PORTFOLIO ANALYSIS OF COMMERCIAL BANKS IN NEPAL

(A Case Study of HBL and Nabil Bank Ltd.)

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RECOMMENDATION

This is to certify that the thesis

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PORTFOLIO ANALYSIS OF COMMERCIAL BANKS IN NEPAL

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

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VIVA-VOCE SHEET

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

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

Master's Degree in Business Studies (M.B.S.)

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DECLARATION

I hereby, declare that the work reported in this thesis entitled **"Portfolio Analysis of Commercial Banks in Nepal"** submitted to Central Department of Management, University Campus, T.U., Kirtipur is my original piece of work done in the form of partial fulfillment of the requirement for the Master's Degree in Business studies under the supervision and guidance of Mr. Santosh Kumar Ghimire, Lecturer, Central Department of Management.

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I am thankful all the staff members of Central Library for their manifold helps and providing good environment for this study.

I have tried to cover all the possible are that I felt important to sum up the portfolio analysis on common stock of commercial banks. I am hopeful that this will be helpful to the students of business studies and to those who want to make further researcher under this topic.

Last not least I am responsible for any errors and I apologize for any of them committed that may have remained in this work.

Namita Sigdel

August, 2011

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ABBREVIATIONS

ABBS	Any Branch Banking System
APT	Arbitrage Pricing Theory
ATM	Automated Teller Machine
B.S	Bikram Sambat
C.V.	Coefficient of Variation
CAPM	Capital Assets Pricing Model
CML	Capital Market Line
Cor	Correlation
Cov	Covariance
DPS	Dividend Per Share
ER	Expected Return
ERR	Expected Rate of Return
F/Y	Fiscal Year
HBL	Himalayan Bank Ltd
HPR	Holding Period Return
i.e.	That is
JVB	Joint Venture Bank
MBS	Master's Degree in Business Studies
MPS	Market Per Share
NABIL	Nepal Arab Bank Ltd
NEPSE	Nepal Stock Exchange
NIDC	Nepal Industrial Development Cooperation
NRB	Nepal Rastra Bank
RBB	Rastriya Banijya Bank
RRR	Required Rate of Return
S.D.	Standard Deviation
SML	Security Market Line
SWIFT	Society for Worldwide Inter Bank Financial Telecommunication
TU	Tribhuvan University
Var	Variance

CHAPTER I

INTRODUCTION

1.1 Background of the study

Banking sector is the most dynamic part of economy, which collects unused funds and mobilizes it in needed areas. it is the heart of trade commerce industry. It is an institution, which deals money, receiving it on deposit from customers honoring customer's drawing against such deposits on demand, collecting cheques for customer and lending or investing surplus deposits until they are required for payment .the nature of the bank fund and it's payment depends upon day to day operation .In Nepalese contexts commercial banks have comparatively good performance among the public limited companies.

1.1.1 Meaning of bank

According to the concise dictionary, Bank is financial establishment which uses money deposited by customers for investment, pays it out when required, makes loans at interest, exchanges currency etc."

"A person or company carrying on the business of receiving money and collecting draft, for customers subject to the obligation of honoring cheques drawn upon them from time to time by the customer to the extent of the amount available on their current account ."(Hart, 1931: 1)

1.1.2 Growth of Banking sector in Nepal

Bank of Vanice established in 1157 is the first commercial bank in the world. Commercial bank's functions were confined to accepting deposit and giving loans. However, their functions have, now, increased manifold .The record of banking system in Nepal gives detail account of mixture of slow and steady evolution in the financial and global economy of Nepalese life.

The banking sector in Nepal stated with the establishment of Nepal Bank Limited. Today, we got 30 commercial banks in operation. The commercial banks of Nepal can be categorized into two types of public and private sector. Public sector banks include the two old banks NBL and RBB. Private sector comprises the other 28 banks.

The Nepal Bank Limited was incorporated in 1937 under the Nepal Bank Act of 1937 with an authorized capital share of Rs.100 lakhs. At first the majority of shares were owned by the government. Now government owns only 40% share with the suggestion of World Bank to transfer the ownership to the private sector for better functioning of the financial sector. But it not breeds results as expected. (Jha 2003)

LIST OF COMMERICAL BANKS

Table no: 1.1

1. Nepal Bank Ltd.	17. Siddhartha Bank Ltd.
2. Rastriya Banijiya Bank	18. Agricultural Development Bank Ltd.
3. Nabil Bank Ltd.	19. Global Bank Ltd.
4. Nepal Investment Bank Ltd.	20. Citizen Bank International Ltd.
5. Standard Chartered Bank Ltd.	21. Prime Bank Ltd.
6. Himalayan Bank Ltd.	22. Sunrise Bank Ltd.
7. Nepal SBI Bank Ltd.	23. Bank Of Asia Nepal Ltd.
8. Nepal Bangladesh Bank Ltd.	24.Development Credit Bank Ltd
9. Everest Bank Ltd.	25.Nepal Merchant Bank Ltd.
10. Bank Of Kathmandu Ltd.	26.Mega Bank Ltd.
11. NCC Bank Ltd.	27.Civil Bank Ltd.
12. Lumbini Bank Ltd.	28. Janta Bank L td
13. NIC Bank Ltd.	29. Kist Bank ltd.
14. Machhapuchhre Bank Ltd.	30.commerz Bank
15. Kumari Bank Ltd.	31.Century Bank ltd
16. Laxmi Bank Ltd.	

1.2 Portfolio Analysis

A portfolio is a combination of investment assets. The portfolio is the holding of securities and investment in financial assets i.e. bond, stock portfolio management is related to the efficient portfolio investment in financial assets.The portfolio analysis is performed to develop a portfolio that has the maximum return at whatever level of risk and an investor thinks appropriate.

According to *Weston and Brigham* "A portfolio simply represents the practice among the investors of having their funds in more than one asset. The combination of investment asset is called a portfolio *"(Weston and Brigham, 1982:245)*

Portfolio management can be also be define as aggregation and management of an diverse portfolio of supply resources which will act as a hedge against various risk that may effect specific resource. Under a more market driven power sector with a power pool or pool Co wholesale market structure, a portfolio manager would aggregate and manage a divers and

other market heding type contract and
mechanism.(www.fiscalagent.com/newsletter/gloss/glossary/p.shtm)
Portfolio management is the process of selecting a bundle of securities that provides the investing organization a maximum yield for a given level of risk. Portfolio management can be also taken as risk and return management .It aims a determine an appropriate asset mix, which attain optimal level of risk and return. Portfolio, technically known as efficient portfolio, is a superior portfolio. The efficient portfolio is a function of not only risk and return of individual asset included, but also the effect of relationship among the asset on the sum total of portfolio risk and return.
Portfolio investment refers to an investment that combines several securities. It is the collection of security. Nobody is ready to bear risk without any return but to have return, one must ready to face some risk. To minimize the risk at given rate of return, the concept of portfolio diversification is necessary. It is one such tool that helps for proper utilization of resources. Investor always tries to achieve their investment goal. To fulfill the goal they gathered different security. These securities diversify the risk. Most investors hope that if they have several securities then even one goes bad, the others will provide protection from loss.
In finance a portfolio is a collection of investment held by an institution or a private individual. In building up an investment portfolio a financial institution will conduct its own investment analysis whilst a private individual may make use of the service of a merchant bank, which offers portfolio management. Holding a portfolio is a part of an investment and risk limiting strategy called diversification. (www.google.com/search)

1.3 Profiles of the Banks Under Study

Himalayan Bank Limited was incorporated in 1992 by a few distinguished business personalities of Nepal in partnership with Employees Provident Fund and NabiL Bank Limited, one of the largest commercial bank of Pakistan. Banking operation commenced from January 1993. It is the first commercial bank of Nepal whose maximum shares are held by the Nepalese private sector. Besides commercial banking services, the Bank also offers industrial and merchant banking services.

Legacy of Himalayan lives on in an institution that's known through out Nepal for its innovative approaches to merchandising and customer service. Products such as Premium Savings Account, HBL Proprietary Card and Millionaire Deposit Scheme besides services such as ATMs and Tele-banking were first introduced by HBL. Other financial institutions in the country have been following our lead by introducing similar products and services. Therefore, we stand for the innovations that we bring about in this country to help our Customers besides modernizing the banking sector. With the highest deposit base and loan portfolio amongst private sector banks and extending guarantees to correspondent banks covering exposure of other local banks under our credit standing with foreign correspondent banks, we believe we obviously lead the banking sector of Nepal. The most recent rating of HBL by Bankers' Almanac as country's number 1 Bank easily confirms our claim.

The Bank's Mission:

The Bank's mission is to become preferred provider of quality financial services in the country. There are two components in the mission of the Bank; Preferred Provider and Quality Financial Services; therefore we at HBL believe that the mission will be accomplished only by satisfying these two important components with the Customer at focus. The Bank always strives positioning itself in the hearts and minds of the customers.

Nabil Bank Limited commenced its operation on 12 July 1984 as the first Joint Venture Bank in Nepal. Dubai Bank Limited, Dubai, which was later, acquired by Emirates Bank International Limited, Dubai was the first Joint Venture Partner of Nabil Bank. Currently, NB (International) Limited, Ireland is the foreign partner of Nabil Bank. Nabil Bank Limited had the official name Nepal Arab Bank Limited till 31 December 2001. Nabil is the pioneer in introducing many innovative products and marketing concept in banking sector of Nepal with 15 branches and two counters in all major cities. It is the only bank having its presence at Tribhuvan International Airport, the only international airport of the country. Also, the number of outlets, in country is the highest Nabil is a milestone in the banking history of

Nepal as it paved the way for the establishment of many commercial banks and financial institutions.

1.4 Focus of the Study

The investment decision is one of the major functions of financial management.The increasing number of bank and finance institution has created a competitive environment in financial sector. The investment opportunity of trade industry, agriculture and other sector have not comparatively been extended, So, commercial bank have to face so many difficulties to mobilized their fund on profitability sector. The risk is involved in every steps of the return, every investor wants a maximum returns from a minimum level of the risk, so to minimization of risk investor should diversify its investment by the means of portfolio. In this study the trends of investment process of commercial bank in various sectors by the means of portfolio will be analysis, the existing investment situation and its investment strategy in future will be analyzed. Our main focuses of the study are measurement of financial performance of simple bank, their risk and return, trend and portfolio pattern etc.

1.5 Statement of the Problems

After the restoration of democracy, Nepal has adopted more liberal and open economic polices. The process of economic liberalization and reform in financial sector introduce in the early 1980 has led to significant changes in the banking industry. The open and liberal policy of government in financial sector has helped in establishing many banks and financial institution in the country. These banks have contributed towards introducing new technology, new banking system and efficient services delivery in the country.

These banks have been contributed in line with the trust of economic liberalization and financial sector reform, i.e. making the financial system more competitive, efficient and profitable. Nepalese commercial banks cannot escape from such condition. Because of liberal economic policy, many new banks are coming in existence day by day which creates threatens for existing bank to be competitive. Declinations of price and cost leadership are best way to complete in the industry.

Banks has to invest its source in different productive sector of the investment alternatives to earn profit. But there is uncertainly of profit, which creates risk to the organization. So, every commercial bank has to diversify their investment to minimize risk. Without diversify it‟s investment policy is impossible. So, this study mainly concerns with the portfolio investment practices by Nepalese commercial banks.

This study seeks to find out to the following question:

- Is the portfolio investment management efficient on Nepalese commercial bank?
- What is the existing situation of financial position of Nepal commercial banks?
- Which banks have the largest degree of financial risk measured in terms of portfolio risk?
- Which portfolio has highest return?

1.6 Objective of the Study

The main and basic objectives of this study are to find out the condition of portfolio management, and to estimate an optimal portfolio among the common stock investment of two selected commercial Banks. The basic objective of the study is to estimate the portfolio on common stock investment of commercial banks in Nepal.

The other objectives of the study are as follows:

- To evaluate the common stocks of selected commercial Banks in terms of risk and return.
- To examine systematic an unsystematic risk associated with stock.
- To determine whether the share of listed commercial banks in Nepal are over-priced, under priced or correctly priced.

1.7 Significance of the Study

The investment analysis of organization flashes outs investment policy, sound investment policy makes a good impact on the economic of country. The success and prosperity of any organization or institution relies heavily upon the successful investment of its available resource into the profitable sector. Successful formulation and effective implementation of investment policy is the prime requisition for the successful performance of nay organization. The research-work in the study of portfolio analysis of commercial banks of Nepal. This study is significant in following way.

- It examines the existing situation of portfolio management of Nepalese commercial banks.
- To evaluate financial performance of selected commercial banks of Nepal.
- It analyzes risk and return ratio of commercial banks. Last but not least, it provides the literature to the researcher who wants to carry on future research in this field.

1.8 Limitation of the study

This research study has been conducted for the fulfillment of partial recruitment of Master Degree in Business Studies (M.B.S).Due to the constraints, financial constraints and other, the study is bound for limited area. It has certain limitations:

- This study has employed secondary data published by and collected from selected banks.
- Among various commercial banks in Nepal the study is only concern on two commercial banks which are ; Himalayan Bank and NABIL Bank.
- The truth of research result is based upon secondary data.
- Among the various commercial banks, only two commercial banks are taken under study. The study covers a period of five fiscal years, which will be tabulated and processed for drawing conclusion.
- The accuracy of the research work will be dependent on data provided by concerned bank differential coverage of data limits the study.

1.9 Organization of the study

The whole study has been divided into five chapters as follows:
Chapter 1 Introduction
Chapter 2: Review of Literature
Chapter 3 Research Methodology
Chapter 4 Presentation and Analysis
Chapter 5: Summary, Conclusion and Recommendation
The contents of each chapter of this study are briefly mentioned below .The first chapter is introduction. This chapter deals with the introduction that includes backgrounds, meaning, focus of study, statement of problems, objective of the study, significance of study, limitation of study and organization of their study.

The second chapter deals on descriptive conceptual framework of portfolio management. It consider to the review of major related literature about the portfolio management and related studies.

The third chapter explains the research methodology used in the study, which includes research design, populating and sample source of data, data collection techniques, data analysis tools.

The fourth chapter is the major parts of the whole study in which all collected relevant data are analyzed and interpreted by the help of different financial and statistical tools. In this chapter we explain the major findings of the study.

The fifth chapter is suggestive to all concern in accordance of analysis and interpretation of data. It gives a summary of study, recommendations are made for concerns authorities and institutions as well as conclusion of the study are also carried out.

CHAPTER II
REVIEW OF LITERATURE

Research is continuous process, which never ends. The Continuity is research is ensured by linking the present study with the past research studies. It means, research must be based on past knowledge. The procedures and the finding may change but research continues. The Review of Literature is "stock taking" of available literature in one's field of research. 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 filed of study.

This chapter deals with the theoretical aspect of the topic on risk, return and portfolio analysis on common stock investment in comprehensive, detail and descriptive4 manner. For this purpose, journals, articles, annual report and various research reports related with topic have been reviews. Similarly, various books related with the topic published with in country and outside of country also have been considered as far as possible. 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 stock in creeping stage. So, there are not sufficient materials that provided basic guidelines for this study. Some master degree theses that are available in TU which are related with this thesis have been reviewed. In additional, some independent studies carried out by well known financial exports are taken into consideration.

2.1 Conceptual Framework

"Don't put all your eggs in one basket" us a bit of time tested folk . Modern portfolio theory reconfirms it. Spreading the fund across a number of assets will eliminate some but not all, of the risk . This is known as principle of diversification too. Portfolio means the collection of securities or investment vehicles.

'Portfolio doesn't include only the securities but also other investment like gold , land etc. study of an individual assets is enough to decide whether to include or delete it from a portfolio .An invester should evaluate the effect on expected risk and return of the portfolio by the inclusion or exclusion of an individual asset in the portfolio."(Dahal, 2003)

"Individual securities have risk-return characteristic of their own Portfolio , which are combinations of securities, may or may not parts. Portfolio analysis considers the determination of future risk and return in holding various blends of individual securities" (Fisher and Jordan).

