

CHAPTER – I

INTRODUCTION

1.1 Background of the Study

The economy is considered as the backbone of a nation. It depends on the uses of available resources in efficient way. The proper utilization of assets appreciates in well position of individual and country as well. To mobilize available resources, there should be proper planning, efficient management, far sighted strategy, good financial management and up-to-date information. Integrated and speedy development of the country is possible only when competitive banking and financial service reach at every nook and corners of the country. To grow financial activities, it requires the banking habit of the community as well as potentially strong lending opportunities. Simply, Bank is an institution whose main function is to accept deposit and invest it. Bank collects money from public by providing sound interest and can earn profit by lending it to mainly business organizations, industrial and agricultural sectors and so on. So, we can say that the main task of commercial banks is to mobilize idle resources in productive areas by collecting it from scattered sources and generating profit. Banking plays significant role in the economic development of country. Banks role as intermediaries, channeling between saving and investment and fulfilling the credit needs of customer as well as investment requirement of savers. It is clear that efficient and stable banking systems are crucial for an orderly economic growth. The pace of development of a country largely depends on the level of financial development.

Successful formulation of investment policy and its proper utilization or implementation is the prime requisite for the development of performance of banks and other financial institutions . Good Investment policy has positive impact on economic development of the country and vice-versa. Healthy development of any banks depends heavily upon its investment policy. A sound and viable investment policy is one of the major effective tools for the economy to attain economic objectives directed towards the acceleration of the pace of development. Bank should attract its customer by implementing best and

competitive investment policy. It helps to increase the quality of banking services as well as volume of quality deposits, loan and investment. Investment management of bank is operated as per investment policy adopted by bank. The best investment policy helps minimize risk, maximize profit and increase efficiency of investment operation.

Economic development is an important factor for development of any country. Nepal is a least developed country; economic growth and the development of economic sector is essential for the entire development of the country. Capital formation and its proper utilization play a paramount role for rapid economic development. A key factor in the development of the country is the mobilization of domestic resources and their investment for productive use to various sectors. Investment portfolio is such a tool that helps for proper utilization of resources. A portfolio is usually defined as a combination of assets. It is a collection of securities. Portfolio means the lists of holding in securities owned by an investor or institution. Portfolio theory deals with the selection of optimal portfolios: that is portfolio provides the highest possible return for any specified degree of risk or the lowest possible risk for any specified return. Portfolio theory has been developed for the financial assets. Thus making investment from the 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.

Investment portfolio is one in which the income or profit of the bank directly depend upon . Commercial banks formulate sound investment policies, which helps maximize quality and quantity of investment and eventually to the economic growth of a country. Commercial banks must follow the rules and regulation as well as directions issued by central bank. The loan provided by commercial bank is guided by several principles such as length of time, their purpose, profitability and safety. These fundamental principles of commercial bank's investment are fully considered while making investment portfolio. Investment decision is one of the major decision functions of financial management.

Finally, Commercial banks and financial institutions have been supposed as the backbone of the Nepalese economy at present. It plays vital role in capital

formulation, proper utilization of collected fund, providing various type of banking services. Mobilization of saving is most essential for the economic growth of the country. Commercial banks are the mediator of mobilizing such savings. Their active performance makes them able to mobilize such fund in a proper way. Development of the country is directly related to the volume of investment in productive sectors. In regard to Nepal, there are several commercial banks operating in different places.

List of licensed commercial Banks are given as follow:

S.N.	Commercial Banks	Operation Year (A.D.)	Head Office
1.	Nepal Bank Ltd.	1937/11/15	Kathmandu
2.	Rastriya Banijya Bank Ltd.	1966/01/23	Kathmandu
3.	NABIL Bank Ltd.	1984/07/16	Kathmandu
4.	Nepal investment Bank Ltd.	1986/02/27	Kathmandu
5.	Standard-Chartered Bank Nepal Ltd.	1987/01/30	Kathmandu
6.	Himalayan Bank Ltd.	1993/01/18	Kathmandu
7.	Nepal SBI Bank Ltd.	1993/07/07	Kathmandu
8.	Nepal Bangladesh Bank Ltd.	1994/06/05	Kathmandu
9.	Everest Bank Ltd.	1994/10/18	Kathmandu
10.	Bank of Kathmandu Ltd.	1995/03/12	Kathmandu
11.	Nepal Credit and Commerce Bank Ltd.	1996/10/14	Siddharthanagar
12.	Lumbani Bank Ltd.	1998/07/17	Narayangadh
13.	Nepal Industry and Commercial Bank Ltd.	1998/07/21	Biratnagar
14.	Machhapuchhre Bank Ltd.	2000/10/03	Pokhara
15.	Kumari Bank Ltd.	2001/04/03	Kathmandu
16.	Laxmi Bank Ltd.	2002/04/03	Birgunj
17.	Siddhartha Bank Ltd.	2002/12/24	Kathmandu
18.	Agricultural Development Bank Ltd.	1968/01/02	Kathmandu
19.	Global Bank Ltd.	2007/01/02	Birgunj, Parsa
20.	Citizen Bank Ltd.	2007/06/21	Kathmandu
21.	Prime Commercial Bank Ltd	2007/09/24	Kathmandu
22.	Sunrise Bank Ltd.	2007/10/12	Kathmandu
23.	Bank of Asia Ltd	2007/10/12	Kathmandu
24.	DCBL	2008/05/25	Kathmandu
25.	NMB	2008/06/05	Kathmandu
26.	Kist Bank Ltd	2009/05/07	Kathmandu
27.	Janata Bank Ltd	2010/04/05	Kathmandu
28.	Mega Bank Nepal Ltd	2010/09/17	Kathmandu
29.	Commerz and Trust Bank Nepal Ltd	2010/09/29	Kathmandu
30.	Civil Bank Limited	2011	Kathmandu
31.	Century Bank Limited	2011	Kathmandu

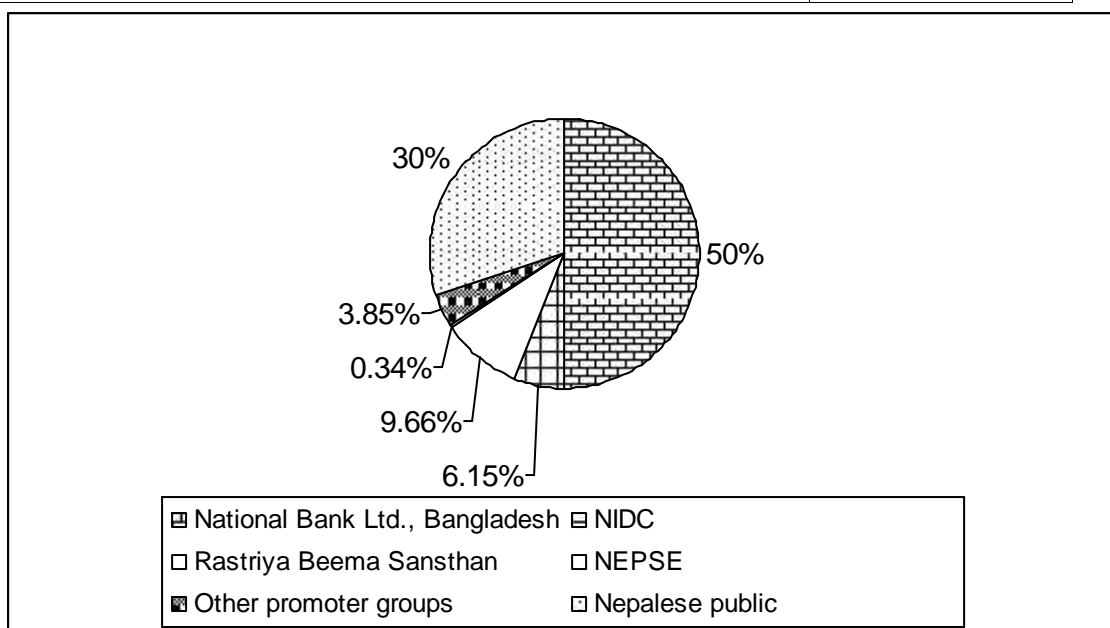
Sources: NRB, Mid-July, 2010.

1.2 Brief Profile to Sample Commercial Banks:

NABIL BANK LIMITED

Nabil Bank Ltd., the first joint venture bank of Nepal, was established in 1984, under the Company Act 1964. Its equity configuration showed that Dubai Bank Ltd (DBL) owned 50% equity partner which was transferred to Emirates Bank International Ltd. Later on, Emirates Bank International Ltd, Dubai sold its entire 50% holding to National Bank Ltd, Bangladesh. So the current configuration is given as follows:

Name of shareholders	Ownership
National Bank Ltd., Bangladesh	50%
Nepal Industrial Development Corporation (NIDC)	6.15%
Rastriya Beema Sansthan	9.67%
Nepal Stock Exchange (NEPSE)	0.34%
Nepalese Public	30%
Other promoter groups	3.85%



Source: Annual report, 2009/10.

Nabil was incorporated with the objective of extending international standard modern banking services to various sectors of the society. Pursuing its objective, Nabil provides a full range of commercial banking services through its 47 points

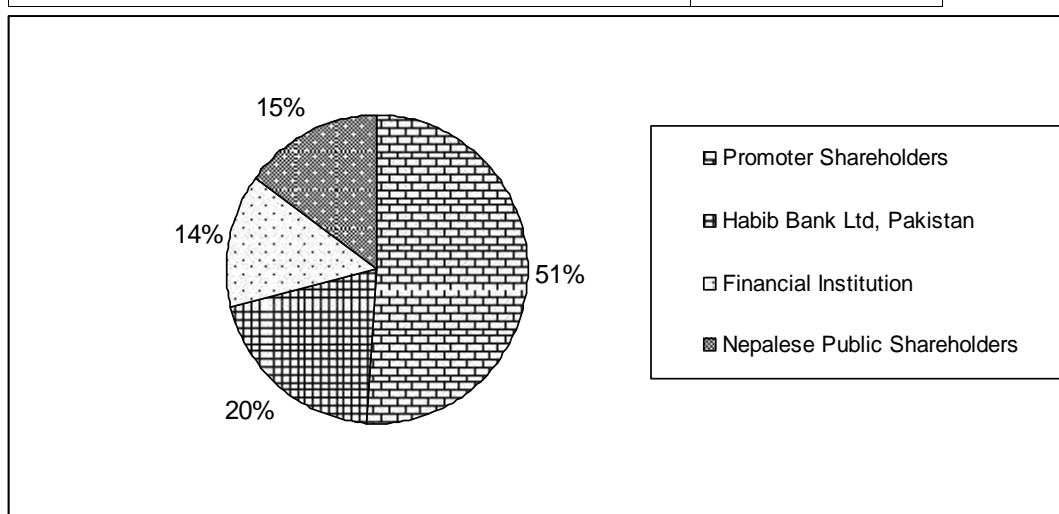
of representation across the kingdom and over 170 reputed correspondent banks across the globe. Besides banking, the other facilities provided are,

-) Credit cards, Debit Cards, Prepaid Cards
-) International trade and bank guarantee
-) Tele banking
-) Society for worldwide inter bank financial telecommunications (SWIFT)
-) Safe deposit locker
-) Western Union Money Transfer
-) ATM (Automated Teller Machine)
-) E-Banking

HIMALAYAN BANK LIMITED

Himalayan Bank was established in 1993 in joint venture with Habib Bank Limited of Pakistan. Despite the cut-throat competition in the Nepalese Banking sector, Himalayan Bank has been able to maintain a leading role in the primary banking activities- Loans and Deposits. Its share subscription is shown as follows:

Name of shareholders	Ownership
Promoter Shareholders	51%
Habib Bank Ltd, Pakistan	20%
Financial Institution	14%
Nepalese Public Shareholders	15%



Source: Annual report, 2009/10.

Besides banking, the other facilities provided by the bank are as follows:

-) Credit cards
-) Any branch banking
-) Sms Banking
-) Internet Banking
-) ATM (Automated Teller Machine)
-) Tele banking
-) Himal Remit
-) Safe Deposit Locker

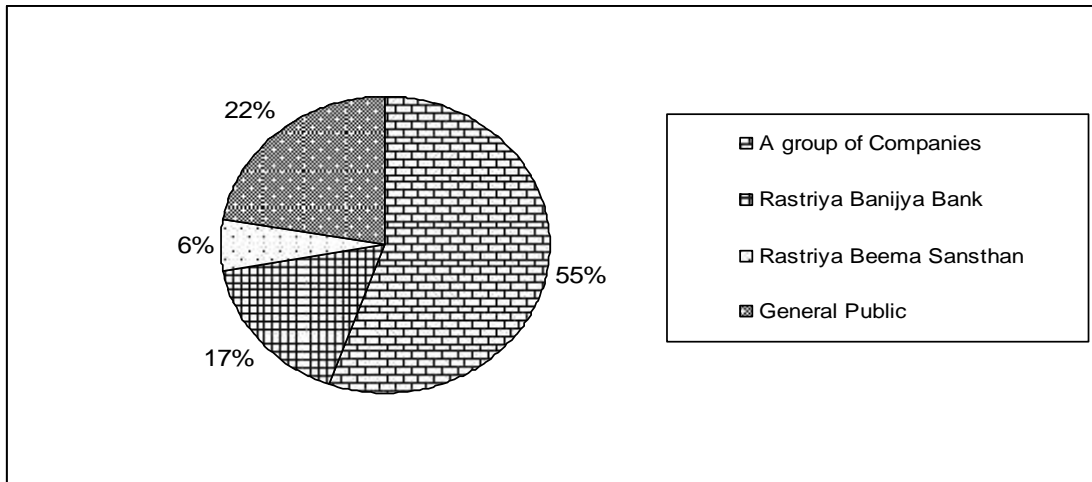
The bank has been expanding services by establishing branches both in rural as well as in urban areas.

NEPAL INVESTMENT BANK LIMITED

Nepal Investment Bank Ltd. (NIBL), previously Nepal Indosuez Bank Ltd., was established in 1986 as a joint venture between Nepalese and French partners. The French partner (holding 50% of the capital of NIBL) was Credit Agricole Indosuez, a subsidiary of one the largest banking group in the world.

With the decision of Credit Agricole Indosuez to divest, a group of companies comprising of bankers, professionals, industrialists and businessmen, has acquired on April 2002 the 50% shareholding of Credit Agricole Indosuez in Nepal Indosuez bank Ltd. The name of the bank has been changed to Nepal Investment Bank Ltd. upon approval of bank's Annual General Meeting, Nepal Rastra Bank and Company Registrar's office. The shareholding structure comprises of:

Name of shareholders	Ownership
A group of Companies	50%
Rastriya Banijya Bank	15%
Rastriya Beema Sansthan	5%
General Public	20%



Source: Annual report, 2009/10.

Besides Banking the other facilities provided by the bank are as follows:

-) ATM with any branch banking
-) Corporate Banking
-) Retail Banking
-) NTC's mobile bill payment
-) Remittance
-) eBanking
-) Sms Banking
-) 365 days banking
-) Debit Card and Credit card

1.3 Statement of the Problems

After the economy was liberalized, Nepalese banking industry boomed until recent past. However, the recent economic slowdown has started affecting the performance of commercial banks. The effect of slowdown is expected to be more in the forthcoming years. This can lead to an increase in the intensity of competition in the banking industry. It has also been facing difficulties in furnishing their loan and advances in profitable sectors. Because of economic recession, only few businesses are able to survive and other which are less competitive are backing out from the market. In such a situation, banks have to be on a safer side, invest their surplus fund in the secured securities, which yield lower rate of return.

Since there is uncertainty of profit which creates risk, every commercial banks has to diversify their investment to minimize risk. However, to maximize profit banks have to invest their sources in different productive sector of the investment alternatives.

Nepalese commercial banks, at present, do not seem to be capable to invest their fund in more profitable sectors where there is also risk. They are found more interested to invest in less risky and liquid sector such as Treasury Bills or Government Securities. This is due to weak investment policy of commercial banks and lack of Portfolio Management. Nepalese commercial banks have not formulated their investment policy in an organized manner. They have no consideration towards portfolio optimization. They just rely upon the instructions and guidelines of Nepal Rastra Bank. They do not have their own clear vision towards investment portfolio. They do not seem to pay attention towards proper matching of deposit and investment portfolio, which is creating financial problem in commercial banks

Most of the commercial banks invest their funds in limited area to achieve highest amount of profit. With the prevailing economic condition in the country, there has been lower investment in agriculture, manufacturing, industrial and other productive sectors, which is not satisfactory to meet the economic growth of the present period. They hesitate to invest in long-term projects. They have become risk averters. Therefore, they follow conservative loan policy.

Further Portfolio Management activities of Nepalese Commercial Banks are in developing stage. The reason behind not using such activities by commercial banks may be due to unawareness about portfolio management and its usefulness, hesitation of taking risk and lack of proper techniques to run such activities in the best and successful manner.

In such situation, thus, this study mainly concerns with the portfolio management of Nepalese commercial banks. This study seeks to find answers to the following questions:

-) How far the commercial banks have managed portfolio investment?
-) What is the risk and return of commercial banks?
-) How do commercial banks analyze the trend of risk and return using portfolio concept?
-) What is the trend of investment in different assets by commercial banks?

1.4 Objectives of the Study

The objective of this study is to identify the situation of portfolio management of Nepalese commercial banks. The specific objectives of the study are as follows.

-) To analyze the existing situation of portfolio management of Nepalese commercial banks.
-) To analyze risk and return of commercial banks.
-) To analyze the portfolio return and risk of the sample commercial banks using portfolio concept.
-) To examine the trend of investment in loan and advances and investment in total deposit.
-) To provide recommendations and suggestions based on the analysis of data for better portfolio management.

1.5 Importance of the Study

The investment analysis of any organization gives a picture of 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 upon the successful investment of its available resource into the profitable sector. Successful formulation and effective implementation of investment policy is the prime requisition for the successful performance of any organization. This is a research-work in the study of portfolio management of commercial banks of Nepal. This study is significant in following ways:

-) It examines the existing situation of portfolio management of Nepalese commercial banks.
-) It evaluates financial performance of selected commercial banks of Nepal.
-) It analyzes risk and return ratio of commercial banks.

-) It is useful to policy formulators, shareholders and also for teachers, students of the related subjects particularly those in management, chartered accountancy and financial institutions.
-) It is important for interested outside parties such as investors, customers (Depositors, loan takers as well as other type of clients), competitors and personnel of the banks, stockholders, dealers and market makers.
-) It is important to management body of these banks for the evaluation of the performance of their banks and in comparison to other banks.
-) Last but not least, it provides the literature to the researcher who wants to carry on future research in this field.

1.6 Limitation of the Study

This study is not a comprehensive study. It is conducted for the partial fulfillment of degree of MBS. So there are many deficiencies found in this study due to various limitations. Some of the them are as follows:

-) The study has basically been concerned with portfolio management of commercial banks. It does not consider other financial aspects of the banks.
-) The study has mainly been based on secondary data. Consequently the result depends on the reliability of secondary data. In some cases primary data has been used.
-) The study has only covered a period of eight fiscal years, i.e.2002/03 to 2009/10.
-) Some of the data have been taken on verbal information of the management of the company. The validity and credibility of the data depend on the trustworthiness.
-) The study concerns only three banks among the various commercial banks in Nepal. They are: Nabil Bank Limited, Himalayan Bank Limited and Nepal Investment Bank limited.

1.7 Organization of the Study

The study has been divided into 5 chapters.

Chapter 1 Introduction: It introduces background of study, statement of problem, objective of the study, importance of the study and limitation of the study.

Chapter 2 Review of Literature: It includes pilot studies and textual concepts with regard to conceptual framework on investment and fund mobilization.

Chapter 3 Research Methodology: This chapter includes research design, population & sample of data, sources of data, data collection techniques and data analysis tools.

Chapter 4 Data Analysis and Interpretation of Data: It analyzes the data and interprets the results using different financial and statistical tools.

Chapter 5 Summary, Conclusion and Recommendation: It summarizes the result of analysis and suggestive framework.

Besides these, bibliography and appendices have also been presented at the end of the thesis.

CHAPTER – II

REVIEW OF LITERATURE

This chapter deals with the exploration of the background to the work and a comprehensive review of recent and relevant literature. In this regard, an effort has been made to grasp the knowledge and information that is available from libraries, document collection centers, other information managing bureaus and concerned commercial banks. This chapter helps take an adequate feedback to broaden the information base and inputs to the study. The conceptual framework given by different researchers, authors, practitioners, scholars is reviewed from research papers, books, annual reports, articles.

2.1 Conceptual Review

A commercial bank is a business organization that receives and holds deposits of funds from others, provides loans or extends credits and transfers funds by written order of deposits. Commercial Bank Act of Nepal (1974) has defined that “A commercial bank is such, which exchanges money, deposits money, accepts deposits, grant loans and performs commercial banking functions and which is not a bank meant for co-operative, agriculture and industries or for such specific purpose.”

American Institute of Banking (1972) has defined, “Commercial bank as a corporation, which accepts demand deposits subject to check and makes short-term loans to business enterprise, regardless of the scope of its other services”. This act has laid emphasis on the functions of commercial bank while defining it. Commercial banks provide short – term debts necessary for trade and commerce. They take deposits from the public, and grant loans in different forms. They purchase discount bills and promissory notes and exchange foreign currencies. They discharge various functions on behalf of their customers and are paid for their services.

2.1.1 Commercial Bank

The commercial banks are those banks which put 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 pay back undemand or after a certain period. They provide loans and advances from the money, which they receive through deposits. Apart from financing, they also render services like collection of bills and cheques, locker facilities for the valuable goods, financial advise etc to their customers.

