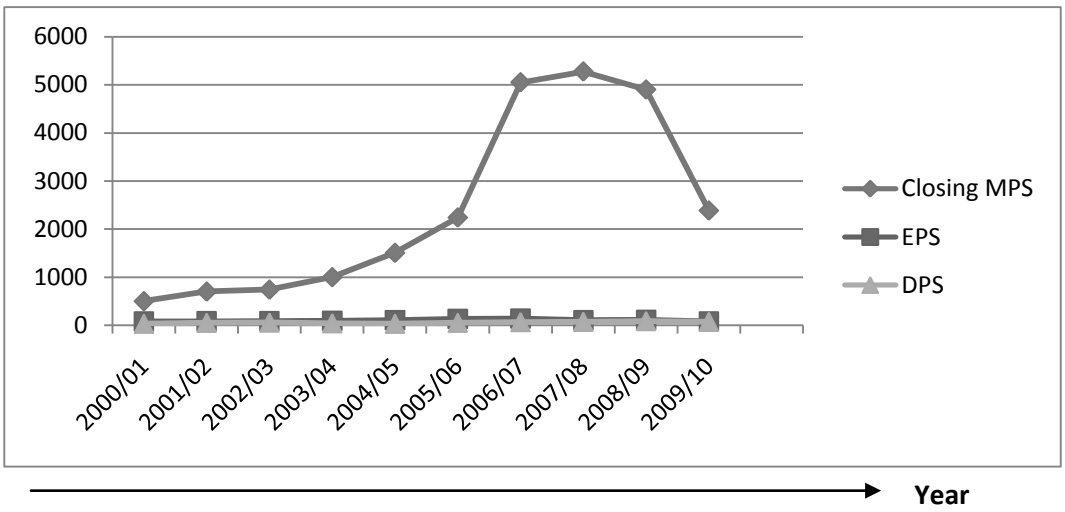
MPS, EPS and Dividend Data of NABIL

Fiscal Year	Closing MPS	EPS	DPS	Stock Dividend %)	Total Dividend (Cash + Stock)
2000/01	500	77.43	30	100	730
2001/02	700	80.67	50	50	420
2002/03	740	84.66	55	-	55
2003/04	1000	92.61	40	-	40
2004/05	1505	105.49	30	25	590
2005/06	2240	129.21	50	-	50
2006/07	5050	137.08	65	-	65
2007/08	5275	106.76	70	-	70
2008/09	4899	108.31	85	-	85
2009/10	2384	78.61	70	-	70

Source: www.nepalstock.com

Figure 4.1

Closing MPS, EPS and DPS Trend of NABIL



From the Table 4.1 and Figure 4.1 , closing MPS is increasing trend from fiscal year 2000/01 to 2007/08 and become high in fiscal year 2007/08 i.e., Rs 5275, then after it is gradually declining stage from fiscal year 2008/09 to fiscal year 2009/10, MPS is low in fiscal year 2000/2001. Here EPS is also increasing trend from fiscal year 2000/01 to 2006/07 and become high i.e. 137.08 and then after it is decline in 2007/08 and then after fluctuating in next two years. DPS is also increasing trend from fiscal year 2000/01 to 2002/03 and then after fluctuating trend. DPS is distributed at fiscal year 2009/10 i.e. 70.

4.1.1.2 Realized Return(R), Expected Return E(R), Standard Deviation (σ) and Coefficient of variation (C.V.).

Realized Return(R), Expected return E(r), Standard deviation (σ) and Coefficient of Variation (C.V.) are the main required terms. Closing Price and dividend amounts are used to calculate to realize rate of return for each year.

Table 4.2

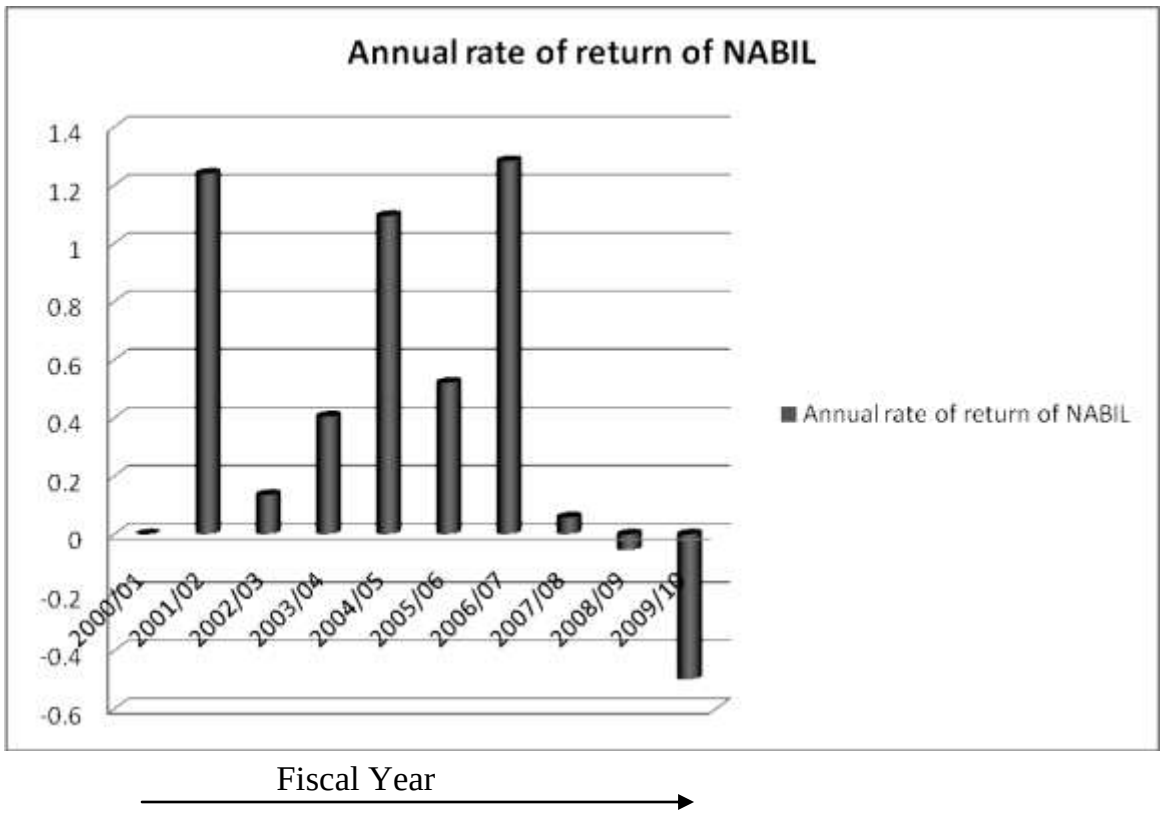
Expected return, Standard deviation & Coefficient of Variation

Expected Return E(R)	Standard Deviation(σ)	Coefficient of Variation(C.V.)
0.4650	0.6273	1.3490

Source: Appendix-1

Here, from the above Table 4.2, it is found that expected return of the common stock of NABIL is 46.50% and the risk is 62.73%. Similarly, the co-efficient of variation is 1.3490, which indicates that to earn 1 unit of return, the investors should bear 1.3490 unit of risk.

Figure 4.2
Annual Rate of Return on Common Stock of NABIL



From the above Figure, It is observed that the highest annual rate of return on common stock of NABIL is in Fiscal Year 2006/07 and the lowest return (i.e. negative) is in fiscal year 2008/09 and 2009/10. Among them Fiscal year 2009/10 has the lowest return than all of the above fiscal year returns.

4.1.2 Standard Chartered Bank Limited. (SCBNL)

4.1.2.1 Analysis of Data

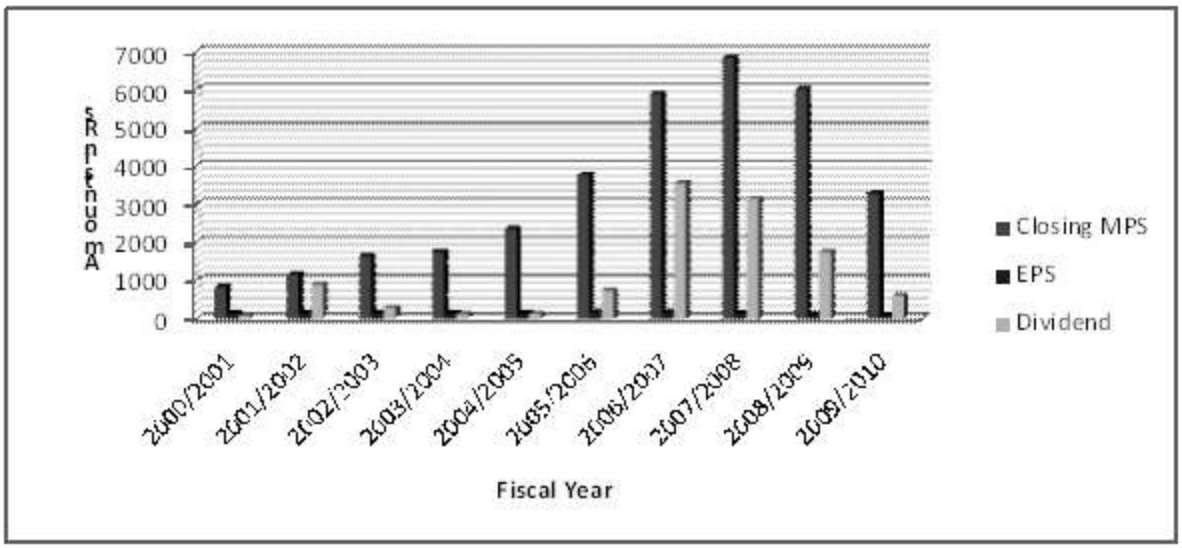
EPS, Market price and dividend records of common stock of SCBNL are shown in table 4.3 and closing MPS is taken into account for the purpose of calculating realized return for the years.

Table: 4.3
MPS, EPS and Dividend data of SCBNL

Fiscal Year	Closing MPS	EPS	Cash dividend	Stock dividend in percentage(%)	Total Dividend
2000/01	840	140.23	70	-	70
2001/02	1162	144.45	80	50	900
2002/03	1640	149.30	110	10	284.5
2003/04	1745	143.55	110	-	110
2004/05	2345	143.14	120	-	120
2005/06	3775	175.84	140	10	730
2006/07	5900	167.37	130	50	3545
2007/08	6830	131.92	130	50	3135
2008/09	6010	109.99	100	50	1739.5
2009/10	3279	77.65	70	15	595

Source: Annual report, Standard Chartered Bank of Nepal

Figure 4.3
Closing MPS, EPS and Dividend Trend of SCBNL



In the above Figure 4.3, Closing MPS of SCBNL is increasing trend from fiscal year 2000/01 to 2007/08 and become high. Then after it is gradually decreasing trend up to fiscal year 2009/10. EPS of SCBNL is also increasing from fiscal year 2000/01 to 2005/06. Dividend is fluctuating trend. Dividend of SCBNL is high in fiscal year 2006/07, then after it is decreasing trend up to fiscal year 2009/10.

4.1.2.2 Realized Return(R), Standard Deviation (σ), and expected return (R), Coefficient of variation (C.V.) and Variance $(\sigma)^2$.

Here for calculation of above required terms we used to Closing MPS, Dividend amount of SCBNL for each year.

Table 4.4
Expected Return E(R), Standard Deviation & Coefficient of Variation

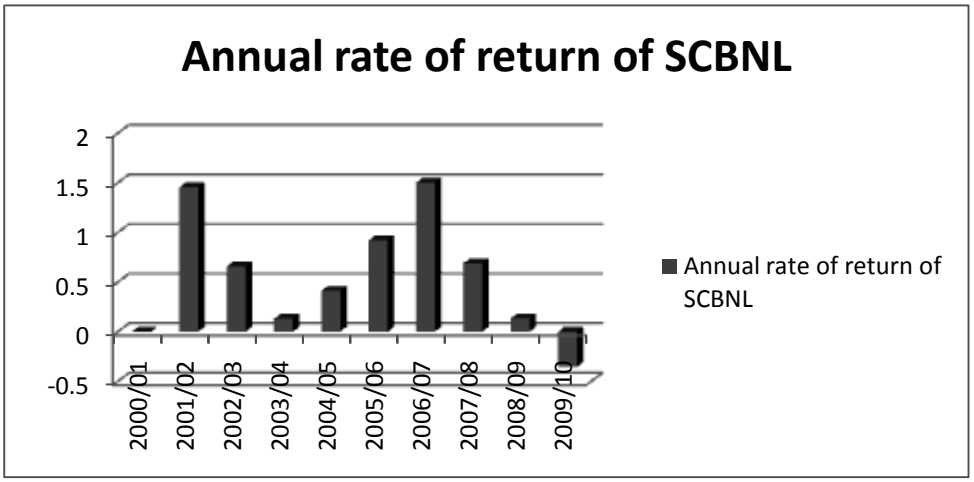
Expected Return E(R)	Standard Deviation	Coefficient of Variation
0.6162	0.6165	1.0005

Source: Appendix-2

Here from the above Table 4.4, it is found that expected return of the common stock of SCBNL is 61.62% and the risk is 61.65%. Similarly, the co-efficient of variation is 1.0005, which indicates that to earn 1 unit of return, the investors should bear 1.0005

unit of risk.

Figure 4.4
Annual rate of return of SCBNL



From the above Figure, It is observed that the highest annual rate of return on common stock of SCBNL is in Fiscal Year 2006/07, then after it is decreasing trend and the lowest return (i.e. negative) is in fiscal year 2009/10.

4.1.3 Himalayan Bank Limited. (HBL)

4.1.3.1 Analysis of Data

Market price and dividend records of common stock of Himalayan Bank Limited are shown in table 4.5 and Closing MPS is shown in diagram 4.5. MPS of HBL was very lowest in 2000/01 i.e. Rs. 500 but in 2007/08, it was abnormally very high i.e. Rs. 5275.Then after it is in decreasing trend from 2007/08 to 2009/10.The Himalayan Bank has been paying stock dividend regularly since 2001/02 to his common stock holders but varied from year to year. HBL is paying both cash dividend and bonus share but in the fiscal year 2006/07, there is not given cash dividend but only 20% stock dividend has been paid to his shareholders. The table and diagram shows the clear picture of closing price, EPS and dividend.

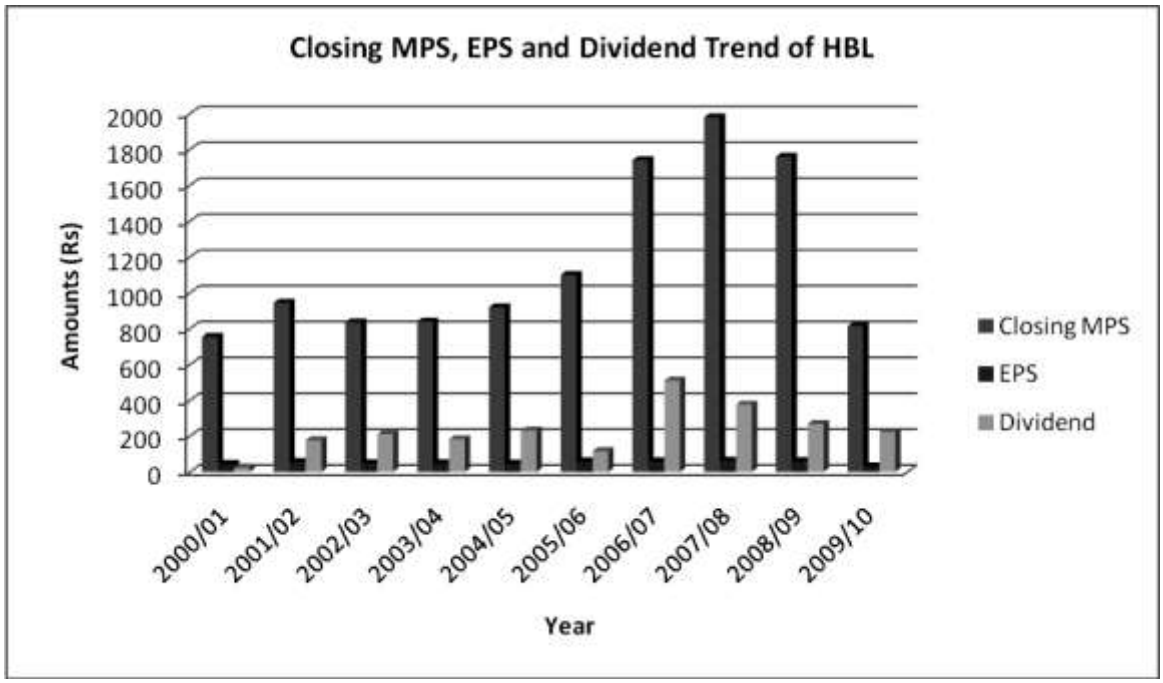
Table: 4.5
MPS, EPS and Dividend data of HBL

Fiscal Year	Closing MPS	EPS	Cash dividend	Stock dividend in percentage(%)	Total Dividend
2000/01	755	45.05	25	-	25
2001/02	945	55.6	11	20	178.20
2002/03	836	49.45	1.32	25	211.32
2003/04	840	49.05	-	20	184
2004/05	920	47.91	11.58	20	231.58
2005/06	1100	59.24	30	5	117
2006/07	1740	60.66	15	25	510
2007/08	1980	62.74	25	20	377
2008/09	1760	61.90	12	31.56	269.5296
2009/10	816	31.80	11.84	25	224.34

Source: Annual Report, HBL

Figure 4.5

Closing MPS, EPS and Dividend Trend of HBL



From the above Figure, it can be concluded that the closing MPS trend is increases from fiscal year 2000/01 to 2001/02 and then after it is in decreasing trend up to 2003/04.And it is in increasing trend up to fiscal year 2007/08 then after it is decreasing trend up to fiscal year 2009/10. EPS and dividend are in fluctuating trends.

4.1.3.2 Realized Return(R), Standard deviation (σ), and expected return (R), Coefficient of variation (C.V.) and Variance $(\sigma)^2$.

Realized Return(R), Expected return E(r), Standard deviation (σ) and Coefficient of Variation are the main required terms that are calculated in Table no. 4.6. Closing Price and dividend amounts are used to calculate to realize rate of return for each year.

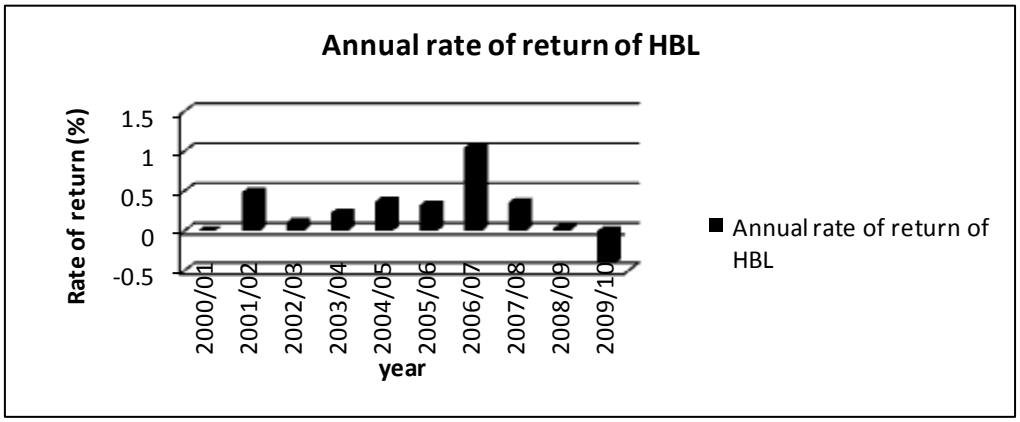
Table 4.6
Expected Return E(R), Standard Deviation and Coefficient of Variation

Expected Return E(r)	Standard Deviation (S.D.)	Coefficient of Variation (C.V)
0.2812	0.39	1.3869

Source: Appendix-3

Here from the above Table 4.6, it is found that expected return of the common stock of HBL is 28.12% and the risk is 39%. Similarly, the co-efficient of variation is 1.3869, which indicates that to earn 1 unit of return, the investors should bear 1.3869 unit of risk. Thus, it is a risky asset (1.3869).

Figure 4.6
Annual rate of return on common stock of HBL



From the above Figure, it is observed that the highest return on common stock of HBL is in fiscal year 2006/07 and lowest return (i.e. negative) is in fiscal year 2009/10. From fiscal year 2002/03 is in increasing trend up to fiscal year 2004/05. Annual rate of return of HBL is often fluctuating trend.

4.1.4 Everest Bank Limited (EBL):

4.1.4.1 Analysis of Data

The EBL is listed in NEPSE only on July 04-1996. Thus, before this date, the data are not available. The closing market price per share and dividend are taken in to account for the purpose of calculating required terms for the years. Total dividend includes cash as well as stock (Bonus) dividend.

