CHAPTER-ONE

INTRODUCTION

1.1 Background of the Study

Bank sector is the most dynamic part of economy which collects idle funds and mobilizes it in needed areas. It is the heart of trade, commerce and industry. Efficient utilization of available resources appreciates the wealth position of individual as well as nation which can be possible any at integrated and speedily condition when competitive banking and financial service reaches nook and corners of the country i.e. without development of banking sector economic development of nation cannot be imagined. Only successful banks can be stable in the country which is very challenging task.

According to Crowther, G. "A bank is an institution, which collects money from those who have it spare or who are saving it out of their income and lend this out to those who require it."

Commercial banks are those banks, which pool together the saving of the community and arrange them for the productive use. They accept deposits from the public and provide same deposit to the public as loan. commercial banks plays a most important role in the economic development of the nation. Without economic development we cannot get a certain economic growth rate. Commercial banks are working under recommendation of Nepal Rastra Bank and main objective of commercial banks is to develop economic status of the country by providing banking habit in community. A commercial bank must mobilize its deposits and other funds to profitable, secured, stable and marketable sectors. Investment policy provides several inputs to the bank though which they can handle their investment operation

efficiently ensuring maximum return with minimum risk which ultimately leads the bank to the path of success. The success of the commercial bank heavily depends upon the proper management of investment.

Commercial bank is a corporation which accepts demand deposits subject to check and makes short term loans to business enterprise, regardless of the scope of its other service (Fisher and Ronald, 2000).

Commercial bank can be defined as a bank which operates currency exchanges transactions, accepts deposits, provides loan and performs dealing relating to commerce except the banks which have been specified for the co-operative, agricultural, industry of similar other specific objective (Commercial Bank Act, 2031).

Portfolio is simply defined as a combination of asset or collection of securities gathered to achieve certain investment goals. In other word investment in two or more securities is called portfolio. Portfolio management is the process of selecting a bundle of securities that provides the investing organization a minimum yield for a given level of risk. It aims to determine appropriate assets which attains optimal level of risk and return. Technically it is known as efficient portfolio or superior portfolio.

Thapa and Koirala (2006), defined "Portfolio is the combination of investment in financial assets. The portfolio is the holding of securities and investment in financial assets i.e. bonds, stock. Holding securities of different companies is called portfolio investment".

Alexandra, Sharpe and Bailey (2003), explained "Portfolio construction involves identifying those specific assets in which to invest as well as determining the proportions of the investor's wealth to put into each one".

Gitman (1988), described "Portfolio means a collection of group of assets."

Weston and Brigham (1992), mentioned "A portfolio simply represents the practice among investors of having their funds in more than one asset. The combination of investment asset is called portfolio."

Portfolio theory deals with the selection of optimal portfolios: that is portfolio provides the highest possible return for any specified degree of risk or the lowest possible risk for any specified return. Portfolio management can also be taken as risk and return management. Portfolio management concern itself with selecting goods, stocks or bonds are fading. Portfolio management of bank asset basically means allocation of funds to different components of banking assets having different degree of risk and carrying rates of return in such a way that balance the conflicting goal of maximum yield and minimum risk. The emphasis of the portfolio management varies from investor to investor. some investing companies may desire higher earnings, other capital gain and still other a combination of both. Despite this variation, there are several objectives which should be considered as basic to a well executed investment program.

In the process of portfolio management of bank assets, various factors such as: availability of fund, liquidity requirement, central banks' norms etc are to be considered. As the task of portfolio management of bank asset is to be carried out within the given macroeconomic environment. The manager should carefully watch related macroeconomics indicators such as interest rate, inflation, monetary aggregates, national income, saving ratio etc. Portfolio should comprise such securities as may assure the investor a fair and stable return on the investment. Which considering the income factor, it would be pertinent to taken to account the rate of interest of dividend rate, which the securities carry tax

exemption benefit, loss or gain if any at the time of redemption. Another objective of sound portfolio management is marketability. Marketability refers to the ability to buy or sell a security easily and quickly.

Portfolio regarding management of investment portfolio may different from company to company. Here are some of the more common types of policies that are usually followed in the portfolio management will be discussed. They are aggressive policy, defensive policy, income policy, growth policy etc. Aggressive policy greater emphasis placed on yield of securities. According to this policy investment portfolio is predominantly composed of common stock. The basic assumption of this policy is that market is strong and raising those common stock will be best for the portfolio in a rising market. Second policy is defensive policy. According to this policy securities that resist a decline in price and favoured under this policy for inclusion in the portfolio. Bond and preferred stocks are defensive type of securities. Aggressive and defensive policy suggests for the construction of a balanced portfolio comprising various types of securities.

1.2 Focus of the Study

Every investment entails some degree of risk; the growth of wealth is possible only when investment is made in some profitable sector expecting the future return. The risk and return are the most crucial factors for making investment decision. Every rational investor attempts maximize return and minimize risk. For the purpose, the investor must understand the concept and measures of risk and return as well as must have knowledge about portfolio investment.

There are 32 commercial banks operating in Nepal. This research is focus on the study of portfolio analysis of five commercial banks listed under 'A' groups companies in NEPSE. For the purpose of the study 10

years data of five commercial banks out of 32 'A' group commercial banks has taken from fiscal year 2002/2003 to 2011/12.

1.3 Statement of the Problem

Nepal is a developing country in the world. The main cause of under development is lack of capital formulation and it proper implementation. After the restoration of democracy, Nepal has adopted more liberal and open economic policies. The open and liberal policy of government in financial sector has helped in establishing many banks and financial institution in the country. But the financial institution of Nepal are interested to invest in less risky sector i.e. treasury bills, government securities, national saving, development bonds etc. Due to the lack of portfolio management, funds are used only on short terms basis and in limited areas. The economic condition and development of country is accelerating slowly since many years. So, it seems to be the major problem of country because without the development of a country the economic status of people cannot be raised. In this situation commercial banks have to bar more responsibilities to avoid above problem.

Due to the sound investment policy of commercial banks and lack of portfolio management Nepalese commercial banks have not formulated their investment policy in an organized manner. They do not have consideration towards portfolio optimization. They just relay upon the instructions and guideline of Nepal Rastra Bank. They do not have their own clear vision towards investment portfolio. They do not try to pay due attention towards proper matching of the deposit and investment portfolio, which creates financial problem enforcing commercial banks to take wrong decision.

Portfolio management activities of Nepalese commercial banks are in developing stage. There are various reasons behind not using such

activities openly by commercial banks such as awareness about portfolio management and its usefulness hesitation of taking risk, lack of proper techniques to run such activities in the best and successful manner, less developed capital market etc. Banking competition is increasing day by day but investment opportunity is not comparatively extended. The present commercial banks, portfolio management of commercial banks in study will try to analyze the investment of their investment, portfolio risk and return. So this study seeks to find out the following question:

- What is the relationship of investment and loan with total deposit?
- How does bank portfolio behave?
- What is the risk and return ratio of commercial banks?
- Which banks has largest portfolio return?
- Which banks has the largest degree of financial risk measured in term of portfolio risk?
- Is portfolio management efficient on Nepalese commercial banks?
- What is the trend of investment into different sectors?

1.4 Objectives of the Study

The main objective of the study is to identify the situation of portfolio management of commercial banks of Nepal. The specific objectives of the study are as follows:

- To analyze the investment, loans and advance portfolio of commercial banks.
- To analyze risk and return ratio of commercial banks.
- To evaluate comparative financial performance of selected commercial banks under study.
- To find out trend of investment in to different sectors.

1.5 Significance of the Study

The success and prosperity of any organization or institution relies heavily upon the successful investment of its available resource in to the profitable sector. Successful formulation and effective implementation of investment policy is the prime requisition for the successful performance of any organization. The main significance of this study of investment portfolio analysis of Nepalese commercial banks is to help the methods of minimization or risk and maximizing return through portfolio analysis. This study is significant in following ways.

- It analyzes risk and return of commercial banks.
- It examines the existing situation of portfolio management of Nepalese commercial banks.
- It evaluates the financial performance of selected commercial banks of Nepal.
- It examines the investment, loan and advance portfolio of commercial banks.

1.6 Limitations of the Study

This study is conducted for the partial fulfillment of the requirement for the Master Degree in Business Studies. Some deficiencies may be found in this study due to various limitations. The limitations of the study are as follows.

- The study is only based on secondary data consequently the result depends on the reliability of secondary data.
- The study only covers a period of 10 fiscal years from 2002/03 to 2011/12.
- This study concentrates only on those factors, which are related with portfolio analysis.

- The study is basically concern with portfolio investment management of listed commercial banks.
- Among the various listed commercial banks in Nepal, the study is only concern on 5 listed commercial banks which are Standard Chartered Bank Ltd., Nepal Investment Bank Ltd., Nabil Bank Ltd., Himalayan Bank Ltd. and Nepal SBI Bank Ltd.

1.7 Organization of the Study

This study is presented according to research structure prescribed by the faculty of management. The research has been categorized into five different chapters. They are as follows:

Chapter 1: Introduction

The first chapter is introduction. This chapter deals with the introduction that includes background of the study, focus of the study, statement of the problem, objectives of the study, significance of the study, limitations of the study and organization of the study.

Chapter 2: Review of Literature

This chapter deals with the review of available literature in the field of the study being conducted. This chapter includes conceptual review, review of popular models of portfolio, review of journals and articles and review of previous thesis.

Chapter 3: Research Methodology

This chapter explains the research methodology used in study, which includes research design, population and sample, data processing and analysis, sources of data, data collection techniques and data analysis tools.

Chapter 4: Data Presentation and Analysis

This chapter is the major part 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.

Chapter 5: Summary, Conclusion and Recommendation

The final chapter includes the summary, conclusion and recommendation. This chapter is suggestive to all concern in accordance of analysis and interpretation of data.

Besides these acknowledgement, table of contents, list of tables, list of figures, abbreviations are included in the front part of this thesis report. Similarly, bibliography and annexure will also present at the end of this thesis.

CHAPTER-TWO

REVIEW OF LITERATURE

This chapter is basically concerned with review of related literature relevant to the topic "A Study on Portfolio Analysis of Commercial Banks" Only the relevant literatures have been reviewed. Every possible effort has been made to grasp knowledge and information that are available from libraries, basic academic financial book, Nepal Rastra Bank, Nepal Stock Exchange Centre, some web sites, concern commercial banks and related studies of some major researches.

There is lack of enough information related with this topic published in Nepal. So, the present study has to refer almost book related with this topic published in foreign countries. This chapter helps to take adequate feedback to broaden the information base and inputs to the study.

2.1 Conceptual Review

The conceptual of portfolio management basically based upon popular Slogan "Don't put your all eggs in the one basket." i.e. portfolio simply deals diversification. So, it is clear that, minimization of risk and to maximize the return of investment is possible only through investment in a more than two securities. Portfolio management is method of selecting a bundle of securities that provides the investing organization a maximum yield for a given level of risk. It can be also taken as risk and return assets mix which attain optional level of risk and return.

Assets of bank can be broadly classified into investment and loans and advance. Portfolio allocation of fund to different components of banking assets having different degree of risk and different rates of return in a such way that balance the conflating goal of maximum yield and

minimum risk. when the process of portfolio management of bank assets are done various factor such as, central bank's policy, availability of fund, liquidity requirement etc. are to be considered. As the task of portfolio management of bank assets is to be carried out within the given macro-economic environment. The manager should carefully watch related macro-economic should indicators such as interest rate, national income, saving ratio, inflation monetary aggregates etc.

Portfolio invest refers to an investment that combines several assets. The modern portfolio theory is explain the relationship between assets risk and return. The theory is founded on the mechanics of measuring the effect of an asset on risk and return of portfolio. Portfolio investment assumes that the mean and variance of return are the only two factors that the investor cares. Based on this assumption, we can say that rational investor always prefers the highest possible mean returns for a given level of risk or the lowest possible level of risk for a given amount of return. Portfolio technically known as efficient portfolio, is a superior portfolio. The efficient portfolios not only do the function of risk and return of individual asset but also the effect of relationship among the asset on the sum total of portfolio risk and return. The portfolio return is straight weighted average of the variances of return of individual assets. The portfolio risk is affected by the variance of return as well as the covariance between the return of individual assets included in the portfolio and their respective weights (Pradhan, 1992).

Portfolio analysis considers the determination of future risk and return in holding various blends of individual securities. Portfolio expected return is a weighted average of the expected return of individual securities but portfolio variance is sharp contrast, can be something less than a weighted average of security variance. As a result an investor can something reduce portfolio risk by adding another security with greater individual risk then any other securities in the portfolio. The seemingly

curious result occurs because risk greatly on the covariance among returns of individuals securities (Bhalla, 2001).

The aim of portfolio management is to achieve the maximum return from a portfolio which has been delegated to be managed by an individual manager or financial institution. The manager has to balance the parameters which define a good investment i.e. security, liquidity and return. The goal is to obtain the highest return for the client of managed portfolio. Portfolio analysis is to develop a portfolio that has a maximum return at whatever level of risk the investor seems appropriate (Cheney and Mosses, 1992).

2.1.1 Basic Assumptions of Portfolio Analysis

Portfolio analysis is based on following assumptions:

- Investor estimates risk on the basis of variability of expected return.
- For any given level of risk investors prefer higher returns to lower returns for any given level of rate of return. Conversely for any given level at rate of return, investors prefer less risk over more risk.
- Investors are willing to base their decisions slowly in terms of expected return and risk. That is utility (U) is a function of variability of return (S.D) and expected return E (r). symbolically, U = f [E (r)]
- All investors consider each investment alternative as being represented by the probability distribution of expected returns over some holding period.
- All investors maximize one period expected utility and possess utility curve which demonstrated diminishing marginal utility of wealth. This implies that investors visualize each investment

opportunity as being represented by a probability distribution of addition to there terminal wealth ((Francis and Archer, 1979).

2.1.2 Objectives of Portfolio Management

Several objectives have to be considered to become an executive investment program. The objective of portfolio analysis is to develop a portfolio that has a maximum return at any level of risk where the investor seems appropriate. We can point out the following objective are the main objectives of portfolio management.

- To minimize the risk and maximize the return.
- To ever liquidity.
- To easy marketability of asset.
- To increase capitalization.
- The safe and secured investment.
- Stable income.
- Getting income by the way of interests and dividends.
- Tax benefit.

2.1.3 Portfolio Management Policies

The portfolio management policies may different from company to company. Some common types of policies of portfolio management used are follows.

A. Aggressive Policy

This policy gives more emphasis on yields of securities. This policy assumes that if the market is strong and rising, the common stocks will be best outlets for the portfolio in rising, market. This policy depends more on short-term source of fund.

B. Defensive Policy

This policy gives more emphasis on safety of principal amount. This policy will be useful when it is suspected that the market will decline in near future. Bonds and preferred stocks are defensive types of securities. This policy depends more upon long-term source of fund.

C. Moderate Policy

This policy suggests for the construction of balanced portfolio of different types of securities. It is the hedge of aggressive and defensive policy or hedge against a rise or fall in the stock market.

D. Income Vs Growth Policy

The income policy gives more emphasis on maximization of current income and attaches insignificant importance to capital gain and growth. The growth policy gives more emphasis on the capital appreciation of the portfolio.

2.1.4 Factors Affecting Investment Portfolio Decision

A) Amount of Investment

While determining the investment portfolio the financial manager should consider the amount of fund available with organization. Trading and manufacturing organization deals in securities only for the purpose of best utilization of their available surplus each resource. The amount of surplus funds available with them will decide the quantum of their investment in securities.

B) Timing of Purchase

To maximize the profit, it is not only important for the financial manager to buy the right security but equally important to buy and sell it at the right time. It is the most complex decision for financial managers.

C) Objective of Investment Portfolio

While determining the investment portfolio there should be clear objective on investment in securities. The objective may differ from organization to organization. However, an organization, looking for investment of provident fund of its employees can invest only in such securities, which can assure the safety fund and its return.

D) Selection of Investment

This is an essential decision to be taken by a financial manager for investing the assets. The selection of investment involves on assuring the type of securities, proportion between fixed and variable yield securities, selection of industries, selection of companies etc. (Maheshowari, 1997).

2.1.5 Features of a Investment Policy

The income and profit of the bank is depends upon its investment policy of its funds in different assets. A investment policy is not only the prerequisite for bank's profitability, but also crucially significant for the promotion of commercial saving of a financially developing country like Nepal. Some features of investment policies are as follows.

) Diversification

Diversification is the important tool to control portfolio risk or to minimize the risk at the same level of return. Diversification means scared investment in more than one securities. So diversification plays vital role in portfolio management. Diversification is essential to the creation of an efficient investment because it can reduce the variability of returns around the expected return. It is based on important slogan that is "Don't put your all eggs in the one basket". There are various types of diversification such as: simple diversification, superfluous

diversification, Markowitz diversification and diversification across industries.

- **Liquidity**

An investment which is easily marketable without loss of money and without loss of time is said to pose liquidity. So we can say that liquidity is the ability of a firm to repay the money when needed. If bank can't repay the depositors. People do not trust the bank and goodwill of bank will decreases. It will negatively affect the bank. So liquidity should be taken into consideration during the investment.

- **Legality**

A commercial bank must follow the rules and regulation as well as different directions issued by the Nepal Rastra Bank and Ministry of finance while mobilizing its funds. Because illegal securities will bring out many problems for investor.

- **Profitability**

A commercial bank can only maximize its volume of health if it maximize the return on its investment. So the banks must invest their funds where maximum profits could be gained.

- **Safety and Security**

Banks will only be successful when it considers safety and security during the investment. Safety indicate good investment policy and security indicate amount of investment never be loss. Bank should accept such types of securities which are commercial, durable, marketable and high market prices. But bank should never invest its funds in those securities which are more depreciation and fluctuation because a little difference may cause great loss.

2.1.6 Portfolio Return

The additional gain on investment is called return. Total return of all individual investment affected by its individual weight (percentage of invested amount) is called portfolio return." The expected return of the portfolio is the weighted average of the expected returns of the individual assets in the portfolio. The weights are proportion of the investors wealth invested in each asset, and sum of the weight must be equal one" (Cheney and Mosses, 1992). The expected return of a portfolio depends upon the amount of funds invested in each security, given expected return on the individual securities. The expected rate of return on the portfolio is calculated as:

$$\bar{R}_P = W_A . \bar{R}_A + W_B \bar{R}_B + ... + W_N \bar{R}_N$$

Where,

$\bar{R}_P$ = Expected Portfolio Return

W_A = Weight of investment invested in asset 'A'

W_B = Weight of investment invested in asset 'B'

$\bar{R}_A$ = Expected return for asset 'A'

$\bar{R}_B$ = Expected return for asset 'B'

2.1.7 Portfolio Risk

The portfolio risk cannot be calculated easily in comparison with the portfolio return because portfolio risk is affected by weighted of investment and also correlation of respective assets or covariance of respective assets. So to find out portfolio risk first of all risk of individual assets, correlation or covariance between respective assets

must be calculated. "The portfolio risk is affected by the variance of return as well as the covariance between the return of individual assets included in the portfolio and respected weight" (Pradhan 1992). The variance of return from portfolio made up on asset is define by following equation.

$$\exists_P^2 XW_A^2.\exists_A^2 + W_B^2\exists_B^2 + 2CoV(r_A r_B)\, W_A W_B$$

$$\exists_P = \sqrt{W_A^2.\exists_A^2 + W_B^2\exists_B^2 + 2CoV(r_A r_B)\, W_A W_B}$$

Where,

$\exists_P$= Standard deviation of portfolio rate of return

CoV ($r_A r_B$) = Covariance of return between asset A and B

The Covariance is equals to correlation coefficient as shown in equation:

CoV ($r_A r_B$) = $\partial AB\ \exists A \exists B$

∂_{AB} = Correlation coefficient between asset A and B

$\exists_A^2$ = Variance of Asset 'A'

$\exists_B^2$ = Variance of Asset 'B'

2.1.8 Sources of Risk

Risk is the deviation between actual return and expected return. Some source of risk are as follows:

- **Management Risk**

The effect on expected return or chances of losing by the cause of management activities is known management risk.

- **Political Risk**

Total variability of return on stock caused by political issue is known as political risk. The political word indicates both internal policies of company as well as the nation for example labour strike, bonus distribution and violence in country, change of government etc.

- **Interest Rate Risk**

If risk is creating return due to change (increasing or decreasing) in interest rate at market, it is called interest rate risk. If there is the risk of market interest rate, then the values and market prices of an investment will fall, and vice-versa.

- **Liquidity Risk**

If investor want quickly to sale or buy the assets at certain time, then there will be the height fluctuation in the price of an assets or the selling price becomes different from marginal price. Due to this reason liquidity risk is created. Liquidity risk is depended upon investor behavior.

- **Purchasing Power Risk**

The variability in purchasing power of an investor due to inflation is called purchasing power risk. Inflation is the decreased rate of capacity of purchasing price. Inflation is calculated by consumer index.

- **Bull Bear Risk**

Market price of securities is affected by different sources. So there may be the fluctuation of increasing and decreasing in price trend of stock. If price of securities is in increasing trend from low point fairly, it is called bull risk and if price of securities is fairly decreasing from upper point then it is called bear risk.

2.1.9 Terminology used in Portfolio

Various variables have been included to analyze the portfolio analysis. Among them some variable are being explained as follows:

Beta Coefficient

The measure of the stock's sensitivity to market fluctuations is called it beta coefficient. The beta coefficient for market portfolio is supposed to be equal to 1.0. It represents average risk for respective securities, more than 1 beta represents more than average risk of respective assets and vice-versa. "The beta of a portfolio is simply a weighted average of the individual stocks betas in the portfolio. Also it is a simple slope of the characteristic line. The beta of stock represents its contribution to the risk of a security market line (SML)" (Van Horne and Wachowicz, 1996). Beta is a key element of the CAPM. The equation for the CAPM is,

$$E(R_j) = R_F + (\bar{R}_M - R_F)\ \beta_j$$

Where,

$E(R_j)$ = Expected rate of return for an asset.

R_F = Risk free rate of return.

$\bar{R}_M$ = Expected market rate of return.

β_j = Beta of asset.