Commercial banks, as financial institutions, perform a number of internal functions. Among them, providing credit is considered as most the important one. According to of H.D. Crosse (1963), “Commercial banks are very risky one. For this, commercial banks have to pay due consideration while formulating investment policy regarding loan investment. Investment policy is one facet of the overall spectrum of policies that guide banks investment operations.”

Functions of the Commercial Bank

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

1. Accepting deposits

The commercial banks accept deposits in three categories namely current, savings 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 deposits.

- 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.

2. 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 moveable and immovable properties. Banks provides four types of loan mainly, overdrafts, direct loans, cash credit and discounting bills of exchange.

3. Agency services

The commercial bank undertakes the payment of subscriptions, insurance premium, rent etc. it collects cheques, bills, dividends, interest, pensions etc on behalf of 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.

4. 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 the loans, the bank creates credit or deposit.

5. Others functions

Other functions of commercial banks can be explained as follows:

a. Assist in Foreign

The commercial bank discounts the bills of exchange drawn by Nepalese exporters on the foreign importers and enables the exporters to receive money in the native currency. Similarly, the bank also accepts the bills drawn by foreign exporters.

b. Offer Security brokerage services

Many commercial banks have begun to market security brokerage services offering customers the opportunity to buy stocks, bonds and other securities without having to go to a Security dealer or broker.

c. Financial Advising

Many banks offer a wide range of financial advisory services from helping in financing planning and consulting business managers.

2.1.3 Concept of Portfolio

A Portfolio is the holding of a collection of investment. For some individuals and institutions, it is the entire holdings consisting of both assets and liabilities. An investment held as part of a portfolio is less risky than the same investment held individually. Therefore, every individuals and institutions should manage the portfolio by which the individuals and institutions get maximum return. The concept of portfolio comes from "*not putting all the eggs in one basket*".

2.1.4 Concept of Portfolio Management

The management of portfolio is called the portfolio management. Portfolio theory evaluates the reduction of non-systematic or diversifiable risks through the selection of securities or other instruments in to a composite holding or efficient portfolio. This efficiency means that a portfolio would offer lower risks or more stable returns for a targeted return level. Instruments that have independent returns lower unsystematic risks. In addition, instruments that are inversely related on a return basis reduce the diversifiable risks.

2.1.5 Assumption of Portfolio Theory

Portfolio is the combination of two or more than two securities. Portfolio theory is a defensive technique, which helps minimize the risk. The assumptions of portfolio theory are as follows: -

- i) Investors are risk averse which some of them are risk taker

“Alternatively, an individual is said to be risk averse if the utility of expected wealth is greater than the expected utility of wealth i.e., if

$$U [E (W)] > E [U (W)] \quad \longrightarrow \quad \text{Risk Aversion}$$

If the utility if expected wealth is equal to expected utility of wealth then investor is said to be risk neutral, that is

$U [E (W)] < E [U (W)]$ —————→ Risk Neutrality

Finally, an investor is said to be risk seeking if the utility of expected wealth is less than expected utility of wealth i.e.

$U [E (W)] > E [U (W)]$ —————→ Risk Seeking.” (Peterson & Lewis, 2001, p470)

- ii) Investor adhere to the principle of dominance that means investors prefer the asset which has high return for any given level of risk than that of low return, they prefer the asset which has low risk for any given level of return that the asset which has high risk.
- iii) The risk of returns from an asset or security is the variability of returns from the average value of returns, which is the standard deviation or variance.
- iv) The return from an asset or security is the expected return that is the weighted average value returns, weights being the probability distribution returns for some period.
- v) An investor makes investment (portfolio) decisions purely on the basis of risk and return of that asset or portfolio. That is, the utility function (or the indifference) of the investor is based on risk and return.

2.1.6 Meaning of Expected Return on Portfolio

The expected return of a portfolio is simply a weighted average of the expected returns of the securities comprising the portfolio. The weights are the proportion of total funds invested in each security and the sum of weights equal to 100%. A portfolio weight can be either positive or negative. A positive weight means that we are buying the security; we also refer to this as taking a long position in the security. The opposite of taking a long position in securities is taking a short position, or selling short. In such case the portfolio is negative due to the negative numerator.

The formula for calculating the portfolio weights is:

$$W_A = \frac{\text{Dollar amount of security 'A' bought}}{\text{Your total equity investment in the portfolio}}$$

The formula for calculating the return on portfolio consisting of two securities is:

$$E [R_p] = W [E (R_X) + (1 - W_X) E (R_Y)]$$

Where,

$E [R_p]$ = Expected return on portfolio

$E [R_X]$ = Expected return on security 'X'

$E [R_Y]$ = Expected return on security 'Y'

W_X = Weight of security 'X'

$1-W_X$ = Weight of security 'Y'

The formula for calculating the return on portfolio consisting more than two securities is:

$$E (R_p) = \sum_{j=1}^n W_j E(R_j)$$

Where,

W_j = Proportion invested in security 'j'

$E (R_j)$ = Expected return for security 'j'

n = Total number of different securities in the portfolio

By investing in a portfolio, the investor can earn the average return of the securities comprising the portfolio and he also assumes the minimum risk on such portfolio.

I.M. Pandey wrote about the expected return on a portfolio is “the weighted expected return on each security in the portfolio with weights being equal to the proportion of investment in each security.”(Pandey, 1992, P383)

The bottom line of portfolio is that the diversification reduces risk (standard deviation).

This concept is presented in figure below:

Figure No. 2.1

Graphical presentation showing the diversification that reduces risk

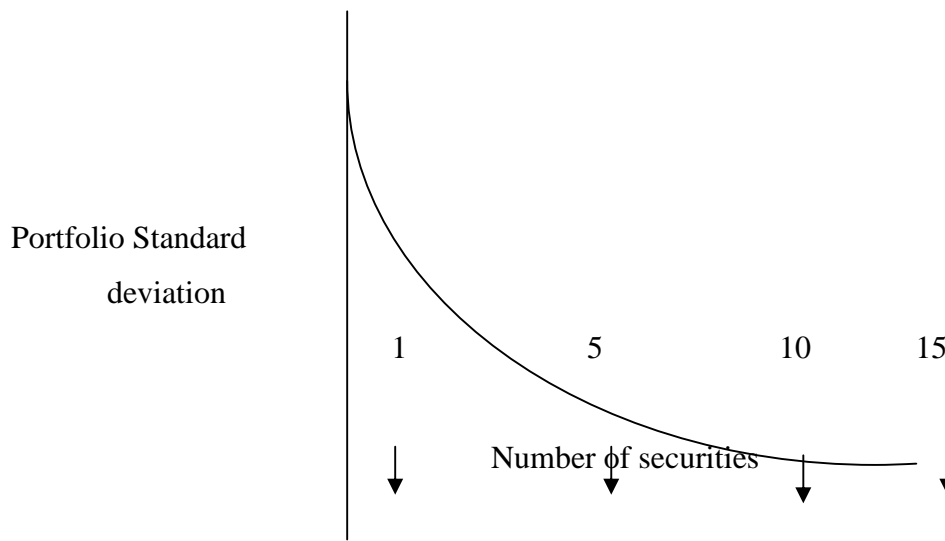


Figure showing that diversification reduces risk (standard deviation) rapidly at first, then more slowly (Brealy & Myers, 2005, P167).

2.1.7 Risk on Portfolio

It is hard to determine portfolio risk. The reason is Co-variability between returns of securities combined in the portfolio. Risk of a portfolio is not the weighted average of the standard deviation of specific securities comprising that portfolio. It rather depends upon the co-movement (interactive risk) among the security as well.

2.1.7. a) Meaning of Covariance in Context of Portfolio Risk

The interactive risk is measured by covariance and correlation. The correlation is the statistical measure of the degree to which two variables such as securities returns move together.

“The covariance is a useful means of measuring how two random variables react to events.”(Beirmen & Smidth,1996,P75)

If X and Y are two securities, then the covariance can be calculated as:

If probability is given:

$$\text{Cov}(x,y) = \sum_{i=1}^n [R_x - E(R_x)] [R_y - E(R_y)] P_i$$

In case of historical return:

$$\text{Cov}(x,y) = \frac{\sum_{i=1}^n [R_x - E(R_x)] [R_y - E(R_y)]}{n}$$

Where,

$\text{Cov}(x,y)$ = Covariance of returns of securities 'X' and 'Y'

R_x, R_y = Return of securities 'x' and 'y'

$E(R_x), E(R_y)$ = Expected return of 'x' and 'y'

P_i = Probability of occurrence of the state of economy

Thus, the covariance can also be calculated as:

$$\text{Cov}(x,y) = \sigma_x \sigma_y \rho_{xy}$$

Where,

ρ_{xy} = Correlation coefficient between security 'x' and 'y'

σ_x = Standard deviation of security 'x'

σ_y = Standard deviation of security 'y'

2.1.7. b) Meaning of Correlation in Context of Portfolio

The correlation coefficient is standardized statistical measure of the linear relationship between two variables. It ranges from -1 to +1 i.e. perfect negative correlation and perfect positive correlation. The risk can be eliminated if the correlation between securities is negative.

Correlation can be mathematically calculated as:

$$\rho_{xy} = \frac{\text{Cov}(x, y)}{\sigma_x \sigma_y}$$

The standard deviation of portfolio return for two-asset case can be found by using the formula given below:

$$\sigma_p = \sqrt{W_x^2 \sigma_x^2 + (1 - W_x)^2 \sigma_y^2 + 2 W_x (1 - W_x) \rho_{xy} \sigma_x \sigma_y}$$

Where,

W_x = Proportion of portfolio invested in security 'X'

$1 - W_x$ = Proportion of portfolio invested in security 'Y'

σ_p = standard deviation of portfolio

σ_x^2 = Variance of return of security 'X'

σ_y^2 = Variance of return of security 'Y'

$\text{Cov}(x, y)$ = Covariance of return between security 'X' and 'Y'

Here, the relationship of covariance with standard deviation and correlation has been shown:

$$\text{Cov}(x, y) = \rho_{xy} \sigma_x \sigma_y$$

The standard deviation portfolio can also be calculated as:

$$\sigma_p = \sqrt{W_x^2 \sigma_x^2 + (1 - W_x)^2 \sigma_y^2 + 2 W_x (1 - W_x) \rho_{xy} \sigma_x \sigma_y}$$

Where,

ρ_{xy} = Correlation coefficient between security 'X' and 'Y'

If we have to construct the portfolio standard deviation between risky and risk-free asset then:

$$\Xi_p = W_m \dagger_m$$

Where,

Ξ_m = standard deviation of market

W_m = proportion of portfolio invested in market

The standard deviation of portfolio is the square root of variance. Where,

$$\Xi_p = \sqrt{\text{Variance portfolio}}$$

Minimum Variance Portfolio:

It shows the best combination of 'X' and 'Y' security so that portfolio variance is minimum. A portfolio that has the lowest level of variance (risk) is referred to the optimal portfolio. A risk-averse investor will have trade-off between risk and return.

Formula for estimating the optimal weights of security 'X' and 'Y' is mentioned below:

$$W_x = \frac{\dagger_x^2 ZCov_{xy}}{\dagger_x^2 \Gamma \dagger_y^2 Z2COV_{xy}}$$

To summarize, the riskiness of a portfolio is a function of

- i) The riskiness of the components
- ii) The correlation of return on the component securities and,
- iii) The proportion invested in the components

2.1.8 Markowitz Efficient Frontier

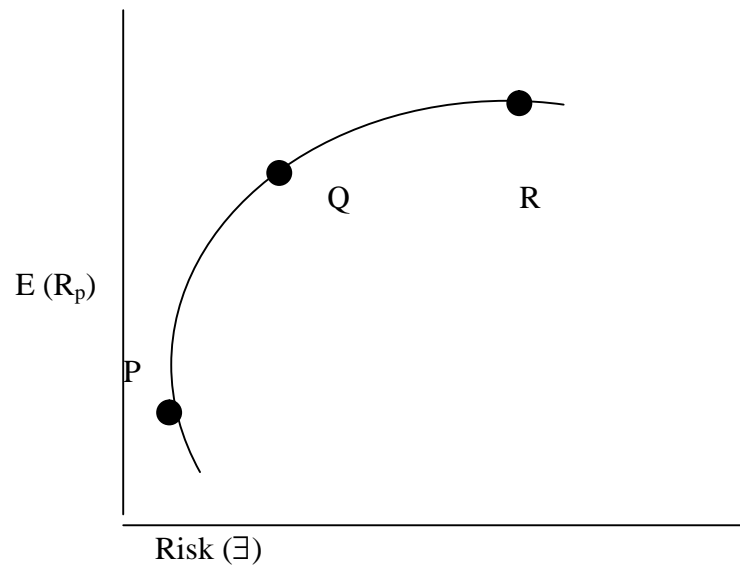
Efficient frontier is the combination of all possible portfolios called the attainable set of investment opportunities. It is the locus of investment graphed in risk return space which has the maximum expected rate of return in their class or the

minimum risk at whatever rate of return is selected. According to Markowitz, an investor should seek a portfolio of securities that lies on the efficient frontier set.

The set of possibilities can be thought of in general terms, assuming many securities.

Figure No. 2.2

Figure presenting the Efficient frontier



Suppose that the expected return and standard deviation of all possible portfolios were plotted as in figure no.7. We may observe that portfolio 'P' has the minimum risk and low return than portfolio 'Q' that has high risk and high return. Portfolio 'R' has high risk and low return as compare to portfolio 'Q'. Thus portfolio 'Q' dominates portfolio 'R'. A risk averse investor will prefer a portfolio with the highest expected return for a given level of risk or prefer portfolio with the lowest level of risk for a given level of expected return. In the portfolio theory this is referred to as the principle of dominance, and the portfolio that has the highest expected returns for a given level of risk is called an efficient portfolio. In figure no.7 the line 'PR' is the efficient frontier and represents the locus of all portfolios, which have the highest return for a given level of risk. All other portfolio that lies outside the efficient frontier is an inefficient portfolio.

Thus, efficient frontier is a curve in which the efficient portfolios lie. It indicates that the portfolio, which lies in the efficient frontier curve, is more efficient than

portfolio, which lies below the curve. Due to lack of perfectly positive correlation the efficient frontier is concave.

2.1.9 Systematic and Unsystematic Risk

Each and every organization suffers risk because investment is a part of economics and economical cycle changes frequently. The total risk associated with the investment can be classified as systematic and unsystematic risk.

Systematic Risk

Systematic risk is also called undiversifiable risk. Changes due to economic, political and sociological environment that affects security market are the sources of systematic risk. These types of risk will be beyond the control of management of any organization. It is also well known for unavoidable risk. The systematic risk lies on the overall stock within the market measured by beta (β).

Unsystematic Risk

Unsystematic risk is that type of risk that can be diversified totally and also avoided to some extent if diversification is efficient. Due to various unsystematic factors within the organization such type of risk arises. This type of risk will be within the control of management body of organization. Event such as labor strikes, management errors, inventories, advertising, campaigns, shifts in consumer taste and lawsuits cause unsystematic variability in the value of market assets.

Investors can expect to be compensated for bearing the systematic risk. They should not expect the market to provide any extra compensation for bearing avoidable risk or unsystematic risk. The relationship among systematic and unsystematic risk is:

$$\text{Total risk } (\sigma_j) = \text{Systematic risk} + \text{Unsystematic risk}$$

where,

$$\text{Systematic risk} = \sigma_j \rho_{jm}$$

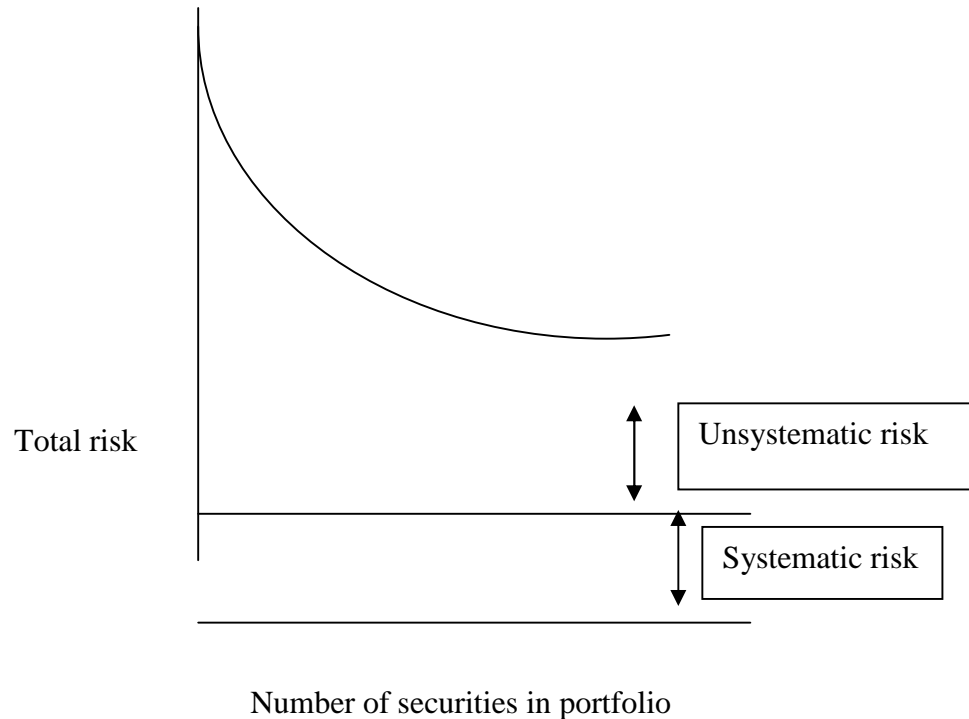
$$\text{And, Unsystematic risk} = \sigma_j (1 - \rho_{jm})$$

$$\text{So, } \sigma_j = \sigma_j \rho_{jm} + \sigma_j (1 - \rho_{jm})$$

The occurrence of systematic and unsystematic risk is shown in figure below:

Figure No. 2.3

Figure presenting the Systematic and Unsystematic risk



2.1.10 Capital Asset Pricing Model (CAPM)

Harry M. Markowitz laid down the foundation of modern portfolio theory in 1952. The CAPM was developed 12 years later by William Sharpe, John Lintner and Jan Mossin.

Capital assets are the long term financial as well as real assets and CAPM is based on the pricing of these assets. Modern portfolio theory of Markowitz suggests that the investment decision should be based on the total risk and the price of asset should also be determined on the basis of the total risk. But the CAPM suggests that, any investor can create a portfolio of assets that will eliminate virtually all-diversifiable risk, the only relevant risk is non-diversifiable risk. Therefore, the investment decision and the pricing of capital assets should be based on the undiversifiable risk. This is the primary importance of selecting assets with the most desired risk return characteristics. The CAPM further suggests that the price of capital assets should be determined in ways that compensate the systematic risk. The major implication of the model is that the expected return on asset will

be related to measure of risk known as Beta. The exact manner in which expected return and beta are related is specified by CAPM.

CAPM is a very simple model and extremely important analytical tool in both managerial finance and investment analysis.

It suggests that in equilibrium market, every security available in the market is priced and they provide risk-adjusted rate of return.

The significant contribution of the CAPM is that it provides a measure of the risk of an individual security, which is consistent with portfolio theory. It enables us to estimate the undiversifiable risk of a single asset is comparing it with the undiversifiable risk of a well-diversified portfolio. Originally developed by Sharpe, Treynor, Mossin and Lintner the CAPM equation or security market line (SML), is presented as:

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

Where,

$E(R_j)$ = Expected return of security 'J'

R_f = Rate of return of risk free asset

$E(R_M)$ = Expected return of the market portfolio

β_j = A measure of the undiversifiable risk of the J^{th} security

Whereas, Beta can be mathematically presented as:

$$\beta_j = \frac{COV(j, m)}{Variance(R_m)}$$

'OR'

$$\beta_j = \frac{COV(j, m)}{\sigma_m^2}$$

2.1.10.1 Use of CAPM

Even though the assumption, which the CAPM is based limit the generality of the model but it is still widely used Bierman and Smidt has identified the following uses of CAPM:

i) To estimate the cost of equity capital using

$$\bar{r}_i = X r_f + \Gamma (\bar{r}_m - Z r_f) \quad i$$

These estimates are used both for public utility regulatory proceedings and determining the require return to be earned by operating divisions of corporations.

ii) To form portfolios of securities (the weighted average of the betas of all the securities is one relevant risk measure if the investor is imperfectly diversified).

iii) To evaluate securities- if the expected return is larger than

$$\bar{r}_i = X r_f + \Gamma (\bar{r}_m - Z r_f) \quad i$$

The security is a “Bargain”. If a security has a larger expected return than the return indicated by the CAPM all investors (with homogeneous expectations) will buy it until its expected return is lowered to be equal to

$$\bar{r}_i = X r_f + \Gamma (\bar{r}_m - Z r_f) \quad i$$

In like manner if a security ‘i’ is expected to earn less than the $\bar{r}_i = X r_f + \Gamma (\bar{r}_m - Z r_f) \quad i$ no one will buy (some will sell it short), its price will decrease and its expected return will increase.

All securities are contained in the market portfolio in proportion to their market value. The beta of market portfolio is 1.

2.1.10.2 Assumption of CAPM

The capital asset pricing model (CAPM) is a major contribution to modern business finance theory and practice. CAPM model provides the intellectual basis for a number of the current practices in the investment industry.

Sharpe, Alexander and Bailey have mentioned the following assumption about the CAPM.

- i) Investors evaluate portfolios by looking at the expected return and standard deviation of the portfolios over a one period horizon.
- ii) Investors are never satiated, so when given a choice between two otherwise identical portfolios, they will choose the one with the higher expected return.
- iii) Investors are risk – averse, so when given a choice between two otherwise identical portfolios, they will choose the one with the lower standard deviation.
- iv) Individual assets are infinitely divisible, meaning that an investor can buy a fraction of a share if he or she so desires.
- v) There is a risk free rate at which an investor may either lend (that is, invest) money or borrow money.
- vi) Taxes and transaction cost are irrelevant

To these assumptions the following ones are added:

- vii) All investors have the same one-period horizon.
- viii) The risk free rate is the same for all investors
- ix) Information is freely and instantly available to all investors.