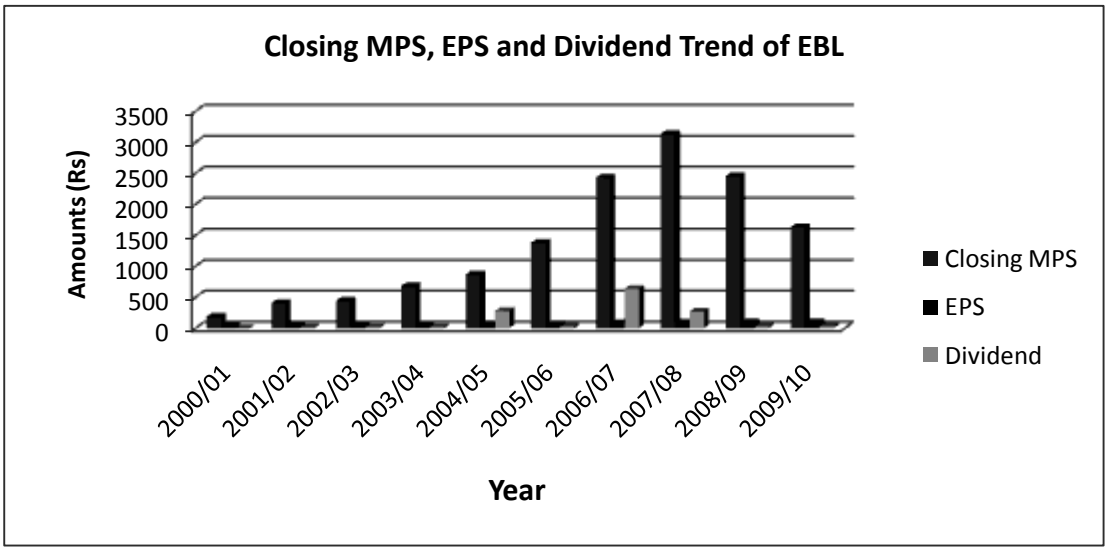
Table 4.7
MPS, EPS and Dividend Data of EBL

Fiscal Year	Closing MPS	EPS	Cash dividend	Stock dividend in %	Total dividend
2000/01	184	25.5	-	-	-
2001/02	407	27.6	15	-	15
2002/03	445	29.9	20	-	20
2003/04	680	45.58	20	-	20
2004/05	870	54.22	-	20	275.80
2005/06	1379	62.78	25	-	25
2006/07	2430	78.42	10	20	636.40
2007/08	3132	91.82	20	10	265.50
2008/09	2455	99.99	30	-	30
2009/10	1630	100.16	30	-	30

Source: Annual report, Everest Bank ltd

Figure 4.7

Closing MPS, EPS and Dividend Trend of Everest Bank Limited



From the above Figure, it can be concluded that the Closing MPS of the EBL is increasing trend up to fiscal year 2007/08 which is highest MPS i.e. 3132 then after it is decreasing trend. EPS is also in increasing trend from fiscal year 2000/01 to fiscal year 2009/10, and dividend is in fluctuating trend and the highest dividend is 275.8 in fiscal year 2007/08.

4.1.4.2 Realized Return(R), expected return E(R), Standard deviation (σ), Coefficient of variation (C.V.) and Variance $(\sigma)^2$.

Realized Return(R), Expected return E(r), Standard deviation (σ) and Coefficient of Variation are the main required terms that are calculated in Table no. 4.8. Closing Price and dividend amounts are used to calculate to realize rate of return for each year.

Table 4.8

Expected Return E(R), Standard Deviation and Coefficient of Variation

Expected Return E(r)	Standard Deviation (σ)	Coefficient of Variation(C.V
0.4888	0.5616	1.1484

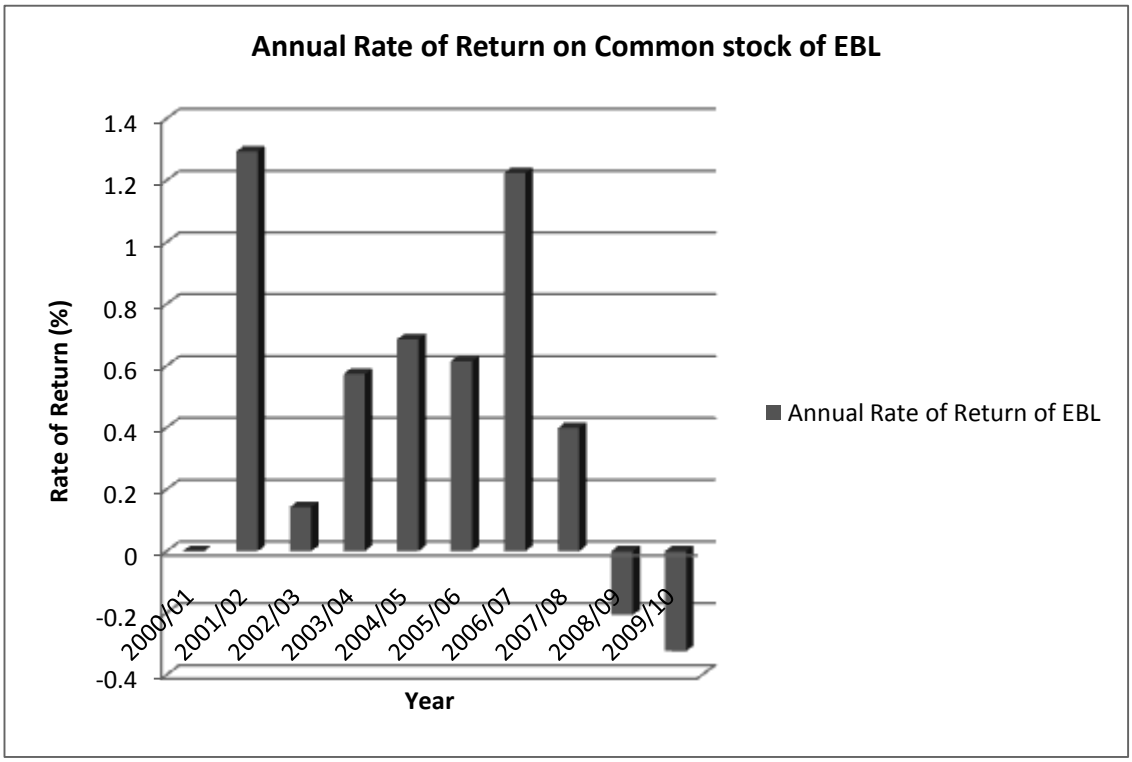
Source: Appendix-4

Here from the above Table 4.8, it is found that expected return of the common stock of EBL is 48.88% and the risk is 56.16%. Similarly, the co-efficient of variation is 1.1484, which indicates that to earn 1 unit of return, the investors should bear 1.1484

unit of risk.

Figure 4.8

Annual rate of return on common stock of EBL



From the above Figure, it is observed that the highest return on common stock of EBL is in fiscal year 2001/02 and lowest return (i.e. negative) is in fiscal year 2009/10.Annual rate of return of EBL is often in fluctuating trend.

4.1.5 Nepal Bangladesh Bank Limited (NBBL)

4.1.5.1 Analysis of Data

Required data for analysis of NBBL are shown in table 4.9. They are included closing market price, Earning per Share (EPS) and dividend data of NBBL. Total dividend includes cash dividend as well as stock dividend (bonus Share).

Table 4.9

MPS, EPS and Dividend data of NBBL

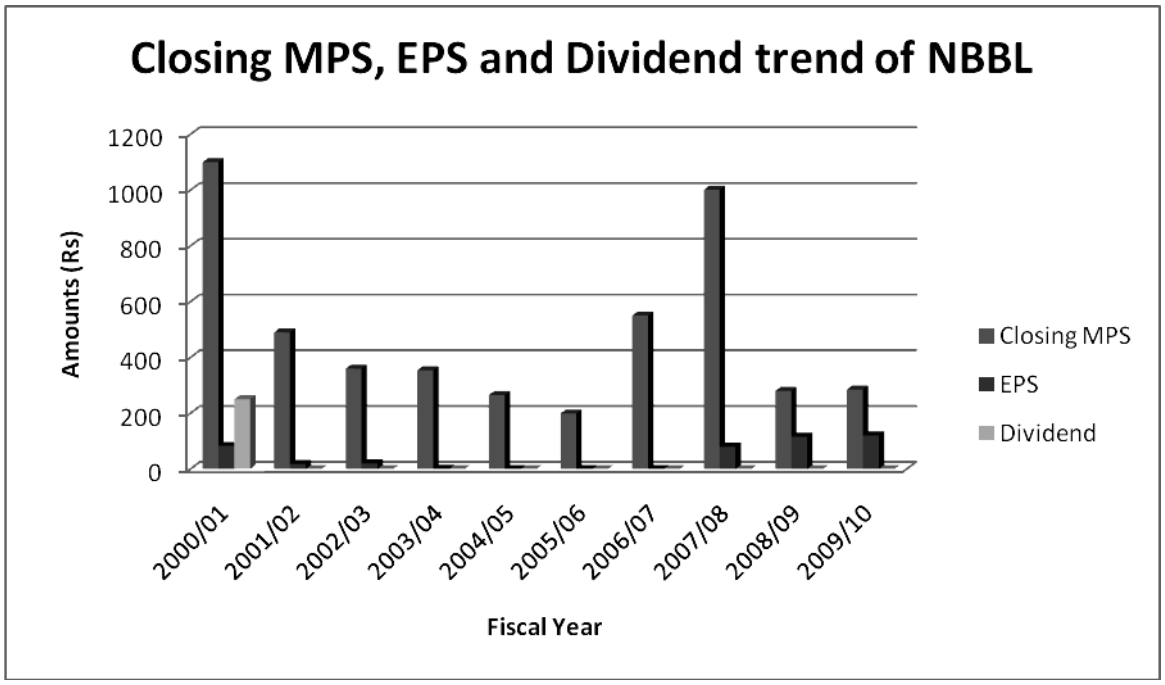
Fiscal Year	Closing MPS	EPS	Cash dividend	Stock dividend in %	Total dividend
2000/01	1100	82.81	5	50	250
2001/02	490	18.27	-	-	-
2002/03	360	19.86	-	-	-
2003/04	354	0.73	-	-	-
2004/05	265	-	-	-	-
2005/06	199	-	-	-	-
2006/07	550	-	-	-	-
2007/08	1001	80.16	-	-	-
2008/09	280	116.01	-	-	-
2009/10	285	120	-	-	-

Source: Annual report, NB Bank ltd

From the above table, the highest closing is Rs. 1100 that is seen in fiscal year 2000/01 whereas lowest one is Rs. 199 at fiscal year 2005/06. NB Bank Ltd has been paying cash or stock dividend only on fiscal year 2000/01 to their shareholders. Then after bank is not paying cash and stock dividend in any year. EPS is in decreasing trend up to fiscal year 2003/04 then after it is nil and it is in increasing trend up to fiscal year 2009/10.

Figure 4.9

Closing MPS, EPS and Dividend trend of NBBL



From the above diagram, it is observed that the closing MPS trend is in decreasing trend up to 2005/06, then after it is increasing trend up to fiscal year 2007/08. Again it is decreasing in increasing trend. EPS is in fluctuating trend and dividend is only distributed in fiscal year 2000/01and then after it is nil in every fiscal year.

4.1.5.2 Realized Return(R), Standard deviation (σ) and expected return (R), Coefficient of variation (C.V.) and Variance $(\sigma)^2$.

Realized Return(R), Expected return E(r), Standard deviation (σ) and Coefficient of Variation are the main required terms that are calculated in Table no. 4.12. Closing Price and dividend amounts are used to calculate to realize rate of return for each year.

Table 4.10

Expected Return E(R), Standard Deviation and Coefficient of Variation

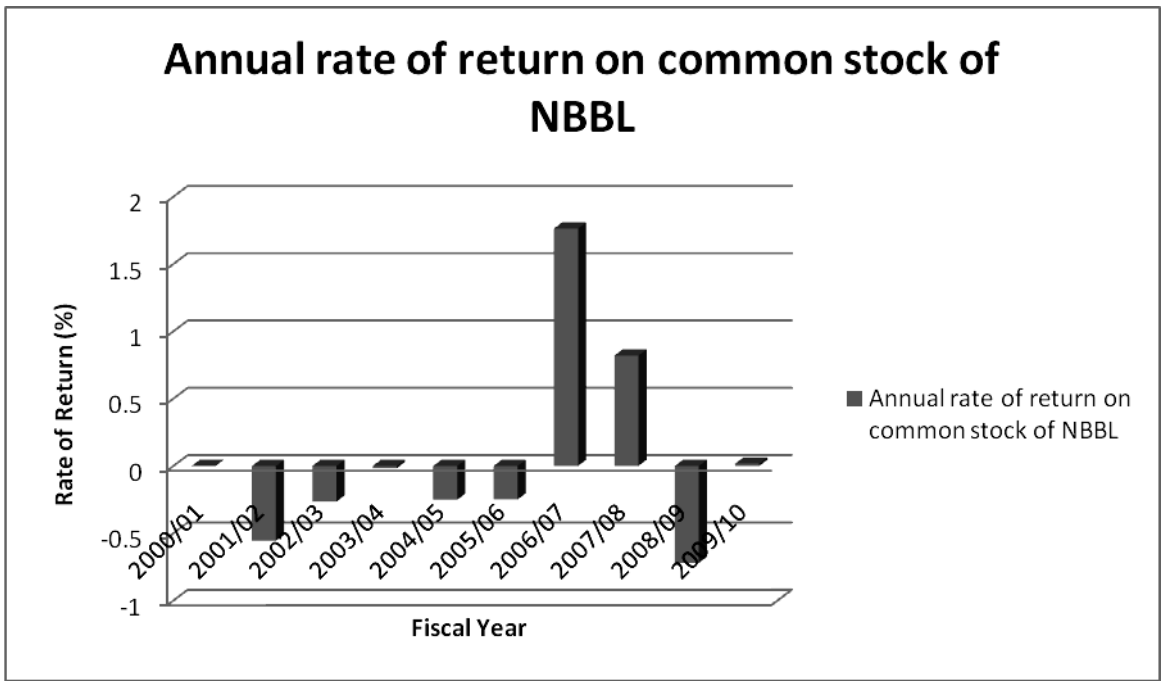
Expected Return E(r)	Standard Deviation (σ)	Coefficient of Variation(C.V.)
0.0605	0.7724	12.7671

Source: Appendix-5

Here from the above Table 4.10, it is found that expected return of the common stock of NBBL is 6.05% and the risk is 77.24%. Similarly, the co-efficient of variation is 12.7671, which indicates that to earn 1 unit of return, the investors should bear 12.7671 unit of risk. Thus, it is a risky asset (12.7671).

Figure 4.10

Annual Rate of Return on Common stocks of NBBL



From the above Figure, it is observed that the highest rate of return on common stock of NBBL is in fiscal year 2006/07 and lowest return (i.e. negative) is in fiscal year 2008/09. If we see in overall scenario of annual rate of return, then it is in more fluctuating trend.

4.1.6 Nepal SBI Bank Limited (NSBIL):

4.1.6.1 Analysis of Data

Required data for analysis of SBI Bank are shown in table 4.11. They are included closing market price, Earning per Share (EPS) and dividend data of NSBIL. Total dividend includes cash dividend as well as stock dividend (Bonus Share).

Table 4.11

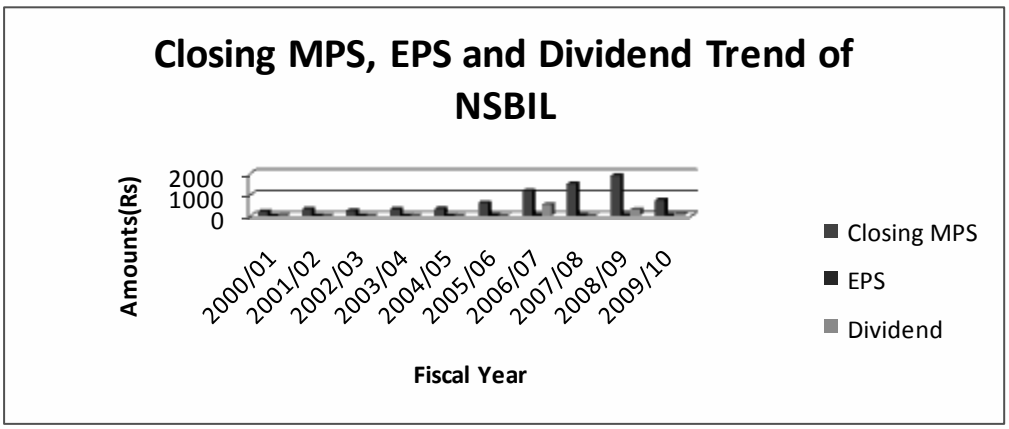
MPS, EPS and Dividend Data of NSBIL

Fiscal Year	Closing MPS	EPS	Cash dividend	Stock dividend in %	Total dividend
2000/01	205	15.5	10	5	26.25
2001/02	325	17.6	15	-	15
2002/03	255	11.47	8	-	8
2003/04	307	14.26	-	-	-
2004/05	335	13.29	-	-	-
2005/06	612	18.27	5	-	5
2006/07	1176	39.35	12.59	35	541.44
2007/08	1511	28.33	-	-	-
2008/09	1900	36.18	2.11	40	298.51
2009/10	741	23.69	5	12.50	105

Source: Annual Report, Nepal SBI Bank

Figure 4.11

Closing MPS, EPS and Dividend Trend of SBI Bank



From the above Figure, it is observed that MPS is in highest in fiscal year 2008/09 and lowest in 2000/01. EPS is up and down trend. Dividend is highest in fiscal year 2006/07 and then after it is decreasing trend up to fiscal year 2009/10.

4.1.6.2 Realized Return(R), Standard deviation (σ) and expected return (R), Coefficient of variation (C.V.) and Variance $(\sigma)^2$.

Realized Return(R), Expected return E(r), Standard deviation (σ) and Coefficient of Variation are the main required terms that are calculated in Table no. 4.12. Closing Price and dividend amounts are used to calculate to realize rate of return for each year.

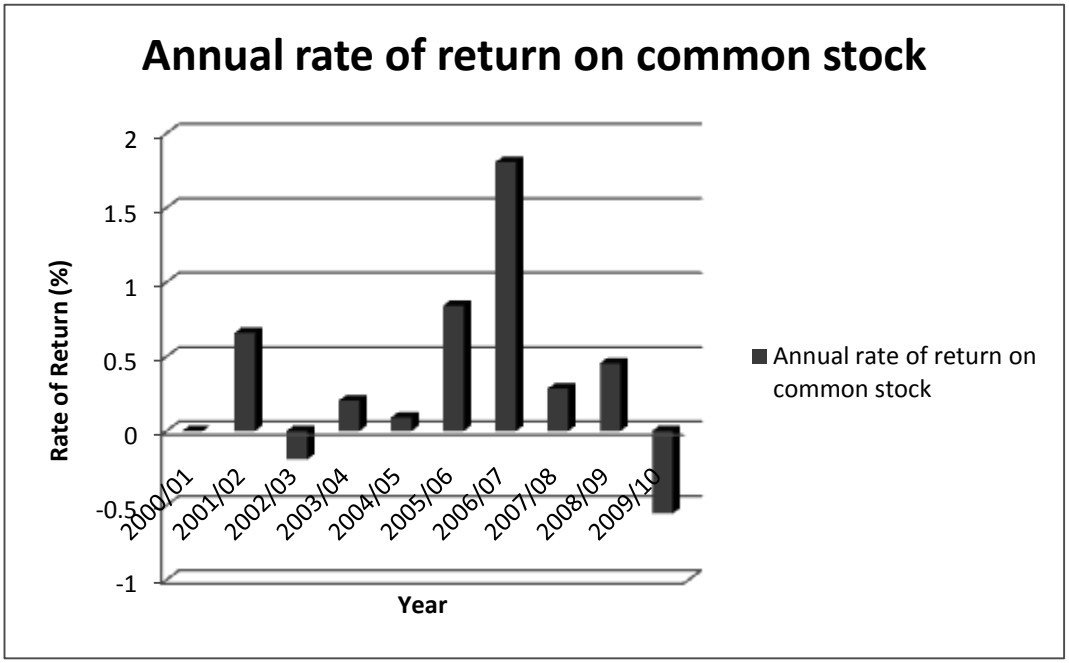
Table 4.12
Expected Return E(R), Standard Deviation and Coefficient of Variation

Expected Return E(r)	Standard Deviation (σ)	Coefficient of Variation (C.V.)
0.3996	0.6755	1.6904

Source: Appendix-6

Here from the above Table 4.12, it is found that expected return of the common stock of SBI Bank is 39.96% and the risk is 67.55%. Similarly, the co-efficient of variation is 1.6904, which indicates that to earn 1 unit of return, the investors should bear 1.6904 unit of risk. Thus, it is a risky asset (1.6904)

Figure 4.12
Annual Rate of Return of NSBIL



From the above Figure, it has become clear that the highest annual rate of return on common stock of SBI is in the fiscal year 2006/07 and the lowest return (i.e. negative) is in the fiscal year 2009/10. In fiscal year 2002/03 has also negative return. Remaining returns are in fluctuating trend.

