

# **CHAPTER – I**

## **INTRODUCTION**

### **1.1 Background of the Study**

Banking has become a part of daily life of today's people. The development in the banking facilities have added a numerable values to the customers, producers, entrepreneurs, travelers and investors around the world. Despite the importance from the view point of service facilities to the users, it plays a significant role in the economic development and the welfare of the people. Bank assists both the flow of goods and services for the product to the consumers and the financial activities of the government. Banking provides the country with a monetary system of making payment and is an important part of the financial system, which makes loan to maintain and increases the level of consumption and production in the country.

Modern banking begins in Nepal with the establishment of Nepal Bank Ltd. in 1937 A.D. The authorized capital was contributed by the government 51% and remaining 49% by public. In 1955, Nepal Rastra Bank was established as the central bank of the country with the objectives of supervising, protecting and directing the functions of commercial banks and maintaining a sound monetary and financial stability in the country. Prior to the establishment of Nepal Rastra Bank, Nepal Bank Ltd. acted as the central bank of the country. In 1966 A.D another commercial bank fully owned by government named Rastriya Banijya Bank was established under the Banijya Bank act 1964 A.D. Agriculture Development Bank was established in 1967 A.D with the objective of enhancing the agriculture development in the country. Agriculture Development Bank provides banking services in some urban areas of Nepal as that other commercial banks.

#### **1.1.1 Meaning of Commercial Bank**

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

lends this out to those who requires it" (Crowther, 2003: 2). It is established by law. So, it's a legal entity. Crowther has described that the merchants, money lenders and goldsmiths are the ancestors of modern banks.

Commercial bank means a bank which operates currency exchanges transactions, accepts deposits, provides loan, performs dealing relating of commerce except the banks which have been specified for the cooperative, agriculture, industry or other similar specific objectives (His Majesty's Government, Commercial Bank Act, 2031 B.S.).

Commercial banks are those banks, which pool together the savings of the community and arrange them for the productive use. Commercial banks transfer monetary sources from savers to users. They accept deposits from the public on the condition that they are repayable. They provide loans and advances from the money, which they receive through deposits. Apart from financing, they also render services like collection of bills of checks, safe keeping of the valuables, financial advising etc. to their customers.

### **1.1.2 Functions of Commercial Banks**

There are many functions of commercial banks. The followings are the main functions performed by the commercial banks:

#### **i. Accepting Deposits**

Commercial banks accept deposits in three forms namely current, saving and fixed deposits.

- a. Current deposits: - Current deposit is also known as demand deposit. Under this, any amount may be deposited in this account. The bank does not pay any interest on such
- b. saving deposits: - Saving deposit is one of the deposits collected from small depositors and low-income depositors. The bank usually pays small interest to the depositors against their deposits. This is also called saving account.

- c. Fixed deposit: - Fixed deposit is the one in which a customer is required to keep a fixed amount with bank for a specific period, generally by those who do not need money for a stipulated period. The bank pays a higher interest on such deposits.

## **ii. Advancing Loans**

Commercial bank provides loans and advances from the money, which it receives by way of deposits. Direct loans and advances are given to all types of persons against the personal security of the borrowers or against the security of movable or immovable properties. Banks in four forms grant loans, namely:

- a. Overdrafts
- b. Direct Loans
- c. Cash Credit
- d. Discounting Bills of Exchange

## **iii. Agency Services**

Commercial bank undertakes the payment of subscriptions, insurance premium, rent, income tax etc. It collects cheques, bills, dividends, interest, pensions etc. on behalf of the customers. The bank charges a small amount of commission for those services. It undertakes to buy and sell securities on behalf of its customers. Commercial bank also acts as a trustee, executor and administrator.

## **iv. Credit Creation**

Credit creation is very important function of the commercial banks. They accept deposits and advance loans. When the bank advances loans, it opens an account to draw the money by cheque according to his needs. By granting loans, the bank creates credit or deposit.

## **v. Other Functions**

Other functions of commercial banks include:

1. Assist in foreign trade:
2. Carrying out the foreign currency exchange.
3. To provide travelers cheque.
4. To facilitate in financial policy formulation by gathering and providing trading and monetary transaction related information.
5. To underwrite the debentures.
6. To accept the bills of exchanges.
7. To provide advice to customers, entrepreneurs, and businessmen on economic matter.
8. To create credit on the specific basis and expand credit.
9. To issue credit card, debit card, master card, visa card etc.

### **1.1.3 History of Banking Development in Nepal**

Formally, Nepal's banking history had begun with the establishment of Nepal Bank Limited in 1994 B.S. At that time, this bank had authorized capital of Rs. 10 million of paid up capital of Rs. 842 thousand. Nepal Bank Limited was the first commercial bank with 51 percent government equity. As a central bank, Nepal Rastra Bank was established in 2013 B.S. under the provision of Nepal Rastra Bank Act, 2012 B.S. with the objective of helping in the development of monetary and financial sector by undertaking various functions.

Another progress was added when Rastriya Banijya Bank came into existence in 1966 (2022 B.S.) fully government ownership with the authorized capital of Rs. 10 million and paid up capital of Rs. 2.5 million under the Banijya Bank Act 1965 (2021 B.S.). Likewise, Agriculture Development Bank was established in 1968 (2024 B.S.) under the Agriculture Development Bank Act, 1968 (2024 B.S.) with the objective of increasing the life standard of those people who are involved in agriculture.

In 1980, the government introduced, 'financial sector reforms'. The government adopted liberalized economic policies to develop the financial sector. As a pre-condition to economic liberalization, the foreign investment and technology transfer Act, 1981 came into existence. The government allowed private sectors to open banks. The government allowed the entry of foreign banks as joint ventures with up to a maximum of 50 percent equity participation. Many joint venture commercial banks and financial institutions were established.

#### **List of Licensed Commercial Banks**

<b>S.N.</b>	<b>Name of Bank</b>	<b>Established Date</b>	<b>Head Office</b>
1.	Nepal Bank Ltd.	1994/07/30	Kathmandu
2.	Rastriya Banijaya Bank Ltd	2022/10/10	Kathmandu
3.	NABIL Bank Ltd	2041/03/29	Kathmandu
4.	Nepal Investment Bank Ltd.	2042/11/16	Kathmandu
5.	Standard Chartered Bank Nepal Ltd	2043/10/16	Kathmandu
6.	Himilayan Bank Limited	2049/10/05	Kathmandu
7.	Nepal Bangladesh Bank Ltd.	2050/02/23	Kathmandu
8.	Nepal SBI Bank Ltd.	2050/03/23	Kathmandu
9.	Everest Bank Ltd.	2051/07/01	Kathmandu
10.	Bank of Kathmandu Ltd.	2051/11/28	Kathmandu
11.	Nepal Credit and Commerce Bank Ltd.	2053/06/28	Kathmandu
12.	Lumbini Bank Ltd	2055/04/01	Narayangadh
13.	Nepal Industrial and Commercial Bank Ltd.	2055/04/05	Biratnagar
14.	Kumari Bank Ltd.	2056/08/24	Kathmandu
15.	Machhapuchhre Bank Ltd	2057/06/17	Pokhara
16.	Laxmi Bank Ltd	2058/06/11	Birjunj
17.	Siddhartha Bank Ltd	2058/06/12	Kathmandu
18.	Agriculture Development Bank	2062/03/30	Kathmandu
19.	Global Bank Ltd.	2063/09/18	Birjunj
20.	Citizens Bank International Ltd.	2064/01/07	Kathmandu
21.	Prime Commercial Bank Ltd.	2064/06/07	Kathmandu
22.	Bank of Asia Nepal Ltd.	2064/06/25	Kathmandu
23.	Sunrise Bank Ltd.	2064/06/25	Kathmandu
24.	Development Credit Bank Ltd.	2065/02/12	Kathmandu
25.	NMB Bank Ltd.	2065/02/20	Kathmandu
26.	Kist Bank Limited	2066/01/24	Kathmandu
27.	Janata Bank	2067	Kathmandu
28.	Mega Bank	2067	Kathmandu

*(Source: Mid July 2010, Nepal Rastra Bank)*

#### **1.1.4 Investment**

Investment is a word of many meaning. If new investment concepts involve and take a root, the whole investment scene could be changed dramatically over the next few years. In modern world, most of the people like to have more wealth and income and time to enjoy them at least they want to make the best use of what they already have. How to get more and how to make the best uses of what is available in economic problem. People invest their saving in different types of assets. Assets are classified in two different categories i.e. financial assets and real assets. Investment in real assets refers to the investment of fund in real goods such as land and building, vehicles and computer etc. Investment in financial securities means putting the money in the piece of paper such as shares, debentures, bonds and treasury bills etc.

Investment, in other hand, is the sacrifice of certain present value of uncertain future rewards. According to A.N. Ahuja investment means' an act or the activity of giving up a benefit presently enjoyed in order to gain a benefit in the future.

For the investors generally these comprises the structure of subjective preferences for the size and regularity of the income to be received from, and for the safety and negotiability of specific investments or combinations of investments, as these are appraised from time to time. When the analysis passes from the stage of description to the higher stage of security selection his frame of reference widens. He now considers not only securities but security holders as well. In the formulation of a program for the acquisition and management of a security portfolio, the first and most basic step is to distinguish clearly between investment and speculation.

Portfolio investment refers to an investment that combines several assets. It is a collection of securities. The portfolio theory is concerned with the selection of optimal portfolio that provides risk for any specified rate of return. Portfolio

theory has been developed for financial assets. Thus, making investment form selected optimal portfolio i.e. the portfolio that provides the highest rate of return with least possible amount of risk is the real investment portfolio.

Most securities available for investment have uncertain outcomes and are thus risky. The basic problem facing each investor is to determine which particularly risky securities to own. Because a portfolio is collection of securities, this problem is equivalent to investor selection optimal portfolio from a set of possible portfolios. Hence, this situation is often referred to as the portfolio selection problem. One solution to this problem as put forward in 1952 by Harry Markowitz in a landmark paper that is generally viewed as the origin of modern investment theory (Sharpe et al : Investment; 119).

### **1.1.5 Portfolio Management**

Portfolio management can be also defined as aggregation and management of a diverse portfolio of supply resources which will act as a hedge against various risks that may affect specific resources. Under a more market driven power sector with a power pool or pool Co wholesale market structure, a portfolio manager would aggregate and manage a diverse portfolio of spot market purchase, contracts for difference, future contracts and other market hedging type contracts and mechanisms([www.naru.org/resources/glossary.html](http://www.naru.org/resources/glossary.html))

In finance, a portfolio is a collection of investment held by an institution or a private individual. In building up an investment portfolio a financial institution will conduct its own investment analysis whilst a private individual may make use of the service of a merchant bank which offers portfolio management. Holding a portfolio is a part of an investment and risk limiting strategy called diversification ([www.google.com.np/search](http://www.google.com.np/search)).

The term 'portfolio' simply means collection of investment. For an investor through the stock exchange the portfolio will be collection of shareholding in different companies. For a property investor portfolio will be collection of

buildings. To a financial manager within an industrial company portfolio will be a collection of real capital projects. It will be apparent that the actual nature of components of a portfolio depends on the population of opportunities from which the selection has been made (Brockinton, 1990:148).

In short, portfolio management is the process of selection a bundle of securities or the selection of the investment sectors (real sector also) that provide the investing organization a maximum yield for a given level of risk. Portfolio management can be also taken as risk and return management. It aims to determine and appropriate asset mix which attains optimal level of risk and return. Portfolio, technically known as efficient portfolio, is a superior portfolio. The efficient portfolio is a function of not risk and return on individual asset included but also the effect of relationship among the asset on the sum total of portfolio risk and return.

### **Objectives of the Portfolio Management**

The portfolio management is a complex task. Investment matrix is one of the many approaches, which may be used in this connection. The various considerations involved in investment decisions Portfolio Management of Listed Commercial Banks In Nepal 28 liquidity, safety and yield of the investment. Image of the organization is also to be taken in account. These considerations may be taken into account and an overall view obtained through a matrix approach by allotting marks for each consideration totaling them. The investors would like to have the following objectives of portfolio management.

- a. Capital
- b. Safety or security of an investment'
- c. Income by way of dividends and interests,
- d. Marketability
- e. Liquidity
- f. Tax planning- capital gains tax, income tax and wealth tax,
- g. Risk avoidance or minimization of risk.



## **1.2 Focus of the Study**

Major focus of the study is about commercial banks and their investment portfolio. This study concentrates about meaning of commercial banks and their functions, mainly the analysis of investment portfolio. The study focus how the selected commercial banks perform the regular jobs and how and what portion they invest the funds in different asserts and securities, what policies they obey to mobilize the deposits.

The commercial banks are those institutions which deal in accepting deposit of individual and giving loans. These banks provide working capital needs of trade, industry and even to agricultural sector. Moreover commercial banks also provide technical and administrative assistance to industries, trade and business enterprises. They transfer monetary sources form savers to users. Commercial bank is a corporation, which accepts demand deposits subject to check and makes short terms loans to business enterprises, regardless of the scope of its other services.

The commercial banks play an important role in the modern economy. Commercial banks are the heart of financial system. They make fund available through their leading and investing activities to borrowers, individuals, business firms and services. a commercial bank must mobilize its deposits and other funds in profitable, secured, stable and marketable sector.

Investment policy provides the bank several inputs through which they handle their investment operation efficiently ensuring that maximum return, with minimum risks, which ultimately leads the bank to the way of success. Thus, investment is the most important function of commercial banks. It is a very challenging task for commercial bank. So, a bank has to very caution while investing their funds in various sectors. The success of a commercial bank heavily depends upon the proper management of it's invest able funds, i.e.

Portfolio management. So this study also concentrates about how to manage the funds properly analyzing portfolio of investment.

### **1.3 Statement of the Problem**

Many financial institutions have been established in our country to assist in the process of economic development. The major problem in all underdeveloped countries like Nepal is capital creation and their proper utilization. In such countries commercial banks have more responsibilities to avoid above problem and contribute to the economy. The problems of investment and lending activities have become serious process for developing countries like Nepal. Nowadays Nepalese CBs is not capable to invest their funds in more profitable sector. They are found more interest in investment in less risky and liquid sector. This is due to lack of sound investment policy and portfolio management of banks. They have no special view towards policy of investment portfolio. They do not have attention towards proper matching of deposit and investment.

The banks invest their funds in limited are as to achieve highest economy of profit. There is hesitation to invest in long term projects cause of more safety minded. Commercial banks are following conservative loan and investment policy. Now, the banking sector has reached to the remote areas of the country and has inspired a good deal in the growth of the economy. Various problems appear in resources mobilization by financial institution of Nepal. The fact problem is poor investment environment prevailing in Nepal. If the funds are wrongly invested neglecting analysis of any financial risk, business risk and other various types of risk and factor, the bank cannot obtain profitable return as well. Therefore, portfolio analysis between various types of investment made by commercial banks is important issues, which helps to minimize risk by diversifying total risk to different sectors. But portfolio management activities of Nepalese commercial bank as well as financial institutions to invest their funds in a good sector, which affects the investment portfolios.

Nowadays commercial banks have to face competition with other financial institutions to grab the investment opportunity.

Based on the above discussion on the research problems, some of the commonly identified research questions for present research are identified as follows:

- a. What is the relationship between investment and loan & advances?
- b. How is effectiveness of fund mobilization and investment policy of commercial banks?
- c. Does the effect exist of the investment decision in total earnings of the commercial banks?
- d. How does commercial bank manage the risk and return using investment portfolio diversification?
- e. What is the trend of investment in different assets and loan portfolio?
- f. How much ability in performance of commercial banks in investment portfolio?

#### **1.4 Objectives of the Study**

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

- ) To examine the existing situation of portfolio management (investment and loans and advances) of sample banks.
- ) To analyze the financial performance of sample banks of Nepal.
- ) To analyze the risk and return of sample banks
- ) To examine the trend of loan and advances and investment in total deposit and forecast it.

#### **1.5 Significance of the Study**

The present analysis of any organization flashes its investment policy; sound investment policy makes a good impact on the economy of country. The

success and prosperity of any organization or institution relies heavily on the successful investment of its available resource into the profitable sector. Successful formulation and effective implementation of investment policy is the prime requisition for the successful performance of any organization.

The research work is the study of portfolio analysis of commercial banks of Nepal. The present study focuses on the portfolio management of the selected banks in different sectors. In addition to the portfolio investment, the study examines the financial performance of the selected banks and provides some inferences regarding the proper mix of investment structure for the maximization of the return of the banks. Hence, it is hoped that this study will be significant for the individual investors, interested persons and policy makers and bank management too.

### **1.6 Limitations of the Study**

This study has following limitation:

- ) The study will basically concern with portfolio investment management of commercial banks based on investment in different sectors. It doesn't consider other financial aspect of the banks.
- ) The study is mainly based on secondary data. Consequently, the results depend on the reliability of secondary data.
- ) The study covers only for the period of five years.
- ) Out of various commercial banks, only five commercial banks have been taken as sample for the study.
- ) The truth of research result is based on the reliability of the secondary data.

### **1.7 Organization of the Study**

This study has been organized in to five chapters and each chapters are devoted to some aspects of the study of portfolio management. The organization of study is arranged as follows.

## **Chapter –I : Introduction**

In the first chapter introduction of the study topics and other relevant topics and are given. This chapter provides the introduction of portfolio management and background to the study.

## **Chapter –II : Review of Literature**

In this chapter the study report is for review of literature. Review of literature has mainly two parts. One is conceptual frame work and other is review of related studies. In this chapter, the importance researches by academicians and researcher studies are reviewed that give ample knowledge to the new researcher.

## **Chapter –III : Research Methodology**

This chapter is for research methodology. It gives the idea of research design, information of the population and samples used for the study purpose. Similarly, data collection and tools and techniques of analysis are also given to this chapter.

## **Chapter –IV: Data Analysis and Presentation**

This chapter is the main part of this study. It represents the data and information collection from secondary. The data are collected from the secondary sources and interpreted by using various financial and statistical tools and techniques.

## **Chapter - V: Summary, Conclusion and Recommendation**

The last chapter includes summary and conclusions of the study and some recommendations and suggestions that were found relevant to suggest and recommend from the study.

## **CHAPTER – II**

### **REVIEW OF LITERATURE**

This chapter is considered to the review of major related literature about the portfolio management and related studies. For this study, various books, journals, articles and some past thesis were also reviewed. Since there are not so much adequate study materials related with this topic published in Nepal, this study has to refer almost all books related with this topic published in other countries than Nepal. The concept of this portfolio management and its analysis is clear from the following studies.

#### **2.1 Conceptual/Theoretical Review**

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

Portfolio management of the bank assets basically means allocation of fund to different components of banking assets having degrees of risk and varying rates of returns in such a way that balance conflicting goal of maximum yield and minimum risk. When the process of portfolio management of bank assets are done various factor such as, availability of fund, liquidity requirement, central banks policy etc. should be considered. As the task of portfolio management of the bank assets is to be carried out within the given macro economic environment the manager should carefully watch related macro economic indicators such as; interest rate, inflation rate, national income, savings ratio etc. assets of the bank can be broadly classified into:

**1. Investment**

**2. Loans and advances**

Portfolio theory was originally proposed by Harry Markovitz in 1952 A.D. the theory is concerned with selection of an optimal portfolio by risk averse investors. Risk averse investors is an investors who selects a portfolio that maximizes expected return for any given level of risk or minimizes risk for any given level of expected returns. Risk adverse investors will select only efficient portfolios. Portfolio theory can be used to determine the combination of these securities that will create the set of efficient portfolios. The selection of the optimal portfolio depends upon the investor's performance for risk and return.

Portfolio investment refers to the investment that combines several assets. The modern portfolio theory explains 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 returns 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 return for a given level of risk or the lowest possible level of risk for a given amount of return.

Portfolio, technically known as efficient portfolios, is a superior portfolio. The efficient portfolios is a function of not only risk and return of individual asset included, but also the effect of the relationship among the assets on the sum total of portfolio risk and return. The portfolio return is straight weight average of the individual asset. But the portfolio risk is not 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.

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 investor can reduce portfolio risk by adding another security with greater individual risk than other security in the portfolio. The seemingly curious result occurs because risk greatly on the covariance among return of individuals securities.

The aim of portfolio management is to achieve the maximum return from a portfolio which has been delegated to be managed by an individual 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

### **2.1.1 Investment**

Investment, in its broadest sense, means the sacrifice of current dollars for future dollars. Two different attributes are generally involved: time and risk. The sacrifice takes place in the present and is certain. The reward comes later, if at all, and the magnitude is generally uncertain (Francis, Op. Cit., p. 1).

Investments are made in assets. Assets in all are of two types: real assets and financial assets (stocks, bond, t-bill etc.). These two investments are not competitive but complementary, highly developed institutions for financial investment greatly facilitating real investment.

The Investment Process (Sharpe, et. al., Op. Cit., pp 11-14).

The investment process describes how an investor should go about making decisions with regard to what marketable securities to invest in, how extensive the investment should be, and when the investment should be made. A five step procedure for making these decisions forms the basis of the investment process.



1. **Set Investment Policy:** It involves determining the investor's objectives and the amount of his or her inevitable wealth. Investment objective should be stated in terms of both risk and return.
2. **Perform Security Analysis:** It involves examining several individual securities or groups of securities within the broad categories of financial assets previously identified.
3. **Construct a Portfolio:** The third step in the investment process, 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. Here the issues of selectivity, timing and diversification need to be addressed by the investor.
4. **Revise the Portfolio:** Portfolio revision concerns the periodic repetition of the previous three steps. That is, overtime the investor may change his or her investment objectives, which in turn may cause the currently held portfolio to be less than optimal.
5. **Evaluate the Performance of the Portfolio:** It involves determining periodically how the portfolio performed, in terms not only the return earned but also the risk experienced by the investor.

### **2.1.1.1 Investment Return**

#### **Single-Period Measure of Return**

The investment return is defined as the after tax increase in the value of the initial investment. The increase in value can come from two sources: a direct cash payment to the investor or an increase in the market value of the investment relative to the original purchase price. The rate of return over the holding period, or holding period return (HPR), is computed as:

$$HPR = \frac{(\text{Ending Price} - \text{Beginning Price}) + \text{Cash Receipts}}{\text{Beginning Price}}$$

## Annualized Holding Period Returns

One possibility is to take the simple arithmetic average of the annual HPRs computed by:

$$\overline{HPR} = \frac{\sum_{t=1}^n (HPR_t)}{n}$$

The simple arithmetic average, however, ignores the compounding effect that results if the first period's return is reinvested. In addition, the result of an arithmetic average return can be distorted if there are large differences in the rates of return across time periods. Large differences in the periodic rates of return over longer investment horizons will cause the arithmetic rate of return to be misleading.

The geometric mean rate of return does not suffer from this flaw. The geometric mean rate of return,  $HPR_g$ , is defined as the rate of return that would make the initial investment equal to the ending investment value. The formula for the geometric mean rate of return is,

$$\overline{HPR} = \left( \prod_{t=1}^n (1 + HPR_t) \right)^{1/n} - 1$$

## Required Rate of Return

"When setting the required rate of return on an investment, an investor must consider the real rate of return, expected inflation and risk. Because consumption is forgone today, the investor is entitled to a rate of return that compensates for this deferred consumption. Since the investor expects to receive an increase in the real goods purchased later and assuming for the moment, zero expected inflation and risk, the required rate could equal the real rate of return, in which case it would represent the pure time value of money. The capital markets determine this rate based upon the supply of money to be invested relative to the demand for borrowed money" (Cheney & Moses, 1995: 33).

The required rate of return is the minimum rate of return that an investor expects from his/her investment in risky assets. It is the function of real rate of return and risk. The required rate of return is the return on risk free assets i.e. government securities plus risk premium. It is determined by CAPM/SML.

The required rate of return using CAPM/SML is:

$$\text{Required Rate of Return (K)} = \overline{R}_F + \beta (R_m - \overline{R}_F)$$

### **Expected Rate of Return**

If an investment is to be made, the expected rate of return, or the expected holding period return, should be equal to or greater than the required rate of return for that investment. The expected rate of return is based upon the expected cash receipts (e.g., dividends or interest) over the holding period and the expected ending or selling price. The expected rate of return is an ex-ante or unknown future return.

If the investor can describe the possible variables that will influence each of the possible rates of return and assign probabilities to these outcomes, the expected rate of return should equal the weighted average of the various possibilities. Listing the possible investment results and assigning probabilities to each of these outcomes is the same as creating a probability distribution in statistics. Probability distributions are used to describe possible outcomes and to assign individual probabilities, from zero (no chance of occurring) to one (full certainty that the outcome will happen), to each possible outcome.

The investor has forecast possible outcomes, each based upon a possible state of the economy. Each economic state will result in a different expected rate of return. Subjective probabilities are assigned to each outcome. The overall expected rate of return, E (HPR), can be calculated as a weighted average of the forecasts.

$$E(HPR) = \sum_{j=1}^n P_j HPR_j$$

### 2.1.1.2 Risk

Risk can be defined as the variability of possible returns around the expected return of an investment.

Each investor has his or her own attitude about risk and how much he or she can tolerate. Since investment alternatives have different types of risks associated with them, the investor must determine which combination of alternatives matches his or her particular risk tolerances.

Financial analysts and statisticians prefer to use a quantitative risk surrogate called the variance of returns, denoted  $\text{Var}(r)$ . The variance of an asset's rates of return equals the sum of the products of the squared deviations of each possible rate of return from the expected rate of return multiplied by the probability that the rate of return occurs (Francis, Op. Cit.:12-13).

$$\begin{aligned} \text{Var}(r) &= \sum_{i=1}^T P_i [r_i - E(r)]^2 \\ &= P_1 [r_1 - E(r_1)]^2 + P_2 [r_2 - E(r_2)]^2 + \dots + P_t [r_t - E(r_t)]^2 \end{aligned}$$

The square root of the variance of the rates of return is called the standard deviation ( ) of the rates of return.

$$\text{Standard deviation}(\sigma) = \sqrt{\text{Var}(r)}$$

The standard deviation and the variance are equally acceptable and conceptually equivalent quantitative measures of an asset's total risk.

### 2.1.2 Trade-Off between Risk and Return

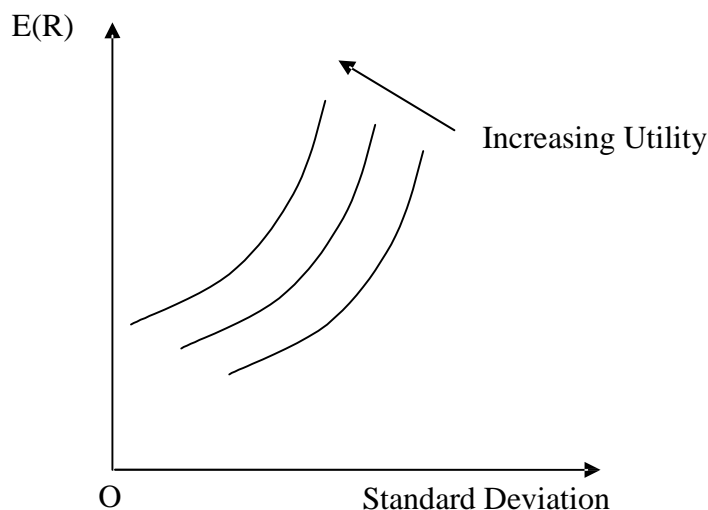
Risk is a complicated subject and needs to be properly analyzed. The relationship between risk and return is described by investor's perception about risk and their demand for compensation. No investor will like to invest in risky assets unless he is assured of adequate compensation for the

assumption of risk. Therefore, it is the investors required risk premiums that establish a link between risk and return. In a market dominated by rational investor, higher risk will command by rational premiums and the trade-off between the two assumes a linear relationship between risk and risk premium.

Utility Functions and Investors Choice (Van Horne, Op. Cit., pp. 58-59)

The best mix of expected return and standard deviation for a security portfolio depends on the investors' utility function. If you are a risk averse investor who associate risk with divergence from expected value of return, your utility function might be depicted in the following figure. The expected return is plotted on the vertical axis, while the standard deviation is along the horizontal. The curves are known as indifference curves; the investor is indifferent between any combination of expected return and standard deviation on a particular curve. In other words, a curve is defined by those combinations of expected return and standard deviation that results in a fixed level of expected utility.