- x) Investors have homogenous expectations, meaning that they have the same perceptions in regard to the expected returns, standard deviation and covariance of securities.

2.1.11 Security Market Line (SML)

Security market line is the graphical representation of the CAPM. It shows the relationship between risk and required rate of return with the help of SML the overpriced and under priced stock can be located.

“SML is the line that shows the relationship between risk as measured by beta and the required rate of return for individual securities.”(Weston &Brigham, 1996, p 208)

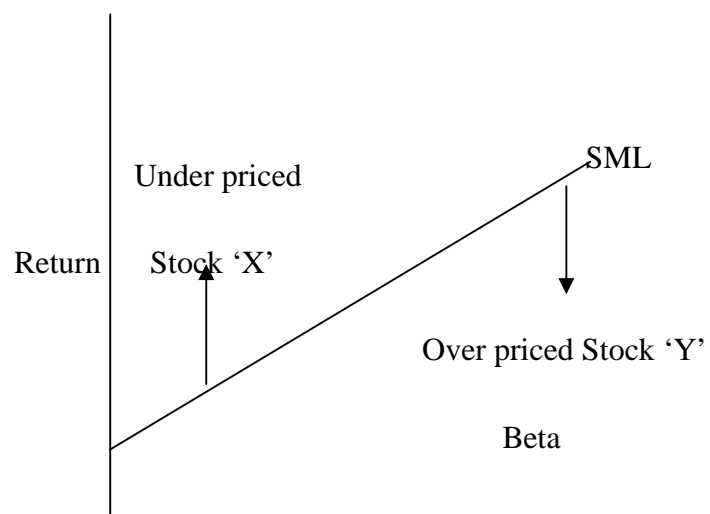
The SML shows that if risk increases the return should also increase proportionally. The risk affecting the return is the market risk. The SML describes that the investor cannot get the compensation for unsystematic risk, the systematic risk is only compensated representing by beta of the security. If the stocks are under priced, they lie above the SML and if they are overpriced, they lie below the SML. If the expected rate of return is more than required rate of return, the stock is called under priced and if the expected rate of return is less than the required rate of return, the stock is called overpriced.

Over-priced and Under-priced

The primary concern of portfolio management is to identify the under-priced securities. Over-priced and under priced securities are identified either by a comparison of their value with market price or a comparison of the required rate of return (return calculated by using CAPM equation) and expected return. If,

S.N	Condition	Pricing
1	Required rate of return > Expected return	Over-priced
2	Required rate of return < Expected return	Under-priced
3	Required rate of return = Expected return	Exactly priced

Figure No. 2.4
Figure presenting the SML



In the above figure no.9 stock 'X' is under priced and stock 'Y' is expected to provide a lower return than that required compensating for its systematic risk.

Investor seeing the opportunity for the superior return by investing in stock 'X', will rush to buy. These actions will drive the price up and the expected return comes down. How long would this continue? The answer becomes that it will continue until the market price was seen that the expected return would now lie on the SML. In case of stock 'Y', investors holding this stock would start to sell.

2.1.12 Capital Market Line (CML)

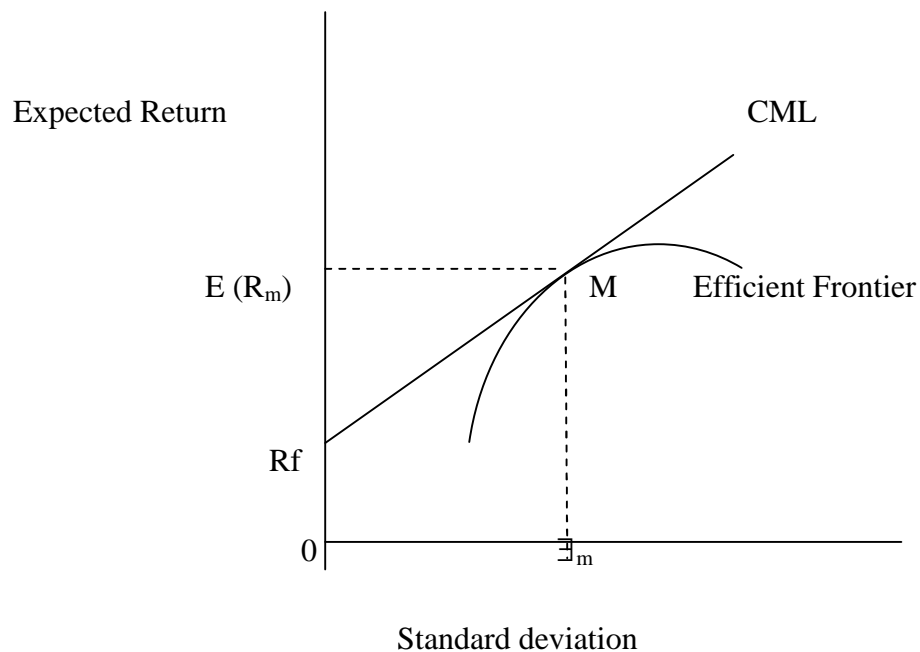
The CML may be used for determining the required return only for those efficient portfolios that are perfectly correlated with the market portfolio. "The capital market line represents the equilibrium relationship between the expected return and standard deviation for efficient portfolios. Individual risky securities will always plot below the line because a single risky security when held by itself is an inefficient portfolio." (Sharpe, Alexander & Bailey, 2000, p268)

The CML expresses the current "trading terms" for risk and return for efficient combinations. It reflects current expectation regarding the distributions of future outcomes from investments. Realized rate or return will generally differ from the expected values. Also there is no reason to believe that the trading terms for risk and return will remain constant overtime.

Presenting the concept of CML in figure:

Figure No. 2.5

Figure presenting the concept of CML



Mathematically the formula of CML can be presented as

$$E(R_j) = R_f + \beta_j \frac{E(R_m) - R_f}{\sigma_m}$$

Where,

$E(R_m)$ = Market portfolio return

R_f = Risk free rate

σ_m = Standard deviation of portfolio return

Here, $\frac{E(R_m) - R_f}{\sigma_m}$ is the slope of CML which is represented by the β_j . So the formula of CML can also be expressed as:

$$E(R_j) = R_f + \beta_j \beta_j$$

Where,

β_j = Slope of CML

2.2 Review of Previous Studies

2.2.1. Review of Previous Theses

There are some studies that had been conducted as previous studies which have been reviewed as follows:

Poudel (2006), *An investment Portfolio Analysis of Joint Venture Banks in Nepal*.

Its objectives are:

-) 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.

The study has been conducted on the basis of secondary data.

The major findings of the study were as follows:

-) 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 banks 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.
-) 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 stock required rate of return is less than expected return, so the stock price is under priced. But other banks stock required rate of return is greater than expected return so the stock price is over Priced.
-) 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.

Mahat (2004), *Investment policy of Nepal Bangladesh Bank Limited*. Its objectives are:

-) To find out the Non Performing Assets position of the bank,
-) To evaluate the portfolio management of the bank,
-) To find out the bank's investment on priority sector,
-) To analyze deposit utilization and its relationship with total investment and net profit of the bank.

The study has been conducted on the basis of secondary data. Major findings of the study are as follows:

-) The proportion of non-performing assets on total loan and advances of the bank is more than the satisfactory level. It should be less than 5% to be graded as internationally “A” grade commercial bank. For the Nepalese context also, NPA should be in single digit to be considered as satisfactory. The NPA level of the bank is higher than these standards. So, the management of the bank should give its due attention in time to manage the NPA level within the satisfactory level.
-) The loan and advances portfolio of the bank is not satisfactory. The lending is not properly diversified. Half of the loan from total portfolio is given to industrial sectors. Bank is unable to explore the new and profitable sectors for the lending purpose. So, the bank has very risky portfolio of loan and advances. If industrial sector will not function properly, its impact to the bank will be huge.
-) Bank has not been fulfilling its priority sector investment requirement every year, during the study period. In the course of failure to fulfill the directive credit requirement, bank is subject to penalty, which affects the profitability of the bank. The average priority sector lending of the bank is less than required 12% landmark.
-) The relation of total deposit is positive to total investment i.e. if total deposit increases, bank's loan and advances, investment on government securities, shares and debentures of other companies also increases. But the bank's investment, in the form of loan and advances and other investments, has not positive relation to total net profit of the bank. Bank's total profit is irrespective to its total investment.

Dhungana (2002), *Investment policy of Nepal Bangladesh Bank Limited & other Joint Venture Banks (Himalayan Bank Limited & Nepal State Bank of India Bank Limited)*. Its objectives are:

-) To study fund mobilization and investment policy with respect to fee based off-balance sheet transaction and fund based on balance sheet transaction.
-) To evaluate the liquidity efficiency of assets management and profitability position.
-) To evaluate the trends of deposit utilization towards total investment and loan & advances and its projection for next five years.
-) To evaluate the growth ratios of loan & advances and total investment with respect to growth ratios of total deposit and net profit.
-) To study the various risks in investment.

The study has been conducted on the basis of secondary data. The research findings of the study are:

-) The liquidity position of NBBL is not better than that of HBL and NSBL.
-) NBBL is in better position regarding its on balance sheet activities. The ratios of NBBL are highly variable which reveals NBBL has not followed stable policy.
-) NBBL is not better regarding off-balance sheet transactions. The ratios of NBBL are highly variable also. The position of NBBL is moderate in OBS transaction.
-) The profitability position of NBBL is comparatively not better than that of HBL but better than that of NSBI.
-) The credit risk ratios and interest rate risk ratios of NBBL is higher than that of HBL and NSBI.
-) NBBL has not maintained adequate capital in relation to the nature and condition of its assets, its deposit liabilities and other corporate liabilities.
-) NBBL has maintained high growth rate.

-) Deposit collection position, lending position, investment position and net profit position of NBBL is not better in comparison to HBL but better than NSBI.

Bajracharya (2000), *Investment of commercial Banks in private sector*. Its objectives are:

-) To analyze the trend of investments in Private sectors and the trend of repayment in private sectors for 10 years from 2047 B.S. to 2056 B.S.
-) To measure the effectiveness of the program in terms of the investment and repayment in rural and urban sector.
-) To evaluate the banking procedures and services in disbursing loan in this sector and provide package of suggestion based on this study.

The research has been conducted through both primary and secondary data. For the primary data, pre-structured questionnaire was distributed to entrepreneur. Secondary data from different sources like reports, books, bulletins, journals, magazine and other publications of Rastriya Banijya Bank, Nepal Rastra Bank, etc. have also been collected.

The research findings of the study are as follows:

- The target of 12% investment of total outstanding liabilities in priority sector and 3% out of which has been invested in deprived sector has been met by RBB. The trend analysis shows that the commercial banks are giving due consideration to increase investment in priority sector.
- The study revealed that the procedure of loan disbursing itself is complicated for the borrowers to understand it.

Thapa (2001), *Investment policy of Nepal Bangladesh Bank Ltd. and other Joint Venture Banks (NABIL and Nepal Grindlays Bank Ltd.)*. Its objectives are:

-) To examine the liquidity, asset management efficiency, profitability and risk position of NB Bank in comparison to NABIL and NGBL.
-) To analyze the relationship between loan & advances and total investment with other financial variables of NB Bank and compare them with NABIL and NGBL.
-) To examine the fund mobilization of investment policy of NB Bank through off-balance sheet activities in comparison to the other two banks.

-) To study the various risks in investment of NB Bank in comparison to NABIL and NGBL.
-) To analyze the deposit utilization trend and its projection for next five years of the NB Bank & compare it with that of NABIL and NGBL.

The study has been conducted through secondary data. The research findings of the study are as follows:

-) The liquidity position of NB Bank is comparatively better than that of NABIL and NGBL.
-) NB Bank is not in better position regarding its on balance sheet as well as off balance sheet activities in compare to NABIL and NGBL. NB Bank does not seem to follow any definite policy regarding the management of its assets.
-) Profitability position of NB Bank is comparatively worse than that of NABIL and NGBL.
-) NB Bank has maintained high growth rates in comparison to other banks though it is not successful to make enough investment.
-) The position of NB Bank in regard to utilization of the fund to earn profit in not better in compare to NABIL and NGBL.

Silwal (1980), *Lending policy of commercial banks in Nepal*. Its objectives are:

-) To analyze the role of commercial banks in its historical prospective.
-) To show the relationship between deposits and loan & advances.
-) To identify major weakness of lending policy of the commercial banks.

The research has been conducted mainly on the basis of secondary data. The research findings of study are as follows:

-) Effectiveness of lending policy is directly based upon a sound banking system. But due to geographical variation, transportation and other regional disparities, it is very difficult to expand branches in different rural areas. So, it can be said that commercial banks in Nepal are not playing an active role to utilize their sources collected from different sectors.
-) By paying higher interest rate, the banks are increasing deposits, which in turn increase saving habits of the general people. Then the banks will be

able to utilize these idle funds in productive channels. This type of business of commercial bank is really a necessary one in an agricultural country like Nepal, where public investment has limited capacity.

Laudari (2001), *A study on investment policy of Nepal Indosuez Bank Ltd. in comparison to Nepal SBI Bank Ltd.* Its objectives are:

-) To examine the liquidity, asset management and profitability position and investment policy of NIBL in comparison to Nepal SBI bank ltd.
-) To study the growth ratios of loans and advances and investment to total deposit and net profit of NIBL in comparison to Nepal SBI bank ltd.
-) To analyse relationships between deposit and investments, deposits and loan & advances, net profit and outside assets of Nepal Indosuez Bank Ltd. in comparison to Nepal SBI Bank Ltd.

The study has been conducted through secondary data. The research findings of the study are as follows:

-) Current ratios for both the Banks is satisfactory.
-) Although cash reserve ratio (CRR) is managed by both banks as per Nepal Rastra Bank directives, both banks have not paid sufficient insight toward cash management. Their cash reserves have fluctuated in a high degree.
-) Nepal SBI Bank Ltd. has increased investment in government securities where as Nepal Indosuez Bank Ltd. has decreased.
-) Nepal Indosuez Bank Ltd. has maintained both current ratio and cash reserve ratio better than Nepal SBI Bank Ltd. But its cash and bank balance, investment in government securities and loan and advances in comparison to current assets are lower than that of Nepal SBI Bank Ltd.
-) Deposit utilization of Nepal Indosuez Bank Ltd. is less effective than that of Nepal SBI Bank Ltd. Further Nepal Indosuez Bank Ltd. has invested lesser amount on government securities and shares and debenture than that of Nepal SBI Bank Ltd.
-) Nepal Indosuez Bank Ltd. did a better performance in return on total assets and loan and advances and interest earning, but it paid lower interest amount to working fund.

-) The analysis of growth ratios shows that growth ratio of total deposit, loan and advances, total investment and net profit of Nepal Indosuez Bank Ltd. is less than that of Nepal SBI Bank Ltd.

Khaniya (2003), *Investment portfolio analysis of joint venture banks*. Its objectives are:

-) To identify the current situation of investment portfolio of joint venture banks in Nepal.
-) To analyze the risk and return ratio of commercial banks.
-) To evaluate the financial performance of joint venture banks in Nepal.
-) To evaluate the financial performance of joint venture banks and portfolio structure of Nabil Bank in investment between loan investment, investment in real fixed assets and investment in financial assets.

The study is based on five joint venture banks and they are NABIL, SCBNL, HBL, NBBL and EBL and the study has been conducted through secondary data.

The major findings of the analysis are as follows:

-) Nabil is investing the highest amount of funds on NRB bond as compare to other joint venture bank i.e. 3% beta coefficient of HBL is lowest among all the banks so the systematic risk of HBL is low.
-) The coefficient of correlation between loans and advances in private sector and portfolio return of joint venture banks come out to be $r_{xy} = -0.6$ therefore it indicate that there is negative correlation between loans and advanced in private sector and portfolio return of five joint venture banks in Nepal.

Joshi (2002), *Investor Problem in Choice of Optimum Portfolio of Stock Exchange*. Its objectives are:

-) To analyze the trend of NEPSE
-) To find out the portfolio of NEPSE to invest.

The study has been conducted through secondary data. He has taken selected and short-listed a companies which are categorized in "grade A" in NEPSE as his sample size.

The major findings of the study are as follows:

-) This study suggests for the improvement of the stock market as well for better meet of investors.
-) He has found 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.

Gaytan (2006), *Investment portfolio of commercial banks in Nepal*. Its objectives are:

-) To emphasize the concept of investment and loans and advance portfolio.
-) To assess the financial performance of commercial banks in term of investment approach.
-) To analyze the risk and return ratio of commercial banks.
-) To provide useful information based on the analysis of the data.

The study has been based only on secondary data and only five commercial banks are taken under study. The study covers a period of eight fiscal years. Based on the analysis of the various data remarkable findings are drawn up. The major findings are as follows:

-) 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.

-) 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%.
-) In this case, industry average 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%.
-) 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 by 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.
-) 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.

2.2.2 Review of Articles

In this section, effort has been made to examine and review of some related articles in different economic journals, World Bank discussion papers, magazines, newspapers and other related books and publications.

Shrestha (1998) has given a short glimpse on the "Portfolio management in commercial banks; theory and practice". Mr. Shrestha has highlighted following issues in the article. The portfolio management becomes very important both for individuals as well as institutional investors. Investors would like to select a best mix of investment assets subject to the higher return; Good liquidity; Maximum tax concession; Economic, efficient and effective investment mix; Flexible investment and certain capital gains.

In view of above aspect, following strategies can be adopted:

-) Do not hold any single security i.e.; try to have a portfolio of different securities.
-) Do not put all the eggs in one basket i.e.; to have a diversified investment.
-) Choose such a portfolio of securities, which ensures maximum return with minimum risk or lower return but with added objective of wealth maximization.

However, Mr. Shrestha has also presented approaches to be adopted for designing a good portfolio and its management. Such as ; To find out the investible assets (generally securities) having scope for better returns investor toward it; To develop alternative investment strategies for selecting a better portfolio that will ensure a trade-off between risk and return and also To identify securities for investment to refuse volatility of return and risk.

Shrestha (1997) in his article "Nepalma Banijya Bank Haruko Bhumika" has pointed out some important activities and its present scenario. In his words these activities are to be studied and revised as soon as possible, otherwise these may be disaster for the sound and effective banking system. The article is written in Nepali language. Some of the main points of his article are given as:

-) Possibility of capital flight: - which indicates the flow of capital outside the country due to the unstable political situation. In this controversial situation joint venture banks become the main source or medium of capital flight.
-) Minimum Deposit amount: - Many commercial banks have increased the minimum deposit amount (threshold). This policy may harass the lower level depositors. It also affects the banking habits of lower level depositors negatively.
-) Debt recovery and its effectiveness: - In these years, it can also be seen that effective debt recovery is also a great problem of banks due to the misinterpretation of use of loan more than this, a gap between banks and debtors (i.e.; effective supervision).

Bhattarai (2003) has presented an article on "Non Performing Assets (NPA) Management". According to him, a loan is very easy term for a borrower when he has already taken and for a lender not availed. It is equally difficult for a borrower to avail and for lender to recover. From a banker's view, it is just like a stone to roll down from the top of the hill while sanctioning, but too difficult to roll back the same stone to the top of the hill while recovering. A loan not recovered within the given time frame either in the form of interest servicing or principal repayment is called non-performing loan (NPL). There are other parameters as well to quantify an NPL. Security not to the extent of loan amount with specified safety margin, value of security not realizable, possession not as per the requirement of bank, conflict of charges are the other reason which causes difficulties while recovering the loan. According the loan for a bank is most important to generate revenue for operational expenses as well as to provide return to the shareholder.

A general survey reveals two major reasons why a good loan turns into bad. Firstly, *Situational Problem* which indicates poor analysis of project and its capital requirement; Faulty evaluation of loan and security; Problem in managing the unit; Sudden change in internal and external environment and project not being run according to its plan; Mismatch in demand and supply; Delay in collection of receivables and secondly, *Intentional Problems*, which indicates intention to cheat the bank; Malicious act of both the bank-staff and borrower;

Intention to auction the property, which is in least requirement, borrower and to waive interest/ penal interest or avail discount on loan if paid in latter stage when bank offer such facilities.

The article in the web page 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 by **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 mould 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.

2.3 Research Gap

In Nepal, regarding portfolio management of investment in the securities issued by listed commercial banks, there have been no up-to-date studies carrying out on it. Independent studies regarding the analysis of stocks have not yet been found. It is found that only master's degree students have been carrying out thesis works in such topics. Nevertheless, these studies are concentrated on portfolio analysis of commercial banks. No study has been carried out regarding securities portfolio consisting of the stocks of listed commercial banks. Most of the studies are concentrated on the risk and return analysis of stocks of listed companies. Moreover, this study covers more recent financial data and guidelines than that of studies previously conducted. This research includes 31 commercial Banks as the population. Among them, the three commercial Banks have been studied. This study differs to other researches in terms of its methodology. As per the nature of the study, descriptive cum analytical research design has been followed. Keeping in view the above facts and situation, different sets of portfolios between the stocks of sample banks have been created using different weights. The portfolio performance has also been evaluated with using Sharpe index of portfolio performance measure, which has not been calculated on other studies.

CHAPTER - III

RESEARCH METHODOLOGY

In this chapter, sequential steps adopted by researcher to achieve the objectives have been laid down .This chapter includes research design, population and sample of data, sources of data, data collection techniques and data analysis tools.