4.2 Inter Firm Comparison

4.2.1 On the basis of Risk and Return

Inter Firm Comparison on the Basis of Risk and Return

(**Expected Return, Standard Deviation, Variance and Coefficient of Variation of Individual Bank**)

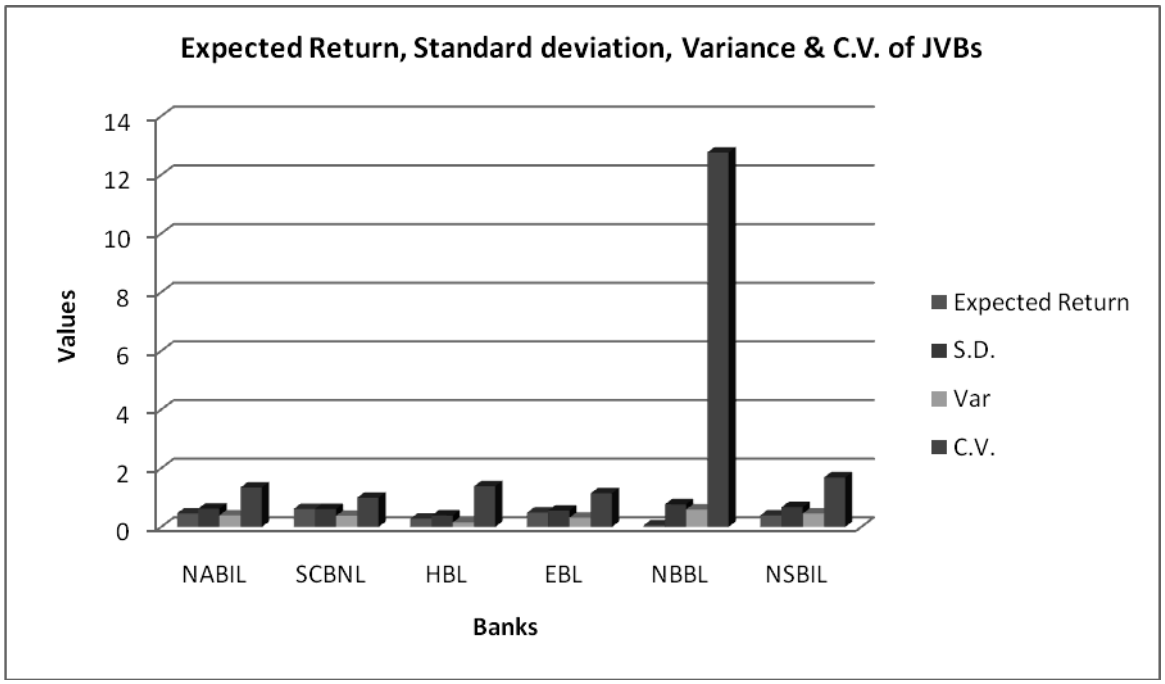
According to the analysis of the return from the section 4.1, a comparative analysis of risk and return is performed in this section. The portion of systematic risk and unsystematic risk also has been included in this section. The Expected return, standard deviation of returns, coefficient of variation of each bank for the fiscal year 2000/01 to 2009/10 is given in Table no. 4.13.

Table 4.13
Inter Firm comparison on the basis of Risk and Return

Name of Bank	Expected Return	S.D.	Variance	C.V.	Remarks
NABIL	0.465	0.6273	0.3935	1.349	Medium risk(σ) and medium return
SCBNL	0.6162	0.6165	0.3801	1.0005	Medium risk(σ) and medium return
HBL	0.2812	0.39	0.1521	1.3869	Low risk(σ) and low return
EBL	0.4888	0.5613	0.3151	1.1484	Medium risk(σ) and medium return
NBBL	0.0605	0.7724	0.5966	12.7671	Medium risk(σ) and lowest return
NSBIL	0.3996	0.6755	0.4563	1.6904	Medium risk(σ) and low return

Figure 4.13

Expected Return, Standard Deviation, Variance and Coefficient of Variation of Joint Venture Banks



From the above analytical Table and figure that is based on historical analysis of past ten fiscal year data it can be stated that the SCBNL has the highest expected return(i.e. 61.61%) and the NBBL has the lowest expected return on common stock investment. Similarly, from the risk side, NBBL has the highest coefficient of variation and SCBNL has the lowest coefficient of variation, which shows that the risk per unit of return. Remaining other banks expected return and risk lies between these values. Thus, the rational investor should select the bank having lowest coefficient of variation (C.V.) for the investment purpose but it depends upon the investors' attitude toward the risk and return.

In conclusion, for risk taker investor should invest on that common stock which have high degree of C.V is appropriate and risk averter investor should invest on that common stock who has low degree of C.V.

4.2.2 On The Basis of Beta, Systematic and Unsystematic Risk

The comparative analysis of Beta, Systematic Risk and Unsystematic Risk of each

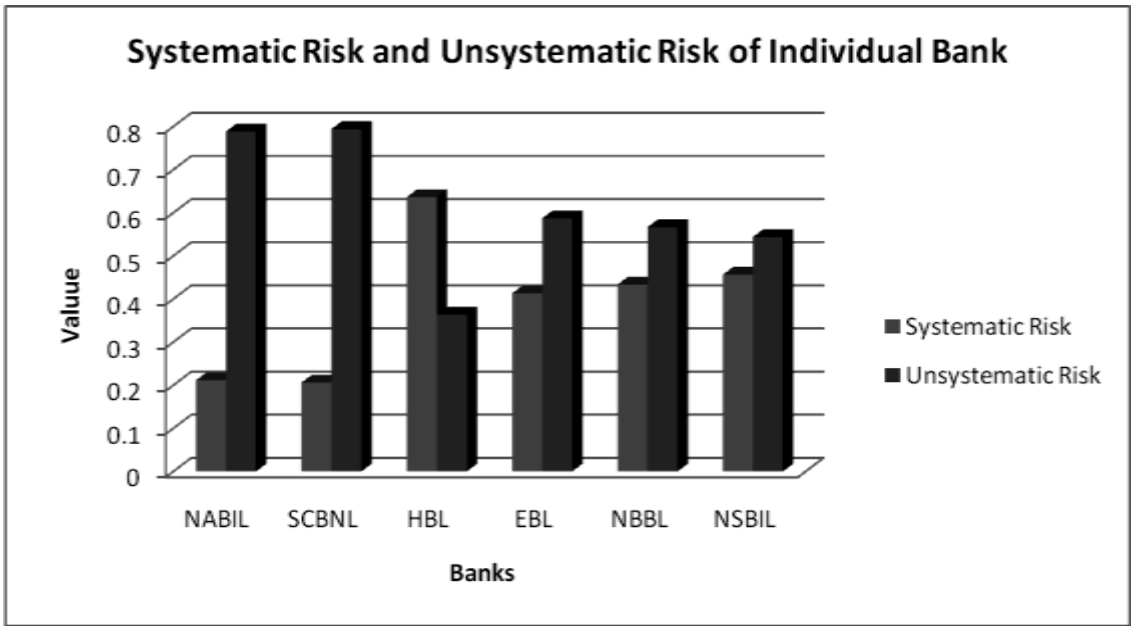
joint venture bank are performed here. Similarly they are shown in Table 4.14 and the systematic Risk and Unsystematic Risk also are shown in Diagram 4.14.

Table 4.14
Systematic Risk and Unsystematic Risk of Individual Bank

Name of Bank	Beta	Variance	Systematic Risk	Unsystematic Risk
NABIL	0.7348	0.3935	0.2114	0.7886
SCBNL	0.7127	0.3801	0.2059	0.7941
HBL	0.7926	0.1521	0.6363	0.3637
EBL	0.9191	0.3151	0.4130	0.5870
NBBL	1.2956	0.5966	0.4334	0.5666
NSBIL	1.2028	0.4884	0.4563	0.5437

Source: Appendix-13 to 19.

Figure 4.14
Systematic Risk and Unsystematic Risk of Individual Bank



According to above calculation, NBBL faces more risk i.e. 1.2956 and lowest is 0.7127 of SCBNL. It means NBBL is more sensitive than remaining others due to its higher beta and SCBNL is less sensitive and vice versa.

In case of systematic risk, HBL takes the first position with 0.6363 and SCBNL Bank

faces the lowest systematic risk of 0.2059 and vice versa.

4.2.3 On the Basis of Market Capitalization

Based on the market capitalization at mid july 2010, size of each bank is presented in table 4.15. Market capitalization is the total market value of at specific time period of the companies, industries and market as a whole. The size of the bank can be determined with the help of market capitalization. The market capitalization of six joint venture banks at the end of the fiscal year 2009/10 is presented in Table 4.15 and diagram 4.15.

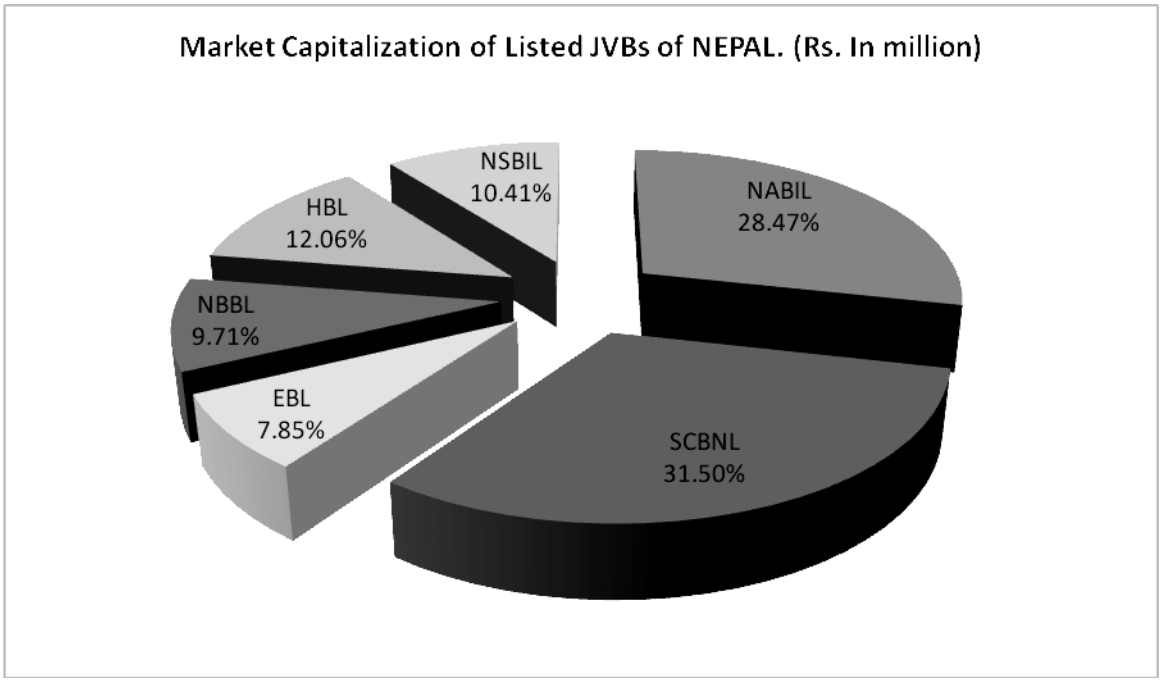
Table 4.15

Market Capitalization of Listed JVBs at Mid July 2010

Name of the Bank	Market Capitalization (Rs. in million)	Ratio (%)
Nepal Arab Bank Limited (NABIL)	33675.38	28.47
Standard Chartered Bank Limited (SCBNL)	37254.92	31.50
Everest Bank Limited (EBL)	9279.90	7.85
Nepal Bangladesh Bank Limited (NBBL)	11490.24	9.71
Himalayan Bank Limited (HBL)	14270.26	12.06
Nepal SBI Bank Limited (NSBIL)	12308.26	10.41
Total	**118278.96**	**100**

Source: Annual Report, SEBON (2009/10)

Figure 4.15



Market Capitalization of Listed JVBs at Mid July 2009/10

From the above market capitalization, SCBNL has the highest market capitalization i.e. 31.50% and the lowest is 7.85% of EBL among the six joint venture banks.

4.3 Inter-Industry Comparison

The main objective of this study is to analyze the portfolio performance of banking sector of Nepal moreover of Joint Venture Banks of Nepal as our research topic. However, effort has been doing here to show the financial outcomes of various industries that contribute their effort in Nepalese economy. Banking sector is not only one route of economic development of any country but also other various means are contributing their own effort. Such of them are manufacturing and processing sector, hotels, trading industries, finance and insurance companies and others also. In this regard, here is trying to compare the size of mentioned industries till current fiscal year 2009/10 since 2000/01 in the following basis.

4.3.1 On the Basis of Market Capitalization of Different Sector

Table 4.16

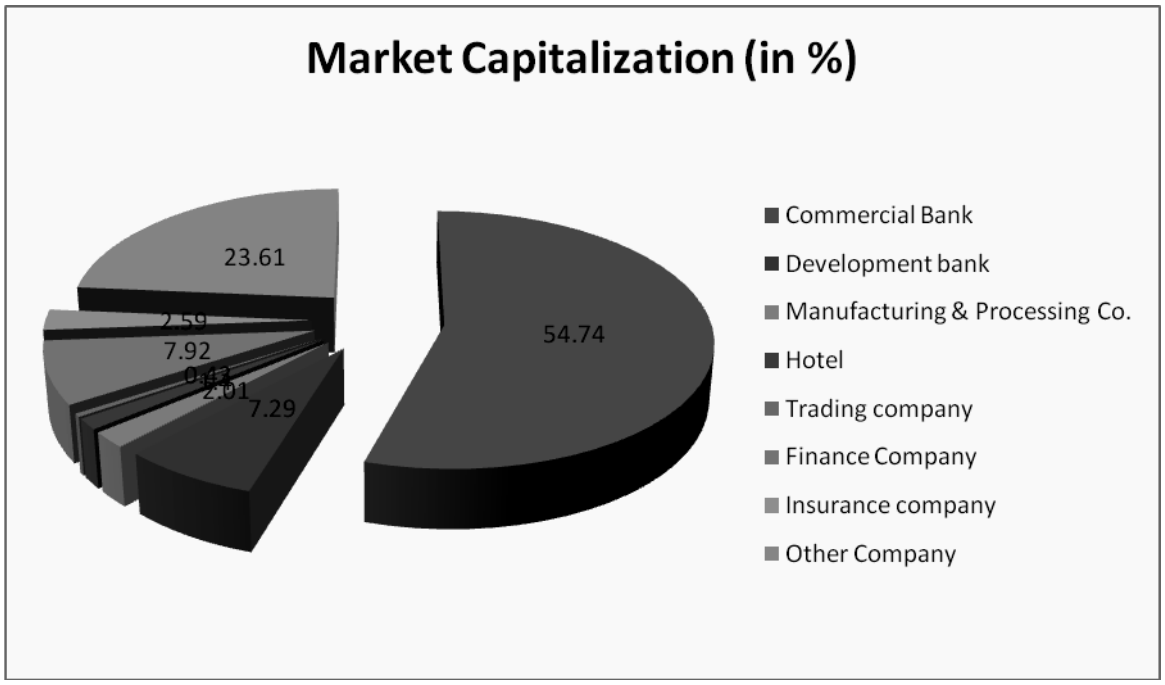
Market Capitalization of Different Sector in Current Year (2009/10)

Industry	Market Capitalization (Rs. in millions)	Percentage (%)
Commercial Bank	206282.52	54.74
Development bank	27488.87	7.29
Manufacturing & Processing Co.	7592.03	2.01
Hotel	5285.58	1.40
Trading company	1617.51	0.43
Finance Company	29869.59	7.92
Insurance company	9756.61	2.59
Other Company	88978.67	23.61
Total	376871.37	100

Source: Annual report, SEBON (2009/10)

Figure 4.16

Market Capitalization of Each Industry in 2009/10



From the above table and figure, it has become clear that major portion i.e. 54.74% of the total market capitalization occupies by Commercial Bank. So we can say that Nepalese share market is largely depend upon the banking industry and banking sector plays a vital role in national economy due to its highest value. However remaining others are also contributing their effort in our national economy from their place.

4.3.2 On the Basis of Risk & Return

On the basis of Market capitalization, there is found that banking sector is a largest sector in Nepalese share market but investment decision is made on the basis of risk and return that is known as a key factor on investment decision. Thus, the risk and return are taken as a main concern to compare between mentioned sectors. The Risk and return of each sector is calculated on the basis of sector wise NEPSE index. Thus, year-end sector wise index is given in Table 4.17. Similarly, the expected return, Standard deviation and coefficient of variation of different sector are presented at Table 4.18.

Table 4.17

Sector wise NEPSE Index at Closing Date of Every Fiscal Year

Fiscal Year	Banking	Finance and Insurance	Trading	Manufacturing & Processing	Hotel	Others	Market
2000/01	194.95	176.32	160.58	226.65	244.49	221.59	348.43
2001/02	219.44	195.68	123.99	229.89	242.52	376.10	227.54
2002/03	397.17	305.98	123.74	340.59	346.15	308.46	204.86
2003/04	397.38	318.67	155.55	349.10	291.34	190.90	222.04
2004/05	482.29	577.51	102.20	216.51	216.51	77.43	286.67
2005/05	446.62	448.78	94.56	250.13	196.68	48.56	386.83
2005/06	422	433.61	95.01	255.58	184.41	142.65	683.95
2007/08	542.50	548.63	123.20	276.50	178	347.65	963.36
2008/09	731.89	642.62	148.20	301.11	180.77	410	749.10
2009/10	810.54	688.45	150.55	324.50	186.55	435.44	477.73

Source: Annual Report, SEBON

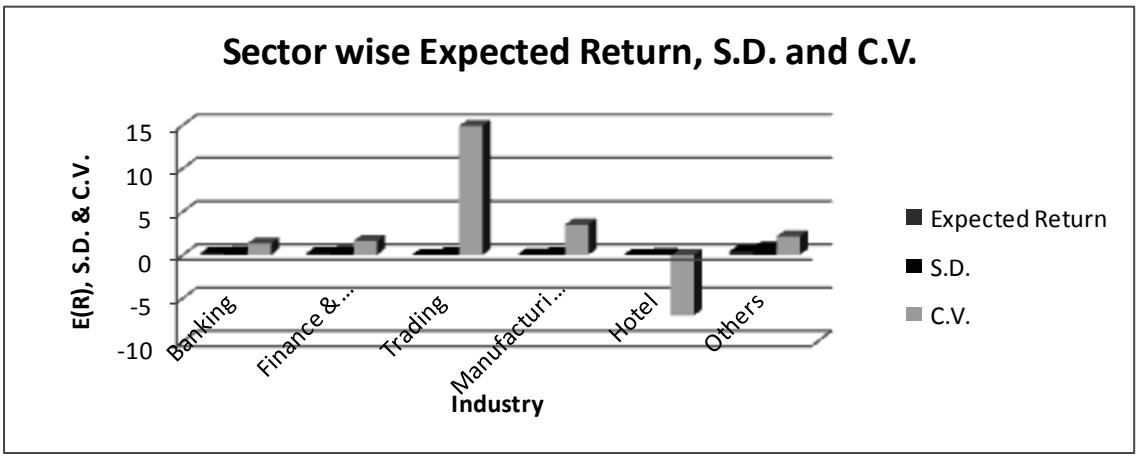
Table 4.18

Expected Return, Standard Deviation and C.V. of Industry

Industry	Expected Return	S.D.	C.V.	Remarks
Banking	0.2187	0.2895	1.3237	Appendix- 7 for details
Finance & Insurance	0.1976	0.3164	1.6012	Appendix – 8 for details
Trading	0.0144	0.2147	14.9097	Appendix –9 for details
Manufacturing & Processing	0.063	0.2199	3.4905	Appendix –10 for details
Hotel	-0.0152	0.1058	6.9605	Appendix- 11for details
Other	0.3941	0.8393	2.1297	Appendix-12 for details

Figure 4.18

Sector-wise Expected Returns, Standard Deviation and Coefficient of Variation



From the above table and figure, the highest expected return is 39.41 of Other sector and lowest expected return is -1.52% of Hotel sector. In the case of risk, the Other sector has the highest risk i.e. 83.93% and Hotel sector has the lowest risk i.e. 10.58%. Which means that the Other sector has the highest risk and highest expected return. Other side, Hotel sector has the lowest risk but it has negative expected return.

4.4 Comparison with Market

There is only one stock market exist in Nepal namely Nepal Stock Exchange Limited (NEPSE) till now. Overall market movement is represented by the market index i.e. NEPSE index. In this section risk and return of each industry is compared with market risk and return.

Table 4.19

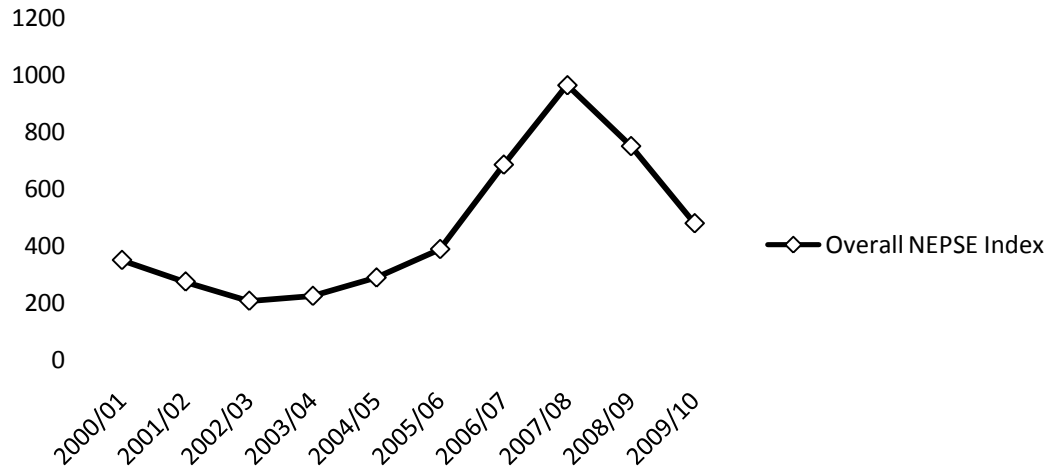
Overall NEPSE Index

Fiscal Year	Overall NEPSE Index
2000/01	348.43
2001/02	272.54
2002/03	204.86
2003/04	222.04
2004/05	286.67
2005/06	386.83
2006/07	683.95
2007/08	963.36
2008/09	749.10
2009/10	477.73

Source: Annual report, SEBON

Figure 4.19

Overall NEPSE Index



According to the above figure 4.19, Overall NEPSE index is in increasing trend from fiscal year 2002/03 to fiscal year 2007/08. Then after it is decreasing trend up to fiscal year 2009/10.

