# PORTFOLIO ANALYSIS ON INVESTMENT OF NEPALESE COMMERCIAL BANK

**(A Case Study on SCBL, NIBL, NABIL, EBL & HBL)**


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# RECOMMENDATION

**This is to certify that the thesis:**

***submitted by***

**Amita Pradhan**

***Entitled***

**"Portfolio Analysis on Investment of Nepalese Commercial Banks"**

*has been prepared as approved by this department in the prescribed format of faculty of management. This thesis is forwarded for examination.*

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# VIVA-VOCE SHEET

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

***Master of Business Studies (M.B.S.)***

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# DECLARATION

I hereby declare that the outcome of this thesis entitled **"Portolio Analysis on Investment of Nepalese Commercial Banks"** submitted to office of the Dean, Faculty of Management, Tribhuvan University, is my original work done in the form of partial fulfillment of the requirement for the master of business studies (MBS) under the supervision and guidance of **Mrs. Ruchila Pandey**, Shanker Dev Campus.

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# ABBREVIATIONS

| | | |
|---|---|---|
| A.D. | : | Anno Domini |
| B.S. | : | Bikram Sambat |
| FY | : | Fiscal Year |
| CBs | : | Commercial Banks |
| Govt. | : | Government |
| NRB | : | Nepal Rastra Bank |
| NBL | : | Nepal Bank Limited |
| RBB | : | Rastriya Banijya Bank |
| NIBL | : | Nepal Investment Bank Ltd. |
| SCBL | : | Standard Chartered Bank Ltd. |
| EBL | : | Everest Bank Ltd. |
| HBL | : | Himalayan Bank Ltd. |
| NEPSE | : | Nepal Stock Exchange |
| SEBO | : | Security Board |
| NYSE | : | New York Stock Exchange |
| S.D. | : | Standard Deviation |
| CV | : | Coefficient of variation |
| NPAT | : | Net profit after tax |
| NPA | : | Non performing assets |
| TOI | : | Total outside investment |
| ROA | : | Return on Assets |
| T.U | : | Tribhuvan University |
| MBS | : | Master in business studies |
| i.e. | : | That is |
| Ltd. | : | Limited |
| & | : | And |

# CHAPTER - I

## INTRODUCTION

### 1.1 Background of Study:

People have travelled a long distance from the individual self sufficiency of the Stone age to highly modernized and scientific age. Within these series of changes some nation becomes highly developed and some become least. Nepal enlisted among least developed country and among the poorest nation of the world is trying to chase the path of economic development by economic growth rate and developing all sectors of economy. It has a lot of problems and prospects too. Unemployment is seemed to be the biggest problem of the country. Most of the people are engaged in the traditional type of agriculture. The productive activity which in turn is the result of the investment venture in the productive enterprises. The process of economic development depends on the various factors, however economists are convinced that capital formation and its proper utilization plays a supreme role for rapid economic development. Therefore, investment portfolio is one such a tool that helps for proper utilization of resources.

To strengthen the economy of any country both the private and public sectors should plays a great role. Both private and public sectors have been contributing our nation. Integrated and speedily development of the country is possible only when competitive banking sectors reaches everywhere and corners of the country. Commercial bank occupy an important place in the framework of every economy because they satisfies the broadest range of financial services needs in the economy, they provide capital for the development of industry, trade, business and other resources deficit sectors by investing the saving collected as deposit. Banks are the essential part of the business activities established to save the people's money and using the money in loans and investment. There are so many commercial banks operating inside and outside the valley.

Every bank invests its deposit money in different profitable financial sector, which may result in profitable in the long range.

The network of well-organized financial system of the country has great bearing in capital formation. It collects scattered financial resources from masses, public and invests them among

those engaged in commercial and financial activities of the country. Economic activities of any country can easily be carried forward with the assistance and support of financial institutions. Thus commercial bank has become the heart of the financial system. A key factor in the economic development of the country is the mobilization of the domestic resources and invests them for productive use of the various sectors. So, to make it more effective, CBs formulate sound investment policies, which help to maximize the quality of investment and eventually contribute to the economic growth of the country.

A portfolio is defined as combination of assets. It is a collection of securities. Portfolio provides highest possible return for any specified degree of risk. The portfolio that provides highest rate of return with least amount of risk is real investment portfolio. Portfolio indicates the investors of having their funds in more than one asset. Good investment policy has a positive impact in the economic development of the country and vice-versa. A good investment policy always attracts the both borrowers and lenders which help the investment operation of bank to be more efficient and profitable by minimizing the risk. Investment portfolio is one which profit or income of bank depends upon directly to minimize the risk; a bank must diversity its investment on different sectors which is known as portfolio investment. Investment portfolio means to reduce the risk and divided the investment in various sectors by the means of risk.

### 1.1.1 Historical development of Banking system

According to the history, who first involved the system of banking by trading in commodities then money was the merchant. Reviewing the history, we can find that banker has three ancestors of particular note. One the merchant and the two other were lender and goldsmith. Lending and borrowing are the almost as old as money itself. The bank of venice established in 1157 is the first commercial bank in the world. Subsequently, bank of Barcelona 1401 and bank of genoa 1407 were established. The Lombard migrated to England and other parts of Europe from Italy are regarded for the development and expansion of the modern banking. Ancestors Geoffrey couther says that the merchant goldsmith and money lenders are the ancestors of modern banking. Though bank of England was established in 1694 as a joint stock bank and later on it became the first bank in the world in 1844, the growth of bank accelerated only after the introduction of

banking act 1833 in United Kingdom as it allows to open joint stock commercial banking system development in the lending countries of the world.

Though the modern banking system is a very recent origin in Nepal to compare to other developing nations. In depth, evidence of money lending function was also found in practice before 8th century. In those days, people used to borrow money from money lenders and pay some interest. In 14th century, Malla king Jayashtiti malla divided people in 64 categories as per working occupation. One of them was "Tankan Dari", he practiced monetary transaction or money lending business. It shows that lending process was prevailing during the Malla rule in Nepal.

Prior to the establishment of the Nepal bank ltd. there was no organized financial institution in Nepal. During the prime ministers ship of Ranodip singh around 1877 A.D. a number of economic and financial reforms were introduced. The establishment of "Tejarath Adda" fully subscribed by the government in the Kathmandu valley was one of them. In the overall development of the banking system in Nepal "Tejarath Adda" may be regarded as the father of modern banking institution and for quite a long time it tended a good service to government servants as well as to the general public. However the installation of "Kaushi tosha khana" as a banking agency during the regime of king Prithivi Narayan Shah could also claim to be regarded as the first step towards initiating banking development in Nepal.

The establishment of Nepal bank ltd in 1937 AD was a landmark in the field of banking and financial sector in Nepal. It was established under the special banking act 1936 AD having elementary function of commercial bank as a semi government organization, without existence of the central bank in country. To manage and control banking system development, monetary policy development, to regulate issue of currency and mobilize capital for economic development. "Nepal Rastra Bank" came into existence as a central bank of Nepal in 1956 under Nepal rastra bank act, 2012 B.S. with an authorized capital of Rs 10 million subscribed by the HMG/N under Nepal rastra bank act of 1955. The main purpose is to help the government in formulating monetary policies with an objective of supervising, protecting and directing the functions of commercial banking activities. It has acted as a government's agent and has contributed in the financial growth of country's economy. In order to facilitate the people all over the country, government established the second commercial bank named "Rastriya Banijya Bank" in 2022

B.S. which is fully owned and controlled by Nepalese government. With the view to promote the development and modernization of the agriculture sector, agriculture development bank was established in 2024 B.S under the agriculture development bank act 2024. The successful establishment of Nabil bank ltd. as the first joint venture bank and the liberal economic policy adopted by the successive government, more commercial banks come into existence. The number of commercial banks started to increase day by day. Various types of financial institutions like joint venture banks, domestic commercial banks, development bank, finance companies, and co-operative society came into existence to cater the financial needs of the country as well as assist the financial development of the country. According to the banking and financial statistics, there are 26 commercial bank, 63 development bank, 77 finance companies, 15 micro credit development banks, 16 savings and credit co-operatives and 45 NGOs (financial intermediaries) providing services in Nepal, licensed by NRB.

### 1.1.2 Functions of commercial banks

The main function of commercial banks is to mobilize idle resources in productive areas by collecting it from scattered sources and generating profit. In Nepal, the commercial banks perform the following functions;

#### i. Accepting deposits

The main function of commercial bank is the acceptance of deposit. A bank accepts deposits in three forms; namely savings, current and fixed deposits.

***Saving deposit:*** This deposit is collected from small investors. The bank usually pays small interest to the depositors against their deposit. The depositors are allowed to withdraw their money by cheques to t he amount prescribed by bank. Generally, most accounts are opened as saving account in bank.

***Current deposit:*** Mostly, the traders and businessman keep their money with the bank under current accounts. The bank does not pay any interest on such deposits but charges a small

amount on the customers having current account. There are no restrictions regarding the number of withdrawals or the amount of the withdrawals.

***Fixed deposit:*** It is also known as time deposit. Customer is required to keep a fixed amount with bank for a specific time period. The bank pays a higher interest on such deposits. If the money is needed, then the customers are permitted to borrow 90% of money in lieu of extra interest. Longer the time period of fixed deposit, higher the interest rate and vice versa.

**ii. Giving Loans**

Commercial banks collect the funds from depositors and keeping a certain portion of the deposits as reserves, the bank mobilized the balance funds as loans and advances to the borrowers against the personal security or against the security of movable immovable assets. The different types of loan and advances made by banks such as cash credit, direct loans, overdraft, short-term loan etc.

### 1.1.2 Commercial Banks and Investment Portfolio

Commercial Bank is those financial institutions deal in accepting the deposits to the person and institutions and provide loan against the securities. They provide working capital needs to the industry, trade businesses even to the agricultural sectors. Moreover commercial banks also provides the technical and administrative assistance to the industries, trade and business enterprises. They transfer monetary sources from savers to users. Commercial banks are the joint stock company system, primarily for the purpose of earning profit.

Commercial bank is an institution which accepts deposits, makes business loans and offers related services. Banks also allow for a variety of deposit accounts such as checking, savings and time deposit. These institutions are run to make a profit and owned by a group of individuals. In this way commercial banks are those banks those engaged in commercial banking transactions and exclude from transaction. CBs collects fund as saving from public of a country and invest them in highly return yielding firm. It develops saving habit in people. So, Commercial bank plays a vital role in the economic development of the developing country.

In broadest sense, investment means to sacrifice the current money for the future money. In general sense, investment means to pay out money to get more.

An investor always wants to minimize the risk of investment and maximize the return but it is not possible through investment in single asset. They need to invest in two or more securities. This collection of securities is called portfolio. Portfolio theory deals with the selection of optimal portfolio. A portfolio is usually defined as a combination of asset.

A portfolio represents the practice among the investor having their funds in more than one asset. The combination of investment assets is called a portfolio.

(Weston and Brigham; 1992).

Investment portfolio refers to an investment that combines several assets. Portfolio is a collection of investment securities, for example: If you owned a soaltee hotel Ltd. Stock, Kathmandu finance stock, salt trading ltd. Stock, Nepal liver ltd. Stock, Nepal insurance company ltd. Stock then you would be holding a five investment stock. Portfolio analysis considers the determination of future risk and return in holding various individual securities. Investment portfolio is the one which income or profit depends upon directly. Hence the banks should not invest its fund in those securities which may cause a great loss. The bank should accept those securities which are commercial, durable, marketable stable, transferable and market high prices. A commercial bank can maximize its volume of wealth through the maximization of returns on their investment and its lending. The profit of CBs mainly depends upon the interest rate, volume, period of loan and nature of investment in different securities. While investing its excess fund in different securities and lending period, the bank should always keep in mind that the people deposit money in different account with confidence that the bank will repay their money when they need. Similarly the bank should not lay all its eggs on the one basket i.e. to minimize the risk the bank should diversify its investment on different sectors.