3.1 Research Design

This research has been carried out to examine and find the problem and possibility of generating the investment portfolio management for the public with special reference to financial securities listed in NEPSE. The nature of this study is historical, descriptive and analytical research because it has based on historical data, generalized theorem of financial management and investment analysis as well as the evaluation of the data of reference companies.

3.2 Source of Data

This research is mainly based on secondary data. Published annual reports of the concerned banks have been taken as the basic source of data. Similarly, related books, magazine, journals, articles, reports, bulletins, data from Nepal Stock Exchange and Nepal Rastra Bank, related websites, college's libraries as well as other supplementary data and various economic surveys have also been used. Previous related studies to the subject have also been consulted as the sources of information. The major sources of data and information are as follows:-

- Annual reports of concerned commercial banks.
- Trading reports published by Nepal stock exchange.
- Materials published in papers and magazines.
- Related websites.
- NRB economic Report, NRB.
- Annual Reports of SEBON.
- Other related books and booklets.

3.3 Population and Sample

All the thirty-one licensed Nepalese commercial banks have been considered as the total population. Out of them, this study concerns with three commercial banks as a sample. Those banks are: Nabil Bank Ltd., Nepal Investment Bank Ltd. and Himalayan Bank Ltd. In the sample, banks are taken according to their rapid growth rate and gradual growth rate. Convenience and simple method have been adopted to select the sample banks. Their head offices are located in Kathmandu. So it has been comfortable to analyze portfolio management of these banks.

3.4 Data Collection Techniques

As this study is mainly based on secondary data, primary data has been used as per requirement. The secondary data has been collected from various libraries, related literatures, websites and concerned bank's information section. Data are not available in readymade format so they have been classified as per research requirements. Firstly, necessary data have been collected. Secondly, data have been assessed and only essentials have been selected. They have been classified in such a way that they represent qualitative and quantitative glimpse. Only categorized data have been used in this research. Computer Application programs have been used in classifying the data. Techniques of data collection are as follows:

-) Library Research
-) Internet, Homepages and Related Links study
-) Review and reports of concerned topic.

3.5 Data Analysis Tools

Financial as well as the statistical tools have been used to make the analysis more convenient, reliable and authentic. Tools of analysis used in this study are as follows:

a) Financial Tools

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

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, p275). 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, p204). 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 portfolio management of CBs. Only such ratios which are related to investment of CBs are taken here. Hence, the following ratios are calculated and analyzed in this study.

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 has used to compute this ratio is as following;

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

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

3. 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;

$$\frac{\text{Net Profit after Tax}}{\text{Total Assets}}$$

4. 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

5. 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.

$$\frac{\text{Investment on share and debenture}}{\text{Total outside investment}}$$

6. Investment on Other Investments (Other than government securities & S&D) to Total outside Investment

This ratio shows the bank investment on other investments. This ratio is calculated by dividing investment on other investments by total outside investment.

$$\frac{\text{Investment on Other Investments}}{\text{Total outside investment}}$$

Other Investments includes investing certificate of deposit, mutual fund, Local licensed institutions, foreign bank as a placement and other investments.

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;

$$\text{Return on share and debenture} = \frac{P_t Z P_{t-1} \Gamma D_t}{P_{t-1} A X}$$

10. Return on other investments

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

$$\frac{\text{Interest income on other investments}}{\text{Other investments}}$$

II. Risk on Individual Assets

The riskiness 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;

$$\sigma_X = \sqrt{\frac{\sum R^2 - n\bar{R}^2}{n-1}}$$

Where

σ_X 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.

$$\text{Portfolio return } R_p = W_A R_A + W_B R_B + \dots + W_N R_N$$

Where,

R_p = Portfolio return

W_A = Weight of investment invested in stock 'A'

W_B = Weight of investment invested in stock 'B'

R_A = Return for stock 'A'

R_B = Return for stock 'B'

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;

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

Where,

W_A, W_B, W_C = Weight of assets A, B and C

$\sigma_A, \sigma_B, \sigma_C$ = Standard deviation of A, B and C

Cov_{AB} = Co-variance between assets A and B

Cov_{BC} = Co-variance between assets B and C

Cov_{AC} = Co-variance between assets A and C

V. Co-Variance

The covariance measures 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 be zero. It is computed as;

$$\# \text{Cov}(R_n, R_m) = \frac{(R_n - \overline{R_n})(R_m - \overline{R_m})}{n - 1}$$

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.

$$\text{C.V.} = \frac{\dagger_j}{\overline{R_j}}$$

Where,

\dagger_j = Standard deviation of securities j.

$\overline{R_j}$ = Average return on securities j.

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, p250).

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 so 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.

$$S_p = \frac{\text{Risk Premium}}{\text{Total Risk}} \times \frac{\overline{r_p} - r_f}{\sigma_p}$$

Where,

S_p = Sharp's index of portfolio performance for portfolio i

$\overline{r_p}$ = Average return on portfolio,

r_f = Risk free rate of return

σ_p = Standard deviation of portfolio

b) Statistical Tools

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

I. Karl Person's Coefficient of Correlation

Correlation coefficient is statistical tool for the measurement of the relative association between two variables series; it describes how much linear co-movement exists between two variables. The correlation coefficient is calculated as follows:

$$\# \text{ Corr. } (R_n, R_m) \text{ or } r = \frac{\text{Cov}(R_n, R_m)}{\sigma_n \sigma_m}$$

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

$$\bar{X} = \frac{1}{N} (f_{x_1} + f_{x_2} + f_{x_3} + \dots + f_{x_n})$$

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

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

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

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

4.1 Investment Operations of CBs

Investment is the most important function 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 successful 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 , commercial, social service, securities and agricultural sector.

The investments held by the Bank comprise following 3 categories:

- i. **Investments Held for Trading (HFT):** These are the marketable investments and held with the primary intention of resale over a short period of time. These investments are initially measured at cost and subsequently recognized at market value. Gain or losses arising from trading/revaluation are recognized in profit or loss account(Income Statement)
- ii. **Investments Available for Sale (AFS):** These are the investments held with the primary intention to recover value of investments through sale rather than continuing to hold. These investments are initially measured at cost and subsequently recognized at market value. Gains or losses arising from sale/revaluation are recognized on Investment Adjustment Reserve/Retained Earning. The investments, which are classified under this category however not listed in stock exchange, are carried at cost in the Balance Sheet. Amount equivalent to at least 2% of such investments are marked on Investment Adjustment Reserve from the Retained Earnings in line with the requirement of NRB.
- iii. **Investments Held till Maturity (HTM):** These investments are primarily intended to hold until the maturity and are stated at cost and carried at these values in the Balance Sheet until the maturity. Any impairment losses arising in such investments are provisioned and charged in the Profit or Loss Account (Income Statement). Premiums paid while acquiring HTM Investments are recognized as the part of initial cost and subsequently amortized as reversal of interest income on proportionate basis until the maturity.

All investments are subjected to periodic review as required by NRB Directives.

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 has dealt with the pinpointing analysis related to the investment of the CBs of Nepal in government securities, share and debentures, Other Investments and loan and advances have been 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 saving bonds, insurance bond etc. To some extent all CBs seem to be interested to use their deposits by purchasing government securities.

The Central Bank has also made mandatory provision to Invest in Government Securities for Banks and Financial Institution. As per the new provision introduced through Monetary Policy 2010/11, commercial banks, development banks, finance companies and finance companies not authorized for operating current account deposits are required to maintain 15 percent, 11 percent, 10 percent and 6 percent SLR respectively. In the context of permission granted to class "D" financial institutions for deposit mobilization, those who have already started deposit mobilization from general public are also required to maintain the 4 percent SLR. The investment on government security, cash in vault; deposit held with the NRB including cash reserve ratio of bank and financial institutions will be eligible for counting SLR. However, commercial banks, development banks and finance companies must maintain 5.5 percent cash reserve ratio whereas finance companies not accredited to operate current account must maintain 2 percent cash reserve ratio. Likewise, class "D" financial institutions that mobilize public deposits must also maintain 2 percent cash reserve ratio. Table 4.1 and 4.2 represents the structure of investment on Government securities held by CBs.

Table 4.1

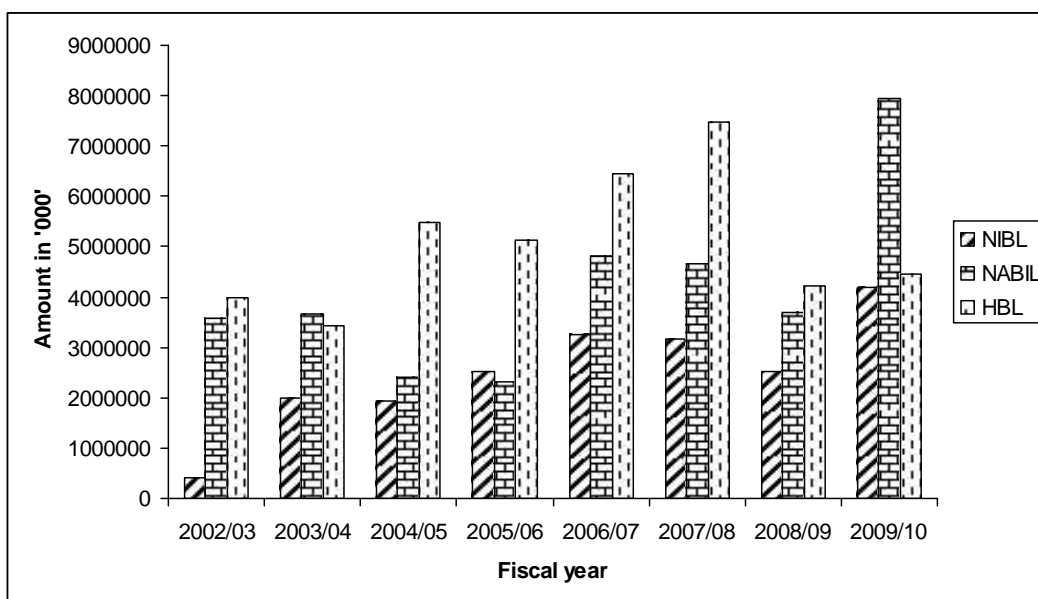
Structure of Investment on Government Securities Held by CBs

(Rs. in '000')

FY	NIBL	NABIL	HBL	CBs
2002/03	400000	3588772	3998870	7987642
2003/04	2001100	3672626	3431729	9105455
2004/05	1948500	2418431	5469729	9836660
2005/06	2522300	2301463	5144313	9968076
2006/07	3256400	4808348	6454871	14519619
2007/08	3155000	4646883	7471668	15273551
2008/09	2531300	3706103	4212300	10449703
2009/10	4201850	7941556	4465372	16608778
Total	20016450	33084182	40648852	93749484
Average	2502056	4135523	5081107	11718686
S.D.	3.21	4.93	4.71	-
C.V.	31.4%	28.2%	21.3%	-

Source: Annual Reports of CBs from FY 2002/03 to 2009/10

Figure 4.1
Coverage of Government Securities Held By CBs



The table 4.1 and figure 4.1 reveals that most of the CBs have made investment on government securities. The investment on government securities of HBL is highest among other banks. The NIBL has been found to have investment on govt. securities lower comparative to other banks. Similarly the HBL covers more shares i.e. 5081107 of the total investment on govt. securities made by CBs. NABIL be on 2nd position by investing of the total investment on govt. securities i.e. 4135523 made by CBs. Similarly the lowest C.V. of HBL shows the more consistency in investment.

NIBL 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.

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 on share for strategic purpose, most of the CB's are holding promoter shares of Micro Finance Companies (Bittiya Sanstha) for fulfillment of their mandatory requirement to lending in deprived

sector. There is a mandatory provision to lend 3% of their total lending portfolio in deprived sectors thus CB's fulfill this mandatory provision indirectly by investing equity in Micro Finance companies. Some other companies whose shares are held by commercial banks are: Credit Information Centre Ltd, Taragaon Regency Hotel Ltd and Nepal Clearing House Ltd etc. Some of the Commercial Banks are also investing in debenture and bonds and the common example is Bond issued by Nepal Electricity Authority. Among 5 CBs, the Nabil bank is the solo bank investing in foreign securities like IDBI bond, Development Bank of Singapore Bond and ICICI Bank Bond. The investment structure of commercial banks on share and debentures are shown in Table 4.2.

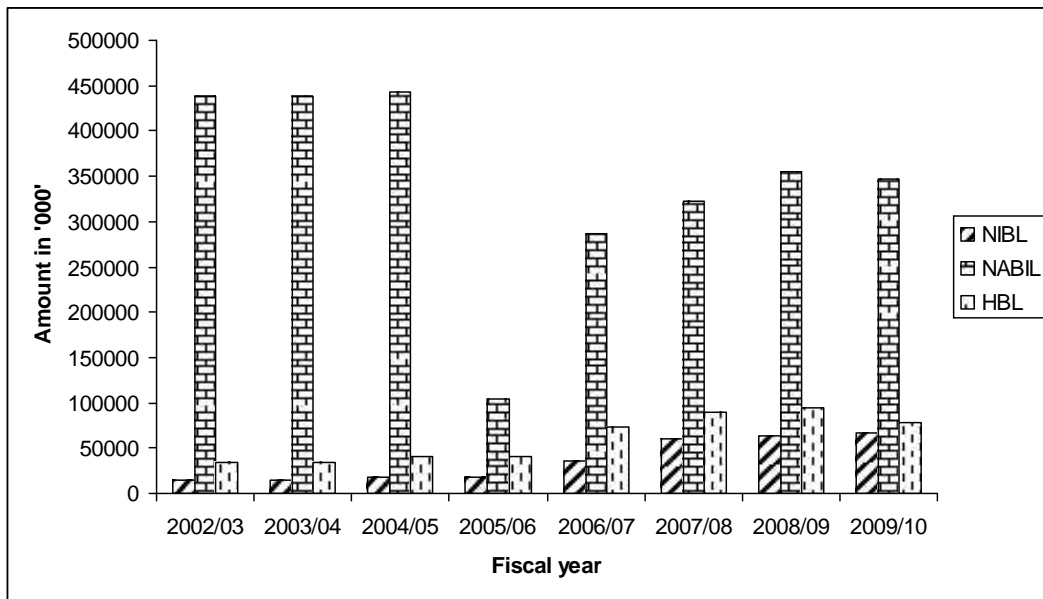
Table 4.2
Structure of Investment on Shares and Debentures Held by CBs

(Rs. in '000')

FY	NIBL	NABIL	HBL	CBs
2002/03	13895	437944	34265	486104
2003/04	13895	437944	34265	486104
2004/05	17738	443087	39909	500734
2005/06	17738	104192	39909	161839
2006/07	35253	286958	73424	395635
2007/08	59946	323236	89558	472740
2008/09	64271	354930	93883	513084
2009/10	66646	346856	78882	492384
Total	289382	2735147	484095	3508624
Average	36173	341893	60512	438578
S.D.	2.87	16.29	4.71	-
C.V.	43.8%	25.4%	21.3%	-

Source: Annual Reports of CBs from FY 2002/03 to 2009/10

Figure 4.2
Coverage of Share and Debentures Held by CBs



The table 4.2 and figure 4.2 shows that CBs made very low parts on Shares and Debentures of other companies except Nabil Bank Ltd. The investment of Nepalese CBs on other companies' shares shows NABIL has been investing highest among other CBs i.e. 2735147 thousand. Similarly, NIBL has least mean, which means that NIBL invest lowest amount in share and debenture, where as Nabil has lowest CV that indicates more consistency in investing shares and debentures of other companies.

It has been revealed that there is not 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 and NIBL covers lowest shares of total investment on shares and debentures made by CBs.

Among the above three listed commercial banks Nabil bank is the only bank investing in foreign bonds. Nabil has been investing foreign bonds like IDBI Bond, Development Bank of Singapore Bonds and ICICI Bank Bond. Thus the Nabil Bank has highest percentage of total investment on shares and debentures made by CB's.

4.1.3 Investment other than Government Securities and Corporate Shares and Bond

Commercial banks have also invested their fund other than government securities and Corporate Shares and Bond. The other investment includes investing on Certificate of Deposit, Mutual Fund, Local licensed institutions, Foreign Bank and Other Investment. CB's are investing large portion of Other Investment in Foreign Banks in term of deposit and Placement. Some of the CBs are investing on Swift and NCM mutual fund under category other investment. The investment structure of commercial banks on other Investments (other than Government Securities and Corporate shares and Bond) is shown in table 4.3.

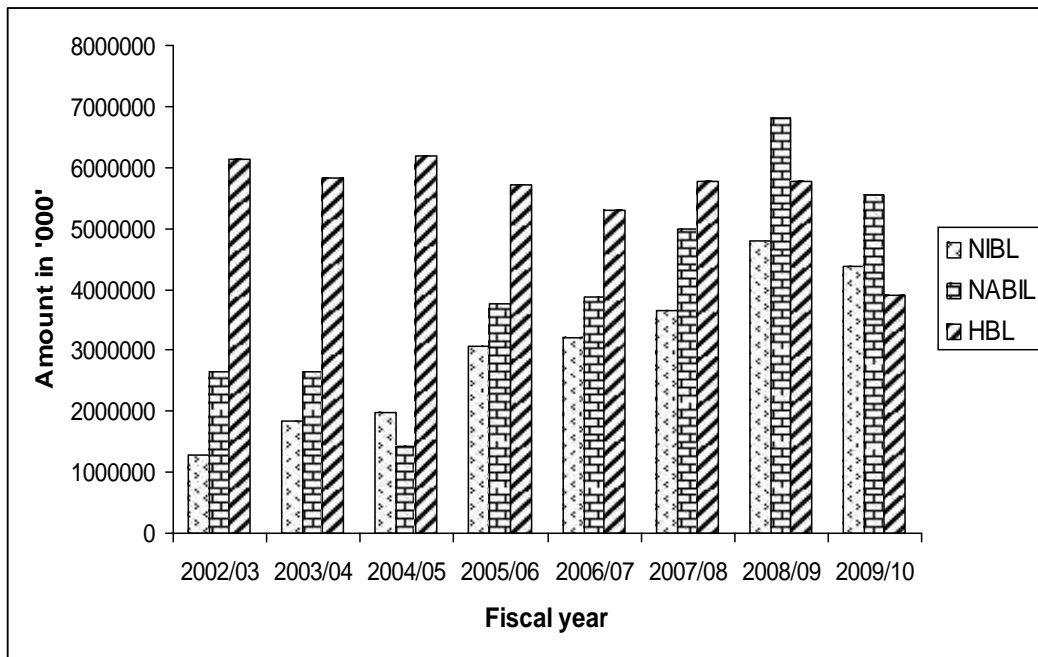
Table 4.3
Structure of Investment other than Government securities and Shares and
Debentures Held by CBs

(Rs. in '000')

FY	NIBL	NABIL	HBL	CBs
2002/03	1291346	2644430	6142299	10078075
2003/04	1847488	2644430	5826108	10318026
2004/05	1967951	1416435	6182704	9567090
2005/06	3062831	3775003	5706151	12543985
2006/07	3214027	3861003	5294687	12369717
2007/08	3664478	4996443	5778951	14439872
2008/09	4807541	6813772	5778951	17400264
2009/10	4370335	5553813	3900655	13824803
Total	24225997	31705329	44610506	100541832
Average	3028250	3963166	5576313	12567729
S.D.	2.91	4.16	12.12	-
C.V.	19.4%	21.4%	38.3%	-

Source: Annual Reports of CBs from FY 2002/03 to 2009/10

Figure 4.3
Coverage of Other Investment (Other than Government securities and Shares and Debenture) Held by CBs



The table 4.3 and figure 4.3 shows that CBs have made significant investment on other investment including Local Licensed Institution and Foreign Banks placement and deposits. Among three CBs HBL has invested large portion on other investment i.e. 446105069 thousand followed by NABIL 31705329 thousand. It signifies that HBL has larger foreign currency reserve in term of deposits and placement. Other investment of NABIL and NIBL is 31705329 thousand and 24225997 thousand respectively.

The HBL has greater CV which reveals the other investment pattern of HBL is quite volatile whereas CV of NIBL is the lowest that reveals consistent investment on other investment.

4.1.4 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. CBs have been improving access to financial services to majority of population of Nepal and are committed to help bring, who are not in

realm of financial services, into mainstream of economy. This is vital part of promoting economic growth and can help bring people out of poverty.

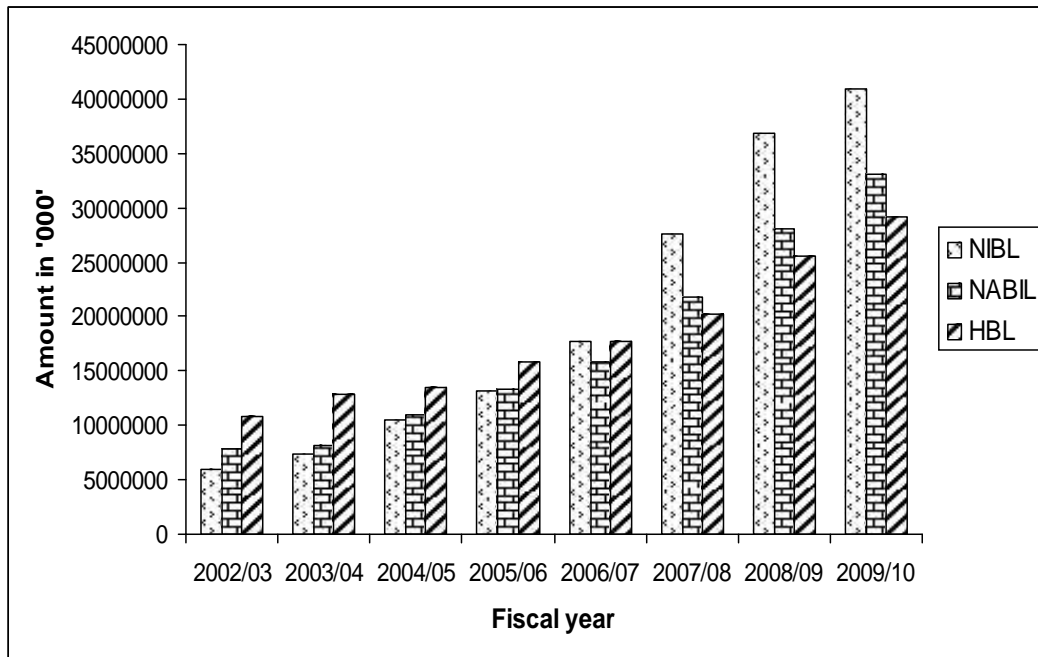
Commercial banks invest their funds in various sectors like , agriculture; commercial sector etc. Commercial banks should invest its collected funds as loan and advances. Loans and advances, Overdrafts and bills purchased include direct finance provided to customers such as bank overdrafts, credit card, personal loans, term loans, hire purchase finance and loans to deprived sectors. All loans are the subject to regular review and are graded according to the level of credit risk and classified as per Nepal Rastra Bank's Directives. Commercial Banks have diversified the loan portfolio with a mix of different sectors from personnel lending to small & medium enterprise lending, gramin micro lending Investment structure of loan and advances of CBs are tabulated in Table 4.4.