**Figure 2.1**  
**Hypothetical Indifference Curves**

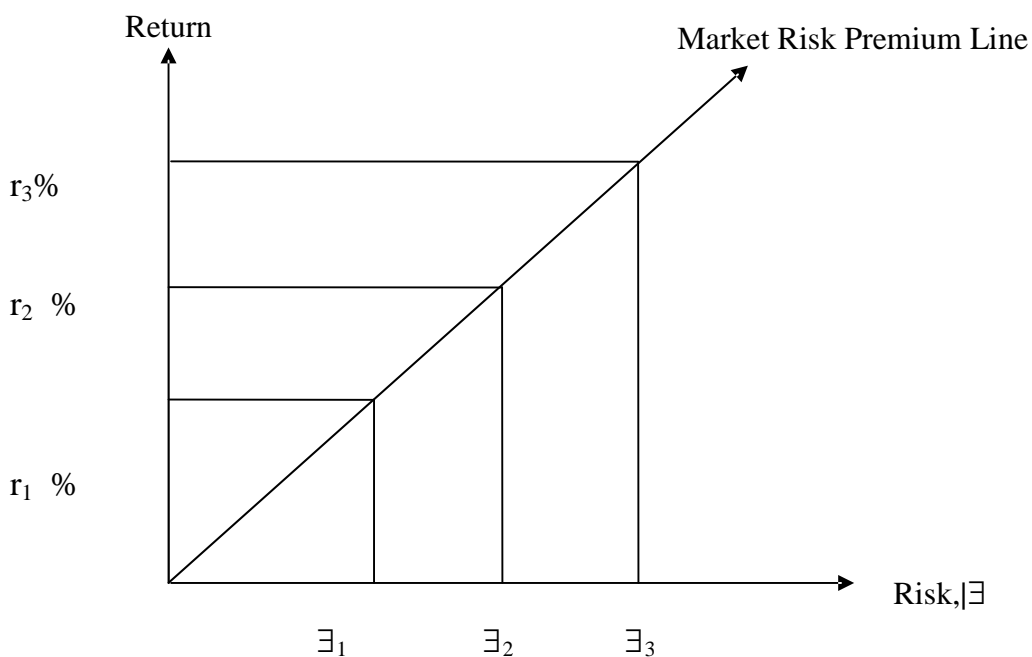


(Source: Van Home, 2000: 59).

The greater the slope of indifference curves, the more averse the investor is to risk. As we move to the left in Fig.2.1, each successive curve represents a higher level of expected utility. It is important to note that the exact shape of the indifference curves will not be the same for different investors. While the curves for all risk-averse investors will be upward sloping, a variety of shapes are possible, depending on the risk preferences of the individual. As an investor, you want to hold that portfolio of securities that places you on the highest indifference curve.

Investors are risk averse. As a result, high-risk assets must offer investors high returns to induce them to make the riskier investments.

**Figure 2.2**  
**Positive Trade off between Risk & Return**



The Figure 2.2 represents a higher risk premium. For taking risk  $\Xi_1$ , the expected return is  $r_1$  when an investor assumes risk  $\Xi_2$ , the return must be  $r_2$  increasing the return (risk premium) by  $r_2 - r_1$  for assuming more risk:  $\Xi_2 - \Xi_1$ . The assumption of linear relationship states that the risk premium must increase or decrease in proportion to a change in level of risk. It also indicates - higher the risk, higher the return and lower the risk lower the return.

### **2.1.3 Portfolio Analysis**

#### **2.1.3.1 Portfolio and Diversification**

According to Jack Clark Francis. "Investment positions are undertaken with the goal of earning some expected rate of return. Diversification is essential to the creation of an efficient because it can reduce the variability of returns around the expected return (Francis, Op. Cit., pp. 58-59).

Raymond, Brockington defined, "The term 'Portfolio' simply means collection of investments. For an investor through the stock exchange will be a collection of shareholdings in different companies. For a property investor, portfolio will be a collection of buildings. To a financial manager with in an industrial company, portfolio will be a collection of real capital projects. It will be apparent that the actual nature of the components of a portfolio demands on the population of opportunities from which the selection has been made (Raymond Brockington).

George B. Cohen et al. defined the portfolio management as – " Portfolio management is the art of handling a pool of funds so that it not only preserves its original worth but also overtime appreciates in value and yields an adequate return consistent with the level of risk assumed" (George, Op. Cit., p. 75).

"Portfolio is simply a combination of two or more securities or assets" (Francis, Op. Cit., p. 229).

The portfolio manager seeking efficient investments works with two kinds of statistics – expected return statistics and risk statistics. The expected return and risk statistics for individual assets are the exogenously determined input data analyzed by the portfolio analyst. The objective of portfolio analysis is to develop a portfolio that has the maximum return at whatever level of risk the investor deems appropriate" (Van Horne and Wachowicz, Op. Cit., p. 90).

Diversification is a risk management technique that mixes a wide variety of investments within a portfolio. It is designed to minimize the impact of any one security on overall portfolio performance. "Diversification is possibly the greatest way to reduce the risk. This is why mutual funds are so popular (<http://www.ameritrade.com>).

Diversification means reducing the investment risk by dividing the investment among a variety of assets. Diversification helps to reduce risk because different investments will rise and fall independent of each other. The combinations of these assets more often than not will cancel out each other' fluctuation, thereof reducing risk.

"Diversification in investments can be achieved in many different ways. Individuals can diversify across one type of asset classification – such as stocks. To do this, one might purchase shares in the leading companies across many different (and unrelated) industries. Many other diversification strategies are also possible. You can diversify your portfolio across different types of assets (stocks, bonds, and real estate for example) or diversify by regional decisions (such as state, region, or country). Thousands of opinions exist" (<http://www.ameritrade.com>).

The common saying "Don't put all your eggs in one basket" is the essence of the principle of diversification. Because all investments carry with them some level of risk, it is important to diversify and spread your money into many different investments.

"Diversification is important for every investor. In fact, it is so important that in 1990, Harry M. Markowitz won the Nobel Prize largely for his work on diversification" (<http://www.nefe.org>).



"Investors can reduce their potential for loss through diversification. The key to diversification is the age-old adage, "don't put all of your eggs in one basket." The main point of diversification is to reduce risk rather than improve expected return. This is the power of diversification: the whole is greater than the sum of its parts (<http://www.dfaus.com.>).

Diversification can help to reduce portfolio risk by eliminating unsystematic risk for which investors are not rewarded. Investors are rewarded for taking market risk. By choosing securities of different companies in different industries, we can minimize the risks associated with a particular company's "bad luck". Diversification among companies, industries and asset classes affords the investor the greatest protection against business risk, financial risk and volatility. Investments whose price movements are opposite each other are negatively correlated. When negatively correlated assets are combined within a portfolio, the portfolio volatility is reduced.

There are some different diversification techniques for reducing a portfolio risk (Francis, Op. Cit., pp. 228-235).

### **1. Simple Diversification**

Simple diversification can be defined as "not putting all the eggs in one basket" or "spreading the risks". But it does not eliminate risk by creating a simple diversified portfolio.

### **2. Diversification across Industries**

Some investment counselors advocate selecting securities from different industries to achieve better diversification. But, empirical research has shown that diversifying across industries is not much better than simply selecting securities randomly since all industries are highly correlated with one another.

### **3. Superfluous Diversification**

If 10 or 15 different assets are selected for a portfolio, the maximum risk reduction benefits from simple diversification have most likely been attained. Further spreading of the portfolio's assets is superfluous diversification and should be avoided.

### **4. Simple Diversification across Quality Rating Categories**

Quality ratings measure default risk – essentially the risk of bankruptcy. The highest quality portfolio of randomly diversified stocks was able to achieve lower levels of risk than the simply diversified portfolios of lower-quality stocks. This result reflects the fact that default risk (as measured by the quality ratings) is part of total risk. The higher quality portfolios contain assets with less default risk. This finding suggests that portfolio managers can reduce portfolio risk to levels lower than those attainable with simple diversification by not diversifying across lower-quality assets.

### **5. Markowitz Diversification**

Markowitz diversification may be defined as "combining assets which are less than perfectly positively correlated in order to reduce portfolio risk without sacrificing portfolio returns" (H. Markowitz, "Portfolio Selection". *Journal of Finance*, 1952, p. 89). It can sometimes reduce risk below the undiversifiable level. Markowitz diversification is more analytical than simple diversification and considers assets' correlations (or covariance). The lower the correlation between assets, the more that Markowitz diversification will be able to reduce the portfolio's risk.

Applying Markowitz diversification to a collection of potential investment assets with a computer is called Markowitz Portfolio Analysis. It is a scientific way to manage a portfolio, and its results are quite interesting. Since Markowitz portfolio analysis considers both the risk and return of dozens, or hundreds, or thousands of different securities simultaneously, it

is a more powerful method of analyzing a portfolio than using intuition or selecting investments by committee.

\* Expected Portfolio Return

The expected portfolio return is the simple weighted average of the expected returns from the investment represented by a portfolio. This expected return is calculated by determining the expected return of each component of the portfolio and using these returns to compute a weighted average. The weights used are the portfolio weights, which describe how the portfolio's investment is weighted among the various assets/securities. Portfolio weights are percentages of the total dollar amount available to be invested in the portfolio and sum to 1. The expected return of a portfolio E (R<sub>P</sub>), is calculated as:

$$\text{Expected Portfolio Return } E(R_p) = \sum_{j=1}^n X_j E(R_j)$$

Where

E (R<sub>P</sub>) = The expected return on the portfolio

E (R<sub>j</sub>) = The expected return of asset j

X<sub>j</sub> = The portfolio weight for asset j, where  $\sum W_j = 1.0$

n = Number of assets/securities in a portfolio

In a two asset portfolio comprising risk free asset and risky asset, the portfolio return will be as:

$$\text{Expected Portfolio Return} = E (R_p) = X_F E (R_F) + X_m E (R_m)$$

\* Portfolio Risk

Total portfolio risk is measured by the variance of the portfolio's rate of return distribution. The portfolio risk depends on the risk of the individual securities and the covariance between the returns of the individual securities. The risk (variance of returns) from a portfolio made up of n assets is defined as:

$$\text{Portfolio Risk } X\text{Var}(R_p) = \sum_{i=1}^n X_i^2 \sigma_i^2 + 2 \sum_{i=1}^{n-1} \sum_{j=i+1}^n X_i X_j \rho_{ij} \sigma_i \sigma_j$$

Where,

$X_i$  = Proportion of investment in security i.

$X_j$  = Proportion of investment in security j.

$\rho_{ij}$  = Correlation coefficient between i and j securities.

$\sigma_i$  = Standard deviation of security i.

$\sigma_j$  = Standard deviation of security j.

### **Risk: Systematic Vs. Unsystematic Risk**

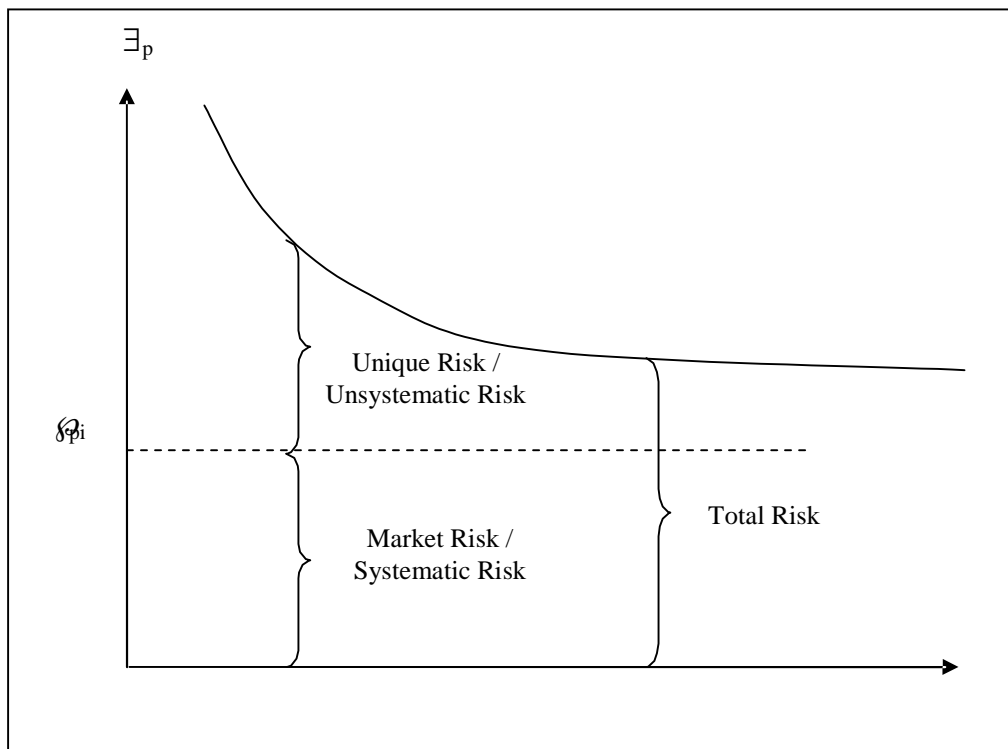
*Systematic Risk:* Systematic risk is that portion of total variability in returns caused by market factors that simultaneously affect the prices of all securities (Francis, p. 265). Systematic risk is the variability of a security's return with that of the overall stock market. It is also called unavoidable risk. It is measured by the beta. The beta of a stock is the slope of the characteristic line between returns for the stock and those for the market. Beta depicts the sensitivity of the security's excess returns to that of the market portfolio. If the slope is 1, it means that excess returns for the stock vary proportionately with excess returns for the market portfolio. In other words, the stock has the same unavoidable or systematic risk as the market as a whole. A slope steeper than 1 means that the stock's excess return varies more than proportionately with the excess return of the market portfolio. Put another way, it has more systematic risk than the market as a whole. This type of stock is often called an "aggressive" stock. A slope less than 1 means that the stock has less unavoidable or systematic risk than does the market as a whole. This type of stock is often called a "defensive" stock (Weston and Copeland, 1992).

"Changes in the economic, political and sociological environment that affect securities markets are sources of systematic risk. Systematic variability

of return is found in nearly all securities to varying degrees because most securities tend to move together in a systematic manner" (Francis, Op. Cit., p. 265).

*Unsystematic Risk:* Unsystematic risk is that portion of total risk which is unique to the firm that issued the securities. It is the amount of a stock's variance unexplained by overall market movements. It can be diversified away. It derives from the variability of the stock's excess return not associated with movements in the excess return of the market as a whole.

**Figure 2.3**  
**Risk & Diversification**



(Source: Van Horne, 2000)

"Events such as labor strikes, management errors, inventions, advertising campaigns, shifts in consumer taste, and lawsuits cause unsystematic variability in the value of a market asset. Since unsystematic changes affect one firm, or at most a few firms, they must be forecast separately for each firm and for each individual incident. Unsystematic security price movements are

statistically independent from each other, and so they may be averaged to zero when different assets are combined to form a diversified portfolio. Therefore, unsystematic risk is also called diversifiable risk (Ibid).

### **2.1.3.2 Markowitz Portfolio Selection Model**

A portfolio is a collection of securities. There exists a problem of portfolio selection. Investors face a problem of selection optimum portfolio from a set of possible portfolio. Hence, it is often referred to a portfolio selection problem. One solution to this problem was put forth in 1952 by Harry M. Markowitz, when he published a landmark paper that is generally viewed as the origin of the modern portfolio theory approach to investing.

Markowitz's approach begins by assuming that an investor has a given sum of money to invest at the present time. Markowitz's approach considers the single period rate of return. Single period rate of return is simply the total return an investor would receive during the investment period or holding period.

Markowitz's model is a theoretical framework for the analysis of risk-return choices. Decisions are based on the concept of efficient portfolios. A portfolio is said to be efficient when it provides maximum expected return for the same level of risk or provides minimum risk for the same level of return.

### **Portfolio Theory Assumptions**

The portfolio selection model developed by Harry M Markowitz is based on several assumptions regarding investor's behavior (Bhalla, 2001: 500).

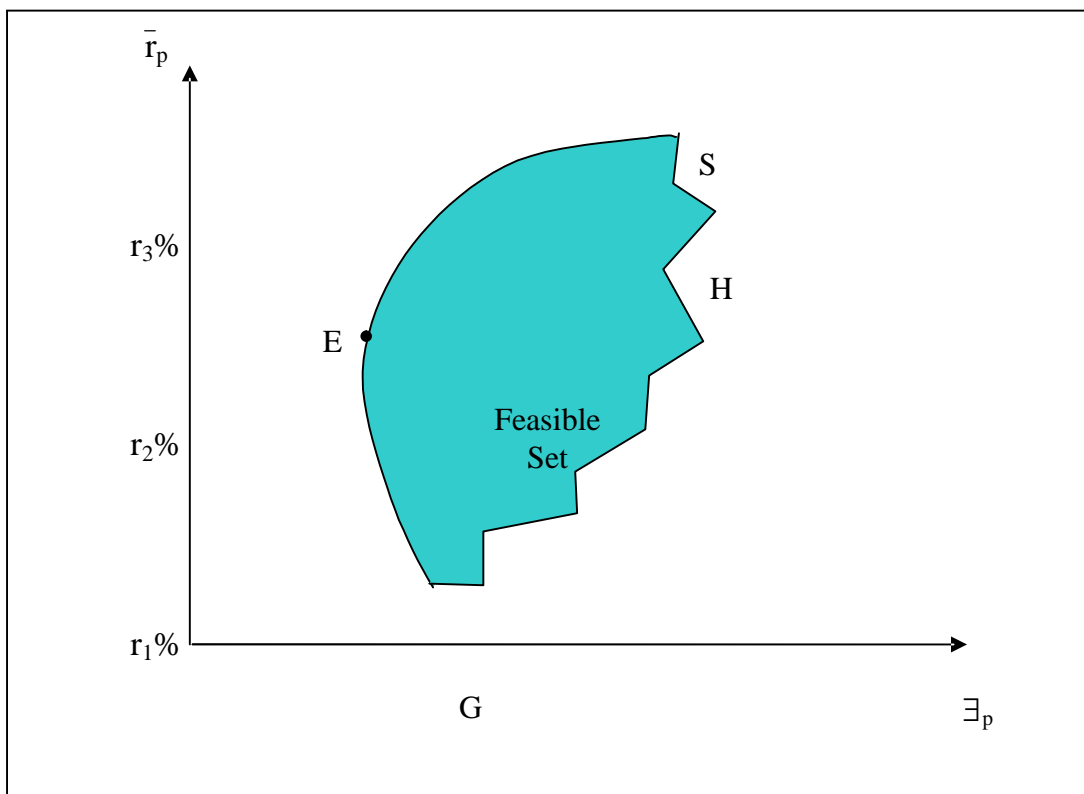
- i. Investors consider each investment alternative as being represented by a probability distribution of expected returns over same holding period.
- ii. Investors maximize one period-expected utility and possess utility curve, which demonstrates diminishing marginal utility of wealth.
- iii. Individuals estimate the risk on the basis of the variability of expected returns.

- iv. Investors base decisions solely on expected return and variance of returns only.
- v. For a given risk level, investors prefer high returns to lower returns. Similarly, for a given level of expected return, investors prefer less risk to more risk.

**2.1.3.3 The Efficient Set Theorem (Sharpe et. al., op. cit., p. 171)**

An infinite number of portfolios can be formed from a set of N securities. The investor can buy any one security or buy more securities in order to create a portfolio. An investor can distribute his or her investing money in different securities.

**Figure 2.4  
Feasible and Efficient Set**



(Source: Sharpe et. al., 2002: 172)

The investor should not have to evaluate all these portfolios. The investor can select an optimal portfolio from a feasible set of portfolios. Efficient set theorem states that:

An investor will choose his or her optimal portfolio from the set of portfolios that:

- i. Offer maximum expected return for varying levels of risk, and
- ii. Offer minimum risk for varying levels of expected return.

The set of portfolios meeting these two conditions is known as the efficient set. Efficient set is also known as the efficient frontier.

#### **2.1.3.4 The Feasible Set (Ibid, p. 172)**

Figure 2.4 is an illustration of the location of the feasible set/the opportunity set. Efficient set can be identified from the feasible set. The feasible set simply represents all portfolios that could be formed from a group of N securities. All the possible portfolios, which could be formed from the N securities, lie either on or within the boundary of feasible set. In general, this set will have an umbrella type shape similar to the one shown in the Figure 2.4.

#### **2.1.3.5 The Efficient Set Theorem Applied to the Feasible Set (Ibid, pp. 172-173)**

The efficient set can now be located by applying the efficient set theorem to this feasible set. To begin with, the set of portfolios that meet the first condition of the efficient set theorem must be identified. Looking at Figure 2.4, there is no portfolio offering less risk than that of portfolio E because if a vertical line were drawn through E, there would be no point in the feasible set that was to the left of the line. Also, there is no portfolio offering more risk than that of portfolio H because if a vertical line were drawn through H, there would be no point in the feasible set to the right of the line. Thus the set of portfolios offering maximum expected return for varying levels of risk is the set of portfolios lying on the northern boundary of the feasible set between points E and H.



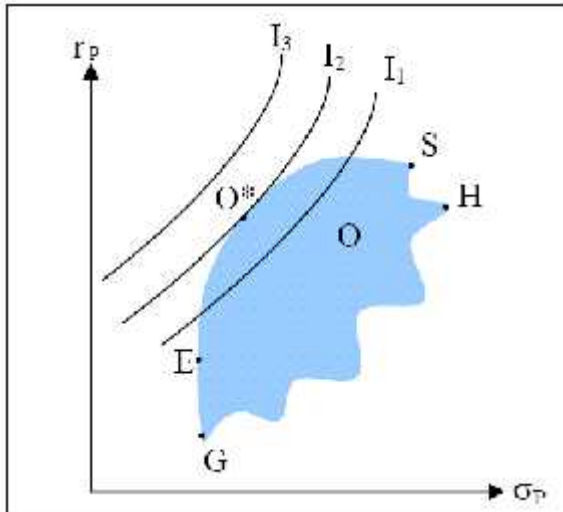
Considering the second condition next, there is no portfolio offering an expected return greater than portfolio S (because no point in the feasible set lies above a horizontal line going through S). Similarly, there is no portfolio G, because no point in the feasible set lies below a horizontal line going through G. Thus, the set of portfolios offering minimum risk for varying levels of expected return is the set of portfolios lying on the western boundary of the feasible set between G and S.

Remember that both conditions have to be met in order to identify the efficient set. It can be seen that only those portfolios lying on the northwest boundary between points E and S do so. Accordingly, these portfolios form the efficient set, and it is from this set of efficient portfolios that the risk-averse investor will find his or her optimal one. All the other feasible portfolios are inefficient portfolios and can be ignored.

#### **2.1.3.6 Selection of the Optimal Portfolio (Ibid, p. 173)**

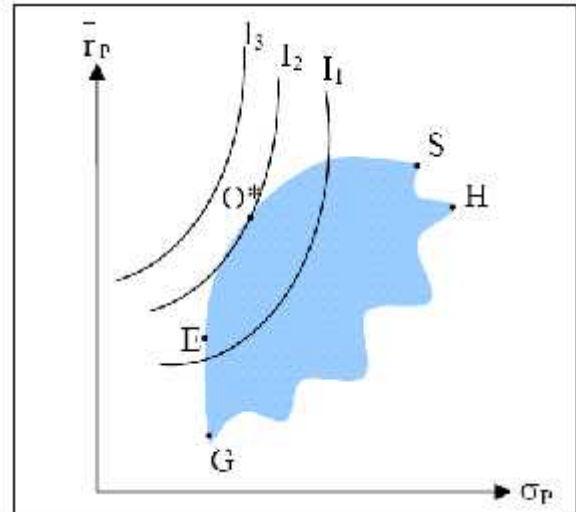
To select an optimal portfolio, an investor should plot his or her indifference curves on the efficient set and then proceed to choose the portfolio that is on the indifference curve that is farthest northwest. This portfolio will correspond to the point at which an indifference curve is just tangent to the efficient set. As can be seen in the Figure 2.5, this is portfolio O\* on indifference curve I2. Although the investor would prefer a portfolio on I3, no such portfolio exists; wanting to be on this indifference curve is just wishful thinking. In regard to I1, there are several portfolios that the investor could choose (for example O). However, the figure shows that portfolio O\* dominates such portfolios because it is on an indifference curve that is farther northwest. The portfolio selection for a highly risk-averse investor has been shown in Figure 2.6.

**Figure 2.5:  
Selecting an Optimal Portfolio**



(Source: Sharpe, 2002: 173).

**Figure 2.6:  
Portfolio Selection for a Highly Risk-Averse Investor**



(Source: Sharpe, 2002: 174)

Upon reflection, the efficient set theorem is quite rational. The efficient set theorem, stating that the investor needs to be concerned only with portfolios that lie on the northwest boundary of the feasible set, is a logical consequence.

### Mean-Variance Indifference Curves

Indifference curves represent the investor's risk preferences. Through indifference curves, it is possible for an investor to determine the various combinations of expected returns and risks that provide a constant utility. Joshi (2002) writes that the curves can be drawn on a two dimensional figure, where the horizontal axis indicates risk as measured by standard deviation (denoted by  $\sigma_p$ ) and the vertical axis indicates reward as measured by expected return (denoted by  $r_p$ ).

The sets of mean variance indifference curves are literally a theory of choice. The only assumptions necessary to draw the indifference curves for risk-averse investors are

- ) People prefer more wealth to less
- ) They have diminishing marginal utility of wealth

These assumptions, if valid, imply that all decision makers are risk averse and will require higher return to accept greater risk.

Indifference curves cannot intersect. “A risk adverse investor will find any portfolio that is lying on an indifference curve that is “father north-west” to be more desirable (that is, to provide greater utility) than any portfolio lying on an indifference curve that is “not as far northwest”. Last, he further describes that an investor has an infinite number of indifference curves.”

#### **2.1.4 Capital Asset Pricing Model (CAPM)**

Capital Asset Pricing Model (CAPM) is a descriptive model of how assets are priced. The major implication of the model is that the expected return of an asset will be related to a measure of risk for that asset known as beta. The exact manner in which expected return and beta are related is specified by the CAPM.

"The capital assets pricing model states that the expected risk premium on each investment is proportional to its beta. This means that each investment should lie on the sloping security market line connecting treasury bills and Market Portfolio (Myers and Brealey, 2003: 200).

In market equilibrium, a security will be expected to provide a return commensurate with its unavoidable risk. This is simply the risk that cannot be avoided by diversification. The greater the unavoidable risk of a security, the greater the return that investors will expect from the security. The relationship between expected return and unavoidable risk, and the valuation of securities that follows, is the essence of the capital asset pricing model (CAPM). This model was developed by William F. Sharpe (1990 Nobel Prize winner in economics) and John Lintner in the 1960s, and it has had important implications for finance ever since (Van Horne, op. cit., p. 62).

The CAPM used to calculate the required rate of return for stock j is:

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

Where,

$E(R_j)$  = The expected or ex-ante return on the jth risky asset.

$R_f$  = The rate of return on a risk less asset.

$E(R_m)$  = The expected or ex ante return on the market portfolio.

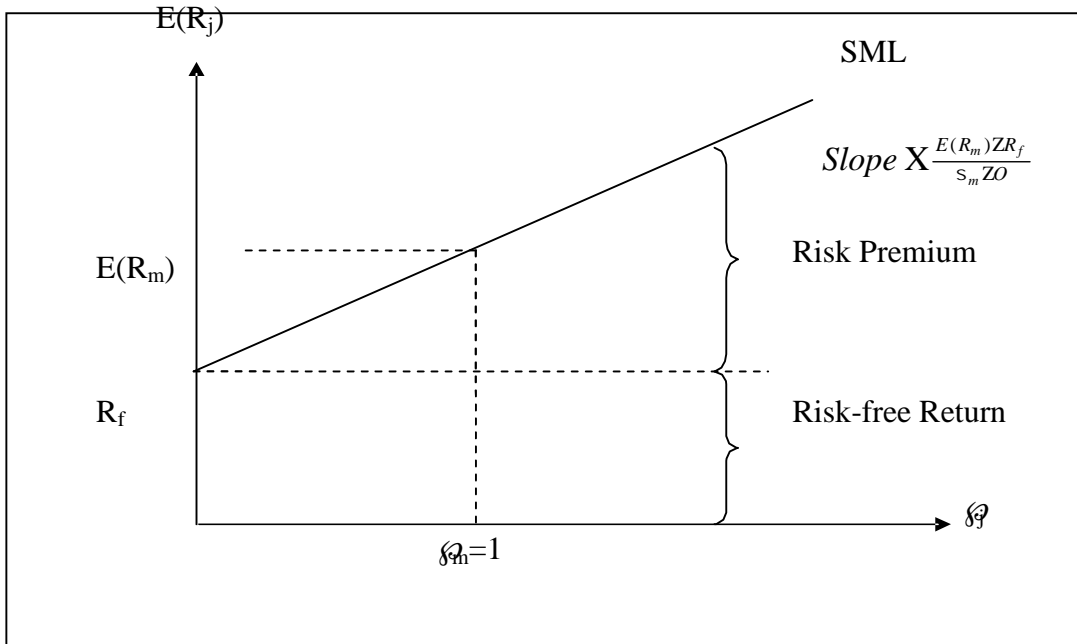
$\beta_j$  =  $\text{Cov}(R_j, R_m) / \text{Var}(R_m)$  = a measure of the undiversifiable risk of the j<sup>th</sup> security.