4.4.1 On the basis of Market Risk and Return

Market return, its standard deviation, Variance and co-efficient of variation is shown in Table 4.20.

Table 4.20

Calculation of Expected Return, Standard deviation, Variance and C.V. of Market

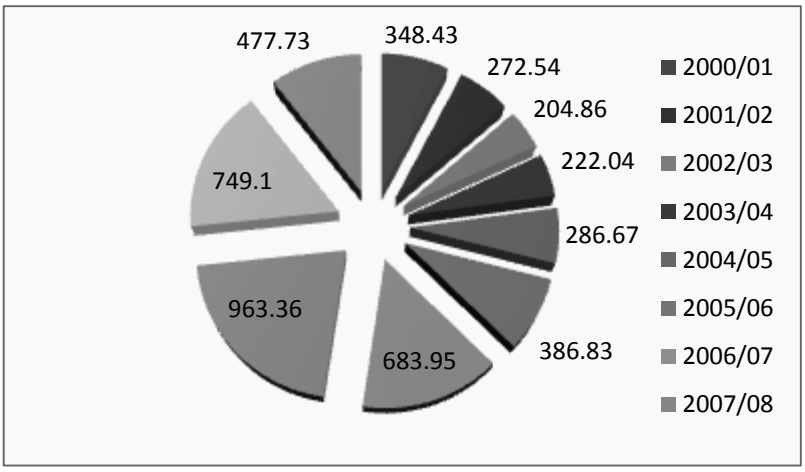
Fiscal Year	NEPSE index	Expected Return ($\bar{R}_m$)	Standard Deviation(σ_m)	Variance$(\sigma_m)^2$	Coefficient of Variation(C.V.)
2000/01	348.43	9.22%	39.25%	15.41%	1.6714
2001/02	272.54				
2002/03	204.86				
2003/04	222.04				
2004/05	286.67				
2005/06	386.83				
2006/07	683.95				
2007/08	963.36				
2008/09	749.10				
2009/10	477.73				

Source: Appendix-35

Figure 4.20

The year wise market movement is shown below

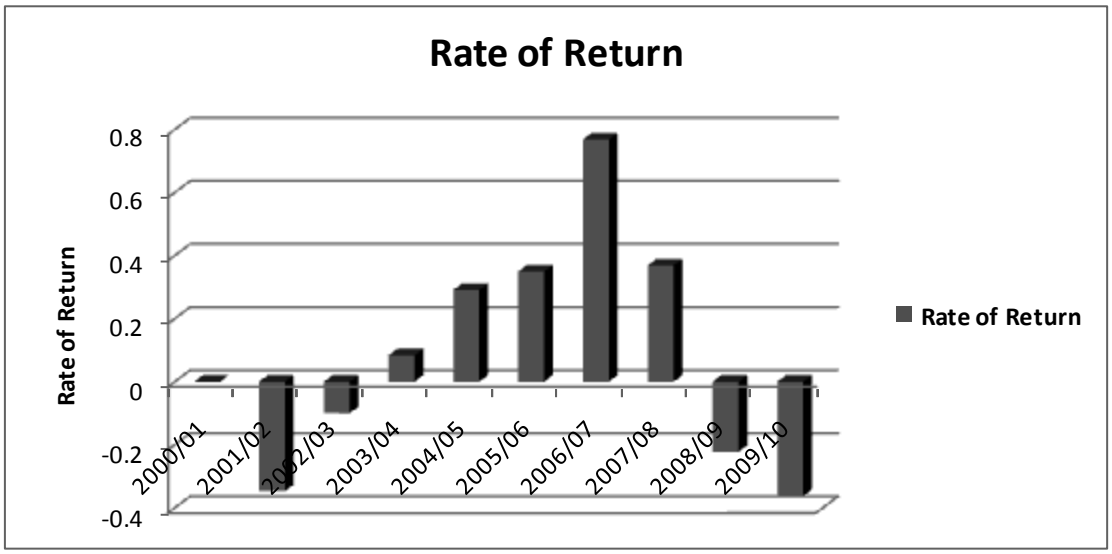
Market Index Movement



According to the figure 4.20, the NEPSE Index is very high in fiscal year 2007/08 i.e. 963.36 and the lowest is 204.86 in fiscal year 2002/03 during the included period of time in this study. From the fiscal year 2000/01 to fiscal year 2002/03, NEPSE index looks in decreasing trend. Then after it is in increasing trend and it become high in fiscal year 2007/08, in remaining two year NEPSE is in decreasing trend.

Figure 4.20
The Year-Wise Realized Return of Market is shown below

Market Returns Movement



From the above diagram 4.20, we can see that the realized returns of the market is in negative trend in fiscal year 2001/02 to 2002/03, but after that it is in positive trend up to fiscal year 2007/08, and become highest realized return rate between mentioned ten years period in fiscal year 2006/07. Again in fiscal year 2008/09, market return become negative. However, in current year the realized return of market is highly negative among all of the return.

In comparison with market return i.e. 9.22%, Banking sector i.e.21.87, Finance & Insurance sector i.e.19.76% and other sector i.e.39.41% have higher expected returns than market return. But remaining sector like Trading sector has only 1.44%, Manufacturing & processing sector has only 6.3% expected return which are lower expected return than market return. In other hand, hotel sector has faced negative expected return of -1.52%.

From the above analysis, it has become clear that the expected return of Other sector is the best sector in comparison with banking, manufacturing & Processing, hotel, trading finance & insurance and market as well due to positive and the highest expected rate of return.

In comparison with market risk i.e. 39.25%, Other sector has higher risk than market risk i.e.83.93%. Similarly, Banking sector i.e. 28.95, Finance& insurance sector i.e.

31.34%, Trading sector i.e. 21.47, Manufacturing & processing sector i.e. 21.99% and Hotel sector i.e. 10.58%, have lower risk than market risk (39.25%).

4.4.2 On the Basis of Market Sensitivity of Common Stock of joint Venture Banks.

Market sensitivity is explained by its beta coefficient. The beta is known as systematic risk which cannot be eliminated through the means of diversification as mentioned in chapter II. Beta of market is an always equal to 1. The beta of Common stock more than 1 is called aggressive and the beta of stock less than 1 is called defensive. Specially, aggressive denotes more risky and highly returnable and higher beta will be the reaction to the market movement.

Calculation of Beta of Market:

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

Where,

ρ_{jm}= Correlation coefficient between returns of market and stock j.

Again,

$$\beta_m = \frac{Cov\,(R, R_m)}{\sigma_m^2} = \frac{\sigma_j\,\sigma_m\,\rho_{mm}}{\sigma_m^2} = \rho_{mm} = 1$$

Hence, Beta co-efficient of market is always equal to 1.

Table 4.21

Beta Coefficient of Different Joint Venture Banks

Name of Banks	Beta Co-efficient	Remarks
NABIL	0.7348	Most defensive
SCBNL	0.7127	Most defensive
HBL	0.7926	Defensive
EBL	0.9191	Defensive
NBBL	1.2956	Aggressive
NSBIL	1.2028	Aggressive

Source: Appendix-13 to 18.

The beta of common stock of NBBL is higher than other samples bank. Here beta of common stock of NBBL (i.e. 1.2956) and NSBIL (1.2028) are the higher than 1, so both bank are aggressive. Which mean that if market return is increased by 1%, then

NBBL & NSBIL stock return will rise by 1.2956 & 1.2028 respectively. The beta coefficient of other samples banks NABIL, SCBNL, HBL & EBL are less than market beta (i.e.1) so they are defensive stock under the study period.

4.5 On The Basis of Price Evaluation of Common Stock of Each joint Venture Banks.

Comparison of required rate of return and expected rate of return gives the result whether the common stock is under priced or overpriced. Generally there are three conditions of price evaluations that are as follows.

- When expected rate of return is greater than the required rate of return, in that case the price of stock will be under priced.
- When expected rate of return is lower than the required rate of return, in that case the price of stock will be overpriced.
- When expected rate of return is equal to the required rate of return, in that cae the price of stock will be correctly priced.

For the price evaluation, the calculation of required rate of return is necessary and it can be calculated by using the following formula.

Required rate of return (RRR) = $K_{rf} + (\overline{R}_m - K_{rf}) \times \beta_i$

In the above equation, the risk free rate of return is needed to determine required rate of retun. The discount rate of Treasury bill (T-bill) issued by the Nepal Rastra Bank is taken as risk free rate of return (K_{rf}) in Nepal. NRB issue two type of T-bill i.e. 91 days and 364 days but according to the suggestion of T-bill section of NRB it is better to take 364 days weighted average discount rate as risk free rate. T-bill rate will be differs in various issue but in this study I have taken 8% as $K_{rf.}$

Table 4.22

Equilibrium return, Expected return and Price Evaluation of JVBs

Name of Banks	Beta	$K_{rf} + (\overline{R}_m - K_{rf}) \times \beta_i$	Expected return ($\overline{Ri}$)	Price Evaluation
NABIL	0.7348	=0.08+(0.0922-0.08)×0.7348= 0.0890 = 8.90%	0.4650	Under Priced
SCBNL	0.7127	0.0887 = 8.87%	0.6162	Under Priced
HBL	0.7926	0.0897 = 8.97%	0.2812	Under Priced
EBL	0.9191	0.0912= 9.12%	0.4888	Under Priced
NBBL	1.2956	0.0958= 9.58%	0.0605	Over Priced
NSBIL	1.2028	0.0947= 9.47%	0.3996	Under Priced

Source: Appendix -13 to 18.

Where,

K_{rf} = Risk free rate of Return = 0.08= 8% (assumed)

$\overline{R}_m$= Market rate of return = 0.0922 = 9.22%

(Expected market rate of return is for the year 2000/01 to 2009/10)

From the above table it is observed that the pricing of common stock of NABIL, SCBNL, HBL, EBL and NSBIL are underpriced .NBBL is overpriced. Thus, under pricing situation of common stock of the banks indicates that the NABIL, SCBNL, HBL, EBL and NSBIL banks stock demands are very good investment opportunity and NBBL stock has not good investment opportunity due to overpriced. Thus investors can gain from buying the under priced stocks and selling the overpriced stocks. It is recommended to purchase underpriced stock and selling of overpriced stock but rational and efficient investment decision-maker need to analyze other dimensions as well to invest from the investment point of view.

4.6 Portfolio Analysis

A Portfolio is the combination of different investment assets. The portfolio would be able to reduce unsystematic risk or diversifiable risk. Thus investors want to invest in portfolio assets because of diversification of risk. As eggs seller keeps eggs in various basket but no putting all in one because of bearing less risk, an investor wants to spread his risk by investing his fund in different assets with hopping to get optimum returns or benefit but by bearing low risk. It is called simple diversification. Therefore, the analysis is based on two assets and the tools for analysis are based on two assets that are presented in chapter III.

The concept of portfolio theory was developed by Professor Harry M. Markoviz. He explained that the risk could be reduced without losing considerable return by constructing portfolio. The investor can diversify the unsystematic risk up to zero level. The main objective of portfolio is reduction of unsystematic risk, from which the investor can get optimum return in certain degree of risk by constructing efficient portfolio. In making portfolio investment, the total available fund is divided into proper amount or proportion for different securities that means, in this study, investment making in common stocks of different banks. The total weighted of a portfolio is equal to 100%. In this chapter, co-variance of the returns of the given two stocks and proportion of stock i.e. the optimal weight is calculated to minimize the risk and to find the risk and return of the portfolio assets. Table 4.22 shows the portfolio risk and returns and co-variance between two banks respectively. Details of that calculation are shown in appendix - respectively.

Table 4.23

Portfolio Risk and Return and Co-variance Between JVBs

S. No.	Portfolio	Weight	Co-variance	Portfolio return	Portfolio risk
1.	NABIL & SCBNL	**W**n= 0.1642 $\mathbf{W}_{SC}$= 0.8358	0.3047	0.5914	0.5998
2.	NABIL & HBL	**W**n= 1.4489 **W**h= -0.4489	0.2092	0.5475	0.7646
3.	NABIL & EBL	**W**n= 1.3811 **W**e= -0.3811	0.3308	0.4559	0.5313
4.	NABIL & NBBL	**W**n= 0.3649 **W**nb= 0.6351	0.1192	0.2081	0.5901
5.	NABIL & NSBIL	**W**n= 0.3829 **W**sb= 0.6171	0.2908	0.4246	0.5778
6.	SCBNL & HBL	**W**sc= 1.4811 **W**h= -0.4811	0.2080	0.7774	0.4397
7.	SCBNL & EBL	**W**sc= 0.8303 **W**e= 0.1697	0.2984	0.5946	0.7540
8.	SCBNL & NBBL	**W**sc= 0.3231 **W**nb= 0.6769	0.1824	0.2400	0.6267
9.	SCBNL & NSBIL	**W**sc= 0.2890 **W**sb= 0.7110	0.3279	0.4622	0.6302
10.	HBL & EBL	**W**h= -0.4867 **W**e= 1.4867	0.1923	0.58980	0.6739
11.	HBL & NBBL	**W**h= 0.0869 **W**nb= 0.9131	0.1850	0.0797	0.7266
12.	HBL & NSBIL	**W**h= -0.5772 **W**sb= 1.5772	0.2336	0.4679	0.8721
13.	EBL & NBBL	**W**e= 0.2629 **W**nb= 0.7371	0.1590	0.1731	0.8774
14.	EBL & NSBIL	**W**e= 0.1909 **W**sb= 0.8091	0.2715	0.4166	0.2955
15.	NBBL & NSBIL	**W**nb= 0.6478 **W**sb= 0.3522	0.2892	0.1799	0.8140

Source: Appendix- 20 to 34.

Risk can be decreased by using diversification method or forming an optimal portfolio. Risk diversification means divide risk in various parts as keeping eggs in different baskets. As mentioned above in table 4.23, risk is minimized by doing portfolio between each bank. For example, before diversification, S.D. of NABIL and SCBNL was 62.73% and 61.65% respectively and average risk was 62.19% but after diversification portfolio risk of NABIL and SCBNL is 59.98 %, risk is decreased by 2.21%.Which means considerable reduction in risk than previous. Similarly, before

diversification S.D. of SCBNL and HBL was 61.65% and 39% respectively and average risk was 50.33%. But after diversification, portfolio risk is 43.97%, risk is decreased after diversification by 6.36% which means that there is considerable reduction in risk. We can reduce the risk of portfolio (EBL & NSBIL). Before diversification, the risk of EBL & NSBIL was 56.13% and 67.55% respectively and average risk was 61.84% but after diversification, their portfolio risk become 29.55% the risk of portfolio is reduced by 32.29%, which is the considerable reduction in risk without losing return.

Diversification can only reduce risk but cannot increase return. Portfolio return is simply the average of weighted of high return individual's security returns. Hence, average of high return is also high. According to the table 4.22 and 4.23, portfolio return between SCBNL and HBL is very high i.e. 77.74%. Likewise, the lowest portfolio returns is 7.97% because of lower expected return of NBBL Bank. Risk is minimized till 29.55% between EBL and NSBIL by doing portfolio.

In case of weight on the way of doing portfolio there is seem some borrowing portion. Portfolio weight between NABIL and HBL is 1.4489 and -0.4489 respectively. The meaning is that borrowing from HBL and investing in NABIL (44.89%) is found to be of profitable to an investor. Likewise, NABIL borrows from EBL (38.11%), SCBNL borrows from HBL (48.11%), EBL borrows from HBL (48.67%) and NSBIL borrows 57.72% from HBL while creating portfolio between mentioned banks.

4.6.1 Measurement of Portfolio Performance

Risk and Return both have to consider when considering a portfolio performance. There are various methods applied to measure the portfolio performance. For the simplicity of the study, here the Sharpe Portfolio Performance is to be considered.

The Sharpe portfolio performance measure is based on the capital market line (CML) and total risk, which makes it more suitable for evaluating portfolios rather than individual assets. Ranking of each portfolio using the Sharpe measure has been presented in Table no. 4.25. Results and interpretation is shown below and details of

calculation can be seen in appendix- 37.

Table 4.25

Sharpe's Portfolio Performance Measure (Sp)

S. No.	**Portfolio**	**Sharpe's Performance (Sp)**	**Rank**
1	SCBNL & HBL	1.5861	1st
2	EBL & NSBIL	1.1391	2nd
3	NABIL & SCBNL	0.8526	3rd
4	HBL & EBL	0.7565	4th
5	NABIL & EBL	0.7075	5th
6	SCBNL & EBL	0.6825	6th
7	NABIL & HBL	0.6114	7th
8	SCBNL & NSBIL	0.6065	8th
9	NABIL & NSBIL	0.5964	9th
10	HBL & NSBIL	0.4448	10th
11	SCBNL & NBBL	0.2553	11th
12	NABIL & NBBL	0.2171	12th
13	NBBL & NSBIL	0.1227	13th
14	EBL & NBBL	0.1061	14th
15	HBL & NBBL	-0.0004	15th

Source: Appendix-37

The Sharpe's portfolio performance measures for the market = $S_m = \frac{\bar{R}_m - K_{rf}}{\sigma_m}$

Where,

Risk free rate of return (K_{rf}) = 8%

Expected return of market ($\bar{R}_m$) = 9.22%

Standard deviation of market (σ_m) = 39.25%

From the above calculation, portfolio HBL & NBBL has the lowest risk premium return per unit of total risk and the SCBNL & HBL has the highest risk premium return per unit of total risk. Even though, portfolio performed by SCBNL & NBBL, NABIL & NBBL, NBBL & NSBIL, EBL & NBBL and HBL & NBBL have not better than the aggregate market but portfolio performed by other is better than the aggregate market.

4.7 Correlation between Banks

Correlation between the returns of the two securities plays vital role to risk minimization because some risk can be reduced when stocks will be positively correlated but not perfectly. Correlation between each bank is presented below in table 4.24.

Table 4.24
Correlation Coefficient between Each Joint Venture Banks.

Banks	NABIL	SCBNL	HBL	EBL	NBBL	NSBIL
NABIL	1	0.7879	0.8551	0.9395	0.2460	0.6863
SCBNL	0.7879	1	0.8651	0.8623	0.3830	0.7874
HBL	0.8551	0.8651	1	0.8785	0.6141	0.9548
EBL	0.9395	0.8623	0.8785	1	0.3667	0.7711
NBBL	0.2460	0.3830	0.6141	0.3667	1	0.5543
NSBIL	0.6863	0.7874	0.9548	0.7711	0.5543	1

Source: Appendix-36.

According to table 4.24, HBL and NSBIL are highly positive correlated i.e.0.9548 and the lowest correlation co-efficient is 0.2460 between NABIL and NBBL. However, there is neither negative correlation seem between individual bank and perfect correlation. The meaning is that each bank is positively correlated between 0.2460 to 0.9548.

4.8 Major Findings of the Study

In this study, the data has been collected, presented and analyzed to fulfill the objectives of this study. From the presentation and analysis of data the following points can be listed out as major findings of the study:

Name of Banks	$\bar{R}_j$	S.D.	C.V.	BETA
NABIL	0.4650	0.6273	1.3490	0.7348
SCBNL	0.6162	0.6165	1.0005	0.7127
HBL	0.2812	0.39	1.3869	0.7926
EBL	0.4888	0.5613	1.1484	0.9191
NBBL	0.0605	0.7724	12.7671	1.2956
NSBIL	0.3996	0.6755	1.6904	1.2028

According to above table, the expected return of the SCBNL is the highest among the six joint venture banks that is 61.62% and standard deviation is 61.65% which shows that the risk on investing on common stock of SCBNL is 61.65% with coefficient of variance of 1.0005. The meaning of this is that SCBNL has best performance among the mentioned six banks and it seems more secure for the investment. NBBL shows its expected return is only 6.05%, which is the lowest one among all JVBs. It means there is very less opportunities of investment in common stock of NBBL. On the basis of S.D., the NBBL has the highest S.D. that is 77.24% and the HBL has the lowest S.D. that is 39% among the JVBs of Nepal. Thus, it indicates that the common stock of HBL is less risky and the NBBL is risky for investment purpose. Similarly, on the basis of C.V. the SCBNL has the lowest i.e. 1.0005 and the NBBL has the highest C.V. i.e.12.7671, which indicates that the common stock of SCBNL is the best for investment due to the less risky assets.

1. Considering the beta coefficient of mentioned banks, the beta coefficient of NBBL is the highest one i.e. 1.2956, which is the greater than one that indicates that the return of NBBL is more volatile than that of market. It means, every 1%

change in market return leads to 1.2956% change in NBBL stocks return. Thus, it is more aggressive stock but the stock of SCBNL is most defensive due to the lowest beta coefficient i.e. 0.7127.

2. The systematic risk of HBL is the highest one among the mentioned JVBs of Nepal i.e. 0.6363 and the lowest is 0.2059 of SCBNL. In case of unsystematic risk SCBNL is the highest one i.e. 0.7941 and the lowest is 0.3637 of HBL.
3. Considering the market capitalization of six JVBs of Nepal, the capitalization of NABIL, SCBNL, HBL, EBL, NBBL AND NSBIL is 28.47%, 31.50%, 7.85%, 9.71%, 12.06% and 10.41% respectively in the fiscal year 2009/10. The SCBNL has capitalized greater amount of money in the market i.e. Rs. 37254.92 million and the lowest amount capitalized by EBL i.e. Rs. 9279.90 million.