Table 4.4
Structure of Investment on Loan and Advance Held by CBs
(Rs. in '000')

FY	NIBL	NABIL	HBL	CBs
2002/03	5921718	7802000	10844599	24568317
2003/04	7338506	8114000	12919631	28372137
2004/05	10453164	10946737	13451168	34851069
2005/06	13178152	13278782	15761976	42218910
2006/07	17769100	15903024	17793724	51465848
2007/08	27529305	21759460	20179613	69468378
2008/09	36827157	27999012	25519519	90345688
2009/10	40948440	33030969	29123756	103103165
Total	159965542	138833984	145593986	444393512
Average	19995693	17354248	18199248	55549189
S.D.	4.27	0.76	4.41	-
C.V.	18.7%	35.6%	18.0%	-

Source: Annual Reports of CBs from FY 2002/03 to 2009/10

Figure 4.4
Coverage of Loan and Advances of Different CBs



From the above table no. 4.4 and figure 4.4 shows that NIBL has the highest shares i.e.19995693 thousand on loan and advances among three CBs throughout the review period from 2002/2003 to 2009/10. HBL takes at the second position and NABIL take last position respectively loan and advances among three CBs. The Loan and Advances of NIBL has drastically been increasing in last three years. Unlike the case NIBL, HBL investment on loan and advances is in decreasing trend. The above table reveals that the NABIL has been consistently grown its Loan and Advances. Abreast, NABIL has less CV which indicates the consistency of investment on loan and advances.

It is clear that HBL is the best bank among three banks on the basis of utilization of resources in the field of loan and advances. In the 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 their fund raised through deposit and borrowings into loans and advances. In order to fulfill the gap between

borrowings and lending banks rather goes for investment on government securities, shares and debenture, such as NRB bond, Other Investment etc.

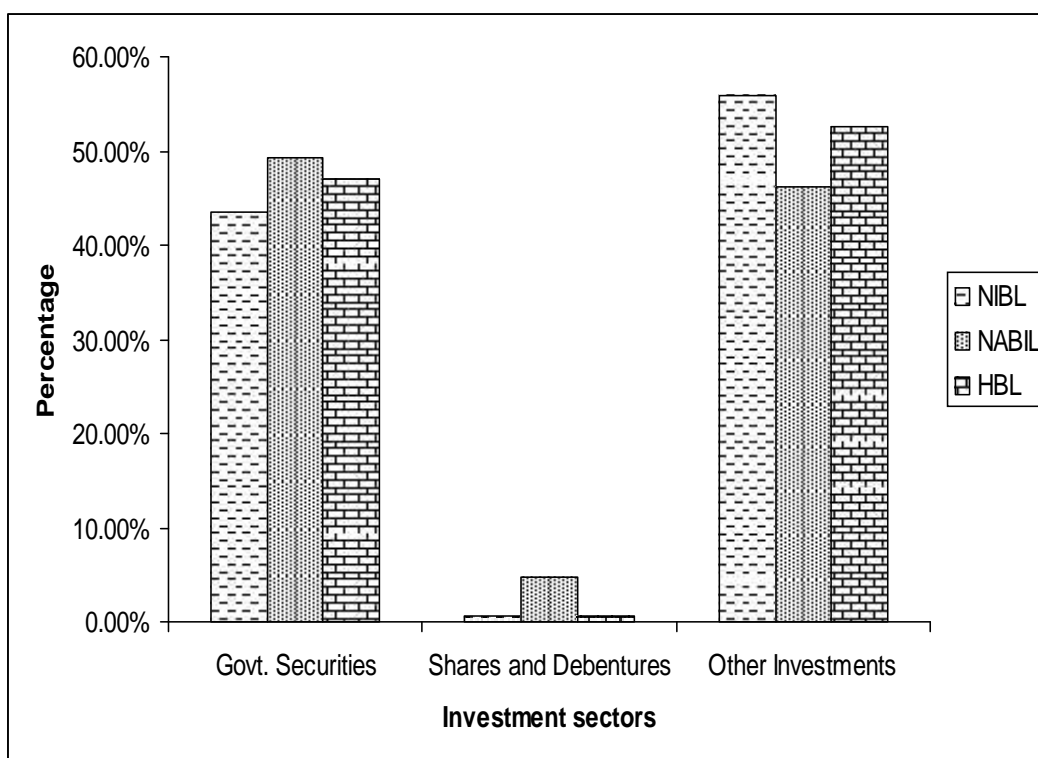
The portfolio of making investment by three commercial banks i.e. NIBL, NABIL and HBL has been analyzed in table 4.5. (Detail on Appendix 1)

Table 4.5
CBs Average Investment Portfolio

Name of Banks	Percentage		
	Govt. Securities	Shares and Debentures	Other Investments
NIBL	43.57	0.62	55.81
NABIL	49.21	4.66	46.12
HBL	46.94	0.57	52.49
Average	46.57	1.95	51.47

Source: Banking and Financial Statistics, NRB, Mid July 2010

Figure 4.5
CBs Average Investment Portfolio in Percentage



The table 4.5 and figure 4.5 shows the average investment portfolio of three commercial banks. The average investment on government securities is 46.57% whereas investment in shares and debentures and other investments are 1.95% and 51.47% respectively.

NIBL has invested high amount on Other Investment of total investment portfolio. The mean percentage invested on other investment is i.e.55.81% and the mean percentage invested on government securities and share & debenture is 43.57% and 0.62% respectively.

NABIL has invested very high amount of fund on government securities. The mean percentage of fund invested on government securities is 49.21%. The mean percentage of invested amount on share and debenture and Other Investment is 4.66% and 46.12% respectively. Among three CBs, NABIL has invested maximum mean percentage on shares and debentures. The mean percentage invested on shares and debentures is 1.16% after NABIL among three CBs.

HBL has invested significant amount of funds on government securities. Its mean percentage ratio investment on government securities is 46.94% and the mean percentage invested on other investment is i.e. 52.49%. The mean percentage ratio of HBL invested on share and Debenture is 0.57%.

4.3 Loan and Advance Portfolio Analysis

Commercial bank provides loan and advance from 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 HBL has been analyzed in table 4.6 (Detail on Appendix 1).

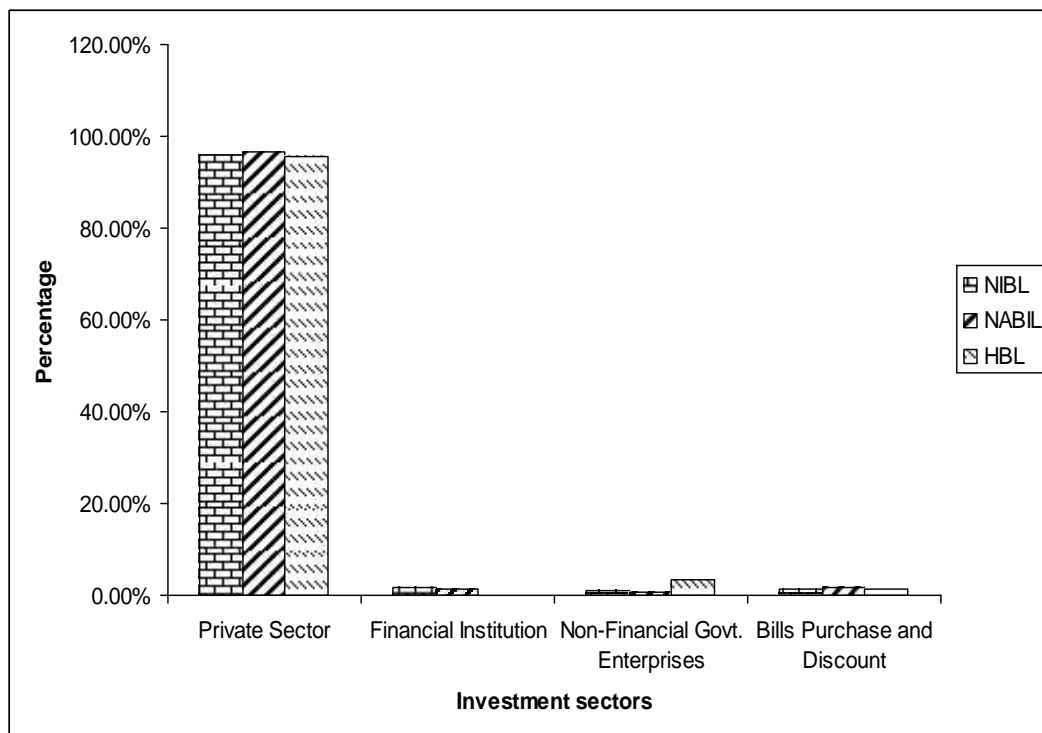
Table 4.6
CBs Average Loan and Advances Portfolio

Percentage

Name of the Banks	Private Sector	Financial Institution	Non-Financial Govt. Enterprises	Bills Purchase and Discount
NIBL	95.85	1.84	0.91	1.40
NABIL	96.47	1.24	0.65	1.64
HBL	95.58	0	3.23	1.20
Average	95.96	1.54	1.60	1.41

Source: Banking and Financial Statistics, NRB, Mid July 2010 and Appendix 2b

Figure 4.6
CBs Average Loan and Advances Portfolio in Percentage



The table 4.6 and figure 4.6 shows the average loans and advance portfolio of three commercial banks. NIBL has provided very high amount of its loans and advances to the private sector which is 95.85%. The mean percentage of loans and advances to the private sector is 95.96%. NIBL has given second priority to foreign bills financial institutions. The mean percentage of foreign bills P&D is

1.41%. The bank has finally given priority to government enterprise with the mean percentage of 0.91%.

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 96.47% which is highest among CBs. It has given a second priority to foreign bills P&D. The mean percentage of loans and advances to Foreign and Domestic bills P&D including loan against collection Bills is 1.64%. Lastly it has given a priority in providing loans and advances to Financial Institution and government securities with mean percentage of 1.24% and 0.65% respectively.

HBL has provided 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 95.58%. It has given second priority to government enterprise. The mean percentage on it is 3.23%. And finally it has invested on foreign bills P&D with mean percentage of 1.92%. HBL has been not provided any loan to Financial Institution.

From the table 4.6 it revealed that the private sector occupied maximum proportion of lending portfolio of the Commercial Banks. The commercial banks are lending insignificant amount of its lending portfolio in Government Enterprises.

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 HBL are shown in table 4.7.

Table 4.7
Investment to Total Deposits Ratio

	Percentage		
FY	NIBL	NABIL	HBL
2002/03	21.52	49.61	48.35
2003/04	33.51	47.84	42.22
2004/05	27.60	29.33	47.12
2005/06	29.60	31.95	41.11
2006/07	26.57	38.37	39.35
2007/08	19.97	31.23	41.90
2008/09	15.85	29.12	29.08
2009/10	17.24	29.87	22.42
Mean	23.98	35.91	38.94
S.D.	5.87	7.90	8.29
C.V.	25.0%	22.0%	21.0%

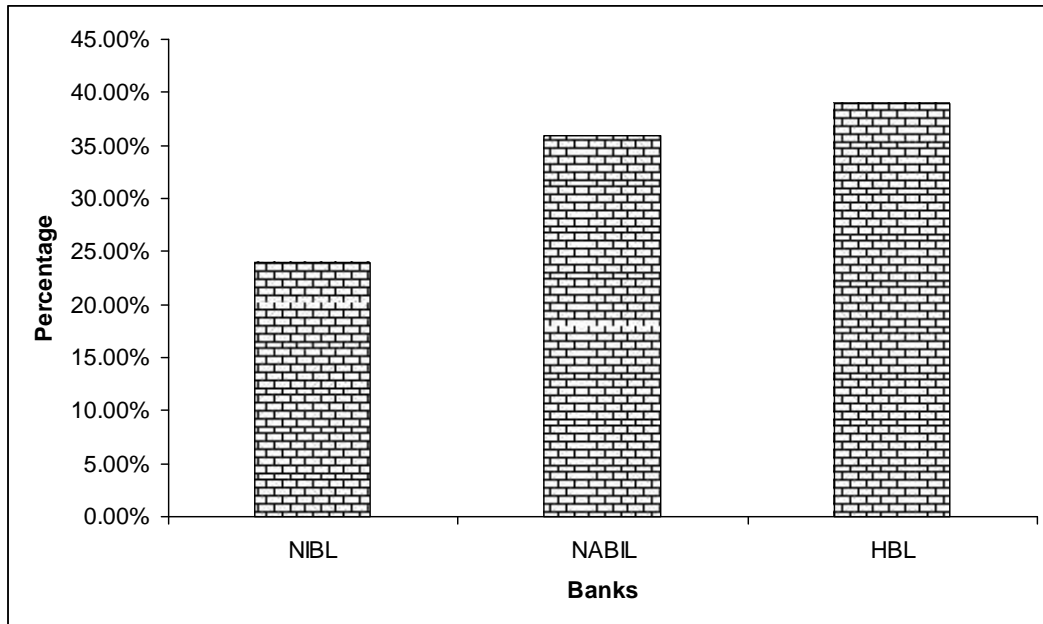
Source: Appendix I (e, f)

Average Mean = 32.94%

Average CV = 23.0%

Figure 4.7

Total Investment to Total Deposit Ratio



The comparative table 4.7 and figure 4.7 have revealed that the ratio of investment to total deposits of CBs are in fluctuating trend throughout the review period i.e. from the FY 2002/2003 to 2009/10. The mean investment to total deposit of HBL is the highest at the 38.94%. Similarly NABIL and NIBL has second and third highest ratio of investment to total deposit with 35.91% and 23.98%. From the point of view of average ratio it can be said that the HBL's capacity to mobilize its deposit on investment is better than others because their mean ratio is higher than average ratio.

The coefficient of variation in the ratio of HBL is the lowest i.e. 21% indicated consistent investment on government securities. Unlikely, the CV of NABIL and NIBL has 22% and 25% indicates somehow inconsistent. So, it is clear that HBL is the most successful in utilizing its resources on investment among other three banks. However, NABIL moderates in utilizing its resources on investment to some extent. NIBL is not so successful in utilizing its deposits on investment than other CBs.

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;

$$\frac{\text{Loans and advance}}{\text{Total Deposit}}$$

Where, loan and advances have 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 table 4.8 shows the ratios of loan and advances to total deposit ratio of various CBs.

Table 4.8
Loan and Advance to Total Deposit Ratio

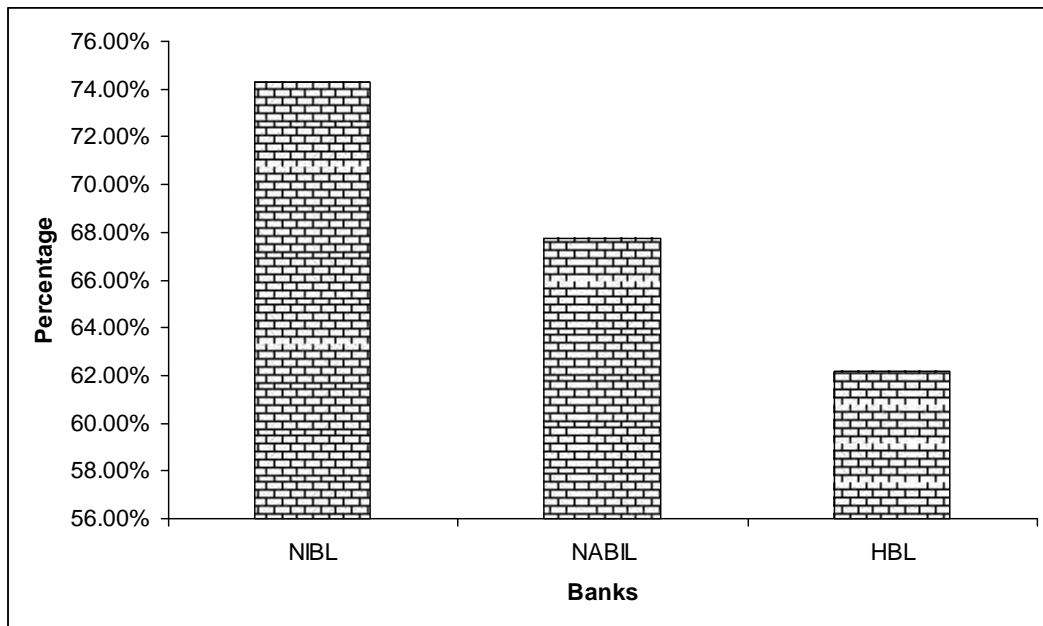
	Percentage		
FY	NIBL	NABIL	HBL
2002/03	74.74	58.02	51.53
2003/04	63.68	57.47	58.70
2004/05	73.33	75.05	54.21
2005/06	69.63	68.63	59.50
2006/07	72.56	68.13	59.22
2007/08	79.91	68.18	63.37
2008/09	78.86	74.97	73.58
2009/10	81.74	71.28	77.32
Mean	74.31	67.72	62.18
S.D.	5.56	6.32	8.41
C.V.	7.5%	9.3%	14.0%

Source: Appendix I (d, f)

Average Mean = 68.07%

Average CV = 10.0%

Figure 4.8
Loan and Advances to Total Deposit Ratio



In table 4.8 and figure 4.8, the mean loans and advances to total deposit ratio of NIBL is highest i.e. 74.31 % and HBL is lowest ratio i.e. 62.18 % among three commercial banks. NABIL bank has a mean ratio of 67.72%. The average mean ratio is 68.07%. It can be said that NIBL's capacity to mobilize its deposit on loan and advance is better than average ratio of CBs.

The CV ratio of NIBL is lowest i.e. 7.5% among three commercial banks which indicated that the investment as NIBL is the most uniform. NABIL and HBL has the higher CV ratio i.e. 9.3% and 14% among three commercial banks, it indicated that the investment of NABIL and HBL is more fluctuated. The lowest CV is better than highest CV. The average CV ratio is 10%. NIBL and NABIL have a lowest CV than average CV i.e. 7.5% and 9.3% respectively. So it can be concluded that NIBL is the most effective, NIBL and NABIL is moderate effective to mobilize its deposit on loan and advances.

c. Government securities to Total Deposit Ratio

The Government securities are also some of major sectors of an investment. This ratio measures how banks have mobilized its deposit on government securities. Though investment in government securities yields less return but it is considered as more secured investment. The higher ratio represents the more secure

investment of the firm in utilizing fund and vice-versa. NRB has made mandatory provision to invest minimum of 8% of their total deposit in Government securities. This ratio is calculated by dividing investment in government securities by total deposit. This can be stated as;

Investment on government securities

Total Deposit

Where, investment in government securities included purchasing of government bonds, treasury bills etc. The table 4.9 shows the government securities to total deposit ratio of various CBs.

Table 4.9
Government securities to Total Deposit Ratio

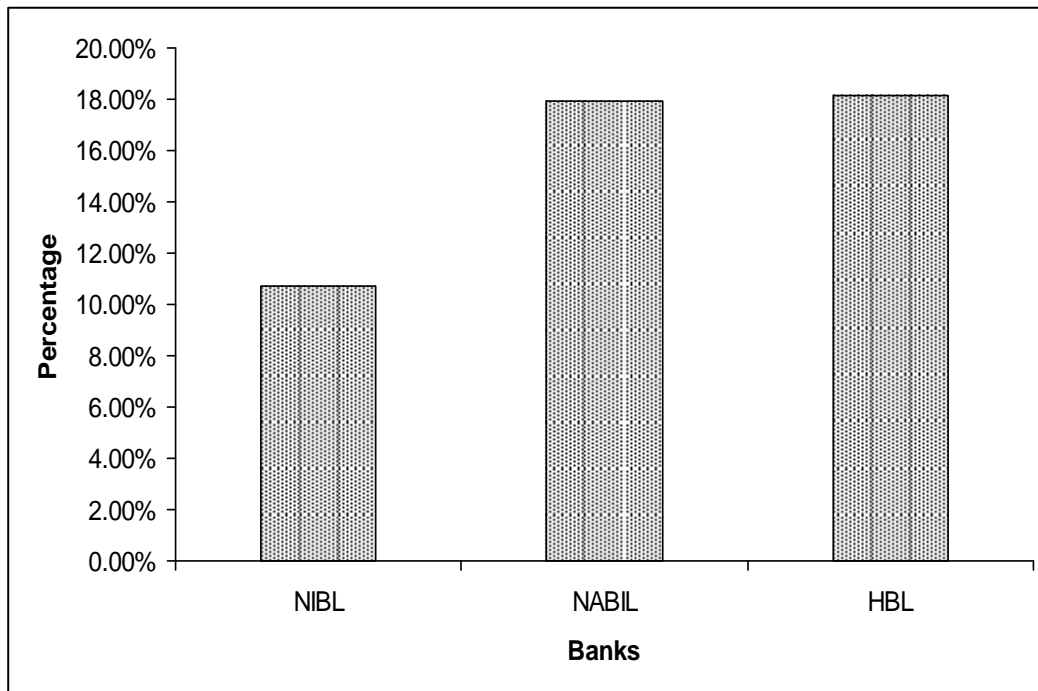
	Percentage		
FY	NIBL	NABIL	HBL
2002/03	5.05	26.69	19.00
2003/04	17.36	26.01	15.59
2004/05	13.67	16.58	22.04
2005/06	13.33	11.90	19.42
2006/07	13.30	20.60	21.48
2007/08	9.16	14.56	23.46
2008/09	5.42	9.92	12.15
2009/10	8.39	17.14	11.86
Mean	10.71	17.92	18.13
S.D.	4.10	5.74	4.17
C.V.	38%	32%	23%

Source: Appendix I (a, f)

Average Mean = 15.59%,

Average CV = 31%

Figure 4.9
Government Securities to Total Deposit Ratio



From table 4.9 and figure 4.9 revealed that the mean Government securities to total deposit ratio of HBL is highest i.e. 18.13% and NIBL is lowest ratio i.e. 10.71% among three commercial banks. Next bank NABIL has mean ratios of 17.92%. The average mean ratio is 15.59%. However, all three commercial banks have been invested higher than prescribed limit indicates an existence of comfortable level of liquidity in the banking system.