### 1.1.3 Profile of the banks under study

**Nepal Investment Bank Ltd. (NIBL)**

Nepal Investment Bank Ltd., previously known as Nepal Indosuez Bank Ltd., was established in 1986 as a joint venture between Nepali and French partners. The French partner (holding 50% of

the capital) was Credit Agricole Indosuez, a subsidiary of one of the largest banking groups in the world. When Credit Agricole Indosuez decided to divest, a group of companies comprising of Bankers, professionals, industrialists and businessman acquired 50% of holdings of Credit Agricole Indosuez in Nepal Indosuez Bank in April 2002. The name of the bank was changed to Nepal Investment Bank Ltd. upon approval of the Bank's annual general meeting, Nepal Rastra Bank and company Registrar's office. The main objective of the bank is to provide loans and advances to the agriculture, industries and to provide modern banking services to the people. The shareholder structure comprises of;

- A group of companies holding 50% of the capital.
- Rastriya Banijya Bank holding 15% of the capital.
- Rastriya Beema Sansthan holding 15% of the capital.
- The general public holding 20% of the capital.

The bank has authorized capital of Rs. 1000 million, issued and paid up capital is Rs. 801.352 and 801.352 million respectively.

**Nabil Bank Ltd.**

Nabil Bank Ltd. was established on July 1984 through a joint venture with Dubai bank ltd. This was the first foreign joint venture bank of Nepal. Nabil was incorporated with the objective of extending international standard modern banking services to various sectors of the society. Nabil provides a full range of commercial banking services through its 19 points of representation across the kingdom and over 170 reputed correspondent banks across the globe. The current equity structure is given as follows;

- NB international ltd 50%
- Nepal Industrial development corporation (NIDC) 10%
- Rastriya Beema Sansthan 9.67%
- Nepal Stock Exchange (NEPSE) 0.33%
- General public share 30%

The bank has authorized capital, issued and paid-up capital of Rs. 500 million, Rs. 491.65 million and 491.65 million respectively.

**Everest Bank Ltd.**

Everest Bank Ltd. was registered on 17th November, 1992 and come into operation on 18th Oct, 1994. Later, the Punjab national bank, India joined hands with EBL as a joint venture in 1997 which holds 20% equity on the bank's share capital. The main objective of the bank is to carry out commercial banking activities under the commercial bank act, 1974. The share capital of bank is as follows;

- Local Nepalese promoters 50%
- Punjab National Bank, India 20%
- General Public 30%

**Himalayan Bank Ltd.**

Himalayan Bank Ltd. was established in 1993 by a group of prominent businessmen, bankers and financial institution with Habib bank limited of Pakistan as the joint venture partner. The main objective of the bank is to provide modern banking facilities like Tele banking to the businessmen, industrialists, professionals and to provide loans on agriculture, commerce and industrial sector. The bank authorized capital, issued capital and paid up capital are Rs.1000 million, 810.81 million and 810.81 million respectively. The share capital of bank is as follows;

- Foreign institutions 20%
- Other licensed institutions 14%
- General public shareholders 15%
- Other Entities 51%

**Standard Chartered Bank Nepal Ltd.**

Standard Chartered Bank Nepal Limited has been in operation in Nepal since 1987. The Bank is an integral part of Standard Chartered Group having an ownership of 75% and the balance owned by the Nepalese public. The Bank is the largest international bank currently operating in Nepal.

Standard Chartered Bank Nepal Limited offers a full range of banking products and services in Wholesale and Consumer banking. The Bank has been the pioneer in introducing 'customer focused' products and services and aspires to continue to be a leader in introducing new products in delivering superior services. The authorized capital, issued and paid up capital of the bank as on mid July 2006 are Rs.1,000 million, 500 million and 374.6 million respectively.

### 1.1.4 Investment pattern of Nepalese commercial bank

Commercial banks are found operating throughout the world. Banking history of Nepal is not more than six decades. In Nepalese context, the history of development of modern bank started from the establishment of "Nepal Bank Ltd" on 30th Kartik 1994 B.S is the first commercial bank in Nepal with put forth effort of government and public as a commercial bank with 10 million authorized capital. Then the government felt the requirement of central bank and established "Nepal Rastra Bank" in 2013(1957) under the Nepal Rastra Bank Act 2012(1956).It helps the development of banking sector in Nepal which also control the monetary culture in the country. Later rising of banking function gets more popular and complicated NRB suggested for the establishment of another commercial bank so in 1966 A.D. "Rastriya Banijya Bank" was established as a fully government owned commercial bank. Now its branches are diversified all over the country. As the country moved towards the economic liberalization in 1980 A.D. foreign banks were invited to operate in Nepal. The number of commercial bank has been increasing. Since then various financial institution like JVB's, Domestic commercial bank, development banks, different financial institutions, cooperative banks, Employee provident fund, National insurance corporation, Nepal stock exchange has come into existence to meet the financial needs of t he country.

The development of CB's in Nepal is categorized in three phases on the basis of financial institutions policies adopted by country from time to time. They are CB's prior to 1980's, CB's of 1980's, CB's post 1990's. There are only two banks prior to 1980's NBL and RBB. All the three CB's of 1980's were established as JVB. Other bank including Laxmi bank ltd, kumara bank ltd, lumbini bank ltd., siddartha bank ltd, machapuchhre bank ltd., Global bank ltd, citizen bank ltd, prime bank ltd, sunrise bank ltd., Bank of Asia were established by Private sector. The names of the bank are also changed such as Nepal Grindlays Bank ltd., Nepal Arab Bank Ltd., Nepal Bank

of Ceylon, Nepal Indosuoz Bank Ltd., are known as Nabil Bank Ltd., Nepal Standard Chartered Bank Ltd., Nepal Investment Bank Ltd., Nepal credit & commerce Bank Ltd.

After the adoption of economic liberalization policy, particularly the financial sector liberalization that paved the way for establishment of new banks & non-bank financial institutions in the country. Consequently, by the end of Mid-July 2009, altogether 242 banks and non-bank financial institutions licensed by NRB are in operation. Out of them, 26 are "A" class commercial banks, 4 under process for being the commercial bank, 63 "B" class developments banks, 77 "C" class finance companies, 15 "D" class micro-credit development banks, 16 saving and credit co-operatives and 45 NGOs.

Most of the other commercial banks are providing new schemes like insurance to depositor, which is an extra bonus to encourage them to deposit their surplus in such banks. The other attractive feature is credit card system ie. Nabil credit card, NGB, HBL credit card. EBL also introduced cumulative deposit scheme (CDS) and facilities for Nepalese live in gulf countries for transfer their savings to home in Nepal by entering into drawing arrangements with exchange houses in UAE, Bahrain & Kuwait. Commercial bank and other financial institutions should immediately start to improve their customer service quality at high standards to reflect tremendous opportunities in the markets for the customer benefits such as managing their risk, giving them the advantage of global strength which can make the customer take full confidence to expand their transaction further more and feel secured for their investment. Therefore commercial banks should aware and at every moment while providing service to their customers and should have better judgment on the quality of service whether they could satisfy their customers up to their expectation and have been able to attract others as many to meet the objectives.

Nepal being listed among the least developed countries, commercial bank has played a catalytic role in the economic growth. Its investment range from small scale cottage industries to all types of social and commercial loans and large industries. The commercial bank generally invest on the government securities like treasury bills, development bonds, national saving bonds, foreign government securities, shares on government owned companies and non-government companies and invest on debentures, and the commercial bank used their funds as loans and advances. The guidelines given by NRB play a significant role in the composition of bank portfolio. Portfolio management activities of Nepalese bank are in developing stage.

## 1.2 Focus of the study

In Nepal banking history starts from the establishment of "Nepal Bank Ltd" in 1936. In 1956 "Nepal Rastra Bank" came in existence as a central bank of our country. The focus of the study is on portfolio analysis on the investment of selected commercial banks in Nepal & to measure the financial performance of selected five listed banks in NEPSE, their risk, return, and trend and portfolio patterns. Further from the study, the shareholders would get information to make a decision while making investments on share of various banks. These are the following focus of the study given below:

- Risk and Return analysis of commercial banks in Nepal.
- Investment portfolio analysis of commercial banks and compare with each other.
- Existing situation of portfolio management of Nepalese commercial banks.
- Loans and advance portfolio analysis of commercial banks.
- Investment to total deposit ratio analysis.

## 1.3 Statement of Problem

The establishment of commercial banks in the economic sector has added more bricks in the construction of the Nepalese economy. Its investment in small scale cottage industries to large industries in making investment in loan and government securities one may always wonder which investment is better. The investment planning of the commercial bank in Nepal heavily depends upon the rule and regulation provided by the central bank. The composition of the asset portfolio of the banks is influenced by the policy of the central bank. Nepalese commercial bank are found to be more interest in investment in less risky and liquid sector i.e. treasury bill, development bonds, national savings, debentures and shares i.e. due to the sound investment management of commercial bank and lack of portfolio management. They just follow the instruction and guidelines of NRB. They do not have their clear vision towards the investment portfolio. They have no consideration towards portfolio optimization.

Nepal is a least developed country and always there is scarcity of capital. Due to the low saving rate, investment rate is also low. The low investment rate has also constrained the growth rate of GDP. There are various problems in resource mobilization by commercial banks in Nepal. The

most important problem is poor investment climate prevailing in Nepal due to heavy regulatory procedure uncertain government policy, portfolio analysis between various types of investment by commercial banks are most important subject which helps to minimize the risk by diversifying the risk into various sectors. But portfolio management activities of commercial bank are in developing stage. There are various reasons behind not using these activities by commercial banks likewise lack of proper techniques to run such activities in the best and successful manner, limited opportunities for exercising the portfolio management, hesitation of taking risk. Banking completion has increase day by day but investment opportunity is not comparatively extended.
The present study will try to analyze the investment of commercial banks, portfolio analysis of commercial bank of their investment, return on various types of investment, portfolio risk and return.

These are the following issues deal by this study:

- How do the banks behave for portfolio variables?
- How do commercial banks manage their risk and return using portfolio diversification?
- How far have been commercial banks been able to transfer monetary resources from savers to users?
- What is the relationship of investment with total deposit, loan and advances, net income?
- Is investment portfolio directed towards objectives of profit maximization?
- Is commercial bank effectively utilizing their investment to minimize risk and maximize the return or not?

### 1.4 Objectives of the study

The main objective of the study is to identify the present situation of the investment portfolio of commercial banks in Nepal which are as follows:

- To analyze the concept of Investment of CBs.
- To evaluate the profit (financial performance) of CBs in terms of investment strategies.

- To analyze the risk & return on investment using portfolio concept.
- To forecast the trend of investment.

### 1.5 Significance of the study

The main objectives of the commercial banks are to earn profit by proper mobilization of the resources in Nepalese commercial banks, but they don't have clear view towards effective investment. They are found to be making investment only on short term basis; only few banks invest on long terms. They avoid investing on long term project because they don't want to take risk anymore. They are found to be more interested to investment in less risky and high liquid sectors. The banks do not pay attention toward the different way of minimizing the risk. They should apply the portfolio investment.

The main significance of the study of portfolio investment on Nepalese commercial banks is to help how to minimize the risk on investment and maximize return through portfolio analysis.

These are the following significance of the study:

- Risk and return analysis of commercial banks in Nepal.
- Profitability situation of commercial banks and comparing with each other.
- Existing situation of portfolio analysis on investment of commercial banks in Nepal.
- Loans and advances portfolio analysis of commercial banks in Nepal.