4. Considering the total capitalization of various industries in fiscal year 2009/10, Banking, Manufacturing & processing, Hotel, Trading, finance, Insurance and Other is 62.03%, 2.01%, 1.40%, 0.43%, 7.92%, 2.59% and 23.61% respectively. Out of total market capitalization of various industries, the Banking sector covers most of shares i.e. Rs. 206282.52 million and the Trading sector covers the lowest share i.e. Rs. 1617.51 million.

5. Among the whole sector wise industries, categorized by NEPSE Other sector has the highest expected return on common stock i.e. 39.41% and the lowest positive return is 1.44% of Trading sector but Hotel sector is bearing negative return i.e. -1.52%. On the basis of risk, the S.D. of Other sector is maximum i.e. 83.93%, which indicates that the common stock of Other sector is less risky among the mentioned sectors.

6. Considering the market risk and return, the Expected Return and the S.D. of the overall market is 9.22% and 39.25% respectively. Similarly the Coefficient of Variation is 1.6714.

7. From the analysis of Required Rate of Return and the Expected Rate of Return it shows that the entire bank's common stocks are under priced except one, NBBL which is overpriced.

8. While creating the portfolio between two assets of the entire sample JVBs, the optimal portfolio is SCBNL & HBL which gives the maximum Expected Return i.e. 77.74%. Whereas, HBL & NBBL gives lowest Expected Return i.e. 7.97%. Considering the Portfolio Risk the portfolio of EBL & NBBL has maximum S.D. i.e. 87.74% but the portfolio of EBL and NSBIL has the lowest S.D. i.e. 29.55%.

9. Correlation between HBL & NSBIL is found 0.9548, which is the highest between mentioned banks under this study and the Correlation between NABIL & NBBL is 0.2460 which is the lowest correlation. However, all the banks are positively correlated but they are neither perfectly correlated nor negatively correlated.

10. Considering the Sharpe's Performance Measure, the portfolio of SCBNL & HBL has the best performance because of the Highest risk premium return per unit of total risk i.e. 1.5861 and the portfolio of EBL and NBBL is the worst due to the negatively lowest risk premium return per unit i.e. -0.0004.

CHAPTER - V

SUMMARY, CONCLUSION AND RECOMMENDATIONS

Summary

National economic development is the backbone of the any country, which affects the development of every sector of any country. Without economic development, the country has fearsome of losing its existence and identity. Thus, the primary need of the country is to boost up its economic development to promote the welfare of the people and country as well as but to achieve this objective, there should be proper investment in productive activities to enhance the country's economic development. In this regard, commercial banks occupy an important place in the framework of every economy because they generate the sources of capital and its utilization in the proper sector through the banking activities. In the context of Nepal, among the commercial banks, the Joint Venture Banks are playing the leading role in the banking sector. Their role is remarkable in capital formation, foreign capital flows, and transfer of advance technology, enhancement in management skills and access in global market. Thus, simply, it is known that banking sector contributes its effort for the development of the nation. Therefore, in this study, it is trying to flash the contribution of commercial banks in Nepalese economy by taking the Joint Venture Banks as sample.

Common stock is the most risky security because the common stock neither ensures an annual return nor ensures for the return of price of stock. Therefore, the investment in the common stock is very sensitive on the ground of risk. Even though, in the context of Nepal, the participation of investors and the stock trading in increasing trend unexpectedly. Among them, the share of commercial banks is heavily traded in the stock market and the majority is of Joint Venture Banks but the main problem is that they cannot perfectly analyze the risk and return of the common stock and the stock market. Without the proper information and sound knowledge, individual investors are suffering from losses. It means they are bearing the high risk on their investment.

This study is concerned with risk, return and portfolio analysis because the central focus of finance is tradeoff between risk and return. Generally, investors are risk averter. None of investor would like to invest in the risky asset unless he/she is assured for adequate compensation for the acceptance of risk. So the primary problem in investment is to identify such security, which has low risk and high return. Thus, risk plays vital role in the analysis of common stock investment and to reach investment decision. However return cannot increase subsequently but the risk can be reduced by diversification of funds in different stocks making portfolio of different stocks. A rational investor always seeks to find the optimal portfolio with good performance so that this will reduce risk in his/ her investment. It means appropriate portfolio should be constructed instead of investing in a single asset because it would be able to reduce unsystematic risk.

The main objective of this research work is to analyze the portfolio risk and return and the portfolio performance evaluation on common stock investment of six Joint Venture Banks which are listed in NEPSE where ten years data are presented as required. Thus, this research work covers population study considering only Joint Venture Banks those are operating in Nepal among Thirty one commercial banks. During this research work, a brief review of literature has been conducted. Mathematical and financial tools and technique are used in data analysis process. In this research, the data are separately presented in Tables, graphs and diagram to make the result more clear. Both quantitative and qualitative analysis has performed by using statistical tools as well as personal judgment to derive the conclusion. Secondary data has been gathered from various sources such as website of concern Joint Venture Banks, articles and annual reports of related banks, annual report of SEBO/N, NEPSE website and other related fields.

5.1 Conclusion

In the Nepalese context, there is seen very fluctuation in the return of common stock investment, which is expected from the investor. Thus, due to such inequality, stock market is known as a gambling. Many people have unrealistically optimistic or pessimistic expectations about the stock market investment that means they are taking

fear of unknown. Therefore, the conclusion of this research work may be important information for those who are directly or indirectly concerned with the common stock investment. From the analysis of various financial indicators and statistical tools of all the sample banks, the following conclusion can be outline.

1. The return is defined as income received on common stock investment, which is usually expressed in percentage. The expected rate of return on common stock of SCBNL is maximum (i.e. 61.62%), which is the highest one among the six Joint Venture Banks and the lowest one is 6.05% of NBBL during this research work covered period. Similarly, risk is associated with return and it is variability of returns, which is measured in terms of S.D. The NBBL has the highest S.D. (i.e.77.24%) and the HBL has lowest S.D.(i.e.39%). According to S.D. the investor should choose HBL due to less risky but as expected return, the investor should choose SCBNL due to highest one. Thus, to remove this difficulty regarding the choice of individual stock, we can use other relative measure of risk that is C.V. According to the C.V., the SCBNL is the best investment alternative due to the least C.V. that is 1.0005.

2. Beta is systematic risk and Market beta is always 1. Beta coefficient of NBBL is the highest (i.e. 1.2956), which is greater than 1. Thus, it indicates that return of NBBL is more volatile that means every 1% change in market return leads to 1.2956% change in NBBL stock return. Therefore, stock of NBBL is most aggressive and the stock of SCBNL is the most defensive stock than other due to the lowest beta coefficient i.e. 0.7127.

3. Regarding the market capitalization of six Joint Venture Banks, SCBNL is in the highest position with Rs. 37254.92 million (I.e. 31.50%) and EBL is in the lowest position with Rs. 9279.90 million i.e. 7.85%.

4. Considering the total market capitalization of various industries in fiscal year 2009/10, Banking sector covers most of the shares i.e. Rs. 206282.52 million

and the Trading sector covers the lowest share i.e. Rs. 1617.51 million. Among the whole sector wise industries, categorized by NEPSE, Other sector has the highest expected return i.e. 39.41% and the lowest one is -1.52% which is negative returns. Similarly, the common stock of Other sector is very risky due to the highest S.D. (i.e. 83.93%) and due to lowest S.D. (i.e. 10.58%), Hotel sector is less risky.

5. Considering the market risk and return, expected return of overall market is 9.22% which is the lowest than NABIL, SCBNL, HBL, EBL and NSBIL, highest than NBBL expected return of Joint Venture Banks and the risk I is s also found in average portion i.e. 39.25%.

6. One of the main significant of beta is Capital Asset Pricing Model (CAPM), which describes the relationship between risk and equilibrium return. In this model, risk free rate plus a premium based on systematic risk of security is equilibrium rate of return there is found that the NABIL, SCBNL, HBL, EBL and NSBIL bank's common stocks are under priced and NBBL is overpriced. So NABIL, SCBNL, HBL, EBL and NSBIL JVBs are having stock with a good investment opportunity because there is chance of increasing of stock value in near future and NBBL is worse investment opportunity because there is no chance of increasing of stock value in near future. Thus, the investor can purchase the common stock of under priced five Joint Venture Banks and sell the common stock of overpriced JVBs of NBBL.

7. Using the Markowitz simple diversification, risk could be diversified on investing in two or more asset without losing considerable return. According to this research work, investing on EBL & NSBIL, unsystematic risk could be reduced to 29.55%. Before diversification, risk of these particular banks was 56.13% and 67.55% respectively. Their expected return of portfolio is 41.66%. Similarly, after creating the portfolio between NABIL & SCBNL, the risk can

be minimized to 59.98% but before diversification, risk of these particular banks was 62.73%, 61.65% respectively. In this way, with doing the diversification, every bank could reduce their risk for the same or more return. While creating the portfolio between two assets among the sample JVBs, the portfolio between SCBNL & HBL gives the highest expected return, which is 77.74% whereas the portfolio between HBL & NBBL gives the lowest expected return i.e. 7.97%. Similarly, considering the portfolio risk, the portfolio of EBL & NBBL has the highest risk i.e. 87.74% and the portfolio of EBL & NSBIL has the lowest risk i.e. 29.55%.

8. Correlation coefficient between HBL & NSBIL is the highest one that is 0.9548, which is about near of perfectly positively correlation (1) and correlation co-efficient between NABIL & NBBL is the lowest that is only 0.2460, which means common stocks of such banks are less correlated.

9. Portfolio performance evaluation measures the better financial position of created portfolio between mentioned sample banks by making cameraperson among them. Considering the Sharpe's performance measure, the portfolio of SCBNL & HBL has the best performance because of the highest risk premium return per unit of total risk that is 1.5861 and the portfolio of HBL & NBBL is worst due to the lowest risk premium return per unit i.e. -0.0004.

5.2 Recommendations

The finding of this study may provide significant information for those who are concerned directly or indirectly with the stock market activities. Thus, on the basis of the analysis and findings of this study, the following recommendations are presented separately for investors and institution to overcome the weakness and inefficiently and to improve present stock performance.

(I) For Investors

1. Risk and Return play vital role on common stock investment of banking sector. Therefore, it is suggested to analyze risk and return with sincerely before investing in this sector. According to the analysis of individual common stock of Joint Venture Bank, Investors should invest their money in common stock of SCBNL due to the lowest C.V. (i.e. 1.0005), and aggressive type of stock.

2. Analysis of the market sensitivity of common stock guides in investing on stock market. It is better to invest on such common stock, which has less beta i.e. defensive stock for that investor who does not eager to take high risk but higher return can't obtain in such investment. Thus, investor should buy the underpriced stocks when market is rising and sell the over-priced securities when market performance is falling. Similarly, the investor should hold that securities which are performing better than the market. This study recommends to purchase the common stock of NABIL, SCBNL, HBL, EBL and NSBIL banks due to the underpriced and selling the common stock of NBBL bank due to the overpriced.

3. Investor must concern with the systematic risk that is measured by given stock's beta. The systematic risk is only the risk, which is priced at market. According to the study, the stock of HBL has the higher systematic risk and

SCBNL has the lowest systematic risk. Although, there is chance of more return than expected and there is also a chance of heavy loss because stock market investment is risky job. Thus, investor must be well aware of this fact and must be able to visualize and analyze about the whole things. To beat the stock market, proper analysis of individual security, industry and overall market is always essential. Similarly, general knowledge about the political, economic, social and technological (PEST) trend is advantageous.

4. Among mentioned sectors in this research work, the co-efficient of variation of banking sector has low and remaining sector has the highest C.V. Thus, investing in banking sector is the best.

5. Investors need to diversify their fund to reduce the risk. Proper construction of portfolio will reduce considerable potential loss, which can be defined in term of the risk but portfolio construction is dynamic and difficult job. Thus, investor should be selected the stocks that have higher return and negative correlation or near to zero correlation between different companies and sector. The portfolio revision is also necessary at certain interval time to get best return at lower risk. According to the study, the portfolio between EBL & NSBIL is recommended to construction due to lowest risk as well as good positive return.

6. Before making an investment decision in stock, it is recommended to visit and discuss with investment companies, with individual expert and researchers. Investor should make their investment decision on the basis of reliable information or financial parameters of the related bank rather than imagination.

II) For Institutions

1. NEPSE needs to provide the clear information about the process of investment, trading rules, regulations and about the up to date information to the investors through the efficient and effective information channel. NEPSE is still "open cry system" for trading while world is using sophisticated technology in the field of stock market. Thus, NEPSE should be modernized to develop the stock market in the modern age of information technology. Another recommendation to NEPSE is that it should take steps to establish the stock market in other main cities of the country because the market is concentrate only in the capital city, which is the main difficulty in development of stock market.

2. Government should amend the rules and regulations regarding to the stock market in time to time that insures the protection of an individual investor's right. Such amendment is essential to make the act effectiveness with the pace of time and also need to follow the implementation and supervision of rules and regulation to make sure the objective is achieved.

3. NEPSE should manage the trading of government securities to provide different type of securities at that same place to investors. It will increase the opportunities for well diversification of funds to investors and it will also increase the private investor's participation in government securities.

4. 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. It creates confusion to potential investors about the actual financial condition of the company. They should publish their annual reports and information timely and accurately, which will help to the investors to take the investment decision on their common stock.

5. The peace and the potential problem of the country are another burning issue, which affects the economy of the nation adversely. Thus, political stability is must for the economic prosperity and increasing trend of business.
6. The stock broker company should be trained their staff about share trading system and they should be aware with investor's right and their service to the investors on time.

BIBLIOGRAPHY

BOOKS

Cheney, J.M. & Edward, A.M. (1992). *Fundamental of investment*. New York: West Publishing Company.

Thapa, K. (2007). *Corporate financial management*. Kathmandu: Khanal Books Publisher & Distributer.

Gitman, L. J. (1998*). Principal of managerial finance*. New York: Harper Collins Publishers.

Panday, I.M. (1995). *Financial management*. New Delhi: Vikash Publishing House Pvt. Ltd.

Bhalla, V. K. (2000). *Financial management*. New Delhi: Prentice Hall of India.

Bhattarai, R. (2004). *Investment theory and practice*. Kathmandu: Asmita Books Publishers & Distributors.

Fisher, D.E. & Jordan , R. J. (2000). *Security analysis and portfolio management*. New Delhi:Hall of India Pvt. Ltd.

Frank, K.R. & Keith, C.B.(2004). *Investment analysis & portfolio management*. Thomson South-Western: Hall of India Pvt. Ltd.

Richard, B. & Myers, S.(2000). *Principles of corporate finance*. Tata Mc Graw Hill.

Wolf, H.K. & Pant, P.R.(2005*). Social science research and thesis writing*. Kathmandu: Budha Academic Enterprises Pvt. Ltd.

Chaudhary, A.K. & Sharma, P.K.(2007*). Statistical methods*. Kathmandu: Khanal Books & Stationery.

Shrestha, K.N. & Manadhar, K.D.(1999). *Statistic and quantitative techniques for management*. Kathmandu: Kathmandu Valley Publishers.

Kothari, C.R.(1990). *Research methodology*. New Delhi: Wishwa Prakashan.

Shrestha, M.K. & Handari, D.B.(2004). *Financial markets and institutions*. Kathamdu: Asmita Books Publications.

Van Horne, J.C. & Wachowicz, Jr. J.M.(1995). *Fundamentals of financial management*. USA: Prentice Hall Inc.

Western, J.F. & Eugene, F. (1999). *Managerial finance*. New York: Hold Saunders International edition.

Shrestha, S. & Silwal, D. (2002). *Statistical methods in management*. Kathamandu: Taleju Prakashan.

Van Horne, J.C. & Wachowicz, Jr. J.M. (1995). *Fundamentals of financial management*. USA: Prentice Hall Inc.

Sharma, B. (2003). *Corporate financial management*. Kathmandu: Taleju Prakashan.

Weston, B. & Bringham. (1996). *Investment analysis*. New York, USA: Mc Graw Hill.

Thapa, K., Bhattarai, R. and Basnet, D. (2006). *Investment theory and solution*. Kathmandu: Asmita Books and Publishers.

Articles and Journals

Elton, E.J. (1999). "Expected Return, Realized Returns and Pricing Tests". The Journal of Finance.

Shrestha, Dr. M.K. (2057 B.S.). Commercial banks comparative performance evaluation. Kathmandu*: Karmachari Sanchaya Kosh.*

Shrestha, Shiv Raj (2055), Portfolio management in commercial bank: Theory and practice'. *Nepal Bank Patrika*.

Ghimire, A.R. (2001). "Nepal Share Market and Investors Prospect". Kathmandu: Business Age.

Shrestha, (2000), "*Comparative Performance of Commercial Banks Evaluation",* Kathmandu, Nepal.

Poudel, N.P. (2002). "Investing in Shares of Return and Risk Elements With Special References to Eight Commercial Banks. Development Finance Department". Kathmandu: Nepal Rastra Bank.

Thesis of Master Degree

Banjade, K.(2003), *"Investment portfolio analysis of joint venture banks"*. Unpublished Master's Thesis, Faculty of Management, Tribhuwan University.

Joshi, D.R.(2004), *"Risk and return analysis of common stock of five listed commercial banks*". Unpublished Master's Thesis, Faculty of Management, Tribhuwan University.

Pokharel, K.R. (2005*), "Risk and return on common stock investment of commercial banks, with reference to six commercial banks".* Unpublished Master's Thesis, Faculty of Management, Tribhuwan University.

Mainali, U.P.(2005), *" Risk and return analysis on common stock investment"*. Unpublished Master's Thesis, Faculty of Management, Tribhuwan University.

Chhetri, A. B.(2007), *"Portfolio analysis on common stock investment of joint venture banks in nepal".* Unpublished Master's Thesis, Faculty of Management, Tribhuwan University.

Thapa, B.(2008), *"Portfolio investment in common stock of joint venture banks in nepal".* Unpublished Master's Thesis, Faculty of Management, Tribhuwan University.

Chhetri, D.B. (2009), "*Risk and returns analysis on common stock investment with reference to listed commercial banks*". Unpublished Master's Thesis, Faculty of Management, Tribhuwan University.

Websites:

www.nepalstock.com

www.sebonnepal.com

www.nabilbankltd.com

www.Standardchartered.com

www.hbl.com.np

www.ebl.com.np

www.hbl.com.np

www.nbbl.com.np

www.nrb.org.np

APPENDICES

APPEDIX-1

Calculation of Realized return(R),Expected Return E(r) & Standard Deviation (σ)

Fiscal Year	Closing MPS	Dividend (D_t)	$R_n = \frac{Dt + Pt - Pt\text{-}1}{Pt\text{-}1}$	$(R_n - \overline{R}_n)$	$(R_n - \overline{R}_n)^2$
2000/01	500	730	-	-	-
2001/02	700	420	1.24	0.775	0.6006
2002/03	740	55	0.1357	-0.3293	0.1084
2003/04	1000	40	0.4054	-0.0596	0.0036
2004/05	1505	590	1.095	0.63	0.3969
2005/06	2240	50	0.5216	0.0566	0.0032
2006/07	5050	65	1.2835	0.8185	0.6699
2007/08	5275	70	0.0584	-0.4066	0.1653
2008/09	4899	85	-0.0552	-0.5202	0.2706
2009/10	2384	70	-0.4991	-0.9641	0.9295
Total			$\sum R_n = 4.1853$		$\sum(R_n - \overline{R}_n)^2 = 3.1480$

$$\text{Expected Return } (R_n) = \frac{\sum R_n}{n} = \frac{4.1853}{9} = 0.4650$$

$$\text{Standard Deviation } (\sigma_n) = \sqrt{\frac{\sum(R_n - \overline{R}_n)^2}{n-1}}$$

$$= \sqrt{\frac{3.1480}{9-1}} = 0.6273$$

$$\text{Co-efficient of Variation } (CV_n) = \frac{\sigma_n}{\overline{R}_n} = 0.6273/0.465 = 1.3490$$

$$\text{Variance } (\sigma_n^2) = (0.6273)^2 = 0.3935$$

Appendix-2

Realized Return(R), Standard Deviation (σ) and Expected Return (R)

Fiscal Year	Closing MPS	Dividend	$R_{sc} = \frac{Dt + Pt - Pt-1}{Pt-1}$	$(R_{sc} - \bar{R}_{sc})$	$(R_{sc} - \bar{R}_{sc})^2$
2000/01	840	70	-	-	-
2001/02	1162	900	1.4548	0.8386	0.7032
2002/03	1640	284.5	0.6562	0.04	0.0016
2003/04	1745	110	0.1311	-0.4851	0.2353
2004/05	2345	120	0.4126	-0.2036	0.0415
2005/06	3775	730	0.9211	0.3049	0.093
2006/07	5900	3545	1.5020	0.8858	0.7846
2007/08	6830	3135	0.6890	0.0728	0.0053
2008/09	6010	1739.5	0.1346	-0.4816	0.2319
2009/10	3279	595	-0.3554	-0.9716	0.9440
			$\sum R_{sc} = 5.5460$		$\sum (R_{sc} - \bar{R}_{sc})^2 = 3.0404$

Expected Return $(\bar{R}_{sc}) = \frac{\sum R_{sc}}{n} = \frac{5.5460}{9} = 0.6162$

Standard Deviation $(\sigma_{sc}) = \sqrt{\frac{\sum (R_{sc} - \bar{R}_{sc})^2}{9-1}}$

$= \sqrt{\frac{3.0404}{9-1}} = 0.6165$

Co-efficient of Variation $(CV_{sc}) = \frac{\sigma_{sc}}{\bar{R}_{sc}} = 0.6165/0.6162 = 1.0005$