The CV ratio of HBL is lowest i.e. 23% among three commercial banks which indicates that the investment of HBL is more secured. NIBL has the highest CV ratio i.e. 38% among three commercial banks; it indicates that the investment of NIBL is inconsistent. The lowest CV is better than highest CV. The average CV ratio is 31%. HBL has a lowest CV than average CV. So it can be concluded HBL has the consistent investment than that of NIBL and NABIL which are more inconsistent in comparison to average.

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 efficiency 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 include the total assets of balance sheet item.

The table 4.10 shows the ratios of net profit after tax to total assets ratio of various CBs.

Table 4.10
Return on Total Assets

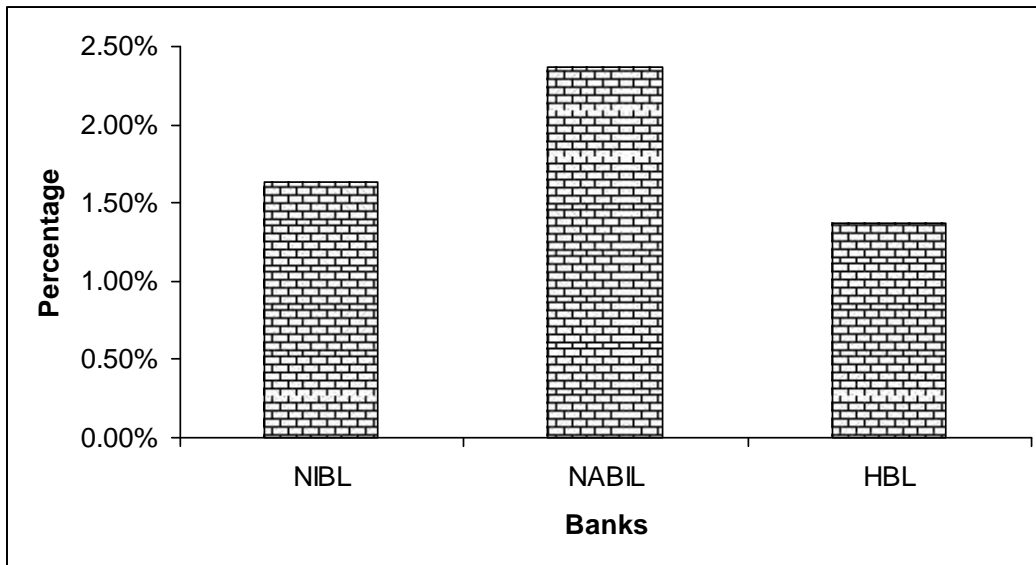
	Percentage		
FY	NIBL	NABIL	HBL
2002/03	1.30	1.57	0.91
2003/04	1.15	2.51	1.06
2004/05	1.43	3.05	1.12
2005/06	1.64	2.84	1.55
2006/07	1.82	2.47	1.47
2007/08	1.79	2.01	1.76
2008/09	1.70	2.35	1.91
2009/10	2.21	2.19	1.19
Mean	1.63	2.37	1.37
S.D.	0.31	0.44	0.33
C.V.	19%	19%	24%

Source: Appendix I (g, h)

Average Mean = 1.79%

Average CV = 21%

Figure 4.10
Return on Total Assets Ratio



The comparative table 4.10 and figure 4.10 shows that commercial banks has mixed trend on their return to total assets ratio. Among three CBs, NABIL has the highest mean return and HBL has the lowest return on total assets i.e. 2.37% and 1.37%. The overall average mean of CBs is 1.79%. However NABIL also has mean return above average mean of CBs i.e. 2.37%.

Similarly, looking at CV among the three CBs, NIBL and NABIL have the lowest CV i.e. 19% each which is the most consistent than other banks. And, the highest CV in the ratios of HBL i.e. 24% shows the return on total assets of HBL 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 has utilized overall resources efficiently than other bank. The profitability position of HBL 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 which can be stated as,

Investment on share and debentures

Total outside investment

Where,

TOI = loan and advances + Bill purchased and discounted + Investment

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

The table 4.11 shows the ratios of investment on share and debentures to total outside investment ratio of various CBs.

Table 4.11

Investment on Share and Debenture to Total outside Investment Ratio

Percentage

FY	NIBL	NABIL	HBL
2002/03	0.18	3.03	0.16
2003/04	0.12	2.95	0.15
2004/05	0.12	2.91	0.16
2005/06	0.09	0.54	0.15
2006/07	0.15	1.15	0.25
2007/08	0.17	1.02	0.27
2008/09	0.15	0.91	0.26
2009/10	0.13	0.74	0.21
Mean	0.14	1.66	0.20
S.D.	0.03	1.03	0.05
C.V.	21%	63%	25%

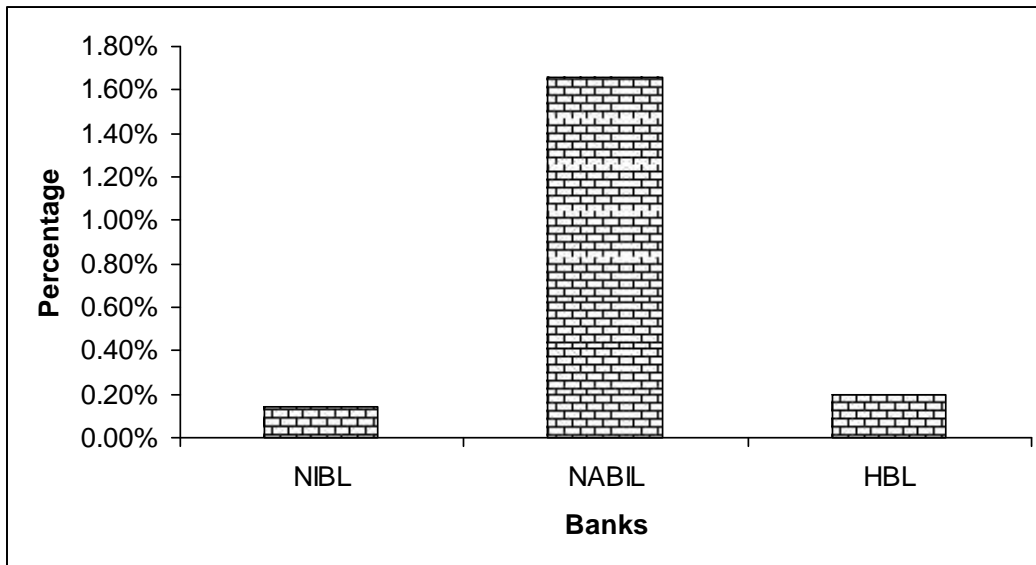
Source: Appendix I(b, i)

Average Mean = 0.67%

Average CV = 36%

Figure 4.11

Investment on Share and Debenture to Total outside Investment Ratio



The table 4.11 and figure 4.11 shows that CBs have 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 has been invested by all CBs except NABIL. Among three commercial banks, NABIL has invested higher amount on share and debenture i.e. 1.66% 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. 21% among the three CBs, which shows that the variability of the ratios between investment on share and debenture and total outside investment is the most uniform among the other CBs. Similarly, NABIL has the highest CV i.e. 63% which shows that it has more 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 has invested highest portion of total investment into share and debenture on the basis of mean. On the other hand, NIBL and HBL are the most consistent banks in investing their total outside investment on share and debenture.

f. Investment on Government Securities to Total outside Investment

This ratio is very useful to know in that 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 which 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 table 4.12 shows the ratios of investment on government securities to total outside investment ratio of various CBs.

Table 4.12

Investment on Government Securities to Total outside Investment Ratio

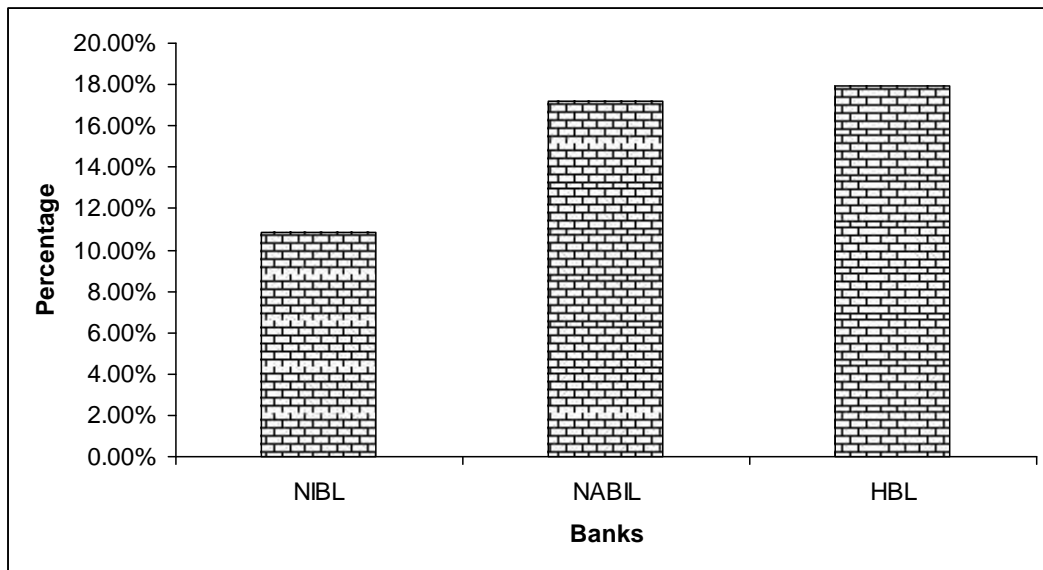
	Percentage		
FY	NIBL	NABIL	HBL
2002/03	5.24	24.80	19.02
2003/04	17.87	24.70	15.45
2004/05	13.54	15.88	21.75
2005/06	13.43	11.83	19.30
2006/07	13.41	19.34	21.79
2007/08	9.17	14.65	22.29
2008/09	5.72	9.53	11.83
2009/10	8.47	16.94	11.89
Mean	10.86	17.21	17.92
S.D.	4.12	5.18	4.05
C.V.	38%	30%	23%

Source: Appendix 1(a, i)

Average Mean & CV= 15.33% & 30%.

Figure 4.12

Investment on Government Securities to Total outside Investment Ratio



The table 4.12 and figure 4.12 show that there is maximum investment in government securities than in other investment portion because of its security. On government securities, HBL has the highest invest on government securities to total outside investment i.e. 17.92% 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. 10.86%.

NIBL has the highest CV among three CBs which shows the least consistent. But HBL 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 HBL is higher among three CBs which is proved by highest ratio and lowest CV. Similarly, NABIL and NIBL have moderate position. Likewise, NIBL has the weakest position for mobilization of total outside assets into government securities.

g. Investment on others securities (other than government securities & share and debenture) to Total outside investment

The ratio of investment on others securities to total outside investment reflects the portion of investment of CB's on other securities (other than government

securities & share and debenture). CBs have invested large portion of their investment portfolio in other securities. The other investment includes investing on Certificate of Deposit, Mutual Fund, Local licensed institutions, Foreign Bank and Other Investment. CB's have been investing large portion of Other Investment in Foreign Banks in term of deposit and Placement. Some of the CBs have been investing on Swift and NCM mutual fund under category of other investment.

A ratio of Investment on other securities to total outside investment can be calculated as follows:

Other Investments

Total outside Investment

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

The table 4.13 shows the ratio of other investment to the total outside investment of various CBs.

Table 4.13
Investment on Other Investment to Total outside Investment Ratio

	Percentage		
FY	NIBL	NABIL	HBL
2002/03	16.93	18.27	29.22
2003/04	16.49	17.78	26.23
2004/05	13.68	9.30	24.59
2005/06	16.31	19.40	21.41
2006/07	13.24	15.53	17.88
2007/08	10.65	15.75	17.24
2008/09	10.87	17.53	16.23
2009/10	8.81	11.85	10.38
Mean	13.37	15.68	20.40
S.D.	2.86	3.24	5.75
C.V.	21%	21%	28%

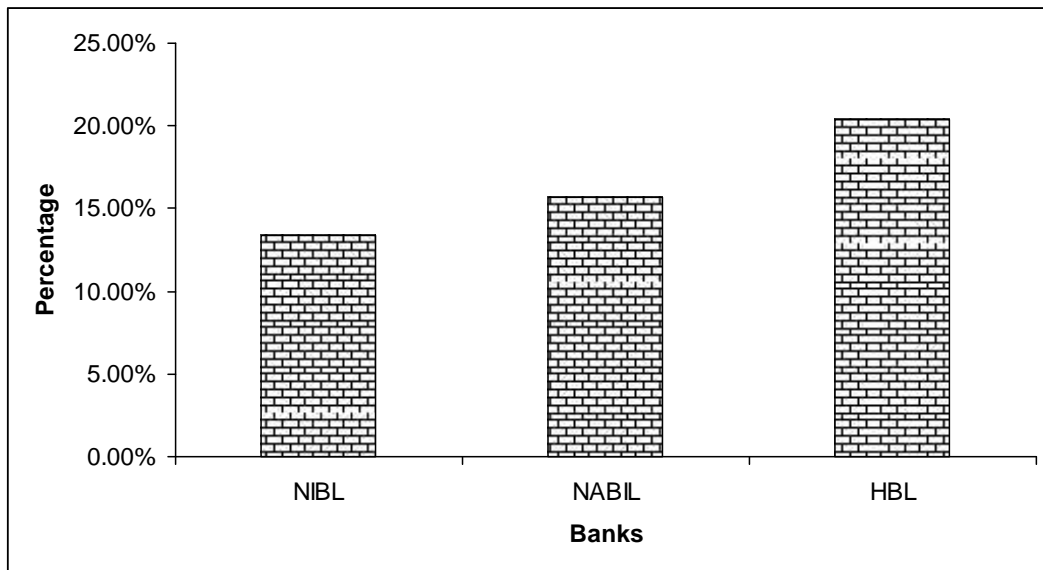
Source: Appendix I(c, i)

Average mean = 16.48%

Average CV = 23%

Figure 4.13

Percentage Investment on others Investment to Total outside Investment



The table 4.13 and figure 4.13 show that there are maximum investment in other investment. On other investment, HBL has the highest investment on other investment to total outside investment i.e. 20.40% among three CBs. Similarly, NIBL has invested lowest parts of total outside investment to other investment because it has lowest investment on other investment to total outside investment i.e. 13.37%.

HBL has the highest CV among three CBs which shows the least consistent. But NIBL & NABIL 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 other investment of HBL is higher among three CBs which is proved by highest ratio and lowest CV. Similarly, NABIL has moderate position. Likewise NIBL has weakest position for mobilization of total outside assets into Other Investment.

4.5 Investment Portfolio Risk and Return Analysis of CBs

Risk and Return are two crucial phenomenons in the world of investment. There is always linear relationship between risk and return. Nobody seems interested to

invest in risky assets unless he is assured of adequate compensation for the assumption of risk. Generally in a market, higher risk commands 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 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 phenomena in the 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 in Table 4.14;

$$\text{Return on govt. securities } (R_g) = \frac{\text{Interest Income from govt. securities}}{\text{Total Investment on govt. securities}}$$

$$\text{Average rate of return } \bar{R}_g = \frac{\sum_{t=1}^n R_g}{n}$$

$$\text{Risk on govt. securities } \sigma_g = \sqrt{\frac{\sum_{t=1}^n (R_g - \bar{R}_g)^2}{n}}$$

Table 4.14

Calculation of Risk and Return on Government Securities of Nepalese CBs

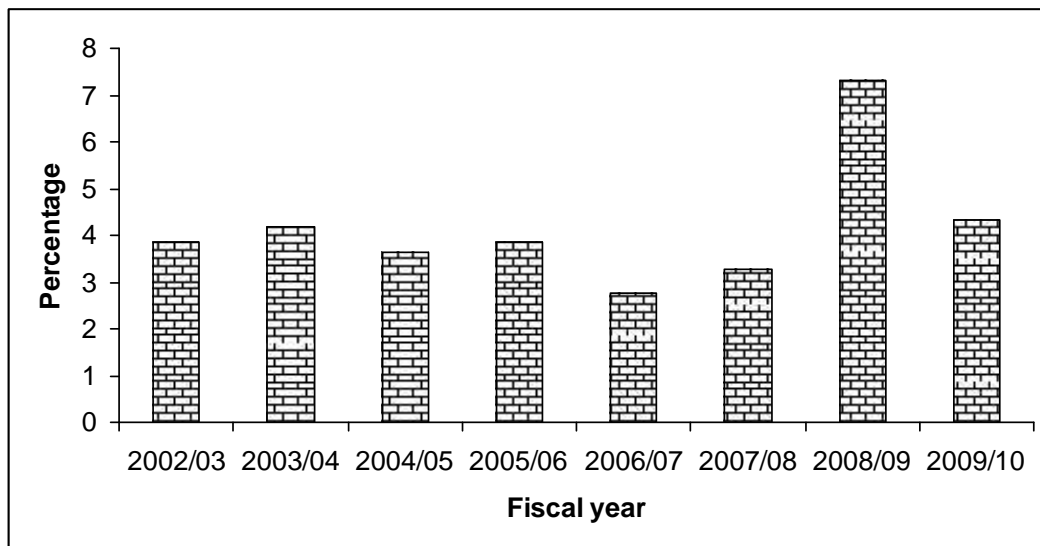
FY	Investment on GOVT. Securities “000”	Interest Income on GOVT. Securities “000”	Return on GOVT. Securities (%)(R_g)	$(R_g - \overline{R_g})^2$ (%)
2002/03	7987642	307349	3.85	0.09
2003/04	9105455	381061	4.18	0.009
2004/05	9836660	356745	3.62	0.2809
2005/06	9968076	384859	3.86	0.0841
2006/07	145819619	402282	2.78	1.8769
2007/08	15273551	499743	3.28	0.7569
2008/09	10449703	764834	7.32	10.0489
2009/10	16608778	720374	4.34	0.0361
Total	86560484	3517247	33.23	13.1828

Source: Appendix1 (a) (j) and (m)

$*(3.85-4.15)^2=0.09$

Figure 4.14

Return on Government Securities of CBs



Here, $R_g = 33.23$

$n = 8$

$$\overline{R_g} = \frac{R_g}{n} = 33.23/8 = 4.15$$

$$\bar{R}_g = 4.15\%$$

Now,

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

$$= \sqrt{\frac{4.15}{8}} = 0.77$$

$$\sigma_g = 1.38$$

Again,

$$\text{Coefficient of Variation (CV)} = \frac{\sigma_g}{\bar{R}_g}$$

$$\frac{1.38}{4.15} = 0.33$$

Hence CVg = 0.33

From table 4.14 and figure 4.14, it can be concluded that, in average the return on investment on govt. securities made by CBs is 4.15%. Standard deviation is 1.38% 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. If the Treasury securities does not match the length of the investors holding period with maturity date, no treasury securities are qualified as risk free assets. There is always presence of price risk and re-investment risk in all treasury securities if mismatch between maturity date and investor's holding period.

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 volatile.