2.1.1 Modern Portfolio Theory

Financial pioneer Harry M. Markowitz originally proposed portfolio theory in 1952. He won the 1990 Nobel Prize in economics ‘ for having development the theory of portfolio selection.’

“A portfolio is collection of investment securities . Portfolio theory deals with the selection of optimal portfolio; that is portfolio that provides the highest possible return or the lowest possible risk for any specified rate of return “(Western & Copeland,1992: 302)

“The portfolio of investment can be formed with just single assets or several assets and the risk and return of individual assets or assets included in the portfolio determine the risk and return of the portfolio .While the return on a portfolio is measure as the weighted average of return on the assets included, the portfolio risk depends on several factors such as returns on individual assets, their weights in the portfolio , and the correlation among the securities included in the portfolio.

The portfolio theory explains the relationship between assets , risk and return. The theory is founded on the measurement of risk and return of portfolio. It was Harry Markowitz, a practitioner, who first developed the model that deals with the portfolio risk and return. The model emphasizes risk (measured in terms of variance of portfolio returns) and return (measured in terms of mean return of portfolio) as the only two major reflectors of portfolio performance. He used these two parameters in developing modern portfolio theory “ (Pradhan, 2000: 267)

Portfolio Theory Assumption

“The portfolio selection model that has been developed by Markowitz, is based on the following assumption regarding investor behavior.”(Bhalla, 2001:500)

- Investor considers each investment alternative as being represented by a probability distribution of expected returns over some holding period.
- Investors maximize one period-expected utility and posses utility curve, which demonstrates diminishing marginal utility of wealth.
- Individual estimates risk on the basis of variability of expected returns.
- Investors base decisions solely on the expected and variance of returns only .
- For a given risk level, investors prefer high returns to lower returns Similarly, for a given level of expected return, Investor prefer less risk to more risk.

“According to the Markowitz, the investor should maximum expected return . This rule implies that the non – diversified single security portfolio with the highest expected return is

the most desirable portfolio. Expected rate of return for any assets is weighted average rate of return, applying the probability of each rate of return as the weight."(Western & Brigham)

2.1.2 Basis Element of portfolio Theory

"The discussion of portfolio theory leads to define the feasible set of portfolios, efficient frontier, capital market line, etc which are very important to analyze and understand. The feasible set of portfolios indicates what available portfolio in the market for investment is. The efficient frontier shows the all possible superior portfolios which dominate all other portfolios in terms of risk and return. The portfolios, which do not lie on the efficient frontier,that is those ,which are inside the feasible set ,are relatively inferior portfolio. The discussion of the modern portfolio theory will be incomplete without understanding some fundamental elements on which the theory of the portfolio is based on. Several questions arise with respect to the choice of among feasible portfolios .efficient portfolios and market average portfolios. They are"(pradhan,2000:272)

- What is the feasible set of portfolios?
- What are the superior or efficient portfolios among all feasible ones ?
- How is the efficient frontier defined and where are they positioned in the portfolio graphs?
- Is the market average portfolio efficient one?
- How do we find out the portfolio with the lowest level of risk (which is called minimum variance portfolio), and where is it located in the graphs?
- What happens to the portfolio curve if we mix risks- free assets with risky assets in the portfolio, and how the efficient frontier change when both risk free and risky assets are included in the portfolio?
- What does capital market line indicate?
- Which the basic assumption of capital market line?
- How does an individual investor choose the best portfolio for him?

2.1.3 Introduction to Portfolio Management

Portfolio management is concerned with efficient management of portfolio investment in financial assets, including shares and debentures of companies . The management may be by professionals, by others, or by individuals themselves. A portfolio of an individual or a corporate unit is the holding of securities and investment in financial assets .These holding of securities are the result of individual preferences and decisions regarding risk and return.

The process of portfolio management is closely and directly linked with process of decision-making the correctness of which cannot be ensured in all cases.

“Portfolio Management is the art of handling a pool of funds so that it not only preserves its original worth but also over time appreciates in value and yields an adequate return consistent with the level of risk assumed.” ?(Cohen, Zinbarg & Zeinkal, n.d:591)

Portfolio management is the process of selecting a bundle of securities that provides the investing organization a maximum yield for given level of risk for alternatively ensuring minimum risk for a given level of return . portfolio management can also be taken as risk and return management .it aims to determine an appropriate assets mix, which attains optimum level of risk and return.

Objective of Portfolio Management

“The portfolio manager’s task is to select the investment weights that will result in dominant investment .Hereafter, dominant assets will be called ‘efficient portfolios’ whether they contain one or many assets. An efficient portfolio, then, is any assets or combination of assets that has

- The maximum expected return in its class ,or conversely
- The minimum risk at its level of expected return.

The objective of portfolio management is to analyze different individual assets and delineate efficient set of portfolios. The efficient set of portfolios comprises the ‘efficient frontier’. The efficient frontier is the locus of point in risk – return space having the maximum return at each risk class. The efficient frontier dominates all other investment.” (Clark, Gordon, Shapre & Bailey, n.p)

The objective of the portfolio management are as follows

- Capital
- Safety or security of an investment
- Income by way of individual and interests
- Liquidity
- Marketability
- Tax planning – capital gain tax, income tax and wealth tax
- Risk avoiding or minimization of risk

2.1.4 Portfolio Selection

“In practice choosing a discount rate is seldom so easy. For example, you must learn how to adjust for the extra risk caused by company borrowing and how to estimate the discount rate for projects that do have the same risk as the company’s existing business. There are also tax issues. But these refinements can wait until later.

Let’s review four basic principle of portfolio selection:

- Investors like high return and low standard deviation. Common stock portfolios that offer the highest expected return for a given standard deviation are known as efficient portfolios.

- If you want to know the marginal impact of a stock on the risk of portfolio, you must look not at the risk of that stock in isolation, but as it’s contribution to the portfolio risk. That contribution depends on the stock’s sensitivity to changes in value of the portfolio.

- As stock’s sensitivity to changes in the value of the market portfolio is known as beta. Beta, therefore, measures the marginal contribution of stock to the risk of the market portfolio.

- If investors can borrow and lend at the risk free rate of interest, then they should always hold a mixture of risk free investment and one particular common stock portfolio .The composition of this stock portfolio depends only on investor ‘s assessment of the prospects for each stock and not on their attitude to risk. If they have no superior information, investors should hold the market portfolio.

Risk premium always reflect the contribution to portfolio risk. If the portfolio you have chosen is efficient, each of your investment must be working equally hard for you. So if one stock has a greater marginal effect on portfolio risk than another stock, it must also have proportionately greater expected return.”(Brealey & Myers, 1997: 181- 182)

2.1.5 Common Stock

"Common stock is an ownership share in a corporation. Therefore the common stock holders are true owners of a corporation. Each share of common stock represents fractional ownership interest in the firm. For example, one share of common stock in a corporation that

has 100 shares outstanding would represent 1/10,000 ownership interest. The return on common investment comes from either of two sources the periodic receipt of dividend and capital gains. Common stock holders enjoy a No. of tights 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 highly risk and return for a long period too. Common stocks are traded in stock exchanges and over the counter market (OTC)." (Thapa, Bhattarai and Basnet, 2006:9)

Common stocks are easier to descriptive 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 dominated all other elements in their valuation. Common stock represents 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 of the claimants have been satisfied from organizations .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 and Bailey; 2003:457)

"Common stock represents ownership of a firm. Owners of the common stock of a firm share in the company prospers, the investor receives high rates of return and can become wealthy. In contrast, the4 investor can lose money if the firm does not do well or even goes bankrupt, as the once for mid able K-Kart, Enron, W.T. Grant, and Interstate Department Stores all did . In these instances, the firm is forced to liquidate its assets and pay off all its creditors. Notably, the firms preferred stockholders and common stocks all the advantages and disadvantages of ownership and is a relatively risky investment compare with fixed-income securities." (Reilly and Brow; 2004:83)

"Common stock is an ownership security. Common stock holders will get the return from common stock. People typically bur common stock expecting to earn dividend plus a capital gain when they sell 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, then only residual value comes into common stock holder side. In case of liquidity or bankruptcy, common stock holders are in the principle entitled only to assets remaining after all prior claimants have been satisfied. As expressed above, common stock is the most risky security so must be in its expected return as well. When investors buy common stock they receive certificate of ownership as a part of they are being part ownership of the company. The certificate stated the number of shares purchased and their par value" (Bhalla ; 2000:196)

"Common stock has one important investment characteristics and one important speculative market policies tend increase irregularly but persistently over the decades as their net worth builds through the reinvestment is undistributed earning. 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 of gamble4,i..e to give way to hope fear and greed." (Western and Brigham ; 1999:93).

"Of all the other forms of securities, common stock appears to most of romantic whole fixed income. Investment Avenue may be more important to most of the investors, equity shares seem to capture their interest the most. The potential reward and penalties associated with the equity make then an interesting even exciting proportion, no owner, equity investment is a favorite topic for conservation in parties and get together." (Prassna and Chandra; 1995:16)

"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 priceless than par value because stock holders who bought stocks for less than par value would be liable to creditors for the difference between the 4 below par price they paid and the par value."

2.1.6 The Expected Rate of Return Common Stock

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

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

Expected value, E (r)= $\sum_{j=1}^{n} r_j p_j = r_1 p_1 + r_2 p_2 + \cdots + r_n p_n$

Where,

r_j=rate of return on j outcome or event

p_j = Probability of occurrence of j outcome or event

When historical returns are used, the following formula is used to

Calculate and average return:

Expected value, E(r)= $\frac{\sum_{t=1}^{n} rt}{n}$

Where E (e) is the average or mean return and n the number of observed returns." (Thapa, Bhattarai and Basnet; 2006:118)

"Investors main objective to maximize concept of value by investing money in product and project. A company creates value of it the expected return exceeds the return required by the financial market for the risks involve. If someone buy a bond, he expects to revive 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 weight average of outcomes. The weights are the probability and the weighted average is the expected rate of return." (Sharma; 2058 B.S: 70)

"The expected rate of return is the increase in the expected after tax value of the initial investment over the holding period. The cash payoff to owners of common stock can be descriptive as two types i.e.

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

Capital appreciation is the difference 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:

Single period return(r) = $\frac{\text{Ending price} - \text{Beginning price} + \text{dividend}}{\text{Beginning price}}$

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 and John, M; 1995:90)

"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 gain period and the second one, which also takes in t account the compounding effects of cash receipts over different time intervals, in the geometric mean rate of return.

Simple Arithmetic Mean= $\sum_{t=1}^{n} \frac{r_t}{n} = \frac{r_1 + r_2 + r_3 + \ldots + r_n}{n}$

Where,

r_t = single period return at time t

n=number of observations or return

The geometric mean

$$G_M = [\prod_{t=1}^{n}(1 + r_t)]^{\frac{1}{n}} - 1 = [(1 + r_1)(1 + r_2)(1 + r_3) \ldots (1 + r_n)]^{1/n} - 1$$

Where,

G_M = geometric mean return

r_t=single period return at time t

n=number of observation

(Cheney, Moses; 1992:85)

2.1.7 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, the riskier the project." (Thapa, Bhattarai and Basnet; 2006:119)

"Risk is defined in Webster's dictionary as a 'hazard: a peril: exposure to loss or journey', thus for mist, risk referees to the chance that some unfavorable event will occur. If u invest in

speculative 4stock (or, really, any stock), you are taking a risk in the hope of making an appreciable return. " (Weston and Brigham; 1995: 182)

"Although there is difference is the specific definitions of risk uncertainty, for our purposes and in most financial literature the tow terms are used interchangeably. In fact, one way to define risk in the uncertainty of future outcomes. And alternative definitions might be the probability of an adverse outcome. Subsequent6ly,in our discussion of portfolio theory, well will consider several measures of risk that are used when developing the theory." (Reilly and Brown; 2004:210) "The risk is defined in Wenster's Dictionary as a hazard: A peril: exposure to loss or injury; thus for most, risk refers to the change that some unfavorable event will occur. If you invest in speculative stocks (or, really any stock,) you are taking a risk in the hope of making an appreciable return." (Weston and Brigham; 1995:182)

"Risk defined as the variability of the returns of a period. The basic random variable that measures an investments 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 that the expected return. It referees 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 certainly and consequently cannot make any correct predictions about the cash flow sequences." (Basu; 2058 B.S: 70).

"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 you invest in speculative stokes (or, really, any stock), you are taking a risk in the hope of making inapplicable return." (Weston, Basely and Brigham; 2003: 182)

"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 applicable 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 probability the occurrence of unfavorable outcomes. But risk has different meaning in different contexts. In out context two measures developed from risk. They are the mean and standard deviation of probability distribution." (Weston and Brigham; 2000:183)

2.1.8 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 and Moses; 1992:41)

"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 under lying security is reflected in the magnitude of the difference. The smaller the difference the lower will be degree of risk." (Pokhrel ; 2004:11).

"Another measure risk is the range of retransmit 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/" (really and Brown; 2004:211)

2.1.9 Standard Deviation

"Standard deviation is a statistical of the variability of a set of observations. It is the measure of total risk. The smaller the variance, the lower the riskiness of the stock and vice versa. The risk or standard deviation is denoted by the symbol sigma. The square root of the variance of the rate of return is called the standard deviation of the rate of return. (Thapa, Bhattarai and Basnet; 2006:121)

"Standard deviation is another parameter of return distribution measurement. It measures the tightness or variability of set of outcome. 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 we have defined as the variability of returns, we can measure risk by examining the tightness of the probability distribution associated with possible outcomes. In general, the width of a probability distribution indicates the amount scatter, or variability, or 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." (Weston Basely and Brigham; 1996:182).

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

We calculate the expected rate of return: Where

$\sum_{i=1}^{n} p_1 k_2 = p_1 k_1 + p_2 k_2 + \cdots + p_n k_n$

Pr= Probability

k= Expected rate of return

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

Deviation i= k-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.

$$\sigma^2 = \sum_{t=1}^{n} k_1 \; E(K)'^2 \; \Pr_1$$

Where

E(k)=expected rate of return

P(r)=probability

Finally, we take the square root of the variance to obtain the standard deviation.

$$\exists = \sqrt{\pm^2} \; X \sqrt{\sum_{t=1}^{n} k_1 \; E(K)^2 \; \Pr_1'}$$

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 and Brigham; 2003:182).

2.1.9 Systematic Risk and Unsystematic Risk

"Systematic risk is market related risk. It is also called market, risk or indivertible risk. For example, inflation, interest rates 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 t zero." (Thapa, Bhattarai and Basnet; 2006:183)

"Systematic risk has its source factors that affect all the marketable asses and thus can't be diversified away. The sources of systematic risk are market-pervasive. The measure if systematic 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 e reduce through diversification. The relationship among total risk, systematic risk and unsystematic risk are shown below:

Total risk= Systematic Risk + Unsystematic Risk

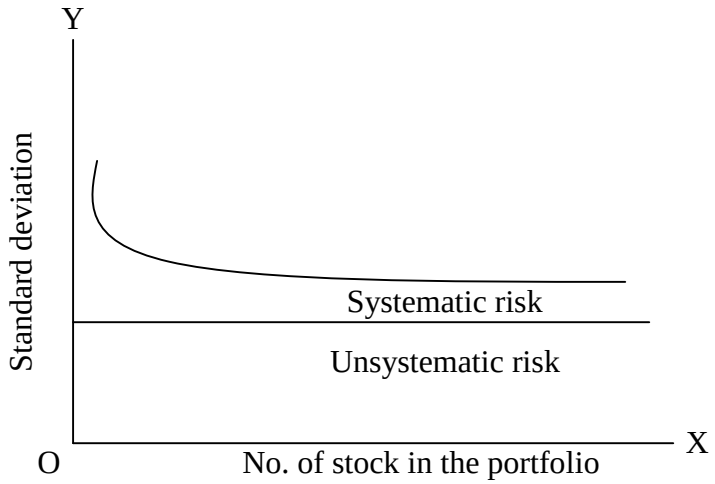
While Systematic Risk = (σ_j) (ρ_{jm}) and unsystematic Risk= (σ_j) $(1-\rho_{jm})$

In this equation ρ_{jm} is the correlation between the return of given stock (i) and the return on market portfolio." (Upadhyaya; 2001: 11)

The relationship between systematic risk In this equation ρ_{jm} is the correlation between the return of given stock (i) and the return and unsystematic risk are shown in given figure

Diagram 2.1

Relation between S.D of portfolio and Number of securities in portfolio



2.1.10 Capital Assets Pricing Model (CAPM)

"Capital assets pricing model (CAPM) is a model that indicated 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 usually represents the relationship between risk and expected or the required rate of return on an assets. The equation of this SML, together with estimated for the return on risk-free asset and so on the based on its systematic risk. You compare this required rate of return to the rate of return that you estimate that you will earn on investment of determine if the investment id undervalued or overvalued. After demonstrating this procedure, we finish the section with demonstration of how to calculate the systematic risk variable for a risky asset." (Reilly and Brow; 2004: 247)

"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 bill and market Portfolio." (Myers and Brealey; 2003:200)

"The capital assets pricing model (CAPM) specifies the relationship between risk and required rates of return on asset 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 basis of each portfolio's expected return and standard deviation.
- All investors can borrow and lend an unlimited mount are a given risk free rate of interest KRF, and there are no restrictions on short sales of any assets.
- All investors have identical estimated 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 takers (that is, all investors assume that their own buying and selling activity will not affect prices)
- The quantities of all assets are given and fixed. (Thapa, Bhattarai and Basnet, 2006: 177).