Variance $(\sigma_{sc})^2 = (0.6165)^2 = 0.3801$

APPENDIX-3

Realized return(R), Expected Return E(r) and Standard Deviation (σ)

Fiscal Year	Closing MPS	Dividend (D_t)	$R_h = \frac{Dt + Pt - Pt-1}{Pt-1}$	$(R_h - \bar{R}_h)$	$(R_h - \bar{R}_h)^2$
2000/01	755	25	-	-	-
2001/02	945	178.20	0.4877	0.2065	0.0426
2002/03	836	211.32	0.1083	-0.1729	0.0299
2003/04	840	184	0.2249	-0.0563	0.0032
2004/05	920	231.58	0.3709	0.0897	0.008
2005/06	1100	117	0.3228	0.0416	0.0017
2006/07	1740	510	1.0455	0.7643	0.5842
2007/08	1980	377	0.3546	0.0734	0.0054
2008/09	1760	269.5296	0.0250	-0.2562	0.0656
2009/10	816	224.34	-0.4089	-0.6901	0.4762
Total			$\sum R_h = 2.5308$		$\sum (R_h - \bar{R}_h)^2 = 1.2168$

Expected Return (R_h) $= \frac{\sum R_h}{n} \quad \frac{2.5308}{9} = 0.2812$

Standard Deviation (σ_h) $= \sqrt{\frac{\sum (R_h - \bar{R}_h)^2}{n-1}}$

$= \sqrt{\frac{1.2168}{9-1}} = 0.39$

Co-efficient of Variation (CV_h) $= \frac{\sigma_h}{\bar{R}_h} = 0.39/0.2812 = 1.3869$

Variance $(\sigma_h)^2 = (0.39)^2 = 0.1521$

Appendix-4

Realized return(R), Expected Return E(r) and Standard Deviation (σ)

Fiscal Year	Closing MPS	Dividend (D_t)	$R_e = \frac{Dt + Pt - Pt\text{-}1}{Pt\text{-}1}$	$(R_e - \bar{R}_e)$	$(R_e - \bar{R}_e)^2$
2000/01	184	-	-	-	
2001/02	407	15	1.2935	0.8047	0.6475
2002/03	445	20	0.1425	-0.3463	0.1199
2003/04	680	20	0.5730	0.0842	0.0071
2004/05	870	275.80	0.6850	0.1962	0.0385
2005/06	1379	25	0.6138	0.1250	0.0156
2006/07	2430	636.40	1.2236	0.7348	0.5399
2007/08	3132	265.50	0.3981	-0.0907	0.0082
2008/09	2455	30	-0.2066	-0.6954	0.4836
2009/10	1630	30	-0.3238	-0.8126	0.6603
Total			$\sum R_e = 4.3991$		$\sum(R_e - \bar{R}_e)^2 = 2.5206$

Expected Return (R_e) $= \frac{\sum R_e}{n} = \frac{4.3991}{9} = 0.4888$

Standard Deviation (σ_e) $= \sqrt{\frac{\sum (R_e - R_e)^2}{n-1}}$

$= \sqrt{\frac{2.5206}{9-1}} = 0.5613$

Co-efficient of Variation (CV_e) $= \frac{\sigma_e}{R_e} = 0.5613/0.4888 = 1.1484$

Variance $(\sigma_e)^2 = (0.5613)^2 = 0.3151$

APPENDIX-5

Realized return(R), Expected Return E(r) and Standard Deviation (σ)

Fiscal Year	Closing MPS	Dividend (D_t)	$R_{nb} = \frac{Dt + Pt - Pt\text{-}1}{Pt\text{-}1}$	$(R_{nb} - \bar{R}_{nb})$	$(R_{nb} - \bar{R}_{nb})^2$
2000/01	1100	250	-	-	-
2001/02	490	-	-0.5545	-0.6150	0.3782
2002/03	360	-	-0.2653	-0.3258	0.1061
2003/04	354	-	-0.0167	-0.0772	0.006
2004/05	265	-	-0.2514	-0.3119	0.0973
2005/06	199	-	-0.2491	-0.3096	0.0959
2006/07	550	-	1.7638	1.7033	2.9012
2007/08	1001	-	0.82	0.7595	0.5768
2008/09	280	-	-0.7203	-0.7808	0.6096
2009/10	285	-	0.0179	-0.0426	0.0018
Total			$\sum R_{nb} = 0.5444$		$\sum (R_{nb} - \bar{R}_{nb})^2 = 4.7729$

Expected Return ($\bar{R}_{nb}$) $= \frac{\sum R_{nb}}{n} = \frac{0.5444}{9} = 0.0605$

Standard Deviation (σ_{nb}) $= \sqrt{\frac{\sum (R_{nb} - \bar{R}_{nb})^2}{n-1}}$

$= \sqrt{\frac{4.7729}{9-1}} = 0.7724$

Co-efficient of Variation (CV_{nb}) $= \frac{\sigma_{nb}}{R_{nb}} = 0.7724/0.0605 = 12.7671$

Variance $(\sigma_{nb})^2 = (0.7724)^2 = 0.5966$

APPENDIX-6

Realized return(R), Expected Return E(r) and Standard Deviation (σ)

Fiscal Year	Closing MPS	Dividend (D_t)	$R_{sb} = \frac{Dt + Pt - Pt\text{-}1}{Pt\text{-}1}$	$(R_{sb} - \bar{R}_{sb})$	$(R_{sb} - \bar{R}_{sb})^2$
2000/01	205	26.25	-	-	-
2001/02	325	15	0.6585	0.2589	0.0670
2002/03	255	8	-0.1907	-0.5903	0.3485
2003/04	307	-	0.2039	-0.1957	0.0383
2004/05	335	-	0.0912	-0.3084	0.0951
2005/06	612	5	0.8418	0.4422	0.1955
2006/07	1176	541.44	1.8063	1.4067	1.9788
2007/08	1511	-	0.2848	-0.1148	0.0132
2008/09	1900	298.51	0.4550	0.0554	0.0031
2009/10	741	105	-0.5547	-0.9543	0.9107
Total			$\sum R_{sb} = 3.5961$		$\sum(R_{sb} - \bar{R}_{sb})^2 = 3.6502$

$$\text{Expected Return } (\bar{R}_{sb}) = \frac{\sum R_{sb}}{n} = \frac{3.5961}{9} = 0.3996$$

$$\text{Standard Deviation } (\sigma_{sb}) = \sqrt{\frac{\sum (R_{sb} - \bar{R}_{sb})^2}{n-1}}$$

$$= \sqrt{\frac{3.6502}{9-1}} = 0.6755$$

$$\text{Co-efficient of Variation } (CV_{sb}) = \frac{\sigma_{sb}}{\bar{R}_{sb}} = 0.6755/0.3996 = 1.6904$$

$$\text{Variance } (\sigma_{sb})^2 = (0.6755)^2 = 0.4563$$

APPENDIX-7

Calculation of Returns, Expected Returns, Standard deviation, Variance & C.V. of Banking Sector

Fiscal Year	NEPSE Index	$R_b = \frac{NI_t - NI_{t-1}}{NI_{t-1}}$	$R_b - \bar{R}_b$	$(R_b - \bar{R}_b)^2$
2000/01	194.95	-	-	-
2001/02	219.44	0.1256	-0.1204	0.1204
2002/03	397.17	0.8099	0.5639	0.3180
2003/04	397.38	0.21	-0.036	0.0013
2004/05	482.29	0.2137	-0.0323	0.001
2005/06	446.62	-0.074	-0.3200	0.1024
2006/07	422	-0.0551	-0.3011	0.0907
2007/08	542.50	0.2855	0.0395	0.0016
2008/09	731.89	0.3491	0.1031	0.0106
2009/10	810.54	0.1075	-0.1385	0.0192
		$\sum R_b = 1.9682$		$\sum(R_b - \bar{R}_b)^2 = 0.6706$

Expected Return ($\bar{R}_b$) = $\frac{\sum R_b}{n}$

$= \frac{1.9682}{9} = 0.2187$

Standard Deviation (σ_b) = $\sqrt{\frac{\sum(R_b - \bar{R}_b)^2}{n-1}}$

$\sqrt{\frac{0.6706}{8}} = 0.2895$

C.V. = $\frac{\sigma_b}{\bar{R}_b}$ = 0.2895 / 0.2187 = 1.3237

APPENDIX-8

Calculation of Returns, Expected Returns, Standard deviation, Variance & C.V. of Finance & Insurance Sector

Fiscal Year	NEPSE Index	$R_{fi} = \frac{NI_t - NI_{t-1}}{NI_{t-1}}$	$R_{fi} - \bar{R}_{fi}$	$(R_{fi} - \bar{R}_{fi})^2$
2000/01	176.32	-	-	-
2001/02	195.68	0.1098	-0.1125	0.0127
2002/03	305.68	0.5637	0.3414	0.1166
2003/04	318.67	0.0415	-0.1808	0.0327
2004/05	577.51	0.8123	0.5900	0.3481
2005/06	448.78	-0.2229	-0.4452	0.1982
2006/07	433.61	-0.0338	-0.2561	0.0656
2007/08	548.63	0.2653	0.0430	0.0018
2008/09	642.62	0.1713	-0.051	0.0026
2009/10	688.45	0.0713	-0.1510	0.0228
		$\sum R_{fi} = 1.7785$		$\sum(R_{fi} - \bar{R}_{fi})^2 = 0.8011$

Expected Return ($\bar{R}_{fi}$) = $\frac{\sum R_{fi}}{n}$

$= \frac{1.7785}{9} = 0.1976$

Standard Deviation (σ_{fi}) = $\sqrt{\frac{\sum(R_{fi} - \bar{R}_{fi})^2}{n-1}}$

$\sqrt{\frac{0.8011}{8}} = 0.3164$

Variance (σ_{fi}^2) = $(0.3164)^2 = 0.0838$

C.V. = $\frac{\sigma_{fi}}{\bar{R}_{fi}} = 0.3164 / 0.1976 = 1.6012$

APPENDIX-9

Calculation of Returns, Expected Returns, Standard deviation, Variance & C.V. of Trading Sector

Fiscal Year	NEPSE Index	$R_T = \frac{NI_t - NI_{t-1}}{NI_{t-1}}$	$R_T - \bar{R}_T$	$(R_T - \bar{R}_T)^2$
2000/01	160.58	-	-	-
2001/02	123.99	-0.2279	-0.2441	0.0596
2002/03	123.74	-0.0020	-0.0182	0.0003
2003/04	155.55	-0.2571	0.2409	0.0580
2004/05	102.20	-0.3430	-0.3592	0.1290
2005/06	94.56	-0.0748	-0.0910	0.0083
2006/07	95.01	0.0048	-0.0114	0.0001
2007/08	123.20	0.2967	0.2805	0.0787
2008/09	148.20	0.2029	0.1867	0.0349
2009/10	150.55	0.0159	-0.0003	0.0000
		$\sum R_T = 0.1297$		$\sum(R_T - \bar{R}_T)^2 = 0.3689$

Expected Return ($\bar{R}_T$) = $\frac{\sum R_T}{n}$

$= \frac{0.1297}{9} = 0.0144$

Standard Deviation (σ_T) = $\sqrt{\frac{\sum(R_T - \bar{R}_T)^2}{n-1}}$

$\sqrt{\frac{0.3689}{8}} = 0.2147$

$C.V_T = \frac{\sigma_T}{\bar{R}_T} = 0.2147 / 0.0144 = 14.9097$

APPENDIX-10

Calculation of Returns, Expected Returns, Standard deviation, Variance & C.V. of Manufacturing & Processing Sector

Fiscal Year	NEPSE Index	$R_{mp}=\frac{NI_t - NI_{t-1}}{NI_{t-1}}$	$R_{mp} - \bar{R}_{mp}$	$(R_{mp} - \bar{R}_{mp})^2$
2000/01	226.65	-	-	-
2001/02	229.89	0.0143	-0.0565	0.0032
2002/03	340.59	0.4815	0.4107	0.1687
2003/04	349.10	0.0250	-0.0458	0.0021
2004/05	216.51	-0.3798	-0.4506	0.2030
2005/06	250.13	0.1553	0.0845	0.0071
2006/07	255.58	0.0218	-0.0490	0.0024
2007/08	276.50	0.0819	0.0111	0.0001
2008/09	301.11	0.089	0.0182	0.0003
2009/10	324.50	0.0777	0.0069	0.0000
		$\sum R_{mp} = 0.5667$		$\sum(R_{mp} - \bar{R}_{mp})^2 = 0.3869$

Expected Return ($\bar{R}_{mp}$) = $\frac{\sum R_{mp}}{n}$

$$= \frac{0.5667}{9} = 0.063$$

Standard Deviation (σ_{mp}) = $\sqrt{\frac{\sum (R_{mp} - \bar{R}_{mp})^2}{n-1}}$

$$\sqrt{\frac{0.3869}{8}} = 0.2199$$

$$C.V_{mp} = \frac{\sigma_{mp}}{\bar{R}_{mp}} = 0.2199 / 0.063 = 3.4905$$

APPENDIX-11

Calculation of Returns, Expected Returns, Standard deviation, Variance & C.V. of Hotel Sector

Fiscal Year	NEPSE Index	$R_H = \frac{NI_t - NI_{t-1}}{NI_{t-1}}$	$R_H - \bar{R}_H$	$(R_H - \bar{R}_H)^2$
2000/01	244.49	-	-	-
2001/02	242.54	-0.0080	-0.0251	0.0006
2002/03	346.15	0.4272	0.0091	0.0001
2003/04	291.34	-0.1583	-0.1412	0.0199
2004/05	216.51	-0.2568	-0.2397	0.0575
2005/06	196.68	-0.0916	-0.0745	0.0056
2006/07	184.41	-0.0624	-0.0453	0.0021
2007/08	178	-0.0348	-0.0177	0.0003
2008/09	180.77	0.0156	0.0327	0.0011
2009/10	186.55	0.0320	0.0491	0.0024
		$\sum R_H = -0.1371$		$\sum(R_H - \bar{R}_H)^2 = 0.0896$

Expected Return ($\bar{R}_H$) = $\frac{\sum R_H}{n}$

$$= \frac{-0.1371}{9} = -0.0152$$

Standard Deviation (σ_H) = $\sqrt{\frac{\sum(R_H - \bar{R}_H)^2}{n-1}}$

$$\sqrt{\frac{0.0896}{8}} = 0.1058$$

$$C.V_H = \frac{\sigma_H}{\bar{R}_H} = 0.1058 / -0.0152 = -6.9605$$

APPENDIX-12

Calculation of Returns, Expected Returns, Standard deviation, Variance & C.V. of Other sector

Fiscal Year	NEPSE Index	$R_o = \frac{NI_t - NI_{t-1}}{NI_{t-1}}$	$R_o - \bar{R}_o$	$(R_o - \bar{R}_o)^2$
2000/01	221.59	-	-	-
2001/02	376.10	0.6973	0.2539	0.0645
2002/03	308.46	-0.1798	-0.6232	0.3884
2003/04	190.90	0.3811	-0.0623	0.0039
2004/05	77.43	-0.5944	-1.0378	1.077
2005/06	48.56	-0.3729	-0.8163	0.6663
2006/07	142.65	1.9376	1.4942	2.2326
2007/08	347.65	1.4371	0.9937	0.9874
2008/09	410	0.1793	-0.2641	0.0697
2009/10	435.44	0.0620	-0.3814	0.1455
		$\sum R_o = 3.5473$		$\sum(R_o - \bar{R}_o)^2 = 5.6353$

Expected Return ($\bar{R}_o$) = $\frac{\sum R_o}{n}$

$= \frac{3.5473}{9} = 0.3941$

Standard Deviation (σ_o) = $\sqrt{\frac{\sum(R_o - \bar{R}_o)^2}{n-1}}$

$\sqrt{\frac{5.6353}{8}} = 0.8393$

$C.V_o = \frac{\sigma_o}{\bar{R}_o} = 0.8393 / 0.3941 = 2.1297$

APPENDIX-13

Calculation of Co-variances, Correlation and Beta of NABIL

Year	$(R_n - \overline{R}_n)$	$(R_m - \overline{R}_m)$	$(R_n - \overline{R}_n)\ (R_m - \overline{R}_m)$
2000/01	-	-	-
2001/02	0.775	-0.5197	-0.4028
2002/03	-0.3293	-0.2724	0.0897
2003/04	-0.0596	-0.0888	0.0053
2004/05	0.63	0.1184	0.0746
2005/06	0.0566	0.1767	0.0100
2006/07	0.8185	0.5954	0.4873
2007/08	-0.4066	0.1963	-0.0798
2008/09	-0.5202	-0.3951	0.2055
2009/10	-0.9641	-0.5350	0.5158
			$\sum(R_n - \overline{R}_n)\ (R_m - \overline{R}_m)$= 0.9056

$$\# \quad \text{Cov}(R_n, R_m) = \frac{\sum(R_n - \overline{R}_n)\ (R_m - \overline{R}_m)}{n-1}$$

$$= \frac{0.9056}{9-1} = 0.1132$$

$$\# \quad \text{Cor}(R_n, R_m) = \frac{\text{Cov}(R_n, R_m)}{\sigma_n, \sigma_m} = 0.1132/\ (0.6273 \times 0.3925) = 0.4598$$

$$\# \text{ Beta } (\beta n) = \frac{\text{Cov}(R_n, R_m)}{\sigma_m^2} = \frac{0.1132}{(0.3925)^2} = 0.7348$$

APPENDIX-14

Calculation of Co-variances, Correlation and Beta of SCBNL

Year	$(R_{sc} - \overline{R}_{sc})$	$(R_m - \overline{R}_m)$	$(R_{sc} - \overline{R}_{sc})\ (R_m - \overline{R}_m)$
2000/01	-	-	-
2001/02	0.8386	-0.5197	-0.4358
2002/03	0.04	-0.2724	-0.109
2003/04	-0.4851	-0.0888	0.0431
2004/05	-0.2036	0.1184	-0.0241
2005/06	0.3049	0.1767	0.0539
2006/07	0.8858	0.5954	0.5274
2007/08	0.0728	0.1963	0.0143
2008/09	-0.4816	-0.3951	0.1903
2009/10	-0.9716	-0.5350	0.5198
			$\sum(R_{sc} - \overline{R}_{sc})\ (R_m - \overline{R}_m)$= 0.8780

$$\# \quad \text{Cov}\ (R_{sc}, R_m) = \frac{\sum(R_{sc} - \overline{R}_{sc})\ (R_m - \overline{R}_m)}{n-1}$$

$$= \frac{0.8780}{9-1} = 0.1098$$

$$\# \quad \text{Cor}\ (R_{sc}, R_m) = \frac{\text{Cov}\ (R_{sc}, R_m)}{\Sigma_{sc}, \sigma_m} = 0.1098/\ (0.6165 \times 0.3925) = 0.4538$$

$$\# \text{ Beta } (\beta sc) = \frac{\text{Cov}\ (R_{sc}, R_m)}{\sigma_m^2} = \frac{0.1098}{(0.3925)^2} = 0.7127$$

APPENDIX-15

Calculation of Co-variances, Correlation and Beta of HBL

Year	$(R_h - \overline{R}_h)$	$(R_m - \overline{R}_m)$	$(R_h - \overline{R}_h)\ (R_m - \overline{R}_m)$
2000/01	-	-	-
2001/02	0.2065	-0.1597	-0.033
2002/03	-0.1729	-0.2724	0.0471
2003/04	-0.0563	-0.0888	0.0050
2004/05	0.0897	0.1184	0.0106
2005/06	0.0416	0.1767	0.0074
2006/07	0.7643	0.5954	0.4551
2007/08	0.0734	0.1963	0.0144
2008/09	-0.2562	-0.3951	0.1012
2009/10	-0.6901	-0.5350	0.3692
			$\sum(R_h - \overline{R}_h)\ (R_m - \overline{R}_m)$= 0.9770

$$\# \quad \text{Cov}\ (R_h, R_m) = \frac{\sum(R_h - \overline{R}_h)\ (R_m - \overline{R}_m)}{n-1}$$

$$= \frac{0.9770}{9-1} = 0.1221$$

$$\# \quad \text{Cor}\ (R_h, R_m) = \frac{\text{Cov}\ (R_h, R_m)}{\sigma_h, \sigma_m} = 0.1221/\ (0.0.39 \times 0.3925) = 0.7976$$

$$\# \text{ Beta } (\beta h) = \frac{\text{Cov}\ (R_h, R_m)}{\sigma_m^2} = \frac{0.1221}{(0.3925)^2} = 0.7926$$

APPENDIX-16

Calculation of Co-variances, Correlation and Beta of EBL

Year	$(R_e - \overline{R}_e)$	$(R_m - \overline{R}_m)$	$(R_e - \overline{R}_e)\ (R_m - \overline{R}_m)$
2000/01	-	-	-
2001/02	0.8047	-0.1597	-0.1285
2002/03	-0.3463	-0.2724	0.0943
2003/04	0.0842	-0.0888	-0.0075
2004/05	0.1962	0.1184	0.0232
2005/06	0.1250	0.1767	0.0221
2006/07	0.7348	0.5954	0.4375
2007/08	-0.0907	0.1963	-0.0178
2008/09	-0.6954	-0.3951	0.2748
2009/10	-0.8126	-0.5350	0.4347
			$\sum(R_e - \overline{R}_e)\ (R_m - \overline{R}_m)$= 1.1328

$$\# \quad \text{Cov}(R_e, R_m) = \frac{\sum(R_e - \overline{R}_e)\ (R_m - \overline{R}_m)}{n-1}$$

$$= \frac{1.1328}{9-1} = 0.1416$$

$$\# \quad \text{Cor}(R_e, R_m) = \frac{\text{Cov}(R_e, R_m)}{\Sigma_{\mathbf{e}}, \sigma_{\mathbf{m}}} = 0.1416/ (0.5613 \times 0.3925) = 0.6427$$

$$\# \text{ Beta } (\beta e) = \frac{\text{Cov}(R_e, R_m)}{\sigma_{\mathbf{m}}^{\mathbf{2}}} = \frac{0.1416}{(0.3925)^2} = 0.9191$$