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 in which customers of the CBs can enjoy. In order to realize their objectives, CBs invest in various sectors like , 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;

Return on Loan and Advances $fR_l A = \frac{\text{Interest income on loan and advances}}{\text{Investment on loan and advances}}$

Average return on loan and advances $f\bar{R}_l A = \frac{R_l}{n}$

Where,

n = No. of historical year

Standard deviation on return on loan and advances $f\sigma_{R_l A} = \frac{\sqrt{fR_l Z \bar{R}_l A^2}}{n}$

Coefficient of variation $fCV_{R_l A} = \frac{\sigma_{R_l A}}{R_l}$

Table 4.15

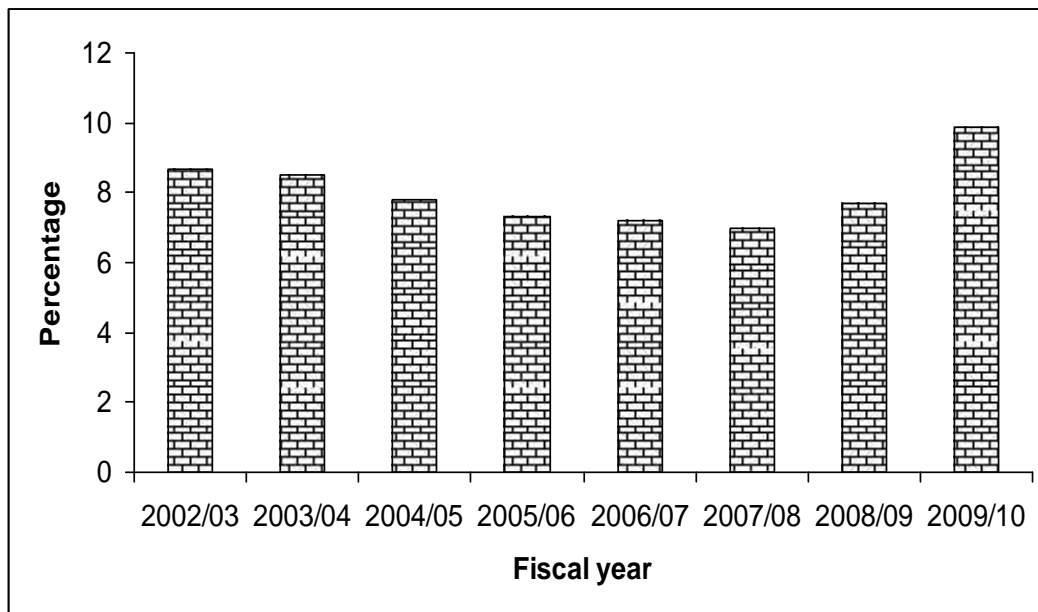
Calculation of Risk and Return on Loan and Advances of Nepalese CBs

FY	Investment on Loan and Advances “000”	Interest Income on Loan and Advances “000”	Return on Loan and Advances (%) (R_L)	$(R_L - \bar{R}_L)^2$ (%)
2002/03	24568317	2126731	8.66	0.4356
2003/04	28372137	2409483	8.50	0.25
2004/05	34851069	2723417	7.80	0.04
2005/06	42218910	3093607	7.32	0.4624
2006/07	51465848	3712227	7.21	0.6241
2007/08	69468378	4847750	6.98	1.0404
2008/09	90345688	6949747	7.69	0.0961
2009/10	103103165	10163880	9.85	3.4225
Total	100541832	36026842	64.01	6.3711

Source: Appendix I (d) (l) and (n)

*= (8.86-8.00)²=0.4356

Figure 4.15
Return on Loan and Advances of CBs



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

$$\frac{\sum R_i A_i}{n}$$

$$= \frac{64.01}{8} = 8.00$$

Again,

$$\sigma_{R_i} \times \sqrt{\frac{\sum R_i^2 A_i}{n \sum A_i}}$$

$$= \sqrt{\frac{6.3711}{8 \times 1}} = 0.91$$

$$CV_{R_i} \times \frac{\sigma_{R_i}}{R_i}$$

$$= \frac{0.91}{8} = 0.12$$

From table 4.15 and figure 4.15 reveals that the return on investment on loan and advances has no any fixed trend. During the period 2002/2003 to 2009/10 the highest return is 9.85% in 2008/2009 and lowest return is 7.21% in 2006/07. The highest return in 2009/10 was due to liquidity crisis in the Overall economy.

Because of the liquidity crisis the CBs are forced to increase their rate of return on deposits based on portfolio which tends to increase the rate on lending as well. The average return 8% means that in average the CBs generate 8% return on its investment made in loan and advances. The standard deviation 0.91% and coefficient of variation 0.12 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. Three companies have been 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 $fR_s^A = \text{Capital gain yield} + \text{Dividend yield}$.

$$\frac{P_t - P_{t-1}}{P_{t-1}} + \frac{D_t}{P_t}$$

Risk on share and debenture $f\sigma_s = \frac{\sqrt{\sum (R_s - \bar{R}_s)^2}}{n}$

Coefficient of variation $fCV_s = \frac{\sigma_s}{R_s}$

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

$D_t = \text{Dividend per share (all types of dividend)}$.

Table 4.16
Estimates of Market Parameter

Selected Co.	2002/03		2003/04		2004/05		2005/06		2006/07		2007/08		2008/09		2009/10	
	P_t	D_t	P_t	D_t	P_t	D_t	P_t	D_t	P_t	D_t	P_t	D_t	P_t	D_t	P_t	D_t
NABIL	740	50	1000	65	1505	70	2240	85	5050	140	5275	100	4899	85	2384	70
HBL	836	25	840	20	920	31.58	1100	35	1740	40	1980	45	1760	43.56	816	23
NIBL	795	20	940	15	800	12.5	1260	20	1729	5	2450	40.83	1388	20	705	25
Total	3661	225	4265	230	5640	327.5	9754	305	16849	355	19667	365.83	16512	308.56	8814	248
No. of Observation (n)	3		3		3		3		3		3		3		3	
Average $\int P_t^A$	790		967		1075		1534		2340		3235		2682		1302	

Source: Trading Report, NEPSE and Annual report of SEBO and NEPSE 2003 to 2010

Table 4.17
Calculation of Dividend Yield

In Percentage

Selected Co.	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10
NABIL	6.76	6.5	4.65	3.79	2.77	1.90	1.74	2.94
HBL	2.99	2.38	3.43	3.18	2.30	2.27	2.48	2.82
NIBL	2.52	1.60	1.56	1.59	0.29	1.67	1.44	3.55
Total	23.46	19.72	16.64	14.09	9.21	9.33	9.76	15.12
No. of observation (n)	3	3	3	3	3	3	3	3
Average Dividend Yield	4.09	3.50	3.21	2.85	1.79	2.09	1.89	3.10

Source: Table no. 4.16

Table 4.18
Calculation of Capital Yield and Dividend Yield on Share and Debentures of CBs

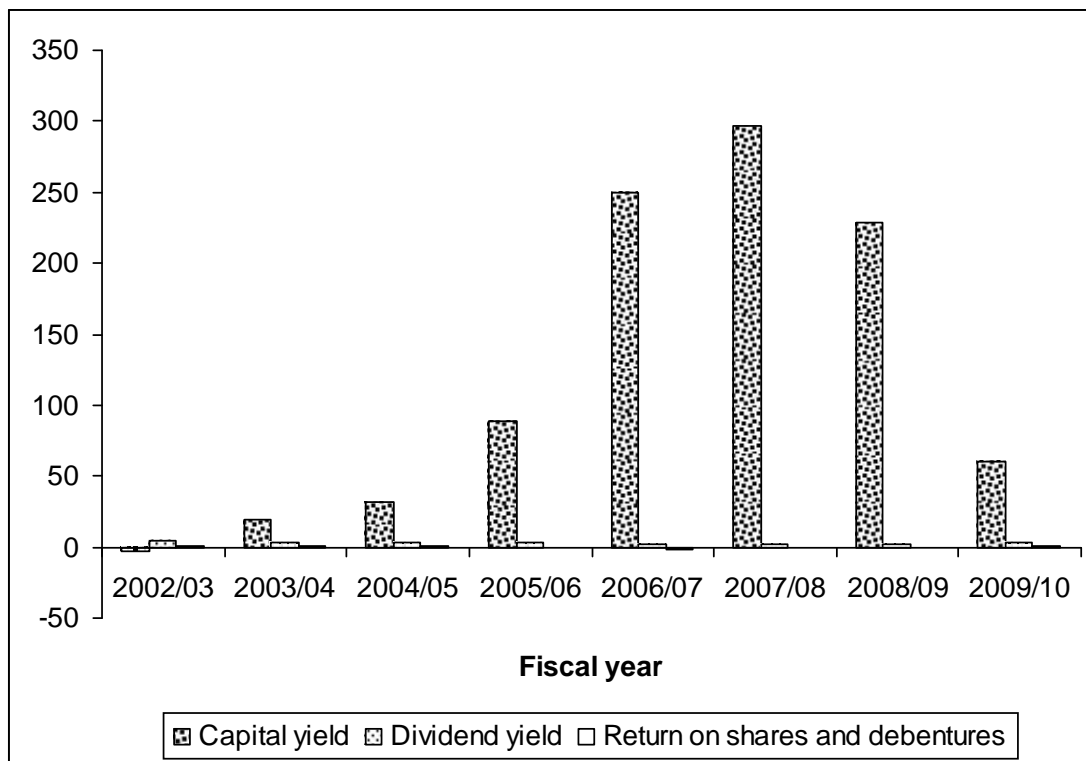
Fiscal year	Avg. Closing Price \bar{P}_t	% Change in Price (Capital Yield)	Avg. Dividend Yield $\frac{D_t}{P_t}$	Return on Share and Debentures R_s	$\int R_s \bar{Z} \bar{R}_s \bar{A}$
2001/02	813*	-	-	-	
2002/03	790	-2.89**	4.09	1.20***	1.6256
2003/04	967	18.94	3.50	0.61	0.4692
2004/05	1075	31.98	3.21	0.32	0.1560
2005/06	1534	88.68	2.85	-0.04	0.001225
2006/07	2840	250	1.79	-1.1	1.050
2007/08	3235	297	2.09	-0.8	0.5256
2008/09	2682	229	1.89	-1	0.8556
2009/10	1302	60.15	3.10	0.21	0.082
Total				0.6	4.7645

Source: Table No. 4.16 and 4.17

$$* \frac{790 \text{ Z } 813}{813} = -0.0289 = -2.89\%$$

$$** -2.89 + 4.09 = 1.20$$

Figure 4.16
Capital Yield, Dividend Yield and Return on Share and Debentures



The average closing price in year 2001/02 is calculated on the basis of NEPSE index and 2002/03 average closing price

$$2001/02 \text{ NEPSE index} = 227.54$$

$$2002/03 \text{ NEPSE index} = 204.86$$

$$\text{Closing price in year } 2002/03 = 732$$

$$\begin{aligned} \text{Average closing price on } 2001/02 &= \frac{732}{204.86} \times 227.54 \\ &= 813* \end{aligned}$$

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

$$\begin{aligned} \overline{R_s} &= \frac{R_s}{n} \\ &= \frac{0.6}{8} \\ &= 0.075 \end{aligned}$$

Again,

$$\begin{aligned} & \dagger_s \times \sqrt{\frac{\int R_s Z \bar{R}_s \bar{A}}{n Z 1}} \\ &= \sqrt{\frac{4.76445}{8 Z 1}} \\ &= 0.825 \end{aligned}$$

Now,

$$\begin{aligned} & CV_s \times \frac{\dagger_s}{R_s} \\ &= \frac{0.825}{0.2} \\ &= 4.125 \end{aligned}$$

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 tables 4.16, 4.17 and 4.18 and figure 4.16 that the annual rate of return of investment on share and debenture of CBs shows wide fluctuation, ranging from 1.20% in 2002/03 to -1.1% in year 2006/07. These fluctuations in returns are caused mainly by volatility of the share prices in the market. The change in dividends has also contributed to the variability of the shares return in some extent.

Risk and Return on Other Investments (Other than government securities and Corporate Shares and Debenture)

The large portion of investments of CBs includes other investments. The other investments are those investments other than government securities and corporate shares and debentures. The other investment includes investing on Certificate of Deposit, Mutual Fund, Local licensed institutions, Foreign Bank and Other Investment. CBs have been investing large portion of other investment in Foreign Banks in term of deposit and Placement. Some of the CBs have been investing on Swift and NCM mutual fund under category of other investment.

The risk and return on Other Investments are calculated by dividing interest income on other investments by total investment on govt. securities which is shown below;

Return on govt. securities (Ro) = Interest Income from Other Investments

Total Investment on Other Investments

$$\text{Average rate of return } \bar{R}_o = \frac{\sum_{t=1}^n R_{ot}}{n}$$

$$\text{Risk on other investments } \sigma_o = \sqrt{\frac{\sum_{t=1}^n (R_{ot} - \bar{R}_o)^2}{n}}$$

Table 4.19

Calculation of Risk and Return on Other Investment of Nepalese CBs

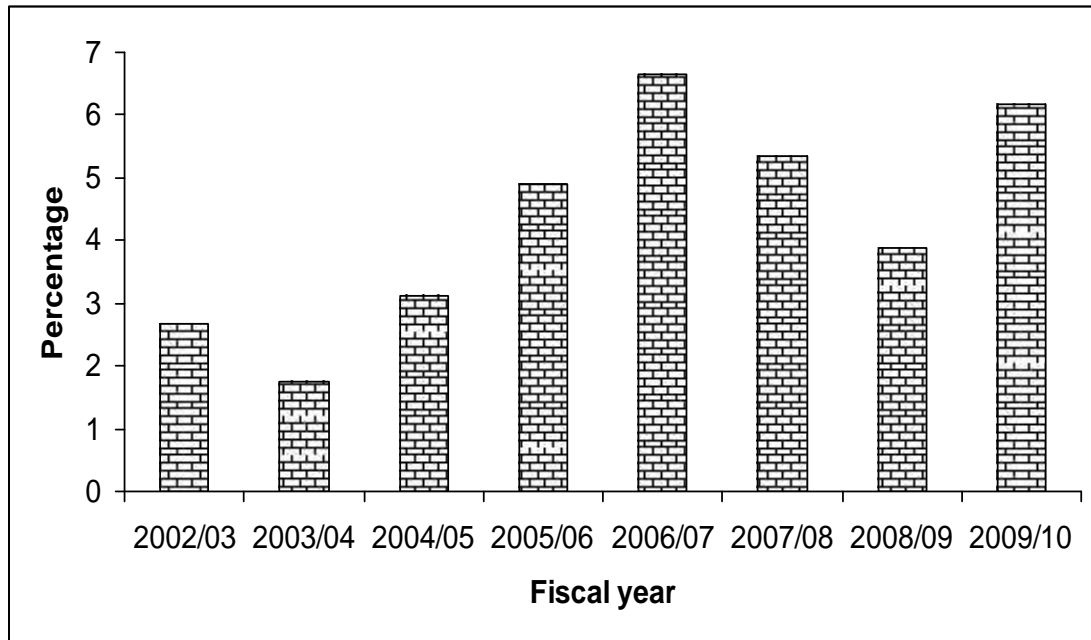
FY	Investment on Other Investment Securities "000"	Interest Income on Other investment Securities "000"	Return on Other Investment Securities (%) (Ro)	$(R_o - \bar{R}_o)^2$ (%)
1999/00	10078075	269996	2.68	6.076
2000/01	10318026	178974	1.74	13.50
2001/02	9567090	298931	3.12	4.1209
2002/03	12543985	615651	4.90	0.060
2003/04	12369717	823388	6.65	2.27
2004/05	14439872	774324	5.36	0.0462
2005/06	17400264	676188	3.88	1.60
2006/07	13824803	854460	6.18	1.071
Total	100541832	4491912	41.16	28.75

Source: Appendix I (c) (i) and (o)

*= (2.68-5.145)²= 6.076

Figure 4.17

Return on Other Investment Securities of CBs



Here, $R_o = 41.16$

$n = 8$

$$\bar{R}_o = \frac{R_o}{n} = 41.16/8 = 5.145$$

$$\bar{R}_o = 5.145\%$$

Now,

$$\text{Standard deviation } \sigma = \sqrt{\frac{\sum R_o^2 - \frac{(\sum R_o)^2}{n}}{n-1}}$$

$$= \sqrt{\frac{28.75}{8-1}} = 2.026$$

$$\sigma = 2.026\%$$

Again,

$$\text{Coefficient of Variation (CV)} = \frac{\sigma}{\bar{R}_o}$$

$$= \frac{2.026}{5.145} = 0.39$$

Hence $CV_o = 0.39$

From table 4.19 and figure 4.17, it can be concluded that, in average the return on investment on other investments made by CBs is 5.145%. Standard deviation is 2.02% which indicates risk on other investments. It is mainly due to the more fluctuating nature on other investment securities. There is no fixed trend to invest on other investments.

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

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, other investment and loan and advance. The weight of the investment on various assets and their average rate of returns are presented in Table 4.20.

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	86560484	0.14*	4.19
2	Share and Debenture	3508624	0.00552	35.20
3	Other Investment	100541832	0.1584	4.33
4	Loan and Advance	444393512	0.70	7.97
Total		635004452	1.0	

Source: Appendix 1(a), (b), (c), (d).

$$* = \frac{86560484}{635004452} = 0.14$$

Calculation of Portfolio Return $\sum R_p^A$

$$R_p = \sum W_i R_i$$

$$= 0.14 \times 4.19\% + 0.00552 \times 35.20\% + 0.1584 \times 4.33\% + 0.70 \times 7.97\%$$

$$= 7.045\%$$

Hence, Portfolio Return on Investment of CBs $\hat{R}_p = 7.045\%$

Portfolio Risk on Investment

We measure the risk of a portfolio by the variance or standard deviation of the return of the portfolio. The riskiness 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.	Combination of two assets	Covariance between two assets	Correlation Coefficient between two assets
1	Government securities and Loan and Advances	0.356	0.6157
2	Government securities and share & debentures	1.12	0.05228
3	Government securities and Other Investments	-0.01301	-0.0149
4	Loan & Advances and Shares & Debentures	0.465	0.0131
5	Loan & Advances and Other Investments	-0.031	-0.0009
6	Shares & Debentures and Other Investments	21.71	0.4040

Sources: Appendix 3 and Above Page

Where,

$$\# \text{Cov} (R_n, R_m) = \frac{(R_n \sum R_n) (R_m \sum R_m)}{n - 1}$$

$$\# \text{Corr.} (R_n, R_m) = \frac{\text{Cov}(R_n, R_m)}{\sigma_n \sigma_m}$$

Covgl, Covgs, Covgo, Covls, Covlo, and Covso are the Co-variance between government securities and loan and advance, government securities and share & debenture, government securities and other investments, loan and advance and share and debenture, loan and advances and other investment and share and debenture and other investment respectively.

The standard deviation of portfolio investment σ_p is

$$\sigma_p = \sqrt{W_g^2 \times \sigma_g^2 + W_l^2 \times \sigma_l^2 + W_s^2 \times \sigma_s^2 + W_o^2 \times \sigma_o^2 + 2\text{Covgl} \times W_g W_l + 2\text{Covgs} \times W_g W_s + 2\text{Covgo} \times W_g W_o + 2\text{Covls} \times W_l W_s + 2\text{Covlo} \times W_l W_o + 2\text{Covso} \times W_s W_o}$$

$$= \sqrt{(0.14)^2 \times (0.77)^2 + (0.00552)^2 \times (0.98)^2 + (0.1584)^2 \times (30.31)^2 + (0.70)^2 \times (1.48)^2 + 2 \times 0.356 \times 0.14 \times 0.644 + 2 \times 1.12 \times 0.14 \times 0.004 + 2 \times (-0.1301) \times 0.14 \times 0.152 + 2 \times 21.71 \times 0.004 \times 0.152 + 2 \times 0.465 \times 0.654 \times 0.04 + 2 \times (-0.031) \times 0.654 \times 0.152 + 2 \times 21.71 \times 0.004 \times 0.152}$$

$$= 0.59 \%$$

Hence, standard deviation of portfolio on investment of CBs $\sigma_p = 0.59\%$

Portfolio risk and return on investment have been 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, share and debenture and other investment. Due to the negative correlation between return of investment on Government securities and other investment and investment on loan and advance and other investment. Investment portfolio risk 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 i.e. 7.045% is less than that of average rate of return of individual investment on share and debentures i.e. 35.20% and investment on loan and advances i.e. 7.97%. 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 depends 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 has used Sharpe's 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 by S_i which measures the slope of the line starting at risk less rate R and running out to asset is defined as below;

$$S_i = \frac{\text{Risk Premium}}{\text{Total Risk}}$$

$$= \frac{\bar{r}_i - R}{\sigma_i}$$

Where,

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

σ_i = Standard Deviation of Returns.

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, other investments, loan and advances and portfolio is calculated in table 4.22.

Table 4.22
Performance of Various Investment Assets

S. No.	Investment Assets	Average Annual Return (%) \bar{r}_i	Standard Deviation of Annual Return σ_i	Sharpe's Measure of Performance $S_i = \frac{\bar{r}_i - R_f}{\sigma_i}$, $R_f = 7.5991\%$
1	Government Securities	4.19	0.77	-4.43
2	Loan and Advance	7.97	0.98	0.378
3	Share and Debenture	35.20	36.31	0.76
4	Other Investment	4.33	1.48	-2.21
5	Investment Portfolio	6.81	0.60	-1.315

Source: From Above Calculation

Risk less rate of interest (R) = 7.5991% (Weighted Average of Treasury Bills rate, annualized) Source; NRB Quarterly economic bulletin April, 2010.

From the above calculation $S_s > S_l > S_p > S_o > S_g$, which indicates that the investment on Share and Debenture is a better performer than Loan and Advances, Loan and Advances are better than Portfolio Investment. Portfolio Investment is better than Other Investment. Other investment is better than government securities. So, portfolio made by the CBs among various investment assets is not satisfactory. The lower Sharpe's portfolio performance than that of investment Share and Debenture 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 Major Findings of the Study

From the above analysis following major findings have been drawn which are presented as below:

-) The investment on government securities of HBL is the highest among other banks. The NIBL has been found to have investment on govt. securities lower comparative to other banks. Similarly, the HBL covers more shares i.e. 5081107 of the total investment on govt. securities made by CBs. NABIL be on 2nd position by investing of the total investment on govt. securities i.e. 4135523 made by CBs.
-) The investment of Nepalese CBs on other companies' shares shows NABIL has been investing highest among other CBs i.e. 2735147 thousand. Similarly, NIBL has least mean, which say that NIBL invest lowest amount in share and debenture.
-) NIBL has the highest shares i.e.19995693 thousand on loan and advances among three CBs throughout the review period from 2002/2003 to 2009/10. HBL takes at the second position and NABIL take last position respectively loan and advances among three CBs. The Loan and Advances of NIBL has been increasing drastically in last three years. Unlike NIBL, HBL investment on loan and advances is in decreasing trend.
-) NIBL has invested high amount on Other Investment of total investment portfolio. The mean percentage invested on other investment is i.e.55.81% and the mean percentage invested on government securities and share & debenture is 43.57% and 0.62% respectively.
-) Average loans and advance portfolio of three commercial banks. NIBL has provided very high amount of its loans and advances to the private sector which is 95.85%. The mean percentage of loans and advances to the private sector is 95.96%. NIBL has given second priority to foreign bills financial institutions. The mean percentage of foreign bills P&D is 1.41%.