### 1.6 Limitations of study

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

- This study has employed secondary data published by and collected from selected banks.
- The accuracy of the research work will be dependent on data provided by concerned organization.
- Among the various commercial banks, only five commercial banks are taken under the study.

- This study concentrates only on those factors, which are related with investment portfolio analysis and available in the form required for analyzing the different issues.
- Time factor is major limitation of this study.
- The study covers a period of 5 fiscal years which will be tabulated and processed for drawing conclusions.

### 1.7 Organization of the study

This study has been organized over altogether five chapters. Starting from Introduction, Review of Literature, Research methodology, Presentation and Analysis of data and summary to conclusion and recommendation as get of the entire study. A brief outline of this chapter has been outlined as under.

**Chapter I "Introduction":** It introduces the subject, present the research problem, reason for studying, objective of the study, along with limitation.

**Chapter II "Review of Literature":** It concerns with the study of portfolio analysis on investment have been reviews and presented.

**Chapter III "Research methodology":** It comprises research design, nature and source of data, data gathering method and analytical tools used.

**Chapter IV "Presentation and analysis":** This chapter deals with the presentation and analysis of data and scoring the empirical finding out the study through definite course of research methodology.

**Chapter V "Summary, conclusion and recommendation":** It is followed by the basic conclusion of the study based in the fourth chapter on the basic of these conclusions and recommendation has also been presented for consideration.

# CHAPTER-II

## REVIEW OF LITERATURE

Review of literature is the past research study and relevant materials. It is advancement of existing knowledge and in depth study of subject matter. It starts with a suitable topic and continues throughout the volumes of similar or related subjects. It is very rare to find out completely new problem. In literature review, researcher takes hints from past dissertation but he or she should take heed of replication. Literature review means reviewing research studies and other pertinent prepositions in the related area of the study so that all the past studies their conclusions and deficiencies and further research takes place. It is a vital and mandatory process in research works. During the review of this research, in depth study theoretical investigation regarding portfolio's aspects and their present application and potentialities made. Investment "Range of investment held by an investor, company etc (Oxford Dictionary; 1994:272), A portfolio simply represents the having their funds in more than one assets. The combination of investment assets is portfolio. Hence in this chapter, the focus has been made on the review of literature relevant to the investment portfolio analysis of commercial banks in Nepal. For this study, different Journal, articles, Books, Annual reports and some research paper related with this topic has been reviewed. Therefore this chapter is arranged into the following order:

1. Review of supportive text.
2. Review of legislative provisions.
3. Review of previous studies.
4. Review of unpublished thesis.
5. Research gap

### 2.1 Conceptual Framework

Review of supportive text provides the fundamental theoretical framework and foundation to the present study. For this various books, research paper, articles etc dealing with the theoretical aspects of investments and portfolio analysis are taken into consideration.

### 2.1.1 Definition of Investment

Investment is a commitment of money and other resources that are expected to generate additional money and resources in the future. In general sense investment means to pay out money to get more. But in the broadest sense investment means the sacrifice of current money for future money. There are two different attributes involved time and risk. The sacrifice takes place in the present and is certain but the reward comes in the future and always remains uncertain. Investment is employment of funds with the aim of achieving addition income of growth in value. It involves the commitment of resources that have been saved or put away from current consumption, in the hope that some benefits will acquire in the future. Generally investments are made in assets and assets are of two types i.e. real assets and financial assets. Real assets investment involves tangible assets such as land, building, machinery and factories and financial assets investment are pieces of paper representing an indirect claim to real assets held by someone else such as stocks, bonds, T-bills. Real assets are generally less liquid than financial assets.

"Investment is any vehicle into which funds can be placed with the expectation that will preserve or increase in value and generated positive returns." (Gitman and joehnk; 1990:265).

"Investment is current commitment of funds for a period of time to derive future flow of funds that will compensate the investing unit for the time funds are committed, for the expected rate of inflation and also for uncertainty involved in the future flow of the funds." (Frank and Reilly; 2004: 298-299).

"Investment may be defined as the purchase by an individual or institutional investor of a financial asset or real asset that produces a return proportional to the risk assumed over some future investment period." (Amling; 1994:147).

### 2.1.2 Source of Investment Uncertainty (Elton, Edwin J, 2001: 13-17)

Every investment involves uncertainties that make future investment return risky. Some of the sources of uncertainty that contribute to investment risk are as follows:

### i. Interest rate risk

It is the potential variability of return caused by the changes in the market interest rates. Present value of investment moves inversely with the changes in the market interest rate i.e. if market interest rise then the present value of investment's present value will fall.

$$PV\ of\ investment\ a = \frac{1}{Interest\ Rate}$$

Thus, the investment rate risk affects the prices of securities like stocks, debenture, bonds, gold, puts, calls and other investments as well.

### ii. Purchasing power risk (Inflation Risk)

It is the variability of return an investor suffers because of inflation. The rate of inflation is measure by consumer price index.

$$Rate\ of\ inflation\ = \frac{CPI_t - CPI_{t-1}}{CPI_{t-1}}$$

Where,

$CPI_t$ = consumer price index in time period t.

$CPI_{t-1}$ = consumer price index in time period t-1.

When inflation takes place, financial assets such as bonds, stocks etc may lose their ability to command the same amount of real goods and services they did in the past.

### iii. Market Risk

It is the risk that arises from the variability in the market returns resulting from the bull and bear market forces. When a security index rises fairly consistently from low point, this upwards trend is called bull market and when the security index decline from the peak point to the next trough is called bear market. During the bearish period the price of the stocks falls but in the bullish market that usually rise more than enough to compensate for the bear market lose.

**iv. Default Risk**

Default risk is that portion of investment's total risks that resulting from the changes in the financial integrity of the investment. In other words, default risk is the variability of return that investors experience as a result of changes in the credit worthiness of a firm in which they invested. Investors loses from default risk usually result from the securities prices falling as the financial integrity of a firm weaken. So, when the bankruptcy occurs, the market price of the firm's securities will already have declined to near zero.

**v. Liquidity risk**

It is variability of return which results from price discounts given or sales commission paid in order to sell the assets without delay. Liquid assets are highly marketable and suffer no liquidation costs but liquid assets are not readily marketable. Hence, liquid assets required large price discounts and sales commission in order to affect a quick sell.

**vi. Call-ability Risk**

The portion of security's total variability of return that derives from the possibility that the issue may be called is the call-ability risk. Call-ability risk commands a risk premium that comes in the form of a slightly higher average rate of return.

**vii. Convertibility Risk**

It is that portion of the total risk of return from a convertible bond or convertible preferred stock that reflects the possibility that the investment may be converted into the issuer's common stock.

**viii. Political Risk**

It is the risk that caused by changing in the political environment that affect the assets market value. Political risk arises from the exploitation of a politically weak group for the benefit of politically strong group with the effects of various to improve their relative position increasing the variability of return from the affected asset.

**ix. Industry Risk**

Industry risk is the variability of return caused by the events that affect the products and firms that make up an industry. The stage of industry's life cycle, international tariffs, quotas, taxes, labor union problem, environmental restrictions, raw materials availability and similar factors interact and affect all the firms in an industry. As a result the prices of the securities issued by the competing firms tend to rise and fall together.

So,

Total Risk = Interest rate risk + Purchasing power risk + Liquidity risk + Market risk + Default risk + Political risk + Convertibility risk + Call-ability risk + Management risk + Industry risk + Other risk factors. *(Source; Investment, Rabindra Bhattarai)*

### 2.1.3 Investment Alternatives

In the market, a wide range of investment alternatives are available to an individual investor. Traditionally, there were limited investment alternatives like common stock, preferred stock and bond as financial assets. But with the increase in financial market, concept and principles, a lot of other financial alternatives have mushroomed. Other investment alternatives are convertibles, warrants, rights, commodity futures, financial futures, options etc. But these alternatives are not in practice yet. There are various alternatives for investors as well as financial institutions. They are as follows:

1. Equity Securities
   a) Common Stock b) Preferred Stock

2. Debt Securities
   i. Short term debt securities
   a) Negotiable certificate of deposit b) Treasury bill
   c) Commercial papers d) Banker's acceptance

   ii. Intermediate and long term debt securities
   a) Treasury bonds b) Saving bonds c) Corporate bonds
   d) Treasury notes e) Municipal securities f) Agency securities

3. Derivatives securities
   a) Warrants b) Options c) Rights
   d) Financial futures e) Commodity futures f) Options on futures

4. Real assets
   a) Precious metals b) Real estate c) Collectibles

5. Hybrid securities
   a) Convertible bonds b) convertible preferred

6. International investment
   a) Multinational corporations b) Foreign stock traded on a local exchange
   c) American depository receipts

7. Other investment alternatives
   a) Pension funds b) Mutual funds c) Closed end companies

### 2.1.4 Feature of sound lending and investment policy

The income and profit of bank depends upon its lending procedures, lending policy and investment of its funds in different securities. The greater the credit created by the bank the higher will be the profitability.

Many authors have given some necessities or some of the main characteristics for sound lending and investment policies, which must be considered by the commercial banks:

**i. Safety and Security**

The bank should never invest its funds in those securities, which are too volatile, i.e. which are subject to too much depreciation and fluctuation that may cause a great loss. It must not invest its funds in speculative businessmen who may be bankrupt at once and who may earn millions in a minute also. The bank should accept that type of securities, which are commercial, durable, and marketable having fair market value. For this purpose "MAST" should be applied while reaching an investment decision, where MAST stands for,

M- Marketability

A- Ascertain ability

S- Stability

T- Transferability

**ii. Profitability**

Commercial bank can maximize its volume of wealth through maximizing its return on investment and lending. So, they must invest their funds where they can gain maximum profit. The profit of commercial banks depends on the interest rate, volume of loan, its time period and nature of investment in different securities.

**iii. Liquidity**

Liquidity is the ability of a firm to repay the money when needed. Generally, people deposit their earnings in the different accounts of the bank, having confidence that the bank will repay their money whenever it is needed. In order to maintain the confidence to the depositors, the bank should always be ready to meet the current or short term obligations when they become due for repayment.

**iv. Purpose of loan**

In the viewpoint of security, a banker should always know that why a customer is in need have loan. If a borrower misuses the loan granted by the bank, he can never repay therefore to avoid this situation each and every bank should demand all the essential detailed information about the scheme of project or activities.

**v. Diversification**

A bank should not lay all its eggs on the same basket. This saying is very important to the bank and it should always be careful not to grant the loan in only one sector. To minimize the risk, the bank must diversify its investment on different sectors. Diversification of loan helps to sustain loss according to the law of average because if the securities of a company deprived, there may be appreciation in securities of other company. In this way the loss can be minimized or recovered.

**vi. Tangibility**

A commercial bank should prefer tangible security to an intangible one. Though it may be considered that tangible property doesn't yield an income apart from intangible securities, which have lost their value due to price level inflation.

**vii. National interest**

For its own profitability, the bank should also consider the national interest. Even though the bank cannot get maximum return from such investment, it should carry out its obligation towards the society and the country. The bank is required to invest on such sectors as per the government and Nepal rastra bank's instruction. Such as investment on government bonds, deprived sector lending.

**viii. Legality**

Illegal issued securities may cause the problem to the investors. Therefore all the commercial banks should follow the rules, regulations and directives of NRB, ministry of finance and other relevant organizations at the time of mobilizing funds.

### 2.1.5 Portfolio Analysis

A portfolio is a combination of assets or securities. Portfolio means the lists of holding in securities by an investor or institution. The portfolio theory provides a normative approach to the investors, decision to investment in the assets or securities under risk. Portfolio analysis considers the determination of future risk; and return is the weighted average of the expected return of the individual securities.