The greater the beta of a security, the greater the risk and the greater the expected return required. Likewise, the lower the beta, the lower the risk, the more valuable it becomes and the lower the expected return required.

"In market equilibrium, the relationship between an individual security's expected rate of return and its systematic risk, as measured by beta, will be linear. The relationship is known as the security market line" (Ibid, p. 70). When the CAPM is graphed in a figure, it is called the Security Market Line (SML). In equilibrium, all securities must be priced so that they fall on the SML. The fact is that they have different variances, 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 or not they are efficient. The SML provides a unique relationship between undiversifiable risk (measured by beta) and expected rate of return. Hence, if we can accurately measure the beta of a security, we can estimate its equilibrium risk-adjusted rate of return.

**Figure 2.7**

**The Security Market Line / CAPM**



*(Source: Van Horne, 2000: 71)*

The CAPM or SML is an equilibrium theory of how to price and measure risk. It has many applications for capital budgeting, asset valuation, determination of cost of equity capital and the explaining risk in the structure of interest rates.

The logic of the SML equation is that the required return on any investment is the risk free return plus a risk adjustment factor. The risk adjustment factor is obtained by multiplying the risk premium required for the market return by the risky ness of the individual investment. If the returns on the individual investment fluctuate by exactly the same degree as the returns on the market as a whole, the beta for the security is one. In this situation, the required return on the individual investment is the same as the required return on the total market. The risk premium is measured by the slope of SML.

Assumptions of the CAPM (Chenery & Moses, op. cit., p. 75).

Capital market theory (CMT) uses portfolio theory; thus the assumptions underlying portfolio theory also pertain to the CAPM. The additional assumptions underlying CMT and the CAPM appear less realistic than the portfolio theory assumptions. The assumptions of CMT are as follows:

1. All investors are risk-averse. Thus, all investors seek to be on the efficient frontier.
2. There are no constraints on the amount of money that can be borrowed or lent. Borrowing and lending occur at the identical risk-free rate,  $R_f$ .
3. All investors have identical beliefs about the expected returns and risks of assets and portfolios; that is all investors have homogeneous expectations.
4. All investors have a common investment horizon, whether it is one month, three months, one year, or whatever.
5. All the investments are infinitively divisible and marketable; that is, it is possible to buy or sell any portion of an asset or portfolio.
6. Taxes and transaction costs do not exist. That is, there are no tax effects, costs of acquiring information or transaction costs associated with buying or selling securities. These are often referred to as perfect market assumptions. Markets are assumed to be competitive; therefore, the same investment opportunities are available to all investors.
7. There are no unanticipated changes in inflation or interest rates.
8. The capital markets are in a state of equilibrium or striving toward equilibrium. There are no under priced or overpriced securities; if under pricing or overpricing exists, the prices will move to correct this disequilibrium situation.

Under and Over Valuations (Van Horne, op. cit., p. 71).

In market equilibrium, the CAPM implies an expected return-risk relationship for all individual securities (the security market line). If an individual security has an expected return-risk combination that places it above the security line, it will be undervalued in the market. That is, it provides an

expected return in excess of that required by the market for the systematic risk involved.  $\bar{R}_j - \Psi R_f - \Gamma [E(R_m) - ZR_f] S_j$ . As a result, the security will be attractive to investors. According to the theory, the increased demand will cause the price to rise until the expected return declines sufficiently for the security to lie on the security market line and, thereby, for  $\bar{R}_j - X R_f - \Gamma [E(R_m) - ZR_f] S_j$ . An overvalued security is characterized by an expected return-risk combination that places it below the security market line. This security is unattractive, and investors holding it will sell it and those not holding it will avoid it. The price will fall and expected return will rise until there is consistency with the security market line and with equilibrium pricing.

### **Efficient Frontier**

Collections of possible portfolios are the attainable sets. Cheney and Moses (1992) define at any given level of risk or return, however there is no one portfolio that provides the highest (lowest) level of expected return or risk. This set of portfolio that dominates all other portfolio in the attainable set is referred to as the efficient frontier. They further add once the investor has determined the expected returns and standard deviations for each of the assets and correlation coefficients between the assets, then the portfolios on the efficient frontier can be identified. Estimation of the efficient frontier requires quadratic programming that will simultaneously estimate the minimum portfolio risk at each level of expected return.

Olsen (1983) writes when only common stocks are considered as components of portfolio on the efficient frontier, a sample size of several hundred randomly selected securities will provide an estimate of the efficient frontier not significantly different from the frontier obtained by using the entire universe of common stocks.

## Capital Market Line (CML)

“The efficient frontier that can be constructed without borrowing or lending is convex towards the E(r) axis in risk-return space. However, if borrowing and lending opportunities are concluded in the analysis, linear set of investment opportunities called the capital market line emerges”.

Sharpe’s (1964) writes the CML is the locus of the portfolio that wealth-seeking risks-averse investor will find more desirable than any other portfolios. Fisher and Jordan (2000) describe that all investor will end up with portfolios somewhere along CML and all efficient portfolios would lie along CML. However, not all securities or portfolios lie along the CML. From the derivation of the efficient frontier we know that all portfolios, except those that are efficient, lay below the CML. Observing the CML tells us something about the market price of risk

### 2.1.5 Portfolio Performance Evaluation (Francis, op. cit., pp. 644-662)

#### 2.1.5.1 Sharpe's Portfolio Performance Measure

Ranking portfolio's average returns ignores the skill with which they minimize risk and therefore presents an oversimplified picture. Hence, in assessing the performance of a portfolio, it is necessary to consider both risk and return. William F. Sharpe devised an index of portfolio performance for portfolio i as:

$$S_i = \frac{\text{Risk Premium}}{\text{Total Risk}} = \frac{\bar{r}_i - R}{\sigma_i}$$

Where,

$S_i$  = Sharpe index of portfolio performance for portfolio i.

$\bar{r}_i$  = Average return from portfolio i.

$\sigma_i$  = Standard deviation of returns for portfolio i.

R = Risk-less rate of interest.



$r_j - R$  is the risk premium for portfolio i. The risk premium is the additional return over and above the risk-less rate that is paid to induce investors to assume risk.

Sharpe's index of performance generates one number that is determined by both the risk and the return of the portfolio or other investment being evaluated.

### 2.1.5.2 Treynor's Portfolio Performance Measure

Jack Treynor conceived an index of portfolio performance that is based on systematic risk, as measured by portfolios' beta coefficients. He suggests measuring a portfolio's return relative to its systematic risk rather than relative to its total risk, as does the Sharpe measure. Treynor's index is ascertained as:

$$T_p = \frac{\text{Risk Premium}}{\text{Systematic Risk Index}} \times \frac{\bar{r}_j - R}{S_p}$$

Where,

- $T_p$  = Treynor's index of portfolio performance for portfolio i.
- $\bar{r}_j$  = Average return from portfolio i.
- $S_p$  = Systematic risk index of returns for portfolio i.
- $R$  = Risk-less rate of interest.

### 2.1.5.3 Jensen's Portfolio Performance Measure

Dr. Michael C. Jensen has modified the characteristic regression line to make it useful as a one parameter investment performance measure. The basic random variables in Jensen's model are risk premiums, such as:

$$rp_{i,t} = r_{i,t} - R_t$$

Where,

- $rp_{i,t}$  = Risk premium for asset I in period t.
- $r_{i,t}$  = One period rate of return from asset I in period t.
- $R_t$  = Risk-less rate observed in period t.

### **2.3 Reviews from Articles**

The article in the web page [www.investopedia.com](http://www.investopedia.com) "Are you over diversified" mentioned that many individual investor could not tolerate the short term fluctuation in the stock market. Diversifying the portfolio is the best way to smooth out the ride. Diversification is the risk management techniques that mix a wide variety of investments within a portfolio in order to minimize the impact that only one security will have on the overall performance of the portfolio. Diversification low the risk of your portfolio. Academics have complex formulas to demonstrate how this works.

The Article "Selection of Portfolio" in web page [www.indiainfoline.com](http://www.indiainfoline.com) by Prof. Dr. Vijay Pal Chatarjee mentioned some guideline to select optimal portfolio. He mentioned that investor like high-expected return for given level of risk is efficient portfolios. If an investor wants to know the marginal impact of the stock on the risk of the portfolio, then he/she must not looks at the risk of that stock in isolation but rather at its contribution to portfolio risk. That is dependent on the stocks sensitivity to changes in the value of the portfolios. If the investor can borrow and lend at the risk free rate of interest, then they should always hold a mixture of the risk free investment and one particular common stock portfolio. The composition of this portfolio depends on when the investment liquidated. Risk is lower in the short term. Diversification of the portfolio can reduce the unique risk. If such diversification results an expected portfolio return or risk level that is below/above the desired level then, then borrowing and lending can be used to achieve the desired level. Portfolio strategy should be mouled according to the need of each individual investor. Since each portfolio provides an expected return based on a particular level of risk, while constructing portfolios, care should be taken to ensure that the portfolio does not exceed the risk bearing capacity of the investor.

It is constructed in such a way that it provides the highest return for a given acceptable level of risk. In an efficient portfolio, there is a straight-line relationship between the expected return and the marginal contribution to portfolio risk. This is true because an investor would include a security, which contributes to increasing the risk of the portfolio as a whole only when it offers higher return and increases the expected return of the portfolios.

An article published on the Kathmandu Post Daily on 28th April 2004 on entitled "Effective Banking" by L.D. Mahat, explained that the efficient of banks could be measured using different parameters. The concept of productivity and profitability can be applies while evaluating efficiency of banks. The term productivity refers to the relationship between the quality of inputs employed and the quality of outputs produced. An increase in productivity means that more output can be produced from the same inputs or the same outputs can be produced from the less inputs. Interest expenses to interest income ratio shows the efficiency of banks in mobilizing resources at lower cost and investing in high yielding assets. In other words, it reflects the efficiency in the use of funds. The operating profit to total income ratio helps in assessing whether bank are doing the right things internally. According to Mr. Mahat the analysis of operational efficiency of banks will help one in understanding the extent of exposure of banks under the changed scenario and in deciding when to back upon. This may also help the inefficient bank to upgrade their efficiency and be wire in the situation developing due to slowdown in the economy. The regulation should also be concerned on the fact that the banks with unfavorable ratio may bring catastrophe in the banking industry.

An article entitled "International Portfolio Investment Flows" by Michael. J. Brennam and Henny Cao developed a model of international equity portfolio investment flows based in difference in informational endowment between

foreign and domestic investors. It is shown that when domestic investor's possess a cumulative information advantage over foreign investor about their domestic market, investor tends to purchase foreign assets in period, when the return on foreign assets is high and to sell when the return is low. The article has concluded that if foreign and domestic investors are differently informed then portfolio flows between two countries will be linear function of the contemporaneous return in all national market indices, and if domestic investors are better informed about domestic securities, the coefficient of the market return will be positive. It has developed a model of international equity portfolio flows that relies on informational difference between foreign and domestic investors. The examination of US portfolio investment in emerging market has shown the strong evidence that US purchases are positively associated with the local market return in many countries.

Diversification is the important component in helping you reach your long-range financial goal while minimizing your risk. At the same time, diversification is not an ironclad guarantee against loss. No matter how much diversification you employ, investing involves taking on some sort of risk.

Another question frequently baffles investors. How many stocks should be brought in order to reach optimal diversification? According to portfolio theorists, after around 20 securities, you have reduced almost all the individual security risk in a portfolio. This assumes you buy stocks of different sizes from various industries.

It is well known that risk and return are the major things of analysis but there are so many factors to be considered while making investment. Imperfect knowledge and imperfect data create more risk. Investors are not always risk averters. Some of the investors are risk lovers but they expect some considerations for bearing more risk. Acceptance of risk level is different for different investors, so they are interested in various stocks, which have

incompatible risk. Mr. Terrance Odeon mentioned risk loving nature of investor in the finance of journal Vol. 53 1998. He further mentioned that investor has unique risk bearing capacity and choice in investment varies accordingly to level of risk.

## **2.4 Reviews from Thesis**

There are some studies had been conducted as a thesis for the partial fulfillment of Master degree. Here some thesis is reviewed:-

**Joshi (2002)**, conducted a research entitled "Investor Problem in Choice of Optimum Portfolio of Stock Exchange" with reference to various commercial banks financial companies and others. There are some of the objectives of this study. The main objective of this research is to analyze the trend of NEPSE and try to find out the portfolio of NEPSE to invest. This research also suggests the majors for the improvement of the stock market as well for better meet of investors. Mr. Joshi has taken selected and short-listed a companies which are categorized in "grade A" in NEPSE as his sample size. From this he has find that SCBNL has the greater expected return i.e. Rs. 2358.85 and Necon Airlines the lowest expected return i.e. Rs.-3.34. Likewise, NBBL has the greater risk i.e. =Rs 753.04 and the CIT has the lowest risk i.e. =Rs.4.08. Higher C.V. explains that the stocks are highly volatile and thus much risks. So as per lesser coefficient of variation PFC, NABIL & CIT are the best stock to invest whose coefficient of variation are 205%, 308% and 344.71% respectively. The correlation coefficient between PFC & NSBIBL is 0.07479 where as correlation coefficient between PFC & CIT is 0.17645. Both are positive but lower degree of positive correlation. It means when one increases another also increases and vice versa.

**Khaniya (2003)**, entitled "Investment Portfolio Analysis of Joint Venture Banks". The main objective of the research was to analyze the portfolio

investment of the listed joint venture banks:-NABIL, SCBNL, HBL, NBBL and EBL. In this research the researcher tries to analyze the risk and return of joint venture banks and the financial performance analysis. This research helps to provide the suggestive package based on the analysis of data. The major of the study is that the SCBNL and HBL have better position. NBBL and NABIL have a low position in the industry. But EBL has a very low position in the industry because of having mean return on shareholder's fund resulting from the negative return.

**Shrestha (2004)**, research entitled to "Optimum Portfolio Investment in NEPSE". The objective of the research was to analyze the optimum portfolio investment in NEPSE. The main objective of the research was to analyze the performance of listed companies in the term of expected rate of return and company specific risk, required rate of return, systematic risk and diversification of risk and to find out the optimum portfolio through portfolio concept. He takes the seven years data of seven commercial banks, finance companies, insurance companies, manufacturing companies and other company. From this the researcher concludes that NABIL is the best security for risk lover investor and NIBL is the best alternative for risk averter investor in banking securities. BOK is the most risky asset. NCM is the most risky assets and YFC is the best security to risk averter investors in securities of finance companies. The best security in the insurance companies is EICL on the base of risk and return characteristics. Regarding the risk and risk of the manufacturing securities BNL is the best security. The risk and return of other securities are not satisfactory. Only BBCL is providing positive return, which is also lower than market. Market return of NEPSE index is 7% and standard deviation of market is 36.11%. The market rate of return is not satisfactory in comparison to its risk level. Among the selected securities, YFC is the best security having minimum coefficient of variation i.e. 0.9910 with the return of 31% and risk of 30.72%. According to the researcher investor

selected securities on the basis of fundamental analysis rather than technical analysis. Investors are risk lovers

**Neupane (2005)**, made a research entitled “Determinants of Stock Price in NEPSE” and tried to explore the factors that have significant influence on the stock price in NEPSE. He concluded his study by quoting;

Nepalese investors have not adequate education about the capital market. They do not have good knowledge and information to analyze the scenario and to forecast share price. Perhaps due to this reason stock price in NEPSE rather shows irrational behavior.

In NEPSE, DPS, BPS & EPS individually do not have constituent relationship with the market price of the share among the listed companies. The pricing behavior varies from one company to another. But EPS, BPS & DPS, jointly have significant effect in market price of the share. So, there may be other major factors affecting the share price significantly. NEPSE is in its primary stage, adopting open out cry system for stock trading and stockbrokers lack professionalism to create investing opportunities in NEPSE.

) Commercial banking sector has dominated the overall performance of NEPSE. Manufacturing & processing, trading and hotel sectors have weak performance. So, financial intermediaries are strong but their ultimate investment is suffering.

) Companies’ performances(earning, dividend, book value, risk etc) information disclosed , timely AGM , political stability, national economy, demand & supply situation, strikes, demonstrations, ceasefire and peace talks (and their outbreak) are the major factors affecting the share price in NEPSE, according to the respondent of survey. Interest rate, retention ratio, cost of equity, tax rate, gold price ,

value of US \$ , global economy, market liquidity, season, day of the week, size of the firm, change in the management do not significantly affect the price of the share in NEPSE.

- ) There is deficiency of proper laws and policies regarding the capital market. Shareholders are feeling unsecured to invest in security markets due to poor regulatory mechanism to protect shareholders interests. The implementation of existing laws is weak.
- ) Listed companies do not provide sufficient information (financial as well as non financial) to their shareholders and they are not able to act according to the shareholders' interests. The performance of most of the listed companies is not transparent.
- ) Since NEPSE is in increasing trend, in spite of unfavorable environment for investment, Nepalese citizens have a huge amount of scattered fund remained unproductive, which can be used in the industrial development through capital market to accelerate the economic growth of the nation.
- ) With the existing Maoist problem, industrial development and capital market development is impossible. So, the peaceful solution of the Maoist problem is preliminary condition for capital market and economic development in Nepal.

**Phuyal (2006)**, has conducted research on “Stock Price Behavior of Selected Banking and Insurance Companies” is related with stock price behavior. He has tried to show the functional relationship of MPS with other financial indicators: DPS, EPS, NWPS and price appreciation along with the fundamental concept of stock market. He has attempted to show the behavior of chartists (Technicians) and fundamentalists in relation to projection of equity prices. To achieve the basic aim of this study, he set following objectives at the time of research.

- ) To identify the major financial indicators which affect on determining MPS.



- ) To examine and evaluate the relationship of MPS with various financial indicators like; EPS, NWPS, DPS and current years dividend.
- ) To identify whether stocks of the sampled companies are over priced, under- priced or equilibrium priced.
- ) To study the signaling and informational effect on share price.
- ) To examine Nepalese investors' response on the change of stock.

**Regmi (2008)**, has conducted research on “Portfolio Analysis on Investment of Nepalese Commercial Banks” is to describe to minimized risk and maximized return by portfolio management and existing situation of portfolio management of commercial bank in Nepal and to measure the financial performance of selected five listed banks in NEPSE, their risk, return, trend, and portfolio patterns.

The general objective of the present study is to identify the current situation of investment portfolio of commercial banks in Nepal. The specific objectives are as follows.

- ) To highlight the concept of investment and loans and advances portfolio.
- ) To evaluate the financial performance of commercial banks in term of investment strategies.
- ) To analyze the risk and return ratio of commercial banks.
- ) To analyze how commercial banks manage their risk and return on investment using portfolio concept.

**Shrestha (2008)**, research entitled to “A Study on Portfolio Management of Nepalese Commercial Banks (With reference to BOKL, HBL, NABIL and Nepal Investment Bank Ltd.)

To achieve the above objective, he has taken 5-year financial data of five leading commercial banks, three finance companies and two Insurance companies. He applied econometric model to show the relationship

between the independent variables and their linear impact on MPS. Correlation coefficient and regression equations were calculated and derived to estimate future MPS. However, this study covered very few variables due to which the inferences drawn might lead to wrong conclusion. In research design, he explained, "To draw inferences on the market performance of stock market and price formation, different measures have been used, while collecting and interpreting relevant data, facts and figures with a view to systematic data collection and data's interpretation. Simple statistical tools have been used to finish this research works, which represent the explanatory and descriptive analysis of the relevant information and data." Nevertheless, this study tries to explore the determinants of equity price by way of showing the functional relationship between the equity price and financial indicators along with the fundamental knowledge of stock market in Nepalese context. The major findings of this study are given below:

- ) Nepalese investors have limited knowledge about security market. It lacks of professional investors.
- ) Most of the stocks of banking and finance companies are under valued in the stock market.
- ) Investors are trading the stocks without proper analysis of the financial indicators.
- ) The price fluctuating trend is not predictable by general investors.
- ) Signaling factors should be analyzed on regular basis by the concerned authority so that the future movements of price can be predicted from the side of analyst and investors.

**Poudel (2006)**, Prepared the thesis entitled "An investment Portfolio Analysis of Joint Venture Banks in Nepal. The study is based only to the portfolio analysis between banking sector and other sector.

The main objective of this study is to identify the situation of portfolio management of commercial bank of Nepal and portfolio analysis

between banking sector and other sector. The specific objectives of the study are as follows:

- ) To examine risk and return of commercial banks.
- ) To analyze market sensitivity.
- ) To know about systematic, unsystematic risk and analyze them in portfolio construction process.
- ) To analyze portfolio return and risk.
- ) To evaluate financial performance of commercial banks of Nepal Under study.

Major Findings:

- ) SCBL Stock has the highest expected return i.e. 20.486% and HBL has the lowest expected return i.e 3.48% NIBL and SBIBL stock have the expected return is 11.63%. The risk (S.D)of SBIBL is the highest i.e. 62.22% and SCBL has the lowest risk i.e. 33.10% . HBL and NIBL has a risk of 37.24% and 37%, respectively. The market risk (Market S.D) is 36.40%. So it shows that SCBL has higher the return lower level risk.
- ) All the returns of commercial bank's are positively correlated with returns of market because all values are nearly equal to +1. SBIBL stocks return are the highest positively correlated and SCBL stocks returns are least positively correlated with return of market. All banks has a beta less than 1 except SBIBL. SBIBL has highest beta i.e. 1.63 and SCBL has the lowest beta i.e. 0.77. So stock returns of SBIBL are more volatile and stock returns of SCBL is less volatile among four commercial banks.
- ) Total risk of SBIBL stock is highest and total risk of SCBL stock is lowest among four banks. SBIBL stock has 91% of undiversifiable risk only 9% of its risk on total risk is diversifiable risk. HBL has 84.5% of undiversifiable risk and remaining 16.5% diversifiable risk on total risk. NIBL and SCBL have an 85.5% and 72% of undiversifiable risk and 14.5% and 28% risk and diversifiable risk respectively.

- J The required rate of return of SBIBL is the highest i.e 16.34% and SCBL stock is the lowest i.e. 9.9%. Other bank HBL and NIBL have a required rate of return of 11.18% and 11.18% respectively. SCBL stocks required rate of return is less than expected return, so the stocks price is under priced. But other banks stock required rate of return is greater than expected return so the stock price is one Priced.
- J NIBL has the highest portfolio return i.e. 8.2643 and it has the highest portfolio risk i.e. 20.03%. HBL has the lowest portfolio return i.e. 4.2447% and it has the lowest portfolio risk i.e. 0.4831%. SCBL and SBIBL has a portfolio return of 6.1683% and portfolio risk of 9.8134% and 0.6145% respectively.
- J The performance measure shows that the stock of NIBL is the highest i.e. 4.118, stock of HBL is lowest i.e. 0.0984. Sock of SCBL is second higher i.e. 0.2055 and stock of SBIBL is in third position among banks.

**Gaytan (2006)**, prepared the thesis entitled "Investment portfolio of commercial banks in Nepal." The study is based only on those factors, which are related with investment portfolio analysis, on secondary data published by and collected from selected banks and from the journals and unpublished articles and thesis, only five commercial banks are taken under study. The study covers a period of eight fiscal years which are tabulated and processed for drawing conclusion.

The main objective of the study is to identify the current situation of investment portfolio of commercial bank in Nepal. The specific objectives are as follows:-

- J To emphasize the concept of investment and loans and advance portfolio.
- J To assess the financial performance of commercial banks in term of investment approach.
- J To analyze the risk and return ratio of commercial banks.

) To provide useful information based on the analysis of the data.

#### Major Findings:

Based on the analysis of the various data remarkable findings are drawn up.

The major findings are as follows:

**Investment Portfolio:** In investment portfolio, the industry average investment on government securities is 84.33%, among the CBS, EBL has invested the highest amount of funds on govt. Securities i.e. 98.58% and NIBL has invested lowest 55.84% other banks SCBL, NABIL and EBL have been investing highest amount of funds on share and debenture among CBS and EBL have invested lowest amount of funds on S and D. i.e. 1.42% NABIL and HBL have invested lower than industry average and the industry average in this case is 15.67% on which NIBL is invested higher than industry average i.e. 44.16%. In case of NRB bonds no one banks are investing. There is zero amount of investment.

**Loan and Advances Portfolio:** In loan and advances portfolio, the industry average investment on Govt. Enterprise is 2.28%, Among the CB's HBL has invested the highest amount of funds on Govt. enterprises i.e. 3.89% and EBL has invested lowest 1.08%, NIBL and NABIL are below the industry average i.e.

1.41%, and 1.36% respectively and HBL is higher the industry average of 3.89% EBL is investing highest amount of funds on Private sector among CBs i.e. 97.01% and NIBL has invested above the industry average on private sector i.e. 96.32%. And SCBL and HBL have invested lowest amount of funds on Private Sector i.e 93.70% and 94.17% respectively. NABIL is investing the highest amount of funds on for bill P and D as compared to other CBs i.e. 3.38%.

The industry average in this case is 2.44%. NIBL, EBL and HBL has invested lower than the industry average i.e. 2.27%, 1.91% and 1.99% respectively but SCBL have invested above industry average i.e. 2.65%.

Portfolio Risk and Return on Investment: There is positive Correlation coefficient between return on investment made by CBs in Govt. Securities loan and advance i.e. 0.613. And there is low positive correlation coefficient between return on investment made CBs in Govt. Securities and S & D and loan & advance and S & D i.e. 0.032 and 0.207 respectively. This shows the low degree of normal relationship between assets. Such assets are very useful to make portfolio combination, so that the risk of the portfolio will be significantly reduced.

According to the Calculation Portfolio Return is lesser than the individual return of S & D. and L & A but higher than individual return of Govt. Securities. And portfolio risk is less than the individual risk of L & A and Govt. securities but very lower risk than individual risk of S & D this is due to low correlation between assets which shows the portfolio reduce risk.

Risk and Return: The average return on Govt. Securities 4.57% and its coefficient of variation is 28% which is very low return among other investment but higher risk than L & A investment.

"Investors' Problems in Choice of Optimum Portfolio of Stocks in Nepal Stock Exchange" (Joshi, 2002)

A thesis entitled "Investor's problems in choice of optimum portfolio of stocks in Nepal stock exchange" was undertaken by Roopak Joshi in July 2002.

The main objective of this study was to identify the investors' problems in choice of optimum portfolio of stocks in NEPSE which concluded that portfolio management is a new concept for Nepalese investor. Due to lack of sufficient information proper investment is not possible. Proper investment

needs huge information internal as well as external. The stock market of Nepal is also in growing stage only. The only one stock exchange located in Kathmandu. Traditional cry system for trading stocks, limited number of security broker, lack of opportunity of invest and many other reasons are there, which are acting as barrier of development of NEPSE."

Joshi further also concluded that most of the investors do not know in which stock to make investment and how to formulate the portfolio. Even many brokers do not furnish the information to the investors. Investors are trading the securities mostly under the pressure of brokers.

"Portfolio Management of Listed Commercial Banks and Insurance Companies in Nepal" (Sharma, Durga Mani, 2004)

A thesis entitled "Portfolio Management of listed commercial banks and insurance companies in Nepal" was undertaken by Durga Mani Sharma in March 2004. The main objectives of the study were to analyze the current status of portfolio management of listed commercial banks and insurance companies in Nepal, to analyze the return and risk of the common stocks of listed commercial banks and insurance companies to analyze the diversifiable and undiversifiable risk of the return on common stocks, to analyze the portfolio return and risk and to determine whether the shares of commercial banks and insurance companies are correctly priced or not.