Security Market Line (SML)

The SML is a graphic presentation of CAPM. It is a straight line that reflects the required rate of return from a security for each given level of non-diversifiable risk. SML describe the relationship between an

individual securities expected return and its systematic risk as, measured by beta. In market equilibrium, all securities lie on the SML. The securities lying above SML is considered to securities and sell overpriced securities." The SML is a straight line connecting the risk-free point and the average market return. Since the risk premium is proportion of stock beta, the risk free securities, such as the treasury bills which have zero risk, command no premium (Pradhan, 2004).

Characteristic Line

A line which describe the relationship between an individual securities return and return on the market portfolio is called characteristic line. It depicts the expected relationship between excess return of the stock and excess for the market portfolio. The expected relationship may be based on the past experience in which case actual excess returns for the stock and for the market portfolio would be plotted on the graph and a regression line best characterizing the historical relationship would be drawn. The slope of this line is beta. (Vanhorn and Wachowitz, 1996).

Total Risk

The total variation of the rate of return for an individual securities as measured by the standard deviation or variance of the rate of return is called total risk. According to CAPM, total risk is divided into two parts. They are systematic and unsystematic risk (Thapa, 2001).

Systematic Risk

Systematic risk is the part of total risk. It is also called market risk or non diversifiable risk or unavoidable risk or irremovable risk or beta risk. It cannot be avoided Systematic risk is created due to external factors like; economic, political, sociological environment. Thus, undiversifiable risk is caused by such factors, which systematically

affect all firm such as: war, inflation, recession, interest rate policy, corporate tax rate policy.

Systematic risk or undiversifiable risk is a function of its covariance with market portfolio of all assets divided by the variance of the market portfolio (Weston and Copeland, 2003). Un-diversifiable risk can be measured by beta coefficient. Beta represents the degree of systematic risk due to underlying movement of security prices.

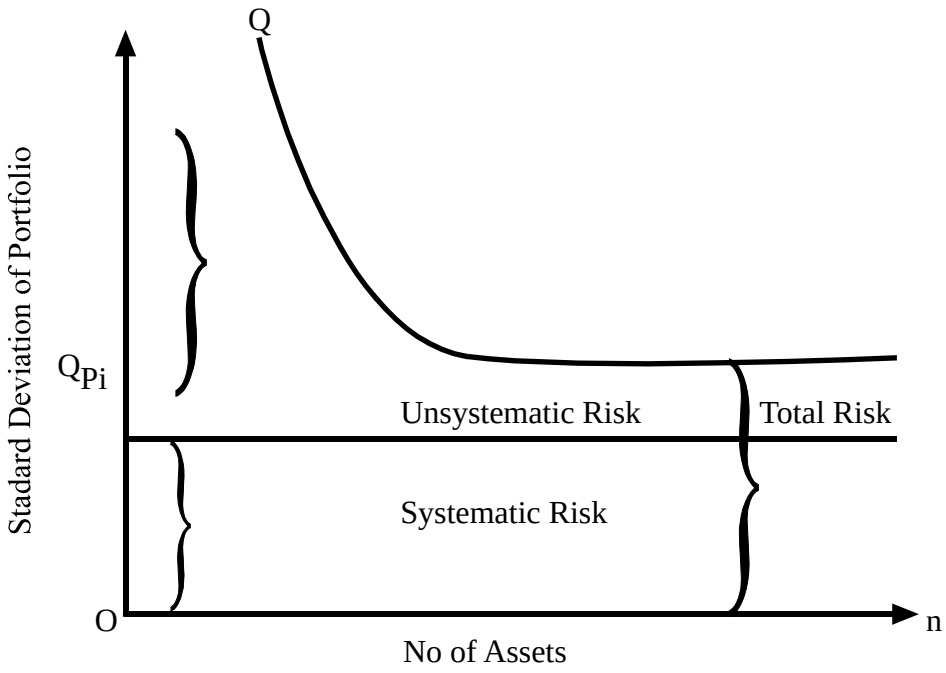
Unsystematic Risk

It is also called non-market risk or removable risk or diversifiable risk or avoidable risk or company specific of eliminated through diversification. "Unsystematic risk or diversifiable risk is the portion of the total risk which is unexplained by overall market movements. Since it happens due to internal causes, it is diversifiable by increasing the efficiencies and effectiveness for the productivity of the organization. This kind of risk is diversifiable risk as more and more securities are added to a portfolio, various, studies suggest that 15 to 20 stocks selected randomly are sufficient to eliminate most of the unsystematic risk of a portfolio" (Van Horne, 1997).

Some sources of unsystematic risk are management error, inventories, labour strike, successful and unsuccessful market program, shift in customers taste the winning and losing of major contracts and advertising campaigns.

Figure No. 2.1

Risk and Diversification



Source: (Van Horne, James C, 2000) Financial Management and Policy.

Minimum Variance Portfolio

Minimum variance portfolio is also called the feasible least risky portfolio with the lowest level of risk in efficient frontier. The minimum variance portfolio of any number of assets is determined by the weighted distribution of asset held on portfolio (Pradhan, 1992).

Efficient Portfolio

Efficient portfolios are those portfolios which offer the highest expected return for given levels of risk or the lowest possible degree of risk of equal level of expected return.

Optimum Portfolio

The portfolio which gives minimum risk and possible return given set of portfolios is called optimum portfolio. The efficient frontier and risk return indifference cures, the optimal portfolio is found set the point of

tangency between the efficient frontier and a utility indifference cure. This point represents the highest level of utility the investor can reach.

Diversification

Simply diversification means scared investment in more than one asset, whose main objective is to try to minimize the risk at the same level of return. Diversification is the important tool to control portfolio risk. Diversification is essential to the creation of an efficient investment because it can reduce the variability of return around the expected return. The diversification may significantly reduce risk without a corresponding reduction in the expected rate of return on the portfolio.

Overpriced and underpriced Securities

If the expected rate of return is less than required rate of return, it is called overpriced securities. Investor will be desired to sell these stocks. Similarly, if the expected rate of return is greater than the required rate of return, it is called under priced security. Investor will be desired to purchase shares of the stock. "An overpriced security is unattractive and investor holding it will sell it, and those not holding it will avoid it. Thus the price of securities will fall. Under priced security provides an, expected return in excess of that required by the market for the systematic risk involved. As a result, the securities will be attractive to investor, accordingly to the theory the expected demand will cause the price to rise" (Van Horne, 1997).

Opportunity Set

It is the group of portfolio which is available in the market i.e, all possible portfolios which can be developed by an investor is called opportunity set.

Efficient Set

Group of dominant portfolio or effective portfolio is known as efficient set.

Correlation

The correlation is a tool which is designed to measure the relationship between two or more variable and the correlation analysis measures the strength or degree of liner relationship between two or more variables. If the change in the values of the one variable result the change in the value of another variable, then we say that variable are correlated (Acharya, Katuwal and Yadav, 2011). Correlation coefficient always lies between +1 to –1, + 1represnet perfectly positive correlation and –1 represents perfectly negative correlation and zero represents no relationship between returns on the respective assets.

2.1.10 Portfolio Performance Measure

Sharpe's Portfolio Performance Measure

Sharpe's Portfolio performance measure divides average portfolio excess return over the sample period by the standard deviation of return over that period. This measure shows the risk premium earned per unit of total risk. The rate is appropriately called reward – to – variability ratio. A higher value of Sp means a better performing portfolio because this indicates higher risk premium per unit of total risk. It can be stated as:

$$S_p = \frac{\text{Risk Permium}}{\text{Total Risk}} = \frac{\bar{r}_p \, Zr_F}{\exists_p}$$

Where,

S_P = Sharpe's index of portfolio performance for portfolio

$\bar{r}_p$ = Total portfolio return

r_F = Risk free rate of return

$\exists_P$ = Standard deviation of return for portfolio

Treynor's Portfolio Performance Measure

Jack Treynor conceived and index of portfolio performance that is based on systematic risk, as measured by portfolio's beta coefficient. Treynor's measure gives excess return per unit of risk, but it uses systematic risk instead of total risk. Trynor index is defined as follows:

$$T_p \; X \frac{\text{Risk Permium}}{\text{Systematic Risk Index}} \quad X \frac{\bar{r}_p \; Zr_f}{\wp}$$

T_p = Treynor's index of performance for portfolio

$\bar{r}_p$ = The Average return from portfolio

r_f = Risk free rate of return

$\wp$ = Portfolio beta coefficient

Jensen's Portfolio Performance Measure

Michael Jensen has also developed a method for evaluating a portfolio's performance. Jensen's measure is the average realized return on the portfolio over the return predated by the CAPM, given the portfolio's beta and the average market return. Jensen's measure represents how much of the rate of return on the portfolio is greater than the average returns adjusted for risk. A positive Jensen's measure indicates the superior portfolio performance. Jensen's measure is a portfolio alpha values (Thapa, 2001) Jensen's index is defined as follows:

$\Im_P = \bar{r}_P Z[r_F \Gamma(\bar{r}_M Z r_F)\wp_P]$

$\Im_P$ = Jensen's Measure (Alpha)

$\bar{r}_P$ = Expected return on Portfolio

r_F = Expected return on market

$\wp_P$ = Portfolio beta coefficient

If $\Im p$ +ve, portfolio is under valued.

If $\Im p$ +ve, portfolio is over valued.

2.2 Review of Popular Model's of Portfolio

2.2.1 Markowitz's Portfolio Selection Model

The portfolio selected model, for the first time, formally proposed by Harry Markowitz in 1952 through his study entitled "portfolio Selection". This model is essentially concerned with identifying the efficient set of the risky assets portfolios. The essence of Markowitz model is that investor are basically interest in those portfolios that offer maximum expected return for a given level of risk or that offer minimum variance for a give level of expected return. The expected return of the portfolio is the weighted average of the expected return of the individual assets in the portfolio. The weights are proportional to the investors health's invested in each asset and sum of the weights must be equal one. Markowitz has highlighted following points on his model:

- The proportion of health investment in each asset by investor is called weight.
- Expected return of the portfolio is the weighted average of the expected return of the individual assets in the portfolio.

- Portfolio risk is the total risk with affect of weight of investment, covariance of respective assets.

The portfolio model developed by the Markowitz is based on the following assumptions:

- The expected return from an asset or portfolio is the mean value of a probability distribution of the future return over some holding period.
- The risk of an individual asset or portfolio is based on the variability of returns (i.e. the standard deviation or variance).
- Investors adhere to the dominance principle. that is for any given level of risk, investor prefer assets with a higher expected return to asset with a lower expected return for assets with the same expected return investors prefer lower to higher risk.
- Investor depend solely on there estimates of return and risk in making their investors utility (indifference) curvy are only a function of expected return and risk.

"According to Markowitz, the investors should maximize expected return. This rule implies that the non-diversified single security portfolio with the highest expected retune is the most desirable portfolio. Expected rate of return for any assets is the weighted average rate of return applying the probability of each rate of return as the weight. The portfolio return is the weighted average expected return of the individual stock in the portfolio with weight being the fraction of the total portfolio invested in each stock" (Weston and Brigham, 1992).

The portfolio's expected return is defined as follows:

$$\bar{R}_P XW_A \mid \bar{R}_A \Gamma W_B \bar{R}_B \ldots\ldots W_N \mid \bar{R}_N$$

Where,

$\bar{R}_P$ = Portfolio expected return

W_A = Weight of Investment in Asset 'A'

W_B = Weight of investment in Asset 'B'

$\bar{R}_A$ = Expected return for asset 'A'

$\bar{R}_B$ = Expected return for asset 'B'

The portfolio risk is affected by the variance of return as well as the covariance between the return of individual assets included in the portfolio and respective weights. According to Markowitz, the portfolio risk is measured by either variance or the standard deviation of returns. The variance of returns from portfolio is defined by following equation:

$$\exists_P^2 = W_A^2.\exists_A^2 \Gamma W_B^2.\exists_B^2 \Gamma 2CoV(r_A r_B).W_A W_B$$

$$\exists_P = \sqrt{W_A^2.\exists_A^2 \Gamma W_B^2.\exists_B^2 \Gamma 2CoV(r_A r_B).W_A W_B}$$

Where,

$\exists_P$ = Standard deviation of portfolio rate of return.

W_A = Weight of investment in Asset 'A'

W_B = Weight of investment in asset 'B'

CoV ($r_A r_B$) = covariance of returns between asset A and B

The covariance is equals to correlation coefficient as shown in equation.

$$CoV(r_A r_B) = \partial_{AB} \Gamma \exists_B.\exists_B$$

∂_{AB} = Correlation coefficient between asset A and B

2.2.2 Capital Asset Pricing Model (CAPM)

This model is developed in articles by William Sharpe, John Lintner and Jan Mossin in 1960. The capital asset pricing model is an equilibrium model that describes why different securities have different excepted returns. CAPM model has been developed to make contribution in the investment decision. This model is a set of predictions concerning equilibrium expected returns on risky assets. The CAPM suggests the concept of market equilibrium to determine the market price and appropriate measure of risk for a single asset. The CAPM establishes a link between market risk and return for all assets. Therefore, the relationship between expected return and market risk is the essence of the CAPM.

Some of the assumptions behind the CAPM are as follows:

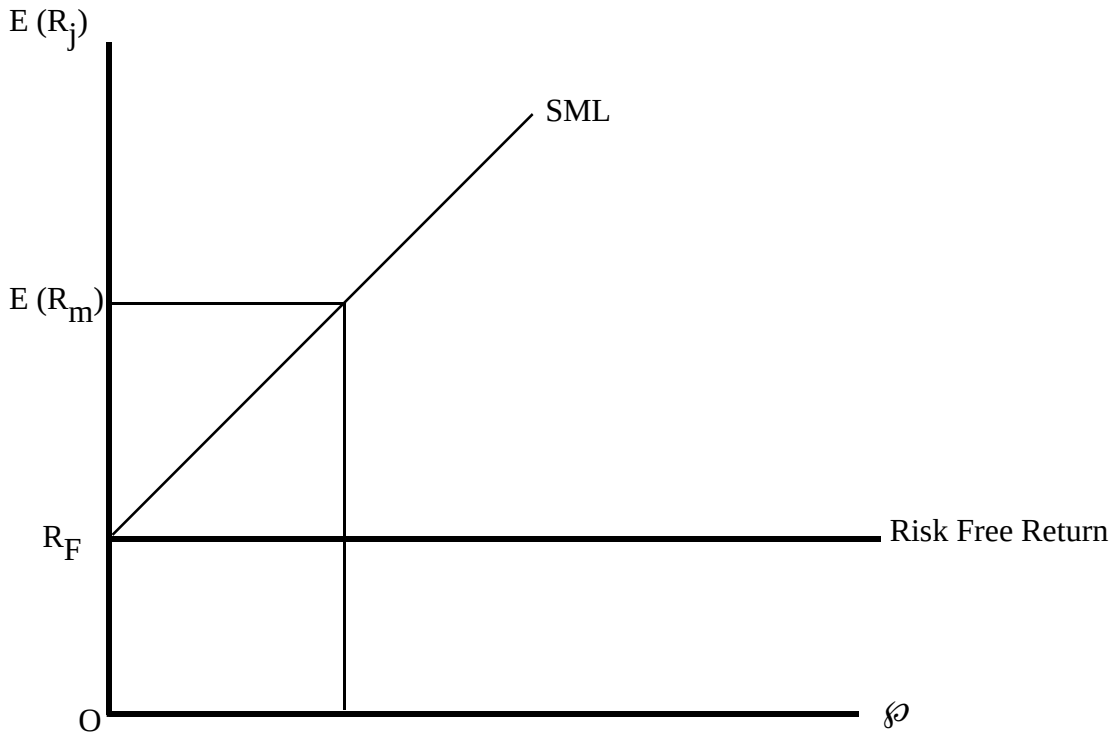
- Investors evaluate portfolios by looking at the expected returns and standard deviations of the portfolios over a one period horizon.
- Investors are never satiated, so when given a choice between two otherwise identical portfolios, they will choose the one with the higher expected return.
- Investors are risk-averse, so when given a choice between two otherwise identical portfolios, they will choose the one with the lower standard deviation.
- Individual assets are infinitely divisible, meaning that an investor can buy a fraction of a share if he/she so desires.
- There is a risk free rate at which an investor may either lend money or borrow money. Taxes and transaction cost are irrelevant.
- All investors have the same one period horizon.
- The risk free rate is the same for all investors.

- Information is freely ad instantly available to all investors.
- Investors have homogeneous expectations, meaning that they have the same perceptions in regarded to the expect returns, standard deviations and covariance of securities. (Alexandar, Sharpe and Bailey, 2000).

When the CAPM is graphed in a figure, it is that they fall on the security market Line (SML). The fact is that they have different variance which are irrelevant for determining their expected return because total risk contains a diversifiable component, which is not priced in market equilibrium. SML may be used to explain the required rate of return on all securities whether they are efficient or not. The SML provides a unique relationship between undiversifiable risk and expected rate of return. It can be shown as below.

Figure No. 2.2

The Security Market Line/CAPM



Source: (Van Horne, James C., 2000) Financial Management and Policy.

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2.2.3 Arbitrage Pricing Theory Model (APTM)

CAPM has been criticized by different others due to its unrealisiutc assumption and base on single factor but APTM has taken a broad concept about it. Arbitrage pricing theory has been developed by Stephen A. Ross in 1976. Arbitrage means buying at low price and selling at high price under Riskless profit. Such transaction are called arbitrage which allows market participants to make profit without investment and without assuming and risk through short selling and buying long for the amount equivalent to short selling. The expected arbitrage profit is zero is the long run if the market functions efficiently. The APT is based on one pricing theory, and causes no investment, no risk and no gain. APT assumes that 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 APT is based on the 'Law of one Price' which says that the same goods cannot be sold with the different prices. If the same goods were sold with different prices, arbitrages will buy the goods where it is cheap, there by bidding up the low price and simultaneously sell the goods where its price is higher, thereby driving down the high price. Arbitragers will continue this activity until prices for the good are equal (Alexander, Sharpe and Bailey, 2003).

Conditions of Arbitrage Opportunities are:

- Assets should be under price or over price,
- The arbitrage portfolio must have positive return in long position.
- No needs of additional for an investor sell to involved in arbitrage. Investors will sell over price assets in short position and simultaneously buy in long position of equal value.

- The weighted average beta of the portfolio must be equal to zero, since they are selected from same risk class. The average beta must be equal to zero.

2.2.4 Review of Articles

Shrestha (1998), has written an article entitled "Portfolio Management in Commercial Banks, Theory and Practice" published on "Nepal Bank Patrika." The portfolio management becomes very important for both individuals and institutional investor. Investors would like to select better mix of investment assets subject on these aspects like, higher return that is comparable with alternatives according to the risk class of investor. He has mentioned short transitory view on portfolio management in Nepalese commercial banks. Shrestha has presented two types to consider any securities such as equity, debenture or bond and other money and capital market instrument. He has pointed out the requirement of skilled labours, proper management information system in joint venture banks and financial institution to get success in portfolio management and customer assurance. The banks having international joint venture banks and financial institution to get success in portfolio management and customer assurance. He has suggested that the banks having international joint venture network can also offer admittance to global financial markets.

According to Shrestha, the portfolio management activities of Nepalese commercial banks at present is in nascent stage. However, on the other hand most of the banks are doing such activities so far because of following reasons such as unawareness of the client about the service available, hesitation on taking risk by the client to use such families, lack of proper techniques to run such activates in the best and successful manner, less development of capital market and availability of few financial investment in the financial market. He has given the following

conclusion for smooth running and operation of commercial banks and financial institution.

- For surviving commercial banks should depend upon there own financial health and various activities.
- In order to develop and expand the portfolio management activities successfully, the investment methodology of portfolio manager should reflect high standards and give their clients the benefits of global strengths, local insights and product philosophy.
- With the systematic approval to the selection of appropriate countries, financial assets and management of various risks the portfolio manager could enhance the opportunity for each investor to earn supervisor returns over time.

Ghimire (1999), in his article entitled "Investment Trends" published on Rising Nepal on 13th May, has mentioned that most of the commercial banks of Nepal are ready to pay the penalty in spite of investing on rural, priority sector, poverty and deprived areas. In the directive of NRB, it was clearly mentioned that all commercial banks should invest 12% of its total investment to the priority sectors. Out of which, they should investment 3% to the lower class of countrymen. He has found that those commercial banks are unable to meet the requirements of NRB. He has suggested that if investment was done to these areas, operation cost will be very high, that exceeds the penalty if investment was not done. So they are interested in paying penalty rather than investing in priority areas.

Thapa (2003), wrote an article entitled "Managing a Banking Risk" published on "The Kathmandu Post" daily of 9th March. He has shown that banking and financial service are emerging as cornerstones nations. The banks based economy as the momentum of growth flames up, bankers face the daunting task of positioning themselves competitively

in the market, and thus face the challenge of reducing risk and uncertainty during the period of unprecedented innovation and prosperity. Bank's primary function is to take risk. Risk cannot be avoided by the banks but can be managed. There are different types of systematic and unsystematic risk such as interest rate risk, market risks credit risk, off balance sheet risk, operational risks and liquidity risk. According to Thapa risk management of the banks is not only crucial for optimum tradeoff between risk and profitability but is also one of the deciding factors for the overall business investment leading to growth of the economy. Managing such risk is not only needs sound professionalism at the organizational level but an appropriate environment also needs to be developed. He found that the major environmental problems of Nepalese banking sector are relatively weak regulatory frame, in the state-owned banks, although significant improvement has been made but international standard and the biggest of all is lack of is to develop the badly needed commitment, eradication of corrupt environment especially in the disbursement of lending and to formulate prudent and conducive regulatory frame work.

Mahat (2004), explained an article, "Efficient Banking" published on "The Kathmandu Post" daily of 28th April he has accomplished, the efficiency of banks can be measure using different parameters. The concept of productivity and profitability can be applied while evaluating efficiency of banks. According to Mahat the analysis of operational efficiency of banks will help one in understanding the extent of vulnerability of bank under the changed scenario and decide whom to bank upon. The regulations should also be concerned on that fact that the banks with unfavorable rations may bring catastrophe in the banking industry.