- J Ratio of investment to total deposits of CBs is in fluctuating trend throughout the review period i.e. from the FY 2002/2003 to 2009/10. The mean investment to total deposit ratio of HBL is the highest at the 38.94%. Similarly NABIL and NIBL has second and third highest ratio of investment to total deposit with 35.91% and 23.98%.
- J The mean loans and advances to total deposit ratio of NIBL is highest i.e. 74.31 % and HBL is lowest ratio i.e. 62.18 % among three commercial banks. NABIL bank has a mean ratio of 67.72%. The average mean ratio is 68.07%. It can be said that NIBL's capacity to mobilize its deposit on loan and advance is better than average ratio of CBs.
- J The mean Government securities to total deposit ratio of HBL is highest i.e. 18.13% and NIBL is lowest ratio i.e. 10.71% among three commercial banks. Other bank NABIL has mean ratios of 17.92%. The average mean ratio is 15.59%. However, all three commercial banks have been invested higher than prescribed limit indicates an existence of comfortable level of liquidity in the banking system.
- J Among three CBs, NABIL has the highest mean return and HBL has the lowest return on total assets i.e. 2.37% and 1.37%. The overall average mean of CBs is 1.79%. However NABIL also have mean return above average mean of CBs i.e. 2.37%.
- J In share and debenture very low portion of the total outside investment has invested by all CBs except NABIL. Among three commercial banks NABIL has invested higher amount on share and debenture i.e. 1.66% of total outside investment while NIBL has invested lower amount on share and debenture i.e. 0.14% only.
- J On government securities HBL has the highest investment on government securities to total outside investment i.e. 17.92% 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. 10.86%.
- J On other investment, HBL has the highest investment on other investment to total outside investment i.e. 20.40% among three CBs. Similarly, NIBL has

invested lowest parts of total outside investment to other investment because it has lowest investment on other investment to total outside investment i.e. 13.37%.

-) In average, the return on investment on govt. securities made by CBs is 4.15%. Standard deviation is 1.38% which indicates risk on govt. securities.
-) The return on investment on government securities has not any fixed trend. During the period 2002/2003 to 2009/10 the highest return is 7.32% in 2008/2009 and lowest return is 2.78% in 2006/07. The highest return in 2009/10 was due to liquidity crisis in the Overall economy.
-) In average the return on investment on other investments made by CBs is 5.145%. Standard deviation is 2.02% which indicates risk on other investments. It is mainly due to the more fluctuating nature on other investment securities.
-) The expected return on portfolio 7.045% is less than that of average rate of return of individual investment on share and debentures is 35.20% and investment on loan and advances is 7.97%. But investing the total funds in share and debentures and loan and advances is more risky than that of investment on portfolio.

CHAPTER – V

SUMMARY, CONCLUSION AND RECOMMENDATION

This chapter has contained summary, conclusion and recommendations. Brief introduction to all chapters of the study and genuine information of the present situation under the topic of the study has been defined on summary. Conclusions and Findings are analysis of applicable data by using various financial and statistical tools, which present strengths, weakness, opportunities and threats of the CBs. And suggestions are recommended on the basis of findings and conclusions.

5.1 Summary

Any country depends upon the economic development for the entire progress. To strengthen, the economy of any country both the private and public sector should play a vital role, which contributes to our nation. The process of the economic development depends upon various factors. However, some economists see to be convinced that capital formation and its proper utilization play a paramount role for rapid economic development.

In any economy, the importance of financial sector in general and banking sector in particular can not be undermined. Banking sector definitely plays a pivotal role in the overall development of an economy. All the economic activities of each and every country are greatly influenced by the commercial banking business of the country.

Banking sector mirrors the larger economy. Its linkage to all sectors makes it a proxy for what is happening in the economy as a whole. Banks are some essential parts 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 invest them among those engaged in commercial and economical activities of the country. CBs are those financial institutions that deal in accepting deposits to persons and institutions and giving loans against securities. It also provides technical and administrative assistance to industries, trade and business enterprises. CBs are defined as financial institutions, which perform widest range of economic and financial functions of any business firm in the economy. CBs play vital role for development of a developing country such as Nepal. Banks also provide internal resources for developing country's economy.

The concept of banking system was introduced in Nepal with the establishment of Nepal Bank Ltd. in 1937. The financial scenario has been changed with introduction of joint venture banks in 1984. The domestic banks of Nepal, Nepal Bank Ltd. and Rastriya Baniya Bank could no longer hold monopoly. The number of commercial banks has been increasing so is the investment volume and opportunity in various sectors that extends to agriculture, , commercial and social sectors.

As financial intermediary, the commercial banks have also been played an important role as implementing body for central bank. The monetary structure has involved analysis of the behavior of banking system. The variation in the size and composition of bank assets seem to play important role in transmitting the influence of monetary policy to the economy. The composition of bank portfolio, such as, reserve, investment and lending has led the money supply to vary.

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 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 use their funds as loan and advances. Most of the banks have been 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 has heavily depended upon the rules and regulation provided by the central banks. The composition of asset portfolio of the bank has been influenced by the policy of the central bank. NRB's directives, unsecured climate created by political situation,

government policy, and sluggish economic growth etc. have been seen as 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 fulfillment of the objectives of the study, many analysis have 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 and portfolio performance test. For the analysis, mainly secondary data have been used, effort have been made to present current data for mid july-2010 which has been collected from concerned banks, NRB, NEPSE, SEBO and different library and different information also provided from there. Financial and statistical tools have been used to reckoning and secondary data have been compiled, processed, tabulated and graphed for better presentation from which various findings and conclusions have been drawn.

5.2 Conclusions

Commercial banks have been operating efficiently and have been successful in becoming the pillars of economic system of the country. These banks have been performing as financial intermediaries, which provide 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 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 have been unsuccessful to use the investment portfolio management to balanced investment opportunities.

From the analysis of risk and return of individual investment resources, it has been concluded that the loan and advances is much better than investment on share and debentures, govt. securities and other investment due to the fixed interest income on loan and advances. The CBs have become eager to invest their maximum part of investment on loan and advances in different sectors due to return from loan and advances that seems less explosive than other resources. The average rate of return and risk on share and debentures has been advanced than other assets so that the CBs

could invest very low portion of resources into share and debentures of other companies. The CBs have invested on less risky sectors by which CBs can reduce risk and return also. From the various ratios relating with the utilization of resources on investment it can be accomplished that NABIL is the bank which has shown better performance on their investment strategies. While NIBL, HBL have imitated moderate performance in utilization of overall resources. And NIBL and HBL have been seen the average bank to mobilize their total resources in various investment assets among three 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 some banks have invested more than 90% of their funds into over sector. From investment portfolio analysis, it has been accomplished that the CBs have been given first priority to invest their funds in the govt. sector due to less risk and second priority to the other investment and last priority to the share and debentures of other companies. And in the case of investment on loan and advances portfolio, CBs have been concentrated in the private sector due to high return from them and given second priority to Government enterprises followed by financial institution and bills P & D due to the less return from them. CBs have been found to flow their funds from higher level of return to lower level of return.

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

5.3 Recommendations

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

-) In investment portfolio, except NIBL other two CBs have been 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 increased.
-) The profitability position of HBL 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, NIBL increases its total investment by increasing total deposit and increasing investment on government securities and other investments.
-) NABIL should invest more funds in government securities and other investments to control the risk.
-) Among the three CBs, NABIL 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 NABIL is insufficient to reduce existing total risk. So NABIL 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 investing on more than one asset not on only one asset. CBs are not pretty booming to invest their funds in various assets. CBs have invested 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 and other investments.
-) CBs are seemed to be focusing on Investment on different assets class but they should be diversified their Lending portfolio and emphasis should be given to Small and Medium sized enterprises and Productive sector.
-) Banking is the risky business, so risks can not be eliminated it should be managed. On other to mitigate the risks, CBs should evaluate the underlying risks of Investment and lending in qualitatively as well as quantitatively.
-) Bank should strictly maintain high level of discipline in Balance sheets management and Credit Management in order to ensure smooth operation during unprecedented crisis.
-) It is cleared from the above study that some CBs have been 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 the CBs should use portfolio management concept effectively and extend opportunities for exercising the portfolio management in investment.

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APPENDICES

Appendix - 1

Arrangement & Tabulation of Available Financial Data of Various CBs

a) Investment on Government Securities

(Rs. in '000')

FY	NIBL	NABIL	HBL	CBs
2002/03	400000	3588772	3998870	7987642
2003/04	2001100	3672626	3431729	9105455
2004/05	1948500	2418431	5469729	9836660
2005/06	2522300	2301463	5144313	9968076
2006/07	3256400	4808348	6454871	14519619
2007/08	3155000	4646883	7471668	15273551
2008/09	2531300	3706103	4212300	10449703
2009/10	4201850	7941556	4465372	16608778
Total	20016450	33084182	40648852	93749484
Average	2502056	4135523	5081107	11718686

b) Investment on Shares and Debentures

(Rs. in '000')

FY	NIBL	NABIL	HBL	CBs
2002/03	13895	437944	34265	486104
2003/04	13895	437944	34265	486104
2004/05	17738	443087	39909	500734
2005/06	17738	104192	39909	161839
2006/07	35253	286958	73424	395635
2007/08	59946	323236	89558	472740
2008/09	64271	354930	93883	513084
2009/10	66646	346856	78882	492384
Total	289382	2735147	484095	3508624
Average	36173	341893	60512	438578

c) Investment on Other Investments

(Rs. in '000')

FY	NIBL	NABIL	HBL	CBs
2002/03	1291346	2644430	6142299	10078075
2003/04	1847488	2644430	5826108	10318026
2004/05	1967951	1416435	6182704	9567090
2005/06	3062831	3775003	5706151	12543985
2006/07	3214027	3861003	5294687	12369717
2007/08	3664478	4996443	5778951	14439872
2008/09	4807541	6813772	5778951	17400264
2009/10	4370335	5553813	3900655	13824803
Total	24225997	31705329	44610506	100541832
Average	3028250	3963166	5576313	12567729

d) Investment on Loans and Advances**(Rs. in '000')**

FY	NIBL	NABIL	HBL	CBs
2002/03	5921718	7802000	10844599	24568317
2003/04	7338506	8114000	12919631	28372137
2004/05	10453164	10946737	13451168	34851069
2005/06	13178152	13278782	15761976	42218910
2006/07	17769100	15903024	17793724	51465848
2007/08	27529305	21759460	20179613	69468378
2008/09	36827157	27999012	25519519	90345688
2009/10	40948440	33030969	29123756	103103165
Total	159965542	138833984	145593986	444393512
Average	19995693	17354248	18199248	55549189

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

FY	NIBL	NABIL	HBL	CBs
2002/03	1705241	6671146	10175434	18551821
2003/04	3862483	6755000	9292102	19909585
2004/05	3934189	4277953	11692342	19904484
2005/06	5602869	6180658	10890373	22673900
2006/07	6505680	8956309	11822982	27284971
2007/08	6879424	9966562	13340177	30186163
2008/09	7403112	10874805	10085134	28363051
2009/10	8638831	13842225	8444909	30925965
Total	44531829	67524658	85743453	197799940
Average	5566479	8440582	10717932	24724993

f) Total Deposit**(Rs. in '000')**

FY	NIBL	NABIL	HBL	CBs
2002/03	7922766	13447661	21045087	42415514
2003/04	11524680	14119032	22010332	47654044
2004/05	14254574	14586609	24815012	53656195
2005/06	18927306	19347399	26490852	64765557
2006/07	24488856	23342285	30048418	77879559
2007/08	34451726	31915047	31842789	98209562
2008/09	46698100	37348256	34681345	118727701
2009/10	50094725	46340701	37665526	134100952
Total	208362733	200446990	228599361	637409084
Average	26045342	25055874	28574920	79676136

g) Net Profit**(Rs. in '000')**

FY	NIBL	NABIL	HBL	CBs
2002/03	116817	271639	212128	600584
2003/04	152670	416235	263053	831958
2004/05	232147	520114	308275	1060536
2005/06	350537	635263	457458	1443258
2006/07	501399	673960	491823	1667182
2007/08	696732	746468	635869	2079069
2008/09	900619	1031053	752835	2684507
2009/10	1265950	1139099	522860	2927909
Total	4216871	5433831	3644301	13295003
Average	527108.88	679228.9	455537.6	1661875.38

h) Total Assets**(Rs. in '000')**

FY	NIBL	NABIL	HBL	CBs
2002/03	9014249	17269252	23279341	49562842
2003/04	13255496	16562625	24762025	54580146
2004/05	16274064	17064082	27418158	60756304
2005/06	21330138	22329971	29460390	73120499
2006/07	27590845	27253393	33519141	88363379
2007/08	38873306	37132759	36175532	112181597
2008/09	53010803	43867398	39320322	136198523
2009/10	57305413	52150237	43929068	153384718
Total	236654314	233629717	257863977	728148008
Average	29581789.25	29203714.63	32232997.1	91018500.98

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

FY	NIBL	NABIL	HBL	CBs
2002/03	7626959	14473146	21020033	43120138
2003/04	11200989	14869000	22211733	48281722
2004/05	14387353	15224690	25143510	54755553
2005/06	18781021	19459440	26652349	64892810
2006/07	24274780	24859333	29616706	78750819
2007/08	34408729	31726022	33519790	99654541
2008/09	44230269	38873817	35604653	118708739
2009/10	49587271	46873194	37568665	134029130
Total	204497371	206358642	231337439	642193452
Average	25562171	25794830	28917180	80274181

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

FY	NIBL	NABIL	HBL	CBs
2002/03	10227	175579	121543	307349
2003/04	35868	174861	170332	381061
2004/05	56550	151064	149131	356745
2005/06	82420	130197	172242	384859
2006/07	78494	132229	191559	402282
2007/08	99991	198442	201310	499743
2008/09	140698	269187	354949	764834
2009/10	169620	330919	219835	720374
Total	673868	1562478	1580901	3817247
Average	84233.5	195309.8	197612.6	477155.9

k) Interest Income on Other Investments**(Rs. in '000')**

FY	NIBL	NABIL	HBL	CBs
2002/03	27435	66710	175851	269996
2003/04	32519	41059	105396	178974
2004/05	61055	62931	174945	298931
2005/06	125633	176473	313545	615651
2006/07	204372	277842	341174	823388
2007/08	187023	269209	318092	774324
2008/09	221189	328795	126204	676188
2009/10	180590	336358	337512	854460
Total	1039816	1559377	1892719	4491912
Average	129977	194922.125	236589.875	561489

l) Interest Income on Loans and Advances**(Rs. in '000')**

FY	NIBL	NABIL	HBL	CBs
2002/03	421847	801046	903838	2126731
2003/04	663016	776301	970166	2409483
2004/05	769195	831830	1122392	2723417
2005/06	964689	988231	1140687	3093607
2006/07	1302122	1167255	1242850	3712227
2007/08	1907261	1496244	1444245	4847750
2008/09	2906055	2182647	1861045	6949747
2009/10	4303311	3368728	2491841	10163880
Total	13237496	11612282	11177064	36026842
Average	1654687	1451535	1397133	4503355

m) Return on Government Securities

FY	NIBL	NABIL	HBL	CBs
2002/03	2.56%	4.89%	3.04%	4.08%
2003/04	1.79%	4.76%	4.96%	4.37%
2004/05	2.90%	6.25%	2.73%	4.00%
2005/06	3.27%	5.66%	3.35%	3.78%
2006/07	2.41%	2.75%	2.97%	3.26%
2007/08	3.17%	4.27%	2.69%	3.54%
2008/09	5.56%	7.26%	8.43%	5.71%
2009/10	4.04%	4.17%	4.92%	4.73%
Total	25.70%	40.01%	33.09%	33.48%
Average	3.21%	5.0%	4.14%	4.19%

n) Return on Loans and Advances

FY	NIBL	NABIL	HBL	CBs
2002/03	7.12%	10.27%	8.33%	8.86%
2003/04	9.03%	9.57%	7.51%	8.58%
2004/05	7.36%	7.60%	8.34%	7.70%
2005/06	7.32%	7.44%	7.24%	7.25%
2006/07	7.33%	7.34%	6.98%	7.08%
2007/08	6.93%	6.88%	7.16%	6.89%
2008/09	7.89%	7.80%	7.29%	7.70%
2009/10	10.51%	10.20%	8.56%	9.73%
Total	63.49%	67.10%	61.41%	63.78%
Average	7.94%	8.39%	7.68%	7.97

o) Return on Other Investments

FY	NIBL	NABIL	HBL	CBs
2002/03	2.12%	2.52%	2.86%	2.99%
2003/04	1.76%	1.55%	1.81%	2.06%
2004/05	3.10%	4.44%	2.83%	3.75%
2005/06	4.10%	4.67%	5.49%	5.12%
2006/07	6.36%	7.20%	6.44%	6.46%
2007/08	5.10%	5.39%	5.50%	5.98%
2008/09	4.60%	4.83%	2.18%	3.86%
2009/10	4.13%	6.06%	8.65%	4.44%
Total	31.27%	36.66%	35.76%	34.66%
Average	3.91%	4.58%	4.47%	4.33%

Appendix - 2

a) Investment Portfolio Analysis (%)

	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	Mean
NIBL									
Govt. Securities	23.46	51.81	49.53	45.02	50.05	45.86	34.19	48.64	43.57
Share & Deb.	0.81	0.36	0.45	0.32	0.54	0.87	0.87	0.77	0.62
Other Investments	75.73	47.83	50.02	54.67	49.40	53.27	64.94	50.59	55.81
NABIL									
Govt. Securities	53.80	54.37	56.53	37.24	53.69	46.62	34.08	57.37	49.21
Share & Deb.	6.56	6.48	10.36	1.69	3.20	3.24	3.26	2.51	4.66
Other Investments	39.64	39.15	33.11	61.08	43.11	50.13	62.66	40.12	46.12
HBL									
Govt. Securities	39.30	36.93	46.78	47.24	54.60	56.01	41.77	52.88	46.94
Share & Deb.	0.34	0.37	0.34	0.37	0.62	0.67	0.93	0.93	0.57
Other Investments	60.36	62.70	52.88	52.40	44.78	43.32	57.30	46.19	52.49

b) Loans and Advances Portfolio Analysis

(%)

	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	Mean
NIBL									
Pvt. Sector	96.78	96.08	97.04	98.11	95.14	96.38	91.80	95.49	95.85
Financial Inst.	0	0	0	0	2.78	2.04	6.08	3.82	1.84
Govt. Entp.	1.93	2.33	1.10	0.64	0.47	0.18	0.55	0.06	0.91
For. Bill P& D	1.29	1.59	1.86	1.25	1.62	1.39	1.57	0.63	1.40
NABIL									
Pvt. Sector	96.37	98.21	96.99	95.35	95.58	95.81	96.57	96.87	96.47
Financial Inst.	0	0	0	0	2.50	2.74	2.78	1.90	1.24
Govt. Entp.	0.25	0.23	0.53	2.71	0.38	0.28	0.001	0.75	0.65
For. Bill P& D	3.38	1.56	2.49	1.94	1.55	1.17	0.64	0.39	1.64
HBL									
Pvt. Sector	91.67	94.14	91.97	94.56	95.11	98.77	98.88	99.49	95.58
Financial Inst.	0	0	0	0	0	0	0	0	0
Govt. Entp.	6.71	5.86	5.48	3.83	3.94	0	0	0	3.23
For. Bill P& D	1.63	0	2.55	1.60	0.95	1.23	1.12	0.51	1.20

Appendix – 3

Calculation of Correlation between Various Investment Securities of CBs

Year	Return on Govt. Securities $\bar{f}R_g \bar{A}$	Return on Loan & Advances $\bar{f}R_l \bar{A}$	Return on Share & Debenture $\bar{f}R_s \bar{A}$	Return on Other Investments (Ro)
2002/03	4.08	8.86%	-5.27	2.99
2003/04	4.37	8.58%	20.47	2.06
2004/05	4.00	7.70%	35.57	3.75
2005/06	3.78	7.25%	75.78	5.12
2006/07	3.26	7.08%	74.57	6.46
2007/08	3.54	6.89%	18.58	5.98
2008/09	5.71	7.70%	74.91	3.86
2009/10	4.73	9.73%	-13.02	4.44
Total	33.48	63.78%	281.59	34.66
Mean	4.19	7.97	35.20	4.33
SD	0.59	0.98	36.31	1.48

Co-variance and Correlation between two assets are determined using the following formula.

$$\# \text{Cov} (R_n, R_m) = \frac{(R_n \bar{Z} R_n) (R_m \bar{Z} R_m)}{n - 1}$$

$$\# \text{Corr.} (R_n, R_m) = \frac{\text{Cov}(R_n, R_m)}{\sqrt{\dagger_n \dagger_m}}$$

S.N.	Combination of two assets	Covariance between two assets	Correlation Coefficient between two assets
1	Government securities and Loan and Advances	0.356	0.6157
2	Government securities and share & debentures	1.12	0.05228
3	Government securities and Other Investments	-0.01301	-0.0149
4	Loan & Advances and Shares & Debentures	0.465	0.0131
5	Loan & Advances and Other Investments	-0.031	-0.0009
6	Shares & Debentures and Other Investments	21.71	0.4040