APPENDIX-17

Calculation of Co-variances, Correlation and Beta of NBBL

Year	$(R_{nb} - \overline{R}_{nb})$	$(R_m - \overline{R}_m)$	$(R_{nb} - \overline{R}_{nb})\ (R_m - \overline{R}_m)$
2000/01	-	-	-
2001/02	-0.6150	-0.1597	0.0982
2002/03	-0.3258	-0.2724	0.0887
2003/04	-0.0772	-0.0888	0.0069
2004/05	-0.3119	0.1184	-0.0369
2005/06	-0.3096	0.1767	-0.0547
2006/07	1.7033	0.5954	1.0141
2007/08	0.7595	0.1963	0.1491
2008/09	-0.7808	-0.3951	0.3085
2009/10	-0.0426	-0.5350	0.0228
			$\sum(R_{nb} - \overline{R}_{nb})\ (R_m - \overline{R}_m)$= 1.5967

$$\# \quad \text{Cov}\ (R_{nb}, R_m) = \frac{\sum(R_{nb} - \overline{R}_{nb})\ (R_m - \overline{R}_m)}{n-1}$$

$$= \frac{1.5967}{9-1} = 0.1996$$

$$\# \quad \text{Cor}\ (R_{nb}, R_m) = \frac{\text{Cov}\ (R_{nb}, R_m)}{\Sigma_{sc}, \sigma_m} = 0.1996/\ (0.7724 \times 0.3925) = 0.6583$$

$$\# \text{ Beta } (\beta nb) = \frac{\text{Cov}\ (R_{nb}, R_m)}{\sigma_m^2} = \frac{0.1996}{(0.3925)^2} = 1.2956$$

APPENDIX-18

Calculation of Co-variances, Correlation and Beta of NSBIL

Year	$(R_{sb} - \overline{R}_{sb})$	$(R_m - \overline{R}_m)$	$(R_{sb} - \overline{R}_{sb})\ (R_m - \overline{R}_m)$
2000/01	-	-	-
2001/02	0.2589	-0.1597	-0.0413
2002/03	-0.5903	-0.2724	0.1608
2003/04	-0.1957	-0.0888	0.0174
2004/05	-0.3084	0.1184	-0.0365
2005/06	0.4422	0.1767	0.0781
2006/07	1.4067	0.5954	0.8375
2007/08	-0.1148	0.1963	-0.0225
2008/09	0.0554	-0.3951	-0.0219
2009/10	-0.9543	-0.5350	0.5106
			$\sum(R_{sb} - \overline{R}_{sb})\ (R_m - \overline{R}_m)$= 1.4822

$$\# \quad \text{Cov}\ (R_{sb}, R_m) = \frac{\sum(R_{sb} - \overline{R}_{sb})\ (R_m - \overline{R}_m)}{n-1}$$

$$= \frac{1.4822}{9-1} = 0.1853$$

$$\# \quad \text{Cor}\ (R_{sb}, R_m) = \frac{\text{Cov}\ (R_{sb}, R_m)}{\Sigma_{sb}, \sigma_m} = 0.1853/\ (0.6755 \times 0.3925) = 0.6989$$

$$\# \text{ Beta } (\beta sb) = \frac{\text{Cov}\ (R_{sb}, R_m)}{\sigma_m^2} = \frac{0.1853}{(0.3925)^2} = 1.2028$$

APPENDIX-19

Calculation of Systematic Risk & Unsystematic Risk of Individual Bank

Name of Banks	Beta (Bj)	Variance of the Bank ($\sigma j)^2$	Systematic Risk (S.R.) = $\frac{\beta_j^2 \times \sigma_m^2}{(\sigma j)^2}$	Unsystematic Risk = 1- S.R.
NABIL	0.7348	0.3935	0.2114	0.7886
SCBNL	0.7127	0.3801	0.2059	0.7941
HBL	0.7926	0.1521	0.6363	0.3637
EBL	0.9191	0.3151	0.4130	0.5870
NBBL	1.2956	0.5966	0.4334	0.5666
NSBIL	1.2028	0.4884	0.4563	0.5437

Market Variance (σ_m^2)= $(0.3925)^2$ = 0.1541

APPENDIX-20

Calculation of Portfolio Risk and Return of NABIL & SCBNL

Year	$(R_n - \bar{R}_n)$	$(R_{sc} - \bar{R}_{sc})$	$(R_n - \bar{R}_n)\ (R_{sc} - \bar{R}_{sc})$
2000/01	-	-	-
2001/02	0.775	0.8386	0.6499
2002/03	-0.3293	0.04	-0.0132
2003/04	-0.0596	-0.4851	0.0289
2004/05	0.63	-0.2036	-0.1283
2005/06	0.0566	0.3049	0.0173
2006/07	0.8185	0.8858	0.7250
2007/08	-0.4066	0.0728	-0.0296
2008/09	-0.5202	-0.4816	0.2505
2009/10	-0.9641	-0.9716	0.9367
			$\sum(R_n - \bar{R}_n)\ (R_{sc} - \bar{R}_{sc})$= 2.4372

$Cov(R_n, R_{sc}) = \dfrac{\sum(R_n - \bar{R}_n)\ (R_{sc} - \bar{R}_{sc})}{n-1} = \dfrac{2.4372}{9-1} =$ 0.3047

$W_n = \dfrac{\sigma_n^2 - Cov(R_n, R_{sc})}{\sigma_n^2 + \sigma_{sc}^2 - 2\ Cov(R_n, R_{sc})} = \dfrac{0.3935-0.3047}{0.3935+0.3801 - 2\times 0.3047} = 0.1642$

$W_{sc} = 1 - W_n = 1 - 0.1642 = 0.8358$

$\bar{R}_p = W_n \times \bar{R}_n + W_{sc} \times \bar{R}_{sc} = 0.1642 \times 0.4650 + 0.8358 \times 0.6162 = 0.5914$

$\sigma_p = \sqrt{W_n^2\ \sigma_n^2 + W_{sc}^2\ \sigma_{sc}^2 + 2\ Cov(R_n, R_{sc})\ W_n\ W_{sc}}$

$= \sqrt{(0.1642)^2 \times 0.3935 + (0.8358)^2 \times 0.3801 + 2 \times 0.3047 \times 0.1642 \times 0.8358}$

$= 0.5998$

APPENDIX-21

Calculation of Portfolio Risk and Return of NABIL & EBL

Year	$(R_n - \bar{R}_n)$	$(R_e - \bar{R}_e)$	$(R_n - \bar{R}_n)\ (R_e - \bar{R}_e)$
2000/01	-	-	-
2001/02	0.775	0.8047	0.6236
2002/03	-0.3293	-0.3463	0.1140
2003/04	-0.0596	0.0842	-0.0050
2004/05	0.63	0.1962	0.1236
2005/06	0.0566	0.1250	0.0071
2006/07	0.8185	0.7348	0.6014
2007/08	-0.4066	-0.0907	0.0369
2008/09	-0.5202	-0.6954	0.3617
2009/10	-0.9641	-0.8126	0.7834
			$\sum(R_n - \bar{R}_n)\ (R_e - \bar{R}_e)$= 2.6467

$$\# \quad \text{Cov}(R_n, R_e) = \frac{\sum(R_n - \bar{R}_n)\ (R_e - \bar{R}_e)}{n-1} = \frac{2.6467}{9-1} = 0.3308$$

$$\# \quad W_n = \frac{\sigma_n^2 - \text{Cov}(R_n, R_e)}{\sigma_n^2 + \sigma_e^2 - 2\,\text{Cov}(R_n, R_e)} = \frac{0.3935-0.3308}{0.3935+0.3151 - 2\times 0.3308} = 1.3811$$

$$\# \ W_e = 1 - W_n = 1 - 1.3811 = -0.3811$$

$$\# \ \bar{R}_p = W_n \times \bar{R}_n + W_e \times \bar{R}_e = 1.3811\times 0.4650 + (-0.3811) \times 0.4888 = 0.4559$$

$$\sigma_p = \sqrt{W_n^2\, \sigma_e^2 + W_e^2\, \sigma_e^2 + 2\,\text{Cov}(R_n, R_e)\, W_n\, W_e}$$

$$= \sqrt{(1.3811)^2\times 0.3935 + (-0.3811)^2 \times 0.3151 + 2\times 0.3308\times 1.3811\times -0.3811}$$

$$= 0.5313$$

APPENDIX-22

Calculation of Portfolio Risk and Return of NABIL & HBL

Year	$(R_n - \bar{R}_n)$	$(R_h - \bar{R}_h)$	$(R_n - \bar{R}_n)\ (R_h - \bar{R}_h)$
2000/01	-	-	-
2001/02	0.775	0.2065	0.1600
2002/03	-0.3293	-0.1729	0.0569
2003/04	-0.0596	-0.0563	0.0034
2004/05	0.63	0.0897	0.0565
2005/06	0.0566	0.0416	0.0024
2006/07	0.8185	0.7643	0.6256
2007/08	-0.4066	0.0734	-0.0298
2008/09	-0.5202	-0.2562	0.1333
2009/10	-0.9641	-0.6901	0.6653
			$\sum(R_n - \bar{R}_n)\ (R_h - \bar{R}_h)$= 1.6736

$$\# \quad Cov\ (R_n, R_{sc}) = \frac{\sum(R_n - \bar{R}_n)\ (R_h - \bar{R}_h)}{n-1} = \frac{1.6736}{9-1} = 0.2092$$

$$\# \quad W_n = \frac{\sigma_n^2 - Cov\ (R_n, R_h)}{\sigma_n^2 + \sigma_h^2 - 2\ Cov\ (R_n, R_h)} = \frac{0.3935-0.2092}{0.3935+0.1521 - 2\times 0.2092} = 1.4489$$

$$\# \ W_h = 1 - W_n = 1 - 1.4489 = -0.4489$$

$$\# \ \bar{R}_p = W_n \times \bar{R}_n + W_h \times \bar{R}_h = 1.4489 \times 0.4650 + (-0.4489) \times 0.2812 = 0.5475$$

$$\sigma_p = \sqrt{W_n^2\ \sigma_n^2 + W_h^2\ \sigma_h^2 + 2\ Cov\ (R_n, R_h)\ W_n\ W_h}$$

$$= \sqrt{(0.1642)^2 \times 0.3935 + (0.8358)^2 \times 0.3801 + 2 \times 0.2092 \times 1.4489 \times -0.4489}$$

$$= 0.7646$$

APPENDIX-23

Calculation of Portfolio Risk and Return of NABIL & NBBL

Year	$(R_n - \bar{R}_n)$	$(R_{nb} - \bar{R}_{nb})$	$(R_n - \bar{R}_n)\ (R_{nb} - \bar{R}_{nb})$
2000/01	-	-	-
2001/02	0.775	-0.6150	-0.4766
2002/03	-0.3293	-0.3258	0.1073
2003/04	-0.0596	-0.0772	0.0043
2004/05	0.63	-0.3119	-0.1965
2005/06	0.0566	-0.3096	-0.0175
2006/07	0.8185	1.7033	1.3942
2007/08	-0.4066	0.7595	-0.3088
2008/09	-0.5202	-0.7808	0.4062
2009/10	-0.9641	-0.0426	0.0411
			$\sum(R_n - \bar{R}_n)\ (R_{nb} - \bar{R}_{nb})$= 0.9537

$$\# \quad Cov\ (R_n, R_{nb}) = \frac{\sum(R_n - \bar{R}_n)\ (R_{nb} - \bar{R}_{nb})}{n-1} = \frac{0.9537}{9-1} = 0.1192$$

$$\# \quad W_n = \frac{\sigma_n^2 - Cov\ (R_n, R_{nb})}{\sigma_n^2 + \sigma_{nb}^2 - 2\ Cov\ (R_n, R_{nb})} = \frac{0.3935-0.1192}{0.3935+0.5966 - 2\times 0.1192} = 0.3649$$

$\# W_{nb} = 1 - W_n = 1 - 0.3649 = 0.6351$

$\# \bar{R}_p = W_n \times \bar{R}_n + W_{nb} \times \bar{R}_{nb} = 0.3649\times 0.4650 + 0.6351\times 0.0605 = 0.2081$

$$\sigma_p = \sqrt{W_n^2\ \sigma_n^2 + W_{nb}^2\ \sigma_{nb}^2 + 2\ Cov\ (R_n, R_{nb})\ W_n\ W_{nb}}$$

$$= \sqrt{(0.3649)^2\times 0.3935 + (0.6351)^2\times (0.7724)^2 + 2\times 0.3649\times 0.6351\times 0.1192}$$

$= 0.5901$

APPENDIX-24

Calculation of Portfolio Risk and Return of NABIL & NSBIL

Year	$(R_n - \bar{R}_n)$	$(R_{sb} - \bar{R}_{sb})$	$(R_n - \bar{R}_n)\ (R_{sb} - \bar{R}_{sb})$
2000/01	-	-	-
2001/02	0.775	0.2589	0.2006
2002/03	-0.3293	-0.5903	0.1944
2003/04	-0.0596	-0.1957	0.0117
2004/05	0.63	-0.3084	-0.1943
2005/06	0.0566	0.4422	0.0250
2006/07	0.8185	1.4067	1.1514
2007/08	-0.4066	-0.1148	0.0467
2008/09	-0.5202	0.0554	-0.0288
2009/10	-0.9641	-0.9543	0.9200
			$\sum(R_n - \bar{R}_n)\ (R_{sb} - \bar{R}_{sb})$= 2.3267

$$\# \quad Cov\ (R_n, R_{sb}) = \frac{\sum(R_n - \bar{R}_n)\ (R_{sb} - \bar{R}_{sb})}{n-1} = \frac{2.3267}{9-1} = 0.2908$$

$$\# \quad W_n = \frac{\sigma_n^2 - Cov\ (R_n, R_{sb})}{\sigma_n^2 + \sigma_{sb}^2 - 2\ Cov\ (R_n, R_{sb})} = \frac{0.3935-0.2908}{0.3935+0.4563 - 2\times 0.2908} = 0.3829$$

$$\# \ W_{sb} = 1 - W_n = 1 - 0.3829 = 0.6171$$

$$\# \ \bar{R}_p = W_n \times \bar{R}_n + W_{sb} \times \bar{R}_{sb} = 0.3829\times 0.4650 + 0.6171 \times 0.3996 = 0.4246$$

$$\sigma_p = \sqrt{W_n^2\ \sigma_n^2 + W_{sb}^2\ \sigma_{sb}^2 + 2\ Cov\ (R_n, R_{sb})\ W_n\ W_{sb}}$$

$$= \sqrt{(0.3829)^2\times 0.3935 + (0.6171)^2 \times 0.4563 + 2\times 0.2908\times 0.3829\times 0.6171}$$

$$= 0.5778$$

APPENDIX-25

Calculation of Portfolio Risk and Return of SCBNL & HBL

Year	$(R_{sc} - \bar{R}_{sc})$	$(R_h - \bar{R}_h)$	$(R_{sc} - \bar{R}_{sc})\ (R_h - \bar{R}_h)$
2000/01	-	-	-
2001/02	0.8386	0.2065	0.1732
2002/03	0.04	-0.1729	-0.0069
2003/04	-0.4851	-0.0563	0.0273
2004/05	-0.2036	0.0897	-0.0183
2005/06	0.3049	0.0416	0.0127
2006/07	0.8858	0.7643	0.6770
2007/08	0.0728	0.0734	0.0053
2008/09	-0.4816	-0.2562	0.1234
2009/10	-0.9716	-0.6901	0.6705
			$\sum(R_{sc} - \bar{R}_{sc})\ (R_h - \bar{R}_h) = 1.6642$

$$\# \quad Cov\ (R_{sc}, R_h) = \frac{\sum(R_{sc} - \bar{R}_{sc})\ (R_h - \bar{R}_h)}{n-1} = \frac{1.6642}{9-1} = 0.2080$$

$$\# \quad W_{sc} = \frac{\sigma_{sc}^2 - Cov\ (R_{sc}, R_h)}{\sigma_{sc}^2 + \sigma_h^2 - 2\ Cov\ (R_{sc}, R_h)} = \frac{(1.6165)^2 - 0.2080}{(0.6165)^2 + 0.39^2 - 2 \times 0.2080} = 1.4811$$

$$\# \ W_h = 1 - W_{sc} = 1 - 1.4811 = -0.4811$$

$$\# \ \bar{R}_p = W_{sc} \times \bar{R}_{sc} + W_h \times \bar{R}_h = 1.4811 \times 0.6162 + (-0.4811) \times 0.2812 = 0.7774$$

$$\# \ \sigma_p = \sqrt{W_{sc}^2\ \sigma_{sc}^2 + W_h^2\ \sigma_h^2 + 2\ Cov\ (R_{sc}, R_h)\ W_{sc}\ W_h}$$

$$= \sqrt{(1.4811)^2 \times (0.6165)^2 + (-0.4811)(0.39)^2 + 2 \times 0.2080 \times 1.4811 \times -0.4811}$$

$$= 0.4397$$

APPENDIX-26

Calculation of Portfolio Risk and Return of SCBNL & EBL

Year	$(R_{sc} - \bar{R}_{sc})$	$(R_e - \bar{R}_e)$	$(R_{sc} - \bar{R}_{sc})\ (R_e - \bar{R}_e)$
2000/01	-	-	-
2001/02	0.8386	0.8047	0.6748
2002/03	0.04	-0.3463	-0.0139
2003/04	-0.4851	0.0842	-0.0408
2004/05	-0.2036	0.1962	-0.0399
2005/06	0.3049	0.1250	0.0381
2006/07	0.8858	0.7348	0.6509
2007/08	0.0728	-0.0907	-0.0066
2008/09	-0.4816	-0.6954	0.3349
2009/10	-0.9716	-0.8126	0.7895
			$\sum(R_{sc} - \bar{R}_{sc})\ (R_e - \bar{R}_e)$= 2.3870

$$\# \quad Cov\ (R_{sc}, R_e) = \frac{\sum(R_{sc} - \bar{R}_{sc})\ (R_e - \bar{R}_e)}{n-1} = \frac{2.3890}{9-1} = 0.2984$$

$$\# \quad W_{sc} = \frac{\sigma_{sc}^2 - Cov\ (R_{sc}, R_e)}{\sigma_{sc}^2 + \sigma_e^2 - 2\ Cov\ (R_{sc}, R_e)} = \frac{(0.6165)^2 - 0.2984}{(0.6165)^2 + (0.5613)^2 - 2 \times 0.2984} = 0.8303$$

$$\# \ W_e = \quad 1 - W_{sc} \ = \ 1 - 0.8303 = \ 0.1697$$

$$\# \ \bar{R}_p = \ W_{sc} \times \bar{R}_{sc} + W_e \times \bar{R}_e \quad = 0.8303 \times 0.6162 + 0.1697 \times 0.4888 \ = \ 0.5946$$

$$\# \ \sigma_p \ = \ \sqrt{W_{sc}^2\ \sigma_{sc}^2 + W_e^2\ \sigma_e^2 + 2\ Cov\ (R_{sc}, R_e)\ W_{sc}\ W_e}$$

$$= \sqrt{(0.8303)^2 \times (0.8303)^2 + (0.1697)^2 (0.5613)^2 + 2 \times 0.2984 \times 0.8303 \times 0.1697}$$

$$= \quad 0.7540$$

APPENDIX-27

Calculation of Portfolio Risk and Return of SCBNL & NBBL

Year	$(R_{sc} - \bar{R}_{sc})$	$(R_{nb} - \bar{R}_{nb})$	$(R_{sc} - \bar{R}_{sc})\ (R_{nb} - \bar{R}_{nb})$
2000/01	-	-	-
2001/02	0.8386	-0.6150	-.05157
2002/03	0.04	-0.3258	-0.0130
2003/04	-0.4851	-0.0772	0.0374
2004/05	-0.2036	-0.3119	0.0635
2005/06	0.3049	-0.3096	-0.0944
2006/07	0.8858	1.7033	1.5088
2007/08	0.0728	0.7595	0.0553
2008/09	-0.4816	-0.7808	0.3760
2009/10	-0.9716	-0.0426	0.0414
			$\sum(R_{sc} - \bar{R}_{sc})\ (R_{nb} - \bar{R}_{nb})$= 1.4593

$$\# \quad Cov\ (R_{sc}, R_{nb}) = \frac{\sum(R_{sc} - \bar{R}_{sc})\ (R_{nb} - \bar{R}_{nb})}{n-1} = \frac{1.4593}{9-1} = 0.1824$$

$$\# \quad W_{sc} = \frac{\sigma_{sc}^2 - Cov\ (R_{sc}, R_{nb})}{\sigma_{sc}^2 + \sigma_{nb}^2 - 2\ Cov\ (R_{sc}, R_{nb})} = \frac{(0.6165)^2 - 0.1824}{(0.6165)^2 + (0.7724)^2 - 2 \times 0.1824} = 0.3231$$