"Portfolio analysis is to develop a portfolio that has the maximum return at whatever level of risk the investor deems appropriate. A portfolio is a collection of investment securities. "(Weston and Brigham; 1992:123)". The objective of portfolio analysis is to reduce risk. By combining the securities of low risk with securities of high risk, success can be achieved by an investor in making a choice of investment outlets.

"Portfolio theory deals with the selection of optimal portfolio i.e. portfolio that provides the highest possible return for any specified degree of risk or the lowest possible risk for any specified rate of return."(Weston and Copeland; 2003: 366). Portfolio management is the process

of selecting a bundle of securities that provides the investing organization a maximum yield for a given level of risk. It can be also taken as a risk and return management. The objective of portfolio management is to analyze different individual assets and delineate efficient portfolio. The group of all efficient portfolios will be called the efficient set of portfolios. The efficient set of portfolios comprises the "efficient frontier". The efficient frontier is the locus of points in risk-return space having the maximum return at each risk class.

The portfolio theory can be used to determine the combination of these securities that will create the set of efficient portfolios. The selection of the optimal portfolio depends on the investor's performance for risk and return.

### 2.1.6 Portfolio Analysis and Diversification

An investor wants to minimize the risk of investment and maximize return but it is not possible through investment in a single asset. So, investor needs to invest in two or more securities. This collection of securities is called portfolio. Investment risk can be reduced by including more than one alternative or categories of assets in the portfolio and by including more than one asset from each category. Hence diversification is essential to the creation of an efficient investment because it can reduce the variability of returns around the expected return. This diversification significantly reduces the risk without a corresponding reduction in the expected rate of return on the portfolio. (Weston and Copeland; 2003: 366).

Diversification is the one important means to control portfolio risk. Investments are made in a wide variety of assets so that exposures to the risk of any particular securities are limited. By placing one's eggs in many baskets overall portfolio risk actually may be less than the risk of any component security considered in isolation. (Bodie, Kane and Marcus; 2002:162,208)

To minimize the risk, a bank must diversify its investment on different sectors. Diversification helps to sustain loss according to the law of average because if securities of company deprived, there may be appreciation in securities of other company. In this way the loss can be minimized or recovered. There are different diversifications techniques for reducing a portfolio risk are as follows;

### i. Simple diversification

Simple diversification is defined as “not putting all the eggs in one basket”, i.e we can reduce the investment risk by spreading our investment in different securities. Even the portfolio of randomly selected securities can reduce risk. Further it is not necessary to include too many securities in the portfolio. A portfolio consists of 10 to 15 randomly selection securities can eliminate almost all diversifiable risk. Simple diversification reduces a portfolio’s total diversification risk to zero and only the undiversification risk remains.

### ii. Superfluous Diversification

It refers to the investors spreading himself in so many investments on his portfolio. The investor finds it is impossible to manage the asset on his portfolio because the management of large number of assets requires knowledge of liquidity of each investment return, tax liability and thus becomes impossible without specialized knowledge. Superfluous diversification will usually result in the following portfolio management problems:

- Impossibility of good portfolio management.
- Purchase of lackluster performers.
- High search costs
- High transactions costs.

More money is spent to manage a superfluously diversified portfolio, there will most likely to be no concurrent improvement in the portfolio performance. Thus superfluous diversification may lower the net return portfolio’s owners after the portfolio management expenses are deducted.

### iii. Diversification across industries

Some investment counselors advocate selecting securities from different industries to achieve better diversification. It is certainly better to follow this advice than to select all the securities in a portfolio from one industry. But empirical research has shown diversifying across industries is not much better than simply selecting securities randomly. Since all the industries are highly correlated with one another. The indiversifiable variability cannot be diversified away simply by selecting securities from different industries.

**iv. Superfluous diversification across quality rating categories**

Superfluous diversification across quality rating categories is investing in only same qualified and same rated securities. Such as NEPSE has rated security grade "A" and so on and in this portfolio investor will make in same category security.

**v. Markowitz Diversification**

Markowitz diversification is based on the correlation. Under this theory, if portfolio is made by combining assets which are less than perfectly positively correlated (+1), the reduction in risk is possible without sacrificing portfolio returns. The lower the correlation between assets, the more the Markowitz diversification will be able to reduce the portfolio's risk. If the assets are perfectly negatively correlated (-1), the riskless portfolio is possible. There is a nature tradeoff between risk return in the market but at any given level of expected return, Markowitz diversification can reduce risk more than simple diversification. Applying diversification to a collection of potential investment assets with a computer is Markowitz portfolio analysis. It is a scientific way to manage a portfolio and its result is quite interesting. Since Markowitz portfolio analysis considers both the risk and return of dozen and hundreds of different securities simultaneously. It is a more powerful method of analyzing a portfolio than using intuition. *(Source; "Investment" by Rabindra Bhattarai)*

### 2.1.7 Portfolio risk and return

Each asset's expected return and risk along with the expected return and risk for other asset's and their inter relationships are important inputs in portfolio selection.

In order to construct efficient portfolios, the investor must be able to quantify the portfolios expected return and risk. (Cheney, JM & Mosses, Eward.A.1992)

From an investor's standpoint the fact that a particular stock goes up or down

is not very important; what is important is the return on his or her portfolio, and the portfolio risk. Logically, "then the risk and return of an individual security should be analyzed in terms of how that security affects the risk and return of the portfolio in which it is held." (Weston and Brigham; 1992:183)

**i. Portfolio expected return**

The expected return of a portfolio should depend on the expected return of each of the securities contained in the portfolio. The portfolio return is the weighted average expected return of the individual stocks in the portfolio, with weights being the fraction of the total portfolio invested in each stock. The portfolio expected return is defined in equation as follows:

$E(r_p) = \sum_{i=1}^{n} W_i \; X \; E(r_i) = W_1 E(r_1) + W_2 E(r_2) + \ldots\ldots\ldots W_n E(r_n)$

Where,

$E(r_p)$ = expected return of portfolio

$W_i$ = weight of $i^{th}$ asset or stock

$E(r_i)$ = expected return of $i^{th}$ asset

n = number of assets included in the portfolio

**ii. Portfolio Risk**

The calculation of portfolio risk is not as easy as portfolio return. The portfolio risk depends upon the risk of each securities and covariance of particular securities. Portfolio risk can be measured in terms of standard deviation and variance. The variance used to measure the risk of the portfolio. It is the square root of the standard deviation. The variance of a portfolio of assets depends on not only the variance portfolio but also how the assets track each other asset in the portfolio. This introduces the concept of covariance or correlation. To determine the variance of a portfolio of assets, the sum of the weighted variances of the individual assets and the sum of the weighted covariance of the assets added together.

**iii. Measuring Portfolio risk**

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

return (covariance or correlation), the risk of the portfolio can be estimated. cheney, JM & mosses, E.A (1992).

Total risk is measured by either the variance or its square root, the standard deviation of returns. The variance of returns from a portfolio made up of n assets is defined by following equation. Francis, J.C.(2003)

$$Var(r_p) = \sum_{i=1}^{n} \sum_{j=1}^{n} x_i \, x_j \sigma_{ij}$$

$$\sigma_p = \sqrt{\sum_{i=1}^{n} \sum_{j=1}^{n} x_i x_j \sigma_{ij}}$$

Where,

$\sigma_p$ = standard deviation of portfolio's rates of return

$\sigma_{ij}$ or cov($r_i$, $r_j$) = Covariance of the returns between security i and security j

cov($r_i$, $r_j$) = $\sigma_i \, \sigma_j \, \rho_{ij}$

$\rho_{ij}$ = correlation coefficient between i and j

$x_i$ = weight of security i

$x_j$ = weight of security j

Portfolio risk for two assets,

$$\sigma_p = \sqrt{X_A^2 \sigma_A^2 + X_B^2 \sigma_B^2 + 2 X_A X_B cov(r_A r_B)}$$

For three assets,

$$\sigma_p = \sqrt{X_A^2 \sigma_A^2 + X_B^2 \sigma_B^2 + X_C^2 \sigma_C^2 + 2 X_A X_B cov(r_A r_B) + 2 X_A X_C cov(r_A r_C) + 2 X_B X_C cov(r_B r_C)}$$

Where,

$X_A$, $X_B$ & $X_C$ = weights of securities A, B & C

$\sigma_A$, $\sigma_B$ & $\sigma_C$ = standard deviation of A, B & C

$cov(r_A r_B)$ = covariance between security A & B and so on.

### 2.1.8 Covariance, Correlation coefficient and portfolio risk

#### i. Covariance and Correlation coefficient

The covariance is related to the correlation coefficient as shown in the following equation;

$\text{Cov}(r_i, r_j) = \sigma_i \sigma_j \rho_{ij}$

Where $\rho_{ij}$ denotes the correlation coefficient between the return on security i and return on security j. The covariance measures how two variables co-vary. According to the portfolio theory, consideration must be given not only to the risk of the individual assets in the portfolio but also to the degree to which the returns of the assets co-vary or move together. If two assets are positively correlated, their covariance will also be positive. If two variables are independent then their covariance is zero. And if two variables vary inversely, their covariance is negative. In other words, if the returns on two assets are simultaneously above or below their respective mean, the covariance will be positive. Conversely, if the return on one asset is above its mean and return on another asset is simultaneously below its mean, then the covariance will be negative.

The relationship between two variables is called correlation and the correlation coefficient. The correlation coefficient is a relative number that measures the degree to which the returns on two assets move together. The correlation coefficient can take range of values between +1.0 and -1.0. Perfectly positive correlation i.e. +1.0 indicates that the returns on two assets move together. If the return on two assets are perfectly negatively correlated i.e. -1.0 then as one asset return move above (below) to its mean, the return on second asset move above (below) to its mean in the same proportion. A correlation statistic of 0.0 indicates that there is no consistent relationship between the movements of the two assets return.

#### ii. Correlation coefficient and portfolio risk

a) The expected return of a portfolio is a function of the expected returns of the assets in the portfolio and the proportion of the portfolio represented by each asset. The correlation between the assets in the portfolio does not affect the expected return of the portfolio.
b) When a portfolio contains only one asset, the risk of the portfolio is the standard deviation of the return of the asset.
c) When more than one asset is held in a portfolio, the lower the correlation between the assets, the lower risk of the portfolio for any given set of asset weight.

d) When the correlation between the assets is perfectly positive (ie.$\rho_{ij}$ = +1.0), the portfolio risk is the weighted average of risk of the assets in the portfolio.
e) When the correlation between the assets is perfectly negative (i.e. $\rho_{ij}$ = -1.0), it is possible to create a portfolio with zero risk.

### 2.1.9 Portfolio risk of a risky and risk free security

"A risk free security is one which has a zero various or standard deviation consequently the covariance between the risk free security and risky security will be zero. Since the risk free security has a zero standard deviation and covariance between the risk free security and risky security is zero, when a risky asset is combined with risk free asset, the product of standard deviation of risky asset and portfolio proportion invested in the risky asset." (Bodie, Kane and Marcus; 2002:164).

Here,

$\sigma_p = W_j \, x \, \sigma_j$

Where,

$\sigma_p$ = portfolio risk

$W_j$ = weight of risky securities in a portfolio

$\sigma_j$ = standard deviation of a risky securities

The total risk of portfolio can be divided into two parts. They are:

Undiversifiable risk / Market risk/ Systematic risk

Diversification risk/ company specific risk/ Unsystematic risk/ Unique risk

**Systematic Risk (Undiversifiable risk)**

This risk is that portion of total variability in return caused by market factors (also called market risk) that simultaneously affect the prices of all securities. This risk occurs due to changes in the macro-economic factors like interest rate, inflation, investor's expectations, gross domestic product etc. Moreover, it is the causes of external environment (political, economic, sociological and technological) of the firm. Undiversifiable risk is that part of the total risk that cannot be

eliminated by allocating capital to a diversified portfolio of investments. A statistical measure of undiversifiable risk index is beta coefficient.