In order to achieve the set objectives, Sharma used five years (FY 1998 to 2002) historical data of four commercial banks and four insurance companies as sample. The study had the following findings:

1. The share of NABIL offered the highest average rate of return i.e. 83.06 percent with highest risk i.e. 96.60 percent where as the share of NIBL offered the lowest average rate of return i.e. 33.09 percent with the least risk i.e. 40.06 percent. On the basis of average rate of return, the shares of

NABIL seemed to be the best of investment. Considering the overall market, however, the shares of the commercial banks were attractive for investment.

2. Coefficient of variation can depict the exact position of risk per unit of return. Lower CV is preferable. It seemed that the CV of SCBNL was the highest and of HBL was the lowest among all. So, investors retaining the stocks of SCBNL should assume more risk than any others.
3. The stock of EVIC had the highest average rate of return i.e. 49.16 percent and PRIC had the lowest average rate of return i.e. 21.74 percent among all. However, the least risky stocks were UNIC.
4. Coefficient of variation is the best measure to make investment decisions, which gives the exact situation of risk per unit of return. The CVs of HGIC, UNIC, EVIC, and PRIC were 1.69, 1.70, 1.51 and 2.30 respectively. Here, risk per unit of return of EVIC was the lowest among all whereas of PRIC was the highest. On the basis of CV, the common stock of EVIC was attractive among all.
5. The average market return is only 10.73 percent with the standard deviation of 39.25 percent (Variance of returns being 15.41 percent). The return might not be regarded as attractive with respect to its risk. Coefficient of variation, which measures the risk per unit of return, is 3.66. It seemed that the market was more risky than the individual stocks of listed companies.
6. All the selected commercial banks have invested their large amount of money in government securities.
7. Average portfolio returns of SCBNL, HBL, NIBL and NABIL are 11.15 percent, 10.08 percent, 8.89 percent and 8.09 percent respectively. The portfolio return of SCBNL appeared highest and that of NABIL appeared least among all.
8. Portfolio risk (Portfolio standard deviation) of SCBNL, HBL, NIBL and NABIL are 25.96 percent, 30.67 percent, 35.13 percent, 22.56 percent



respectively. With respect to portfolio standard deviation, the portfolio of NIBL appeared most risky among all and the portfolio of NABIL appeared least risky. The two asset portfolio of all the commercial banks seems to be very dissatisfactory. However, the risk of the portfolios managed by the companies is less than the market risk i.e. 39.25 percent.

9. HGIC and UNIC didn't make any investment in shares of other companies. All the insurance companies except PRIC have invested their large amount in government securities.
10. The return on the portfolio of HGIC is 6.83 percent, UNIC is 7.35 percent, EVIC is 6.08 percent and PRIC is 7.42 percent with a standard deviation of 22.47 percent, 32.97 percent, 23.11 percent and 29.38 percent respectively. It seems that the portfolio returns of all the insurance companies are greater than the risk free rate. And for all insurance companies, the average portfolio returns are same.

## **2.5 Research Gap**

Based on the review of the previous researches, researcher found that most of the previous researches on portfolio management have been conducted showing the risk and return of the stocks. Portfolio management of commercial bank's assets basically means the collection of fund to different components but none of the researches are done on making analysis of portfolio management. Previous researches are not able to show the real picture of investment pattern of the commercial banks. Thus, this research aims to conduct the research from the bank's side regarding the portfolio investment management available resources of the bank for the maximization of return to the bank.

## **CHAPTER – III**

### **RESEARCH METHODOLOGY**

The research methodology is the process of arriving to the solution of the problem through planned and systematic dealing with the collection, analysis, and interpretation of fact and figure. Research is a systematic method of finding out solution to a problem whereas research methodology refers to the various sequential steps to adopt by a researcher in studying a problem with certain objectives in view. To find out such solution of problems various statistical and financial tools and techniques are applied according to the nature of phenomena. This chapter mainly deals with the research methodology used to ascertain the study objectives. Under this, research design, population and sample, sample selection method, data collection and analysis techniques have been described.

#### **3.1 Research Design**

Proper planning is essential to get success either in battlefield or in research. Research design is a strategic approach to be proactively maintained probable cause and effects. A researcher also develops a framework or design of strategy to get solution of research problem. Research design is a brief structure design of strategic investment conceived to get research objectives. This research is acquainted to examine and find out the problem and possibility of generating the portfolio investment for the public with special reference to financial securities listed in NEPSE. Nature of this research is historical, descriptive and analytical research because this research based on historic data, generalized theorem of financial management and investment analysis evaluation the data of reference companies.

### **3.2 Population and Samples of Data**

The term population of data denotes for the data of securities listed in NEPSE and Sample data are the data from organizations selected from population in few numbers. First, research has considered only common stock as sample and second, those securities which were listed NEPSE in FY 1996/97, are selected. Third, random selection model on the personal judgment of researcher is used to select sample organizations for the study. The population data of this study are data from all companies listed in NEPSE and sample data among them.

Many companies are already listed in NEPSE and this is on-going process. From the population of 29 commercial banks, the samples taken from the study are NABIL, EBL and NIBL.

### **3.3 Nature and Sources of Data**

Data are the mathematical expression of variables. Data help to develop some understanding in quantitative phenomenon. The data collected from field survey from the questioner is primary data so that researcher made some question and given to the different people to fill up and from that result researcher made an analysis. The data collected from others and made available as published or unpublished statistics are secondary data. Those data helped during this research period. Sources of secondary data are published and unpublished data from organization like shareholder report, annual report, reviews and reports, report and reviews from SEBO, trading reports of NEPSE, statistics report and annual report of NRB, articles from various magazines, previous thesis and dissertation, homepages, books and journals.

### **3.4 Data Collection Techniques**

Data were not available in readymade format. Data manipulated as per research requirements. First, needed data assessed. Second, data are collected

and only essential are selected, classified and such a way that they represent qualitative and quantitative glimpse. Only manipulated data used in this research. To manipulate data Computer Application program MS- Office, Professional Edition, 2003 were used. Techniques of data collection are as follows:

- ) Library Research
- ) Internet, Homepages and Related Links study
- ) Review and reports of concerns

### **3.5 Data Analysis Tools**

Various financial and statistical tools were used to analyze the data ratio analysis, correlation coefficient, trend analysis, risk and return, standard deviation, hypothesis test, etc were used in the study. A brief explanations of statistical and financial tools employed in this study is given below.

#### **a) Financial Tools**

There are several tools which can be applied in order to analyze the performance of CBs. But the following main financial tools are used to analyze.

#### **I. Ratio Analysis**

The relationship between the two accounting figures expressed mathematically is known as ratio. Ratio analysis is used to compare a firm's financial performance and status to that of other firms or to itself on time (Gitman, 1990:275). Likewise, ratio refers to the numerical or quantitative relationship between two items or variables. In simple language it is one number expressed in term of another and can be worked out by dividing the number to the other i.e. it is calculated by dividing one items of the relationship with the other (Munakarmi, 2002:204). In financial analysis, ratio is used as an index of yardstick for evaluating the financial position and performance of the firms.

Since, this study mainly moves around investment portfolio of CBs. Only such ratios which are related to investment of CBs are taken here. Hence, in this study the following ratios are calculated and analyzed.

### **1. Total Investment to Total Deposit Ratios**

Investment is one of the major credits created to earn income. This implies the utilization of firms deposit on investment in government securities. This ratio can be obtained by dividing total investment by total deposit. This can be mentioned as;

$$\frac{\text{Total Investment}}{\text{Total Deposit}}$$

### **2. Loan and Advances to Total Deposit Ratio**

This ratio assesses to what extent the banks are able to utilize the depositor's funds to earn profit by providing loan and advances. It is computed by dividing the total amounts of loans and advances by total deposited funds. The formula used to computed this ratio is as

$$\frac{\text{Loan and Advances}}{\text{Total Deposit}}$$

High ratio is the symptom of higher/ proper utilization of funds and low ratio is the single of balance remained unutilized/ idle.

### **2. Investment on Government Securities to Total Deposit Ratio**

This ratio assesses to what extent the banks are able to utilize the depositor's funds to earn profit by investing on Government Securities. It is computed by dividing the total amounts of Investment on Government Securities by total deposited funds. The formula used to computed this ratio is as

$$\frac{\text{Investment in Government Securities}}{\text{Total Deposit}}$$

#### **4. Net Profit to Total Assets Ratio**

This ratio is very much crucial for measuring the profitability of funds invested in the banks assets. It measures the return on assets. It is computed by dividing the net profit after tax by total assets. The formula used for computing this ratio is as

$$\frac{\text{Net profit After Tax}}{\text{Total Assets}}$$

#### **5. Investment on Government Securities to Total Outside Investment Ratio**

This ratio is crucial for measuring the investment on government securities out of total outside investment. This ratio is calculated by dividing investment on government securities by total outside investment.

$$\frac{\text{Investment on Government Securities}}{\text{Total Outside Investment}}$$

TOI= Loan & Advances + Bill Purchased + Discounted+ All Types of Investment

#### **6. Investment on Share and Debenture to Total Outside Investment**

This ratio shows the bank investment in share and debenture of subsidiary and other companies. This ratio is calculated by dividing investment on share and debenture by total outside investment.

$$\frac{\text{Investment on Share and Debenture}}{\text{Total Outside Investment}}$$

#### **7. Return on Government Securities**

This ratio indicates how efficiently the bank has employed its resources to earn good return from government securities. This ratio is computed by dividing

interest income on government securities by government securities. This can be expressed as;

$$\frac{\text{Interest Income on Government Securities}}{\text{Government Securities}}$$

### 8. Return on Loan and Advances

This ratio indicates how efficiently the bank has employed its resources to earn good return from provided loan and advances. This ratio is computed by dividing interest income on loan and advances by loan and advances. This can be expressed as;

$$\frac{\text{Interest Income on Loan and Advances}}{\text{Loan and Advances}}$$

### 9. Return on Share and Debentures

The return on share and debenture considers dividend yield and capital gain yield. The dividend yield is only a partial indication of the return hence, return on share and debenture significantly depends on the change in its share price. It is calculated as follows

Return on Share and Debenture = Capital Gain Yield + Dividend Yield

$$\text{Return on Share and Debenture (R}_s\text{)} = \frac{P_t - P_{t-1}}{P_{t-1}} + \frac{D_t}{P_{t-1}}$$

Where  $P_t$  and  $P_{t-1}$  are the average closing price of year  $t$  and  $t-1$

$D_t$  = Dividend per share (all types of dividend)

## II. Risk on Individual Assets

The risky ness of assets depends on the variability of rates of return, which is defined as the extent of the deviation of individual rates of return from the average rate of return. Risk on individual assets can be calculated as;

$$\sigma = \sqrt{\frac{\sum (R - \bar{R})^2}{n}}$$

Where

$\sigma$  = Standard deviation or Risk

$\bar{R}$  = average rate of return on individual assets

R = rate of return on individual assets

n = no. of years

### III. Return on Portfolio

The return of a portfolio is the weighted average of the returns of the individual assets in the portfolio. The weights are proportion of the investors wealth invested in each asset, and sum of the weights must be equal one.

$$\text{Portfolio Return } (R_p) = W_1R_1 + W_2R_2 + \dots + W_NR_N$$

Where

$R_p$  = Portfolio Return

$W_i$  = Weight of investment invested in stock 'i'

$W_j$  = Weight of investment invested in stock 'j'

$R_i$  = Return for stock 'i'

$R_j$  = Return for stock 'j'

### IV. Risk on Portfolio

The portfolio risk is measured by either variance or standard deviation of returns. 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.

The portfolio risk can be calculated in term of its standard deviation as;

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



## V. Co-Variance

The covariance measure how two variables co-vary. It is a measure of the absolute association between two variables. How the returns of individual stocks and market co-vary measured by covariance between the return of individual stocks and market return. If two variables are independent, their covariance will zero. It computed as;

Symbolically  $Cov_{ij} = \frac{1}{n} \sum_{i=1}^n (X_i - \bar{X})(Y_i - \bar{Y})$

## VI. Coefficient of Variation

We know that standard deviation is the absolute measure of dispersion of rate of return. The relative measure of dispersion based on the standard deviation is known as the coefficient of standard deviation.

$$C.V. = \frac{\sigma_i}{R_i}$$

Where,

$\sigma_i$  = Standard deviation of securities i.

$R_i$  = Average return on securities i.

The CV thus defines the risk associated with each dollar of expected return in terms of ratio of the standard deviation of return to the expected return (Pradhan, 2000:250).

## VII. Portfolio Performance Measure

### 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. The Sharpe ratio measures the amount of return from an investment portfolio for a given level of risk. It does this by dividing a measure of portfolio variability (the standard deviation of its returns over a specific period) into the excess returns generated by the portfolio over a risk free rate of return for the same period. The higher the resulting number (index), the better is the portfolio performance. This ratio is used to rank the performance of investment funds.

$$S_i \times \frac{\text{Risk Premium}}{\text{Total Risk}} \quad \text{or} \quad S_i \times \frac{\bar{r}_i - ZR}{\dagger_i}$$

Where,

$\bar{r}_i$  = Average Return of Assets i.

$\dagger_i$  = Standard Deviation of Return.

$R$  = Risk less Rate of Return.

$S_i$  = Sharpe's Index of Portfolio Performance.

## b) Statistical Tools

The process of analyzing and evaluating various data statistical tools has been used. In this study, statistical tools such as standard deviation, mean, coefficient of variation, coefficient of correlation between different variables, trend analysis as well as hypothesis test have been used, which are as follows;

### I. Karl Person's Coefficient of Correlation

Correlation Coefficient is statistical tools for measure of the relative association between two variables series; it describes how much linear co-movement exists between two variables. Karl Person's measure, known as personas correlation coefficient between two variables (series) X and Y usually denoted by  $r(X, Y)$  or  $r_{xy}$  or simply  $r$  can be obtained as

$$r = \frac{N \sum xy - \sum x \sum y}{\sqrt{N \sum x^2 - (\sum x)^2} \cdot \sqrt{N \sum y^2 - (\sum y)^2}}$$

The value of correlation coefficient 'r' lies between -1 to +1

If  $r = 1$  there is perfect positive relationship

$r = -1$  there is perfect negative relationship

$r = 0$  there is no correlation at all

The closer the value of 'r' is 1 or -1, the closer the relationship between the variables and the closer 'r' is to 0, the less close relationship.

## II. Mean

It can also be denoted by AM or simply a mean of a set of observations is the sum of all the observation divided by the number of observations. AM is also known as the arithmetic average. AM is the most popular one among the different measures of the averages. e.g. the AM of X of N observation  $x_1, x_2, x_3, \dots, x_N$  is given by

$$\bar{x} = \frac{1}{N}(x_1 + x_2 + x_3 + \dots + x_N)$$

or  $\bar{x} = \frac{\sum x}{N}$

## III. Trend Analysis

The straight line trend implies that irrespective of the seasonal and cyclical swings and irregular functions, the trend values increases or decreases by absolute amount per unit of time. It is computed as follows

$$Y = a + bx$$

Where,

$Y$  = The value of dependent variable

$a$  = Intercept of trend line

$b$  = Slope of trend line

$x$  = Value of the independent variable

Following two equations can be developed putting the above values in normal equation

$$\sum y = Na + b \sum x$$

$$\sum xy = a \sum x + b \sum x^2$$

Since  $\sum x = 0$ ,  $a = \frac{\sum y}{N}$  or  $b = \frac{\sum xy}{\sum x^2}$

The constant 'a' is simply equal to the mean Y value and constant 'b' gives the rate of change.

This is a mathematical method which is widely used in practice. It is applied for finding out a trend line for those series which changes periodically in absolute amount.

### **3.6 Limitations of the Methodology**

The methodology deployed in this research cannot be different from the common limitations of same types of thesis. However, in analyzing portfolio risk and return of the selected samples, the tools applied cannot best describe the relationships between the variables under study since portfolio analysis tools are based on various assumptions. In choosing samples, purposive and judgmental sampling method has been adopted. The reliability, accuracy and validity of the research findings depend on these samples.

The primary data and information is collected through questionnaires and direct interviews with the personnel. Validity of the study more depends on the primary information provided by the higher level personnel.

The study of portfolio management is a vague and difficulty in realistic analysis of current practices. So, to make it ease portfolio theory are used to analyze. Portfolio theory is not free from biasness because of its assumptions.

## **CHAPTER – IV**

### **DATA PRESENTATION AND ANALYSIS**

The main theme of this chapter is to analyze and interpret the data by using financial and statistical tools. In this chapter, the concern is given in the presentation and analysis part of data in detail. As data presentation and analysis is the crucial part of any research, the purpose is to organize the collected data so that it can be used for interpretation whereas analysis of the data is to convert it from a crude form to an easy and understandable presentation. It is so obvious that the presentation of the data and its analysis help us to draw valid conclusion.

There are a number of methods which can be used to simplify the data. It is being felt that the easiest way to understand the data is by examining it through charts, tables and graphs. Necessary tables and figures are presented to achieve the objectives of the study. Here, all possible data are collected from Nepal Stock Exchange (NEPSE) and Security Board (SEBO). Similarly, some of the data are also collected from Internet, Journals and other concerned sources.

For the title of the thesis, the investment portfolio of CBs is analyzed with the help of following tools;

- ) Ratio analysis
- ) Investment operations of CBs
- ) Risk and return analysis of individual securities and portfolio investment
- ) Financial performance of individual as well as portfolio investment
- ) Trend analysis

## 4.1 Investment Operations of CBs

Investment is the most important functions of CBs because investment policy provides several inputs, through which banks can handle their investment operation efficiently and maximize return with, minimize risk which is the success path for the banks. CBs must mobilize it funds to profitable, secured, and marketable sector, so that it can earn more profit. CBs must fulfill the credit needs of various sectors of the economy including industry, commercial, social service, securities and agriculture sector.

Nowadays most of the banks depend upon the investment strategies. By which the CBs are playing the vital role in the economic development of the country. This chapter investment operation of CBs deals with the pinpointing analysis related to the investment of the CBs of Nepal in government securities, share and debentures and loan and advances prepared in various economic sectors.

### 4.1.1 Investment on Government Securities

The investment of the CBs on government securities includes the investment on treasury bills, development bonds, national savings bonds, insurance bond etc. In some extent all CBs seem to be interested to use their deposits by purchasing government securities.

**Table 4.1**  
**Structure of Investment on Government Securities Held by CBs**  
(Rs. in '000')

<b>FY</b>	<b>NIBL</b>	<b>NABIL</b>	<b>EBL</b>	<b>CBs</b>
<b>2004/05</b>	1,948,500	2413939	2100289	6,462,728
<b>2005/06</b>	2,522,300	2301463	3322443	8,146,206
<b>2006/07</b>	3,256,400	4808348	3614541	11,679,289
<b>2007/08</b>	3,155,000	4646861	4821684	12,623,545
<b>2008/09</b>	2,531,300	3706102	5146845	11,384,247
<b>Total</b>	<b>13,413,500</b>	<b>17876713</b>	<b>19005802</b>	<b>50,296,015</b>
<b>Average</b>	<b>2682700</b>	<b>3575342.6</b>	<b>3801160.4</b>	<b>10059203</b>

*Source: Annual Reports of CBs from FY 2004/05 to 2008/09*

**Table 4.2**

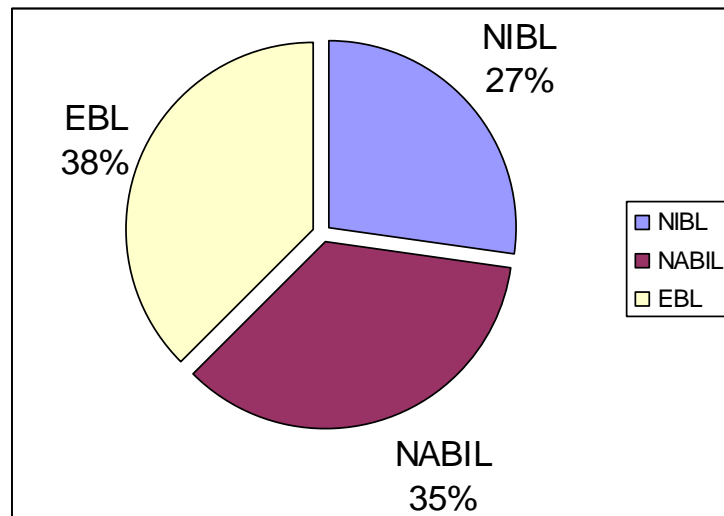
**% Share of Investment on Government Securities of each Banks**

<b>FY</b>	<b>NIBL</b>	<b>NABIL</b>	<b>EBL</b>
<b>2004/05</b>	30.15	37.35	32.50
<b>2005/06</b>	30.96	28.25	40.79
<b>2006/07</b>	27.88	41.17	30.95
<b>2007/08</b>	24.99	36.81	38.20
<b>2008/09</b>	22.24	32.55	45.21
<b>Total</b>	<b>136.22</b>	<b>176.14</b>	<b>187.64</b>
<b>Mean</b>	<b>27.24</b>	<b>35.23</b>	<b>37.53</b>
<b>S.D.</b>	<b>3.63</b>	<b>4.95</b>	<b>5.89</b>
<b>C.V.</b>	<b>13.34</b>	<b>14.06</b>	<b>15.69</b>

*Source: Table 4.1 and Appendix 1. (c)*

**Figure 4.1**

**Percentage Coverage of Government Securities Held By CBs**



The above table reveals that most of the CBs made investment on government securities. The investment on government securities of EBL is highest among other banks. The NIBL has been found to have investment on govt. securities lower comparative to other banks. Similarly the EBL covers more shares i.e. 37.53% of the total investment on govt. securities made by CBs. NABIL be on 2nd position by investing 35.23% of the total investment on govt. securities made by CBs. Similarly the lowest C.V. of NIBL shows the more consistency in investment.

EBL has highest CV which means there is high variability in investment on govt. securities. From above analysis about the investment structure of CBs on the govt. securities reveal there is no similar trend of investment on govt. securities made by CBs. Some banks 3% of total investment while some covers more than that (i.e. nearly half parts) of total investment on govt. securities. From average mean and CV analysis, it is clear that EBL and NABIL are the banks which mobilize maximum funds comparative to other banks on govt. securities. NIBL stood at the last position sharing average 27.24% in total investment.

#### **4.1.2 Investment on Share and Debenture**

Commercial banks are interested to invest its funds on share and debentures of other companies. Commercial banks invest their resources in finance, banks, rural micro finance company, companies, and regional development banks. Some companies whose shares are hold by commercial banks are Nepal Oil Corporation, Nepal housing development finance co. ltd., NIDC capital market, Insurance Corporation, rural development banks etc. the investment structure of commercial banks on share and debentures are shown in table below.

**Table 4.3**  
**Structure of Investment on Shares and Debentures Held by CBs**  
(Rs. in '000')

<b>FY</b>	<b>NIBL</b>	<b>NABIL</b>	<b>EBL</b>	<b>CBs</b>
<b>2004/05</b>	17738	27363	19387	64488
<b>2005/06</b>	17738	27363	19387	64488
<b>2006/07</b>	35253	57853	19082	112188
<b>2007/08</b>	59,945	323236	101152	484333
<b>2008/09</b>	64,270	354,930	102034	521234
<b>Total</b>	<b>194944</b>	<b>790745</b>	<b>261042</b>	<b>1246731</b>
<b>Average</b>	<b>38988.8</b>	<b>158149</b>	<b>52208.4</b>	<b>249346.2</b>

*Source: Annual Reports of CBs from FY2004/05 to 2008/09*



**Table 4.4**

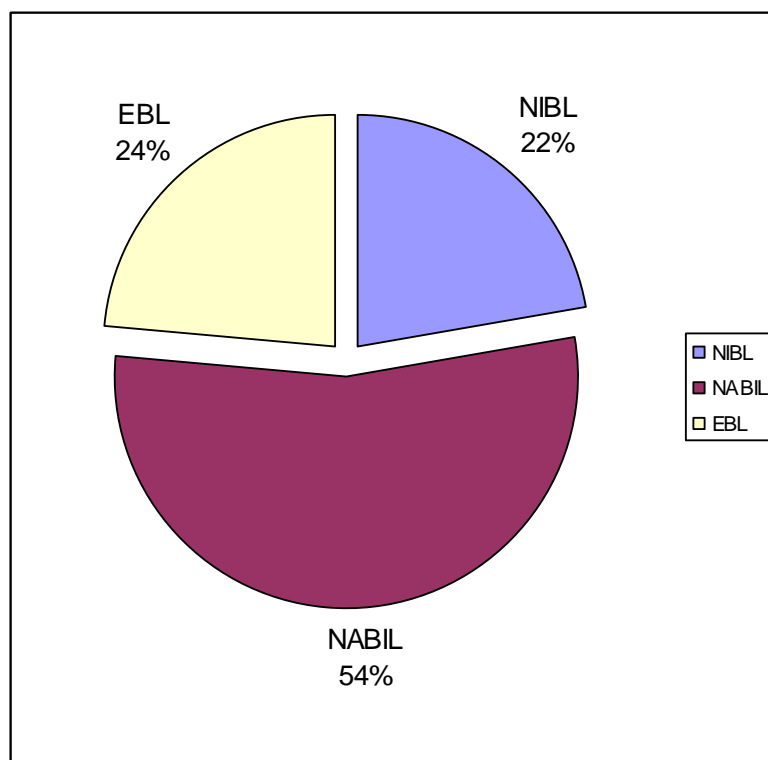
**% Share of Investment in Shares and Debentures of each Banks**

<b>FY</b>	<b>NIBL</b>	<b>NABIL</b>	<b>EBL</b>
<b>2004/05</b>	27.51	42.43	30.06
<b>2005/06</b>	27.51	42.43	30.06
<b>2006/07</b>	31.42	51.57	17.01
<b>2007/08</b>	12.38	66.74	20.88
<b>2008/09</b>	12.33	68.09	19.58
<b>Total</b>	<b>111.14</b>	<b>271.26</b>	<b>117.60</b>
<b>Mean</b>	<b>22.23</b>	<b>54.25</b>	<b>23.52</b>
<b>S.D.</b>	<b>9.16</b>	<b>12.59</b>	<b>6.13</b>
<b>C.V.</b>	<b>41.19</b>	<b>23.21</b>	<b>26.08</b>

*Source: Table No.4.3*

**Figure 4.2**

**Percentage Coverage of Share and Debentures Held by CBs**



The above table shows that CBs made very low parts on Shares and Debentures of other companies. The investment of Nepalese CBs on other companies' shares shows NABIL has been investing highest among other CBs i.e. 53.86%. Similarly, NIBL has least mean, which say that NIBL invest lowest amount in share and debenture, its investment is more consistent than other banks.

It has been revealed that there is no any proper trend of investing on share and debenture of CBs. But all banks take part in such investment. Among the above three listed commercial banks, it is quite clear that NABIL covers highest shares i.e. 53.86% and NIBL covers lowest shares i.e. 22.39% of total investment on shares and debentures made by CBs.

#### 4.1.3 Investment on Loan and Advances

Commercial banks are financial institutions that collect scattered savings of community and invest them into most desirable and high return sectors of economy. Pace of economic development is directly related to the quality and quantity of the credit. Commercial banks invest their funds in various sectors like industry, agriculture, commercial sector etc. Commercial banks should invest its collected funds as loan and advance not to keep it as cash and bank balance for mobilize its fund. Investment structure of loan and advances of CBs are tabulated below.