Timilsina (2004), wrote an article entitled "Managing Investment Portfolio". In this article he has shown that a rational investor would

like to diversify his investment different classes of asset so as to minimize risk and earn a reasonable rate of return. According to Timilsina an investor has to evaluate the risk and return of each of the investment alternatives and select on alternative which has lower degree of risk and offer at least reasonable rate of return. Stock market these day is much unpredictable because once can draw a safe side conclusion to invest all the money in government securities only and other can invest his whole amount in equity share assuming high risk these both are not rational decision. So it makes us clear that investing in one class of financial asset is not good portfolio.

Shrestha (2008), has presented a short scenario of investment management from his article "Portfolio Management in Commercial Bank, Theory and Practice". He has stressed in case of investors having lower income, portfolio management may be limited to a small saving income but on the other hand portfolio management means to invest funds in various schemes of mutual funds like deposits, share and debenture for the investors with surplus income. He has found that portfolio management become very important both for individual as well as institutional investors.

Nepal Portfolio Performance Review (2011), has shown the value of focusing on a limited number of specific doable indicators and targets, which requires both GON and development partners to identify the most critical issues. The strong monitoring framework with regular review meeting and shown clearly indentified targets and indicators, is also key component of the success of NPPR has been a relevant forum for discussion of key effectiveness issues on the national side. Two areas are observed for further discussion to improve NPPR's role in ensuring overall aid effectiveness.

- In addition to the existing work on transversal efficiency and process issues, NPPR should also include a segment looking at key development results in priority sectors.
- In the spirit of partnership and mutual accountability, key aid effectiveness indicators should be introduced also for development partners, to complement the existing targets and indicators set for GON.

Considering this, NPPR 2011 is trying to focus on results framework and mutual accountability which ultimately boost the aid effectiveness efforts, in addition to the traditional key areas that NPPR is being pursued over the years. The areas of government commitment that we would like to see tracked through the NPPR are:

- Budgetary Performance
- Economic management
- Service Delivery
- Governance

2.2.5 Review from Journal

William and Alok (1999), in their journal entitled "Equity portfolio diversification" concluded the number was disturbingly low. After examining more than 40000 equity investment accounts at a large discount diverge firm from 1991 to 1996, the authors found that the vast majority of investor held portfolio that were clearly undiversified with holding. Typically concerned in just a few stocks they found that less than 5% of investors held at least ten stocks. They further argued that many investors mistakenly assume that diversification worker by the gross number of holding rather than by holding stocks with low correlation. Investors are over confident of their stock-picking skills. However, some stocks might be over priced in the market.

Detemple, Garica and Rindisbcher (Feb, 2003), had written a journal entitled "A Monte Carlo Method for Optimal Portfolio". They have developed a comprehensive approached for the calculation of optimal portfolios in asset allocation problem with complete markets. The major benefit of their method, which relies on Monte Carlo simulation, is its flexibility. The journal has also derived a number of economic results that can be used as guidelines for sound asset allocation rules. Naturally, the performance of these rules was dependent upon empirical sophistication of the underlying model of financial market. Clearly, they did not suggest that the model investigated here are adequate in that, although they appear more realistic that the specification examined in the prior literature. But they have purposed great generally affairs that can be easily adopted to address that asset allocation problem for a large class of financial market models.

Jenter (2005), has presented a journal entitled "Market Timing and Managerial Portfolio Decisions" published on August. He has suggested that managers try to actively time the market both in their private trades and in firm level decision. This journal provided evidence that top managers have constrain views on firm value. Managers perception of fundamental value diverge age systematically from market valuations and perceived mispricing seems on important determinant of managers decision making. Insider trading patterns showed that low valuation firms are regarded as undervalued by their own managers relative to high valuation firms. His finding was robust to controlling for non information motivated trading. Further evidence links managers private portfolio decision to changes in corporate capital structures.

Dumas, Kurshev and Uppal (April, 2009), has written a journal entitled "Equilibrium Portfolio Strategies in the Presence of Sentiment Risk and Excess Volatility." The main objective was to identify the trading strategy that would allow an investor to take advantage of excessive stock price

volatility and 'sentiment' fluctuations. They constructed a general equilibrium different-of-option model of sentiment in which there are two classes of agents, one of which was overconfident about a public signal, while still optimizing inter-temporally. Overconfident investor overreacted to the signal and introduce on additional risk factor causing stock prices to be excessively volatile. Consequently, rational investor choosed a conservative portfolio, moreover, this portfolio future sentiment and the speed of price convergence.

Buraschi, Porchia and Trojani (2010), wrote a journal entitled "Correlation Risk and Optimal Portfolio Choice" published on February. It was difficult to obtain tractable solutions for portfolio choice without a simple structure for the variance-covariance process. This paper developed a new multivariate modeling framework for inter-temporal portfolio choice under a stochastic variance-covariance matrix. The optimal portfolio problem and provide simple closed-form solutions that allow to study the volatility and covariance hedging demands in realistic asset allocation settings. They found that the estimated correlation structure changes overtime, depending on economic policies, the level of capital market integration and relative business cycle conditions. They concluded that ignoring the stochastic component of the correlation can easily imply erroneous portfolio choice and risk management decisions.

Dell'ariccia and Marquez (June, 2010), had written a journal entitled, "Risk and the Corporate Structure of Banks." The objective of this journal was to analyze how risk affects the organizational structure of banks. They focused on two different, albeit related, sources of risk. First, banks are subject to credit or economic risk in the host market. Some of this risk can arise as a result of changes in macrocosmic conditions, as shocks to economic activity and interest rates affect the credit worthiness of borrowers and may lend them to default on their

loans. Second host government may engage in policies that infringe on the bank's property rights and expropriate either fully or partially the bank's revenue and capital. They found that the political versus economic risk affects the form of banks entry in a specific market. The main contribution of this journal was to identify different sources of risk as important determinant of bank's corporate structure.

2.2.6 Review from Previous Thesis

Khaniya (2003), had described a thesis in the titled of "Investment Portfolio Analysis of Joint venture Bank's." Her research has based on five joint venture banks: (NABIL, SCBL, HBL, NBBL and EBL) as a sample size from listed commercial bank of NEPSE. The main objective of her study were to evaluate the financial performance of joint venture banks, to provide suggestive package based on the analysis of data and to study portfolio structure of NABIL bank Ltd. as compared to other joint venture banks. From her analysis it is concluded that finding SCBL and HBL bank have better position and NABIL bank is at moderate position to other joint venture banks. But EBL has a very low position in the industry because of having lowest mean return. The investment portfolio structure of NABIL bank is almost similar to other joint venture banks investment portfolio. Hence NABIL is following market trend is composing investment in concentrated into loans and advance to private sector enterprises. There is negative relationship between the investment portfolio on government securities and total portfolio return.

Shrestha (2004), prepared a thesis on entitled "Portfolio Management in Nepal a Case study of Listed Commercial Bank in NEPSE". He had taken data of nine commercial banks (EBL, BOK, HBL, NABIL, NBB, IC, NIB, SBI and SCBL) from year 1998 to 2002 from the purpose of his study. The main objective of the study were to evaluate common stock of listed commercial banks under presents study in terms of risk

and return, to calculate beta for analysis of systematic risk associated with common stock price and identity the range for true beta and true alpha and to carry out test of significance for difference in annual returns of the stocks of banks. The study concluded that most of stock return possessed positive correlation with each other. To earn 5% rate of return, a portfolio constructed from the stock of EBL, BOK, HBL and SCBL has been identified as the optimal one. To earn 89% rate of return, a portfolio constructed from the stock of NABIL, NBB and NIC has been identified as the optimal one and to earn 39% rate of return, a portfolio constructed from the stock of NABIL, NBB NIC, NIB, SBI and SCBL has been identified as the optimal one. He had identified that the stocks of NIC banks are overpriced and the rest of the stock of banks are underpriced.

Adhikari (2005), has written thesis in the title of "Investor's Problem in Selecting Optimal Portfolio of Common Stock in NEPSE." She had taken 9 financial institutions and data from year 1997/98 to 2002/03 for the purpose of analysis. Financial institutions under study were 4 commercial banks (NABIL, NIB, HBL and EBL), 2 finance companies (Kathmandu Finance co. and National finance Co.), 2 insurance companies (united insurance co. and Himalayan general Insurance Co.) and one manufacturing company (Nepal Liver Ltd.). Main objective of the study were to find out the best alternative portfolio in NEPSE to invest and to analysis of the return of sample stocks. The study concluded that most of Nepalese private investors invest in single security. Some of investor use their funds in two or more than two securities. She has found that investors do not make any analysis of portfolio before selecting securities and invest fund in different securities on the basis of assumption of individual security rather than analysis of the effect of the portfolio. It seems investor have no knowledge of the risk diversification and they are unable to calculate the risk factors of the security.

Gautam (2005), had described a thesis in the title of "Selection of Optimum Portfolio in NEPSE". He had taken 22 Companies (7 commercial banks, 8 finance company, 7 insurance company) out of 43 'A' Grade companies for the purpose of the study. Objectives of the study were to find out the risk and return of securities and to find out the best portfolio for investment.

The study concluded that on the basis of risk and return, most of commercial banks are attractive for investment. Most of the common stock of the companies has positive correlation. Because of lack of knowledge and consoling about investment, investors poring their fund in the desert. Most of them purchase and sell their stock only in the pressure of brokers and for portfolio investment. He has found that only very small change in portion their will be handsome change in average return.

Paudyal (2006), wrote a thesis entitled "A Study on Portfolio Analysis of Commercial Banks in Nepal." His research has based on four banks (EBL, HBL, NIBL and BOKL) as a sample size from listed commercial banks of NEPSE. The main objective of the study was to analyze risk and return of commercial banks. The study concluded that BOKL has the highest expected return and HBL has the lowest expected return. NIBL has also negative return. The market expected return is 6.47%. The risk of BOKL is the highest and HBL has lower risk. The market risk is 15.86%. Total risk or BOKL stock is highest and total risk of HBL stock is lowest among four commercial banks. HBL has the highest portfolio return and NIBL has lowest portfolio return. It means NIBL invest its amount in risky assets so it has lowest portfolio return. EBL and BOKL portfolio risk is 0.28% and 5.77% respectively and portfolio return is 4.79% and 4.80% respectively. In conclusion we can say that higher the risk higher the return and vice versa.

Paudel (2008), had written a thesis in the title of "Portfolio Analysis on Common stock Investment of commercial Banks in Nepal." His

research has is based on five joint venture banks: NABIL, NBBL, SCBL, HBL and EBL as a sample. the main objective of study were to examine systematic and unsystematic risk associated with stock and to study risk and return associated with common stock investment of listed commercial bank. From his study it concluded that the beta coefficient of NABIL is the highest i.e. 1.5061 which is greater than 1. Thus it indicates that the return of NABIL is more volatile. So, NABIL is the most defensive stock than other due to the lowest beta coefficient i.e. 0.4939. EBL has the highest rate of return i.e. 32.90% and NBBL has the negative rate of return i.e. –27.20%, NBBL stock is the less risky assets and NABIL stock is the most risky assets. C.V. of EBL is 1.3012 so, EBL is the best security. Correlation coefficient between NABIL and EBL is the highest then other bank i.e. 0.9942.

Chhetri (2008), had prepared a thesis on entitled "Portfolio Analysis on Common Stock Investment of Joint Venture Banks in Nepal." His research has based on five joint venture banks (NABIL, NBBL, SCBL, HBL and EBL). He has mainly focused about to identify the current situations of investment portfolio of joint venture Banks in Nepal. The main objective of the study were to evaluate the common stocks of JV Bank in terms of risk and return and to examine systematic and unsystematic risk associated with securities. From his study it concluded that the optimal portfolio of NBBL and EBL gives the maximum expected return i.e. 62.37% whereas, the portfolio of NABIL and EBL gives the lowest expected return i.e. 3.37%. Considering the portfolio risk, the portfolio of HBL and SBI has maximum S.D. i.e. 75.16% i.e. but the portfolio of HBL and NBBL has the lowest S.D. i.e. 35.79%. According to Sharpe's performance measure, the portfolio of HBL and NBBL has the best performance because of highest risk premium return per unit of total risk and portfolio of Premium return per unit of total risk and portfolio of SCBL and SBI has worst due to the lowest risk premium.

2.2.7 Research Gap

From the above study the researcher found the gap that all of the previous research on portfolio management has been only showing the risk and return analysis of the stocks of commercial banks. Previous research was not able to show the real picture about the diversifiable investment made by different financial institution. Portfolio management of banks asset basically means allocation of fund to different securities but none of the researchers are done on making analysis of portfolio management. The present research will help to find out whether portfolio investment are applied or not by commercial banks.

CHAPTER-THREE

RESEARCH METHODOLOGY

3.1 Introduction

Research is systematic and organizational effort to investigate a specific problem that needs a solution. It is a careful search or inquiry into any subject or subject matter. Hence, the entire process by which we attempt to solve the problem is called research. The research methodology is the systematic way of solving research problem. "Research methodology refers to the various sequential steps (along with rationale of each step) to be adopted by a research in studying a problem with certain objectives" (Kothari, 1992). In other words, research methodology refers to the various methods of practices to solve the research problem applied by the researcher along with the logic behind them within the entire study. It would be appropriate to mention that research projects are not susceptible to be studied will determine the particular steps to be taken order too.

Only secondary data has been used in this study. Different financial tools as well as statistical tools have used to analyze the data. This chapter has explained about the research design, population and sample, data processing and analysis, sources of data, data collection techniques and data analysis tools.

3.2 Research Design

Generally, research design means definite procedures and techniques which guideline profound ways for research ability. "Research design is the plan, structure and strategy of an investigation conceived to obtain answer to research objective through analysis of data"(Kothari, 1992).

Research design is mainly based on two types. They are descriptive research design and analytical research design.

3.2.1 Descriptive Research

Descriptive research includes surveys and facts finding inquiry of different kinds. It is concerned with findings of facts relating to the subject matter, abating important data and getting new areas of knowledge by describing them. Descriptive research will be carried out in the study of portfolio analysis (with reference to selected listed commercial banks).

3.2.2 Analytical Research

In analytical research, the researcher was the facts sand the information already available and analyzes to make a critical evaluation of the materials. Analytical research will be carried in terms of general pattern of the Nepalese investors, business environment and problems regarding the portfolio management of commercial banks.

3.3 Population and Sample

The total number of listed commercial banks in NEPSE is population for this study. There are 32 commercial banks in Nepal. Among them 26 commercial banks are listed and 6 commercial banks are unlisted in NEPSE. This study is concentrated with listed commercial banks. Portfolio analysis of five listed commercial banks are the sample for our study. Those banks are:

S. N.	Name of Banks	Establishment Date (B.S)	Location of the Head office
1	Standard Chartered Bank Ltd. (SCBL)	2043/10/16	Kathmandu
2	Nepal investment Banks Ltd. (NIBL)	2042/11/16	Kathmandu
3	Nabil Bank Ltd. (NABIL)	2041/03/09	Kathmandu
4	Himalayan Bank Ltd. (HBL)	2049/10/15	Kathmandu
5	Nepal SBI Bank Ltd (SBI)	2050/03/23	Kathmandu

3.4 Data Processing and Analysis

In this research work the collected data are edited and analyzed thoroughly and then presented in appropriate table, charts, diagram and graphs for further analysis and interpretation. So, financial as well as statistical tools have been used to accomplish the objective of the study in order to make the analysis more convenience, reliable and authentic too.

3.5 Sources of Data

The present study has mainly based on secondary data. Source of Secondary data are published data like annual report of banks, financial statement, journals, articles and reports etc. The major sources of data are as follows:

- Annual report of concerned commercial banks.
- Related websites and books.
- Materials published in newspapers and magazines.
- NRB Economic report
- Annual reports of SEBON
- Trading reports published by NEPSE
- Journal of finance

3.6 Data Collection Techniques

This study is mainly dominated by secondary data collected from the above mentioned sources. The relevant data have been collected from the Nepal stock exchange limited and concerned banks chosen as sample for the study. Related information about banks have been collected from the website of the banks. Because of the website door-to-door visit to the head office of the banks is not needed. Similarly, the required data has been recollected from central library of Kirtipur, T.U. as well as library of Shankar Dev Campus and different related websites visit.

3.7 Data Analysis Tools

Various financial and statistical tools have been used in this study to get meaningful result and to meet research objectives. Financial tools are the major tools for analysis. In addition to the financial tools, other statistical tools have been used in order to make the analysis more convenience, reliable and authentic. The major tools applied in this study are described as follows.

3.7.1 Financial Tools

There are various financial tools which can be applied in order to analyze the performance of commercial banks. Flowing main financial tools have been used to analyze:

3.7.1.1 Beta Coefficient

Market sensitivity of stock is explained in terms of beta coefficient. Beta coefficient is a measure of the extent to which the return on a given stock moves with the stock market (Weston and Brigham, 1996). The measure of systematic risk is presented by beta. It can be stated as follows:

$$\wp = \frac{CoV[R_j R_M]^2}{\exists_m^2}$$

Where,

$\wp$ = Beta coefficient of stock j

$\exists_m^2$ = variance of market return

$CoV[R_j R_M]$ = Covariance between return on stock j and return on market.

3.7.1.2 Covariance (CoV)

Covariance is the joint variance of any two assets. It measures how two random variable, such as the return on securities A and B move together over time. The covariance between the securities return can be calculated by using following formula.

$$CoV\ (r_j r_m) = \frac{\phi(R_j Z\bar{R}_j)\ R_m Z\bar{R}_m}{N}$$

Where,

CoV $[r_j r_m]$ = covariance between security J and M

3.7.1.3 Coefficient of Variation (C.V.)

It is a measure of relative risk or a measure of risk per unit of expected return. It converts S.D. of expected values into relative values to enable comparison of risk associated with assets having different expected value. The C.V. is computed by dividing the S.D. It is calculated as:

$$\text{Coefficient of variation (C.V.)} = \frac{\exists_j}{\bar{R}_j}$$

Where,

$\exists_j$ = S.D. of security j

$\bar{R}_j$ = Expected return on security j.

3.7.1.4 Portfolio Risk ($\pm_p$)

The portfolio risk if measured by either variance or the standard deviation of return. It is the combined S.D. of the individual stocks return in the portfolio of two or more securities.

Symbolically

$$\exists_P X\sqrt{W_A^2.\exists_A^2 \Gamma W_B^2.\exists_B^2 \Gamma 2W_A W_B.COV_{AB}}$$

Where,

$\exists_P$ = Standard deviation of the portfolio returns of stock

W_A and W_B = weight of stocks A and B

$\exists_A^2$ and $\exists_B^2$ = Variance of stocks A and B

CoV_{AB} = covariance between stocks A and B

3.7.1.5 Portfolio Return [R_P]

The expected return of the portfolio is the weighted average of the expected return of the securities comprising the portfolio. The weights are proportion of the investors wealth invested in each asset and sum of the weights must be equal one.

$$\bar{R}_P = W_A\bar{R}_A \Gamma W_B\bar{R}_B \Gamma .....\Gamma W_N\bar{R}_N$$

$\bar{R}_P$ = Portfolio expected return.

$\bar{R}_A$ and $\bar{R}_B$ = Expected return for stocks A and B

W_A and W_B = weight of stocks A and B

3.7.1.6 Systematic Risk

Systematic risk one that influences a large, number asset, each to a greater or large extent, because systematic risk have market wide effects, they are sometimes called market risk (Rose Randolph and Brodford, 2006).

Undiversifiable risk is known as the systematic risk. This risk is those portions of total variability in return cause by market factor that simultaneously affect the price of all securities. It can be stated as:

Systematic risk = $\wp_j^2 \exists_m^2$

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

$$\text{Coefficient of determination } (R^2) = \frac{\text{Systematic Risk}}{\text{Total Risk}} X \frac{\wp_j^2 \exists_m^2}{\exists_j^2}$$

Where,

$\wp_j^2$ = Beta coefficient of security

$\exists_m^2$ = Variance of market

$\exists_j^2$ = Total risk

3.7.1.7 Unsystematic Risk

Unsystematic risk is the portion of total risk that is unique to a firm or industry and can be largely eliminated by holding diversified portfolio of investment. For example labour strikes, management errors etc. It can be stated as:

Unsystematic risk = Total risk – systematic risk

$$\text{Var (e)} = \exists_j^2 \, Z\wp_j^2 . \exists_m^2$$

Where,

Var (e) = Variance of standard error.

3.7.1.8 Capital Assets Pricing Model (CAPM)

CAPM suggest that any investor can create a portfolio of assets that will eliminate virtually all diversifiable risk the only relevant risk is non diversifiable risk, therefore the investment decision and the pricing of capital asset should be based on undiversifiable risk. CAPM can be determined by using following equation.

$$R_j = R_f + [R_M - R_F]\ \wp_j$$

Where,

R_F= Risk free rate of return

R_M = Expected return on the market portfolio

$\wp_j$ = Beta coefficient of stock j

3.7.1.9 Ratio Analysis

The purpose of ratio analysis is to evaluate and analyze the financial position and performance of the different commercial banks. It refers to the numerical or quantitative relationship between two variables. Only those major ratios,

which are related with investment operations of commercial banks are calculated and analyzed.

3.7.1.10 Dividend

Dividend is a part of total earning which is distributed to the existing stockholder either in terms of cash or stock. If the company declare dividend in cash then there is no difficulty in calculation. But if company declares stock dividend, it is difficult to obtain the amount of total dividend. In case of stock dividend the formula for total dividend amount is considered as follow:

Total dividend = DPS + next year's closing price × stock dividend

3.7.2 Statistical Tools

The following statistical tools have been used for the analysis of data.

3.7.2.1 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 of total of the return by the number of the observation. In probability distribution, the expected return is obtained as the weighted average of the probability and the forecasted return. "Arithmetic mean or simply a mean of a set of observations is the sum of all the observation divided by the number of observations. A.M. is also knows as the arithmetic average" (Bajracharya, 2001).

$$\text{Expected return } (\bar{X}) = \frac{\phi R_j}{n}$$

Where,

ϕR_j = Rate of return on stock j

n = Number of observations

3.7.2.2 Standard Deviation (S.D.)

Standard deviation is defined as the positive square root of the mean of the square of the deviations taken from the arithmetic mean. It is denoted by ∃. It measures the unsystematic risk on the stock investment. The higher the S.D., the more risk will be in the assets and vice-versa.