**Unsystematic risk (Diversifiable risk)**

This type of risk is unique to an organization and can be largely eliminated by holding a diversified portfolio of investment. Diversifiable risk occurs through the events like, labor strikes, management errors, inventions, advertising campaigns, availability of raw materials etc. Diversified portfolio of securities can successfully eliminate most of the unsystematic risk inherent in individual securities.

### 2.1.10 Market portfolio

The market portfolio is the unanimously desirable portfolio containing all securities in exactly the proportion in which they are supplied. The return on market portfolio is the weighted average return on all capital on assets. Since the market portfolio contains all risky assets in the proportion to their market value, it is by definition, a perfectly diversified portfolio. The market portfolio is therefore subject only to systematic or undiversifiable risk. The volatility of the market portfolio is due to macroeconomic factors that affects all risky assets and not to company or industry specific factors. Volatility in returns created by unsystematic risk, this can be diversified away by adding risky assets to a portfolio. A portfolio's total risk is equal to the sum of its systematic risk and unsystematic risk. In the case of market portfolio, there is no unsystematic or diversifiable risk and total risk is equal systematic risk. Since it is possible to eliminate all unsystematic risk through perfect diversification, the capital markers do not reward investors for facing unsystematic risk. (Cheney, J.M & Mosses, EA 1992).

The market portfolio holds a special place in modern theory and practices. It is central to CAPM, which assumes that the market portfolio lies on the efficient set and that all the investors hold the market portfolio in combining with a desired amount of risk free borrowing and lending.

### 2.1.11 Factors Affecting Investment Portfolio Decision

#### i. Amount of investment

While determining the investment portfolio the financial manager should actually consider the fund available with the organization. Trading and manufacturing organization deals in securities

only for the purpose of best utilization of their available surplus cash resource. The amount of surplus fund available with them will therefore decide the quantum of their investment in securities.

**ii. Objective of investment portfolio**

While determining the investment portfolio we should be clear about objective of making investment in securities. The objective may differ organization to organization. While an organization looking for investment of provident fund of its employees can think of having in its investment portfolio only such securities which can assure safety of the fund and its return.

**iii. Selection of investment**

This is an essential decision which a finance manager has to take. He has to decide the kind of investment in which he has to put his fund. The selection of investment involves deciding about the type of securities, proportion between fixed and variable yield securities, selection of industries, selection of companies etc.

**iv. Timing of purchase**

To maximize the profit, it is not only important for the finance manager to buy the right securities but it is also equally important to buy and sell it at the right time. It is the most intricate and complex decision for finance manager.

## 2.2 Review of legislative provision

In the section, the review of legislative framework under which the commercial banks are operating has been discussed. This legislative environment has significant impact on the commercial bank's establishment, their mobilization, utilization of resources. All the commercial banks have to confirm to the legislative provision specified in the commercial bank Act 2031 and the rules and regulation formulated to facilitate the smooth running of commercial banks. The preamble of Nepal Bank Act 1994 clearly states the need of commercial bank in Nepal. "In the absence of any bank in Nepal the economic progress of the country was being hampered a causing inconvenience to the people. For the betterment of the country this law is hereby promulgated for the established of the bank and operation."

As mentioned in this act, commercial banks will help in banking business by opening its branches in the different parts of the country under the direction of NRB. The main function of commercial bank established under this act will be exchange money, to accept deposits and provide loan to commercial and business activities.

**NRB Rules Regarding Fund Mobilization of Commercial Bank**

To mobilize banks deposit in different sector in the different parts of the nation to prevent them from the financial problems, central bank NRB establishes a legal framework by formulating various rules and regulation. The directives must have direct or indirect impact while making decision to discuss rules and regulation which are formulated by NRB in terms of investment and credit to priority sector, deprived sector, other institutions, single borrower limit, CRR, loan loss provision, capital adequacy ratio, interest spread, productive sector investment. A commercial bank is directly related to the fact how much fund must be collected as paid up capital, while being established at a certain place of the nation? How much fund is needed to expand the branch and counters? How much flexible and helpful the NRB rules are also important? But we discuss only those, which are related to the investment function of commercial banks. The main provision, established by NRB in the form of prudential norms in above relevant area is briefly discussed under here:

**i. Provision for Investment in the Deprived Sector**

Some rules are being affected in the areas of credit and investment extension in the deprived sector by the commercial banks. According to this provision, the commercial banks are required to extend certain portion of their total loans and advances to the deprived sectors.

**ii. Provision for credit to the priority sector**

NRB requires commercial banks to extend loan and advances amounting at least 12% of their total outstanding credit to the priority sector. Commercial banks credit to the deprived sector is also a part of priority sector credit. Under priority sector, credit to deprived sector, credit to cottage and small industries and credit to service are counted commercial banks loan to the co-operatives licensed by NRB is also to be computed as priority sector credit from the fiscal year 1995/96 onwards.

**iii. Provision for the investment in productive sector**

Nepal being a developing country needs to develop infrastructure and other primary productive sectors like agriculture, industry etc. For this NRB has directed commercial bank to extend at least 40% of their total credit to the productive sectors. Loans to priority sector, agriculture sector, industry sector have to be included in the productive sector investment.

**iv. Provision for the single borrower credit limit**

NRB directed CBs to set an upper limit on the amount of loan financed to an individual, firm, company or group of companies. According to this, CBs are required not to exceed the single borrower limit 35% in the case of fund-based credit and 50% in the case of non-fund based credit. Such as the letter of credit, guarantee, acceptance letter and commitment has been fixed in a proportion of capital funds of bank.

**v. Cash reserve requirement (CRR)**

To ensure adequate liquidity in the commercial banks to meet the depositors demand for cash at anytime and to inject the confidence in the depositors regarding the safety of their deposited funds.

**vi. Loan classification and loss provision**

To improve the quality of assets of commercial banks NRB has directed commercial banks to classify their loan and advances, investment and other asset into six categories. The classification is done in two ways. The loans of more than 10 million are to be classified as debt service charge ratio, repayment situation, financial condition of borrower, management efficiency, quality of collateral. The loans of less than 10 million have to be classified as per maturity period.

**vii. Directives regarding interest rate spread**

The interest rate spread, the difference between interests charged on loans and advances and the interest paid to the depositors has widened significantly in the aftermath of deregulation in interest rates which has caused lower financial intermediation. Therefore NRB has required commercial banks to limit interest rate spread between deposits and lending rated to a maximum extent of 5%.

## 2.3 Review of Previous Studies

In this section, an attempt has been made to review some related studies concerning portfolio. For this study, various books, journals, articles and past thesis are reviewed. It is reviewed from international and national context.

Some of them are supposed to be relevant for this study is presented below:

A study entitled *"Portfolio analysis of CBs in Nepal"* an effort was made to examine the concept of investment and loan and advances portfolio of commercial banks. The study analyzed financial performance and portfolio of commercial banks with ratio analysis, investment portfolio analysis, loan and advance portfolios, risk and return analysis and trend analysis. Conclusions are as follows:

a. Commercial banks are investing very low amount of their fund in shares of their companies i.e. less than 1% on average.
b. Commercial banks are investing considerably higher amount of their fund in government securities.
c. Commercial banks are providing a very high amount of their funds on private sector i.e. more than 82% on average.
d. The return of CBs lies above the security market line which indicates that return on commercial banks are increasing; the percentage change in each year is decreasing.
e. Commercial banks have given the second priority to the foreign bills purchase and discount.
f. The financial performance of CBs, the commercial banks are found to be performing better than the domestic Nepalese banks operating under the same environment. (Source: Kisi, 1999)

A study entitled *"Portfolio analysis on investment of Nepalese commercial banks"* (shrestha, 2003) has presented following conclusions:

a. The total investment to total deposits ratio of selected CBs shown that SCBNL is the most successful in utilizing its resources on investment than other CBs.
b. On the basis of return on total assets, SCBNL utilized its overall resources efficiently than other banks.

c. Most of the CBs give first priority to invest their resources on loan and advances, second priority to government securities and third priority to shares and debentures.
d. All commercial banks seem to be interested in using their deposits in purchasing government securities.

Thesis subjected to *"Investment portfolio analysis of joint venture banks"* (Banjade, 2003) had drawn following conclusion;

- Most of the joint venture banks investment is concentrated into government securities.
- Increased portfolio weight on loans and advance portfolio to government enterprises and foreign bills purchase and discount decrease the risk.
- While comparing the investment portfolio weight set up by the commercial banks with directives given by the central bank, the banks have not followed the directives. Directives direct not to invest more than 50% in one sector but most of the banks have invested more or equal to 90% of their funds into one sector.

In international context, several studies have been done in the field of portfolio analysis. Among them some studies are reviewed as follows:

The basic portfolio model was developed by Harry Markowitz who derived the expected rate of return for a portfolio of assets and an expected risk measure. Markowitz entitled the portfolio theory establishes a relationship between a portfolio expected return and its level of risk as the criterion for selecting the optimum portfolio. So as to find the efficient set of portfolios and select the most effective one, the portfolio manager will need to know the expected returns and risk of the individual securities. The basic assumptions of Markowitz model is:

- Investors estimate the risk of the portfolio on the basis of the variability of expected returns.
- Investors base decisions solely on expected return and risk, so their utility curves are a function of expected return and the expected variance (or standard deviation) of returns only.

- Investors consider each investment alternative as being represented by a probability distribution of expected returns over some holding period.
- Investors maximize one-period expected utility, and their utility curves demonstrate diminishing marginal utility of wealth.
- For a given risk level, investors prefer higher returns to lower returns. Similarly, for a given level of expected return, investors prefer less risk to more risk. *(Source: Markowitz's study)*

  $R_p = \sum R_i \times X_i$

  $R_p = R_1X_1 + R_2X_2 + R_3X_3 + \cdots + R_nX_n$

  Where,

  Rp = expected return to portfolio

  Ri = expected return to security i.

  Xi = the proportion of total portfolio investment in security

  The Markowitz has presented the risk of the portfolio consists of the risk ness of the individual securities and covariance between the return of the securities among all possible combinations of them. Thus portfolio risk can be calculated as follows:

  $\sigma_p{}^2 = X_1{}^2\sigma_1{}^2 + X_2{}^2\sigma_2{}^2 + 2X_1X_2 \times \sigma_1\sigma_2 \times \rho_{12}$

  Where,

  $X_1$ = Proportion of funds invested in security 1.

  $X_2$ = Proportion of funds invested in security 2.

  $\sigma_1{}^2$, $\sigma_2{}^2$ = variance of the return on security 1 and 2

  $\rho_{12}$ = correlation between security 1 and 2

Similarly, John D.Martin and Robert C.Klemkosky's entitled the portfolio is measured utilizing zero covariance market model, which ignores the possible existence of group effects and a full covariance model which incorporates them into its estimates of portfolio risk. In their risk "the effect of homogenous stocks grouping on portfolio risk" tried to assess the impact of homogenous stock grouping on portfolio risk. According to them portfolio risk is defined in terms of variance in portfolio return for both zero and full covariance care.

To support their study, they used following linear function:

$$\overline{R}_{it} = \alpha_i + \beta_i(\overline{R}_{mt} + \overline{e}_{it})$$

Where,

$\propto_i =$ Constant whose value is such that the expected value of $\overline{e}_{it}$ is zero.