"CAPM is a model that describes the relationship between risk and expected return. In this model, a security's expected return is the risk free rate 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:

$$R_j = R_f + \left(R_{rm - R_f}\right) b_j$$

Where,

R_j=The required or expected rate of return of stock j

R_f= Risk free rate of return.

R_m=The required rate of return on the market portfolio.

b_j =The beta coefficient for assets j.

It means the sensitivity of a stock's return. It changes in returns on the market portfolio. The beta of portfolio is simply a weighted average of the individual stock beta in the portfolio." (Van Horne; 1997:100)

"The major implication of the CAPM is that expected return of assets will be related at a measure of risk for that asset knows as beta (bj). The exact manner in which expected return and beta rare related is specified by the CAPM. The model provides the intellectual basis for a number of the current practices in the investment industry." (Sharpe, William, and Alexander; 2002:2618u)

"CAPM is a model that describes the relationship between risk and return. In this model, a security expected return is the risk free rate plus a premium based on the systematic risk of the security. The model is given below.

$$R_j = R_f + (R_m - R_f) b_j$$

Where,

Rj = Required rate of return on stock j.

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

Rm =The expected rate of return on the market portfolio.

bj=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 and Wachowicz, 1995:100).

"Beta measures undiversifiable 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.

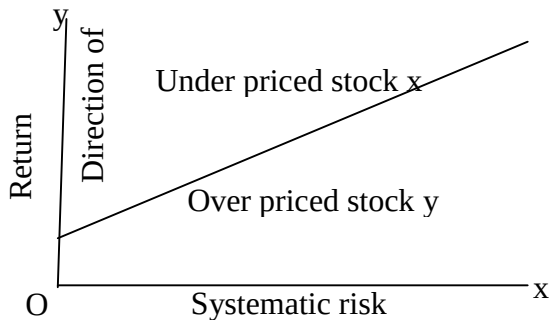
Most betas lies between 4 and 1.9. "The CAPM provides a means by which one can estimate the required rate of return of a security. ON the basis of price and dividend data, expected

return can be calculated. By comparing two or more than two returns, investors can analyze whether the stocks are overpriced or under priced." The capital asset pricing model allows us to draw certain implications about the expected return of a specific security. The key assumptions in the model are that5 the perfect capital markets exist and that investors have homogeneous expectations." (Van Horn; 1997:85)

'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 ink the given diagram the security market line is drawn on tee basis of what investors as a whole know to be the approximate relationship between the required cal then X and Y is improperly priced. Stock X is under priced relative to the security market line, while stock Y is o

Diagram 2.2

Movement of stock



As a result, stock X is expected to provide a rate of return greater than that required used 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 y investing in stock X should rush to buy it. This action would 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 bow 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 and Wachowicz)

2.1.11 Arbitrage Pricing Theory (APT)

"Arbitrage is the process of earning risk less profits by taking advance 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 definitions 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 and Brown; 2004:284)

"Arbitrage is the process of earning risk less profits by taking advantages of different pricing for the same physical asset or security. As a widely applied investment tactic, arbitrage typically entrails 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 of modern, efficient security markets. Because arbitrage profits are by definition all investors have an incentive to take advantages of the whenever they are discovered. Granted, some investors have greater resources and inclinational to engage in arbitrage than others. However, it takes relatively few of these active investors to exploit arbitrage situation and, by their buying and selling actions, eliminate these profit opportunities." (Sharpe, Alexander and Bailey, 2003:284)

The APT is said to be more realistic on the ground that it is more general than CAPM. The CAPM assumes that the rate of return on a security is influenced by only one factor, that is, the average market performance .Unlike CAPM ,the APT assumes that the rate of return on a marketable security is a linear function of the movement of a set of economic factors common to all securities .The random rate of return of return under APT model is linear function of k factors as follow.(Pradhan,2000:356)

$$R_j = R_j + bj1F_1 + bj2F_2 + \ldots bjnFn + ej$$

Where,

R_j=Random rate of return stock j.

R_j=Expected rate of return on stock j

b_jn= Sensitivity of stock j's return to nth factor

F_n=Mean Zero nth factor common to the returns of all assets.

e_j=Random error term indicating the unique effect on return.

2.1.12 Portfolio Expected Return

"An investor's objective is to make maximum return from his/her fund at the lowest risk. By investing in a single asset, investor can not achieve his/her objective. But it is only possible through portfolio 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 pull all the eggs in one basket". It means that one can lose all the eggs if some unlikely event occurs. So, we can say that risk can not be diversified 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 investors deems appropriate" (Thapa, Bhattarai and Basnet; 2006:148)

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 is the weighted average expected return of the individual stocks in the portfolio. The weights are equal to the proportion of total funds in each security. Symbolically, expected return of a portfolio,

$$R_p = W_1K_1 + W_2K_2 + \cdots + W_nW_n$$

Where,

R_p = Portfolio Expected Return

W_1 = Weight for stock 1

W_2 = Weight for stock 2

K_1 = Expected Return for stock 1

K_2 = Expected Return for stock 2

2.1.13 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 risk ness of the components and the correlation of returns on the components securities. This risk is computed by using the following formula. Risk ness of the components and the correlation of returns on the components securities. This risk is computed by using the following equations:

Variance$(\sigma_p^2) = w_i^2\sigma_i^2 + w_j^2\sigma_j^2 + 2w_iw_jcov(r_ir_j)$

$$\sigma_p = \sqrt{w_i^2\sigma_i^2 + w_j^2\sigma_j^2 + 2w_iw_j + 2w_iw_jcov_{ij}}$$

Where,

σ_p=Standard deviation of portfolios rate of return

w_i=Weight for stock i.

w_j=weight for stock j.

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

ρ_{ij}= Correlation Coefficient between variables i & j.

2.1.14 Portfolio Performance Evaluation

Risk and return should e considered by giving important priority when considering a portfolio performance. Due to absence of wither risk or return were can not 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 Shape's Portfolio's performance. Measure is considering here in this study:

Sharpe's Performance Measure:

" When considering a portfolio's performance, it is important to consider both returns and risk . One performance measure that has been developed to evaluate a portfolio's performance considering both returns and risk simultaneously is the Sharpe Index of portfolio performance. It is defined by equation below" (Clark,2000:301)

$$S_p = \frac{\text{Risk Premium}}{\text{Total Risk}} = \frac{r_p - R_f}{\sigma_p}$$

Where,

S_p = Sharpe's index of portfolio performance for portfolio p

r_p = Average return for portfolio p

σ_p = Standard deviation of return for portfolio p

R_f = Risk less rate of interest

Treynor's Performance Measure :

"Another index of portfolio performance that is similar to the Sharpe index is the Treynor performance index. The Treynor index, however , is concerned with systematic risk while the Sharpe's index is concerned with total risk as measured by a portfolio's standard deviation of return . The Treynor's index is defined as follows." (Clark, 2000:301)

$$T_p = \frac{\text{Risk Premium}}{\text{Portfolio's Beta Coefficient}} = \frac{r\square_p - R_f}{b_p}$$

Where,

T_p = Treynor's index of performance for portfolio p.

r_p = The average return for portfolio p

R_f = Risk less rate of interest

B_p = The beta for the portfolio

Jenson's Perfomance Measure

"Michael Jenson has also developed a method for evaluating a portfolio 's of asset's performance .The Jenson's measureis computed with regression equation. " (Clark, 2000;301)

$J_p = r_p - r_f + (r_m - r_f)b_p$

Where,

J_p = Jenson's alpha of portfolio or Jenson's performance measure

r_p= Average realized return from portfolio

r_m= Risk free rate of return

b_p = Beta portfolio

Higher the resulting index, the better is portfolio performance.

2.2 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 rate 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. Pradhan, Radhe Shyam (1993), carried out a study on the topic of "Stock Market Behavior in a small capital market: a case in Nepal" in 1993, the study was based on the data collected for 17 enterprises from 1983 though 190.One of the major objectives, which are related to this study, as "To access the Stock Market behavior in Nepal." Pradhan has summarized the following findings;

1. Dividend per share and Market price share was positively correlated.
2. Higher the earning on stocks, larger the ratio of dividends per share to market price per share.
3. There are positive relationship between dividend payment and liquidity (Pradhan; 1993:23).

Chopra, Sunil (2046 B.S), in his article "The Role of Foreign Bank in Nepal" conclude that the joint venture banks are already playing dynamic and vital role in the economic development of the country and this will undoubtedly increase with time. (Chopra; 2046:1)
Shrestha, Shiva Raj (2055 B.S) has given a short foretaste on the "Portfolio Management in Commercial Bank, Theory and Practice". Shrestha has highlighted the following issues in his article. The portfolio management becomes very important for both individual 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 old any single security i.e. try to have a portfolio of different securities.
- Do not put all the eggs in one basket i.e. to have a diversified investment (making investment indifferent sectors).
- Choose such a portfolio of securities, which ensures maximum return with minimum risk or lower of return but added objectives of wealth Maximization.

However, Shrestha also presented the following approaches to be adopted for designing 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 investor toward risk.
- The 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 lowest risk.
- To identify securities for investment to refuse volatility of return and risk.

In this study, Shrestha 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 and customers confidence. (Shrestha; 2055: 13)

Dr. Shrestha, M. K. (2057 B.S), in his article "Commercial Banks Comparative Performance Evaluation" concluded that the joint venture bank are new 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 governments branching policy is rural areas. Local bank 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 is due to their sophisticated technology, modern banking method and skill. Their better performance is also due to the governments branching policy is rural areas. Local bank 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 bank commanding significant banking business on other spectrum. (Shrestha; 2057:44)

2.2.1 Review of 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:

Bhatta G.P (1995) study on ***"Assessment of the performance of listed companies in Nepal"***, this research is based on the data of ten listed companies from 1990 to 1995. One of the major objectives of this study is to analyze the performance of listed companies in terms of risk and return and internal rate of return, systematic risk and diversification of risk through portfolio context. The objectives of the research were to analyze the performance of listed companies in the terms of expected return and company specific risk, required rate of return, systematic risk and diversification of risk through portfolio concept. His research methodology was descriptive and analytical. Mr. Bhatta concluded that Nepali investors had not yet practiced to invest in portfolio of securities. An analysis of the two securities portfolio shows that the risk can be totally minimizes if the correlation is perfectly negative. In the situation, the risk can totally be diversified, but when there is perfectly positive correlation ship between the returns of the two securities, the risk is not diversifiable. The analysis shows some has negative correlation and some has positive. Negative correlation between securities returns is preferred for diversification of risk. Nepalese capital market is not efficient one. So the stock price doesn't contain all the information relating to market and company itself. Neither investor analyzes the overall relevant information of the stock nor the member of stock exchange tries to disseminate the information. Today's market trend has changed from bull market to bear market. Investors are being rational.

Upadhyaya, S. (2001) has undertaken a study entitled "Risk and Return on Common Stock Investment of Commercial Banks in Nepal". The main objective of the study was to assess the risk associated with returns on common stock investment of the listed commercial banks on the basis of selective financial tools. Others objectives of this research were to evaluated common stocks in terms of risk and return, to assess the risk compensating returns, and to analyze the volatility of common stocks and other relevant variables as an affecting factor in portfolio construction of common stocks.

In order to achieve the objectives, he has analyzed risk and return of individual bank, systematic risk and unsystematic risk and portfolio among the sample banks.

The major findings of his study are:

In general, most people see stock market investment as a black art that they know little about. Many people have unrealistically optimistic or pessimistic expectations about stock market investment or perhaps a fear of the unknown. Due to the lack of information and poor knowledge, Nepalese individual investors can not analyze the securities as well as market properly.

He further stated, "Expected return on the common stock of Nepal Grind lays Bank now renamed, as SCBNL is maximum (i.e. 127.84%) which is very high rate of return. In reality this rate exists only due to the effect of unrealistic annual return because of the issue of bonus share and increase in share price at the same. Similarly, expected return of the CS of Nepal SBI Bank Ltd. is found minimum. IN the context of industries (or sector), expected return of "Others" sector is highest (i.e. 15.5%) Manufacturing and production sector is the least performer." He also revealed, "Common stock of Nepal Grind lays Bank limited now renamed as Standard Chartered Bank Nepal Ltd is most risky and of SBI is least risky. This proves the proverb 'high risk-high return'. Regarding the market volatility, EBL'S common stock is more volatile which has beta value of 3.941 and NIBL'S common stock is least volatile, which has beta

Value of 0.875. Others are also volatile. All the stocks of commercial banks are overpriced. NGBL stock has maximum difference of expected rate of return and required rate of return." Upadhyaya further summarized, "most of the Nepalese private investors invest in single security. Some of the investors use their und in two or more securities. But it is found that they don't make any analysis of portfolio before selecting. They invest their fund in different securities on the basis of expectation and assumption of individual security rather than analysis of the effect of portfolio.

According to him, "The correlation of returns between most of the banks is nearer to +1. It is not favorable to construct a portfolio. Only the correlation between NIBL's CS return and NBBL and EBL CS return is found negative. Investor can reduce risks through holding the CS of NIBL or

EBLO. Portfolio between the CS of NGBL and BBC is very advantageous as far as risk reduction is concerned. Here, portfolio standard deviation is less than individual standard deviation. Hence the portfolio approach of investment is better way to get the maximum return".

Joshi, D.R. (2004) has conducted a study entitled "Risk and Return Analysis of common stock of five listed Commercial Banks." The major objective of the study are to calculated

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 findings of his study are summarized below:

- 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 and Finance has 14% Manufacturing and 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 return, the return of SCBL is maximum (i.e. 73.30%) but it risk also maximum but if risk is taken into account for consideration, NIBL ahs the minimum risk of 73.82%. 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 indicated that it is better to invest on the shares of banking sector. Theme of Joshi's study is summarized as below:

- As analyzing the coefficient of variation, he suggests that the banking industry is the best one for investment. Similarly, while analyzing individual securities, SCBNL is the best for investment due to highest return and lowest C.V
- Based on the findings and conclusion of the study, it is recommended to the investor that if they wish to generate higher return, then they should bear higher risk and invest in the shares of SCBNL. But if they are risk investors and they want to invest in single assets, then they can invest in the share of NIBL of HBL because these two stocks 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.

Pokhrel, K. R. (2005) has under taken a study entitled "Risk and Return on Common Stock Investment of Commercial Banks, with reference to six Commercial Banks." Among various objectives of his study, some majors 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 and to study systematic and unsystematic risk associated with securities of the commercials banks.