**Table 4.5**  
**Structure of Investment on Loan and Advance Held by CBs**

(Rs. in '000')

<b>FY</b>	<b>NIBL</b>	<b>NABIL</b>	<b>EBL</b>	<b>CBs</b>
<b>2004/05</b>	9933084	10465266	7589332	27987682
<b>2005/06</b>	12613561	12681666	9770919	35066146
<b>2006/07</b>	17010464	15305910	13623689	45940063
<b>2007/08</b>	27,529,304	21,759,460	18836431	68125195
<b>2008/09</b>	36,827,157	27,999,012	24469555	89295724
<b>Total</b>	<b>103913570</b>	<b>88211314</b>	<b>74289926</b>	<b>266414810</b>
<b>Average</b>	<b>20782714</b>	<b>17642262.8</b>	<b>14857985.2</b>	<b>53282962</b>

*Source: Annual Reports of CBs from FY 2003/04 to 2008/09*

**Table 4.6**

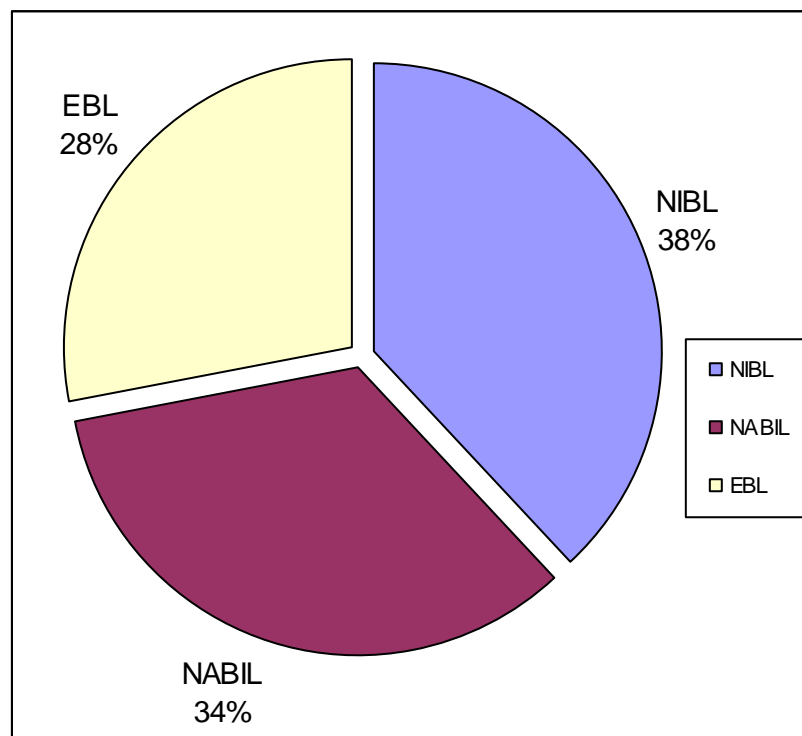
**% Share of Investment on Loan and Advances of each Bank**

<b>FY</b>	<b>NIBL</b>	<b>NABIL</b>	<b>EBL</b>
<b>2004/05</b>	35.49	37.39	27.12
<b>2005/06</b>	35.97	36.16	27.86
<b>2006/07</b>	37.03	33.32	29.66
<b>2007/08</b>	40.41	31.94	27.65
<b>2008/09</b>	41.24	31.36	27.40
<b>Total</b>	<b>190.14</b>	<b>170.17</b>	<b>139.69</b>
<b>Mean</b>	<b>38.03</b>	<b>34.03</b>	<b>27.94</b>
<b>S.D.</b>	<b>2.22</b>	<b>2.51</b>	<b>1.10</b>
<b>C.V.</b>	<b>5.83</b>	<b>7.38</b>	<b>3.94</b>

*Source: Table 4.5*

**Figure 4.3**

**Percentage Coverage of Loan and Advances of Different CBs**



From the above table no. 4.5 and 4.6 shows that NIBL has the highest shares i.e.38.03% on loan and advances among three CBs throughout the review period from 2004/05 to 2008/09. NABIL takes at the second position and EBL take last position covering 27.94% respectively loan and advances

among three CBs. EBL has less CV which indicates the consistency of investment on loan and advances.

It is clear that NIBL is the best bank among three banks on the basis of utilization of resources in the field of loan and advances. In other hand the fluctuating trend of investment on loan and advances shows that there is a lack of any scientific approach towards investment on loan and advances of CBs.

#### **4.2 Investment Portfolio Analysis**

Commercial banks cannot utilize whole of its fund raised through deposit and borrowings into loans and advance. In order to fulfill the gap between borrowings and lending banks rather goes for investment on such as government securities, shares and debenture, NRB bond etc.

The portfolio of making investment by three commercial banks i.e. NIBL, NABIL, EBL, has been analyzed in the table. (Detail on Appendix 2.a)

**Table 4.7**

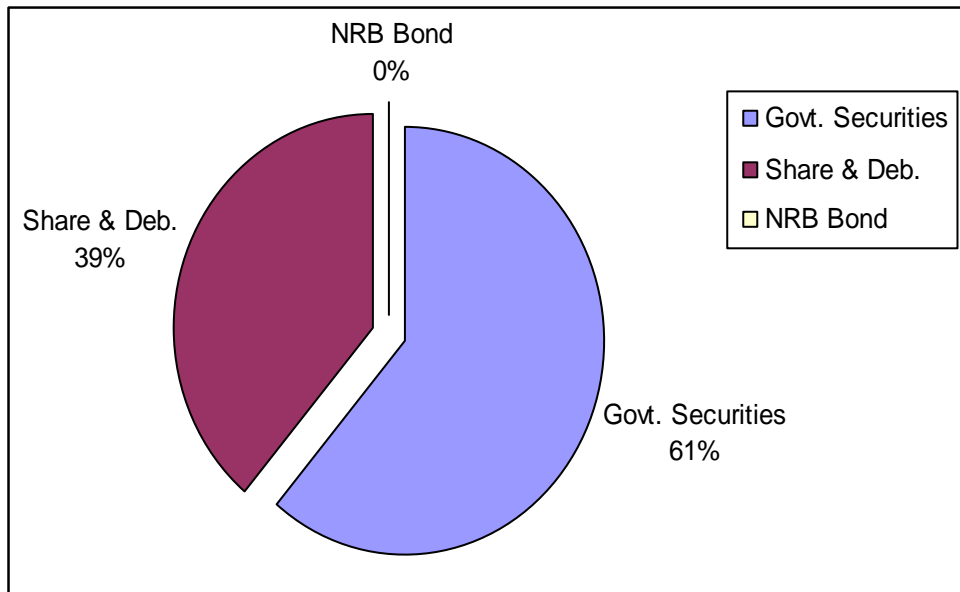
#### **CBs Average Investment Portfolio in Percentage**

<b>Name of Banks</b>	<b>Government Securities</b>	<b>Share &amp; Debentures</b>	<b>NRB Bond</b>
<b>NIBL</b>	44.80	55.20	0.00
<b>NABIL</b>	44.76	55.24	0.00
<b>EBL</b>	92.19	5.81	0.00
<b>Industry Average</b>	<b>60.58</b>	<b>38.75</b>	<b>0.00</b>

*Source: Banking and Financial Statistics, NRB, Mid July 2009 No.49*

**Figure 4.4**

**CBS Average Investment Portfolio in Percentage**



The above table shows the average investment portfolio of three commercial banks. NIBL is investing 44.80% on government securities, 55.70% of fund on shares and debentures and 0% of its fund in NRB bond. It shows that NIBL is investing its more funds on shares & debentures [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. The mean percentage investment on share and debenture is 55.24% and the mean percentage investment on government securities is 44.76%.

EBL is not investing its any amount of funds in NRB bond so its mean percentage ratio investment in NRB bond is 0%. EBL is investing higher amount of funds on government securities. Its mean percentage ratio investment on government securities is 92.19% and it is investing very low amount of its fund on share and debenture, its mean percentage ratio investment on share and debenture is 5.81%.

### 4.3 Loan and Advance Portfolio Analysis

Commercial bank provides loan and advance form the money which it receives by way of the person against the personal security of borrowers or against the security of movable and immovable properties. The major portion of short term investment of CBs is the loan and advance provided to various sector of the market. Mainly commercial banks are providing their funds to government enterprise, private sectors and foreign bills purchase and discount. The portfolio of making loans and advance by three banks NIBL, NABIL and EBL has been analyzed in the table (Detail on Appendix 2.b)

**Table 4.8**

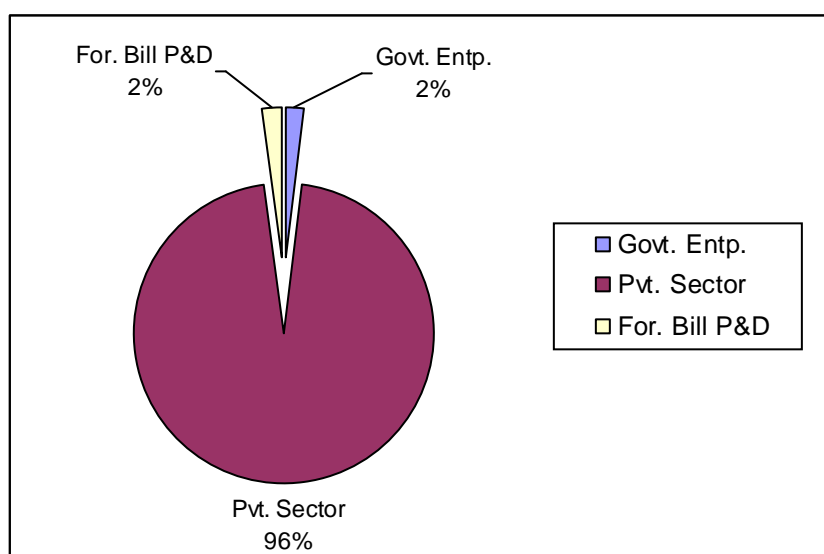
**CBs Average Loan and Advances Portfolio in Percentage**

Name of Banks	Govt. Entp.	Pvt. Sector	For. Bill P&D
<b>NIBL</b>	2.46	94.66	2.88
<b>NABIL</b>	0.62	97.64	1.74
<b>EBL</b>	2.57	95.63	1.80
<b>Industry Average</b>	<b>1.88</b>	<b>95.98</b>	<b>2.14</b>

*Source: Banking and Financial Statistics, NRB, Mid July 2009 No.49*

**Figure 4.5**

**CBs Average Loan and Advances Portfolio in Percentage**



The above table shows the average loans and advance portfolio of three commercial banks. NIBL is providing a very high amount of its loans and

advances to the private sector. The mean percentage of loans and advances to the private sector is 94.66%. It has given second priority to foreign bills P&D. The mean percentage on it is 2.88%. And finally it invests on government enterprise with mean percentage of 2.46%.

NABIL has provided very high amount of its loans and advances to private sector. The mean percentage of loans and advances to private sector is 97.64%. It has given a second priority to foreign bills P&D. The mean percentage of loans and advances to foreign bills P&D is 1.74% which is the highest as compared to other commercial banks. Lastly it has given a priority in providing loans and advances to government securities with mean percentage of 0.62%.

EBL is providing very high amount of its loans and advances to the private sector. The mean percentage of loans and advances to the private sector is 95.63%. EBL has given second priority to government enterprise. The mean percentage of government enterprise is 2.57%. The bank has finally given priority to foreign bills P&D with the mean percentage of 1.80%.

#### **4.4 Analysis of Ratios**

An arithmetical relationship between two figures is ratio. In other words, the relationship between two accounting figures expressed in mathematical terms is known as financial ratios. A ratio is always calculated by dividing one item of the relationship with other. As a tool of financial analysis, ratio can be expressed in terms of %. Ratio analysis is a very important tool of financial analysis.

From the help of ratio analysis, the qualitative judgment can be done very easily and timely regarding financial performance of the firm. It establishes the significant relationship between the times of financial statements to provide a meaningful understanding of the performance and financial position of a

firm. Ratio analysis serves as a stepping stone for an inter-firm comparison to take remedial measures. In this chapter only important ratios are analyzed.

#### **a. Investment to Total Deposit Ratio**

This ratio Investment to Total Deposits is used to measure to which the banks are successful in mobilizing the total deposits on investment or not. CBs may mobilize its bank deposit by investing its fund in different securities issued by government and other financial or non financial companies. Normally CBs are investing their funds in govt. securities such as treasury bills, development bonds, national saving bonds, special bonds etc. shares to other companies. It is computed as;

$$\frac{\text{Total Investment}}{\text{Total Deposit}}$$

High ratio is the indicator of high success to mobilize the banking funds as investment and vice-versa. The ratio of investment to total deposit of NIBL, NABIL and EBL are shown in table below;

**Table 4.9**  
**Investment to Total Deposits Ratio (%)**

<b>FY</b>	<b>NIBL</b>	<b>NABIL</b>	<b>EBL</b>
<b>2004/05</b>	27.60%	29.27%	21.08%
<b>2005/06</b>	29.60%	31.95%	30.44%
<b>2006/07</b>	26.57%	38.32%	27.41%
<b>2007/08</b>	19.95%	31.14%	21.10%
<b>2008/09</b>	15.85%	28.99%	17.85%
<b>Total</b>	<b>119.57%</b>	<b>159.67%</b>	<b>117.88%</b>
<b>Mean</b>	<b>23.91%</b>	<b>31.93%</b>	<b>23.58%</b>
<b>S.D.</b>	<b>5.78%</b>	<b>3.78%</b>	<b>5.17%</b>
<b>C.V.</b>	<b>24.18</b>	<b>11.84</b>	<b>21.93</b>

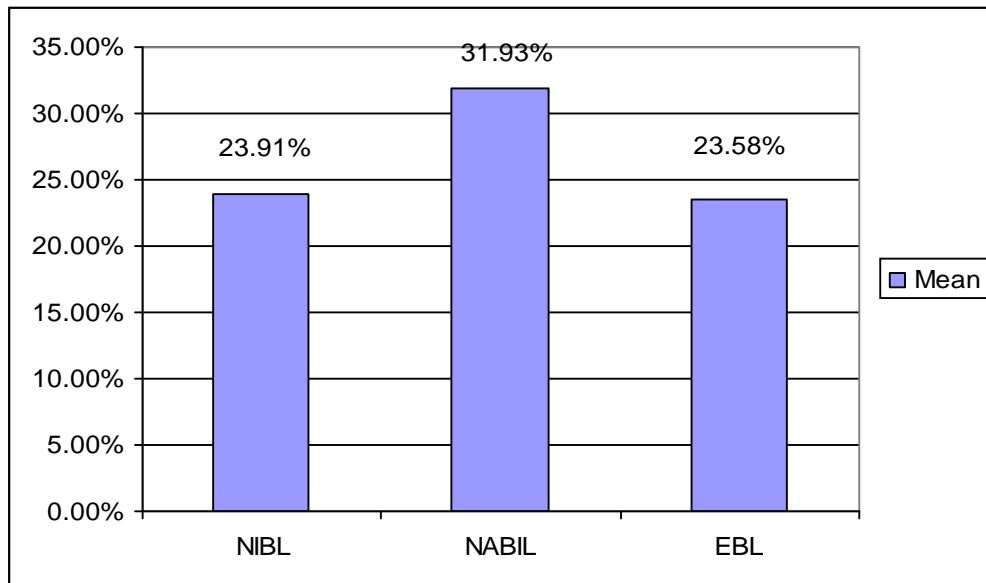
*Source: Appendix 1 (e, f)*

Industry Average Mean = 26.47% Industry Average CV = 19.32%



**Figure 4.6**

**Total Investment to Total Deposit Ratio**



From the above listed comparative table and figures reveals that the ratio of investment to total deposits of CBs are in fluctuating trend throughout the review period i.e. from the FY 2004/05 to 2008/09. The mean investment to total deposit of NABIL is the highest at the 3193%. Similarly NIBL and EBL has second and third highest ratio of investment to total deposit with 23.91% and 23.58%. From the point of view of average ratio it can be said that the NABIL capacity to mobilize its deposit on investment is better than others because their mean ratio are higher than average ratio on CBs 32.47% on the other hand EBL, NIBL mobilized their deposit on investment is not so good as compare to overall CBs.

But the coefficient of variation in the ratio of NABIL is the lowest i.e. 11.84%. Similarly the CV in the ratio of NIBL is the highest i.e. 24.18% indicates more inconsistent among other. So, it is clear that NABIL is the most successful in utilizing its resources on investment among other three banks. Similarly EBL moderate in utilizing its resources on investment.

**b. Loan and Advance to Total Deposit Ratio**

The loan and advance is also one of major sectors of an investment. This ratio

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

$$\frac{\text{Loan and Advances}}{\text{Total Deposit}}$$

Where, loan and advances included loans to government enterprises, private sectors, foreign bills purchase and discount. Total deposit included current deposit, fixed deposit, saving deposit, money at call deposit and other deposit.

The following table shows the ratios of loan and advances to total deposit ratio of various CBs.

**Table 4.10**

**Loan and Advance to Total Deposit Ratio (%)**

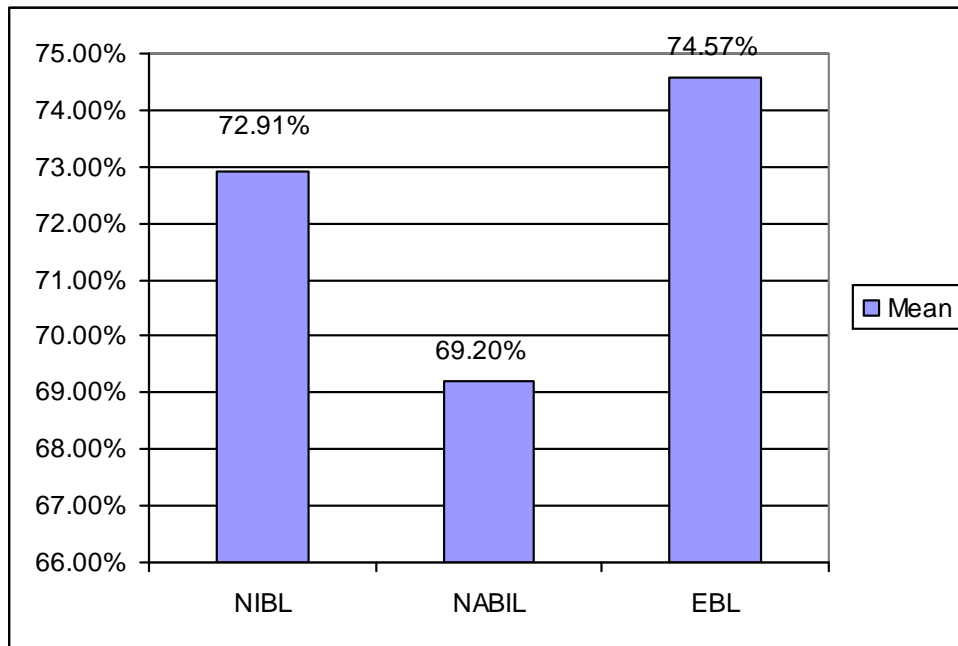
<b>FY</b>	<b>NIBL</b>	<b>NABIL</b>	<b>EBL</b>
<b>2004/05</b>	69.68%	71.75%	75.16%
<b>2005/06</b>	66.64%	65.55%	70.79%
<b>2006/07</b>	69.46%	65.57%	74.91%
<b>2007/08</b>	79.91%	68.18%	78.56%
<b>2008/09</b>	78.86%	74.96%	73.43%
<b>Total</b>	364.55%	346.01%	372.85%
<b>Mean</b>	<b>72.91%</b>	<b>69.20%</b>	<b>74.57%</b>
<b>S.D.</b>	<b>6.04%</b>	<b>4.10%</b>	<b>2.83%</b>
<b>C.V.</b>	<b>8.29%</b>	<b>5.92%</b>	<b>3.79%</b>

*Source: Appendix 1 (d, f)*

Industry Average Mean = 72.23% Industry Average CV = 6%

**Figure 4.7**

**Loan and Advances to Total Deposit Ratio**



In the above table, the mean loans and advances to total deposit ratio of EBL is highest i.e. 74.57% and NABIL is lowest ratio i.e. 60.20% among three commercial banks. NIBL have a mean ratio of 72.91% respectively. The industrial average mean ratio is 72.23%. It can be said that NIBL and EBL capacity to mobilize its deposit on loan and advance is better than average ratio of CBs.

The CV ratio of EBL is lowest i.e. 8.79% among three commercial banks which indicates that the investment as EBL is the most uniform. NABIL has the highest CV ratio i.e. 8.29% among three commercial banks, it indicates that the investment of NABIL is more fluctuating. The lowest CV is better than highest CV. The industrial average CV ratio is 6%. NABIL and EBL have a lowest CV than industrial average CV. So it can be concluded that EBL is the most effective, NABIL is moderate effective and NIBL is least effective to mobilize its deposit on loan and advances.

**c. Government Securities to Total Deposit Ratio**

The Government securities are also one of major sectors of an

investment. This ratio measures that how banks has mobilize its deposit on government securities. Though investment in government securities yields less return but it is considered as more secure investment. The higher ratio represents the more secure investment of the firm in utilizing fund and vice-versa. This ratio is calculated by dividing investment in government securities by total deposit. This can be stated as:

$$\frac{\text{Investment on Government Securities}}{\text{Total Deposit}}$$

Where, investment in government securities included purchasing of government bonds, treasury bills etc. The following table shows the government securities to total deposit ratio of various CBs.

**Table 4.11**  
**Government Securities to Total Deposit Ratio (%)**

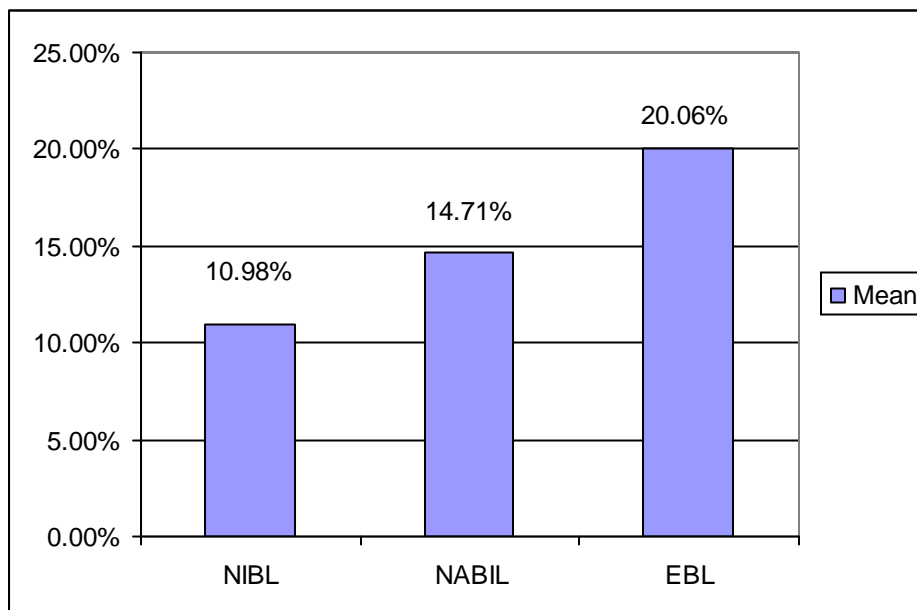
<b>FY</b>	<b>NIBL</b>	<b>NABIL</b>	<b>EBL</b>
<b>2004/05</b>	13.67%	16.55%	20.80%
<b>2005/06</b>	13.33%	11.90%	24.07%
<b>2006/07</b>	13.30%	20.60%	19.88%
<b>2007/08</b>	9.16%	14.56%	20.11%
<b>2008/09</b>	5.42%	9.92%	15.45%
<b>Total</b>	54.88%	73.53%	100.31%
<b>Mean</b>	<b>10.98%</b>	<b>14.71%</b>	<b>20.06%</b>
<b>S.D.</b>	<b>3.62%</b>	<b>4.15%</b>	<b>3.08%</b>
<b>C.V.</b>	<b>32.97%</b>	<b>28.23%</b>	<b>15.35%</b>

*Source: Appendix 1 (a, f)*

Industry Average Mean = 15.25% Industry Average CV = 25.51%

**Figure 4.8**

**Government Securities to Total Deposit Ratio(%)**



In the above table, the mean Government securities to total deposit ratio of EBL is highest i.e. 20.06 and NIBL is lowest ratio i.e. 10.98% among three commercial banks. Other bank NABIL has mean ratios of 14.71%. The industrial average mean ratio is 15.25%. It can be said that EBL have secure investment (i.e. investment in government securities) than the rest of the banks.

The CV ratio of EBL is lowest i.e. 15.35% among three commercial banks which indicates that the investment of EBL is the more secure.

NIBL has the highest CV ratio i.e. 32.97% among three commercial banks; it indicates that the investment of NIBL is unsafe. The lowest CV is better than highest CV. The industrial average CV ratio is 25.51%. EBL have a lowest CV than industrial average CV. So it can be concluded that EBL has the secure investment than that of other banks and NIBL is more risky than that of other banks.

**d) Return on Total Assets**

This ratio measures the effectiveness of the banks in using its overall resources.

It measured in terms of relationship between net profit and total assets. The higher the ratio represents the efficient of the bank utilizing its overall resources and vice-versa. This ratio is calculated by dividing net profit after tax by total assets. This can be stated as

$$\frac{\text{Net profit After Tax}}{\text{Total Assets}}$$

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

The following table shows the ratios of net profit after tax to total assets ratio of various CBs.

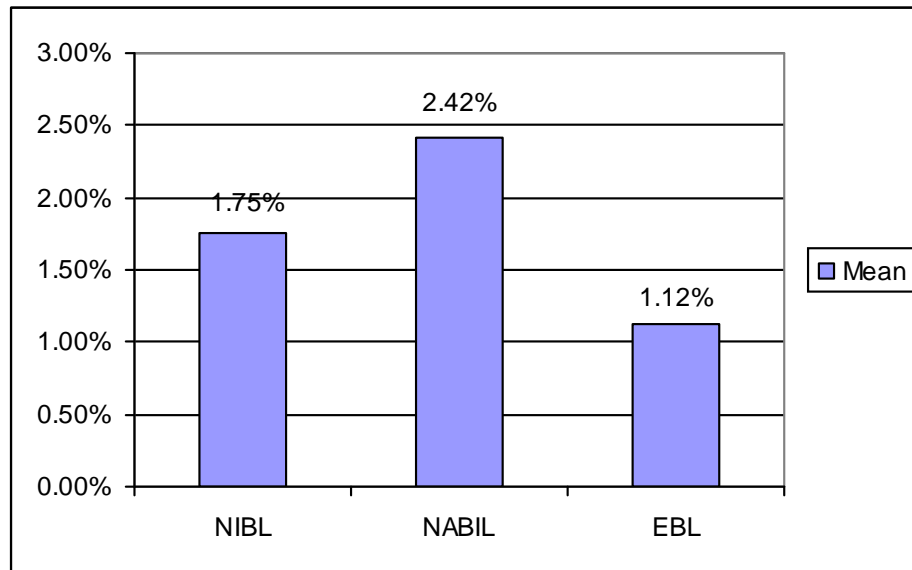
**Table 4.12**  
**Return on Total Assets (%)**

<b>FY</b>	<b>NIBL</b>	<b>NABIL</b>	<b>EBL</b>
<b>2004/05</b>	1.43%	3.19%	1.05%
<b>2005/06</b>	1.64%	2.98%	1.11%
<b>2006/07</b>	1.82%	2.44%	1.07%
<b>2007/08</b>	1.92%	1.79%	1.16%
<b>2008/09</b>	1.94%	1.69%	1.20%
<b>Total</b>	8.75%	12.09%	5.59%
<b>Mean</b>	<b>1.75%</b>	<b>2.42%</b>	<b>1.12%</b>
<b>S.D.</b>	<b>0.21%</b>	<b>0.68%</b>	<b>0.06%</b>
<b>C.V.</b>	<b>12.27%</b>	<b>28.02%</b>	<b>5.56%</b>

*Source: Appendix 1 (g, h)*

Industry Average Mean = 1.76% Industry Average CV = 15.29%

**Figure 4.9**  
**Return on Total Assets Ratio**



The comparative table and figure shows that commercial banks has mixed trend on their return to total assets ratio. Among three CBs, NABIL has the highest mean return and EBL has the lowest return on total assets i.e. 2.42% and 1.12%. The overall average mean of CBs is 1.76%. However NIBL mean return is less than average mean of CBs i.e. 1.76%.

Similarly looking at CV among the three CBs, EBL has the lowest CV i.e. 5.56% which is the most consistent than other banks. And, the highest CV in the ratios of NABIL i.e. 28.02% shows, the return on total assets of NABIL is highly variable among three banks.

Lastly, it is concluded that NABIL is the best bank in relation to return on total assets ratio because it utilized overall resources efficiently than other bank. The profitability position of EBL is the weakest in relation to return on total assets during study period among three CBs.

**e. Investment on Share and Debenture to Total outside Investment**

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 shares and debenture of other companies to generate income.

This ratio is calculated by dividing total outside investment this can be stated as,

$$\frac{\text{Investment on Share and Debenture}}{\text{Total Outside Investment}}$$

Where,

TOI = Loan \$Advances + Bill Purchased + Discounted + All Types of Investment

A high ratio indicates more portion of investment on share and debentures out of total outside investment and vice-versa.

The following table shows the ratios of investment on share and debentures to total outside investment ratio of various CBs.