$\beta_i =$ A measure of responsiveness of $\overline{R}_{it}$ to change in $\overline{R}_{mt}$.

$\overline{R}_{it} =$ Return on securities i in period t.

$\overline{R}_{mt} =$ Market return for period t.

$\overline{e}_{it} =$ Random element

Portfolio variance was computed for randomly selected portfolios containing n= 2, 3 …N stocks, using both the zero covariance model and the full covariance model was as follows:

**Zero covariance model**

$$\sigma^2(\overline{R}_P) = \sum_{t=1}^{n}(x_i \times \beta_i)\sigma^2(\overline{R}_m) + \sum_{t=1}^{n}(x_i^2 \times \beta_i^2)\sigma^2(\overline{E})$$

Where,

$\sigma^2(\overline{R}_m)$ = variance in market return

$x_i$ = proportion of the total portfolio invested in stock i.

n = no. of stocks in portfolio

$\sigma^2(\overline{E})$ = variance in the random element specific to stock i.

**Full co-variance model,**

$$\sigma^2 full(\overline{R}_P) = \frac{\sum_{t=1}^{m}(R_{Pt} - \overline{R}_P)^2}{m}$$

$$R_{Pt} = \sum_{t=1}^{n} x_i R_{it}$$

$$(\overline{R}_P) = \sum_{t=1}^{m} \frac{R_{Pt}}{m}$$

Where,

m = no. of period

In their study, they were selected four homogenous groups to test their model. A total of 150 form stock including 40 growth stocks, 44 cyclical stock, 44 stable stocks and 22 oil stock. They further used Wilcox on matched pairs, singed rank test for each of the portfolio size containing two to ten securities to test the statistical significance differences of the portfolio risk between zero covariance estimates and full covariance estimates. *(Source: The John D.Martin and Robert C. Klemkosky's study)*

### 2.3.2 Review of journals and articles

In the Nepalese context, there are very limited numbers of articles can be found relating to the management of commercial banks of Nepal. However, there are available some related articles in different economic journals, magazines, newspapers and other related books and publication.

**Shrestha, (1995),** A study on "*portfolio behavior of commercial banks in Nepal"* has made remarkable efforts to examine various portfolio behavior of commercial bank in Nepal such as investment portfolio, liability portfolio, assets portfolio etc. In the study, investment of commercial banks when analyzed individually were observed in Nepalese domestic banks invest in government securities, national saving bond, debentures and company's shares. On the basis of this study, the author found that the supply of bank credit was expected to depend on total deposit, lending rate, bank rate, lagged variables and dummy variables; similarly demand of bank credit was assure to be affected by national income, lending rate, Treasury bill rate and other variables. The resources of commercial banks were expected to be related with variables like total deposits, cash reserve requirement, bank rate and lending rate. These are the findings of the study;

- The relationship of banks portfolio variables as found to be best explained by log linear equations.
- Demand of deposit for commercial banks in Nepal is positively affected by GDP from non agriculture and the deposit rate and the lending rate of interest.
- The investment of commercial banks on government securities has been observed to be affected by total deposit; cash reserve requirement, treasury bill rates and lending rates.

- The investment of commercial banks on shares and securities is normal.
- The loan loss ratio has been found to increase with low recovery of loan.

**Shrestha (1998)** has given a short glimpse on article entitled *"Portfolio management in commercial banks;* theory and practices".

Mr. Shrestha in his article has highlighted the following issues;

- The portfolio management becomes very important both for the individuals and institutional investors.
- Investor would like to select better mix of investment assets subject on these aspects like, higher return that is comparable with alternatives according to the risk class of investor.
- Good liquidity with adequate safety on investment, maximum tax concession, economic efficient and effective mixes.

For fulfilling those aspects, following strategies are adopted:

- Do not hold any single security i.e. try to have a portfolio of different securities.
- Choose such portfolio of securities, which ensure maximum return with minimum risk or less return for wealth maximizing objectives.

However author has also attempted the following approaches to be adopted for designing a good portfolio and its management.

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

Regarding the commercial banks, they are very eager to provide such services but above mentioned problems, very limited opportunities are available to the banks for exercising the portfolio management.

The author has drawn following conclusion for smooth running and operation of banks and financial institutions:

- The survival of bank depends upon its own financial health and various activities.
- In order to develop and expand the portfolio management activities successfully the investment management methodology of portfolio manager should reflects high standards and give their clients the benefits of global strengths, local insights and product philosophy.
- With the discipline and systematic approval to the selection of appropriate countries, financial assets and management of various risks the portfolio manager could enhance the opportunity for each investor to earn supervisor returns over time.
- The Nepalese banks having greater network and access to national and international capital market have to go for portfolio management activities for the increment of their fee based income as well as to enrich the client base and contribute to the national economy.

In this context, the author has presented two types of investment analysis techniques; fundamental analysis and technical analysis to consider any securities such as equity, debentures or bond, other money and capital market instruments. The author has also pointed out the required skilled manpower research and analysis and proper management information system (MIS) in any type of commercial banks to get success in portfolio management customer's confidence.

A subject entitled "*Managing investment portfolio"* article has published by **Timilsina. Y(1999**). He is however, confronted with problems of managing investment portfolio particularly in times of economic slowdown. A rational investor would like to diversify his investments in different classes of assets so as to minimize risks and earn a reasonable rate of return.

Commercial banks have continuously been reducing interest rates on deposits. Many depositors are exposed to the increasing risk of non-refund of their deposits because of the mismanagement of some of the banks and financial institutions.

Making investment in fixed deposits with commercial banks is a normal practice among the common people. Normally, fixed deposits with banks are considered risk-less, but they also are not 100% free of risk. You should select a bank to deposit your money therein, which has sound financial health and high creditability and banking businesses.

An investment in equity shares can earn dividend income as well as capital gain in the form of bonus share and right share until an investor holds it and capital profit when he sells it in the stock market.

In co-operatives society, few depositors lost their deposit because some of these cooperatives were closed down because of their inability to refund public deposits. An investor in days of crisis has to make an effort to minimize the risk and at least earn a reasonable rate of return on his aggregate investment.

An investor has to evaluate the risk and return of each of the investment alternatives and select an alternative, which has lower degree of risk and offer at least reasonable rate of return. An investor who doesn't try to maximize return by minimizing the possible risk is not a rational investor. On the other hand one can place over confidence on equity investment and assume high risk by investing whole money in equity shares. Stock market these days is much unpredictable therefore these two is not a wise decision. Therefore a portfolio which consists of only one class of financial assets is not a good portfolio.

**Manohar Krishna Shrestha (2000)** in his article *"commercial banks comparative performance evaluation"* concluded that;

The joint venture banks are new operationally more efficient, having superior performance while comparing with local banks that are operating in Nepal. Better performance of joint venture banks is due to their sophisticated technology, modern banking method and skill. Their better performance is also due to the government's branching policy in rural areas. Local banks are efficient and expertise in rural sectors but has number of deficiencies. Thus local banks are facing growing constraints of socio-economic, political system on one hand spectrum and that of the issues and challenge of joint venture banks commanding significant banking business on other spectrum.

**Thapa.C. (2003)** has published an article entitled *"Managing Banking Risk"* in his article he has accomplished the subsequent issues;

Banking and Financial service are among the fastest growing industries in developed world and are also emerging as corner stones in other developing and undeveloped nations as well. Bank primary function is to trade risk. Risk cannot be avoided by bank but can only be managed. There are two types of risk. The first is diversifiable risk which can be mitigated by maintaining an optimum and diversified portfolio. The second is undiversifiable risk and it is not under control of the firm and bank.

On the basis of his article, risk management of the banks is also one of the deciding factors for overall business investment lending to growth of the economy. Managing risk not only needs sheer professionalism at the organizational level but appropriate environments also need to develop. The only solution to mitigate the banking risk is to develop the badly needed commitment eradication of corrupt environment especially in the disbursement of lending and formulate prudent and conductive regulatory frame work.

**Mahat L.D. (2004)** has published an article entitled *"Efficient Banking"*. In his article he has accomplished, the efficiency of bank can be measured using different parameters. The concept of productivity and profitability can be applied while evaluating efficiency of banks. The term productivity refers to the relationship between the quantity of inputs employed and the quantity of output produced. An increase in productivity means more outputs can be produced from fewer inputs. The analysis of operational efficiency of banks will help in understanding the extent of banks under the changed scenario and deciding whom to bank upon. This may also helps the inefficient banks to upgrade their efficiency and be winner in the situation developing due to slowdown in the economy.

### 2.4 Review of thesis

Some of the related studies are reviewed here;

**Prabina Bajracharya (2000)**, has undertaken a study entitled *"Investment of commercial banks in priority sector"* with the objectives;

- To analyzed the trend of investment in private sectors for 10 years from 2047 to 2056 B.S.
- To analyzed the trend of repayment in private sectors for 10 years.

- To measure the effectiveness of the program in the terms of the investment and repayment in rural and urban sector.
- To evaluate the banking procedures and services in disbursing loan in this sector.

The major findings are as follow:

- The target of 12% investment of total outstanding liabilities in priority sector and 3% out of which has been invested in deprived sector met by RBB.
- Trend analysis for 10 years shows the increasing trend of investment in priority sectors which shows that CBs are giving due consideration to increase investment in priority sector.
- Interest charged on the loan disbursed in this sector is fairly less than the interest charged on loan for other purposes. In addition to this, there is high overhead cost incurred for supervision, administration and others in this program.
- Regression analysis shows the positive relation between the investment and repayment.
- The chi square test of effectiveness of program is more effective in rural and semi rural area as compared to the urban areas.
- Investment on agriculture is higher than the investment on industry and service sector.
- The study revealed that the procedure of loan disbursing itself is complicated for the borrowers to understanding.
- In fact, if the supervisors make the scheduled supervision, inspection and the frequent contact with the borrowers, the chance of misuse of the loan can be minimized.

**Jagdish Basnet (2002)**, thesis entitled *"Portfolio management of joint venture banks in Nepal" is based on* study of four joint venture banks. They are Nepal Bangladesh bank ltd, standard chartered bank, Himalayan bank ltd and Everest bank ltd. The general objective of this study is to identify the situation of portfolio management of joint venture banks in Nepal.

The major findings of this study are given below:

- Among the selected bank on ratios of Everest bank ltd. Are more consistent among the four joint venture banks.

- SCBNL is not investing its fund in NRB bond after 1997 and no government securities after 1998.
- HBL is not investing its fund in NRB bond after 1997 and investing very high amount of fund in government securities.
- NBBL is investing very high amount of its fund in government securities. EBL is not investing its fund in NRB bond after 1997 but investing its high amount of its fund on government securities.
- SCBNL is providing very high amount of its loans and advances to the private sector. It has also given the second priority to the foreign bills purchase and discount.
- HBL is providing very high amount of its loans and advances to the private sector in increasing trends. It has also given the second priority to the foreign bills purchase and discount.
- NBBL is providing very high amount of its loans and advances to the private sector. It has also given the second priority to the government securities by providing very low amount of loans to the foreign bills purchase and discount.
- EBL is providing very high amount of its loans and advances to the private sector and has given the second priority to the foreign bills purchase and discount. It is not providing amount of loans & advances to the government enterprises.

**Kalpana Khaniya (Banjade, 2003)** in her thesis entitled *"Investment portfolio analysis of joint venture banks"* has been done in 2003. The study based on five joint venture banks and they are: SCBNL, HBL, NBBL, EBL & Nabil. The general study of the present study is to identify the current situation of the investment portfolio of joint venture banks in Nepal.