Majors finding of his study are given below;

- Among the six commercials 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 of common stock (i.e. -3.9698%).Similarly, the common stock of BOKL is most risky asset, which has highest 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 BOKLL 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 (i.e. -12.076%). Similarly, considering coefficient of variation of different sectors, the trading sector has maximum by 18.49 units, which indicate that to earn 1unit of return, the investor has to bear 10.49 unit of risk. The coefficient of variation on manufacturing and processing is -3.1349 and -3.28 (negative) respectively.
- On the basis of required rat of return and expected rate of return, the study shows that RRR of NIBL, NABIL, SCBNL, HBL, EBL and BOKL is 0.0175, -0.0677, -0.0174,, -0.0099, -0.0526 and -0.0903 respectively. The ERR of NIBL, NABIL, SCBNL, HBL and 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.'

At the end of study, Mr. Pokhrel recommended that before making investment decision, the investor should visit and discussion with investment companies, with export and researchers because sharing experience, idea and view of export will provide greater help. He also advice that the investor needs to diversify their investment reduce risk. Proper construction of portfolio never takes any considerable loss.

Mainali, U.P. (2005) has performed a study entitled "risk and Return Analysis on Common Stock Investment." In his study, he has performed an analysis of risk and return on common stock investment with special reference to banking industry. In this study, he writes, the main objective of the study's to determine whether the shares of selected commercial banks are

overpriced, under priced or correctly valued by analyzing the risk and return. His others objectives are evaluate the common

stock, to analyze the risk and return and to provide relevant suggestion to concerned authority based on analysis of data. His major findings on his study are given below in details.

- Among the selected commercials banks, he writes that the SCBNL has highest (i.e. 32%) market capitalization which indicated that the size of the stock market of SCNBL 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 -27.9%. So, it indicated 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 is 3.0191. It indicated NABIL stock is more risky and SCBNL is less risky than other. Similarly, bet 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 NSBIL is most aggressive stock and C.S of NIBL is most defensive than other.

At the last, he writes at major finding of his study that the correlation between NIBL and NSBIL is in negative. It indicated making portfolio investment in these two stocks will minimize risk without loosing considerable return. On the basis of his findings, he recommended that the investors should make their decision on the basis of reliable information rather than the imagination and rumors. He furthers advice that, the investors should make several analysis like risk and return analysis and ratio analysis etc.

Chhetri, D.B. (2005) has connected his study on the topic of "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 main objective of the study is to evaluate the common stock of sleeted joint venture banks in terms of risk and return and to perform sector-wise comparison on the basis of market capitalization. Another major on objective of his study is to analyze the volatility of difference stock and other relevant variable that should be considered while deciding investment on stock. His major findings are summarized below:

- On the basis of market capitalization, he has found that size is SCNBL 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 SCNBL has the lowest standard deviation (i.e. 31.30%). Similarly, the EBL has least CV (1.51).Thus, he recommended that the common stock of EBL is the nest investment alternative as it has least risk per unit of expected return.

At the end of his study, he has recommended that the investors need to diversify their fund to reduce risk. He further advice that for the portfolio construction, in sector should the stock that have higher and negative correlation or moderate positive correlation between stocks of different and sector. He writes that common stock investment is very risky. So, investor should learn about the operation of the security market, the characteristics or various investment avenues, concept of the time value money, the basic model 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, investor should translate the knowledge and insight to gain from common stock investment.

2.2.2 Research Gap

Risk, return and portfolio are the most important part of finance because they can strong impact on investment. Thus, it is not totally new concept. Many researchers have done research on this aspect. As long as researchers knows, no specific research has yet been able to go in depth of the topic and has successfully of this topic has been based on only showing the risk and return analysis of the stocks of commercial banks. Hence, this research will fulfill the prevailing research gap by calculating the portfolio risk, return and market price of different companies and estimating the optimal portfolio among the common stock on the basis of all relevant data and information of the latest ten fiscal year of six. Nepalese joint venture banks, which are the major concern of public share holders and others stockholders. Furthermore, the portfolio performance has also been evaluated with using Sharpe index of portfolio performance measure, which has not been calculated on other studies.

CHAPTER III
RESEARCH METHODOLOGY

Research methodology may be defined as ”a systematic process that adopted by the researcher in studying problem with certain objective in view “ .In other words, research methodology describes the methods and process applied in the entire aspect of the study focus of data ,data gathering instruments and procedure, data tabulating and processing and methods of analysis.

Research methodology is a way to systematically solve the research problem. It may be understood as a science of studying how research is done scientifically. In it we study the various steps that are adopted by a researcher in studying his research problem along with the logic behind them. (Kothari, 1990:10)

This chapter will includes research design, a nature of data, data gathering procedure, population and samples and data processing procedures.

3.1 Research Design

A per nature of the study, descriptive cum analytical research design has been followed. The descriptive research design describe about the pattern of the Nepalese investor, problem and uses of portfolio management, structure of business etc. The analytical research design makes a critical evaluation.

3.2 Source of Data

This research study is mainly based on secondary data. Published annual report of the concern banks are taken as the basic source of data. Similarly, related books, magazine, journals, articles, reports, bulletins, data from Nepal Stock Exchange and Nepal Rastra bank Banking directive and financial statistic, related website etc as well as other supplementary data and various economic survey's are also used. Previous related studies to the subject are also counted as the source of information.

3.3 Population and Sample

All licensed Nepalese commercial banks will consider as the total population our of then this study will be concern with two commercial bank as a sample, those banks are: Nabil Bank and Himalayan Bank. Because these banks are categories at same category. Their market prices of stocks are also not so vast different between each others. There establishment and operation date are also not so different. Their Earning per Share are also not so different between each other.

3.4 Data Gathering Procedure

As this study will mainly base on secondary data, Primary data will be used it necessary. The secondary will be collected from various libraries, various related literatures, from related website, from concern bank's information section. Primary data will collect by developing as schedule questionnaire and distributing it to manager and finance chief that will available. To get most reliable result discussion with respondent will be conduct. In this way data will collect and use analysis and interpretation.

3.5 Data Analysis Tools

On the basis of historical data financial as well as statistical tools are used to make the analysis more convenience, reliable and authentic.

3.5.1 Financial Tools

The following financial tools have been used while making analysis of data.

Portfolio Expected Return

"The expected returns of a portfolio are the weighted average of the expected returns of the individual assets in the portfolio. The weights are the proportion of the investor's wealth invested in each asset." (Cheney and Moses, n.d:652)

$$R_p=W_1K_1+W_2K_2+\ldots\ldots\ldots\ldots +W_nK_n$$

Where,

R_p= Portfolio of Expected Return

W_1= weight for stock 1

K_1= Expected Return for Stock 1

W_2= Weight for Stock 2

K_2= Expected Return for Stock 2

Portfolio Risk

"The calculation of the portfolio risk is not as straight forward as the calculated of a portfolio's expected return. In order to calculate the portfolio ,consideration must be given not only to the risk of the individual assets in the portfolio and their relative weights but also to the extent to which assets' returns move together .We measure the risk of an individual assets by the variance of returns or its square root, the standard deviation. The degree to which the assets 'returns move together is measured by the covariance or correlation coefficient. By combining the measures of individual assets risk (variance or standard deviation), relative asset weights, and the co- movement of assets 'return (covariance or correlation). The risk of the portfolio can be estimated."(Cheney and Moses, n.d:653).

For the portfolio consisting of two assets A and B

$$\sigma_p = \sqrt{W_A^2\ \sigma_A^2 + W_B^2\ \sigma_B^2 + 2W_A W_B\ COV_{AB}}$$

σ_p = Standard deviation of portfolios rate of return

W_A = Weight for stock A W_B = Weight for stock B

Cov = Covariance of returns between assets A and B

Minimum Risk Portfolio

It is the portfolio with the lowest level of risk in the efficient frontier. It is also called risk minimizing weight or optimal weight. In two stock portfolios, the optimal weight to invest in stock A and stock B is calculated as follows (Thapa, 2001:32)

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

Where,

W_A = Optimal weight to invest in stock 'A'

W_B = Optimal weight to invest in stock 'B'

Portfolio Performance Measure

Sharpe's Performance Measure:

"When considering a portfolio's performance, it is important to consider both returns and risk. One performance measure that has been developed to evaluate a portfolio's performance considering both returns and risk simultaneously is the Sharpe Index of portfolio performance. It is defined by education below." (Clark, 2000:301)

$$S_p = \frac{Risk\ Premium}{Total\ Risk} = \frac{r_p - R_f}{\sigma_p}$$

Where,

S_p = Sharpe's index of portfolio performance for portfolio p

r_p = Average return for portfolio p

σ_p = Standard deviation of return for portfolio p

R_f = Risk less rate of interest

Treynor's Performance Measure:

"Another index of portfolio performance that is similar to the Sharpe index is the Treynor performance index. The Treynor index, however, is concerned with systematic risk while the Sharpe's index is concerned with total risk as measured by a portfolio's standard deviation of return. The Treynor's index is defined as follows." (Clark, 2000:301)

$$T_p = \frac{\text{Risk Premium}}{\text{Portfolio Beta Coefficient}} = \frac{\bar{r}_p - R_f}{b_p}$$

Where,

T_p = Treynor's index of performance for portfolio p.

r_p = the average return for portfolio p

R_f = Risk less rate of interest

B_p = the beta for the portfolio

Jenson's Performance Measure;

"Michael Jenson has also developed a method for evaluating a portfolio's of asset's performance .The Jenson's measure's computed with regression equation. " (Clark, 2000; 301)

$J_p = r_p - r_f + (r_m - r_f)\, bp$

Where,

J_p = Jenson's alpha of portfolio or Jenson's performance measure

r_p= Average realized return from portfolio

r_m= Risk free rate of return

b_p = Beta portfolio

Higher the resulting index, the better is portfolio performance.

3.5.2 Statistical Tools

The following statistical tools have been used while making analysis of data.

"Expected return (Arithmetic Mean)

Expected return is the arithmetic average of the historical returns forecasted for next period. It is obtained by dividing the sum total of the returns by the number of the observation. In

probability distribution, the expected return is obtained as the weighted average of the probability and the forecasted returns.

$$|\phi\ (Rm) = \frac{\sum R_m}{N}$$

Standard deviation

Standard deviation (s.d) is defined as the positive square root of the mean of the square of the deviation taken from the arithmetic mean. It is denoted by σ.t is said to be the best measure of dispersion as it satisfies most of the requisites of a good measure of dispersion. Standard deviation is an estimate of the likely divergence of an actual return from an expected return. It measures the risk of the return. The higher the standard deviation, the more risk will be in an assets.

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

Where,

σ_m = Standard Deviation of market

R_m= Risk of Market

$\bar{R}_m$ = Expected Return of Market

N = No of observation

Variance of stock

Variance is the square of standard deviation. It is denoted by sigma square (σ). It is the sum of the squared deviation from mean divided by number of observation in case of historical returns. In case of probability distribution, it is the sum of the squared deviations multiplied by the probabilities. The variance also shows the total risk of investment.

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

Where,

σ =Variance of the stock

R_m = Risk of market

R_m = Expected Return of Market

N = No. of observation

Coefficient of Variance

Coefficient of variation is the standardized measure of risk per unit of return. It is calculated as the standard deviation divided by the expected return. It provides a more meaningful basis for a comparison when two or more than two investment of different expected return and

standard deviation are to be compared. Other things held constant, the lower the CV, if E(r) is the arithmetic mean and the standard deviation of the distribution, then the C.V. is define by

$$C.V = \frac{\sigma}{\bar{r}}$$

Where,

σ =Standard Deviation

∑(r) = Expected return

Total Risk

Total variability of returns of an asset or portfolio is measured by variance and standard deviation. This total risk can be divided into two parts i.e. diversifiable and undiversifiable risk.

Therefore,

Total risk= diversifiable risk+ Un-diversifiable risk

$$\sigma_i^2 = Var(e) + \beta_{im}^2 \sigma_m^2$$

Diversifiable Risk

Diversifiable risk is also known as unsystematic risk. This types of risk unique to an organization and can be largely eliminated by holding a diversified portfolio of investment. It is caused through the event like, labor strikes, management errors, invention, advertising campaign, and shifts in consumer test, availability of raw materials. It can be stated as:

Therefore Unsystematic risk= Total risk-systematic risk

$$Var(e) = \sigma_i^2 - \beta_i^2 \sigma_m^2$$

Where,

Var (e) = variance of standard error

Un-diversifiable Risk

Un-diversifiable risk is known as the systematic risk. This risk is those portions of total variability in return caused by market factor (also called market risk) that simultaneously affect the price of all securities. This risk created due to the changes in macro economic factor like, interest rate, inflation, investors' expectations, gross domestic product (GDP etc. Un-diversifiable risk is that part of total risk that can not be eliminated by allocating capital to a diversified portfolio of investment. It can be stated as: (Bhattari , 2004: 121-123)

Systematic risk= Total risk – unsystematic risk

$$\beta_i^2 \sigma_m^2 = \sigma_i^2 - \mathrm{Var}(e)$$

Proportion of Systematic Risk = $\frac{\text{Systematic Risk}}{\text{Total Risk}} \times 100$

Proportion or percentage of systematic risk is also measured by coefficient of determination. Coefficient of determination is the square is the square of correlation coefficient. It can be states as:

Coefficient of determination (ρ_{jm}^2)= $\frac{\text{Systematic Risk}}{\text{Total Risk}} \times 100$

$$= \frac{\beta_i^2 \sigma_m^2}{\sigma_m^2}$$

Covariance

Covariance is a statistical measure of the relationship between two random variable s. That is a measure of two random variables, such as the return on securities I and j ,"move together". A positive value for covariance indicates that the securities 'returns tend to move in the same direction. A negative covariance indicates a tendency for the returns to offset one another. A relatively small or zero value for the covariance indicates that there is little or no relationship between return for two securities.

$$\text{Cov}(r_i, rm) = \frac{\sum(R_{ij} - R_j)(R_m - R_m)}{N-1}$$

Where,

Cov (r_i, r_m) = Covariance of stock I and Market

Correlation

Correlation is a statistical concept measuring the extent to which two variables tend to move together.

Where pij(the Greek letter rhea denotes) the **Correlation Coefficient** between the return on security I and return on security j. The correlation rescales the covariance to facilitate compassion with corresponding values for other pairs of random variables. Correlation

Coefficient always lies between – 1 and +1.A value of -1 represent perfect negative correlation, and a value of +1 represents perfect positive correlation. Most cases lie between these two extreme values. When the two variables have no relationship, they are on correlated and the correlation coefficient is zero. If the two assets have perfectly negative correlation, the minimum risk of the portfolio of those assets is zero meaning it is possible to create a risk less portfolio by perfectly negatively correlated assets. If the assets are perfectly positively correlated, no risk can be reduced by making the portfolio of such assets. If the correlation is less than +1, risk reduction is possible by making the portfolio. (Dahal: 2003)

Correlation coefficient between two assets return can be calculated as below;

Cor (r_i, rm) = $\frac{Cov(r_j r_m)}{\sigma_j \sigma_m}$

Where:

Cor (r_i, r_m) = correlation of stock I and Market.

Cor (r_i, r_m) = Covariance of stock I and Market.

Coefficient of determinants (ρ^2_{jm}) = $\frac{Systematic\ Risk}{Total\ Risk}$

= $\frac{\beta_j^2 \sigma_m^2}{\sigma_j^2}$

Beta Coefficient

"The beta coefficient, b, is used to measure non –diversifiable risk. It is an index of the degree of movement of assets return in response to a change in the market return. The beta coefficient for an asset can be found by examining the assets historical returns relative to the returns for the markets. The market return is the return on the market portfolio of all traded securities."(Gitman: 1988:230)

Using the beta Coefficient b, measures non- diversifiable risk, the capital assets pricing model (CAPM) is given:

$\beta_j = \frac{cov(r_j r_m)}{\sigma_m^2}$

Where,

β_j = Beta Coefficient of stock i

Cov (r_i, r_m) = Covariance of return for asset I with the market

Var (r_m) = σ_m^2 = Variance of return for market portfolio or individual Assets

Tools for Testing Hypothesis

Population is all the listed companies' common stock is NEPSE that makes the market portfolio. Sample is all listed common stock of commercial banks. As the test is 'test of significance for a difference of mean' the test statistic (t) is:

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\sigma^2\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}}$$

Where,

$\bar{x}_1$ = Arithmetic mean of first sample

$\bar{x}_2$= Arithmetic mean of Second sample

n_1 = First Sample size

n_2 = Second Sample size

S^2 = Estimated standard deviation of the market portfolio Population

In order to fulfill the objective of research study the following is formulated for testing:

Null hypothesis (H_0): , i.e. There is no significant difference between the portfolio return of common stock of commercial banking industry and return of market portfolio. In order words, average return on the share of commercial banks is equal to market return.