Symbolically,

$$\exists_j X \sqrt{\frac{\phi[R_j Z \bar{R}_j]^2}{N Z 1}}$$

Where,

$\exists_j$ = Standard deviation of stock j

R_j = Return of stock j

$\bar{R}_j$ = Expected return of stock j

N = Number of observation

3.7.2.3 Variance

It is a statistical measure of the variability of a set of observations. It is the measure of total risk. The lower the variance, the lower the riskiness of the stock and vice-versa. It is the square of standard deviation and denoted by sigma square ($\exists^2$). It is the sum of the square deviation from means divided by number of observations in case of historical return. In case of probabilities distribution, it is sum of the squared deviations multiplied by the probabilities.

Symbolically,

$$\exists_j X \frac{\phi[R_j Z \bar{R}_j]^2}{N Z 1}$$

3.7.2.4 Trend Analysis

It is and analysis and financial ratio over time used to determine the improvement of determination of its financial situation. The trend line is represented by following equation:

$$y = a + bx$$

Where,

y = trend values

a = y intercept

b = slope of the trend line

x = variable that present the time

$$\textbf{CHAPTER-}f(x) = a_0 + \sum_{n=1}^{\infty} \left(a_n \cos\frac{n}{L} + b_n \sin\frac{n}{L}\right)\textbf{zXHJ}$$

DATA PRESENTATION AND ANALYSIS

This chapter is the major part of whole study. This chapter has focused an analysis and interpretation of collected relevant data related to the study based on various financial and statistical tools. Necessary tables and figures have also presented to achieve the objectives of the study.

Data presentation and analysis on this study has been presented into 8 sub-headings and they have been arranged in this order; ratio analysis, investment portfolio analysis, analysis of common stocks risk and return of commercial banks, analysis of systematic risk and unsystematic risk, portfolio analysis, portfolio performance measures. Towards the end of this chapter trend analysis has been presented with relevant sub-topic and major findings has also included in the last sub-headings.

4.1 Ratio Analysis

4.1.1 Investment to Total Deposit Ratio

This ratio measures that which banks are more successful in mobilizing their total deposit on investment. Higher the ratio its better in utilization of collected fund and it generates regular income to the banks. This ratio is calculated by dividing total investment by total deposit. This can be stated as:

$$\text{Investment to total deposit ratio} = \frac{\text{Total Investment}}{\text{Total Deposit}}$$

Total investment includes investment on government securities, government bond, treasury bonds and others. The total deposit consists current deposit, fixed deposit, saving deposit, money to call deposit and other deposit.

Table number 4.1 shows the ratio of investment to total deposit of SCBL, NIBL, NABIL, HBL and SBI bank.

Table No.4.1

Investment to total Deposit Ratio

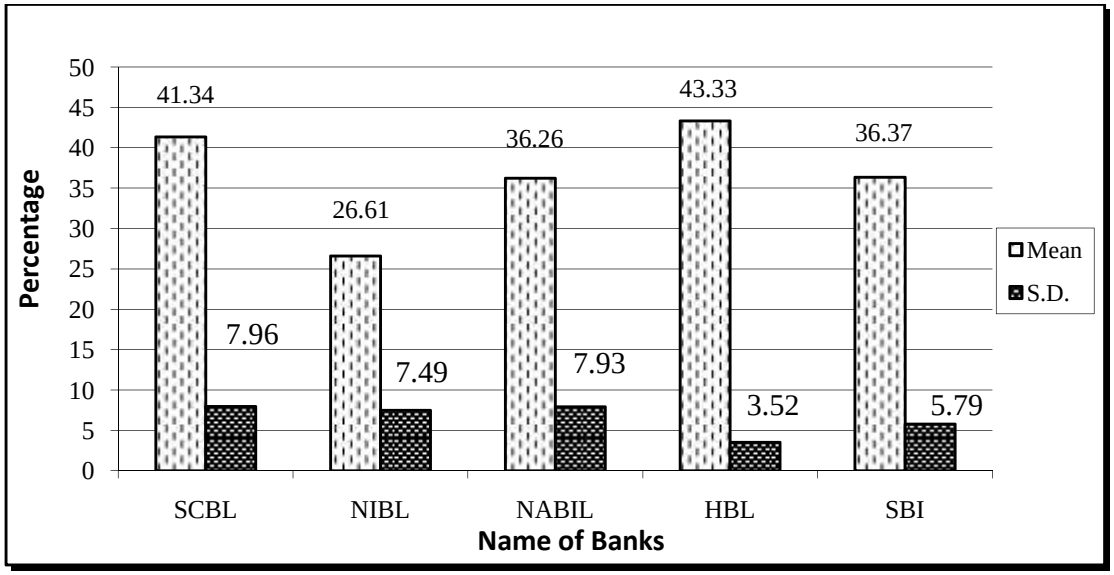
(In Percentage)

F/Y	SCBL	NIBL	NABIL	HBL	SBI	Average
2002/03	35.68	43.65	52.88	49.18	37.97	43.87
2003/04	40.19	21.52	44.85	48.35	46.89	40.36
2004/05	47.25	23.53	41.34	42.22	34.57	39.78
2005/06	44.12	27.60	29.25	47.12	28.40	35.30
2006/07	37.73	29.60	31.93	41.10	40.99	36.27
2007/08	42.67	26.57	38.32	39.35	40.24	37.47
2008/09	39.29	19.95	31.14	41.89	35.54	33.56
2009/10	41.44	21.86	33.21	42.45	38.83	35.56
2010/11	42.43	20.97	29.10	41.20	30.60	32.86
2011/12	42.55	20.89	30.61	40.41	29.66	32.82
Mean (%)	41.34	26.61	36.26	43.33	36.37	36.78
S.D. (%)	3.29	7.49	7.93	3.52	5.79	-
C.V. (%)	7.96	28.14	21.87	8.12	15.92	16.40

Source: Appendix I: (A), (C)

Figure No. : 4.1

Mean and S.D. of Investment to Total Deposit Ratio of Banks



From the table number 4.1, mean investment to total deposit ratio of HBL has highest i.e. 43.33% and NIBL has a lowest i.e. 26.61% among the five listed commercial banks. The other banks SCBL, NABIL and SBI have the mean ratio of 41.34%, 36.26% and 36.37% respectively. The average mean ratio of investment to total deposit is 36.78%. The banks SCBL and HBL have the greater ratio above average i.e. 41.34% and 43.33% > 36.78% but other banks NIBL, NABIL and SBI have the lower investment to total deposit ratio than average i.e. 26.61%, 36.26% and 36.37% < 36.78% respectively. It shows that the performance of SCBL and HBL are quite nice than the other banks. It also shows that SCBL and HBL have effectively mobilizing its deposit on investment to generate the return. But, other banks are investing its deposit on fewer ratio's than average mean ratio of industry.

Likewise, the C.V. of the NIBL is the highest ratio i.e. 28.14% and SCBL has the lowest ratio i.e. 7.96%. The average C.V. ratio is 16.40%. The banks SCBL, HBL and SBI have the lowest C.V. ratio i.e. 7.96%, 8.12% and 15.92%< 16.40%. Other banks NIBL and NABIL have the highest C.V. ratio to comparison with average C.V. ratio i.e. 28.14% and 21.87% > 16.40 respectively. It shows variability of ratio of SCBL, HBL and SBI are the most

consistent among these listed commercial banks and the variability of the ratio of NIBL and NABIL are the least consistent among of C.V. ratio.

4.1.2 Loans and Advance to Total Deposit Ratio

The loan and advance is also one of the major sectors of investment. This ratio measures extend to which bank are successful to mobilize their funds to earn profit by providing the fund to outsiders in the form of loans and advances. The higher ratio represents the greater efficiency of the firm in utilizing funds and vice-versa. This ratio is calculated by dividing loans and advances by total deposit. This can be stated as:

$$\text{Loans and advance to total deposit} = \frac{\text{Loans and Advance}}{\text{Total Deposit}}$$

Loan and advance includes loans to government enterprise, private sectors, foreign bills purchase and discount. The total deposit includes current deposit, fixed deposit, saving deposit, money at call deposit and other deposit.

Table number 4.2 shows the ratio of loans and advance to total deposit of SCBL, NIBL, NABIL, HBL and SBI bank.

Table No. 4.2

Loans and Advance to Total Deposit Ratio

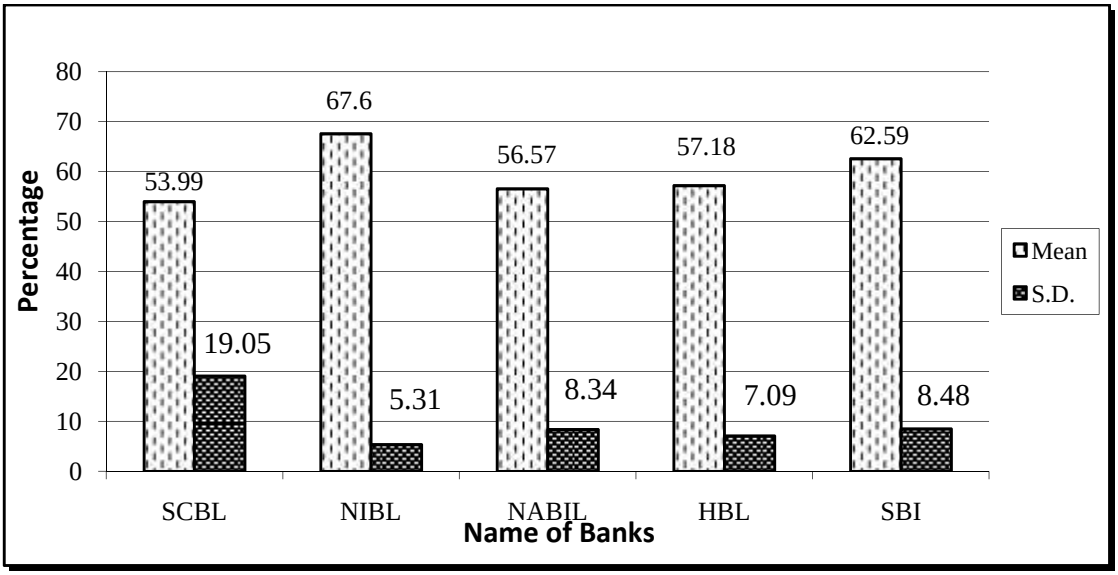
(In Percentage)

F/Y	SCBL	NIBL	NABIL	HBL	SBI	Average
2002/03	26.04	60.32	46.02	54.78	66.31	50.69
2003/04	27.71	71.29	55.43	47.53	62.40	52.87
2004/05	39.15	60.03	56.33	52.86	61.68	54.01
2005/06	42.37	69.68	71.75	48.72	51.70	56.84
2006/07	55.28	66.64	65.55	54.34	63.09	60.98
2007/08	61.58	69.46	65.57	56.02	68.31	64.19
2008/09	64.11	77.26	50.63	60.48	77.74	66.04
2009/10	75.44	70.93	49.16	62.06	69.59	65.44
2010/11	76.08	63.55	52.73	65.86	53.24	62.29
2011/12	72.11	66.84	52.48	69.19	51.87	62.50
Mean (%)	53.99	67.60	56.57	57.18	62.59	59.59
S.D. (%)	19.05	5.31	8.34	7.09	8.48	-
C.V. (%)	35.28	7.86	9.44	12.40	13.55	15.71

Source: Appendix I: (B), (C)

Figure No. 4.2

Mean and S.D. of Loan and Advance to Total Deposit Ratio of Banks



From the table number 4.2, mean loans and advance to total deposit ratio of NIBL is highest i.e. 67.60% and SCBL is lowest ratio i.e. 53.99%, among five listed commercial banks. Other banks NABIL, HBL, and SBI have a mean ratio of 56.67%, 57.18%, 57.18% and 62.59% respectively. The average mean ratio is 59.59%. The banks NIBL and SBI have the greater ratio above average i.e. 67.60% and 62.59% > 59.59% but other banks SCBL, NABIL and HBL have the lower loans and advance to total deposit ratio then average i.e. 53.99%, 56.57%, and 57.18% < 59.59% respectively. Therefore the banks NIBL and SBI has been invested highest amount of deposit fund in loans and advance.

Likewise the C.V. ratio of SCBL is highest i.e. 35.28% among the five listed commercial banks. Which indicates that the investment of SCBL is more fluctuating. NIBL has the lowest C.V. ratio i.e. 7.86% among nine listed commercial banks. It indicates that the investment of NIBL is the most uniform. The lowest C.V. is better than highest C.V. The average C.V. ratio is 15.71%. Four banks NIBL, NABL, HBL and SBI

have a lowest C.V. than average C.V. and one bank SCBL has a highest C.V. than average C.V. From the above description it can be concluded that NIBL is the most effective, SBI is moderate effective and SCBL, NABIL and HBL banks are least effective to mobilize its deposit on loans and advance.

4.1.3 Return on Total Assets Ratio

This ratio measures the effectiveness of the banks in using its overall resources. It measures in terms of relationship between net profit and total assets. The higher ratio represents the efficient of the banks utilizing its overall resources vice-versa. This ratio is calculated by dividing net profit after tax by total assets. This can be calculated as follows:

$$\text{Return on Total Assets} = \frac{\text{Net Profit After Tax}}{\text{Total Assets}}$$

The net profit after tax represent that profit available to common stockholder and total assets includes the total assets of balance sheet item.

Table number 4.3 shows the ratio of return on total assets of SCBL, NIBL, NABIL, HBL and SBI bank.

Table No.4.3

Return on Total Assets Ratio

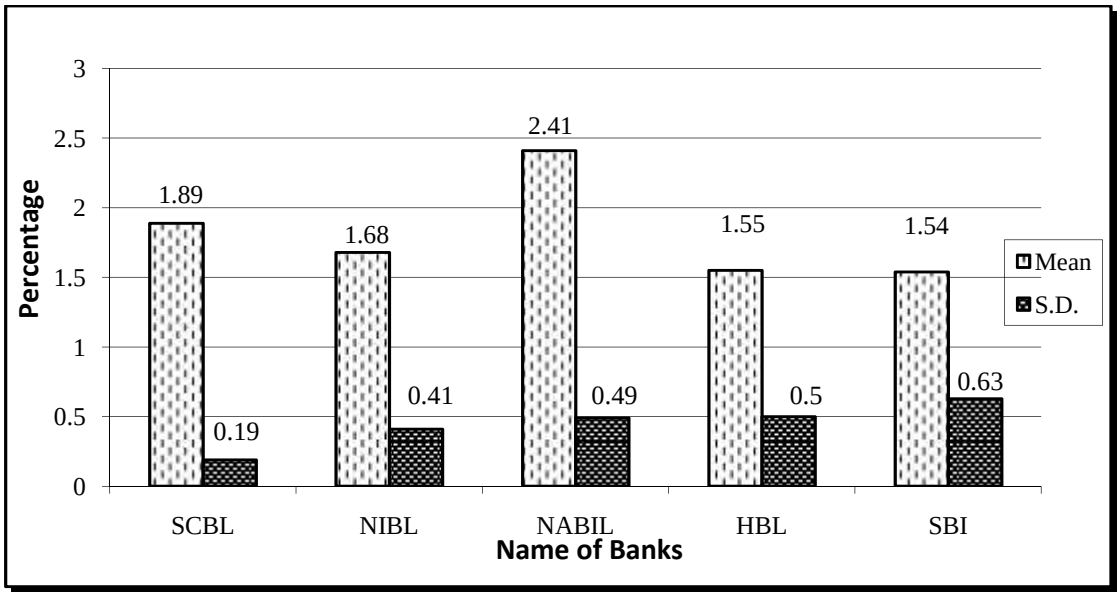
(In Percentage)

F/Y	SCBL	NIBL	NABIL	HBL	SBI	Average
2002/03	1.45	1.15	1.54	1.10	1.24	1.30
2003/04	1.85	1.30	2.51	0.91	1.40	1.59
2004/05	2.02	1.15	2.72	1.06	0.81	1.55
2005/06	1.86	1.43	3.02	1.11	1.23	1.73
2006/07	1.94	1.64	2.84	1.55	1.07	1.81
2007/08	1.88	1.82	3.02	1.47	1.50	1.94
2008/09	1.77	1.79	2.10	1.89	1.73	1.86
2009/10	1.93	1.98	2.02	1.96	2.48	2.07
2010/11	2.06	2.25	2.04	2.17	2.47	2.20
2011/12	2.15	2.25	2.27	2.27	2.42	2.27
Mean (%)	1.89	1.68	2.41	1.55	1.54	1.81
S.D. (%)	0.19	0.41	0.49	0.50	0.63	-
C.V. (%)	10.05	24.40	20.33	32.26	40.91	25.59

Source: Appendix I : (D), (E).

Figure No. 4.3

Mean and S.D. of Return on Total Assets of Banks



From the table number 4.3 shows the mean return on total assets ratio of NABIL bank is the highest return i.e. 2.41% and SBI has the lowest i.e. 1.54% throughout the review period. Other banks SCBL, NIBL and HBL have a mean ratio of 1.89%, 1.68% and 1.55% respectively. The average mean ratio is 1.81%. The banks SCBL and NABIL have higher mean return on total assets ratio than average ratio i.e. 1.89% and 2.41% > 1.81% and remaining other banks NIBL, HBL and SBI have leas mean return on total assets ratio i.e. 1.68%, 1.55% and 1.54% < 1.81% respectively. So the performance of NIBL, HBL and SBI banks are not so good.

Likewise the C.V. ratio of SBI is highest i.e. 40.91% among the five listed commercial banks which indicates that the ROA of SBI is the most fluctuating. Similarly, SCBL has the lowest C.V. ratio i.e. 10.05% 10.5% it indicates that the ROA C.f. SCBL is the most uniform. The lowest C.V. is better than highest C.V. the average C.V. ratio is 25.59%. HBL and SBI have the highest C.V. than average C.V. and remaining other banks SCBL, NIBL and NABIL have the lowest C.V. than average C.V. Form the above description it can be concluded that

NABIL is the most effective and other banks are the least effective to earn a return on total assets.

4.1.4 Investment on Share and Debenture to Total Outside Investment Ratio

The ratio between investment on share and debenture and total outside investment reflects the extent on which the banks are successful to mobilize their total outside investment on purchase of share and debenture of other companies to generate income. A high ratio indicates better performance of investment on share and debentures out of total outside investment and vice-versa. This ratio is calculated by dividing investment on share and debenture by total outside investment. This can be stated as:

$$= \frac{\text{Investment on Share Debenture}}{\text{Total Outside Investment (TOI)}}$$

Where,

TOI = Loan and advances + Bills purchased and discounted + Investment [From B/S]

Table number 4.4 shows the investment of share and debenture to total outside investment ratio of five commercial banks.

Table No. 4.4

Investment on share and Debenture to Total Outside Investment Ratio

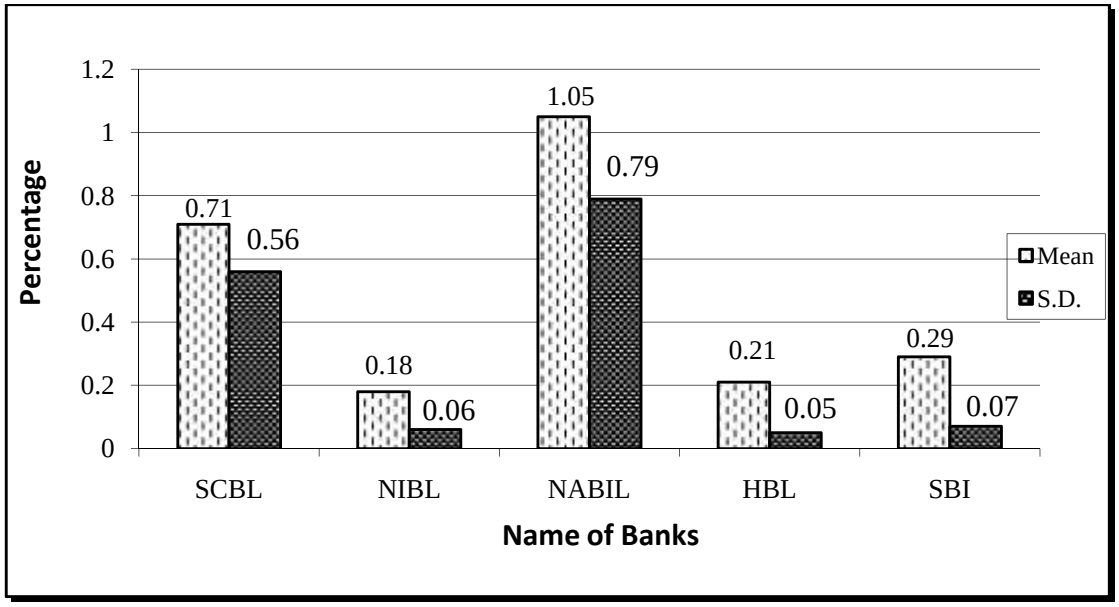
(In percentage)

F/Y	SCBL	NIBL	NABIL	HBL	SBI	Average
2002/03	0.24	0.32	0.14	0.19	0.29	0.24
2003/04	0.21	0.19	0.16	0.17	0.28	0.20
2004/05	0.20	0.13	0.95	0.16	0.23	0.33
2005/06	0.36	0.13	2.96	0.17	0.24	0.77
2006/07	0.34	0.10	0.55	0.16	0.22	0.27
2007/08	0.37	0.15	1.17	0.25	0.22	0.43
2008/09	1.11	0.18	1.03	0.27	0.27	0.57
2009/10	1.32	0.18	1.03	0.18	0.34	0.61
2010/11	1.43	0.19	1.16	0.27	0.39	0.69
2011/12	1.55	0.18	1.34	0.25	0.41	0.75
Mean (%)	0.71	0.18	1.05	0.21	0.29	0.49
S.D. (%)	**0.56**	**0.06**	**0.79**	**0.05**	**0.07**	**-**
C.V. (%)	**78.87**	**33.33**	**75.24**	**23.81**	**24.14**	**47.08**

Source: Appendix I: (G) and (H)

Figure No. 4.4

Mean and S.D. of Investment on Share and Debenture to Total Outside Investment of Banks



The above table number 4.4 shows the mean share and debenture to total outside investment ratio of NABIL bank has the highest return i.e. 1.05% and HBL has the lowest return i.e. 0.21% among the five listed commercial banks. In an average only 0.49% parts of total outside investment is invested in share and debenture of other companies.