The major findings are as follows:

- SCBNL and HBL have better position. NBBL and Nabil have a low position in the industry. But EBL has a very low position in the industry because of having lowest mean return on shareholders' fund resulting from the negative return in the fiscal years 1995/96 and 1996/97.
- SCBNL has the highest mean return and EBL has the lowest return. Except EBL all other four banks i.e. NBBL, NABIL, HBL & SCBNL have good performance.

- Among other joint venture banks SCBNL has the highest return and EBL has mean return than industry average. SCBNL and EBL mobilizes the funds in investment title is higher than the standard ratio.
- NABIL, SCBNL & HBL are investing low amount of deposits on loans and advances which is lower than industry average and NBBL and EBL have invested high amount of deposits on loans and advances title which is higher than industry average.
- SCBNL has highest EPS and EBL has lowest EPS. Similarly, HBL has also above mean EPS than industry average and that of NBBL is lower than industry average.
- Himalayan Bank has the lowest beta coefficient among the five joint venture banks which means that the systematic risk of Himalayan bank is the lowest among the JVBs. The portfolio return of NBBL is 94%. This return is the average capital gain yield and dividend yield.
- The coefficient of correlation between loans and advances in private sector and portfolio return of joint venture banks come out to rxy = -0.6 therefore it indicates that there is negative correlation between loans and advances in private sector and portfolio return of five JVBs in Nepal.

**Deepak Raj Joshi, (2004)** has conducted a study entitled *"Risk and return analysis on common stock of five listed commercial banks"*. The major objectives of the study are to calculate and analyze the risk and return of the banking sector, to evaluate the common stock of the listed commercial banks and to analyze whether common stock of the commercial banks are correctly priced or not.

The major findings of his study are summarized below:

- Regarding the market capitalization, the SCBL has the maximum market capitalization and the NBBL has the minimum market capitalization.
- Regarding the market capitalization of the industry, banking sector has 65%, insurance and finance has 14%, Manufacturing and processing has 13%, Hotel sector has 7%, Trading sector has 1% and other sector has negotiable proportion of share in overall market capitalization.

Mr. Joshi further concludes that the considering returns, the return of SCBL is maximum (i.e. 73.30%) but its risk is also maximum but if risk is taken into account for consideration, NIBL has the minimum risk (i.e. 43.82%). In industry wise analysis, the expected return of insurance and finance has a maximum expected return (i.e. 27.70%), while other sector has minimum expected return (16.61%). If the risk is assessed in term of CV, Banking sector has minimum CV like 1.66 which indicates that it is better to invest in the shares of the banking sector.

**Khem Raj Shrestha (2006)**, in his thesis entitled *"A study on investment portfolio of commercial banks in Nepal"* has been done in 2006. The general objective of this study is to identify the current situation of investment portfolio of CBs in Nepal.

The major findings of his study are summarized below:

- Proper investment on various securities i.e. balance allocation of funds on various government securities such as treasury bills, national saving bonds, development bonds etc and fixed income percentage rate that helps to reduce the variability of return. In the analysis of risk and return comparatively SCBNL have more return from investment on government securities and NABIL has better position on investment of loan and advances.
- The return on shares and debentures of commercial banks shows wide fluctuation. These fluctuations in returns are caused mainly by the volatility of the shares price in the market and by the changes in dividend in some extent. Comparatively to other asset, shares and debenture has higher return and higher risk. Hence it is cleared from analysis that investment on shares and debentures are high risky assets.
- The study shows that the portfolio return is decreasing trend every year. It shows that the investment portfolio concept is not using properly by the selected banks.
- SCBNL is the bank that mobilizes its deposits fund effectively on government securities. EBL has concentrated to mobilize its deposit funds on loan and advances. HBL, NSBIBL and NIBL are not so successful to mobilize its depositor's funds in government securities but NSBIBL is also more successful to mobilize depositor's funds in loan and advances as well as shares and debentures. And NIBL effectively mobilize its depositor's funds in shares and debentures.

**Paudyal Bhavishor (2006)** conduct a *"A study on portfolio analysis of commercial banks in Nepal"* with the objective of;

- To evaluate financial performance of commercial banks of Nepal.
- To examine the existing situation of portfolio management of Nepalese commercial bank.
- To analyze risk and return of commercial bank.
- To analyze investment and loan and advances portfolio of commercial bank.
- To show the present position trend of loan and advance and investment to total deposit and forecast it.

The major findings of his study are as follow;

- The industrial mean ratio of investment to total deposit is 21.86%. The only EBL has a greater ratio above industrial mean ratio i.e 24.77>21.8. But other banks have lower investment to total deposit ratio than industrial mean ratio. It shows that EBL has effective mobilization its deposit on investment to generate the return.
- Among four commercial banks HBL has invested its more funds on govt. securities (i.e. risk free assets) and lesser fund on share and debenture (i.e risky assets). All banks have invested more than 83% amount in government securities. Only BOKL has invested its 0.63% on non-resident sector. None of the banks have invested any amount on NRB bond.
- All of the selected commercial banks are granting very high amount its loan and advances to private sector. NIBL and HBL have given second priority to government enterprise and EBL and BOKL give second priority to foreign bills purchase and discount. EBL and BOKL have granted very low less than 1% loan and advance to government enterprise.
- BOKL stock has the highest expected return i.e. 8.34% and HBL has the lowest expected return i.e -8.82%. NIBL has also negative return i.e -7.71%. The market expected return is 6.47%. The risk of the BOKL is the highest i.e 57.14% and HBL has the lowest risk i.e 15.26%. NIBL and EBL have risk 19.41% and 36.03% respectively. The market risk is 15.68%. In conclusion we can say that higher the risk higher the return and vice versa.
- Total risk of BOKL stock is highest and total risk of HBL stock is lowest among four commercial banks.
- HBL has the highest portfolio return i.e 4.85%, NIBL stock has lowest i.e negative -1.19% portfolio return and it has the highest portfolio risk ie. 8.46%. It means NIBL invest its

amount in risky assets so it become in loss. EBL and BOKL have a portfolio return of 4.79% and 4.80% respectively and portfolio risk is 0.28% and 5.77% respectively. It shows that the portfolio return of three banks is not so different but risk of BOKL is higher than HBL and EBL.

- EBL is utilizing its more collected fund on loan and advances and investment which mean percentage ratio is 95.85%. It is the highest average ratio among four commercial bank. HBL is in loss position on its 67.36%. Other banks NIBL and BOKL are utilizing their deposit in loan and investment is 83.59% and 94.73% respectively.

## 2.5 Research Gap

Portfolio, Risk and return are the most important part of finance because they can impact strongly on investment. Thus it is not totally new concept. Many researchers have done research on this aspect. Portfolio investment refers to an investment that combines the several assets. Commercial banks cannot utilize its whole fund raised through deposit and borrowing into loans and advance. To fulfill the gap between borrowing and lending banks rather goes for investment. From the above study the researcher found the gap that researcher has failed to analyze the financial performance of commercial banks in terms of investment strategies. Hence this research will fulfill the prevailing the research gap by calculating the portfolio risk, return and market price of different companies and estimating the optimal portfolio on the basis of all relevant data and information of the latest five fiscal year of five commercial banks. Furthermore, the investment portfolio performance has also been evaluated with using sharpe index of portfolio performance measure. Overall this study will focus on financial indicators that may or may not affect the financial performance of commercial banks in consideration with portfolio management.

# CHAPTER – III

## RESEARCH METHODOLOGY

Research methodology refers to the various methods of practices applied by the researcher in the entire aspect of the study. In other words, a systematic process adopting by the researcher to study the problem with certain objectives in view is known as research methodology. It is the plan, structure and strategy of investigation conceived to answer the research question or test the research hypothesis. Research methodology consists of research design, data collection procedure, tools and techniques for analysis, method of analysis and presentation and assumptions of the study. The basis objective of the study is to analyze the investment portfolio of the selected commercial banks.

### 3.1 Research design

Research design is the logical planning and directing of a piece of research. It is the conceptual structure within which research is performed. Finally, research design is the plan, structure and strategy of the investigation conceived so as to obtain answers to research questions and to control variance.

The present study is mainly based on two types of research design i.e. descriptive and analytical. Descriptive research design describes the general pattern of the Nepalese investors, business structure, problem of portfolio management etc. The analytical research design makes analysis of the gathered facts and information and makes a critical evaluation of it. To achieve of this study, analytical and descriptive research designs have been used.

### 3.2 Population and sample

Under the study of investment portfolio analysis Nepalese commercial banks, the total number of commercial banks including domestic and joint venture banks operating in the Nepal is the population. At present there are 26 licensed commercial banks are operating in Nepal. It is not possible to study all of them regarding the study topic. So, out of them this study will be concern

with five CBs as a sample. In the sample, banks are taken according to their rapid growth rate and gradually growth rate which head office is in Kathmandu by which we can compare about the investment portfolio of this bank. The selected sample banks for the analysis are as follows;

1. Standard chartered bank ltd.
2. Everest Bank ltd.
3. Himalayan bank ltd
4. Nabil bank ltd.
5. Nepal investment bank ltd.

Population size = 26

Sample size = 5

Sample percentage = 19.23%

### 3.3 Sources of data

This research study is mainly based on secondary data. Published annual reports of the concern banks are taken as the basic source of data. Similarly, different articles, journals, magazines, related books, reports and data from Nepal stock exchange, Nepal rastra bank directive and financial statistics, annual report of SEBO, NEPSE, unpublished thesis and related web sites etc.

### 3.4 Data collection and processing techniques

Almost the data for the research is collected from the secondary sources. Official publications like annual reports, banking and non banking financial statistics, economic survey etc were obtained from respective offices. However, during the study period, informal survey has also been taken with the individual investor, related bank officials, SEBON & NEPSE staffs to obtain more information and reality about the various published data, investment policies of the banks, portfolio concept in the field of investment etc. Hence in this study, the available data, information, figures and facts are checked, rechecked, edited and tabulated for computation.

### 3.5 Data analysis tools

There are various financial and statistical tools are used to analyze the data ratio analysis, correlation coefficient, trend analysis, risk and return, standard deviation, hypothesis test for more effective and significant for achieving objective.

#### a) Financial Tools

The financial tools are used to analyze the performance of CBs. There are several tools which can be applied but the following main financial tools are used to analyze.

#### 1. Ratio Analysis

The relationship between two accounting figures expressed in mathematical term is known as ratio. In financial analysis, ratio is used as a yardstick for evaluating the financial position and performance of the firms. "Ratio analysis is used to compare a firm's financial performance and status to that of other firms or to itself on time" (Gitman; 1990:275). Ratio refers to the numerical or quantitative relationship between two variables or items or 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. In this study, only such ratios which are related to investment portfolio of commercial banks are taken here. Hence, in this study the following ratios are calculated and analyzed.

##### i. Total investment to total deposit ratios

This ratio can be obtained by dividing the total investment by total deposit. This can be mentioned as

$$Total\ investment\ to\ total\ deposit\ ratio = \frac{Total\ investment}{Total\ deposit}$$

### ii. Loan and advances to total deposit ratios

This ratio shows 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 loan and advances by total deposited funds. This ratio can be stated as:

$$Loan\ and\ advances\ to\ total\ deposit\ ratios = \frac{Loan\ and\ advances}{Total\ deposit}$$

### iii. Net profit to total assets ratio

This ratio measures the return on assets. It is computed by dividing the net profit after tax by total assets. i.e

$$Return\ on\ total\ assets\ ratio = \frac{Net\ profit\ after\ tax}{Total\ assets}$$

### iv. Investment on government securities to total outside investment ratio

This ratio shows that the banks investment on government securities in comparison to the total outside investment. It can be calculated by dividing investment on government securities by total outside investment.

$$= \frac{Investment\ on\ government\ securities}{Total\ outside\ investment}$$

### v. Investment on share and debenture to total outside investment

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

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

**vi. Return on government securities**

This ratio shows 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. i.e

$$= \frac{Interest\ income\ on\ government\ securities}{Government\ securities}$$

**vii. Return on loan and advances**

This ratio shows 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 advance by loan and advances. This can be expressed as;

$$= \frac{Interest\ income\ on\ loan\ and\ advance}{Loan\ and\ advances}$$

**viii. Return on share and debentures**

The return on share and debenture considers dividend yield and capital gain yield. The return on share and debenture significantly depends on the change in its share price. This can be calculated as follows;

$$Return\ on\ share\ and\ debenture(R_s) = \frac{P_{t-}P_{t-1} + D_t}{P_{t-1}}$$

**2. Risk on individual assets**

The risk of the assets depends on the variability of the return of a period, which is defined as the extent of the deviation of individual rate of return from the average rate of return.