Alternative hypothesis (H_1) :, i.e.. There is significant difference between the portfolio return of common stock of commercial banking industry and return of market portfolio. In order words, average return on the share of commercial banks is not equal to market return.

3.6 Limitation of the Methodology

In the Nepalese context, data problems are taken as the major problems for the study. There is a considerable place to argue regarding its accuracy and reliability. There are many limitation, which weaken the generalization e.g. inadequate coverage of financial sector, time periods taken and other variables.

CHAPTER-IV
DATA PRESENTATION AND ANALYSIS

This chapter is the heart of the whole study. This chapter makes an analysis and interpretation of all collected relevant data related to the study. In this chapter, the concern is given in the presentation and analysis part of the data in detail. This chapter includes, analysis of market, analysis of individual banks, analysis of portfolio risk and return, portfolio performance, etc and hypothesis test as well.

4.1 Analysis of Market Risk and Return

According to securities trading report published by NEPSE on 2010, the Yearly closing price of stock and Yearly market index are given in the following table:

Table No: 4.1

Closing Price of Equity

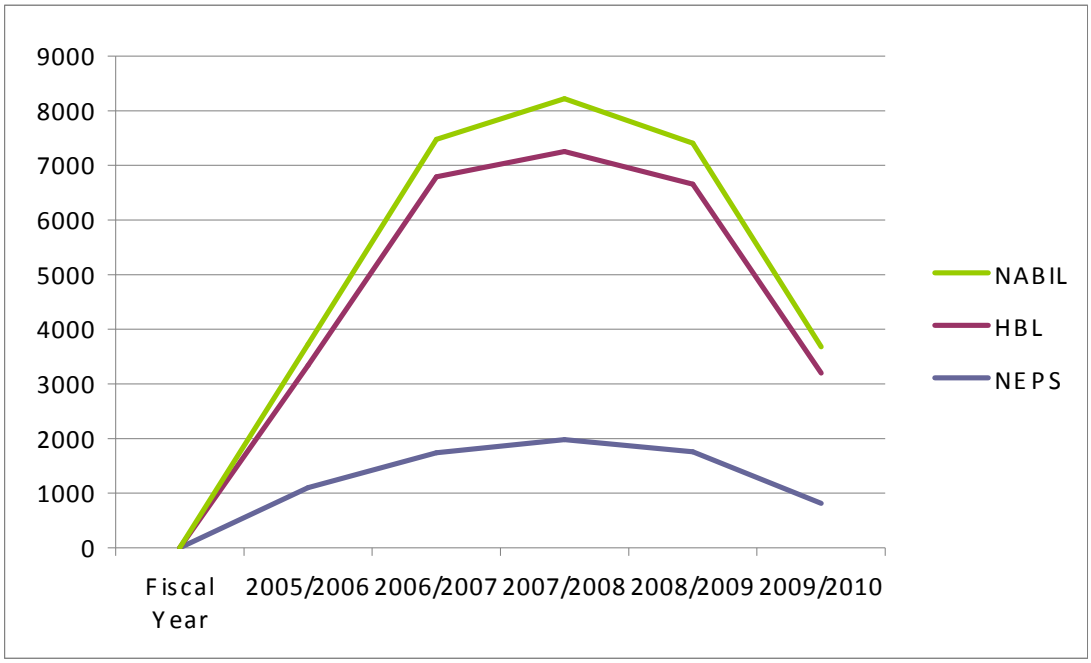
F/Y 2005/2006-2009/2010

Fiscal Year	HBL	NABIL	NEPSE Index
2005/2006	1100	2240	386.83
2006/2007	1740	5050	683.95
2007/2008	1980	5275	963.36
2008/2009	1760	4899	749.10
2009/2010	816	2384	477.73

Above Table shows that NABIL has the highest closing price of Rs.5275 in F/Y 2007/2008 and lowest closing price of Rs.2240 in F/Y 2005/2006.HBL has the highest closing price i.e. 1980 in F/Y 2007/2008 and lowest of 816 in F/Y 2009/2010.

Figure No. 4.1

Closing price Movement



From the above Figure, all two companies stock price is higher then NEPSE average price of stock. Therefore these two companies are called reputed company for investing purpose. Stock price of two companies even the NEPSE index is also fluctuating. We take NEPSE index as a market index.

Table No. 4.2

Calculation of ERR, S.D and C.V of overall Markets

Fiscal Year	MPS	R_m	$(R_m - \bar{R}_m)$	$(R_m - \bar{R}_m)^2$
2005/2006	386.83	0.34939	0.1611	0.0259
2006/2007	683.95	0.7681	0.5798	0.3362
2007/2008	963.36	0.4085	0.2201	0.0484
2008/2009	749.10	-0.2224	-0.4107	0.1687
2009/2010	477.73	-0.3622	-0.9127	0.8330
Total		$\sum R_m$= 0.9414		$\sum(R_m - \bar{R}_m)^2$=1.4122
Expected Return ($\bar{R}_m$)				0.1883
Standard Deviation (σ_m)				0.5941
Coefficient of variation (C.V)				3.1553

The Market Return is high in F/Y in 2006/2007 but there after market return is decreased every year in fact the annual return of market is negative in F/Y 2008/2009 to2009 to

2010.Stock Market is in Bullish trend during 2005/2006 to 2006/2007.Thereafter it goes to Bearish trend with decreasing market return. Above the table shows Expected return 0.1883, standard deviation 0.5941 and Coefficient of variation 3.1553 of overall market.

4.2 Analysis of Himalayan Bank Ltd

Table No. 4.3

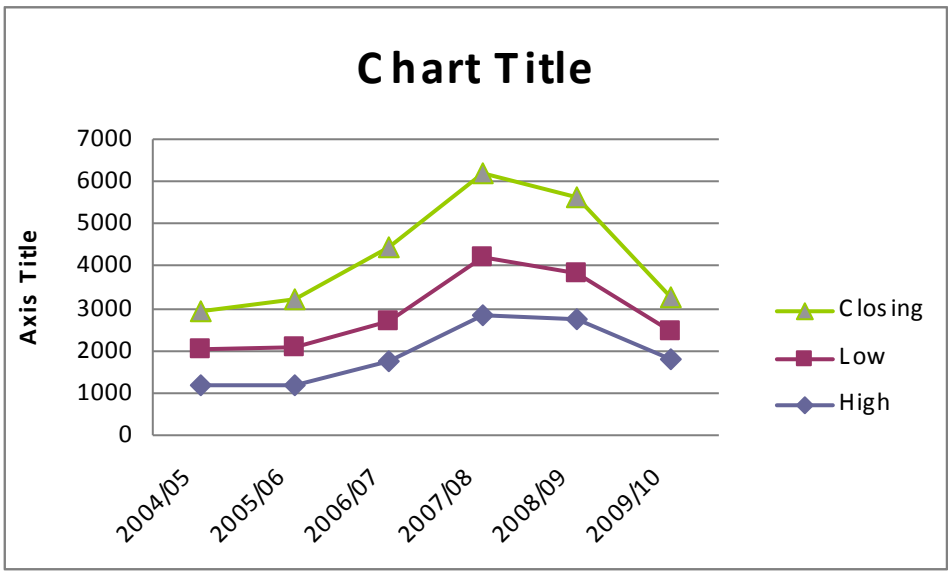
MPS and DPS of Himalayan Bank Ltd.

Fiscal year	MPS			TOTAL DIVIDEND		
	High	Low	Closing	Cash	Stock (%)	Total
2004/2005	1181	855	920	70	70	70+1100X70% = 840
2005/2006	1200	900	1100	30	35	30+1740X35% = 639
2006/2007	1760	950	1740	15	40	15+1980X40% =807
2007/2008	2856	1340	1980	25	45	25+1760X45% = 817
2008/2009	2730	1119	1760	12	43.56	12+816X43.56% =367.45
2009/2010	1780	679	816	11.84	36.84	11.84+560X36.84%=218.1

*suppose, closing price of 2010/2011 is 560.

Figure No. 4.2

Market Price movement of Himalayan Bank



From above figure and table, closing MPS of the bank is increasing trend from F/Y 2004/2005 to F/Y 2007/2008 . Closing MPS is decreasing after that .The MPS range between Rs.679 to Rs.2856.HBL Bank has declared cash dividend through out the review period and stock dividend as well.

Table No: 4.4

Expected Return, Standard Deviation and Coefficient of Variation of Himalayan Bank

Fiscal Year	MPS	TOTAL DIV(D_t)	$R_0 = \frac{(P_t - P_{t-1} + D_1)}{P_{t-1}}$	$(R_0 - \overline{R_0})$	$(R_0 - \overline{R_0})^2$
2005/2006	1100	639	0.15548	-0.1784	0.031826
2006/2007	1740	807	1.3155	0.9816	0.96353
2007/2008	1980	817	0.5338	0.1999	0.03996
2008/2009	1760	367.45	0.07446	0.0673	0.0673
2009/2010	816	218.18	-0.41242	0.5569	0.5569
Total			$\sum R_0$= 1.6698		$\sum(R_0 - \overline{R_0})^2$= 1.0595
Expected Return ($\overline{R_0}$) (See annex – 1)					0.3339
Standard Deviation(σ_0) (See annex – 1)					0.644107
Co efficient of variance (C.V) (See annex – 1)					1.9290

The table no 4.4 shows realize rate of return of bank negative in F/Y 2009/2010. But positive in remaining years. The realized rate of return range is in between -0.41242 to 1.3155. The expected rate of return is 0.3339 and standard deviation is 0.6441.the C.V Of the bank is 1.9290.

Table No. 4.5

Calculation of Covariance, Beta, Coefficient of Himalayan Bank LTD

Fiscal Year	$(R_0 - \overline{R_0})^2$	$(R_m - \overline{R_m})$	$(R_m - \overline{R_m})^2$	$(R_m - \overline{R_m})(R_0 - \overline{R_0})$
2004/2005	-	-	-	-
2005/2006	-0.1784	0.1611	0.0259	-0.02874
2006/2007	0.9816	0.5798	0.3362	0.56913
2007/2008	0.1999	0.2201	0.0484	0.04399
2008/2009	-0.2594	-0.4107	0.1687	0.106535
2009/2010	-0.7463	-0.9127	0.8330	0.6811
Total	$\sum(R_0 - \overline{R_0})^2$= 1.659		$\sum(R_m - \overline{R_m})^2$ = 1.4122	

Cov $(R_0 R_m) = \frac{\sum(R_0 - \overline{R_0})(R_m - \overline{R_m})}{n-1} = \frac{1.3/206}{5-1}$= 0.3430

$$\beta_0 = \frac{COV(R_0 R_m)}{\sigma_m^2} = \frac{0.3430}{0.3530} = 0.9716$$

From above table and calculation beta coefficient of HBL is 0.9716 which is less than 1. The beta less than 1 implies that the stock is less volatile than market.

4.3 Analysis of Nepal Arab Bank Ltd. (NABIL)

Table No. 4.6

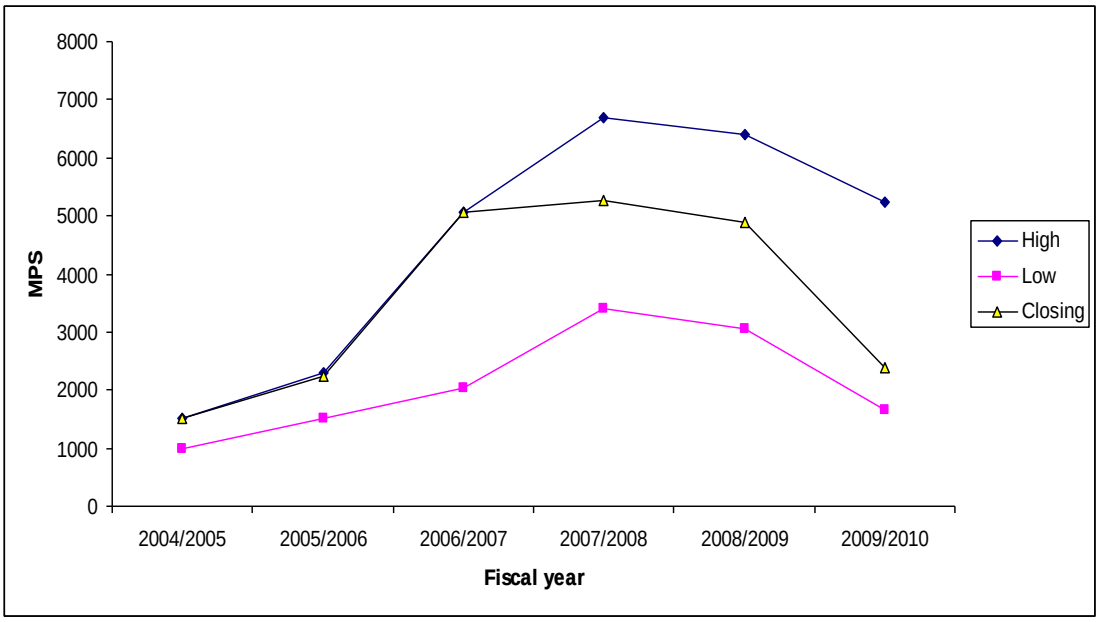
MPS and DPS of NABIL Bank

Fiscal year	MPS			TOTAL DIVIDEND		
	High	Low	Closing	Cash	Stock (%)	Total
2004/2005	1515	1000	1505	-	-	-
2005/2006	2300	1500	2240	85	85	85+5050X85%=4377.5
2006/2007	5050	2025	5050	100	140	100+5275X140%=7485
2007/2008	6700	3410	5275	60	100	60+4899X100%=4959
2008/2009	6400	3050	4899	35	85	35+2384X85%=2026.4
2009/2010	5240	1665	2384	30	70	30+*2050X70%=1465

*Suppose, closing price of 2010/2011 is 2050.

Figure No. 4.3

Market price Movement of Nabil Bank



From above figure and, closing MPS of bank is increasing trend from F/Y 2004/2005 to 2007/2008. In F/Y 2008/2009, Closing MPS is decreased and stay statement for the next year also. The MPS range between 1000 to 6700. Nabil bank has declared cash dividend through

out the review period and stock dividend was declared at the end of every year i.e (85%, 140%,100%,85% and 70%) respectively.

Table No. 4.7

Expected Return, Standard Deviation and Coefficient of Variation of NABIL Bank

Fiscal Year	MPS	TOTAL DIV(D_t)	$R_1 = \frac{(P_t - P_{t-1} + D_1)}{P_{t-1}}$	$(R_1 - \bar{R_1})$	$(R_1 - \bar{R_1})^2$
2005/2006	2240	4377	3.3967	1.572	2.4734
2006/2007	5050	7485	4.5939	2.7719	7.6834
2007/2008	5275	4959	1.0265	-0.7975	0.6360
2008/2009	4899	2026	0.3128	-1.5112	2.2837
2009/2010	2384	1465	-0.2143	-2.0383	4.1546
Total			$\sum R_1$= 9.1176		$\sum (R_1 - \bar{R_1})^2$= 17.231
Expected Return ($\bar{R_1}$) (See annex – 1)					1.824
Standard Deviation(σ_1) (See annex – 1)					2.0755
Co efficient of variance (C.V) (See annex – 1)					1.0414

The table no.4.7 shows realized rate of return of the bank is negative in F/Y 2009/2010 but positive on remaining years. The realized rate of return range is in between -0.2143 to 4.5959.The Expected rate of return is 1.824 and Standard deviation is 2.0755. The C.V of bank is 1.0414.