Likewise HBL has the lowest C.V. i.e. 23.81% which shows that the variability of ratio between investment on share and debenture and total outside investment is most uniform among the five banks. Similarly, the highest C.V. of NABIL i.e. 75.24% shows that it has more variability in investment on share and debenture to total outside investment.

4.1.5 Investment on Government Securities to Total Outside Investment Ratio

This ratio is used to know commercial banks are able to mobilizing their total outside investment on different types of government securities to maximize the income or not. Government securities are highly liquid investment so it measures the liquidity position i.e. liquidity ratio. A

high ratio indicates better mobilization of funds as investment on government securities and vice-versa. This ratio is calculated by dividing investment on government securities by total outside investment. This can be stated as:

$$X \frac{\text{Investment on Government Securities}}{\text{Total outside investment}}$$

Table number 4.5 shows the investment on government securities to total outside investment ratio of five commercial banks.

Table No. 4.5

Investment on Government Securities to Total Outside Investment Ratio

(In Percentage)

F/Y	SCBL	NIBL	NABIL	HBL	SBI	Average
2002/03	25.07	5.12	26.35	14.32	13.87	16.95
2003/04	21.91	5.35	26.03	16.59	22.34	18.44
2004/05	21.13	18.20	26.18	16.15	19.00	20.13
2005/06	23.10	13.86	16.24	22.68	29.30	21.04
2006/07	23.02	13.72	12.05	20.15	15.00	16.79
2007/08	22.56	13.69	19.63	22.40	19.03	19.46
2008/09	21.06	9.31	14.84	22.75	24.79	18.55
2009/10	21.88	9.87	14.17	22.99	25.09	18.80
2010/11	21.57	9.96	14.79	23.17	24.58	18.81
2011/12	21.88	9.93	18.48	22.88	22.33	19.10
Mean (%)	22.32	10.90	18.48	20.41	21.54	18.73
S.D. (%)	1.19	4.05	5.65	3.41	4.81	-
C.V. (%)	53.32	37.16	30.57	16.71	22.33	32.02

Source : Appendix 1 : (F) and (H)

Figure No. 4.5

Mean and S.D. of Investment on Government Securities to Total Outside Investment of Banks

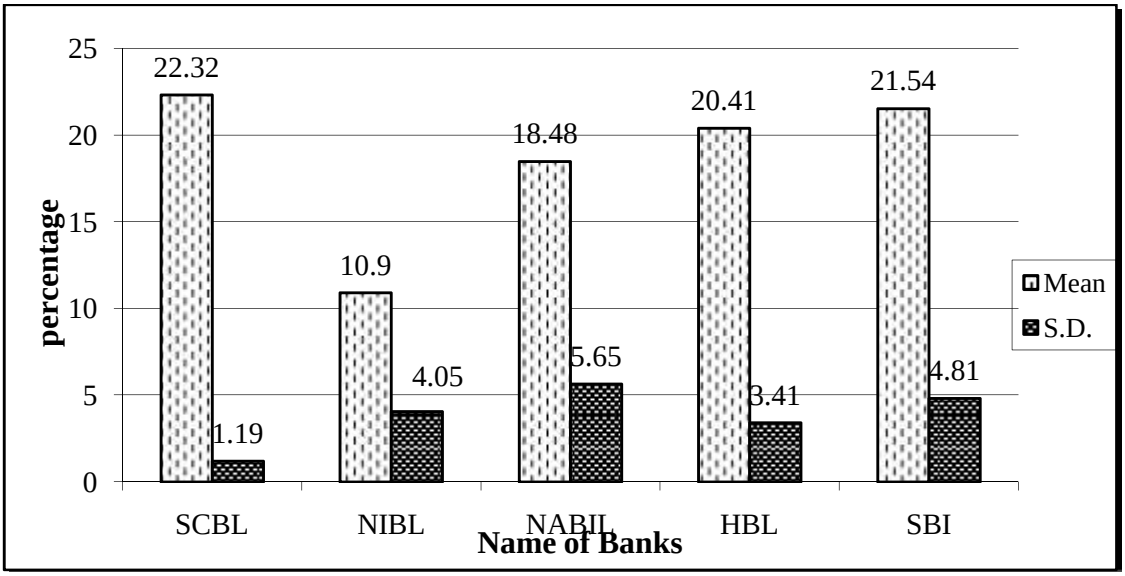


Table number 4.5 shows that in an average SCBL has highest means percentage of investment on government securities to total outside investment i.e. 32.32%. That means among five commercial banks SCBL is utilized highest percentage of total outside investment into government securities. Similarly, NIBL has the lowest mean percentage of investment on government securities to outside investment i.e. 10.90%.

Likewise the C.V. of HBL has smallest than other banks i.e. 16.71% which shows that HBL's investment on government securities to total outside investment ratio is the most consistent among five banks on the other hand, the C.V. of SCBL is the highest i.e. 53.32%, it means the ratio of SCBL is the least consistent.

4.2 Investment Portfolio Analysis

Commercial banks mostly mobilize their deposit and other funds in profitable, secured and marketable areas. Commercial banks cannot utilize whole of its fund raised through deposit and borrowing into loans and advance. In order to fulfill the gap between borrowings and lending banks rather goes for investment on such as government securities, share and debenture, NRB bond etc. Government securities includes Nepal government treasury bills, Nepal government saving bond, Nepal government other securities, Nepal Rastra banks bond etc. and share and debenture includes corporate shares, corporate bonds and debenture etc.

The portfolio of making investment by five listed commercial banks i.e. SCBL, NIBL, NABIL, HBL and SBI has been analyzed in the table.

Table No. 4.6

Percentage Share of Investment in Government Securities, Share and Debenture and NRB Bond of Each Banks

	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2010/10	2010/11	2011/12	Mean (%)
SCBL											
Government Securities	37.10	34.18	30.42	31.46	33.16	26.35	25.46	27.36	27.61	28.20	30.13
Share and Debenture	33.06	32.49	17.71	14.49	31.34	19.42	40.75	47.34	46.35	46.03	32.90
NRB Bond	0	0	0	0	0	0	0	0	0	0	0
NIBL											
Government Securities	18.20	29.69	13.01	10.83	13.97	13.27	11.77	12.07	12.11	12.03	14.70
Share and Debenture	10.63	10.45	5.70	2.93	6.34	6.51	6.79	6.39	5.80	5.10	6.66
NRB Bond	0	0	0	0		0	0	0	0	0	0
NABIL											
Government Securities	33.41	24.64	23.87	13.42	17.63	19.60	17.33	16.15	16.32	16.74	20.11
Share and Debenture	17.0	16.71	54.71	72.71	37.22	52.96	36.59	33.54	32.98	35.06	38.95
NRB Bond	0	0	0	0	0	0	0	0	0	0	0
HBL											
Government Securities	20.99	24.48	22.31	30.41	28.49	26.31	27.88	27.13	26.75	26.73	26.15
Share and Debenture	26.22	25.77	14.05	65.91	14.26	13.55	10.14	60.32	7.93	6.85	24.50
NRB Bond	0	0	0	0	0	0	0	0	0	0	0
SBI											
Government Securities	6.67	11.42	10.40	13.71	16.09	14.46	17.56	17.28	17.20	16.30	14.11
Share and Debenture	13.09	14.58	7.82	32.85	10.84	7.56	5.74	6.71	6.93	6.96	11.31
NRB Bond	0	0	0	0	0	0	0	0	0	0	0

Source: Appendix I: (F), (G)

Table No. 4.7

Investment Portfolio Analysis of Banks

Commercial Banks	Government Securities (%)	Share and Debenture (%)	NRB Bond (%)
SCBL	30.13	32.90	0
NIBL	14.70	6.66	0
NABIL	20.11	38.95	0
HBL	26.15	24.50	0
SBI	14.11	11.31	0

Figure No. 4.6

Investment Portfolio Analysis of Banks

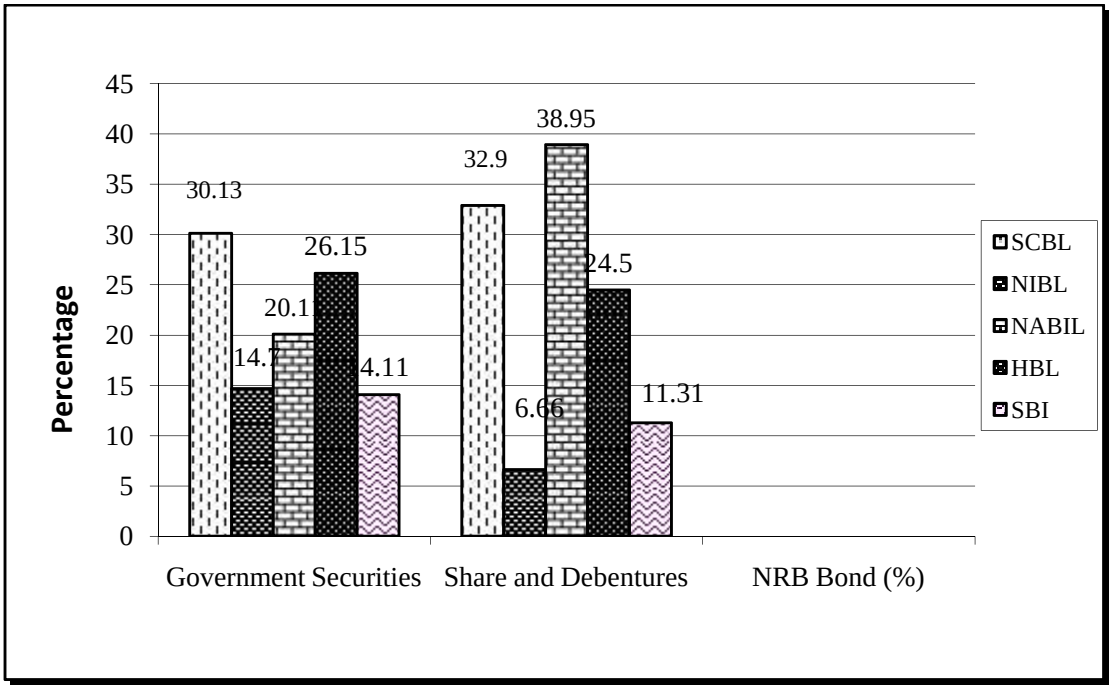


Table number 4.7 shows the average investment portfolio of five listed commercial banks. SCBL is investing 30.13% on government securities, 32.90% of fund on Share and debenture and 0% of its fund on NBR

bond. It shows that SCBL is investing its more fund on share and debenture and not any fund on NRB bond.

NIBL is investing 14.70% on government securities, 6.66%, fund on share and debenture and 0% of its fund on NRB bond. It shows that INBL is investing its more fund on government securities some of its fund on share and debenture and not any fund on NRB bond.

NABIL is not investing any fund on NRB bond i.e. 0%. It is investing high amount on share and debenture among five commercial banks. The mean percentage investment on share and debenture is 38.95% and the mean percentage investment in government securities is 20.11%.

HBL is investing 26.15% on government securities, 24.50% of fund on share and debenture and 0% of its fund on NRB bond. It shows that HBL is investing its more fund on government securities and not any fund any fund on NRB bond.

And at last SBI bank is investing 14.11% on government securities, 11.31% of fund on share and debenture and 0% of its fund on NRB bond. It shows that SBI is investing its more fund on government securities and not any fund on NRB bond.

4.3 Analysis of Common Stocks Risk and Return of Commercial Banks

The annual rate of return, expected return, variance and coefficient of variation of listed commercial banks are shown in the table (see detail calculation).

Calculation of annual rate of return, expected return, variance and coefficient of variation (C.V) of SCBL, NIBL, NABIL, HBL and SBI.

Table No. 4.8

Annual Rate of Return, Expected Return, Variance and C.V. of SCBL

F/Y	Closing Price (Monthly Market)	Cash Dividend	R_j [%]	$[R_j - \bar{R}_j)$	$[R_j - \bar{R}_j)^2$
2002/03	1670	110	–	–	–
2003/04	1590	110	1.80	–22.14	490.18
2004/05	2000	120	33.33	9.39	88.17
2005/06	3100	130	61.5	37.56	1410.75
2006/07	4150	80	36.45	12.51	156.50
2007/08	4925	80	20.60	–3.34	11.16
2008/09	4706	50	–3.43	–27.37	749.12
2009/10	2950	55	–36.15	–60.09	3610.81
2010/11	3075	70	66-10	42.16	1777.47
2011/12	4105	55	35.28	11.34	128.60
			pR_j = 215.48		**$[pR_j - \bar{R}_j)^2$ = 8422.76**

$$\text{Annual rate of return } (R_j) = \frac{\text{Ending Price Z Begining Price } \Gamma \text{ Cash Dividend}}{\text{Begining Price}}$$

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

$$= \frac{215.48}{9}$$

$$= 23.94\%$$

Standard deviation ($\exists_j$) $= \sqrt{\frac{\phi(R_j Z\bar{R}_j)^2}{N Z1}}$

$= \sqrt{\frac{8422.86}{9}}$

$= \sqrt{935.86}$

$= 30.59\%$

Variance [$\exists_j^2$] $= 935.75\%$

C.V. $= \frac{\exists_j}{\bar{R}_j} = \frac{30.59}{23.94} = 1.28\%$

Table number 4.8 shows that the expected return of SCBL is 23.94% and S.D is 30.59%. Similarly, variance of SCBL is 935.75% and C.V. is 1.28%.

Table No. 4.9

Annual Rate of Return, Expected Return, Variance and C.V. of NIBL

F/Y	Closing Price (Monthly Market)	Cash Dividend	R_j [%]	$[R_j - \bar{R}_j)$	$[R_j - \bar{R}_j)^2$
2002/03	780	20	–	–	–
2003/04	745	15	– 2.56	– 12.51	156.50
2004/05	1260	12.5	70.80	60.85	3702.72
2005/06	970	5	– 22.62	– 32.57	1060.80
2006/07	1000	20	5.15	–4.8	23.04
2007/08	1320	7.50	32.75	22.8	519.84
2008/09	1215	20	–6.44	–16.39	268.63
2009/10	1250	25	4-94	–5.01	25.10
2010/11	1275	18	3.44	–6.51	42.38
2011/12	1305	22	4.08	–5.87	34.46
			pR_j= 89.54		**$p[R_j - \bar{R}_j)^2$ = 5833.47**

$$\text{Annual rate of return}(R_j) = \frac{\text{Ending Price Z Begining Price } \Gamma \text{ Cash Dividend}}{\text{Begining Price}}$$

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

$$= \frac{89.54}{9}$$

$$= 9.95\%$$

$$\text{Standard deviation } (\exists_j) = \sqrt{\frac{\phi (R_j \, Z \bar{R}_j)^2}{N \, Z 1}}$$

$$= \sqrt{\frac{5833.47}{9}}$$

$$= \sqrt{648.16}$$

$$= 25.46\%$$

$$\text{Variance } [\exists_j^2] = 648.21\%$$

$$\text{C.V.} = \frac{\exists_j}{\bar{R}_j} = \frac{25.46}{9.95} = 2.56\%$$

Table number 4.9 shows that the expected return of NIBL is 9.95% and standard deviation is 25.46%. Similarly, variance of NIBL is 648.21% and C.V. is 2.56%.

Table No. 4.10

Annual Rate of Return Expected Return, Variance and C.V. of NABIL

F/Y	Closing Price (Monthly Market)	Cash Dividend	R_j [%]	$[R_j - \bar{R}_j)$	$[R_j - \bar{R}_j)^2$
2002/03	800	30	–	–	–
2003/04	725	45	– 3.75	–13.44	180.63
2004/05	950	65	4.0	–5.69	32.38
2005/06	1025	70	15.26	+5.57	31.02
2006/07	1175	80	22.44	12.75	162.56
2007/08	1410	60	25.11	15.42	237.78
2008/09	1700	35	23.05	–13.36	178.49
2009/10	1450	30	– 12.94	– 22.63	512.12
2010/11	1375	25	–3.45	– 13.14	172.66
2011/12	1575	40	17	7.76	60.22
			pR_j= 87.17		**$p[R_j - \bar{R}_j)^2$ = 1567.86**

$$\text{Annual rate of return } (R_j) = \frac{\text{Ending Price Z Begining Price } \Gamma \text{ Cash Dividend}}{\text{Begining Price}}$$

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

$$= \frac{87.17}{9}$$

$$= 9.69\%$$

$$\text{Standard deviation } (\exists_j) = \sqrt{\frac{\phi (R_j Z \bar{R}_j)^2}{N Z 1}}$$

$$= \sqrt{\frac{1567.86}{9}}$$

$$= \sqrt{174.21}$$

$$= 13.20\%$$

Variance [$\exists_j^2$] = 174.24%

C.V. = $\frac{\exists_j}{\bar{R}_j} = \frac{13.20}{9.69}$ = 1.36%

Table number 4.10 shows that the expected return of NABIL is 9.69% and S.D. is 13.20%. Similarly, variance of NABIL is 174.24% and C.V. is 1.36%.

Table No. 4.11

Annual Rate of Return, Expected Return, Variance and C.V. of HBL

F/Y	Closing Price (Monthly Market)	Cash Dividend	R_j [%]	$[R_j - \bar{R}_j)$	$[R_j - \bar{R}_j)^2$
2002/03	850	1.32	–	–	–
2003/04	903	0	6.23	– 3.98	15.84
2004/05	1049	11.58	17.45	7.24	52.42
2005/06	1007	30	– 1.19	–11.4	129.96
2006/07	970	15	–2.18	–12.39	153.51
2007/08	1340	25	40.72	30.51	930.86
2008/09	1580	12	18.80	8.59	73.79
2009/10	840	11.84	–46.09	–56.3	3169.69
2010/11	1200	13	44.40	34.19	1168.96
2011/12	1350	15	13.75	3.54	11.53
			pR_j= 91.89		**$p[R_j - \bar{R}_j)^2$ = 5707.56**

Annual rate of return (R_j) = $\frac{\text{Ending Price Z Begining Price } \Gamma \text{ Cash Dividend}}{\text{Begining Price}}$

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

$$= \frac{91.89}{9} = 10.21\%$$

Standard deviation ($\exists_j$) $= \sqrt{\frac{\phi(R_j Z\bar{R}_j)^2}{N Z1}}$

$$= \sqrt{\frac{5707.56}{9}}$$

$$= \sqrt{634.17}$$

$$= 25.18\%$$

Variance [$\exists_j^2$] $= 634.03\%$

C.V. $= \frac{\exists_j}{\bar{R}_j} = \frac{25.18}{10.21} = 2.47\%$

Table number 4.11 shows that the expected return of NABIL is 10.21% and S.D. is 25.18%. Similarly variance of HBL is 634.03% and C.V. is 2.47%.

Table No. 4.12

Annual Rate of Return, Expected Return, Variance and C.V. of SBI

F/Y	Closing Price (Monthly Market)	Cash Dividend	R_j [%]	$[R_j - \bar{R}_j)$	$[R_j - \bar{R}_j)^2$
2002/03	290	8	–	–	–
2003/04	240	0	–33.28	– 47.14	2222.18
2004/05	442	0	68.13	54.27	2945.23
2005/06	471	5	–8.35	– 22.21	493.28
2006/07	685	12.59	32.07	18.21	331.60
2007/08	1180	0	56.22	42.36	1794.37
2008/09	1425	2.1	4.90	–8.96	80.28
2009/10	1475	5	3.86	–10	100
2010/11	1505	7	2.51	–11.35	128.82
2011/12	1483	3	– 1.26	–15.12	228.61
			pR_j= 124.7		**$p[R_j - \bar{R}_j)^2$ = 8324.37**

Annual rate of return (R_j) = $\frac{\text{Ending Price Z Begining Price Γ Cash Dividend}}{\text{Begining Price}}$

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

= $\frac{124.7}{9}$

= 13.86%

Standard deviation ($\exists_j$) = $\sqrt{\frac{\phi(R_j Z \bar{R}_j)^2}{N Z 1}}$

= $\sqrt{\frac{8324.37}{9}}$

= $\sqrt{924.93}$

= 30.41%

Variance [$\exists_j^2$] = 924.77%

C.V. = $\frac{\exists_j}{\bar{R}_j} = \frac{30.41}{13.86}$ = 2.19%

Table number 4.12 shows that the expected return of SBI is 13.86% and S.D. is 30.41%. Similarly variance of SBI is 924.77% and C.V. is 2.19%.

Table No. 4.13

Analysis of Risk and Return of Banks

Commercial Banks	$\bar{R}_j$[%]	$\exists_j$[%]	$\exists_j^2$[%]
SCBL	23.94	30.59	935.75
NIBL	9.95	25.46	648.21
NABIL	9.69	13.20	174.24
HBL	10.21	25.18	634.03
SBI	13.86	30.41	924.77

Figure No. 4.7

Expected Risk and Return of Banks

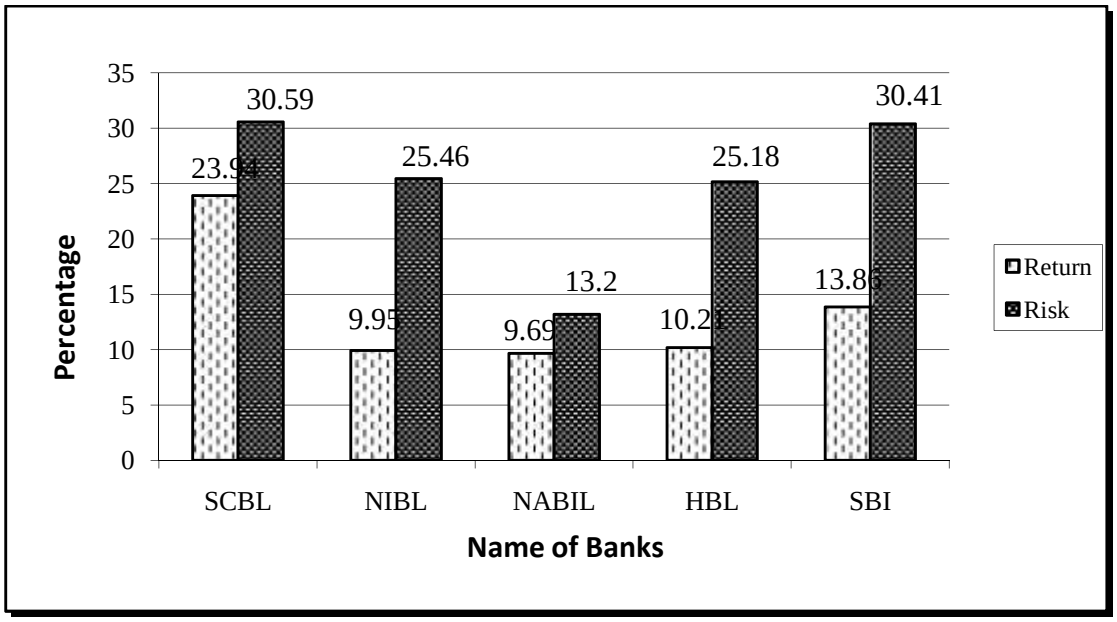


Table number 4.13 shows that SCBL has the highest expected i.e. 23.94% and NABIL has the lowest expected return i.e. 9.69% among five listed commercial banks. Other banks NIBL, HBL and SBI have the expected return of 9.95%, 10.21% and 13.86% respectively. According to return we can say that SCBL is comparatively better than

other banks. SCBL stands at first position and SBI stands at second position its expected return is 13.86%. HBL stands at third position its expected return is 10.21%. Similarly, NIBL stands at fourth position its expected return is 9.95% and NABIL stands at fifth position its expected return is 9.69%.