**Table 4.13**

**Investment on Share and Debenture to Total outside Investment Ratio (%)**

<b>FY</b>	<b>NIBL</b>	<b>NABIL</b>	<b>EBL</b>
<b>2004/05</b>	0.13%	0.18%	0.20%
<b>2005/06</b>	0.10%	0.14%	0.14%
<b>2006/07</b>	0.15%	0.24%	0.10%
<b>2007/08</b>	0.18%	1.03%	0.43%
<b>2008/09</b>	0.15%	0.92%	0.34%
<b>Total</b>	0.71%	2.51%	1.21%
<b>Mean</b>	<b>0.14%</b>	<b>0.50%</b>	<b>0.24%</b>
<b>S.D.</b>	<b>0.03%</b>	<b>0.43%</b>	<b>0.14%</b>
<b>C.V.</b>	<b>20.77%</b>	<b>86.65%</b>	<b>57.44%</b>

*Source: Appendix 1(c, i)*

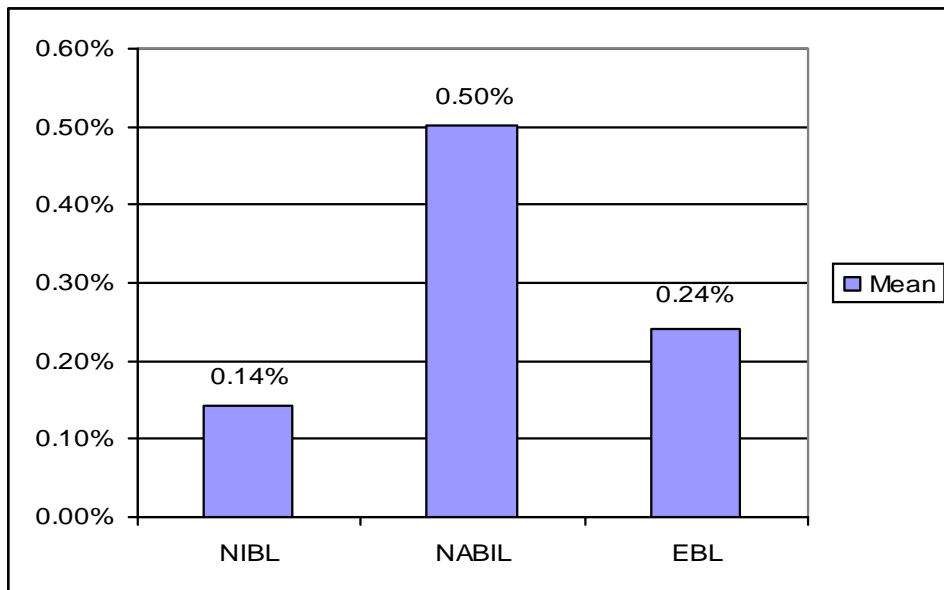
Industry Average Mean = 0.30%

Industry Average CV = 54.95%



**Figure 4.10**

**Investment on Share and Debenture to Total Outside Investment Ratio**



The comparative table shows that CBs has fluctuating trend on their investment on share and debentures to total outside investment. In share and debenture very low portion of the total outside investment is invest. Among three commercial banks NABIL has invested higher amount on share and debenture i.e. 0.50% of total outside investment while NIBL has invested lower amount on share and debenture i.e. 0.14% only.

NIBL has the lowest CV i.e. 20.77% among the three CBs, which shows that the variability of the ratios between investment on share and debenture and total outside investment is most uniform among the other CBs. Similarly, NABIL has the highest CV i.e. 86.65% which shows that it has mover variability in investment on share and debenture to total outside investment.

It is concluded that the CBs are not successful to mobilize their resources in the field of share and debenture of other companies. NABIL invest highest portion of total investment into share and debenture on the basis of mean. On the other hand EBL is the most consistent bank in investing its total outside investment on share and debenture.

#### **f. Investment on Government Securities to Total Outside Investment**

This ratio is very useful to know in which extent the CBs are successful in mobilizing their total outside investment on different types of government securities to maximize the income. Since government securities are highly liquid, to some extent, CBs seem to be interested to utilize their deposits by purchasing government securities.

This ratio is calculated by dividing investment on government securities by total outside investment this can be stated as

$$\frac{\text{Investment on Government Securities}}{\text{Total Outside Investment}}$$

A high ratio indicates better mobilization of fund as investment on government securities and vice-versa.

The following table shows the ratios of investment on government securities to total outside investment ratio of various CBs.

**Table 4.14**  
**Investment on Government Securities to Total Outside Investment Ratio**  
(%)

<b>FY</b>	<b>NIBL</b>	<b>NABIL</b>	<b>EBL</b>
<b>2004/05</b>	13.86%	16.25%	21.55%
<b>2005/06</b>	13.72%	12.05%	23.73%
<b>2006/07</b>	13.69%	19.63%	19.38%
<b>2007/08</b>	9.31%	14.84%	20.61%
<b>2008/09</b>	5.80%	9.65%	17.25%
<b>Total</b>	56.38%	72.42%	102.52%
<b>Mean</b>	<b>11.28%</b>	<b>14.48%</b>	<b>20.50%</b>
<b>S.D.</b>	<b>3.62%</b>	<b>3.84%</b>	<b>2.42%</b>
<b>C.V.</b>	<b>32.08%</b>	<b>26.52%</b>	<b>11.79%</b>

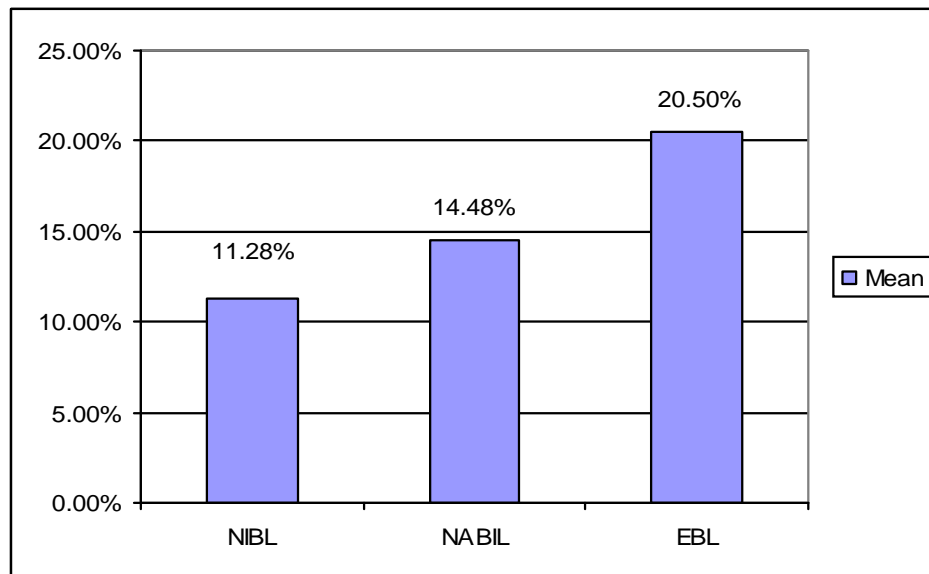
*Source: Appendix I(a, i)*

Industry Average Mean = 15.42%

Industry Average CV = 23.46%

**Figure 4.11**

**Investment on Government Securities to Total Outside Investment Ratio**



The comparative table shows that there is highly invest in government securities than in other investment portion because of secured on it. On government securities EBL has the highest invest on government securities to total outside investment i.e. 20.50% among three CBs. Similarly NIBL invest lowest parts of total outside investment to government securities because it has lowest investment on government securities to total outside investment i.e. 11.28%.

NIBL has the highest CV among three CBs which shows the least consistent. But EBL has the lowest CV which shows the most consistent among three CBs.

From above analysis, it can be concluded that the mobilization of total outside investment into government securities of EBL is higher among three CBs which is proved by highest ratio and lowest CV. Similarly NABIL have moderate position. Likewise NIBL has weakest position for mobilization of total outside assets into government securities.

#### **4.5 Investment Portfolio Risk and Return Analysis of CBs**

Risk and Return are two crucial phenomenons in world of investment. There is always linear relationship between risk and return. Nobody will take to invest in risky assets unless he is assured of adequate compensation for the assumption of risk. Generally in a market, higher risk will command higher premium.

The main purpose of risk and return analysis is to appraise investment performance and to explore combinations of investments that maximize returns, minimize risk or achieve both. The risk minimization, in particular is not possible by holding only one asset or only one type of assets. What makes possible to minimize risk is the diversification of investments. Therefore, the analysis of risk of an investment in isolation is not very meaningful for understanding the risk minimization process. Risk plays a central role in the analysis of investments. CBs or investors generally do not invest their money in only one risky asset. Instead they hold a portfolio of many assets with the hope of diversifying the investment risk. In the context of portfolio, the contribution of each asset to the portfolio risk is the portion of relevant risk of the asset.

The portfolio of assets usually offers the advantage of reducing risk through diversification. The standard deviation of the returns on the portfolio may be less than the sum of the standard deviation of the returns from the individual assets. The portfolio return is the straight weighted average of returns from the individual assets. But the portfolio risk is not the weight average of the variance of return of individual assets. The portfolio risk is affected by the variances of return as well as the covariance between the returns of individual assets included in the portfolio and their respective weights. In reality, one will find an asset held in the portfolio to be relatively less risky than when it is held in isolation. This is because when an asset is held in a portfolio, the unsystematic risk is totally or at least

partly eliminated. Therefore, the portfolio standard deviation is not just the sum of variances of assets held in the portfolio.

#### **4.5.1 Risk and Return on Individual Investment**

Risk and return are two crucial phenomenon in world of investment. There is always linear relationship between risk and return. As the return goes on increasing, the risk also increases. Hence a rational investor has to consider the various aspects relating to R&R associated with investment while taking an investment decision. In the following section various aspects of R&R have been briefly explained in responses to the three selected banks. Risk is a complicated subject and needs to be properly analyzed. The expected return on an investment is the mean value of the probability distribution of its possible returns. The higher the probability that actual return will be far below the expected return, the greater the risk associated with owning an asset. When analyzing investments, analysis of tightness of return is most necessary one such measure is the standard deviations and another useful measure of risk is the coefficient of variation. Therefore standard deviations and coefficient of variation are taken as the measuring tools of risk and return.

#### **Risk and Return on Government Securities**

Governments often need to finance their expenditures by borrowing. To meet govt. expenditure, revenue surplus alone is not enough foreign grants as well as foreign and internal loans have to mobilize to meet such expenditures. Unlike business, govt. can not sell equity shares. Hence, they increase their required fund from internal loan by issuing treasury bills, treasury bonds, development bonds, national saving bonds etc. CBs also invest their funds by purchasing such govt. securities.

The risk and return on govt. securities is calculated by dividing interest income on govt. securities by total investment on govt. securities which is shown

below;

$$\text{Return on govt. securities (R}_g) = \frac{\text{Interest Income on Government Securities}}{\text{Total Investment on Government Securities}}$$

$$\text{Average rate of return (R}_g) = \frac{\sum R_{g_i}}{n}$$

$$\text{Risk on Government Securities (R}_g) = \sqrt{\frac{\sum (R_{g_i} - \bar{R}_g)^2}{n}}$$

$$\text{Coefficient of Variation (CV}_g) = \frac{R_g}{R_g}$$

**Table 4.15**

**Calculation of Risk and Return on Government Securities of Nepalese CBs**

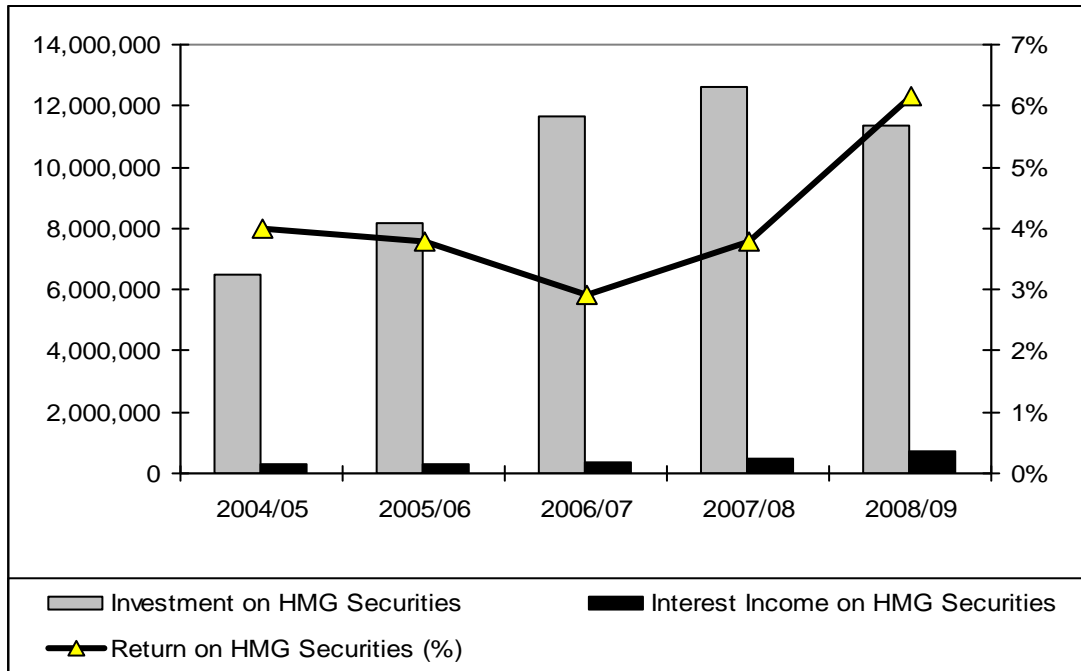
FY	Investment on Government Securities	Interest Income on Government Securities	Return on Government Securities	$\sum (R_{g_i} - \bar{R}_g)^2$
	“000”	“000”	(%) (R <sub>g</sub> )	
<b>2004/05</b>	6,462,728	285607	4%	* 0.017
<b>2005/06</b>	8,146,206	309889	3.80%	0.11
<b>2006/07</b>	11,679,289	339288	2.91%	1.49
<b>2007/08</b>	12,623,545	478651	3.79%	0.12
<b>2008/09</b>	11,384,247	699648	6.15%	4.08
<b>Total</b>	50,296,015	2113083	20.65%	5.82

Source: Appendix 1 (a) (j) and (l)

\*  $(4-4.13)^2=0.017$

Figure 4.12

Return on Government Securities of CBs



Here,

$$\bar{R}_g = \frac{\sum R_g}{n} = \frac{20.65}{5} = 4.13\%$$

Now,

$$\text{Standard deviation on Government Securities} = \sqrt{\frac{\sum R_g^2 - \frac{(\sum R_g)^2}{n}}{n-1}}$$

$$= \sqrt{\frac{5.82}{5-1}} = 1.21\%$$

$$\text{Hence Coefficient of Variation (CV}_g) = \frac{\text{Standard deviation}}{\bar{R}_g} = \frac{1.21}{4.13} = 0.29$$

From above table, it can be concluded that, in average the return on investment on govt. securities made by CBs is 1.143. Standard deviation is 1.21% which indicates risk on govt. securities. In general concept there is no any risk on government securities but the result of standard deviation and coefficient of variation shows there is risk on such securities. It is mainly due to the more fluctuating nature on investment on government securities. There is no fixed trend to invest on government securities such as treasury bills, national saving bonds, development bonds etc. by CBs its fund on treasury bills and the treasury bills are purchased directly at auction. Hence the returns on government securities are more volatility.

It is concluded that the higher variability of return on investment made on govt. securities is due to lack of proper investment on various securities.

### **Risk and Return on Loan and Advances**

Loan and advances are the main sources of CBs. The facility of granting loan and advances is one of the main services which customers of the CBs can enjoy. In order to realize their objectives CBs invest in various sectors like industry, service sector, agriculture, commercial sectors and other sectors. The risk and return on investment in the form of loan and advances can be calculated as follows;

$$\text{Return on Loan and Advances (R}_L\text{)} = \frac{\text{Interest Income on Loan and Advances}}{\text{Total Investment on Loan and Advances}}$$

$$\text{Average return on Loan and Advances (R}_L\text{)} \times \frac{R_L}{n}$$

Where  $n$  = no. of historical year

$$\text{Standard deviation on return on loan \& advances (R}_L\text{)} \times \sqrt{\frac{\sum R_L^2 - \frac{(\sum R_L)^2}{n}}{n-1}}$$

$$\text{Coefficient of Variation (CV}_L\text{)} \times \frac{L}{R_L}$$



**Table 4.16**

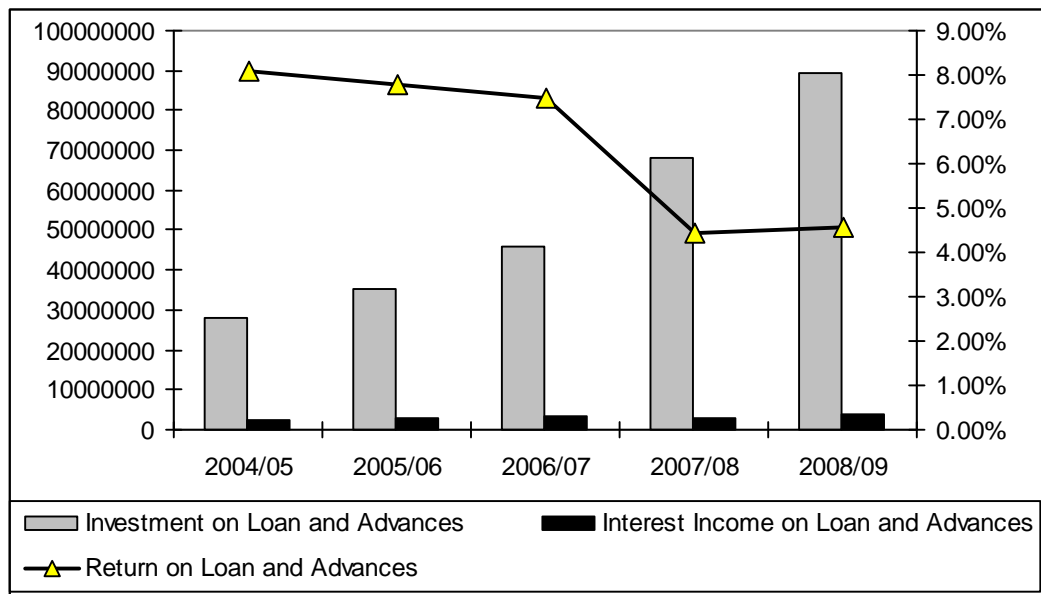
FY	Investment on Loan and Advances	Interest Income on Loan and Advances	Return on Loan and Advances	$\frac{\sum R_g Z \bar{R}_g \bar{A}}{n Z \bar{R}_g \bar{A}}$
	“000”	“000”	(%) (RL)	
2004/05	27987682	2264650	8.09%	* 2.62
2005/06	35066146	2721746	7.76%	1.66
2006/07	45940063	3436554	7.48%	1.02
2007/08	68125195	3034123	4.45%	4.08
2008/09	89295724	4071302	4.56%	3.65
<b>Total</b>	<b>266414810</b>	<b>15528375</b>	<b>32.35%</b>	<b>13.03</b>

Source: Appendix 1 © (k) and (m)

$$* (9.09 - 6.47)^2 = 2.62$$

**Figure 4.13**

**Return on Loan and Advances of CBs**



Now, the average rate of return on loan and advances of CBs in Nepal is

$$\bar{R}_L \times \frac{R_L}{n} \times \frac{32.35}{5} \times 6.47\%$$

Again,

$$\dagger_L \times \sqrt{\frac{\sum R_L Z \bar{R}_L \bar{A}}{n Z \bar{R}_L \bar{A}}} \times \sqrt{\frac{13.03}{5 Z \bar{R}_L \bar{A}}} \times 1.80\%$$

$$\text{Hence } CV_L \times \frac{\dagger_L}{R_L} \times \frac{1.80}{6.47} \times 0.28$$

From the above table and figure reveals that the return on investment on loan and advances has no any fixed trend. During the period 2004/05 to 2008/09 the highest return is 8.09% in 2004/05 and lowest return is 4.45% in 2007/08. The average return 6.47% means that in average the CBs generate 9.05% return on its investment made in loan and advances. The standard deviation 1.16% and coefficient of variation 28.1% show the risk of return on loan and advances. The variability on return on loan and advances seems to be less than return on government securities.

### **Risk and Return on Share and Debentures**

The return on share and debenture considers dividend yield and capital gain yield. The information about dividend received and capital yield by CBs is not available properly. Due to information disclosure by the concern banks regarding return from share and debenture is insufficient for the calculation purpose. The general assumption has been established to calculate the necessary return on share and debenture by using market return. The market return on share and debenture for this purpose is the average return of the sample companies listed in NEPSE. 5 companies are selected for the study.

The risk and return on investment in share and debenture of the CBs can be calculated as follows;

Return on share and debenture = Capital gain yield + Dividend yield

$$\text{Return on share and debenture (R}_s\text{)} = \frac{P_t - P_{t-1}}{P_{t-1}} + \frac{D_t}{P_{t-1}}$$

Where  $P_t$  and  $P_{t-1}$  are the average closing price of year  $t$  and  $t-1$

$D_t$  = Dividend per share (all types of dividend)

$$\text{Risk on Share and Debenture ( } R_s) \times \sqrt{\frac{\sum_{t=1}^n Z R_s \bar{A}}{n Z 1}}$$

$$\text{Coefficient of Variation (CV}_s) \times \frac{s}{R_s}$$

**Table 4.17**

**Estimates of Market Parameter**

Selected Companies	2004/05		2005/06		2006/07		2007/08		2008/09	
	<i>P<sub>t</sub></i>	<i>D<sub>t</sub></i>	<i>P<sub>t</sub></i>	<i>D<sub>t</sub></i>	<i>P<sub>t</sub></i>	<i>D<sub>t</sub></i>	<i>P<sub>t</sub></i>	<i>D<sub>t</sub></i>	<i>P<sub>t</sub></i>	<i>D<sub>t</sub></i>
<b>NABIL</b>	1505	70	2240	85	5050	100	4899		5275	35
<b>EBL</b>	870	20	1379	25	2430	40	2455		3132	30
<b>NIBL</b>	800	12.5	1260	20	1729	5	1388		2450	20
<b>Total</b>	<b>3175</b>		<b>4879</b>		<b>9209</b>		<b>8742</b>		<b>10857</b>	
<b>No. of Observation(n)</b>	<b>3</b>		<b>3</b>		<b>3</b>		<b>3</b>		<b>3</b>	
<b>Average (P)<sub>t</sub></b>	<b>1058.3</b>		<b>1626.3</b>		<b>3069.7</b>		<b>2914</b>		<b>3619</b>	

Source: Trading Report Vol. 2 to10, NEPSE and Annual report of SEBO and NEPSE 2000 to 2009`

**Table 4.18**

**Calculation of Dividend Yield  $\frac{D_t}{P_t}$**

Selected Companies	2004/05	2005/06	2006/07	2007/08	2008/09
<b>NABIL</b>	4.65	3.79	1.98	1.22	0.66
<b>EBL</b>	2.30	1.81	1.65	0.81	0.96
<b>NIBL</b>	1.56	1.59	0.29	0.54	0.82
<b>Total</b>	8.51	7.19	3.92	2.58	2.44
<b>No. of observation (n)</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>
<b>Average Dividend Yield</b>	<b>2.84</b>	<b>2.40</b>	<b>1.31</b>	<b>0.86</b>	<b>0.81</b>

Source: Table no. 4.17

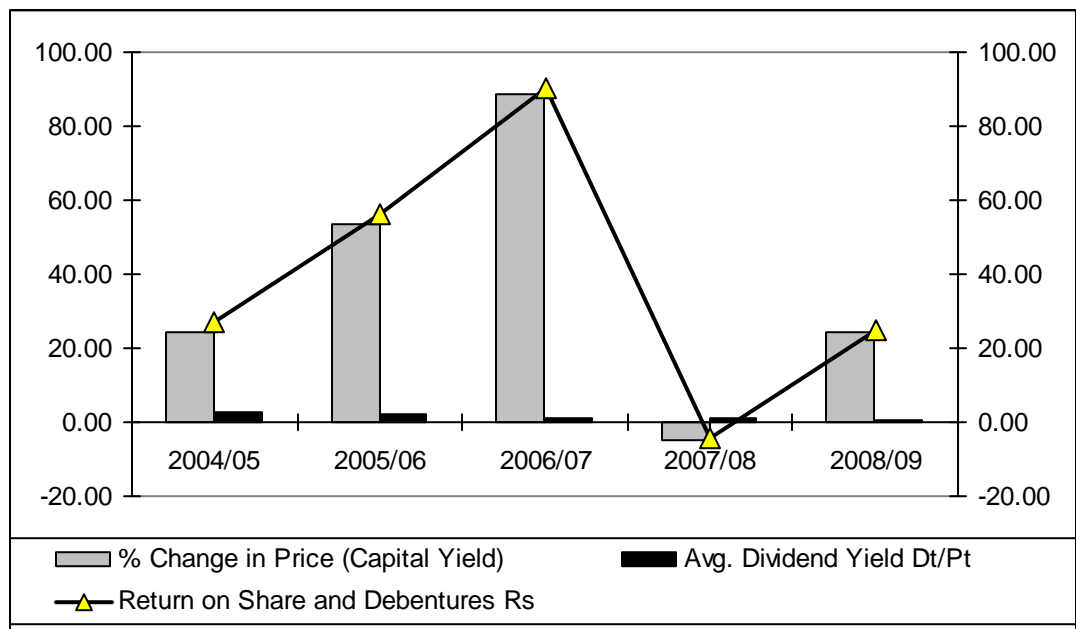
**Table 4.19**  
**Calculation of Capital Yield and Dividend Yield on Share**  
**and Debentures of CBs**

Fiscal year	Avg. Closing Price ( $P_t$ )	% Change in Price (Capital Yield)	Avg. Dividend Yield $\frac{D_t}{P_t}$	Return on Share and Debentures ( $R_s$ )	$\int R_s \bar{Z} R_s \bar{A}$
2004/05	1058.3	24.07	2.84	26.91	97.22
2005/06	1626.3	53.67 *	2.4	56.07 **	296.87
2006/07	3069.7	88.75	1.31	90.06	2630.66
2007/08	2914	-5.07	0.86	-4.21	1847.28
2008/09	3619	24.19	0.81	25.00	189.61
<b>Total</b>				<b>193.84</b>	<b>5061.64</b>

Source: Table No. 4.16 and 4.17

\*  $\frac{1626.3 - 1058.3}{1058.3} \times 100 = 53.67$       \*\*  $53.67 + 2.4 = 56.07$

**Figure 4.14**  
**Capital Yield, Dividend Yield and Return on Share and Debentures**



The average closing prize in year 2004/05 is calculated on the basis of Nepse index and 2004/05 average closing price.

The average rate of return from Share and Debentures for CBs is;

$$\bar{R}_s \times \frac{R_s}{n} \times \frac{193.84}{5} \times 38.77$$

$$\text{Again, } \dagger_s \times \sqrt{\frac{\sum R_s - n \bar{R}_s^2}{n - 1}} \times \sqrt{\frac{5061.64}{5 - 1}} \times 35.57$$

$$\text{Now, } CV_s \times \frac{\dagger_s}{R_s} \times \frac{35.57}{38.77} \times 0.92$$

Return on share and debenture is the sum of capital yield and dividend yield. This is present in the above figure.

It can be observed from above table and figure that the annual rate of return of investment on share and debenture of CBs shows wide fluctuation, ranging from 26.91% in 2004/05 to -4.21% in year 2007/08. These fluctuations in returns are caused mainly by volatility of the share prices in the market. The change in dividends also contributed to the variability of the shares return in some extent.

The average rate of return of investment on share and debenture of CBs for five years during 2004/05 to 2008/09 is 38.77%. Similarly the annual rate of return of investment on share and debenture show a high degree of variability, they deviated on an average by 35.57% from the average rate of 38.77%. This is also reveals by the 92% coefficient of variation.