Table No. 4.8

Calculation of Covariance, Beta, Coefficient of NABIL Bank Ltd

Fiscal Year	$(R_1 - \bar{R}_1)^2$	$(R_m - \bar{R}_m)$	$(R_m - \bar{R}_m)^2$	$(R_m - \bar{R}_m)(R_1 - \bar{R}_1)$
2004/2005	-	-	-	-
2005/2006	2.4734	0.1611	0.0259	0.25336
2006/2007	7.6834	0.5798	0.3362	1.60714
2007/2008	0.6360	0.2201	0.0484	-0.1755
2008/2009	2.2837	-0.4107	0.1687	0.6206
2009/2010	4.1546	-0.9127	0.8330	1.8604
Total	$\sum(R_1 - \bar{R}_1)^2$= 17.231		$\sum(R_m - \bar{R}_m)^2$= 1.4122	$\sum(R_m - \bar{R}_m)(R_1 - \bar{R}_1)$ = 4.1659

Cov $(R_1 R_m) = \frac{\sum(R_1 - \bar{R}_1)(R_m - \bar{R}_m)}{n-1} = \frac{4.1659}{5-1} = 1.04147$

$\beta_0 = \frac{COV(R_1 R_m)}{\sigma_m^2} = \frac{1.0414}{0.3530} = 2.9501$

From above table and calculation, beta coefficient of Nabil bank is the 2.9501 which is greater than 1.Beta greater than 1 shows that the stock of Nabil Bank is more volatile than the market or stock seems to be an aggressive.

4.4 Analysis of Various Stocks:

According to result from table no:4.4 and 4.7 a comparative analysis of expected return and unsystematic risk are performed in table no:4.9. Expected Return , Standard Deviation of return and Coefficient of variation of each bank for the year 2005/2006 to 2009 to 2010 are also shown in table no:4.9.

Table No. 4.9

Inter –bank Expected Return, Standard Deviation and Coefficient of Variation

Banks	Expected Return	S.D	C.V
Himalayan Bank	0.3339	0.644107	1.9290
NABIL Bank,LTD	1.824	2.0755	1.0414

(See detail calculation on ANNEX – 1)

Above table shows that investor can get highest return in investing in common stock of NABIL Bank which has highest expected return(i.e.1.824) than the Himalayan Bank, and also NABIL's stock has highest unsystematic risk and lowest coefficient of variation. So we can say that NABIL is the best in terms of C.V also i.e.(1.0414). Likewise Himalayan Bank has lowest expected return than NABIL i.e.(33.39%) and lowest S.D with highest C.V 1.9290.

Table No. 4.10

Analysis of correlation between Market Return and Return on Common stock

Banks	Correlation
Himalayan Bank ltd.	+0.89634
NABIL Bank ltd.	+0.8446

(See details calculation on ANNEX -1)

The above table shows that the return on common stock of two commercial banks is positively correlated with market return correlation value of two banks are almost equal to +1. Return on stock of Himalayan is highest positively correlation with the return of markets which has the correlation value of +0.89634 and +0.8446 respectively. If correlation value is less than +1, risk reduction is possible by constructing the portfolio structure. Above table shows the both correlation value are less than +1, which means the return of common stock of commercial banks are highly influenced by market return. If market return will increases the return on common stock of commercial bank will also increased and vice versa.

4.5 Inter – Bank Beta Coefficient

Market sensitivity of stock can be defined by terms "beta coefficient". If beta coefficient is higher that indicate the greater sensitivity to the movement of the market. Beta is a systematic risk that cannot be eliminated through diversification as unsystematic risk.

A systematic risk of an individual stock can be evaluated with the help of market beta .Beta of an individual stock can be less than, equal to or more than1.The beta of one reflects average market risk and commands the average market risk premium .The beta less than 1 implies that the stock is less volatile than market or said to be a defensive stock .Beta greater than1 implies that the stock is more volatile than market or said to be aggressive stock .if the

beta is positive it moves with the market that means stock- return will rise when market return rises and vice versa.

Table No. 4.11

Beta co-efficient of each Bank

Banks	Beta
Himalayan Bank ltd.	0.97106
NABIL Bank ltd.	2.95014

(See details calculation on ANNEX – 1)

As depicted in table no 4.11, NABIL has the highest beta with 2.95014 that means the stock of NABIL bank is highest sensitive with markets return. It shows that if the market return rises by 1% NABIL stock return will rise by 2.95014%.and if the market return falls by 1% NABIL stock return will also fall by 2.95014%.

A major implication of beta coefficient is in CAPM.A Required Rate of Return (RRR) CAN BE calculated through CAPM. Risk Free Rate (R_f), Expected Rate of Return ($\bar{R}_m$) and Beta Coefficient are the major affecting variable for calculation of RRR.A comparison between ERR and RRR constitute whether the stock is underpriced or overpriced. If the stock ERR is greater than RRR, the stock is said to be the underpriced stock and vice versa.

Table No. 4.12

Analysis of systematic and Unsystematic Risk

Banks	Total risk(σ^2)	Systematic Risk	Unsystematic Risk	Coefficient of Determination
HBL	0.4148	0.3332	0.08156	0.8033
NABIL	4.3077	3.072274	1.235	0.7132

(See detail calculation on ANNEX 3)

The above table shows that the total Risk of NABIL is highest i.e.4.3077 and HBL is lowest i.e. 0.4148 among the two commercial banks .The coefficient of determinants shows the proportion (percentage) of systematic on total risk. Higher the systematic Risk higher will be the co- efficient of determinants and vice versa .Here the stock of HBL has highest proportion of systematic Risk i.e. 80.33% on total risk remaining 19.67% is unsystematic risk. It means ,only 19.67% of risk can be diversify by constructing optimal portfolio .Similarly ,NABIL

has the lowest systematic risk i.e.71.32% on total risk and remaining 28.68% of unsystematic risk can be diversify by construction of optimal portfolio.

4.6 The Security Market Line

"The CML defines the relationship between total risk and expected return for portfolios consisting of the risk free assets and the market portfolio. How is the relationship between the individual assets defined in a capital market that is in equilibrium ? The capital assets pricing model identifies security return net of the risk –free rate as proportional to the expected net market return, where beta serves as the constant of proportionality. As a consequence of this relationship, all securities in equilibrium plot along a straight line called the security market line(SML).Since the unsystematic risk trends to be diversified away by the construction of an efficient portfolio, it is desirable to develop an alternative to CML, which will use beta as the independent variable and will accommodate both portfolios and individual assets. Such line is called the security market line. (SML)" (Bhalla, 2001:561)

"There is liner relationship between their expected return and there covariance with the market portfolio. This relationship, called the security market line (SML) is as follow:

$$\bar{R}_i = R_f + (\bar{R}_m - R_f)\beta_i$$

Where,

$\bar{R}_i$ = Expected return on security i

R_f = Risk free return

$\bar{R}_m$ = Expected return on Market Portfolio

β_i = Beta coefficient for security i

Table No. 4.13

Required Rate of Return, Expected Return and Stock Price Situation of Both Bank

Banks	Beta	Expected Return	RRR=$R_f + (\bar{R}_m - R_f)\beta_i$	Remark
HBL	0.9716	0.3339	0.1829	Underpriced
NABIL	2.950	1.824	0.5555	Underpriced

Where,

R_f = Risk free rate of return = 7.757%(0.0775)

(Average of five years weighted average return of B-bill,364 days)

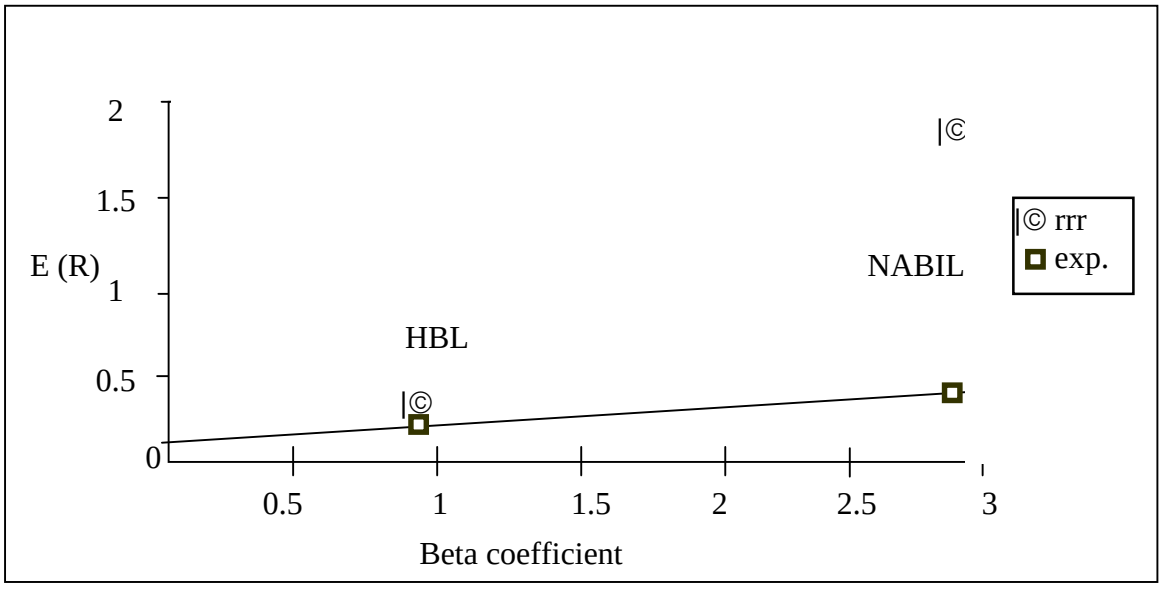
*source; (www.nrb.org)

$\bar{R}_m$ = 0.1883

Above table shows that NABIL Bank has the highest required rate of return i.e.0.5555 with highest beta i.e.2.950 likewise HBL has the lowest RRR i.e.0.1829 with lowest beta i.e.0.9716 Required rate of Return depends on beta of assets so highest the beta higher will be the return.

Figure No. 4.4

Security Market Line



The stock line above the security market line is said to be Underpriced stock and stock lies below the security market line is said to be Overpriced stock. Above table and figure shows two stocks are Underpriced having greater ERR than RRR and lies above security Market line. From investor's point of view underpriced stock should be accepted.

4.7 Analysis of portfolio Risk and Return

"Investment positions are undertaken with the goal of earning some expected rate of return. Investors seek to minimize in efficient deviation from this expected rate of return. Diversification is essential to the creation of an efficient investment because it can reduce the variability of returns around the expected return."(Clark, n.d.:228)

Table No. 4.14

Calculation of portfolio risk and return

Banks	$\bar{r}_f$(%)	$\bar{r}_m$(%)	w_{rf}	w_m	$\bar{r}_p$	σ_p
HBL	7.757	18.33	0.9843	0.0157	7.9309	0.9327
NABIL	7.757	18.33	0.9269	0.0705	8.5185	4.188

(see detail calculation on ANNEX 3)

Where,

$\bar{r}_f$ = Risk free rate of return

w_{rf} =Investment weight on risk free asset (government T-bill)

w_m = Investment weight on risky assets (i.e. market portfolio)

We have,

Expected portfolio return

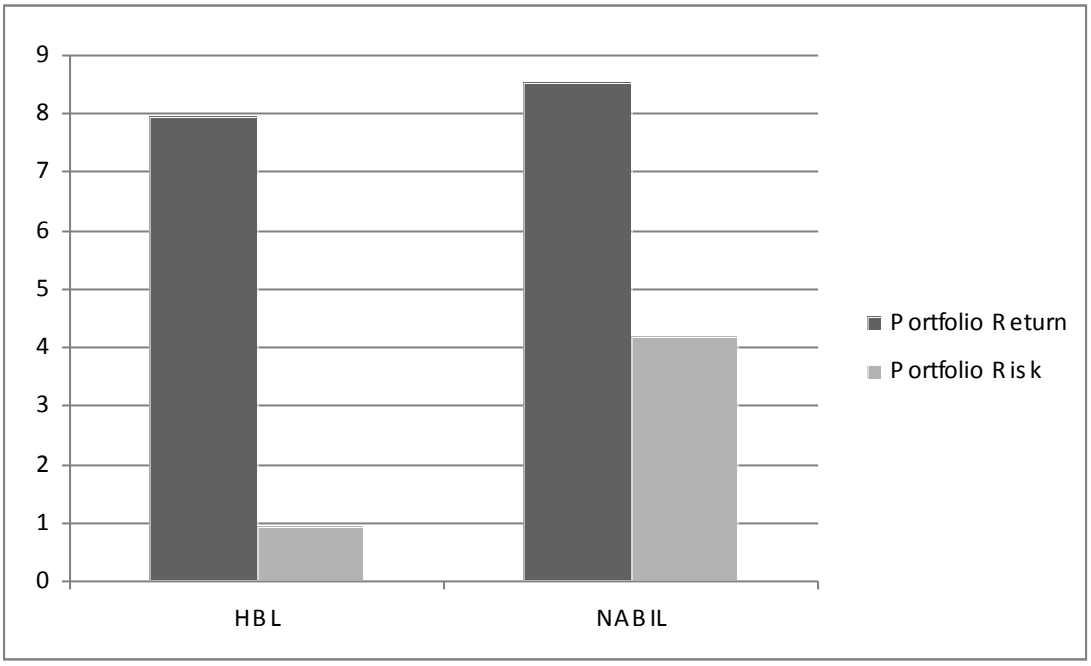
$\bar{r}_p = r_f w_{rf} + \bar{r}_m w_m$……..(1)

Portfolio risk (σ_p) =$w_m \sigma_m$……..(2)

From above table 4.15 it is also shows that HBL invested highest amount of investable fund in risk-free assets (government securities) i.e.98.43% and only 1.57% on risky assets (stock market).Similarly, NABIL was invested lowest amount than HBL investable fund in risk free assets i.e. 92.69% and it also only 7.31% on risky assets.

Figure No. 4.5

Portfolio Risk and Return



From above figure, it is seen that NABIL has highest portfolio return i.e. 8.5185% and highest portfolio Risk i.e 4.188%.likewise, HBL has the lowest portfolio return than NABIL i.e.7.9309% and lowest portfolio risk 4.18%.

4.8 Analysis of Portfolio Performance

"The portfolio performance analysis of mutual funds suggests that many investors who own or are considering buying mutual funds shares could expect higher rates of return and less risky if they invest their own funds by selecting securities randomly and then simply holding them. This statement does not mean that all mutual funds can shares represent poor investment decision. Mutual fund can perform some valuable investment services" (Clark , n.d.: 667)

Table No. 4.15

Ranking according to Sharpe's Performance Measure, Treynor's Performance Measure and Jenson's Performance Measure

Banks	$S_p = \frac{r_p - r_f}{\sigma_p}$	Ranking	$T_p = \frac{r_p - r_f}{b_p}$	Ranking	$J_p = r_p - r_f + (r_m - r_f)b_p$	Ranking
HBL	0.1864	1st	0.5593	2nd	3.7172	2nd
NABIL	0.1818	2nd	1.12	1st	22.39	1st

(See detail calculation on ANNEX-4)

Above table shows the ranking of two commercial bank according to Sharpe's measure. Treynor's measure and Jenson's measures respectively. The Sharpe's portfolio performance measure is based on the CML total risk which measure is more suitable for in evaluating portfolio return then individual assets. According to resulting index HBL in the first position , NABIL is in second position. On the other hand , both the Jenson's and Treynor's performance are based in the CAPM and more flexible because by using systematic risk (Beta) they can used to evaluate the performance of both portfolio and individual assets. According to Treyor's measures NABIL has the highest resulting index and HBL has the lowest resulting index and has been ranked accordingly. Like wise , according to Jenson's measure NABIL is in first rank , HBL is in second rank. All these performance measures trend to rank a group of diversified portfolio similarly.

4.9 Combined/ Pooled Selected Commercial Banks

The Return of commercial stock of combined selected two commercial banks is given in the following table.