Likewise looking at the risk pattern the SCBL has the highest risk i.e. 30.59% and NABIL has the lowest risk i.e. 13.20% other banks NIBL, HBL and SBI have a risk of 25.46%, 25.18% and 30.41% respectively. According to risk we can say that the holding a SCBL stock is the most risky and holding a stock of NABIL is not so risky among five listed commercial banks. Aggressive investor choose a stock of SCBL but conservative investor choose a stock of NABIL and Moderate investor choose a stock of NIBL, HBL and SBI.

4.3.1 Analysis of Market Risk and Return

Market risk (standard deviation) and return are the most important factors to analyze the risk and return of individual stocks. For estimating the market parameters companies listed in NEPSE are taken into consideration. Overall market movement is represented by market index (i.e. NEPSE Index).

Calculation of annual rate of return, expected return and variance of market are shown in table see detail calculation).

Table No.4.14

Calculation of Annual Rate of Return, Expected Return and Variance of Market

Year	NEPSE Index (M)	R_m [%]	$[R_m - \bar{R}_m)$	$[R_m - \bar{R}_m)^2$
1 July 2003	204.86	–	–	–
2004	222.04	8.39	–4.93	24.30
2005	286.67	29.11	15.79	249.32
2006	386.83	34.94	21.62	467.42
2007	683.95	76.81	63.49	4030.98
2008	982.12	43.59	30.27	916.27
2009	749.10	– 23.73	–37.05	1372.70
20010	477.73	–36.23	–49.55	2445.20
2011	523.08	9.49	–3.83	14.67
2012	405.43	–22.49	–35.81	1282.36
		ϕR_m = 119.88		**$\phi[R_m - \bar{R}_m)^2$ = 10813.22**

Annual rate of return (R_m) = $\frac{\text{Ending Price Z Begining Price}}{\text{Begining Price}}$

Expected Return ($\bar{R}_m$) = $\frac{\phi R_m}{n}$

= $\frac{119.88}{9}$

= 13.32%

Standard deviation ($\exists_m$) = $\sqrt{\frac{\phi(R_m Z \bar{R}_m)^2}{N Z 1}}$

$$= \sqrt{\frac{10813.22}{9}}$$

$$= \sqrt{1201.47}$$

$$= 34.66\%$$

Variance of market [$\exists_m^2$] = 1201.32%

From the table number 4.14, it can be concluded that expected return of market is 13.32%. Similarly, standard deviation of market is 34.66% and variance is 1201.32%. The return of market at year 2008 is highest and there after the market return is fluctuation. The market return at year 2003 is highly decreasing.

4.3.2 Analysis of Market Sensitivity

Market sensitivity looks how the sensitive stocks return are to the average market return by looking at the percentage change in stock and market return during the same period. The relevant risk of individual assets is measured in terms of security of its returns to changes in the market return. It is known as systematic or beta risk. The systematic risk is a functions of Co-variability of single stock return with the average market return. It measures of volatility of a security rate of return in response to the volatility of market rate of return. The terms beta is popularly used to measure the sensitivity of assets return to the changes in the market return. Beta coefficient of market is always equal to 1.

Analysis of co-variance between marked and stock j return Cov ($r_{j,}$ r_m) and beta coefficient of market and stock j (β_{jm}) of five listed commercial banks (see detail calculation).

Table No. 4.15

Analysis of Market Sensitivity

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
SCBL											
$(R_{SCBL} - \bar{R}_{SCBL})$	–	– 22.14	9.39	37.56	12.51	–3.34	–27.37	–60.09	42.16	11.34	
$(R_m - \bar{R}_m)$	–	–4.93	15.79	21.62	63.49	30.27	–37.05	–49.55	–3.83	–35.81	
$(R_{SCBL} - \bar{R}_{SCBL})(R_m - \bar{R}_m)$	–	109.15	148.27	812.05	794.26	–101.10	1014.06	2977.46	–161.47	–406.09	5186.59
NIBL											
$(R_{NIBL} - \bar{R}_{NIBL})$	–	–12.51	60.85	–32.57	–4.8	22.8	–16.39	–5.01	–6.51	–5.87	
$(R_m - \bar{R}_m)$	–	–4.93	15.79	21.62	63.49	30.27	–37.05	–49.55	–3.83	–35.81	
$(R_{NIBL} - \bar{R}_{NIBL})(R_m - \bar{R}_m)$	–	61.67	960.82	–704.16	–304.75	690.16	607.25	248.25	24.93	210.20	1794.37
NABIL											
$(R_{NABIL} - \bar{R}_{NABIL})$	–	–13.44	–5.69	5.57	12.75	15.42	13.36	–22.63	–13.14	7.76	
$(R_m - \bar{R}_m)$	–	–4.93	15.79	21.62	63.49	30.27	–37.05	–49.55	–3.83	–35.81	
$(R_{NABIL}\ \bar{R}_{NABIL})(R_m - \bar{R}_m)$	–	66.26	–89.85	120.42	809.50	466.76	–494.99	1121.32	50.33	–277.89	1771.86
HBL											
$(R_{HBL} - \bar{R}_{HBL})$	–	–3.98	7.24	–11.4	–12.39	30.51	8.59	–56.3	34.19	3.54	
$(R_m - \bar{R}_m)$	–	–4.93	15.79	21.62	63.49	30.27	–37.05	–49.55	–3.83	–35.81	
$(R_{HBL}\ \bar{R}_{HBL})(R_m - \bar{R}_m)$	–	19.62	114.32	–246.47	–786.64	923.54	–318.26	2789.67	–130.95	–126.76	2238.07
SBI											
$(R_{SBI} - \bar{R}_{SBI})$	–	–47.14	54.27	–22.21	18.21	42.36	–8.96	–10	–11.35	–15.12	
$(R_m - \bar{R}_m)$	–	–4.93	15.79	21.62	63.49	30.27	–37.05	–49.55	–3.83	–35.81	
$(R_{SBI}\ \bar{R}_{SBI})(R_m - \bar{R}_m)$	–	232.40	856.92	–480.18	1156.15	1282.24	331.97	495.5	43.47	541.45	4459.92

From the above table number 4.15 we can calculation the covariance between market return and stock j return Cov (rj, rm) of five listed commercial bank i.e. SCBL, NIBL, NABIL, HBL and SBI are as follows:

We know,

$$\text{CoV}(r_{j,}\, r_m) = \frac{\phi(R_j Z\bar{R}_j)(R_m Z\bar{R}_m)}{N}$$

$$\text{CoV}(R_{SCBL,}\, R_m) = \frac{\phi(R_{SCBL} Z\bar{R}_{SCBL})(R_m ZR_m)}{N} = \frac{5186.59}{9} = 576.29$$

$$\text{CoV}(R_{NIBL,}\, R_m) = \frac{\phi(R_{NIBL} Z\bar{R}_{NIBL})(R_m Z\bar{R}_m)}{N} = \frac{1794.37}{9} = 199.37$$

$$\text{CoV}(R_{NABIL,}\, R_m) = \frac{\phi(R_{NABIL} Z\bar{R}_{NABIL})(R_m Z\bar{R}_m)}{N} = \frac{1771.86}{9} = 196.87$$

$$\text{CoV}(R_{HBL,}\, R_m) = \frac{\phi(R_{HBL} Z\bar{R}_{HBL})(R_m Z\bar{R}_m)}{N} = \frac{2238.07}{9} = 248.67$$

$$\text{CoV}(R_{SBI,}\, R_m) = \frac{\phi(R_{SBI} Z\bar{R}_{SBI})(R_m Z\bar{R}_m)}{N} = \frac{4459.92}{9} = 495.55$$

Seeing the above result it can be concluded that two variable such as a return on market and return on stock of commercial banks move together. A positive value of covariance indicates that the stock return trend moves in the same direction of market return. SCBL has the highest covariance and NABIL has the lowest covariance between market return and stock j i.e. 576.29 and 196.87 respectively.

Again,

we know,

$$\text{jm} = \frac{\text{CoV}(r_j, r_m)}{\exists_m^2}$$

Beta coefficient of market and stock of various commercial banks are as follows:

$$\beta_{SCBL} = \frac{CoV(R_{SCBL}, R_m)}{\sigma_m^2} = \frac{576.29}{1201.32} = 0.48$$

$$\beta_{NIBL} = \frac{CoV(R_{NIBL}, R_m)}{\sigma_m^2} = \frac{199.37}{1201.32} = 0.17$$

$$\beta_{NABIL} = \frac{CoV(R_{NABIL}, R_m)}{\sigma_m^2} = \frac{196.87}{1201.32} = 0.16$$

$$\beta_{HBL} = \frac{CoV(R_{HBL}, R_m)}{\sigma_m^2} = \frac{248.67}{1201.32} = 0.21$$

$$\beta_{SBI} = \frac{CoV(R_{SBI}, R_m)}{\sigma_m^2} = \frac{495.55}{1201.32} = 0.41$$

The above calculation shows that SCBL has the highest beta i.e. 0.48 and NABIL has the lowest beta i.e. 0.16 among five listed commercial banks. Other banks NIBL, HBL and SBI have a beta of 0.17, 0.21 and 0.41 respectively. From above calculation we find that all beta is less than one. If the beta coefficient is less than 1, it indicates that the stock return is less volatile than market return.

4.4 Analysis of Systematic and Unsystematic Risk

Calculation of Systematic and unsystematic risk

Systematic risk = $\beta_j^2 \sigma_m^2$ 0

Unsystematic risk = $\sigma_j^2 - \beta_j^2 \sigma_m^2$

Coefficient of determination (R^2) = $\frac{\beta_j^2 \sigma_m^2}{\sigma_j^2}$

Table No. 4.16

Analysis of Systematic and Unsystematic Risk

Commercial Banks	Total Risk	Systematic Risk (Undiverisifiable)	Unsystematic Risk (Diversifiable)	Coefficient of Determination
SCBL	935.75	276.78	658.97	0.30
NIBL	648.21	34.72	613.49	0.05
NABIL	174.24	30.75	143.49	0.18
HBL	634.03	52.98	581.05	0.08
SBI	924.77	201.94	722.83	0.22

The table number 4.16 shows that the total risk of SCBL is the highest i.e. 935.75% and the total risk of NABIL is the lowest i.e. 174.24% among nine commercial banks. Other banks NIBL, HBL and SBI have a total risk of 648.21%, 634.03% and 924.77% respectively. The 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.

Stock of SCBL has the highest portion of systematic risk i.e. 30% on total risk and remaining 70% is unsystematic risk. Only 70% of risk can be unsystematic by the construction of optimal portfolio. Likewise the stock of NIBL has the lowest portion of systematic risk i.e. 5% on total risk and remaining 95% is unsystematic risk. Only 95% of risk can be unsystematic by the construction of optimum portfolio. Other banks NABIL, HBL and SBI have a 18%, 8% and 22% portion of systematic risk on total risk respectively. Only the 82%, 92% and 78% of risk can be unsystematic risk by the construction of optimal portfolio.

4.5 Portfolio Analysis

4.5.1 CAPM Equation/SML

Using CAPM model, the investor can estimate the required rate of return for the stock. The intrinsic value of stock is inversely related to required rate of return. The relationship between an assets return and its systematic risk can be expressed by the CAPM theory which is also called the security market line (SML). SML is the line showing the relationship between the systematic risk (beta) and required rate of return. The equation for the CAPM or SML is as follow:

$$\text{Required rate of return } (K_j) = R_F + (R_M - R_F)\,\beta_j$$

$$= 5.75 + (13.32 - 5.75)\,\beta_j$$

$$= 5.75 + 7.57\,\beta_j$$

Where,

R_F = Risk free rate of return

R_M = Expected return on market portfolio

β_j = Beta coefficient of asset j

Calculation of required rate of return and comparing with expected rate of return are shown on table.

Table No. 4.17

Portfolio Analysis

Commercial Banks	R_F (%)	Risk Premium	$_j$	K_j (%)	$\bar{R}$ (%)	Evaluation
SCBL	5.75	7.57	0.48	9.38	23.94	$K_j < R_j$, Under Priced
NIBL	5.75	7.57	0.17	7.04	9.95	$K_j < R_j$, Under Priced
NABIL	5.75	7.57	0.16	6.96	9.69	$K_j < R_j$, Under Priced
HBL	5.75	7.57	0.21	7.34	10.21	$K_j < R_j$, Under Priced
SBI	5.75	7.57	0.41	8.85	13.86	$K_j < R_j$, Under Priced

Source: R_F is taken form NRB quarterly economic bulletin. R_F is average of treasury bills rate (364 day).

The above table number 4.17 shows that SCBL stock has the highest required rate of return i.e. 9.38% and its beta is also highest i.e. 0.48 and the required rate of return of NABIL is lowest i.e. 6.96% and the beta is 0.16 among five listed commercial banks. It meas higher the beta higher the required rate of return and vice-versa. So required rate of return is depend on beta of assets. Other banks NIBL, HBL and SBI have a required rate of return of 7.04%, 7.34% and 8.85% and their betas are 0.17, 0.21 and 0.41 respectively.

From the above calculation all the bank's required rate of return is less than expected rate of return so all of the stocks are underpriced. Thus, from the investor point of view the under priced stock should be purchased. So long position strategy would be beneficial on these stocks.

4.5.2 Portfolio Risk and Return

In previous analysis of risk and return are based on the investment on single asset. But portfolio risk and return is based on two asset portfolio. They are risk free asset i.e. government securities and risky asset i.e.

share and debenture. Risk free assets are denoted by 'f' and risky assets are denoted by 'm' portfolio and also risky assets is known as market portfolio. Portfolio risk and return is to make which of the commercial bank among the sample bank had constructing a portfolio to reduce risk and increase its return.

Calculation of Portfolio Risk and Return

Portfolio return (R_P) = $w_m \bar{R}_m + WR_FR_F$

Where,

W_m = Weight of market portfolio

W_{RF} = weight of risk free assets

R_F = Risk free rate of return

$\bar{R}_m$ = Expected return on market portfolio

Portfolio risk ($\exists_p$) = $\sqrt{W_{RF}^2 \exists_{RF}^2 \Gamma W_M^2 \exists_M^2 \Gamma 2 \exists_{RF} \exists_M W_{RF} W_M}$

= $\sqrt{W_{RF}^2 \mid 0 \Gamma W_M^2 \mid 0 \Gamma 2 \mid 0 \exists_M W_{RF} W_M}$

= $\sqrt{W_M^2 . \exists_M^2}$

… $\exists_P$ = $W_M \exists_M$

Where,

W_M = Weight of market portfolio

$\exists_M$ = S.D. of risky assets or market

Risk (S.D.) of risk free assets = 0

Table No. 4.18

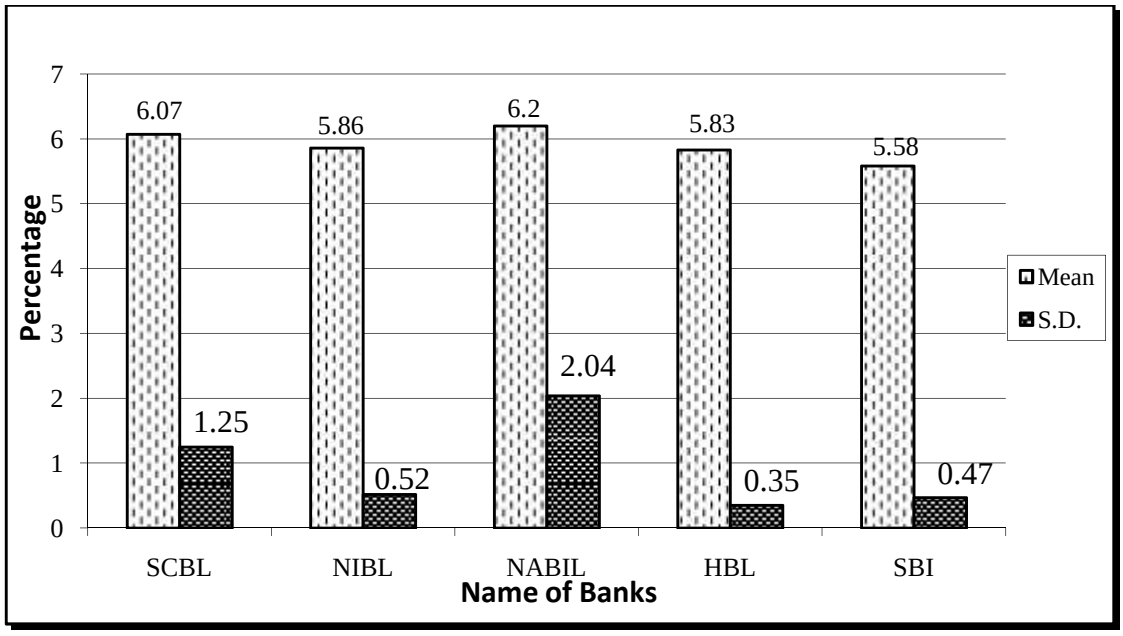
Portfolio Risk and Return of Banks

CBs	R_F (%)	$\bar{R}_M$	W_{RF}(%)	W_j (%)	R_p (%)	$\pm_P$ (%)
SCBL	5.75	13.32	96.40	3.60	6.02	1.25
NIBL	5.75	13.32	98.49	1.51	5.86	0.52
NABIL	5.75	13.32	94.12	5.88	6.20	2.04
HBL	5.75	13.32	98.99	1.01	5.83	0.35
SBI	5.75	13.32	98.65	1.35	5.85	0.47

Source: Appendix–II

Figure No. 4.8

Portfolio Risk and Return of Banks



The table number 4.18 shows portfolio return and risk of five listed commercial banks. Risk free rate of return for all commercial banks are 5.75%. NABIL has the highest portfolio return i.e. 6.20% and HBL has the lowest portfolio return i.e. 5.88% among five commercial banks. Because of NABIL is investing 5.83% of its total investment in risky assets and remaining 94.12% in risk free asset. It has highest portfolio risk i.e. 2.04% Likewise. HBL has invested only 1.01% of its total

investment in risky asset and remaining 98.99% in risk free asset. It has lowest portfolio risk i.e. 0.35% among five commercial banks. Other banks SCBL, NIBL and SBI have portfolio return of 6.02%, 5.86% and 5.85% and portfolio risk of 1.25%, 0.52% and 0.47% respectively. The banks have invested 3.60%, 1.51% and 1.35% of total investment in risky assets and remaining 96.40%, 98.49% and 98.65% in risk free asset respectively.

4.6 Portfolio Performance Measure

4.6.1 Sharpe's Portfolio Performance Measure

Portfolio performance evaluation on the basis of return only will be insufficient therefore, it is necessary to consider both risk and return. One performance measure that has been developed to evaluate a portfolio's performance considering both return and risk is the sharps index of portfolio performance. This measure is also known as the reward to variability ratio. It is used to rank the performance of investment fund.

Symbolically,

$$\text{Sharpe Index of Portfolio} = \frac{\text{Total portfolio return Z Risk free rate}}{\text{Portfolio st an dard deviation}}$$

$$\text{or,} \quad S_P = \frac{r_p Z r_f}{\exists_p}$$

Table No. 4.19

Portfolio Performance Measure

Commercial Banks	r_f (%)	r_P (%)	$\pm_P$ (%)	S_P
SCBL	5.75	6.02	1.25	0.2160
NIBL	5.75	5.86	0.52	0.2115
NABIL	5.75	6.20	2.04	0.2206
HBL	5.75	5.83	0.35	0.2286
SBI	5.75	5.85	0.47	0.2128

The table number 4.19 shows Sharpe's portfolio performance measure of five listed commercial banks. Risk free rate of return for all commercial banks are 5.75%. HBL has the highest Sharpe index of portfolio i.e. 0.2286 and NIBL has the lowest Sharpe index of portfolio i.e. 0.2115 among the five commercial banks. Other banks SCBL, NABIL and SBI have a Sharpe index of portfolio are 0.2160, 0.2206 and 0.2128 respectively.

4.7 Trend Analysis

Trend analysis is a statistical tools which highlight the previous trend and fore cast for a future with the help of past and present information. The purpose of trend analysis in this chapter is to analyze the trend of total investment, total deposit and investment on various individual assets such as government securities, loan and advance and Share and debenture of the commercial banks for next five year. Here, least square method is used to determine the trend value which is stated as:

$y = a + bx$

Where,

y = Dependent variable

x = Independent variable

a = y intercept

b = Slope of the trend line

To make calculation easier, the deviation of the independent variable (i.e. time) are taken from the middle, a and b can be easily calculated by using following formula.

$$a = \frac{\phi y}{n}$$

$$b = \frac{\phi xy}{x^2}$$

4.7.1 Trend Analysis of Total Investment and Total Deposit

On this part, the trend of commercial banks about the investment and total deposit for the 10 years from 2002/03 to 2011/12 should be analyzed and forecasted for the next five year. The following table number 4.20 shows the trend value of total investment and total deposit of commercial banks.