$$\# \ W_{nb} = \quad 1 - W_{sc} = 1 - 0.3231 = 0.6769$$

$$\# \ \bar{R}_{\mathbf{p}} = W_{\mathbf{sc}} \times \bar{R}_{\mathbf{sc}} + W_{\mathbf{nb}} \times \bar{R}_{\mathbf{nb}} = = 0.3231 \times 0.6162 + 0.6769 \times 0.0605 = 0.2400$$

$$\# \ \sigma_p = \sqrt{W_{\mathbf{sc}}^2\ \sigma_{sc}^2 + W_{\mathbf{nb}}^2\ \sigma_{nb}^2 + 2\ Cov\ (R_{sc}, R_{nb})\ W_{\mathbf{sc}}\ W_{\mathbf{nb}}}$$

$$= \sqrt{(0.3231)^2 \times (0.6165)^2 + (0.6769)^2\ 0.5966 + 2 \times 0.1824 \times 0.3231 \times 0.6769}$$

$$= \quad 0.6267$$

APPENDIX-28

Calculation of Portfolio Risk and Return of SCBNL & NSBIL

Year	$(R_{sc} - \bar{R}_{sc})$	$(R_{sb} - \bar{R}_{sb})$	$(R_{sc} - \bar{R}_{sc})\ (R_{sb} - \bar{R}_{sb})$
2000/01	-	-	-
2001/02	0.8386	0.2589	0.2171
2002/03	0.04	-0.5903	-0.0236
2003/04	-0.4851	-0.1957	0.0949
2004/05	-0.2036	-0.3084	0.0621
2005/06	0.3049	0.4422	0.1348
2006/07	0.8858	1.4067	1.2461
2007/08	0.0728	-0.1148	-0.0084
2008/09	-0.4816	0.0554	-0.0267
2009/10	-0.9716	-0.9543	0.9272
			$\sum(R_{sc} - \bar{R}_{sc})\ (R_{sb} - \bar{R}_{sb})$= 2.6235

$$\# \quad Cov\ (R_{sc}, R_{sb}) = \frac{\sum(R_{sc} - \bar{R}_{sc})\ (R_{sb} - \bar{R}_{sb})}{n-1} = \frac{2.6235}{9-1} = 0.3279$$

$$\# \quad W_{sc} = \frac{\sigma_{sc}^2 - Cov\ (R_{sc}, R_{sb})}{\sigma_{sc}^2 + \sigma_{sb}^2 - 2\ Cov\ (R_{sc}, R_{sb})} = \frac{0.3801-0.3279}{0.3801+4563 - 2\times 0.3279} = 0.2890$$

$$\# \ W_{sb} = \quad 1- W_{sc} \ = \ 1- 0.2890 = \ 0.7110$$

$$\# \ \bar{R}_{\mathbf{p}} = \ W_{\mathbf{sc}} \times \bar{R}_{\mathbf{sc}} + W_{\mathbf{sb}} \times \bar{R}_{\mathbf{sb}} = 0.2890 \times 0.6162 + 0.7110 \times 0.3996 \ = \ 0.4622$$

$$\# \ \sigma_p \ = \ \sqrt{W_{\mathbf{sc}}^2\ \sigma_{sc}^2 + W_{\mathbf{sb}}^2\ \sigma_{sb}^2 + 2\ Cov\ (R_{sc}, R_{sb})\ W_{\mathbf{sc}}\ W_{\mathbf{sb}}}$$

$$= \ \sqrt{(0.2890)^2 \times (0.6165)^2 + (0.711)^2\ 0.4563 + 2\times 0.3279 \times 0.2890 \times 0.7110}$$

$$= \ 0.6302$$

APPENDIX-29

Calculation of Portfolio Risk and Return of HBL & EBL

Year	$(R_h - \bar{R}_h)$	$(R_e - \bar{R}_e)$	$(R_h - \bar{R}_h)\ (R_e - \bar{R}_e)$
2000/01	-	-	-
2001/02	0.2065	0.8047	0.1662
2002/03	-0.1729	-0.3463	0.0599
2003/04	-0.0563	0.0842	-0.0047
2004/05	0.0897	0.1962	0.0176
2005/06	0.0416	0.1250	0.0052
2006/07	0.7643	0.7348	0.5616
2007/08	0.0734	-0.0907	-0.0067
2008/09	-0.2562	-0.6954	0.1782
2009/10	-0.6901	-0.8126	0.5608
			$\sum(R_h - \bar{R}_h)\ (R_e - \bar{R}_e)$= 2.6235

$$\# \quad \text{Cov}\ (R_h, R_e) = \frac{\sum(R_h - \bar{R}_h)\ (R_e - \bar{R}_e)}{n-1} = \frac{1.5381}{9-1} = 0.1923$$

$$\# \quad W_h = \frac{\sigma_h^2 - \text{Cov}\ (R_h, R_e)}{\sigma_h^2 + \sigma_e^2 - 2\ \text{Cov}\ (R_h, R_e)} = \frac{(0.39)^2 - 0.1923}{0.1521 + 0.3151 - 3846} = -0.4867$$

$$\# \ W_e = \quad 1 - W_h = \ 1 - (-4867) = 1.4867$$

$$\# \ \bar{R}_p = \ W_h \times \bar{R}_h + W_e \times \bar{R}_e \quad = -0.4867 \times 0.2812 + 1.4867 \times 0.4888 = 0.5898$$

$$\# \ \sigma_p \ = \ \sqrt{W_h^2\ \sigma_h^2 + W_e^2\ \sigma_e^2 + 2\ \text{Cov}\ (R_h, R_e)\ W_h\ W_e}$$

$$= \sqrt{(-0.4867)^2 \times (0.39)^2 + (1.4867)^2\ (0.5613)^2 + 2 \times 0.1923 \times -0.4867 \times 1.4867}$$

$$= \ 0.6739$$

APPENDIX-30

Calculation of Portfolio Risk and Return of HBL & NBBL

Year	$(R_h - \bar{R}_h)$	$(R_{nb} - \bar{R}_{nb})$	$(R_h - \bar{R}_h)\ (R_{nb} - \bar{R}_{nb})$
2000/01	-	-	-
2001/02	0.2065	-0.6150	-01270
2002/03	-0.1729	-0.3258	0.0563
2003/04	-0.0563	-0.0772	0.0043
2004/05	0.0897	-0.3119	-0.0280
2005/06	0.0416	-0.3096	-0.0129
2006/07	0.7643	1.7033	1.3018
2007/08	0.0734	0.7595	0.0557
2008/09	-0.2562	-0.7808	0.2000
2009/10	-0.6901	-0.0426	0.0294
			$\sum(R_h - \bar{R}_h)\ (R_{nb} - \bar{R}_{nb}) = 1.4796$

$$\# \quad Cov\ (R_h, R_{nb}) = \frac{\sum(R_h - \bar{R}_h)\ (R_{nb} - \bar{R}_{nb})}{n-1} = \frac{1.4796}{9-1} = 0.1850$$

$$\# \quad W_h = \frac{\sigma_h^2 - Cov\ (R_h, R_{nb})}{\sigma_h^2 + \sigma_{nb}^2 - 2\ Cov\ (R_h, R_{nb})} = \frac{(0.39)^2 - 0.1850}{0.1521 + (0.7724)^2 - 2(0.1850)} = 0.0869$$

$$\# \ W_{nb} = 1 - W_h = 1 - (0.0869) = 0.9131$$

$$\# \ \bar{R}_p = W_h \times \bar{R}_h + W_{nb} \times \bar{R}_{nb} = 0.0869 \times 0.2812 + 0.9131 \times 0.0605 = = 0.0797$$

$$\# \ \sigma_p = \sqrt{W_h^2\ \sigma_h^2 + W_{nb}^2\ \sigma_{nb}^2 + 2\ Cov\ (R_h, R_{nb})\ W_h\ W_{nb}}$$

$$= \sqrt{(0.0869)^2 \times (0.39)^2 + (0.9131)^2\ (0.7724)^2 + 2 \times 0.1850 \times 0.0869 \times 0.9131}$$

$$= 0.7266$$

APPENDIX-31

Calculation of Portfolio Risk and Return of HBL & NSBIL

Year	$(R_h - \bar{R}_h)$	$(R_{sb} - \bar{R}_{sb})$	$(R_h - \bar{R}_h)\ (R_{sb} - \bar{R}_{sb})$
2000/01	-	-	-
2001/02	0.2065	0.2589	0.0535
2002/03	-0.1729	-0.5903	0.1021
2003/04	-0.0563	-0.1957	0.0110
2004/05	0.0897	-0.3084	-0.0277
2005/06	0.0416	0.4422	0.0184
2006/07	0.7643	1.4067	1.0751
2007/08	0.0734	-0.1148	-0.0084
2008/09	-0.2562	0.0554	-0.0142
2009/10	-0.6901	-0.9543	0.6586
			$\sum(R_h - \bar{R}_h)\ (R_{sb} - \bar{R}_{sb})$= 1.8684

$$\# \quad Cov\ (R_h, R_{sb}) = \frac{\sum(R_h - \bar{R}_h)\ (R_{sb} - \bar{R}_{sb})}{n-1} = \frac{1.8684}{9-1} = 0.2336$$

$$\# \quad W_h = \frac{\sigma_h^2 - Cov\ (R_h, R_{sb})}{\sigma_h^2 + \sigma_{sb}^2 - 2\ Cov\ (R_h, R_{sb})} = \frac{(0.39)^2 - 0.2336}{0.1521 + (0.6755)^2 - 2(0.2336)} = -0.5772$$

$$\# \ W_{sb} = 1 - W_h = 1 - (-0.5772) = 1.5772$$

$$\# \ \bar{R}_p = W_h \times \bar{R}_h + W_{sb} \times \bar{R}_{sb} = 0.-0.5772 \times 0.2812 + 1.5772 \times 0.3996 = 0.4679$$

$$\# \ \sigma_p = \sqrt{W_h^2\ \sigma_h^2 + W_{sb}^2\ \sigma_{sb}^2 + 2\ Cov\ (R_h, R_{sb})\ W_h\ W_{sb}}$$

$$= \sqrt{(-0.5772)^2 \times (0.39)^2 + (1.5772)^2\ (0.6755)^2 + 2 \times 0.2336 \times -0.5772 \times 1.5772}$$

$$= 0.8721$$

APPENDIX-32

Calculation of Portfolio Risk and Return of EBL & NBBL

Year	$(R_e - \bar{R}_e)$	$(R_{nb} - \bar{R}_{nb})$	$(R_e - \bar{R}_e)\ (R_{nb} - \bar{R}_{nb})$
2000/01	-	-	-
2001/02	0.8047	-0.6150	-0.4949
2002/03	-0.3463	-0.3258	0.1128
2003/04	0.0842	-0.0772	-0.0065
2004/05	0.1962	-0.3119	-0.0612
2005/06	0.1250	-0.3096	-0.0387
2006/07	0.7348	1.7033	1.2516
2007/08	-0.0907	0.7595	-0.0689
2008/09	-0.6954	-0.7808	0.5430
2009/10	-0.8126	-0.0426	0.0346
			$\sum(R_e - \bar{R}_e)\ (R_{nb} - \bar{R}_{nb})$= 1.2718

$$\# \quad \text{Cov}(R_e, R_{nb}) = \frac{\sum(R_e - \bar{R}_e)\ (R_{nb} - \bar{R}_{nb})}{n-1} = \frac{1.2718}{9-1} = 0.1590$$

$$\# \quad W_e = \frac{\sigma_h^2 - \text{Cov}(R_e, R_{nb})}{\sigma_e^2 + \sigma_{nb}^2 - 2\,\text{Cov}(R_e, R_{nb})} = \frac{(0.5613)^2 - 0.1590}{(0.5613)^2 + (0.7724)^2 - 2(0.1590)} = 0.2629$$

$$\# \ W_{nb} = 1 - W_e = 1 - 0.2629 = 0.7371$$

$$\# \ \bar{R}_p = W_e \times \bar{R}_e + W_{nb} \times \bar{R}_{nb} = 0.2629 \times 0.4888 + 0.7371 \times 0.0605 = 0.1731$$

$$\# \ \sigma_p = \sqrt{W_e^2\,\sigma_e^2 + W_{nb}^2\,\sigma_{nb}^2 + 2\,\text{Cov}(R_e, R_{nb})\,W_e\,W_{nb}}$$

$$= \sqrt{(0.2629)^2 \times (0.5613)^2 + (0.7371)^2\,(0.7724)^2 + 2 \times 0.1590 \times 0.2629 \times 0.7371}$$

$$= 0.8774$$

APPENDIX-33

Calculation of Portfolio Risk and Return of EBL & NSBIL

Year	$(R_e - \bar{R}_e)$	$(R_{sb} - \bar{R}_{sb})$	$(R_e - \bar{R}_e)\ (R_{sb} - \bar{R}_{sb})$
2000/01	-	-	-
2001/02	0.8047	0.2589	0.2083
2002/03	-0.3463	-0.5903	0.2044
2003/04	0.0842	-0.1957	-0.0165
2004/05	0.1962	-0.3084	-0.0605
2005/06	0.1250	0.4422	0.0553
2006/07	0.7348	1.4067	1.0336
2007/08	-0.0907	-0.1148	0.0104
2008/09	-0.6954	0.0554	-0.0385
2009/10	-0.8126	-0.9543	0.7755
			$\sum(R_e - \bar{R}_e)\ (R_{sb} - \bar{R}_{sb})$= 2.1720

$$\# \quad \text{Cov}(R_e, R_{sb}) = \frac{\sum(R_e - \bar{R}_e)\ (R_{sb} - \bar{R}_{sb})}{n-1} = \frac{2.1720}{9-1}$$

$$\# \quad W_e = \frac{\sigma_e^2 - \text{Cov}(R_e, R_{sb})}{\sigma_e^2 + \sigma_{sb}^2 - 2\,\text{Cov}(R_e, R_{sb})} = \frac{(0.5613)^2 - 0.2715}{(0.5613)^2 + (0.6755)^2 - 2(0.2715)} = 0.1909$$

$$\# \ W_{sb} = 1 - W_e = 1 - 0.1909 = 0.8091$$

$$\# \ \bar{R}_p = W_e \times \bar{R}_e + W_{sb} \times \bar{R}_{sb} = 0.1909 \times 0.4888 + 0.8091 \times 0.3996 = 0.4166$$

$$\# \ \sigma_p = \sqrt{W_e^2\,\sigma_e^2 + W_{sb}^2\,\sigma_{sb}^2 + 2\,\text{Cov}(R_e, R_{sb})\,W_e\,W_{sb}}$$

$$= \sqrt{(0.1909)^2 \times (0.5613)^2 + (0.8091)^2\,(0.6755)^2 + 2 \times 0.2715 \times 0.1909 \times 0.8091}$$

$$= 0.2955$$

APPENDIX-34

Calculation of Portfolio Risk and Return of NBBL & NSBIL

Year	$(R_{nb} - \overline{R}_{nb})$	$(R_{sb} - \overline{R}_{sb})$	$(R_{nb} - \overline{R}_{nb})\ (R_{sb} - \overline{R}_{sb})$
2000/01	-	-	-
2001/02	-0.6150	0.2589	-0.1592
2002/03	-0.3258	-0.5903	0.1923
2003/04	-0.0772	-0.1957	0.0151
2004/05	-0.3119	-0.3084	0.0962
2005/06	-0.3096	0.4422	-0.1369
2006/07	1.7033	1.4067	2.3960
2007/08	0.7595	-0.1148	-0.0872
2008/09	-0.7808	0.0554	-0.0433
2009/10	-0.0426	-0.9543	0.0407
			$\sum(R_{nb} - \overline{R}_{nb})\ (R_{sb} - \overline{R}_{sb})$= 2.3137

$$\# \quad Cov\ (R_{nb}, R_{sb}) = \frac{\sum(R_{nb} - \overline{R}_{nb})\ (R_{sb} - \overline{R}_{sb})}{n-1} = \frac{2.3137}{9-1} = 0.2892$$

$$\# \quad W_{nb} = \frac{\sigma_e^2 - Cov\ (R_{nb}, R_{sb})}{\Sigma_{nb}^2 + \sigma_{sb}^2 - 2\ Cov\ (R_{nb}, R_{sb})} = \frac{(0.7724)^2 - 0.2892}{(0.7724)^2 + (0.6755)^2 - 2(0.2892)} = 0.6478$$

$$\# \ W_{sb} = 1 - W_{nb} = 1 - 0.6478 = 0.3522$$

$$\# \ \overline{R}_{\mathbf{p}} = W_{\mathbf{nb}} \times \overline{R}_{\mathbf{nb}} + \overline{W}_{\mathbf{sb}} \times \overline{R}_{\mathbf{sb}} = 0.6478 \times 0.0605 + 0.3522 \times 0.3996 = 0.1799$$

$$\# \ \sigma_p = \sqrt{W_{\mathbf{nb}}^2\ \sigma_{nb}^2 + W_{\mathbf{sb}}^2\ \sigma_{sb}^2 + 2\ Cov\ (R_{nb}, R_{sb})\ W_{\mathbf{nb}}\ W_{\mathbf{sb}}}$$

$$= \sqrt{(0.6478)^2 \times (0.7724)^2 + (0.3522)^2\ (0.6755)^2 + 2 \times 0.2892 \times 0.6478 \times 0.3522}$$

$$= 0.8140$$

APPENDIX-35

Calculation of Expected Return, Standard deviation, Variance and C.V. of Market

Fiscal Year	NEPSE index	$R_m = \frac{NI_t - NI_{t-1}}{NI_{t-1}}$	$R_m - \overline{R}_m$	$(R_m - \overline{R}_m)^2$
2000/01	348.43	-	-	-
2001/02	272.54	-0.3470	-0.5197	0.2701
2002/03	204.86	-0.0997	-0.2724	0.0742
2003/04	222.04	0.0839	-0.0888	0.0079
2004/05	286.67	0.2911	0.1184	0.0140
2005/06	386.83	0.3494	0.1767	0.0312
2006/07	683.95	0.7681	0.5954	0.3545
2007/08	963.36	0.3690	0.1963	0.0385
2008/09	749.10	-0.2224	0.3951	0.1561
2009/10	477.73	-0.3623	-0.5350	0.2862
Total		**$\sum R_m = 0.8301$**		**$\sum (R_m - \overline{R}_m)^2 = 1.2327$**

Here,

$$\text{Expected Return } (\overline{R}_m) = \frac{\sum R_m}{n} = \frac{8.8301}{9} = 0.0922$$

$$\text{Standard Deviation } (\sigma_m) = \sqrt{\frac{\sum (R_m - \overline{R}_m)^2}{n-1}} = \sqrt{\frac{1.2327}{9-1}} = 0.3925$$

$$\text{Variance } (\sigma_m)^2 = (0.3925)^2 = 0.1541$$

$$\text{Co-efficient of Variation } (CV_m) = \frac{\sigma_m}{\overline{R}_m} = 0.3925/0.0922 = 1.6714$$

APPENDIX-36

Calculation of Correlation Coefficient between each Banks

We Know that, $\rho_{AB} = \frac{Cov(R_A, R_B)}{\sigma_A, \sigma_B}$

S.N.	Portfolio	$Cov(R_A, R_B)$	σ_A	σ_B	ρ_{AB}
1	NABIL & SCBNL	0.3047	0.6273	0.6165	0.7879
2	NABIL & HBL	0.2092	0.6273	0.39	0.8551
3	NABIL & EBL	0.3308	0.6273	0.5613	0.9395
4	NABIL & NBBL	0.1192	0.6273	0.7724	0.2460
5	NABIL & NSBIL	0.2908	0.6273	0.6755	0.6863
6	SCBNL & HBL	0.2080	0.6165	0.39	0.8651
7	SCBNL & EBL	0.2984	0.6165	0.5613	0.8623
8	SCBNL & NBBL	0.1824	0.6165	0.7724	0.3830
9	SCBNL & NSBIL	0.3279	0.6165	0.6755	0.7874
10	HBL & EBL	0.1923	0.39	0.5613	0.8785
11	HBL & NBBL	0.1850	0.39	0.7724	0.6141
12	HBL & NSBIL	0.2336	0.39	0.6273	0.9548
13	EBL & NBBL	0.1590	0.5613	0.7724	0.3667
14	EBL & NSBIL	0.2715	0.5613	0.6273	0.771
15	NBBL & NSBIL	0.2892	0.7724	0.6755	0.5543

APPENDIX-37

Calculation of Sharpe's Portfolio Performance Measures

S.No.	Portfolio	Return(Rp)	σ_p	$S_p = \frac{R_p - R_f}{\sigma_p}$
1	SCBNL & HBL	0.5914	0.5998	0.8526
2	EBL & NSBIL	0.5475	0.7646	0.6114
3	NABIL & SCBNL	0.4559	0.5313	0.7075
4	HBL & EBL	0.2081	0.5901	0.2171
5	NABIL & EBL	0.4246	0.5778	0.5964
6	SCBNL & EBL	0.7774	0.4397	1.5861
7	NABIL & HBL	0.5946	0.7540	0.6825
8	SCBNL & NSBIL	0.2400	0.6267	0.2553
9	NABIL & NSBIL	0.4622	0.6302	0.6065
10	HBL & NSBIL	0.5898	0.6739	0.7565
11	SCBNL & NBBL	0.0797	0.7266	-0.0004
12	NABIL & NBBL	0.4679	0.8721	0.4448
13	NBBL & NSBIL	0.1731	0.8774	0.1061
14	EBL & NBBL	0.4166	0.2955	1.1391
15	HBL & NBBL	0.1799	0.8140	0.1227