Table No. 4.16

Average Return of combined / pooled two Commercial Banks

F/Y	RETURN		SUM	AVERAGE
	HBL	NABIL		
2005/2006	0.15548	3.3967	3.552	1.776
2006/2007	1.3155	4.5959	5.9114	2.956
2007/2008	0.5338	1.02653	1.5603	0.7802
2008/2009	0.07446	0.3128	0.3873	0.1937
2009/2010	-0.41242	-0.2143	-0.6267	-0.3134
TOTAL				5.3925

The calculation of return, Expected return, Standard Deviation and Co-efficient of variance of combined /pooled selected two commercial banks.

Table No. 4.17

Statistical Analysis of the Common Stock of Combined Commercial Banks

F/Y	Average Return(R)	$(R - \bar{R})$	$(R-\bar{R})^2$
2005/2006	1.776	0.69975	0.4865
2006/2007	2.959	1.8775	3.525
2007/2008	0.7802	-0.2983	0.0889
2008/2009	0.1937	-0.8848	0.7828
2009/2010	-0.3134	1.3919	1.93738
Total	5.3925		6.8205

We have,

Expected Return= $\bar{R}$ j=$\sum(R_j) = \frac{\sum R_j}{n} = \frac{5.3925}{5} = 1.078$

Standard Deviation (σ_j) = $\sqrt{\frac{\sum(R_j - R_j)^2}{n-1}} = \sqrt{\frac{6.8205}{5-1}} = \sqrt{1.7050} = 1.3058$

Coefficient of variation (C.V.) = $\frac{\sigma_j}{R_j} = \frac{1.3058}{1.0785} = 1.2107$

1. For the two assets portfolio ,here the portfolio of common stock of HBL(let,s suppose stock A) and common stock of combined/ pooled selected two commercial banks (let,s suppose stock B) is analyzed .The following table shows the calculation of covariance, correlation and the proportion of stock of return of the given two stocks.

Table No. 4.18

COV ($R_A R_B$), Correlation (r_{AB}),and Weight of Stock A(HBL) and Stock B

Fiscal Year	$(R_A - \bar{R}_A)$	$(R_B - \bar{R}_B)$	$(R_A - \bar{R}_A)(R_B - \bar{R}_B)$
2005/2006	-0.1784	0.6997	-0.1248
2006/2007	0.9816	1.8775	1.8429
2007/2008	0.1999	-0.2983	-0.0596
2008/2009	-0.2594	-0.8848	0.2295
2009/2010	-0.7463	1.3919	-1.3877
Total			0.5003

We have,

$COV(R_A R_B) = \frac{\sum(R_A - \bar{R}_A)(R_B - \bar{R}_B)}{n-1} = \frac{0.5003}{5-1} = 0.1250$

The proportion of stock A and stock B, which minimize the risk in the portfolio.

$$W_A = \frac{\sigma_B^2 - cov(R_A R_B)}{\sigma_A^2 + \sigma_B^2 - 2cov(R_A R_B)} = \frac{(1.3058)^2 - 0.1250}{(0.6441)^2 + (1.3058)^2 - 2(0.1250)} = \frac{1.5801}{1.8695} = 0.8450$$

W_B = 1-0.8450 = 0.155

Where,

σ_A = S.D of HBL = 0.6441

σ_B = S.D of combined commercial banks =1.3058

Correlation:

$r_{AB} = \frac{COV(R_A R_B)}{\sigma_A \sigma_B} = \frac{0.1250}{0.6441 \, X \, 1.3058} = 0.14$

Here, in case of portfolio of HBL,s common stock and pooled two commercial bank's common stock ,the correlation is positive correlated that's why the portfolio construction between these two stocks is not so beneficial.

Portfolio Return will be:

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

= 0.8450 x 1.824 + 0.155 x 1.0785

= 1.54128 + 0.1672

= 1.708 (170.84%)

Portfolio risk is given:

$\sigma_p = \sqrt{W_A^2 \sigma_A^2 + W_B^2 \sigma_B^2 + 2 W_A W_B \, cov(R_A R_B)}$

= $\sqrt{(0.8450)^2(0.6441)^2 + (0.155)^2(1.3058)^2 + 2(0.1486X0.155X0.1250)}$

= $\sqrt{0.2962 + 0.04096 + 0.005758}$

= $\sqrt{0.3429}$

= 0.5855 (58.55%)

Using the diversification, we can reduce the risk. Standard deviation of HBL and Pooled two commercial banks was 64.14% and 130.58% respectively before the diversification .But after portfolio construction, the risk is 58.55%, which is lower than the risk before diversification.

2. Again the portfolio of the common stock of NABIL (lets suppose stock A) and common stock of combined/pooled selected two commercial banks (lets suppose stock B) is analyzed. The following table shows the calculation of covariance, correlation and the proportion of stock of the returns of the given two stock.

Table No. 4.19

Cov $(R_A R_B)$,$correlation\ (r_{AB})$ $and\ weight\ of\ stock\ A\ (NABIL)$ $and\ stock\ B$

Fiscal Year	$(R_A - \bar{R}_A)$	$(R_B - \bar{R}_B)$	$(R_A - \bar{R}_A)(R_B - \bar{R}_B)$
2005/2006	1.572	0.6997	1.0999
2006/2007	2.7719	1.8775	5.2042
2007/2008	-0.7975	-0.2983	0.2379
2008/2009	-1.5112	-0.8848	1.3371
2009/2010	-2.0383	1.3919	-2.8371
Total			= 5.042

We have,

Cov $(R_A R_B) = \frac{\sum(R_A - \bar{R}_A)(R_B - \bar{R}_B)}{n-1} = \frac{5.042}{5-1} = 1.26$

The proportion of stock A and stock B, which minimize the risk in the portfolio.

$$W_A = \frac{\sigma_B^2 - cov(R_A R_B)}{\sigma_A^2 + \sigma_B^2 - 2cov(R_A R_B)} = \frac{(1.3058)^2 - 0.1250}{(2.0755)^2 + (1.3058)^2 - 2(0.1250)} = \frac{0.4451}{3.4528} = 0.1274$$

W_B = 1-0.1274 = 0.8725

Where,

σ_A = S.D of NABIL = 2.0755

σ_B = S.D of combined commercial banks =1.3058

Correlation:

$$r_{AB} = \frac{COV(R_A R_B)}{\sigma_A \sigma_B} = \frac{0.1250}{2.0755 \times 1.3058} = 0.4650$$

Since , W_A = 0.1274 and W_B = 0.8725 , this result indicates that if the investor wanted to minimize risk he/she would have to invest more than 100% of his/her capital in stock A i.e. common stock of NABIL.

Here, in case of portfolio of NABIL's common stock and pooled two commercial bank's common stock , the correlation is positive correlated that is why the portfolio construction between these two stocks is not beneficial.

Portfolio Return will be:

$$\bar{R_p} = W_A \bar{R_A} + W_B \bar{R_B}$$

= 0.1274 x 1.824 + 0.8725 x 1.0785

= 1.173 (117.33%)

Where , Portfolio risk is given as:

$$\sigma_p = \sqrt{W_A^2 \sigma_A^2 + W_B^2 \sigma_B^2 + 2 W_A W_B cov(R_A R_B)}$$

=

$$\sqrt{(0.1274)^2(2.0755)^2 + (0.8727)^2(1.3058)^2 + 2(0.1274 * 0.8725 * 0.1250)}$$

= $\sqrt{0.0699 + 1.2986 + 0.2801}$

= $\sqrt{1.6486}$

= 1.284 (128.4%)

Using the diversification, we can reduce the risk. Standard deviation of NABIL and pooled two commercial banks was 205.55% and 130.58% respectively before the diversification. After portfolio construction, the risk can minimize to 128.4% only.

Table No. 4.20

Analysis of Optimal Portfolio

Banks	Rp	∃p
HBL	170.84%	58.55%
NABIL	117.33%	128.4%

The Return on optimal portfolio of HBL is highest i.e. 170.84%, and return on optimal portfolio of NABIL is lowest i.e. 117.33%. Likewise NABIL has highest portfolio risk i.e. 128.4% and HBL has lowest portfolio risk i.e. 58.55%

4.10 Testing of Hypothesis

The hypothesis is based on the test of significance for difference of mean (student's test) and on the test of significance for single mean (student' test)

Test of Hypothesis – 1

The first hypothesis is based on the test of significance for difference of mean (student's test)

Null Hypothesis (H_0): $\overline{X}_1 = \overline{X}_2$, i.e. there is no significant different between the portfolio return of common stock of Banking Industry and return of market portfolio. In other words, average return to the share of commercial banks is equal to market returns.

Alternative Hypothesis (H_1): $\overline{X}_1 \neq \overline{X}_2$, i.e. there is significant different between the portfolio return of the common stock of the banking industry and return of market portfolio. In other words, average return to the share of commercial bank is equal to market return.

Under the H_0 Test Statistic (t) is:

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{S^2\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}}$$

Where,

$\bar{x_1}$ = Average return of the portfolio of banking industry

= 0.1158(see detail calculation of ANNEX-5)

$\bar{x_2}$ = Average return of market

= 0.1883

$n_1 = n_2 = sample\ size = 4$

$S^2 = Estimated\ standard\ deviation\ of\ the\ market\ portfolio(population)$

$S^2 = \frac{n_1 s_1^2 + n_2 s_2^2}{n+n-2} = \frac{4\times0.2730 + 4\times0.3530}{4+4-2} = \frac{1.757476}{6} = 0.2996$

Where,

$s_1^2 = Variation\ of\ return\ of\ banking\ industry = 0.2730$

$s_2^2 = variation\ of\ the\ return\ of\ market\ portfolio = 0.3530$

(see detail calculation of ANNEX 2&5)

$$t = \frac{\bar{x_1} - \bar{x_2}}{\sqrt{S^2(\frac{1}{n_1} + \frac{1}{n_2})}}$$

$$t = \frac{0.1158 - 0.1883}{\sqrt{0.2996(\frac{1}{4} + \frac{1}{4})}}$$

$$= -\frac{0.0725}{0.3870}$$

$$= |0.1873|$$

$\therefore |T_{cal}| = 0.1873$

Critical Region : T_{tab} value at 1% level of significant for two tail test at 4+4-2=6 degree of freedom is 3.707.

Decision $T_{cal} < T_{tab}$ at 1% level of significant for two tail test at 6 degree of freedom. so Null hypothesis accepted. In other words, the average return on the share of banking industry is equal to market return.

Test of Hypothesis – ll

The second hypothesis is based on the test of significant for single mean (student's test)

Null Hypothesis (H_0) : $\bar{\ }$ = 1, i.e. average beta of the commercial bank is equal to l. In other words, there is no significant difference between the portfolio beta of commercial Bank and Market beta.

Alternative Hypothesis (H_1): $\bar{\ }$ ≠ 1, i.e. average beta of the commercial bank is not equal to l. In other words, there is significant difference between the portfolio beta of commercial Bank and the Market beta

Under the H_0 Test Statistics (t) is:

$$t = \frac{\bar{\beta}_{Bl} - 1}{\frac{S}{\sqrt{n}}}$$

Where,

$\bar{\beta}_{Bl}$ = 2.317864 weighted average of the beta of the commercial banks

(See details calculation on ANNEX-4)

S = 0.9946 Estimated population standard deviation

(See details calculation on ANNEX-5)

n= 4= sample Size

Hence,

$$t = \frac{2.317864 - 1}{\frac{0.9946}{\sqrt{4}}}$$

= 2.650

Critical Region: T_{tab} value at 1% level of significant for one tail test at 4-1=3 degree of freedom is 5.841.

Decision: $T_{cal} < T_{tab}$ at 1% level of significance for one tail test at 3degree of freedom. So, null hypothesis is accepted which means that the portfolio beta of the common stock of the commercial bank is equal to 1.

4.11 Major Findings of Study

- Expected return of NABIL stock is highest i.e.182.4% and HBL is lowest i.e. 33.39% among the two banks. The risk of NABIL has Highest i.e.207.5% and HBL have a risk 64.41%, so we can say that higher the risk higher the return and vice versa.
- The correlation of stock, return and market shows that all of banks stock are highly positive correlated with the market. The correlation values of common stock of two bank with the markets is nearly to equal +1 .stock of HBL is highest positive correlated which has a values of 0.8964 and HBL has a value of 0.8446.
- NABIL bank's beta of common stock is greater than 1.Beta greater than 1 implies that stocks more volatile than market or said to be aggressive stock. NABIL has the highest beta i.e. 2.8014 and HBL has the lowest beta i.e. 0.9716.
- HBL has a highest portion of undiversifiable risk i.e. 80.33% only 19.17% of its risk is diversifiable risk on total risk is diversifiable risk i.e. 71.317% only 28.68% of its risk on total risk is diversifiable risk.
- NABIL has highest portfolio return i.e. 8.5785% and highest portfolio risk i.e. 4.188% NABIL has invested its more funds on risky assets and fewer funds on risk free assets. So there exists highest risk as well return. The principle "higher the risk higher the return" is applied for it. Likewise, HBL has the lowest portfolio return i.e. 7.939% and portfolio risk 0.9327%. It has invested more of its fund in on risk free assets and least fund in risky market. The principle "no risk no return" is applied for it.
- Among two banks optimal return and risk shows that return of HBL is highest i.e. 170.84% and return of NABIL is lowest i.e. 117.33% and NABIL has a highest portfolio risk of i.e. 128.4% and HBL has a lowest portfolio risk of 58.55%.
- The first hypothesis is based on the test of significant of banking industry return and market has been formulated to test whether return on common stock of the banking industry is equal to market return or not. Thus over the study period, it was find null hypothesis is accepted at different level of significant, which mean that average return of common stock of commercial bank is equal to market return.
- The second hypothesis test is based on the test of significance of single mean (i.e. commercial bank beta and market beta) has been executed to test whether overall beta on common stock of commercial bank is equal to 1 (market beta) or not. Thus over the study period it was found that if the level of significance is 1% null hypothesis is

accepted, which mean that the portfolio beta of common stock of commercial bank is equal to 1.

CHAPTER V

SUMMARY, CONCLUSION AND RECOMMENDATION

This chapter summarize the whole study summary of the study has been mentioned in the first section. The second section reflects the conclusion drawn from the study. The third part is recommendation to enable the weakness drawback of concern banks and portfolio investment on the basic of finding and conclusion of the study.

5.1 Summary

The investment decision is one of the major functions of financial management. It depend upon two factors i.e. risk and return. Risk is the fluctuation of actual returns and expected return. Higher risk may have greater possible return. Investor attitude, perception and risk handling capacity also play essential role in rational investment decision.

The risk is involved in every step of return every investor wants a maximum return from minimum level of risk. So as to minimize the risk investor should diversify their investment by the means of portfolio.

The basic objective of portfolio management is to minimize. The risk at the given rate of return. Portfolio management is one of the changing tasks for every financial institution. Now a day there is very high competition in banking industry but very less opportunity to make on investment without proper management of portfolio any institution cannot compete effectively in market. Portfolio management of bank assets basically means allocation of fund to different degree of risk and varying rates of return in such way that it can balance the conflicting goal of maximum yield in minimum risk. Bank has to invest its resources in different productive sector of investment alternative to earn profit. Uncertainty of profit creates risk to an investor. So every investor has to diversify their investment indifferent sector to minimize risk. Diversification of assets on different sectors lowers the risk of portfolio.

The main objective of the study is to identify the situation of portfolio management of commercial banks of Nepal, analyze the risk return on common stock investment level of portfolio risk and return of commercial banks. While making an analysis and interpreting the data on portfolio various financial tools like holding period return, CAPM models. Portfolio performance measures etc and statistical tools like mean S.D coefficient of variation.

Covariance, correlation, coefficient of determination trend analysis etc have been used. Information are tabulated and presented as per the requirement of study. The data which are used in this study are mainly secondary nature. From this study it is fund that those investor who had made diversification on their investment in different sector have got a better result rather then investing in only one sector.