Table No. 4.20

Trend value of Total Investment and total Deposit of CBs

(Rs. in Million)

Year (t)	X - [t– 2007.5]	Total Investment		Total Deposit	
		Trend Value	Actual Value	Trend Value	Actual Value
2003	–4.5	24945.60	28349.23	53902.59	63581
2004	–3.5	28791.17	28792.54	67972.03	70775.33
2005	–2.5	32636.74	31436.10	82041.47	75673.29
2006	–1.5	36482.31	33273.09	96110.91	87998.71
2007	– 0.5	40327.88	36666.91	110180.35	100872.57
2008	0.5	44173.45	45486.51	124249.79	121339.06
2009	1.5	48019.02	49714.15	138319.23	149517.64
2010	2.5	51864.59	54257.99	152388.67	154873.35
2011	3.5	55710.16	55906.33	166458.11	169794.23
2012	4.5	59555.73	58623.71	180527.55	177725.55
2013	5.5	63401.30		194596.99	
2014	6.5	67246.87		208666.43	
2015	7.5	71092.44		222735.87	
2016	8.5	74938.01		236805.31	
2017	9.5	78783.58		250874.75	

Source: For a Sample Calculation of trend line equation refer to Appendix-III.

Here,

Statement	Trend Line-equation
Trend line for total investment of CBs	$Y_C = 42250.66 + 3845.57X$
Trend line for total deposit of CBs	$Y_C = 117215.07 + 14069.44X$

Figure No. 4.9

Trend and Actual Value of Total Investment of CBs

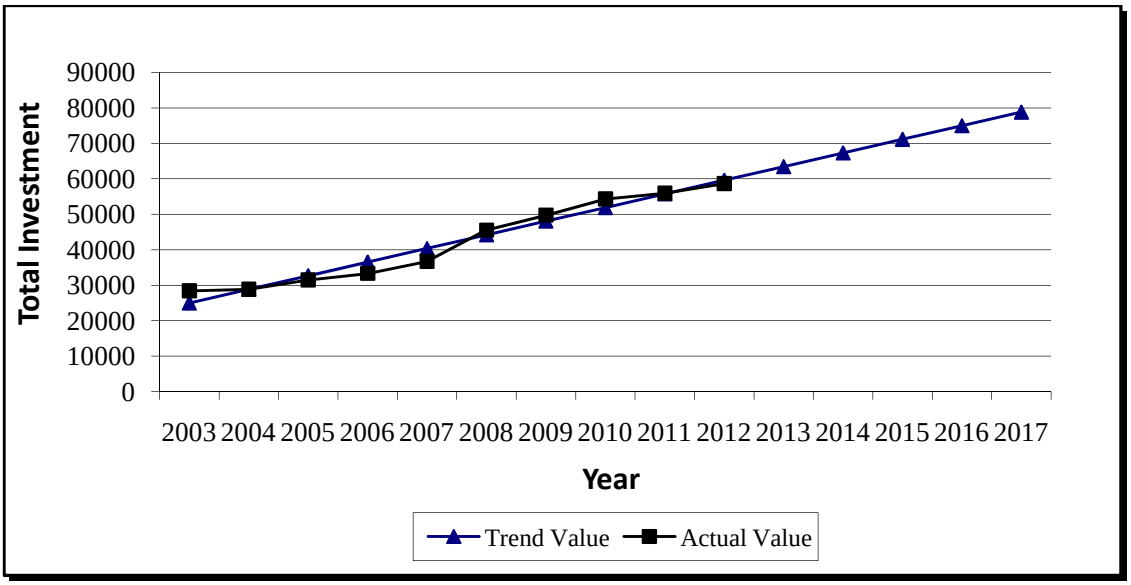
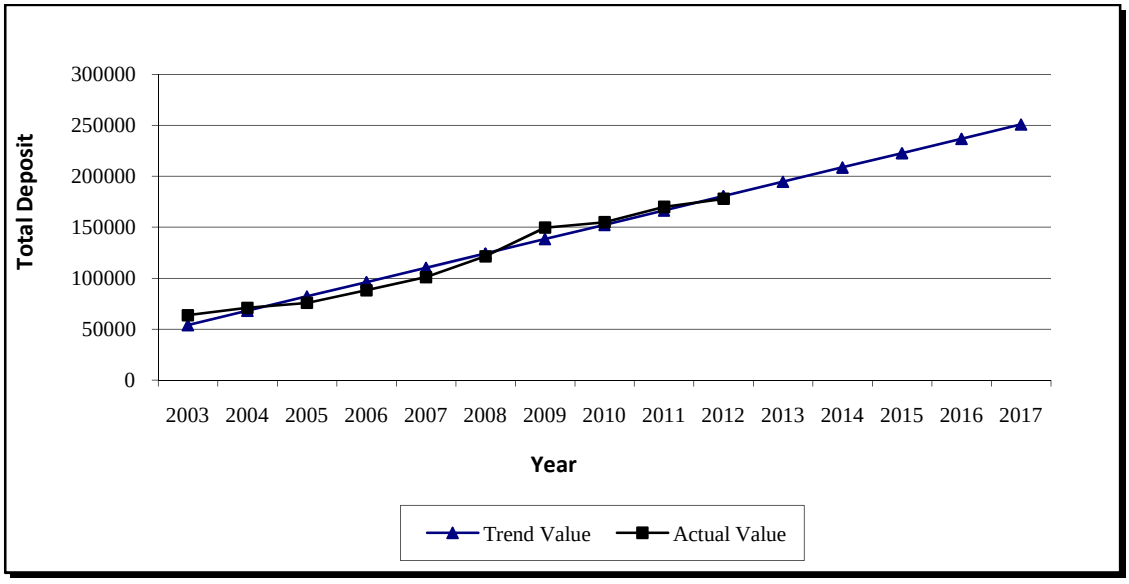


Figure No. 4.10

Trend and Actual Value of Total Deposit of CBs



Above the table number 4.20 and figure no. 4.9 and 4.10 shows that the investment of the commercial banks have been increasing by Rs. 3845.57 million per year and it is expected that it will be reach Rs. 78783.58 million at the end of 2017. Similarly, total deposit of the CBs have been increasing by Rs. 14069.44 million each year and it is hope that it will be reach Rs. 250874.75 million at the end of 2017. The increasing ratio on total deposit (250874.75/53902.59 = 4.65 times) is highest than total investment (78783.58/24945.60 = 3.16 times).

4.7.2 Trend Analysis of Investment on Various Assets

In this part, the three individual investments are taken for the trend analysis of commercial banks, such as loan and advances, share and debenture and government securities. The efforts have been made to analyze total investment on various assets of CBs for 10 years from 2003 to 2012 and forecasted for next five years till 2017. The following table no. 4.21 shows the trend value for 15 years from 2003 to 2017 of commercial bank's investment on different assets i.e. investment on loan and advances, investment on share and debenture and investment on government securities.

Table No. 4.21

Trend value of Investment on Govt. Securities, Loan and Advance and Share and Debenture of the CBs

Year (t)	X - [t– 2007.5]	Investment On Government Securities		Investment On Loan and Advance		Investment on Share and Debenture	
		Trend Value	Actual Value	Trend Value	Actual Value	Trend Value	Actual Value
2003	–4.5	11819.71	12330.75	23107.86	29064.70	23.81	130.72
2004	–3.5	13951.68	13470.36	33646.81	33458.14	155.81	133
2005	–2.5	16083.65	15384.15	44185.76	39426.10	287.81	243.92
2006	–1.5	18215.62	17983.97	54724.71	48092.09	419.81	605.56
2007	– 0.5	20347.59	18054.15	65263.66	60545.91	551.81	279.93
2008	0.5	22479.56	24532.60	75802.61	76834.21	683.81	541.87
2009	1.5	24611.53	26802.68	86341.56	97106.37	815.81	883.38
2010	2.5	26743.50	27901.43	96880.51	101122.29	947.81	972.20
2011	3.5	28875.47	28778.50	107419.46	107114.39	1079.81	1137.23
2012	4.5	31007.44	28897.08	117958.41	112567.10	1211.81	1250.33
2013	5.5	33139.41		128497.36		1343.81	
2014	6.5	35271.38		139036.31		1475.81	
2015	7.5	37403.35		149575.26		1607.81	
2016	8.5	39535.32		160114.21		1739.81	
2017	9.5	41667.29		170653.16		1871.81	

Here,

Statement	Trend Line-equation
Trend line for Govt. securities	$Y_C = 21413.57 + 2131.97\ X$
Trend line for loan and advance	$Y_C = 70533.13 + 10538.95X$
Trend line for share and debenture	$Y_C = 617.81 + 132\ X$

Figure No. 4.11

Trend and Actual Value of Investment on Govt. Securities of CBs

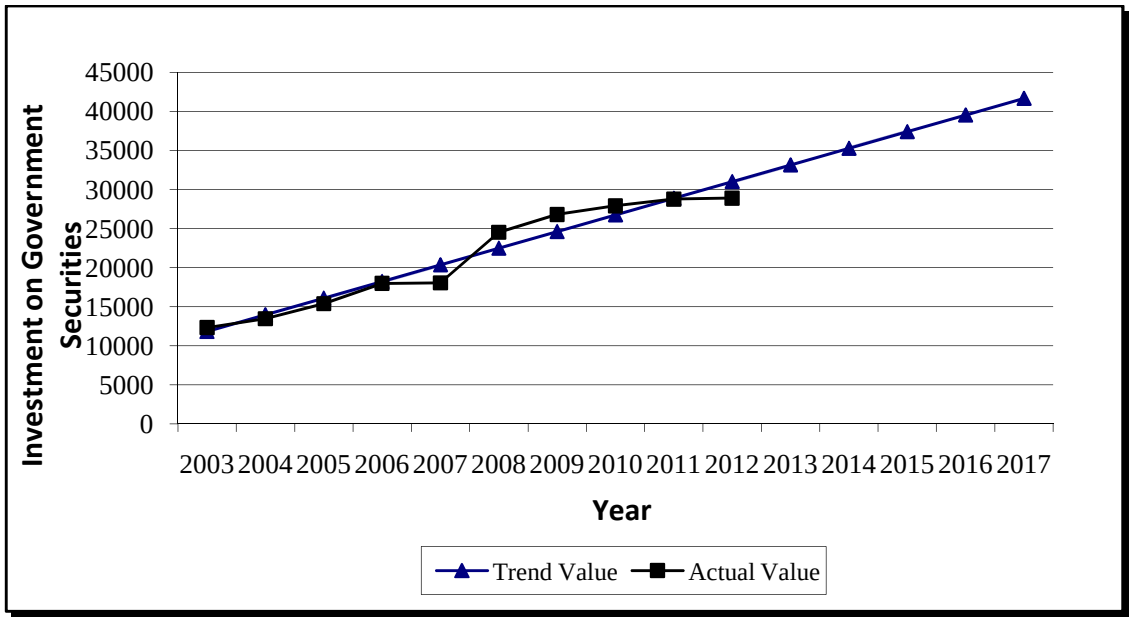


Figure No. 4.12

Trend and Actual Value of Investment on Loan and Advance of CBs

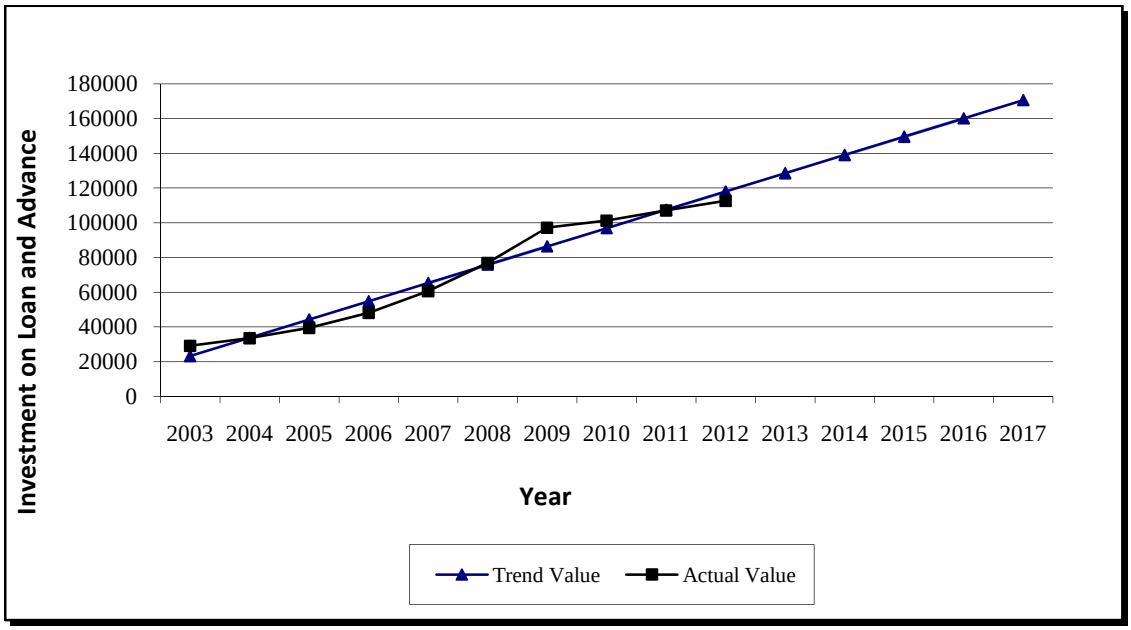
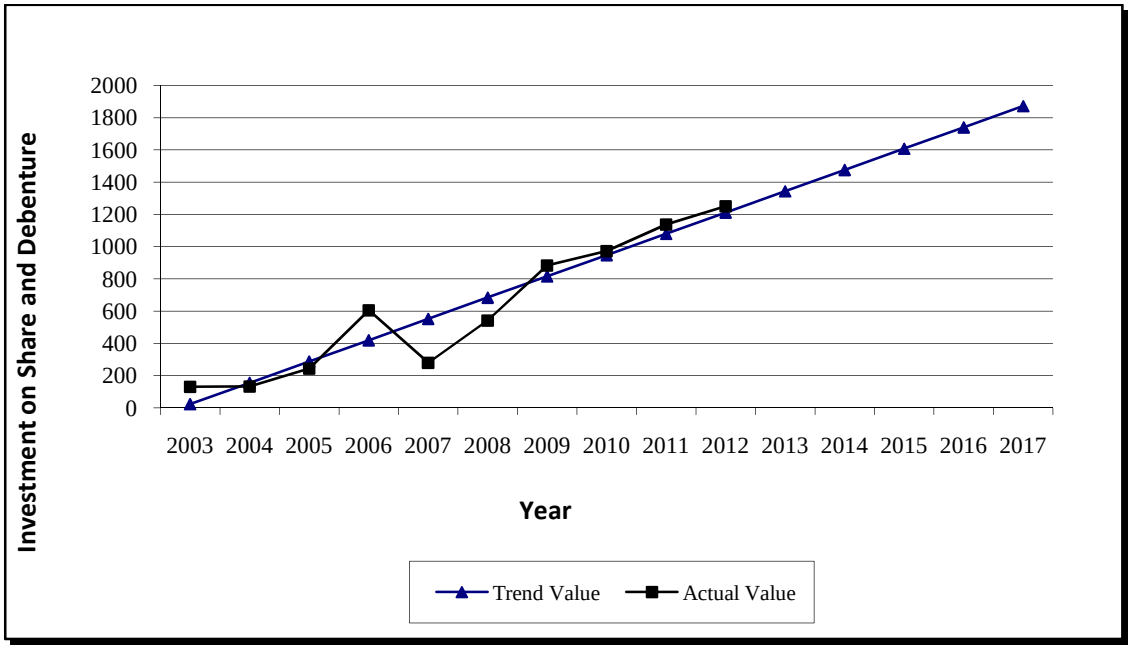


Figure No. 4.13

Trend and Actual Value of Investment on Share and Debenture of CBs



From above table no. 4.21 and figure no. 4.11, 4.12 and 4.13, it is clear that the investments on government securities; loan and advance and share and debenture of commercial banks are in increasing trend. The investment on government securities is increasing by Rs. 2131.97 million each year, investment on loan and advance increasing by Rs. 10538.95 million per year. Similarly, the investment on share and debenture is increasing by Rs. 132 million, per year. If other things remaining same the investment on govt. securities will be Rs. 41667.29 million in year 2017, similarly the investment on loan and advance and share and debenture will be Rs. 170653.16 million, Rs. 1871.81 million in year 2017 respectively. In comparison the increasing ratio on share and debenture (1871.81/23.81 = 78.61 times) is highest than loan and advance (170653.16/23017.86 = 7.39 times) and government (41667.29/11819.71 = 3.53 times). It shows that investment on share and debenture is increasing rapidly more than loan and advance and government securities.

4.8 Major Findings of the Study

- The average mean ratio of investment to total deposit is 36.78%. HBL and SCBL have a greater ratio above average mean ratio. Other banks NIBL, NABIL and SBI have lower investment to total deposit ratio than average mean ratio. It shows that HBL and SCBL has effectively mobilizing its deposit on investment to generate the return. But other banks are investing its deposit in lower ratio than average mean ratio.
- The average mean ratio of loan and advance tot total deposit is 59.59%. NIBL has greater ratio above average mean ratio and SCBL has lower ratio than average mean ratio among five commercial banks. It shows that NIBL has invest larger amount of its deposit fund in loan and Advance through the banks.
- The average mean ratio of return on total assets is 1.81%, NABIL has a greater ratio above average mean ratio and SBI has lower ratio than average mean ratio among five commercial banks. It shows that performance of NABIL is good and SBI is not so good.
- It an average only 0.49% parts of total outside investment is invested in share and debenture of other companies. The mean share and debenture to total outside investment ratio of NABIL has the highest return i.e. 1.05% and HBL have the lowest return i.e. 0.21% among five CBs. It shows that NABIL is utilized highest percentage of total outside investment into share and debenture.
- In an average 18.73% parts of total outside investment is invested in government securities. The mean government securities to total outside investment ratio of SCBL has the highest return i.e. 22.32% and NIBL has the lowest return i.e. 10.90% among the five CBs. That means among the five CBs SCBL is utilized

highest percentage of total outside investment into government securities.

- Among five listed commercial banks SCBL has invested its more fund on government securities i.e. 30.13% and NABIL has invested lesser amount on government securities i.e. 20.11%. Similarly, NABIL has invested its more fund on share and debenture and NIBL has invested lesser amount on share and debenture. None of banks have invested any amount on NRB bond.
- SCBL stock has the highest expected return i.e. 23.94% and NABIL has the lowest expected return i.e. 9.69% among the five CBs. other banks NIBL, HBL and SBI have the expected return on 9.95%, 10.21% and 13.86% respectively. The market expected return is 13.32%. The risk of SCBL has the highest i.e. 30.59% and NABIL has the lowest risk i.e. 13.20%. Other banks NIBL, HBL and SBI have a risk of 25.46%, 25.18% and 30.41% respectively. The market risk is 34.66%. It shows that higher the risk higher the return and vice-versa.
- SCBL has the highest beta i.e. 0.48 and NABIL has the lowest beta i.e. 0.16 among five listed CBs. Other banks NIBL, HBL and SBI have a beta of 0.17, 0.21 and 0.41 respectively. All beta is less than 1. So it indicates the stock return is less volatile than market return.
- Total risk of SCBL stock is highest and total risk of NABL stock is lowest among five CBs. SCBL stock has 30% of undiversifiable risk and 70% of its risk on total risk is diversifiable risk. NIBL has a 5% of undiversifiable risk and remaining 95% diversifiable risk on total risk. Other banks NABIL, HBL and SBI have 18%, 8% and 22% of undiversifiable risk and 82%, 92% and 78% risk are diversifiable risk respectively.

- The required rate of return of SCBL stock is the highest i.e. 9.38% and NABIL stock is the lowest i.e. 6.96%. Other banks NIBL, HBL and SBI have a required rate of return of 7.04% SBI have a required rate of return of 7.04%, 7.34% and 8.85% respectively. All banks stock required rate of return are less than expected rate of return, so all the stock are under priced.
- NABIL highest portfolio return i.e. 6.20% and it has highest portfolio risk i.e. 2.04%. HBL has the lowest portfolio return i.e. 5.83% and it has the lowest portfolio risk i.e. 0.35%.
- The Performance measure shows that stock of HBL is the highest i.e. 0.2286 and stock of NIBL is the lowest i.e. 0.2115. Stock of other banks NABIL, SCBL and SBI are second, third and fourth position respectively.
- The trend analysis shows that the investment of the CBs have been increasing by Rs. 3845.57 million year and total deposit of the CBs have been increasing by Rs. 14069.44 million each year. Similarly, investment on government securities is increasing by Rs. 2131.97 million each year, investment on loan and advance is increasing by Rs. 10538.95 million per year and investment on share and debenture is increasing by Rs. 132 million per year.

CHAPTER–FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

This chapter summarizes the whole study. Summary of the study has been mentioned in the first section. Summary gives the brief introduction of all the chapters and shows the actual facts of the present situation under the related topics. The second section reflects the conclusion drawn from the study. Conclusions are based on the consequences of the analysis of relevant data by using various financial and statistical tools. The third section is recommendation. The recommendations are presented on the basis of findings and conclusions.

5.1 Summary

The correct decision of investment is essential to manage the overall financial condition of an organization. So before taking investment decision, risk and return is getting considerable attention in financial management. Risk is the deviation between actual return and expected return. Investor attitude, perception and risk handling capacity play essential role in rational investment decision. Risk plays a central role in the analysis of investment. Every investor wants to maximum return from minimum level of risk. So to minimize the risk investor should diversify their investment by the means of portfolio. The basic objective of portfolio management is to minimize risk at the given rate of return The study is mainly focused the portfolio analysis of five listed commercial banks.

Portfolio is one of the challenging tasks for every financial institution. Now a day there is very high competition in commercial bank but, less opportunity to make in 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 components of banking assets

having 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. In Nepalese context, it seems that commercial banks are exercising to follow the diversification strategy. They are investing in different kinds of securities such as government securities (treasury bills, treasury bonds, development bonds etc.), share and debentures of other companies, loan and advance etc. Although, they are investing on various assets, they did not seem capable to invest their funds on more profitable sectors where there is low risk. Most of the banks are interested to invest their funds on less risky sector. This was due to lack of sound investment policy and portfolio management.