## 4.5.2 Risk and Return on Investment Portfolio

### Portfolio Return on Investment

The return of a portfolio depends on (i) the expected rate of return of each security contained in the portfolio and (ii) the amount invested in each security. The portfolio return is the weighted average expected return of the individual stock in the portfolio, with weights being the proportion of investment on each security in the portfolio equation. CBs invest their funds in government securities, share and debenture and loan and advance. The weight of the investment on various assets and their average rate of returns are presented below;

**Table 4.20**  
**Calculation of Weight of Investment on Various Assets**

S. No.	Assets	Investment Amount Rs. '000'	Proportion Weight (w)	Average Rate of Return (R)
1	Government Securities	10059203	0.37 *	4.13
2	Share and Debenture	1246731	0.08	38.77
3	Loan and Advance	15528375	0.58	6.47
<b>Total</b>		<b>26834309</b>		

*Source: Appendix 1(a), (b), (c), (l), (m) and Above Table*

$$* \frac{10059203}{26834309} \times 0.37$$

Calculation of Portfolio Return ( $R_p$ )

$$R_p = \sum W_i R_i$$

$$= 0.37 \times 4.13\% + 0.08 \times 38.77\% + 0.58 \times 6.47\%$$

$$= 1.528 + 3.102 + 3.752$$

$$= 8.38\%$$

Hence, Portfolio Return on Investment of CBs ( $R_p$ ) = 8.38%

## Portfolio Risk on Investment

We measure the risk of a portfolio by the variance or standard deviation of the return of the portfolio. The risky ness of the portfolio expresses the extent to which the actual return may deviate from the expected return. However, its calculation is not as straight forward as the calculation of the expected return of portfolio. The portfolio risk is affected by the association of movement of returns of two securities. Hence, by combining the measures of individual asset risk, relative asset weights and the co-movement of assets returns (covariance) the risk of the portfolio can be estimated. Therefore before calculating portfolio risk on investment covariance between two assets return should be calculated.

**Table 4.21**  
**Calculation of Correlation Coefficient and Covariance between Various Assets**

S.N	Assets	Standard Deviation	Correlation Coefficient	Covariance	Weight (w)
1	Government Securities (g)	1.21	-0.46	-0.008278	0.37
2	Share and Debenture (s)	35.57	0.65	0.002763	0.08
3	Loan and Advance (l)	1.8	-0.58	-0.006101	0.58

*Sources: Appendix 3 and Above Page*

Where,

$$Cov_{gs} = R_{gs} \times Z_{gs} \times Z_s = -0.46 \times 0.0121 \times 0.3557 = -0.001627$$

$$Cov_{sl} = R_{sl} \times Z_s \times Z_l = -0.65 \times 0.3557 \times 0.0180 = -0.004143$$

$$Cov_{gl} = R_{gl} \times Z_g \times Z_l = -0.58 \times 0.0121 \times 0.0180 = -0.000126$$

$R_{gs}$ ,  $R_{sl}$  and  $R_{gl}$  are the correlation coefficient between government securities and share and debenture, share and debenture and loan and advance, government securities and loan and advance respectively.

The standard deviation of portfolio investment  $\sigma_p$  be

$$\begin{aligned} \sigma_p &= \sqrt{W_g^2 \sigma_g^2 + W_s^2 \sigma_s^2 + W_l^2 \sigma_l^2 + 2Cov_{gs} W_g W_s + 2Cov_{sl} W_s W_l + 2Cov_{gl} W_g W_l} \\ &= \sqrt{(0.37)^2 (0.002763) + (1.21)^2 (0.08)^2 + (35.57)^2 (0.58)^2 + 2(0.008278)(0.37)(0.08) \\ &\quad + 2(0.006101)(0.37)(0.58)} \\ &= 0.35\% \end{aligned}$$

Portfolio risk and return on investment made by CBs in various assets, which is calculated above is important to note that the expected risk of the portfolio is considerably less than the expected risk of investment on government securities, loan and advances and share and debenture. Due to the negative correlation between return of investment on loan and advances and share and debenture and investment on government securities and share and debentures investment portfolio has considerably reduced. Lower the correlation co-efficient, lower the risk of the portfolio i.e. combining assets with negative correlation will significantly reduce the risk of the portfolio. Risk can be reduced by investing wealth in more than one asset.

The expected return on portfolio 8.38% is less than that of average rate of return of individual investment on share and debentures (38.77%) and investment on loan and advances (6.47%). But investing the total funds in share and debentures and loan and advances is more risky than that of investment on portfolio.

#### 4.6 Test of Investment Portfolio Performance

The portfolio of assets usually offers advantage of reducing risk through diversification. The portfolio risk is depending upon weight of funds invested in various assets, risk of individual assets, the tendency of two variables to move together etc. In this topic, the efforts have been made to explore in which extent the CBs are able to utilize portfolio concept in their investment.



To test the portfolio performance, this study uses three portfolio performance models, which have been given below;

### **Sharpe's Portfolio Performance Measure**

Portfolio performance evaluations on the basis of return only will be insufficient; therefore, it is necessary to consider both risk and return. William F. Sharpe devised an index of portfolio performance denoted which measures the slope of the line starting at risk less rate  $R$  and running out to asset is defined as below;

$$S_i \times \frac{\text{Risk Premium}}{\text{Total Risk}} \quad \text{or} \quad S_i \times \frac{\bar{r}_i - R}{\sigma_i}$$

Where,

$\bar{r}_i$  = Average Return of Assets  $i$ .

$\sigma_i$  = Standard Deviation of Return.

$R$  = Risk less Rate of Return.

$S_i$  = Sharpe's Index of Portfolio Performance.

The portfolio on investment is better than investment on other asset or not is determinant by the above model, which is used to test whether the portfolio in investment made by Nepalese CBs is appropriate or not.

Performance of government securities, share and debentures, loan and advances and portfolio is calculated in table below.

**Table 4.22**

**Performance of Various Investment Assets**

S. No.	Investment Assets	Average Annual Return (%) $\bar{r}_i$	Standard Deviation Annual Return $\dagger_i$	Sharpe's Measure of Performance $S_i \times \frac{\bar{r}_i - ZR}{\dagger_i}, R=7\%$
1	Government Securities (g)	4.13	1.21	-2.37
2	Share and Debenture (s)	38.77	35.57	0.89
3	Loan and Advance (l)	6.47	1.8	-0.29

*Source: From Above Calculation*

Risk less rate of interest (R) = 7% (Economic Survey 2008)

From the above calculation  $S_s > S_l > S_g$  which indicates that the investment on share and debentures is better than the investment on loan and advances, the investment on loan and advances is a better performer than government securities. So, portfolio made by the CBs among various investment assets is not so satisfactory. The lower Sharpe's portfolio performance than that of investment on share and debentures indicates that the commercial banks are not fully successful to utilize their resources on various assets by using portfolio concept to reduce risk and increasing return on assets. This is mainly to lack of well scientific approach towards diversification of funds among different assets.

**4.7 Trend Analysis**

The purpose of this topic is to analysis the trend of total investment, total deposits and investment on various assets such as government securities, share and debenture and loan and advance of the CBs and projection for next four years.

Method of least squares is used to determine trend value. Under this variable y and independent variable x be represented by,

$$Y = a + bx$$

Where,

$a$  = y intercept

$b$  = slope of the trend line or amount of change that comes in y for a unit change in x.

To make calculation easier, the deviation of the independent variables i.e. time are taken from the middle of the time period so that  $\sum x=0$  then, the value of a and b can be easily calculated by using following formula

$$a = \frac{\sum y}{N} \quad \text{and} \quad b = \frac{\sum xy}{\sum x^2}$$

#### 4.7.1 Trend Analysis of Total Investment and Total Deposit

The effort has been made to analyze trend of total investment and total deposit of the CBs for six years and forecast of the same for next four years. The following table shows the trend values of total investment and total deposit of CBs (calculation details in appendix 4).

**Table 4.23**  
**Trend Value ( $Y_c = a + bx$ ) of Total Investment and Total Deposit of CBs**  
(Rs. in million)

Year (t)	X=t-2006.5	Total Investment		Total Deposit	
		Trend Value*	Actual Value	Trend Value**	Actual Value
2004	-2.5	9054.07	9568.08	18047.64	21353.56
2005	-1.5	12257.10	10332.779	36568.54	38938.874
2006	-0.5	15460.13	15984.847	55089.44	52077.15
2007	0.5	18663.15	20436.111	73610.34	66017.398
2008	1.5	21866.18	21873.351	92131.24	90343.068
2009	2.5	25069.21	24174.67	110652.14	117369.301
2010	3.5	28272.23		129173.05	
2011	4.5	31475.26		147693.95	
2012	5.5	34678.29		166214.85	
2013	6.5	37881.31		184735.75	

Source: Appendix 1(e) and (f)

Trend line for Total Investment of CBs

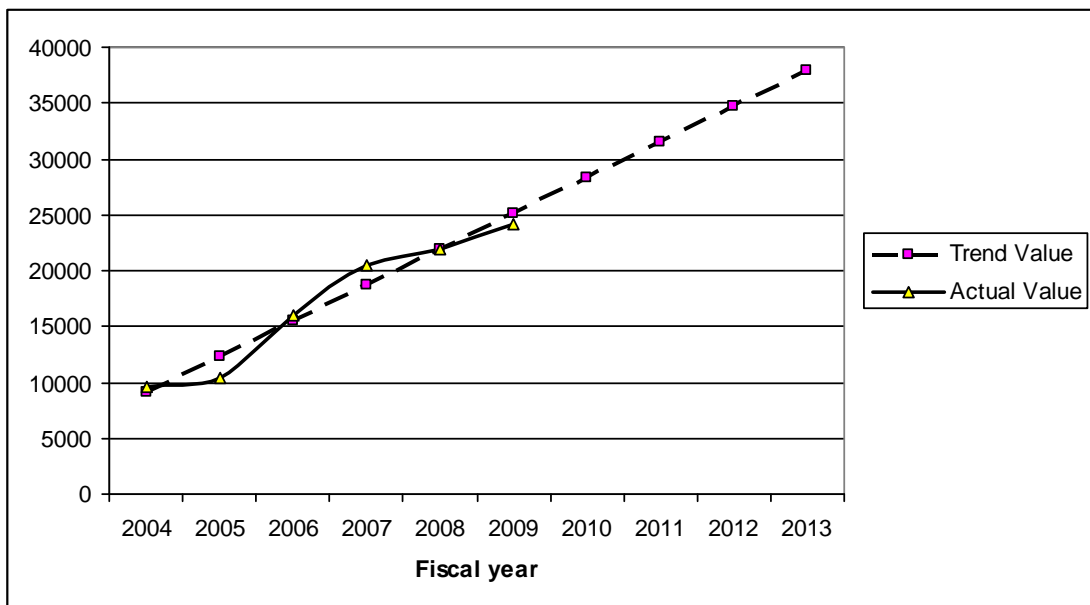
$$* Y_c = 17061.64 + 3203.03x$$

Trend line for Total Deposit of CBs

$$** Y_c = 64349.89 + 18520.9x$$

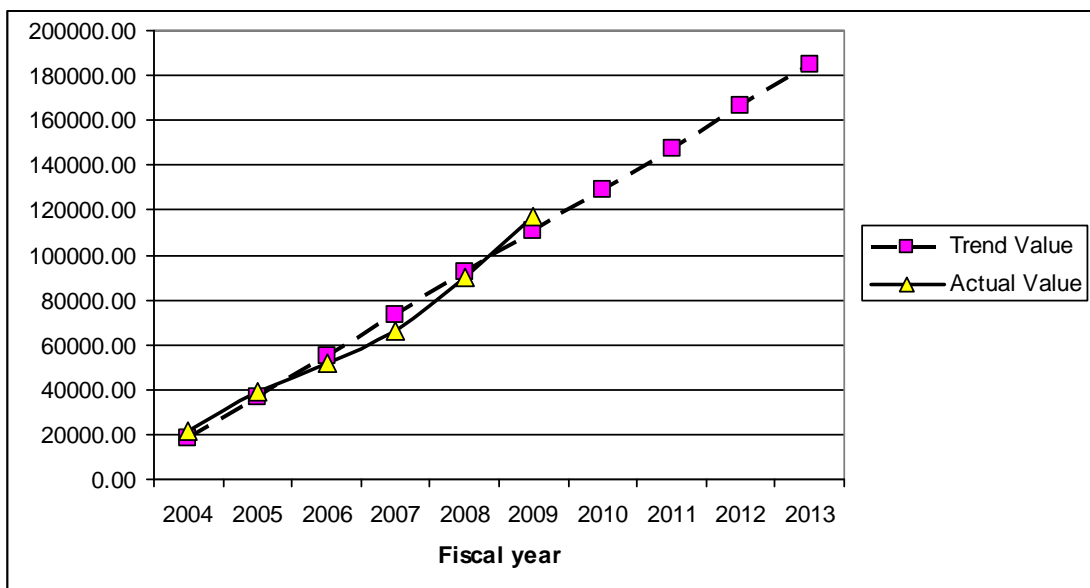
**Figure 4.15**

**Trend and Actual Value of Total Investment of CBs**



**Figure 4.16**

**Trend and Actual Value of Total Deposit of CBs**



From the above table and figure it is clear that CBs total investment has been increasing by Rs. 3203.03 million each year and is expected to reach Rs. 37881.31 million at the end of year 2013. Likewise total deposit of CBs are in increasing trend and which have been increasing by Rs. 18520.9 million every year and is expected to reaches Rs. 184735.74 at the end of year 2013. Other thing remaining the same the ratio of total investment and total deposit will be 20.51% ( $37881.31/184735.74$ ) in year 2013 which is moderate ratio. This shows that deposit utilization position in relation to investment to total deposit ratio is appropriate.

#### **4.7.2 Trend Analysis of Investment on Various Assets**

Only three assets are taken i.e. government securities, share and debenture and loan and advance are taken for analysis. For analyze total investment on various assets of CBs for six years and forecast of the same for next four years till 2013.

The following table shows the trend values of 10 years from 2004 to 2013 of CBs investment on different assets i.e. government securities, share and debentures and loan and advances.

**Table 4.24**

**Trend Value ( $Y_c = Xa + bx$ ) of Investment on Government Securities, Share  
and Debentures and Loan and Advances of CBs.**

(Rs. in million)

Year (t)	X=t- 2006.5	Investment on Government Securities		Investment on Share and Debentures		Investment on Loan and Advances	
		Trend Value*	Actual Value	Trend Value**	Actual Value	Trend Value***	Actual Value
2004	-2.5	5544.44	5345.672	-41.83	57.1	15006.54	22666.7
2005	-1.5	7036.11	6462.728	61.82	64.488	28276.02	27987.68
2006	-0.5	8527.78	8146.206	165.48	64.488	41545.50	35066.15
2007	0.5	10019.45	11679.289	269.13	112.188	54814.98	45940.06
2008	1.5	11511.12	12623.545	372.79	484.333	68084.46	68125.2
2009	2.5	13002.79	11384.247	476.44	521.234	81353.95	89295.72
2010	3.5	14494.46		580.10		94623.43	
2011	4.5	15986.12		683.75		107892.91	
2012	5.5	17477.79		787.40		121162.39	
2013	6.5	18969.46		891.06		134431.87	

Source: Appendix 1(a), (b) and (c)

Trend line of Investment on Government Securities of CBs is,

$$* Y_c = 9273.61 + 1491.67x$$

Trend line of Investment on Share and Debentures of CBs is,

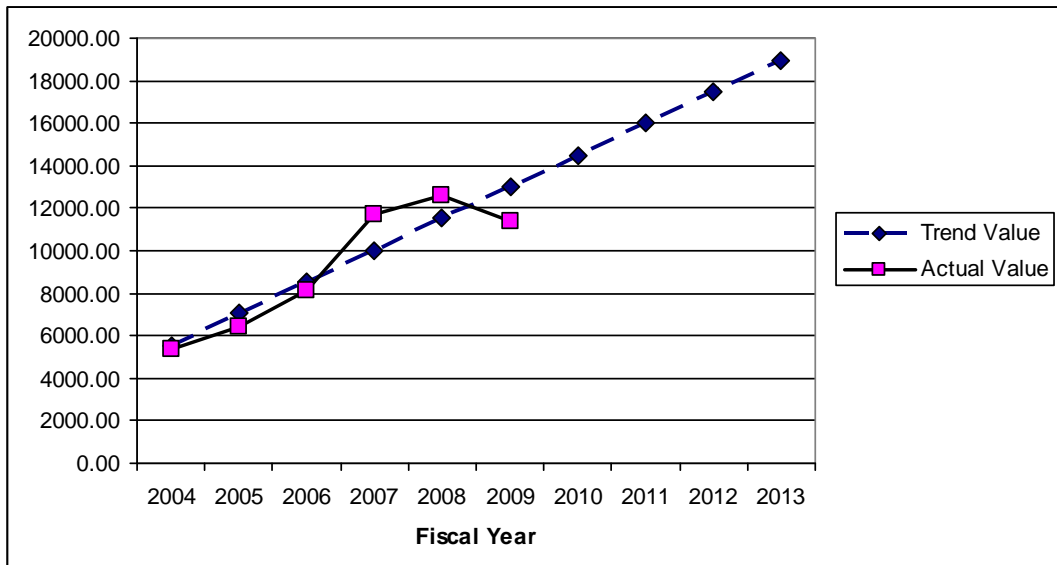
$$** Y_c = 217.31 + 103.65x$$

Trend line of Investment on Loan and Advances of CBs is,

$$*** Y_c = 48180.24 + 13269.48x$$

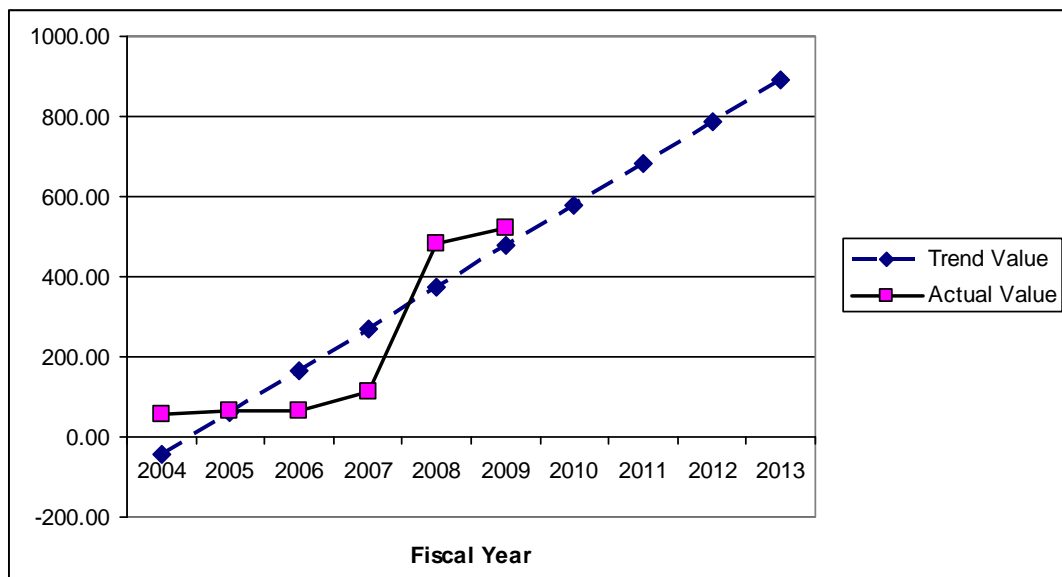
**Figure 4.17**

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



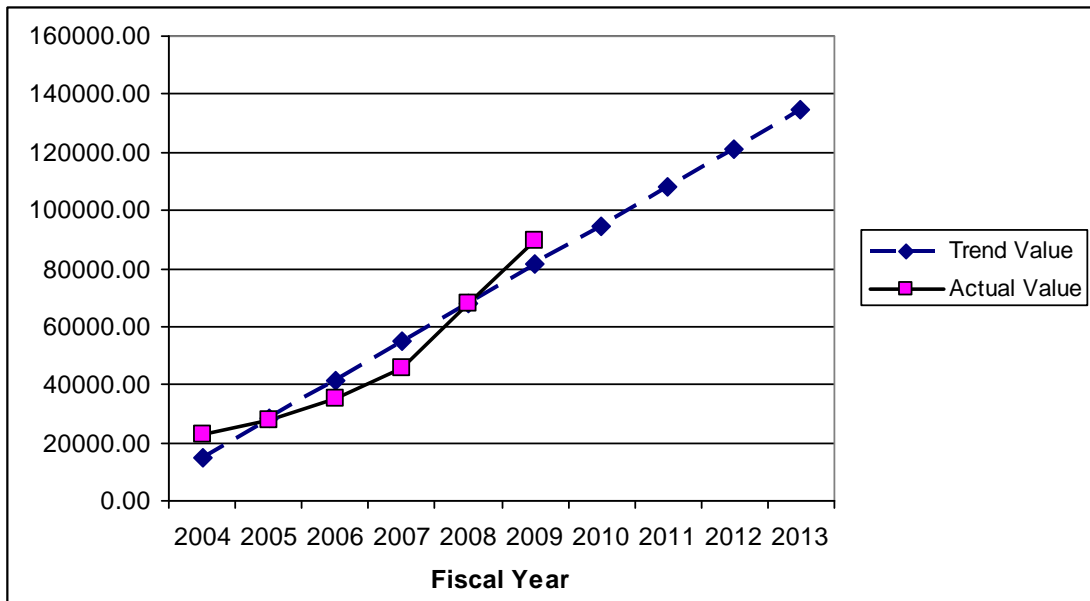
**Figure 4.18**

**Trend and Actual Value of Investment on Share and Debentures**



**Figure 4.19**

**Trend and Actual Value of Investment on Loan and Advances**



From the above table and figure, it is clear that the CBs investment on government securities, share and debenture and loan and advance all are in increasing trend. The investment on government securities, Share and debenture and loan and advance are increasing by Rs. 1491.67 million, Rs. 103.65 million and Rs. 13269.48 million per year respectively. If other thing remaining same, the investment on government securities, share and debenture and loan and advance in 2013 will be Rs. 18969.46 million, Rs. 891.06 million and Rs. 134431.87 million respectively, where as such investment in year 2009 is Rs. 11384.247 million, Rs. 521.234 million and Rs. 89295.724 million respectively.

Hence, it can be concluded that the investment of CBs on various assets like government securities, share and debenture and loan and advance all are increasing per year. In comparison, increasing ratio in government securities is 3.42 times ( $18969.46/5544.44$ ), in share and debenture is 21.30 times ( $891.06/41.83$ ) and in loan and advance is 8.96 times ( $134431.87/15006.54$ ). It shows that investing on government securities is increasing more rapidly than share and debenture and share and debenture increasing more rapidly than loan and advance during the period of 2004 to 2013.



## **4.8 Major Finding**

Based on the analysis of the various data remarkable findings are drawn up. The major findings are as follows;

### **Investment Portfolio**

) In investment portfolio, the industry average investment on government securities is 60.58%, among the CBs, EBL has invested the highest amount of funds on govt. securities i.e. 92.19% and NABIL has invested lowest 44.76%, other bank NIBL have investing highest amount of funds on government securities among CBs i.e. 44.80% and EBL have invested lowest amount of funds on S&D i.e.5.81%. The industry average in this case is 38.75%, on which NIBL and NABIL is invested higher than industry average i.e. 55.20% and 55.24% respectively. In case of NRB bonds no one banks are investing. There is zero amount of investment.

### **Loan and Advances Portfolio**

) In loan and advances portfolio, the industry average investment on Govt. enterprises is 1.88%, Among the CBs, NIBL and EBL has invested the highest amount of funds on Govt. enterprises i.e. 2.46 and 2.57% respectively. The industry average investment on Private Sector is 95.98%. NABIL is investing highest amount of funds on private sector among CBs i.e. 97.64% and NIBL and EBL have invested below the industry average on private sector i.e. 94.66% and 95.63% respectively. NIBL is investing the highest amount of funds on for Bills P& D as compared to other CBs i.e. 2.88%. The industry average in this case is 2.14%. NABIL and EBL has invested lower than the industry average i.e. 1.74% and 1.80% respectively.

### **Portfolio Risk and Return on Investment**

) There is positive correlation coefficient between return on investment made by CBs in Share and debenture i.e. 0.65. And there is negative

correlation coefficient between return on investment made by CBs in Govt. securities and loan and advance i.e. -0.46 and 0.58 respectively. This shows the low degree of negative relationship between assets. Such assets are very useful to make portfolio combination, So that the risk of the portfolio will be significantly reduced.

- ) According to the calculation, portfolio return is lesser than the individual return of S&D but higher than individual return of Govt. securities. And portfolio risk is less than and S&D but very lower risk than securities. This is due to negative correlation between assets, which shows that the portfolio reduce risk.

### **Ratio Analysis**

- ) The total investment to total deposits ratio of selected CBs shows that NABIL is the most successful in utilizing its resources on investment than others CBs. The mean ratio and CV also reveals that EBL are moderate in utilizing its resources on investment. While NIBL is not so successful in better utilizing their total deposits on investment of various assets.
- ) The loan and advance to total deposit ratio of selected CBs shows that EBL is the most successful in utilizing its resources on L&A than other CBs. The mean ratio and CV also reveals that NIBL is moderate in utilizing its resources on L&A. while NABIL are not so successful in better utilizing their total deposits on L&A.
- ) The return on total assets ratio of selected CBs shows that, NABIL utilized its overall resources efficiently than other banks. EBL is the low profitability position among the 3 CBs but NIBL is in moderate in profitability position.
- ) The ratio between investment on S&D and total outside investment reflects the extent on which the NABIL invest highest portion of total investment into share and debenture on the basis of mean. On the other hand EBL is the most consistent bank in investing its total outside

investment on share and debenture. But NIBL have low portion of investment on S&D to total outside investment.

- ) The ratio between investments on Govt. securities and total outside investment reflects the extent on which the EBL is higher among three CBs which is proved by highest ratio and lowest CV. Similarly NABIL have moderate position. Likewise NIBL has weakest position for mobilization of total outside assets into government securities. EBL are better mobilization of fund as investment on Govt. securities and NIBL has weakest position for mobilization of funds as investment on Govt. securities.
- ) NABIL is the best bank among three CBs on the basis of exploitation of resources in the field of govt. securities, on the basis of S&D EBL is the best bank among 3 CBs and EBL is the best bank among 3 banks on the basis of exploitation of resources in the field of loan and advances.
- ) On the basis of investment amount, the CBs gives first priority to invest their resources on loan and advances, then to govt. securities and lastly to share and debentures. Therefore CBs invest highest part of the resources to loan and advances.

### **Risk and Return**

- ) The average return on govt. securities is 4.13% and its coefficient of variation is 0.29 which is very low return among other investment but lower risk than L&A investment.
- ) In broad hypothesis, there is less risk on investment on govt. securities but here is high risk due to the consideration of difference of year to year return on govt. securities as risk factors. CBs wants to invest in short term basis which return is not fixed because its return is resolute by demand and supply so return is volatile with demand and supply.
- ) CBs make faltering to invest on long term govt. securities that provide

usual constant return. So that CV of government securities is privileged.

- ) The average rate of return and CV of loan and advances is higher than the government securities i.e. 6.47% and 0.28 respectively which shows that the investment on L&A have more fixed trend than govt. securities due to flat interest rate charged to clients on L&A.
- ) The average rate of risk and return are higher than other assets on S&D. The average return on S&D of CBs shows wide fluctuations due to transform in shares price. This is exposed by the high degree of CV.
- ) Rate of return of S&D is high but the risk is also high so that loan and advances is advanced than government securities and govt. securities are advanced than S&D according to the individual risk and return.

### **Test of Portfolio Performance**

- ) By using Sharpe's portfolio performance test, it indicates that investment on loan and advances is the superior performance than that of investment on share and debentures, portfolio and govt. securities.
- ) The portfolio has lower performance than loan and advances, which shows that the CBs are not properly using portfolio concept to reduce risk and increase return from their investment.
- ) It shows that the CBs are not use proper diversification of funds among various assets.

### **Trend Analysis**

- ) The total investment, total deposit and investment on S&D, L&A and govt. securities of CBs are increasing per year. In trend analysis the investment of CBs on S&D is increasing more rapidly than govt. securities and govt. securities is increasing more rapidly than L&A during the period on the study.

## **CHAPTER - V**

### **SUMMARY, CONCLUSION AND RECOMMENDATION**

This chapter is an accomplished specific and indicative enclosure which contains summary, major finding and conclusion of finding and recommendations. Brief introduction to all chapters of the study and genuine information of the present situation under the topic of the study is defined on summary. Conclusions and Findings are analysis of applicable data by using various financial and statistical tools, which presents strengths, weakness, opportunities and threats of the CBs. And suggestions are obtainable in recommendation, which is arranged on the basis of finding and conclusions.

#### **5.1 Summary**

Any country depends upon the economic development for developing the country. To strengthen, the economy of any country both the private and public sector should play a great role, which contributing to our nation. The process of the economic development depends upon various factors, however economists are now convinced that capital formation and its proper utilization plays a paramount role for rapid economic development. All the economic activities of each and every country are greatly influenced by the commercial banking business of the country.