5.2 Conclusion

As per the objectives and analysis of study the following conclusion have been drawn:

- The stock price of two commercial banks is higher than NEPSE average price of stock. Stock price of two commercial banks are in fluctuating trend than NEPSE index.
- NABIL has the highest expected return than the HBL. So the investor can get the highest return by investing in common stock of NABIL.HBL has the lowest expected return but it has highest C.V.
- The correlation coefficient measure the degree of relationship of movement of stock return. Correlation coefficient always lies between +1 and -1. A value of +1 represent perfectly positive correlation and value -1 represent perfectly negative correlation. The two commercial banks correlation coefficient values are nearly to equal +1. So stock return are perfectly positive correlated with market.
- The beta itself measures the sensitivity of the stock's return with respect to the change in market return. Stock with beta greater then 1 is an aggressive stock because it is more volatile then the market portfolio. NABIL's beta of common stock is greater than 1.
- Coefficient of determination shows the proportion of systematic risk in total risk. Higher the systematic risk higher will be the coefficient of determination and vice versa. Among the banks HBL has a highest portion of diversified (unsystematic risk.). unsystematic risk can be eliminated by allocating the investment.
- All of commercial bank's required rate of return is less than expected rate return and are underpriced. Thus from the investor's point of view underpriced stock should be purchased so that long position strategy would be beneficiary. Higher will be the required rate of return and vice versa.
- The portfolio risk and return analysis shows that higher amount of investment in risky assets, highest will be return and the higher will be risk as well and vice versa.

Likewise higher amount invested in the risk free assets lower will be the return and lower will be the risk also and vice versa.

5.3 Recommendations

- Proper way of construction of portfolio will reduce considerable potential loss, which is defined in terms of risk. But portfolio is a dynamic job. For optimum portfolio select a stock having negatively correlated stock, positive correlated stock could not diversity the risk properly.
- NEPSE need to modernize the trading system and effective information channel. It needs to develop different program for private investor such as meeting and seminar indifferent subject matters.
- Lack of information with the regard to trading procedure in NEPSE also is a one of the causes of trading volume.
- The common stock returns of commercial bank are sensitive to Market. They are positively correlated to the market. So, market Condition should be analyzed.
- Return on portfolio of NABIL is less among the two bank so to increased its portfolio returns.NABIL should increased its more investment fund on risky assets(share & Debenture) and less fund on risk free assets (government securities)
- Expected rate of return is greater then required rate of return of all banks stock. So all of the stock is under prices, so stock of these banks should be purchased by an investor. Without proper analysis of individual securities industry and overall market, common stock investment will not be fruitful. To make investment fruitful, buy the under price common stock when market is rising and sale the over price common stock.
- The NABIL bank has highest un systematic risk. The management can eliminate the unsystematic risk. For which NABIL should take on some action to reduce its risk.
- Portfolio condition of bank should be regularly revised from time to time and should maintain the equilibrium in the optimal portfolio condition.
- The banks should always try to make continuous efforts to explore competitive and highly yielding investment opportunities to optimize its investment portfolio.
- Construction of portfolio is a dynamic job. Because efficient portfolio depends on market Movements. For construction of portfolio, select the stocks that the higher return with negatively correlated stocks. Positively correlated stock can not diversify the risk.

- Investment on common stock is risky job. It doesn't guarantee return and principle. So investor should be acquainted with associated risk and work out their attitude towards the riskiness' of various investment strategies.
- Generally, it is believed that higher the return, higher will be the risk. Investment risks are better covered through a large and diversified portfolio. Diversifying an investment is a way of reducing the risk

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ANNEX 1

ANALYSIS OF INDIVIDUAL BANKS

Analysis of Himalayan bank ltd.

Calculation of HPR, ER, S.D., C.V., COV ($r_j r_m$), cor ($r_j r_m$) and Beta of HBL

Fiscal year	MPS (P_t)	Total Div (D_t)	$R_0 = \frac{(P_t - P_{t-1}}{P_{t-1}}$	$(R_0 - \bar{R_0})$	$(R_0 - \bar{R_0})^2$	$R_m - \bar{R_m}$	$(R_m - \bar{R_m})^2$	$(R_m - \bar{R_m})(R_0 - \bar{R_0})$
2004/05	1505	840	-	-	-	-	-	-
2005/06	1100	639	0.15548	-0.1784	0.031826	0.16611	0.0259	-0.02874
2006/07	1740	807	1.3155	0.9816	0.96353	0.5798	0.3362	0.56913
2007/08	1980	817	0.5338	0.1999	0.03996	0.2201	0.0484	0.04399
2008/09	1760	367	0.07446	-0.2594	0.0673	-0.4107	0.1687	0.106535
2009/10	816	218	-0.41242	-0.7463	0.5569	-0.9127	0.8330	0.6811
Total			$\sum R_0$= 1.6698		$\sum (R_0 - \bar{R_0})^2$ = 1.6595		$\sum (R_m - \bar{R_m})$ =1.412	$\sum (R_m - \bar{R_m})(R_0 - \bar{R_0})$ = 1.3720

$\bar{R_0} = \frac{\sum R_0}{n} = \frac{1.6698}{5}$ =0.3339

Varσ_0^2 = $\frac{\sum (R_0 - \bar{R_0})^2}{n-1} = \frac{1.6595}{5-1}$ = 0.41487

Standard deviation σ_0 = $\sqrt{0.41487}$ = 0.644107

C.V = $\frac{\sigma_0}{\bar{R_0}} = \frac{0.644107}{0.3339}$ = 1.9290

Cov(R_0, R_m) = $\frac{\sum (R_m - \bar{R_m})(R_0 - \bar{R_0})}{n-1} = \frac{1.37206}{5-1}$ = 0.3430

Cor (R_0, R_m) = $\frac{cov(R_0 R_m)}{\sigma_0 \sigma_m} = \frac{0.3430}{0.644107 \times 0.55941}$ = 0.8963

$\beta_0 = \frac{cov R_0 R_m}{\sigma_m^2} = \frac{0.3430}{0.3530}$ = 0.9716

Analysis of NABIL Bank Ltd.

Calculation of HPR, ER, S.D., C.V., CC), cor ($r_j r_m$) and Beta of NABIL

Fiscal year	MPS (P_t)	Total Div	$R_1 = \frac{(P_t - P_{t-1} + D_1)}{P_{t-1}}$	$(R_1 - \bar{R_1})$	$(R_1 - \bar{R_1})^2$	$R_m - \bar{R_m}$	$(R_m - \bar{R_m})^2$	$(R_m - \bar{R_m})(R_1 - \bar{R_1})$

		(D_t)						
2004/05	1505	-	-	-	-	-	-	-
2005/06	2240	4377	3.3967	1.5727	2.4734	0.16611	0.0259	0.25336
2006/07	5050	7485	4.5959	2.7719	7.6834	0.5798	0.3362	1.60714
2007/08	5275	4959	1.0265	-0.7975	0.6360	0.2201	0.0484	-0.1755
2008/09	4899	2026	0.3128	-1.5112	2.2837	-0.4107	0.1687	0.6206
2009/10	2384	1465	-0.2143	-2.0383	4.1546	-0.9127	0.8330	1.86035
Total			$\sum R_1$= 9.1176		$\sum(R_1 - \bar{R_1})^2$ = 17.2311		$\sum(R_m - \bar{R_m})^2$ =1.412	$(R_m - \bar{R_m})(R_1 - \bar{R_1})$ = 4.1659

$\bar{R_1} = \frac{\sum R_1}{n} = \frac{9.1176}{5}$ =1.824

Varσ_1^2 = $\frac{\sum(R_1 - \bar{R_1})^2}{n-1} = \frac{17.2311}{5-1}$ = 4.3077

Standard deviation σ_1 = $\sqrt{4.3077}$= 2.0755

C.V = $\frac{\sigma_1}{\bar{R_1}} = \frac{2.0755}{1.824}$ = 1.1378

Cov(R_1, R_m) = $\frac{\sum(R_m - \bar{R_m})(R_1 - \bar{R_1})}{n-1} = \frac{4.1659}{5-1}$ = 1.0414

Cor (R_1, R_m) = $\frac{cov(R_1 R_m)}{\sigma_1 \sigma_m} = \frac{1.0414}{2.0755 \times 0.5941}$ = 0.8446

β_1 = $\frac{covR_1R_m}{\sigma_m^2} = \frac{1.0414}{0.3530}$ = 2.95014

EX 2

Analysis of Market

Fiscal Year	INDEX	R_m	$(R_m - \bar{R_m})$	$(R_m - \bar{R_m})^2$
2005/2006	386.83	0.34939	0.1611	0.0259
2006/2007	683.95	0.7681	0.5798	0.3362
2007/2008	963.36	0.4085	0.2201	0.0484
2008/2009	749.10	-0.2224	-0.4107	0.1687
2009/2010	477.73	-0.3622	-0.9127	0.8330
Total		$\sum R_m$=0.9414		$\sum(R_m - \bar{R_m})^2$ = 1.4122

$R_m = \frac{\sum R_m}{n} = \frac{0.9414}{5} = 0.18838$

$Var_m(\sigma_m^2) = \frac{\sum(R_m - R_m)^2}{n-1} = \frac{1.4122}{5-1} = 0.3530$

S.D.$(\sigma_m) = \sqrt{0.3530} = 0.5941$

C.V. $= \frac{\sigma_m}{R_m} = \frac{0.5941}{0.1883} = 3.1553$

Weighted Average Treasury Bill rate(364)

Fiscal Year	Average Rate(in %)
2005/2006	6.9604
2006/2007	7.275
2007/2008	7.3556
2008/2009	8.1312
2009/2010	9.062

Source: NRB

$= \frac{6.9604 + 7.275 + 7.3556 + 8.1312 + 9.062}{5}$

= 7.757

ANNEX 3

Weight of Individual Banks

Individual Amount on Stocks and Government Securities of HBL

Fiscal Year	R_f(Government securities in million)	W_{rf}	R_m (*Share and Debenture in million*)	W_m	Total investment (million)
2005/2006	4565.3	0.9916	38.5674	0.0084	460.87
2006/2007	6079.4	0.9881	73.4238	0.0119	6152.82
2007/2008	7166.5	0.9877	89.56	0.0123	7256.06
2008/2009	3907.3	0.9765	93.88	0.0235	4001.18
2009/2010	3455.30	0.9777	78.88	0.0223	3533.91
Total		4.9216		0.0784	

$W_{rf_0} = \frac{\sum W_{rf}}{n} = \frac{4.9216}{5} = 0.9843$

$W_{m_0} = \frac{\sum W_m}{n} = \frac{0.0784}{5} = 0.0157$

$R_{p_0} = (R_f \times W_{rf0}) + (R_m \times W_{m0})$

$= (7.757 \times 0.9843) + (18.838 \times 0.0157)$

$= 7.9309$

$\sigma_{P0} = W_{m0} \times \sigma_m$

$= 0.0157 \times 59.41$

$= 0.9327$

Total Risk = Systematic Risk + Unsystematic Risk

$\sigma_0^2 = \beta_0^2 + \sigma_m^2 + \text{Var}(e_0)$

$0.4148 = 0.9716^2 \times 0.3530 + \text{Var}(e_0)$

$\text{Var}(e_0) = 0.2377$

Coefficient of determination $(\beta_0^2) = \frac{\text{Systematic Risk}}{\text{Total Risk}} = \frac{\beta_0^2 \times \sigma_m^2}{\sigma_0^2} = \frac{(0.9716)^2 \times 0.3530}{0.4148}$

$= 0.80336$

Investment Amt. on stock and Government Securities of NABIL

Fiscal Year	R_f(Government securities in million)	W_{rf}	R_m (*Share and Debenture in million*)	W_m	Total investment (million)
2005/2006	1222.468	0.9965	4.192	0.0034	1226.66
2006/2007	4085.84	0.9343	286.95	0.0656	4372.79
2007/2008	3788.38	0.9214	323.256	0.0863	4111.63
2008/2009	1838.82	0.8382	354.93	0.1417	2193.75
2009/2010	5865.88	0.9442	346.85	0.0558	6212.73
Total		4.6346		0.3651	

$W_{rf_1} = \frac{\sum W_{rf}}{n} = \frac{4.6346}{5} = 0.9269$

$W_{m_1} = \frac{\sum W_m}{n} = \frac{0.3651}{5} = 0.0705$

$R_{p_1} = (R_f \times W_{rf_1}) + (R_m \times W_{m1})$

= (7.757×0.9269) + (18.838×0.07052)

= 8.518

$\sigma_{p1} = W_{m1} \times \sigma_m$

= 0.07052×59.41

=4.188

Total Risk = Systematic Risk + Unsystematic Risk

$\sigma_1^2 = \beta_1^2 + \sigma_m^2 + \text{Var}(e_1)$

$4.3077 = 2.95014^2 \times 0.3530 + \text{Var}(e_1)$

$\text{Var}(e_1) = 1.235$

Coefficient of determination$(\beta_1^2) = \frac{\text{Systematic Risk}}{\text{Total Risk}} = \frac{\beta_1^2 \times \sigma_m^2}{\sigma_1^2} = \frac{(2.95014)^2 \times 0.3530}{4.3077}$

= 0.7132

ANNEX 4

Portfolio Performance Measure

Calculation of Sharpe's Portfolio Performance Measure

Banks	$\bar{r}_p$	σ_p	$S_p=\frac{\bar{r}_p-r_f}{\sigma_p}$
HBL	7.9309	0.9327	0.1894
NABIL	8.5185	4.188	0.1818

Where,

r_f = 7.757

Calculation of Treynor's Portfolio Performance Measure

Banks	B_i	Market Capitalized	W_p	$b_p = B_p \times W_p$	$\bar{r}_p$	$T_p = \frac{\bar{r}_p - r_f}{b_p}$
HBL	0.9716	12824.371	0.32	0.310912	7.9309	0.56
NABIL	2.95014	27393.052	0.68	2.00695	8.5185	1.12
Total				2.317864		

Where

r_f = 7.757

Total weighted average beta = $\sum W_p \beta_p$ = 2.317864

Thus, the weighted average of selected commercial bank's (β_{BI}) = 2.317864

Calculation of Jenson's Portfolio Performance Measure

Banks	$\bar{r}_p$	$b_p = B_p \times W_p$	$J_p=r_p-r_f+(r_m-r_f)b_p$
HBL	7.9309	0.310912	3.7172
NABIL	8.5185	2.00695	22.39

Where

r_f = 7.757

$\bar{r}_m$ = 18.83

ANNEX 5

Calculation of Realized rate of return, Standard deviation and Variance of banking Industry

Fiscal Year	Banking Index	$R_{BI} = \frac{B_1 - B_0}{B_0}$	$(R_{BI} - \bar{R}_{BI})$	$(R_1 - \bar{R}_1)^2$
2005/2006	404.16	-	-	-
2006/2007	789.21	0.9527	0.8369	0.7004
2007/2008	985.65	0.2489	0.1331	0.0177
2008/2009	780.87	-0.2078	-0.3236	0.1047
2009/2010	456.93	-0.4148	-0.5306	0.2815
Total		0.5790		1.1043

Expected Return of Banking Industry ($\bar{R}_{BI}$) = $\frac{\sum R_{BI}}{n} = \frac{0.5790}{5}$ =0.1158

Standard Deviation (σ_{BI}) = $\sqrt{\frac{\sum(R_{BI} - \bar{R}_{BI})^2}{n-1}} = \sqrt{\frac{1.1043}{5-1}}$ = 0.5254

Variance (σ_{BI}^2) = $(0.5254)^2$ = 0.2730

Calculation of estimated population standard deviation of beta

Banks	Beta (β_i)	$(\beta_i - \bar{\beta}_i)$	$(\beta_i - \beta_i)^2$
HBL	0.9716	0.0107	0.00014
NABIL	2.95014	1.9895	3.9571
Total	3.92174		3.9572

We have,

Average Beta Coefficient, $(\bar{\beta}_i)$ = $\frac{\sum \beta i}{n} = \frac{3.92174}{4}$ = 0.9609

Standard Deviation of Beta S = $\sqrt{\frac{\sum(\beta_i - \bar{\beta}_i)^2}{n-1}} = \sqrt{\frac{3.9572}{5-1}}$ = 0.9946

Estimated Standard Deviation of population = 0.9946