The present study has tried to analyze the different types of ratios, analysis of common stocks risk and return of commercial banks, portfolio analysis, trend analysis etc. The main objectives of the study were to identify the situation of portfolio management of commercial bank to analyze the portfolio risk and return of commercial banks. While making an analysis and interpreting the data on portfolio various financial and statistical tools have been used. Information are used in this study are mainly based on secondary data. From this study it is found that those investors who had made diversification on their investment in different sector have got a better result rather than investing in only one sector.

5.2 Conclusion

HBL has the highest investment to total deposit ratio and NIBL has the lowest investment to total deposit ratio among five listed commercial banks. The loan and advance to total deposit ratio of NIBL was the quite better than other banks. NABIL has the highest return on total assets ratio and SCBL has moderate position but the NIBL, HBL and SBI has the weakest position because of less return on total assets ratio. Most of the CBs give priority to the investment on government securities and then share and debenture. They have invested few funds on share and debenture of the other companies. SCBL has the highest investment percentage on government securities and SBI has the

lowest investment percentage. NABIL has invested its more funds on share and debenture and NIBL has invested lesser amount on share and debenture. None of banks have invested any amount on NRB bond. SCBL common stock has the highest expected return and also the highest risk, NABIL common stock has the lowest expected return and also the lowest risk.

The term of beta is used as an index to measure the sensitivity of asset return to the changes in market return. Beta coefficient of market is always equal to 1. Among the five listed Commercial banks SCBL has a more systematic risk and NABIL has a least systematic risk. All banks stock required rate of return are less than expected rate of return, so all the stock are under priced. The portfolio risk and return analysis shows that higher the investment in risk free asset i.e. government securities lower will be the return and also lower will be the risk but if higher the investment in risky asset i.e. share and debenture higher will be the return and also higher will be the risk. According to Sharpe's performance measure, stock of HBL is the higher and stock of NIBL is the lowest among the five listed commercial banks. The trend analysis shows that the total investment and total deposit of commercial banks are in increasing trend. The individual investment like loan and advance, government securities, share and debenture were also in increasing trend.

5.3 Recommendations

- On the basis of overall analysis and findings of study, following recommendations can be suggested for the concerned parties.
- The mean investment to total deposit ratio of NIBL is the lowest among the banks. So, NIBL must increased its investment by applying portfolio concept. The ratio of NABIL and SBI were not so good, so they should increase the investment in different newly productive sectors.
- SCBL is investing lesser amount of its deposit fund on loan and advance, so SCBL must increase the investment on loan and advance.

- NABIL has the highest return on total assets ratio due to good investment on share and debenture. So, NABIL must keep it up.
- Investment portfolio analysis shows that NIBL has lowest investment on share and debenture i.e. risky assets. This caused very low return on its investment. So, to increases its return NIBL should invest its more funds on share and debenture.
- The expected return and risk shows that SCBL has a highest expected return and risk because of SCBL return is least consistent and it has a greater fluctuation on its return. So, to reduce its risk SCBL return should have stability.
- Expected rate of return is greater than required rate of return of all banks stock. It means all of the stocks are under priced. So, investor should be purchased stock of these banks.
- The common stock returns of commercial banks are highly sensitive to market. They are highly positively correlated to the market. So, market condition should be analyzed.
- It is found that higher the return, higher will be the risk. Investment risk is better covered through a large and diversified portfolio. So, diversifying an investment is a way of reducing the risk.
- Nepalese CBS are more interested to invest their funds on risk free assets, they have no consideration towards diversification. So, they have to take risk and get more return by applying the investment portfolio techniques.

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APPENDIX – I

Arrangement and Tabulation of Available Data of Different CBS

A) Total Investment

(Rs. in Million)

F/Y	SCBL	NIBL	NABIL	HBL	SBI	CBs
2002/03	6693.04	1822.16	8199.51	9157.11	2477.41	28349.23
2003/04	8505.98	705.24	6031.17	10175.44	3374.71	28792.54
2004/05	9150.12	3864.48	5836.97	9592.10	2992.43	31436.10
2005/06	10175.45	3934	4267.23	11692.34	3204.07	33273.09
2006/07	9298.30	5603	6178.53	10889.03	4698.05	36666.91
2007/08	12692.38	6505.68	8945.31	11822.98	5520.16	45486.51
2008/09	13889.03	6874.02	9939.77	13340.18	5672.15	49714.15
2009/10	14580.02	7890.05	10957.50	13850.17	6980.25	54257.99
2010/11	15990.75	7980.08	9850.75	14234.33	7850.42	55906.33
2011/12	16963.62	8180.78	10950.52	14536.27	7992.52	58623.71

B) Loans and Advance

(Rs. in Million)

F/Y	SCBL	NIBL	NABIL	HBL	SBI	CBs
2002/03	4884.79	2518.06	7135.54	10200.55	4325.76	29064.70
2003/04	5863.54	5648.03	7454.26	10001.85	4490.46	33458.14
2004/05	7580.33	6917.8	7953.26	11635.31	5338.90	39426.1
2005/06	9771.92	9933.1	10465.27	12088.71	5833.09	48092.09
2006/07	13624.68	12613.56	12681.67	14395.85	7230.15	60545.91
2007/08	18316.65	17010.06	15305.91	16831.89	9369.70	76834.21
2008/09	22664.70	26618.77	1459.85	19257.72	12405.33	97106.37
2009/10	26540.69	25600.86	16220.75	20250.61	12509.38	101122.29
2010/11	28674.14	24180.52	17850.65	22750.38	13658.70	107114.39
2011/12	28750.48	26170.85	18775.24	24890.26	13980.27	112567.10

C) Total Deposit

(Rs. in Million)

F/Y	SCBL	NIBL	NABIL	HBL	SBI	CBs
2002/03	18756.63	4174.76	15506.40	18619.38	6523.83	63581
2003/04	21163.45	7922.75	13447.70	21045.09	7196.34	70775.33
2004/05	19363.47	11524.70	14119.03	22010.33	8655.76	75673.29
2005/06	23061.03	14255	14586.61	24814.01	11282.06	87998.71
2006/07	24647.02	18927	19347.40	26490.85	11460.30	100872.57
2007/08	29743.10	24488.85	23342.29	30048.42	13716.40	121339.06
2008/09	35350.82	34451.73	31915.08	31842.79	15957.22	149517.64
2009/10	35182.72	36090.75	32995.92	32628.60	17975.36	154873.35
2010/11	37690.77	38050.95	33850.03	34545.40	25657.08	169794.23
2011/12	39870.94	39157.28	35775.06	35971.85	26950.42	177725.55

D) Net Profit After Tax

(Rs. in Million)

F/Y	SCBL	NIBL	NABIL	HBL	SBI	CBs
2002/03	324.54	57.11	271.64	235.02	60.27	948.58
2003/04	455.61	116.83	416.24	212.13	82.14	1282.94
2004/05	516.69	152.67	455.31	263.05	128.49	1516.21
2005/06	530.75	232.15	518.64	308.28	240.54	1830.36
2006/07	575.68	350	635.36	457.476	264.69	2301.09
2007/08	670.61	501.4	673.26	491.82	384.38	2722.17
2008/09	683.90	696.73	746.47	635.87	464.63	3227.6
2009/10	780.96	788.75	780.38	680.91	682.71	3713.81
2010/11	884.68	897.63	789.44	778.93	685.78	4030.46
2011/12	983.57	910.31	884.38	840.64	701.05	4319.95

E) Total Assets

(Rs. in Million)

F/Y	SCBL	NIBL	NABIL	HBL	SBI	CBs
2002/03	22324.40	4973.89	17629.30	21315.85	4850.63	71094.07
2003/04	24870.39	9014.24	16562.60	23279.34	5840.51	79567.08
2004/05	25540.71	13255.5	16562.60	24762.02	15863.74	95984.57
2005/06	28461.20	16274.06	17186.33	27844.70	19500.56	109266.85
2006/07	29675.26	21330	22329.97	29460.39	24762.02	127557.64
2007/08	35640.90	27590.84	22329.97	33519.14	25640.33	144721.18
2008/09	38471.32	38873.31	37132.76	33560.14	26890.38	174927.91
2009/10	40541.80	39750.38	38540.50	34678.52	27524.24	181035.44
2010/11	42950.23	39890.43	38675.63	35871.64	27780.42	185168.35
2011/12	45670.33	40547.62	38963.42	36980.72	28940.37	191102.46

F) Investment on Government Securities

(Rs. in Million)

F/Y	SCBL	NIBL	NABIL	HBL	SBI	CBs
2002/03	4575.30	224.40	4120.29	2588.56	822.20	12330.75
2003/04	4595.69	400	3588.77	3347.10	1538.80	13470.36
2004/05	4679.32	2001.10	3672.63	3431.73	1599.37	15384.15
2005/06	5658.37	1948.50	2413.94	5469.73	2466.43	17983.97
2006/07	5985.89	2522	2301.46	5144.32	2100.48	18054.15
2007/08	6464.35	3256.40	4808.35	6454.88	3548.62	24532.6
2008/09	6823.60	3155	4646.89	7471.66	4705.53	26802.68
2009/10	7634.61	3367.36	4507	7569.83	4822.63	27901.43
2010/11	7946.04	3485	4698.03	7698.67	4950.76	28778.50
2011/12	8150.13	3476.30	4836.27	7724.06	4710.32	28897.08

G) Investment on Share and Debenture

(Rs. in Million)

F/Y	SCBL	NIBL	NABIL	HBL	SBI	CBs
2002/03	43.22	13.90	22.22	34.27	17.11	130.72
2003/04	43.22	13.90	22.22	34.27	19.39	133
2004/05	43.22	13.90	133.45	34.27	19.08	243.92
2005/06	87.74	17.74	440.28	39.91	19.89	605.56
2006/07	87.74	17.74	104.19	39.91	30.35	279.93
2007/08	105.25	35.25	286.96	73.43	40.98	541.87
2008/09	359.95	59.95	323.24	89.56	50.68	883.38
2009/10	460.20	62.08	326.05	58.64	65.23	972.2
2010/11	527.10	65.98	375.08	90.23	78.84	1137.23
2011/12	575.56	63.80	438.31	85.68	86.98	1250.33

H) Total Outside Investment

(Rs. in Million)

F/Y	SCBL	NIBL	NABIL	HBL	SBI	CBs
2002/03	18250.28	4386.59	15637.41	18070.83	5928.24	62273.15
2003/04	20975.32	7477.38	13787.13	20177.29	6889.23	69306.35
2004/05	22143.87	10992.61	14025.94	21243.97	8418.78	76825.17
2005/06	24491.08	14060.25	14861.70	24116.86	8418.78	85948.67
2006/07	26002.83	18379.1	19101.07	25531.59	14007.84	103022.43
2007/08	28648.39	23792.11	24491.09	28820.98	18649.40	124401.97
2008/09	32398.65	33870.67	31304.82	32837.70	18981.08	149392.92
2009/10	34888.22	34125.14	31798.80	32924.08	19223.67	152959.91
2010/11	36837.70	34985.28	32343.12	33231.97	20143.83	157541.90
2011/12	37243.97	35001.50	32692.42	33763.43	21095.37	159796.69

APPENDIX – II

Calculation of Portfolio Risk and Return of SCBL, NIBL, NABIL, HBL and SBI

Calculation of Portfolio risk and Return of SCBL

(Rs. in Million)

Year	Amount Invested in Risky Asset or Share and Debenture	Amount Invested in Government Securities	Total Investment
2003	43.22	4575.30	4618.52
2004	43.22	4595.69	4638.91
2005	43.22	4679.32	4722.54
2006	87.74	5658.37	5746.11
2007	87.74	5985.89	6073.63
2008	105.25	6464.35	6569.6
2009	59.95	6823.50	7183.55
2010	460.20	7634.61	8094.81
2011	527.10	7946.04	8473.14
2012	575.56	8150.3	8725.69
Total	**2333.20**	**62513.3**	**64846.5**
Weight	**3.60%**	**96.40%**	**100%**

Now,

Portfolio Return (R_P) $= W_M \overline{R}_M + W_{RF} R_F$

$= 0.036 \times 13.32 + 0.9640 \times 5.75$

$= 6.02\%$

Portfolio Risk($\exists_p$) $= W_M \exists_M$

$= 0.036 \times 34.66$

$= 1.25\%$

Calculation of Portfolio Risk and Return of NIBL

(Rs in Million)

Year	Amount Invested in Risky Asset or Share and Debenture	Amount Invested in Government Securities	Total Investment
2003	13.90	224.40	238.30
2004	13.90	400	413.90
2005	13.90	2001.10	2015
2006	17.74	1948.50	1966.24
2007	17.74	2522	2539.74
2008	35.25	3256.40	3291.65
2009	59.95	3155	3214.95
2010	62.08	3367.36	3429.44
2011	65.98	34.85	3550.98
2012	63.80	3476.30	3540.10
Total	**364.24**	**23836.06**	**24200.30**
Weight	**1.51%**	**98.49%**	**100%**

Now,

Portfolio Return (R_P) $= W_M \overline{R}_M + W_{RF} R_F$

$= 0.0151 \times 13.32 + 0.9849 \times 5.75$

$= 5.86\%$

Portfolio Risk($\exists_p$) $= W_M \exists_M$

$= 0.0151 \times 34.66$

$= 5.52\%$

Calculation of Portfolio Risk and Return of NABIL

(Rs. in Million)

Year	Amount Invested in Risky Asset or Share and Debenture	Amount Invested in Government Securities	Total Investment
2003	22.22	4120.29	4142.51
2004	22.22	3588.77	3610.99
2005	133.45	3672.63	3806.08
2006	440.28	2413.94	2854.22
2007	104.19	2301.46	2405.65
2008	289.96	4808.35	5095.31
2009	323.24	4646.89	4970.13
2010	326.05	4507	4833.05
2011	375.08	4698.03	5073.11
2012	438.31	4836.27	5274.58
Total	**2472**	**39593.63**	**42065.63**
Weight	**5.88%**	**94.12%**	**100%**

Now,

Portfolio Return (R_P) $= W_M \overline{R}_M + W_{RF} R_F$

$= 0.0588 \times 13.32 + 0.9412 \times 5.75$

$= 6.20\%$

Portfolio Risk($\exists_p$) $= W_M \exists_M$

$= 0.0588 \times 34.66$

$= 2.04\%$

Calculation of Portfolio Risk and Return of HBL

(Rs. in Million)

Year	Amount Invested in Risky Asset or Share and Debenture	Amount Invested in Government Securities	Total Investment
2003	34.27	2588.56	2622.83
2004	34.27	3347.10	3381.37
2005	34.27	3431.73	3466
2006	39.91	5469.73	5509.64
2007	39.91	5144.32	5184.23
2008	73.43	6554.88	6528.31
2009	89.56	7471.66	7561.22
2010	58.64	7569.83	7628.47
2011	90.23	7698.67	7788.90
2012	85.68	7724.06	7809.74
Total	**580.17**	**56900.54**	**57480.71**
Weight	**1.01%**	**98.99%**	**100%**

Now,

Portfolio Return (R_P) $= W_M \overline{R}_M + W_{RF} R_F$

$= 0.0101 \times 13.32 + 0.9899 \times 5.75$

$= 5.83\%$

Portfolio Risk($\exists_p$) $= W_M \exists_M$

$= 0.0101 \times 34.66$

$= 0.35\%$

Calculation of Portfolio Risk and Return of SBI

(Rs. in Million)

Year	Amount Invested in Risky Asset or Share and Debenture	Amount Invested in Government Securities	Total Investment
2003	7.11	822.20	839.31
2004	19.39	1538.80	1558.19
2005	19.08	1599.37	1618.45
2006	19.89	2466.43	2486.32
2007	30.35	2100.48	2130.83
2008	40.98	3548.62	3589.60
2009	50.68	4705.53	4756.21
2010	65.23	4822.63	4887.86
2011	78.84	4950.76	5029.60
2012	86.98	4710.32	4797.60
Total	**428.53**	**31265.14**	**31693.67**
Weight	**1.35%**	**98.65%**	**100%**

Now,

Portfolio Return (R_P) $= W_M \overline{R}_M + W_{RF} R_F$

$= 0.0135 \times 13.32 + 0.9865 \times 5.75$

$= 5.85\%$

Portfolio Risk($\exists_p$) $= W_M \exists_M$

$= 0.0135 \times 34.66$

$= 0.47\%$

APPENDIX – III

A Sample Calculation of "Straight Line Trend"

Let, Straight line trend between dependent variable (total investment) y and the independent variable (time) x, be :

$$Y = a + bx$$

Then, to find the value of a and b, we have,

$$a = \frac{\phi y}{n}, \qquad b = \frac{\phi xy}{x^2}$$

Let, the year 2002/03 is equal to 2003, 2003/04 to 2004 and so on. Fitting of trend liner by least square method.

Trend of total investment

Year	**Total Investment of CBs (y)**	**x = t – 2007.5**	**XY**	**X^2**
2003	38349.23	–4.5	–1275171.535	20.25
2004	28792.54	–3.5	–100773.39	12.25
2005	31436.10	–2.5	–78590.25	6.25
2006	33273.09	–1.5	–49909.635	2.25
2007	36666.91	–0.5	–18333.455	0.25
2008	45486.51	0.5	22743.255	0.25
2009	49714.15	1.5	74571.225	2.25
2010	54257.99	2.5	135644.98	6.25
2011	55906.33	3.5	195672.16	12.25
2012	58623.71	4.5	263806.70	20.25
Total	**ϕY = 422506.56**	**ϕX = 0.0**	**ϕXY = 317259.56**	**ϕX^2 = 82.50**

Now,

$$a = \frac{422506.56}{10} = 42250.66$$

$$b = \frac{317259.56}{82.50} = 3845.57$$

So, straight line trend for total investment of commercial bank is

$Y_C = 42250.66 + 3845.57X$

Trend of Total Deposit

Year	**Total Investment of CBs (y)**	**x = t – 2007.5**	**XY**	**X^2**
2003	63581	–4.5	– 286114.5	20.25
2004	70775.33	–3.5	– 247713.66	12.25
2005	75673.29	–2.5	–189183.23	6.25
2006	87998.71	–1.5	–131998.07	2.25
2007	100872.57	–0.5	–50436.29	0.25
2008	121339.06	0.5	60669.53	0.25
2009	14951.64	1.5	224276.46	2.25
2010	154873.35	2.5	387183.38	6.25
2011	169794.23	3.5	594279.81	12.25
2012	177725.55	4.5	799764.98	20.25
Total	p**Y = 1172150.73**	p**X = 0.0**	p**XY = 1160728.41**	p$\mathbf{X^2}$ **= 82.50**

Now,

$$a = \frac{1172150.73}{10} = 117215.07$$

$$b = \frac{1160728.41}{82.50} = 14069.44$$

So, straight line trend for total deposit of commercial banks is

$Y_C = 117215.07 + 14069.44X$

Trend of Total Investment on Government Securities

Year	Total Investment of CBs (y)	x = t – 2007.5	XY	X^2
2003	12330.75	**–4.5**	–55488.38	20.25
2004	13470.36	–3.5	–47146.26	12.25
2005	15384.15	–2.5	–38460.38	6.25
2006	17983.97	–1.5	–26975.96	2.25
2007	18054.15	–0.5	–9027.08	0.25
2008	24532.60	0.5	12266.30	0.25
2009	26802.68	1.5	40204.02	2.25
2010	27901.43	2.5	69753.58	6.25
2011	28778.50	3.5	100724.75	12.25
2012	28897.08	4.5	130036.86	20.25
Total	p**Y = 214135.67**	p**X = 0.0**	p**XY = 175887.45**	pX^2 **= 82.50**

Now,

$$a = \frac{214135.67}{10} = 21413.657$$

$$b = \frac{175887.45}{82.50} = 2131.97$$

So, straight line trend for total investment of government bank is,

$$Y_C = 21413.57 + 2131.97X$$

Trend of Investment on Loan and Advance

Year	Total Investment of CBs (y)	x = t – 2007.5	XY	X^2
2003	29064.40	–4.5	–130791.15	20.25
2004	33458.14	–3.5	–117103.49	12.25
2005	39426.10	–2.5	–98565.25	6.25
2006	48092.09	–1.5	–26975.96	2.25
2007	60545.91	–0.5	–30272.96	0.25
2008	76834.21	0.5	38417.11	0.25
2009	97106.37	1.5	145659.56	2.25
2010	101122.29	2.5	252805.73	6.25
2011	107114.39	3.5	374900.37	12.25
2012	112567.10	4.5	506551.95	20.25
Total	**pY = 705331.3**	**pX = 0.0**	**pXY = 869463.73**	**pX^2 = 82.50**

Now,

$$a = \frac{705331.3}{10} = 70533.13$$

$$b = \frac{869463.73}{82.50} = 10538.95$$

So, straight line trend for total investment of loan and advance of commercial banks is,

$Y_C = 70533.13 + 10538.95X$

Trend of Total Investment on Share and Debenture

Year (t)	Total Investment of share and debenture CBs (y)	x = t – 2007.5	XY	X^2
2003	130.72	–4.5	–588.24	20.25
2004	133	–3.5	–465.5	12.25
2005	243.92	–2.5	–609.8	6.25
2006	605.56	–1.5	–908.34	2.25
2007	279.93	–0.5	–139.97	0.25
2008	541.87	0.5	–270.94	0.25
2009	883.38	1.5	1325.09	2.25
2010	972.20	2.5	2430.5	6.25
2011	1137.23	3.5	3980.31	12.25
2012	1250.33	4.5	5626.49	20.25
Total	**pY = 6178.14**	**pX = 0.0**	**pXY = 10921.46**	**pX^2 = 82.50**

Now,

$$a = \frac{6178.14}{10} = 617.81$$

$$b = \frac{10921.46}{82.50} = 132.38$$

So, straight line trend for total investment of share and debenture of commercial banks is,

$Y_C = 617.81. + 132X$

Statement	Trend Line-equation
Total Investment	$Y_C = 42250.66 + 3845.57X$
Total Deposit	$Y_C = 117215.07 + 14069.44X$
Total Investment on Government Securities	$Y_C = 21413.57 + 2131.97X$
Total Investment on Loan and Advance	$Y_C = 70533.13 + 10538.95X$
Total Investment on Share and Debenture	$Y_C = 617.81+ 132X$