Banks are an essential part of the business activities which are established to safe guard people's money and there by using the money in making loans and investments. CBs collect scattered financial resources from the masses and invests them among those engaged in commercial and economical activities of the country. CBs are those financial institutions deal in accepting deposits to persons and institutions and giving loans against securities and it also provide technical and administrative assistance to

industries, trade and business enterprises. CBs are defined as a bank is a financial institution, which performs widest range of economic and financial functions of any business firm in the economy. CBs plays vital role for development of a developing country. Banks provides internal resources for developing country's economy.

The evolution of the organized financial system in Nepal has a more recent history than in other countries of the world. In Nepalese content, the history of development of modern banks started from the establishment of Nepal bank limited in 1937 A.D. nowadays there are 23 CBs operating in Nepal financial market which is in increasing due to the country moved towards economic liberalization, financial scenario has changed, and foreign banks were invited to operate in Nepal. For the better performance of CBs, successful formulation and effective implementation of investment policy is the prime requisite. Nowadays there is a very high competition in the banking industries but very less opportunity to make investment. The opportunities are hidden. Thus these CBs should take initiative action in search of the new opportunities. So, that they can easily survive in this competitive banking business world and earn profit. A bank manager its investment has a lot to do with the economic health of the country because the bank loans support the growth of new business and trade empowering the economic activities of the country.

Investment portfolio refers to an investment that combines several assets. Investment portfolio is one which the income or profit of the banks depend upon directly. Investment portfolio usually offers the advantage of reducing risk through diversification of risk from risky investment to less risky investment. The objective of portfolio is to develop a portfolio that has the maximum return at whatever level of risk. The investment portfolio is the tool which helps to reduce risk and maximize return. The banks should never invest its funds in those securities; difference may cause a great loss. The bank

should accept that type of securities which are commercial, durable, marketable stable, transferable and high market price.

Generally the investment of the CBs include the investment on government securities, like treasury bills, development bonds, national saving bonds, foreign government securities, shares on government owned companies and non government companies and investment on debentures, similarly the CBs used their funds as loan and advances. Most of the banks are interested to invest their funds in more liquid and less risky sector. Nepalese CBs don't have their own clear vision towards investment portfolio. The investment planning of the CBs in Nepal heavily depend upon the rules and regulation provided by the central banks. The composition of asset portfolio of the banks is influenced by the policy of the central bank. NRB's directives, unsecured climate created by political situation, government policy, Maoists problems etc are the most important problem for banking sectors in investment.

The researcher has tried to explore investment of CBs in various assets, portfolio management and risk return, risk and return on assets, relationship between various factors of CBs with various investment assets, performance of CBs towards investment for the study of 'Investment portfolio analysis of Nepalese CBs'. For the fulfillments of the objectives of the study many analysis has been done such as operation of CBs, investment and loan and advance portfolio, risk and return analysis, portfolio risk and return on investment, ratio analysis, trend analysis, portfolio performance test and hypothesis test. For the analysis mainly secondary data are used, which is collected from concerned banks, NRB, NEPSE, SEBO and different library and different information also provided from there. Financial and statistical tools are used to reckoning and secondary data were compiled, processed, tabulated and graphed for better presentation from which various finding and conclusion have been drawn which are presented as below.

## 5.2 Conclusion

Commercial banks have been operating efficiently and have been successful in becoming the pillars of economic system of the country. These banks are performing as financial intermediaries, which provided a links between borrowers and lenders by mobilizing the scattered resources towards productive investments. It is not possible to achieve such goal without using portfolio concept on the investment strategies, which helps to reduce risk and increase return on investment. Most of the CBs are fascinated to invest their resources in more liquid and less risky sectors. CBs are unsuccessful to use the investment portfolio management to balanced investment opportunities.

From the analysis of risk and return of individual investment resources, it is conclude that the loan and advances is much better than investment on share and debentures and govt. securities. It is due to the fixed interest income on loan and advances. So that the CBs are eager to invest their maximum part of investment on loan and advances in different sectors due to return from loan and advances seems less explosive than other resources. The average rate of return and risk on share and debentures are advanced than other assets so that the CBs are invested very low portion of resources into share and debentures of other companies which terminate that the CBs are investment on less risky sectors by which CBs can reduced risk but reduced on return also. From the various ratios relating with the utilization of resources on investment it can be accomplished that NABIL is the bank which shows better performance on their investment strategies while EBL imitate moderate performance in utilization of overall resources. And NIBL is the weakest bank to mobilize its total resources in various investment assets among five CBs.

While comparing the investment portfolio weight set up by the CBs with directives given by the central banks, the banks have not followed the directives. Directives direct not to invest more than 50% in one sector



but most of the banks have invested more than 90% of their funds into one sector. From investment portfolio analysis, it is accomplished that the CBs are given first priority to invest their funds in the govt. sector due to less risky and second priority given to the share and debentures of other companies. And in the case of investment on loan and advances portfolio CBs are concentrated in the private sector due to high return from them and given second priority to bills P & D and lastly on the govt. enterprises due to the less return from them. CBs flow their funds from higher level of return to lower level of return.

From the negative correlation coefficient between various investment assets, the CBs can reduce total risk at minimum level and increase profit at higher level. From the study it can be accomplished that CBs are not able to diversify their resources efficiently, which is proved by the financial performance test. According to the Sharpe's portfolio performance test, it can terminate that the Nepalese CBs do not utilize portfolio concept efficiently in their investment.

The trend analysis of the CBs accomplished that investment on share and debentures, investment on loan and advances, investment on govt. securities are ever-increasing per year.

### **5.3 Recommendation**

On the basis of the analysis, findings and conclusion, the following recommendations are suggested to overcome limitation, disorganization as well as exploit opportunities and to improve the present fund mobilization and investment portfolio of Nepalese CBs

In investment portfolio, except NABIL other two CBs are focusing on govt. securities for their investment as a result of various factors, among which the important ones are government policy and regulation framework of the central

banks. Therefore, investment on govt. securities should be decreased and investment on other investment should be increase.

- ) The profitability position of EBL is the weakest in relation on return on assets. So, the bank should utilize its overall resources effectively to gain the peak profit margins.
- ) From the analysis of investment operation of CBs, EBL increases its total investment by increasing total deposit and increasing investment on government securities.
- ) NABIL are not successful in better utilizing their total deposits on loan and advances so that it is recommended that NABIL should increase the amount of loan and advances.
- ) Among the three CBs, EBL is the most excellent bank which is utilizing the investment in various assets and its best position on ratio analysis. The lowest investment on S&D to total outside investment and L&A to total deposit of EBL is insufficient to reduce existing total risk. So that SCBL is to raise the investment on S&D of other companies and increased in loan and advances.
- ) Nepalese CBs have not formulated their investment policy in organized manner. They don't diversify the investment. Hence,
  - CBs need to change their investment policy and investment in different sector not only high percentage on risk free assets but also on risky assets. From risky sectors there is a great opportunity for CBs to get higher return by using portfolio concept.
  - Portfolio condition of a bank should be regularly revised from time to time. It should always try to maintain the balance in the portfolio condition of the bank. Risk can be minimized by invest in more than one assets not on only one assets. CBs are not pretty booming to invest their funds in various assets. CBs are invest most of the funds on only L&A but lower part of their funds in govt. securities and S&D. Commencing above study, correlation coefficient between investment assets are in -ve, which shows the fair opportunities for the CBs to

minimize risk by investing in assets in suitable part. So, CBs must diversify appropriate proportion of their funds in the field of share and debentures along with govt. securities.

- It is clear from the above study that some CBs are able to exploit portfolio management concept in the field of investment, which is not satisfactory to reduce risk and maximize return in the finest level. So that CBs should use portfolio management concept usefulness and extend opportunities for exercising the portfolio management in investment.

## APPENDICES

### Appendix - 1

#### Arrangement & Tabulation of Available Financial

#### Data of Various CBs

##### a) Total Investment (Rs. in '000')

<b>FY</b>	<b>NIBL</b>	<b>NABIL</b>	<b>EBL</b>	<b>CBs</b>
<b>2004/05</b>	3934189	4269658	2128932	10332779
<b>2005/06</b>	5602869	6180658	4201320	15984847
<b>2006/07</b>	6505680	8945311	4985120	20436111
<b>2007/08</b>	6,874,023	9,939,771	5059557	21873351
<b>2008/09</b>	7,399,811	10,826,379	5948480	24174670
<b>Total</b>	<b>30316572</b>	<b>40161777</b>	<b>22323409</b>	<b>92801758</b>
<b>Average</b>	<b>6063314.4</b>	<b>8032355.4</b>	<b>4464681.8</b>	<b>18560351.6</b>

##### b) Total Deposit (Rs. in '000')

<b>FY</b>	<b>NIBL</b>	<b>NABIL</b>	<b>EBL</b>	<b>CBs</b>
<b>2004/05</b>	14254574	14586609	10097691	38938874
<b>2005/06</b>	18927306	19347399	13802445	52077150
<b>2006/07</b>	24488856	23342285	18186257	66017398
<b>2007/08</b>	34451726	31915047	23976295	90343068
<b>2008/09</b>	46698100	37348255	33322946	117369301
<b>Total</b>	<b>138820562</b>	<b>126539595</b>	<b>99385634</b>	<b>364745791</b>
<b>Average</b>	<b>27764112.4</b>	<b>25307919</b>	<b>19877126.8</b>	<b>72949158.2</b>

##### c) Net Profit (Rs. in '000')

<b>FY</b>	<b>NIBL</b>	<b>NABIL</b>	<b>EBL</b>	<b>CBs</b>
<b>2004/05</b>	232147	518636	170808	921591
<b>2005/06</b>	350537	635263	237291	1223091
<b>2006/07</b>	501399	673960	296409	1471768
<b>2007/08</b>	746,468	696,731	451218	1894417
<b>2008/09</b>	1,031,053	900,619	638732	2570404
<b>Total</b>	<b>2861604</b>	<b>3425209</b>	<b>1794458</b>	<b>8081271</b>

<b>Average</b>	<b>572320.8</b>	<b>685041.8</b>	<b>358891.6</b>	<b>1616254.2</b>
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**d) Total Assets (Rs. in '000')**

<b>FY</b>	<b>NIBL</b>	<b>NABIL</b>	<b>EBL</b>	<b>CBs</b>
<b>2004/05</b>	16274064	16274064	16274064	48822192
<b>2005/06</b>	21330138	21330138	21330138	63990414
<b>2006/07</b>	27590845	27590845	27590845	82772535
<b>2007/08</b>	38873306	38873306	38873306	116619918
<b>2008/09</b>	53040803	53040803	53040803	159122409
<b>Total</b>	<b>157109156</b>	<b>157109156</b>	<b>157109156</b>	<b>471327468</b>
<b>Average</b>	<b>31421831.2</b>	<b>31421831.2</b>	<b>31421831.2</b>	<b>94265493.6</b>

**e) Total Outside Investment (Rs. in '000')**

<b>FY</b>	<b>NIBL</b>	<b>NABIL</b>	<b>EBL</b>	<b>CBs</b>
<b>2004/05</b>	14060244	14855828	9747603	38663675
<b>2005/06</b>	18379076	19101076	14001823	51481975
<b>2006/07</b>	23792106	24491088	18648397	66931591
<b>2007/08</b>	33870681	31304824	23398642	88574147
<b>2008/09</b>	43641017	38416312	29833153	111890482
<b>Total</b>	<b>133743124</b>	<b>128169128</b>	<b>95629618</b>	<b>357541870</b>
<b>Average</b>	<b>26748624.8</b>	<b>25633825.6</b>	<b>19125923.6</b>	<b>71508374</b>

**f) Interest Income on Government Securities (Rs. in '000')**

<b>FY</b>	<b>NIBL</b>	<b>NABIL</b>	<b>EBL</b>	<b>CBs</b>
<b>2004/05</b>	56550	151064	77993	285607
<b>2005/06</b>	82420	130197	97272	309889
<b>2006/07</b>	78493	132229	128566	339288
<b>2007/08</b>	99991	198442	180218	478651
<b>2008/09</b>	140697	269187	289764	699648
<b>Total</b>	<b>458151</b>	<b>881119</b>	<b>773813</b>	<b>2113083</b>
<b>Average</b>	<b>91630.2</b>	<b>176223.8</b>	<b>154762.6</b>	<b>422616.6</b>

**g) Interest Income on Loan and Advances (Rs. in '000')**

<b>FY</b>	<b>NIBL</b>	<b>NABIL</b>	<b>EBL</b>	<b>CBs</b>
<b>2004/05</b>	769195	861830	633625	2264650
<b>2005/06</b>	964689	986231	770826	2721746
<b>2006/07</b>	1302121	1167255	967178	3436554
<b>2007/08</b>	1249470	989764	794889	3034123
<b>2008/09</b>	1569180	1483042	1019080	4071302

<b>Total</b>	<b>5854655</b>	<b>5488122</b>	<b>4185598</b>	<b>15528375</b>
<b>Average</b>	<b>1170931</b>	<b>1097624.4</b>	<b>837119.6</b>	<b>3105675</b>

**h) Return on Government Securities**

<b>FY</b>	<b>NIBL</b>	<b>NABIL</b>	<b>EBL</b>	<b>CBs</b>
<b>2004/05</b>	2.90%	6.26%	3.71%	4%
<b>2005/06</b>	3.27%	5.66%	2.93%	3.80%
<b>2006/07</b>	2.41%	2.75%	3.56%	2.91%
<b>2007/08</b>	3.17%	4.27%	3.74%	3.79%
<b>2008/09</b>	5.56%	7.26%	5.63%	6.15%
<b>Total</b>	<b>17.31%</b>	<b>26.20%</b>	<b>19.57%</b>	<b>21%</b>
<b>Average</b>	<b>3.46%</b>	<b>5.24%</b>	<b>3.91%</b>	<b>4.13%</b>

**i) Return on Loan and Advances**

<b>FY</b>	<b>NIBL</b>	<b>NABIL</b>	<b>EBL</b>	<b>CBs</b>
<b>2004/05</b>	7.74%	8.24%	8.35%	8.09%
<b>2005/06</b>	7.65%	7.78%	7.89%	7.76%
<b>2006/07</b>	7.65%	7.62%	7.10%	7.48%
<b>2007/08</b>	4.54%	4.55%	4.22%	4.45%
<b>2008/09</b>	4.26%	5.30%	4.16%	4.56%
<b>Total</b>	<b>31.84%</b>	<b>33.49%</b>	<b>31.72%</b>	<b>32.34%</b>
<b>Average</b>	<b>6.37%</b>	<b>6.70%</b>	<b>6.34%</b>	<b>6.47%</b>

**j) Investment on Government Securities**

<b>FY</b>	<b>NIBL</b>	<b>NABIL</b>	<b>EBL</b>	<b>CBs</b>
<b>2004/05</b>	1,948,500	2413939	2100289	6,462,728
<b>2005/06</b>	2,522,300	2301463	3322443	8,146,206
<b>2006/07</b>	3,256,400	4808348	3614541	11,679,289
<b>2007/08</b>	3,155,000	4646861	4821684	12,623,545
<b>2008/09</b>	2,531,300	3706102	5146845	11,384,247
<b>Total</b>	<b>13,413,500</b>	<b>17876713</b>	<b>19005802</b>	<b>50,296,015</b>
<b>Average</b>	<b>2682700</b>	<b>3575342.6</b>	<b>3801160.4</b>	<b>10059203</b>

**k) % (percentage) Share of Investment on Government Securities of each Banks**

<b>FY</b>	<b>NIBL</b>	<b>NABIL</b>	<b>EBL</b>
<b>2004/05</b>	30.15	37.35	32.50
<b>2005/06</b>	30.96	28.25	40.79
<b>2006/07</b>	27.88	41.17	30.95
<b>2007/08</b>	24.99	36.81	38.20
<b>2008/09</b>	22.24	32.55	45.21
<b>Total</b>	<b>136.22</b>	<b>176.14</b>	<b>187.64</b>
<b>Mean</b>	<b>27.24</b>	<b>35.23</b>	<b>37.53</b>
<b>S.D.</b>	<b>3.63</b>	<b>4.95</b>	<b>5.89</b>
<b>C.V.</b>	<b>13.34</b>	<b>14.06</b>	<b>15.69</b>

**l) Structure of Investment on Shares and Debentures Held by CBs**

<b>FY</b>	<b>NIBL</b>	<b>NABIL</b>	<b>EBL</b>	<b>CBs</b>
<b>2004/05</b>	17738	27363	19387	64488
<b>2005/06</b>	17738	27363	19387	64488
<b>2006/07</b>	35253	57853	19082	112188
<b>2007/08</b>	59,945	323236	101152	484333
<b>2008/09</b>	64,270	354,930	102034	521234
<b>Total</b>	<b>194944</b>	<b>790745</b>	<b>261042</b>	<b>1246731</b>
<b>Average</b>	<b>38988.8</b>	<b>158149</b>	<b>52208.4</b>	<b>249346.2</b>

**m) % (percentage) Share of Investment on Shares and Debentures Held by CBs**

<b>FY</b>	<b>NIBL</b>	<b>NABIL</b>	<b>EBL</b>
<b>2004/05</b>	27.51	42.43	30.06
<b>2005/06</b>	27.51	42.43	30.06
<b>2006/07</b>	31.42	51.57	17.01
<b>2007/08</b>	12.38	66.74	20.88
<b>2008/09</b>	12.33	68.09	19.58
<b>Total</b>	<b>111.14</b>	<b>271.26</b>	<b>117.60</b>
<b>Mean</b>	<b>22.23</b>	<b>54.25</b>	<b>23.52</b>
<b>S.D.</b>	<b>9.16</b>	<b>12.59</b>	<b>6.13</b>
<b>C.V.</b>	<b>41.19</b>	<b>23.21</b>	<b>26.08</b>

**n) Structure of Investment on Loans and Advances**

<b>FY</b>	<b>NIBL</b>	<b>NABIL</b>	<b>EBL</b>	<b>CBs</b>
<b>2004/05</b>	9933084	10465266	7589332	27987682
<b>2005/06</b>	12613561	12681666	9770919	35066146
<b>2006/07</b>	17010464	15305910	13623689	45940063
<b>2007/08</b>	27,529,304	21,759,460	18836431	68125195
<b>2008/09</b>	36,827,157	27,999,012	24469555	89295724
<b>Total</b>	<b>103913570</b>	<b>88211314</b>	<b>74289926</b>	<b>266414810</b>
<b>Average</b>	<b>20782714</b>	<b>17642262.8</b>	<b>14857985.2</b>	<b>53282962</b>

**o) % (percentage) Share of Investment on Loans and Advances**

<b>FY</b>	<b>NIBL</b>	<b>NABIL</b>	<b>EBL</b>
<b>2004/05</b>	35.49	37.39	27.12
<b>2005/06</b>	35.97	36.16	27.86
<b>2006/07</b>	37.03	33.32	29.66
<b>2007/08</b>	40.41	31.94	27.65
<b>2008/09</b>	41.24	31.36	27.40
<b>Total</b>	<b>190.14</b>	<b>170.17</b>	<b>139.69</b>
<b>Mean</b>	<b>38.03</b>	<b>34.03</b>	<b>27.94</b>
<b>S.D.</b>	<b>2.22</b>	<b>2.51</b>	<b>1.10</b>
<b>C.V.</b>	<b>5.83</b>	<b>7.38</b>	<b>3.94</b>



## Appendix 2

### a) Investment Portfolio Analysis (%)

Fiscal Year	2004/05	2005/06	2006/07	2007/08	2008/09	Total	Mean
<b>NIBL</b>							
Govt. Securities	49.52	44.46	49.96	45.86	34.20	<b>224.00</b>	<b>44.80</b>
Share & Deb.	50.48	55.54	50.04	54.14	65.80	<b>276.00</b>	<b>55.20</b>
NRB Bond	0.00	0.00	0.00	0.00	0.00	<b>0.00</b>	<b>0.00</b>
<b>NABIL</b>							
Govt. Securities	56.53	38.42	59.86	35.00	34.00	<b>223.81</b>	<b>44.76</b>
Share & Deb.	43.47	61.58	40.14	65.00	66.00	<b>276.19</b>	<b>55.24</b>
NRB Bond	0.00	0.00	0.00	0.00	0.00	<b>0.00</b>	<b>0.00</b>
<b>EBL</b>							
Govt. Securities	98.65	84.46	95.82	95.00	87.00	<b>460.93</b>	<b>92.19</b>
Share & Deb.	1.35	15.54	4.18	5.00	3.00	<b>29.07</b>	<b>5.81</b>
NRB Bond	0.00	0.00	0.00	0.00	0.00	<b>0.00</b>	<b>0.00</b>

### b) Loan and Advances Portfolio Analysis (%)

	2004/05	2005/06	2006/07	2007/08	2008/09	Total	Mean
<b>NIBL</b>							
Govt. Entp.	2.58	0.90	3.47	0.80	4.55	<b>12.30</b>	<b>2.46</b>
Pvt. Sector	93.74	95.83	94.20	96.33	93.22	<b>473.32</b>	<b>94.66</b>
For. Bill P&D	3.68	3.27	2.33	2.87	2.23	<b>14.38</b>	<b>2.88</b>
<b>NABIL</b>							<b>0.00</b>
Govt. Entp.	0.65	0.64	0.47	0.65	0.70	<b>3.11</b>	<b>0.62</b>
Pvt. Sector	97.49	98.11	97.91	97.39	97.31	<b>488.21</b>	<b>97.64</b>
For. Bill P&D	1.86	1.25	1.62	1.96	1.99	<b>8.68</b>	<b>1.74</b>
<b>EBL</b>							
Govt. Entp.	4.23	2.72	0.38	1.96	3.55	<b>12.84</b>	<b>2.57</b>
Pvt. Sector	94.47	95.63	98.23	95.48	94.34	<b>478.15</b>	<b>95.63</b>
For. Bill P&D	1.30	1.65	1.39	2.55	2.10	<b>8.99</b>	<b>1.80</b>

### Appendix 3

#### Calculation of Correlation between Various Investment Securities of CBs

Year	Return on Government Securities ( $R_g$ )	Return on Share and Debentures ( $R_s$ )	Return on Loan and Advances ( $R_l$ )
2004/05	4	26.91	8.09
2005/06	3.8	56.07	7.76
2006/07	2.91	90.06	7.48
2007/08	3.79	-4.21	4.45
2008/09	6.15	25.00	4.56

#### Correlation Coefficient between $R_g$ and $R_s$

		$R_g$	$R_s$
$R_g$	Pearson Correlation	1	-.46*
	Sig. (2-tailed)	.	.736
	N	5	5
$R_s$	Pearson Correlation	-.46	1
	Sig. (2-tailed)	.736	.
	N	5	5

\* Correlation is significant at the 0.05 level (2-tailed).

#### Correlation Coefficient between $R_s$ and $R_l$

		$R_s$	$R_l$
$R_s$	Pearson Correlation	1	.65
	Sig. (2-tailed)	.5	.233
	N		5
$R_l$	Pearson Correlation	.65	1
	Sig. (2-tailed)	.233	.
	N	5	5

#### Correlation Coefficient between $R_g$ and $R_l$

		$R_g$	$R_l$
$R_g$	Pearson Correlation	1	-.58
	Sig. (2-tailed)	.	.039
	N	5	5
$R_l$	Pearson Correlation	-.58	1
	Sig. (2-tailed)	.039	.
	N	5	5

## Appendix 4

### A Sample Calculation of Straight Line Trend

Let straight line trend between dependent variables (total investment)  $y$  and independent variable (time)  $x$  be

$$Y = a + bx$$

Where,

$a$  =  $y$  intercept

$b$  = slope of the trend line or amount of change that comes in  $y$  for a unit change in  $x$ .

for finding value of  $a$  and  $b$ , we have

$$a \times \frac{y}{N} \text{ and } b \times \frac{xy}{x^2} \quad \text{it is only when } \sum x = 0$$

Deviation are taken from middle of the years

Trend line by Least Square method

#### Trend for Total Investment of CBs (Rs. in million)

Year(t)	Total Investment of CBs (Y)	$x = t-2006.5$	$xy$	$x^2$
2004	9568.08	-2.5	-23920.2	6.25
2005	10332.779	-1.5	-15499.1685	2.25
2006	15984.847	-0.5	-7992.4235	0.25
2007	20436.111	0.5	10218.0555	0.25
2008	21873.351	1.5	32810.0265	2.25
2009	24174.67	2.5	60436.675	6.25
<b>Total</b>	<b>102369.838</b>	<b>0</b>	<b>56052.965</b>	<b>17.5</b>

$$x=0$$

$$a = \frac{y}{n} = 102369.838/6 = 17061.64$$

$$b = \frac{xy}{x^2} = 56052.965/17.5 = 3203.03$$

Hence, the straight line trend for total investment of CBs be;

$$Y_c = a + bx$$

$$= 17061.64 + 3203.03x$$

**Trend for Total Deposit of CBs (Rs. in million)**

Year(t)	Total Investment of CBs (Y)	$x = t - 2006.5$	$xy$	$x^2$
2004	21353.56	-2.5	-53383.9	6.25
2005	38938.874	-1.5	-58408.311	2.25
2006	52077.15	-0.5	-26038.575	0.25
2007	66017.398	0.5	33008.699	0.25
2008	90343.068	1.5	135514.602	2.25
2009	117369.301	2.5	293423.2525	6.25
<b>Total</b>	<b>386099.351</b>	<b>0</b>	<b>324115.7675</b>	<b>17.5</b>

$$x=0$$

$$a = y/n = 386099.351/6 = 64349.89$$

$$b = xy / x^2 = 324115.7675/17.5 = 18520.9$$

Hence, the straight line trend for total deposit of CBs be;

$$Y_c = a + bx$$

$$= 664349.89 + 18520.9x$$

**Trend for Investment on Govt. Securities of CBs (Rs. in million)**

Year(t)	Total Investment of CBs (Y)	$x = t - 2006.5$	$xy$	$x^2$
2004	5345.672	-2.5	-13364.18	6.25
2005	6462.728	-1.5	-9694.092	2.25
2006	8146.206	-0.5	-4073.103	0.25
2007	11679.289	0.5	5839.6445	0.25
2008	12623.545	1.5	18935.3175	2.25
2009	11384.247	2.5	28460.6175	6.25
<b>Total</b>	<b>55641.687</b>	<b>0</b>	<b>26104.2045</b>	<b>17.5</b>

$$x=0$$

$$a = y/n = 55641.687/6 = 9273.61$$

$$b = xy / x^2 = 26104.2045/17.5 = 1491.67$$

Hence, the straight line trend for Investment on Govt. Securities of CBs be;

$$Y_c = a + bx$$

$$= 9273.61 + 1491.67x$$

**Trend for Investment on Share and Debentures of CBs (Rs. in million)**

Year(t)	Total Investment of CBs (Y)	x = t-2006.5	xy	x <sup>2</sup>
2004	57.1	-2.5	-142.75	6.25
2005	64.488	-1.5	-96.732	2.25
2006	64.488	-0.5	-32.244	0.25
2007	112.188	0.5	56.094	0.25
2008	484.333	1.5	726.4995	2.25
2009	521.234	2.5	1303.085	6.25
<b>Total</b>	<b>1303.831</b>	<b>0</b>	<b>1813.9525</b>	<b>17.5</b>

x=0

$$a = y/n = 1303.831/6 = 217.31$$

$$b = xy / x^2 = 1813.9525/17.5 = 103.65$$

Hence, the straight line trend for Investment on Share and Debentures of CBs

be;

$$Y_c = a + bx$$

$$= 217.31 + 103.65x$$

**Trend for Investment on Loan & Advances of CBs (Rs. in million)**

Year(t)	Total Investment of CBs (Y)	x = t-2006.5	xy	x <sup>2</sup>
2004	22666.65	-2.5	-56666.625	6.25
2005	27987.682	-1.5	-41981.523	2.25
2006	35066.146	-0.5	-17533.073	0.25
2007	45940.063	0.5	22970.0315	0.25
2008	68125.195	1.5	102187.7925	2.25
2009	89295.724	2.5	223239.31	6.25
<b>Total</b>	<b>289081.46</b>	<b>0</b>	<b>232215.913</b>	<b>17.5</b>

x=0

$$a = y/n = 289081.46/6 = 48180.24$$

$$b = xy / x^2 = 232215.913/17.5/17.5 = 13269.48$$

Hence, the straight line trend for Investment on Loan and Advances of CBs be;

$$Y_c = a + bx$$

$$= 48180.24 + 13269.48x$$

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