Risk on individual assets or standard deviation for assets can be calculated as;

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

Where,

$\sigma$ = standard deviation or risk

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

$R$ = rate of return on individual assets

n = no. of years

### 3. Return on Portfolio

The return on portfolio is simply the weighted average of the expected returns on the individual assets in the portfolio with the weights being the fraction of the total portfolio investment in each asset.

Return on portfolio $(R_p) = W_A R_A + W_B R_B + \ldots\ldots\ldots + W_N R_N$

Where,

$R_p$ = Expected return to portfolio

$W_A$ = 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'

### 4. 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 portfolioA risk can be calculated in term of its standard deviation as;

$$\sigma_\rho = \sqrt{W_A^2\sigma_A^2 + {W_B}^2{\sigma_B}^2 + {W_C}^2{\sigma_C}^2 + 2Cov_{AB}\, x\, W_A x\, W_B + 2Cov_{AC}\, x\, W_A x\, W_C + 2Cov_{BC}\, x\, W_B x\, W_C}$$

## 6. Co-variance

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

$cov_{jm} = \rho_{jm}\sigma_j\sigma_m$

## 7. Coefficient of variation

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

C.V. $= \frac{\sigma_j}{\overline{R}_j}$

Where,

$\sigma_j$ = Standard deviation of security j.

$\overline{R}_j$ = Average return on security j.

## 8. Portfolio Performance Measure

### Sharpe's Portfolio Performance Measure

Portfolio performance evaluation on the basis of return only will be insufficient; therefore it is necessary to consider both risk and return. The sharpe ratio measures the amount of return from an investment portfolio for a given level of risk. It does this by dividing a measure of portfolio volatility (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.

$$S_p = \frac{Risk\ Premium}{Total\ risk} = \frac{\overline{r}_p - r_f}{\sigma_p}$$

Where,

$S_p$ = Sharpe index of portfolio performance

$\overline{r}_p$ = Average return on portfolio

$r_f$ = Risk free rate of return

$\sigma_p$ = Standard deviation of portfolio

**b) Statistical Tools**

Different types of statistical tools can be used to analyze and evaluate the data available. In this study, statistical tools such as standard deviation, mean, coefficient of variation, coefficient of correlation between different variables, trend analysis as well as hypothesis test have been used which are as follows;

**1. Karl Person's coefficient of correlation**

Karl person's measure known as personas correlation coefficient between two variables (series) X and Y usually denoted by r(X,Y) or $r_{xy}$ or simply r can be obtained as;

$$r = \frac{N\sum XY - \sum(X)\sum(Y)}{\sqrt{N\sum X^2 - (\sum X)^2}\ \sqrt{N\sum Y^2 - (\sum Y)^2}}$$

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

If r = 1, there is perfect positive relationship

If r = -1, there is perfect negative relationship

If 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.

**2. Arithmetic Mean**

Arithmetic mean is the ration of the sum of all the observations to the number of observation. Let us suppose $X_1$, $X_2$, $X_3$……..$X_n$ denotes 'n' variate values of the random variable X, then the arithmetic mean denoted by $\overline{X}$ is defined by the following formula;

$$\overline{X} = \frac{X_1 + X_2 + X_3 + \cdots + X_n}{n} = \frac{\sum X}{n}$$

Where,

$\overline{X}$ = Arithmetic mean

$\sum X$ = Sum of observations

$n$ = number of observations

### 3. Trend Analysis

This is a mathematical method which is widely used in practice. The general tendency of the time series data to increase or decrease or remain stagnant during a long period of time is called trend. It is applied for finding out a trend line for those series which changes periodically in absolute amount. As per this method, the trend line between dependent variable Y and the independent variable X be represented by,

$$Y = a + bx$$

Where,

Y = the value of dependent variable

a = Intercept of trend line

b = Slope of trend line

x = value of independent variable

By putting the above values in normal equation, the following two equations can be developed;

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

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

$$Since\ \sum x = 0,\ a = \frac{\sum y}{n} \text{ and } b = \frac{\sum xy}{\sum x^2}$$

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

# CHAPTER – IV

## DATA PRESENTATION AND ANALYSIS

The main purpose of this chapter is to analyze and interpret the data by using different financial and statistical tools. In this chapter, data gathered from various sources and organize and have been inserted in the tabular form so that it can be used for interpretation and the presentation can be easy and understandable.

There are number of methods which can be used to simplify the data. Necessary tables, charts and graphs are presented to achieve the objectives of the study. All the possible data are collected from NEPSE (Nepal stock exchange), SEBO (Security board) and also from internet, concerned sources, journals etc. In this section, the investment portfolio of commercial banks is analyzed with the help of following tools;

1) Investment operations of CBs
2) Ratio analysis
3) Risk and return analysis of individual securities and portfolio investment
4) Financial performance of individual as well as portfolio investment
5) Trend Analysis

### 4.1 Investment operations of CBs

Nowadays most of the banks depend upon the investment strategies through which commercial banks are playing the vital role in the economic development of the country. Investment policy provides several inputs through which banks can handle their investment operations efficiently and maximize return with minimize risk which is the success path for the banks. CBs must mobilize its funds to profitable, secured and marketable sector so that it can earn more profit. The investment operation of CBs deal with the analysis related to the investment of the CBs of Nepal in government securities, shares and debentures and loan & advances

### 4.1.1 Investment on government securities

The investment on government securities includes the investment on treasury bills, development bonds, and national saving bonds, insurance bonds etc. which are shown in table below:

**Table 4.1**
**Structure of investment on government securities held by CBs**

**(Rs. In '000')**

| FY | SCBL | NIBL | NABIL | EBL | HBL | CBs |
|---|---|---|---|---|---|---|
| **2005/06** | 8644855 | 2522300 | 2301463 | 3548616 | 5144313 | 22161547 |
| **2006/07** | 7107937 | 3256400 | 4808348 | 4704632 | 6454873 | 26332190 |
| **2007/08** | 8137615 | 3155000 | 4646883 | 4821604 | 7471667 | 28232769 |
| **2008/09** | 9998753 | 2531300 | 3706102 | 5146045 | 4212300 | 25594500 |
| **2009/10** | 8531519 | 4201850 | 7941556 | 4354353 | 4465372 | 29494650 |
| **Total** | **42420679** | **15666850** | **23404352** | **22575250** | **27748525** | **131815656** |
| **Average** | **8484135.8** | **3133370** | **4680870.4** | **4515050** | **5549705** | **26363131.2** |

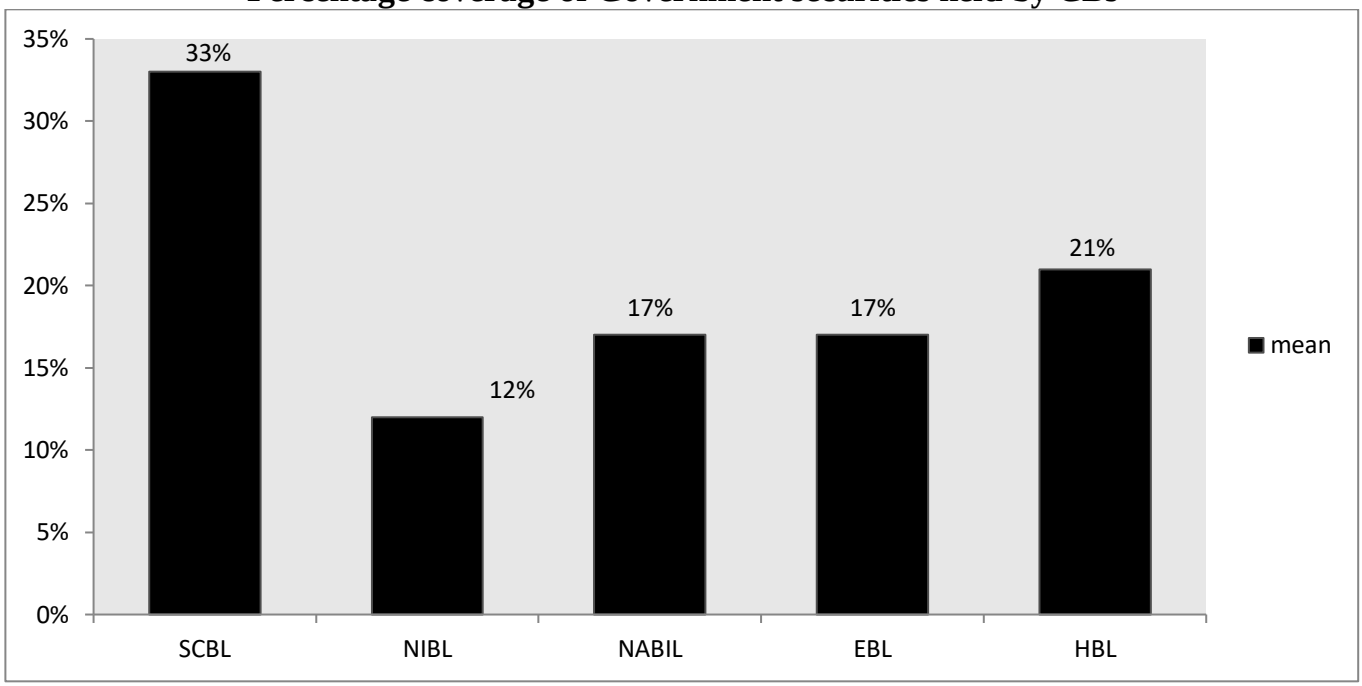
*Source: Annual Reports of CBs from 2005/06 to 2009/10*

**Table 4.2**
**% share of investment on government securities of each bank**

| FY | SCBL | NIBL | NABIL | EBL | HBL |
|---|---|---|---|---|---|
| **2005/06** | 39.01% | 11.38% | 10.38% | 16.01% | 23.21% |
| **2006/07** | 26.99% | 12.37% | 18.26% | 17.87% | 24.51% |
| **2007/08** | 28.82% | 11.17% | 16.46% | 17.08% | 26.46% |
| **2008/09** | 39.07% | 9.89% | 14.48% | 20.11% | 16.46% |
| **2009/10** | 28.93% | 14.25% | 26.93% | 14.76% | 15.14% |
| **Mean** | **32.56%** | **11.81%** | **17.30%** | **17.17%** | **21.16%** |
| **S.D.** | **5.96** | **1.62** | **6.13** | **2.02** | **5.05** |
| **C.V.** | 18.3 | 13.72 | 35.43 | 11.76 | 23.87 |

*Source: Table 4.1 and Appendix 1 C*

**Figure 4.1**
**Percentage coverage of Government securities held by CBs**




The above table shows that the investment on government securities of SCBL is highest among other banks. The NIBL has been found to have investment on government securities lower comparative to other banks. Similarly the SCBL covers more shares i.e. 32.56% of the total invetment on govt. securities made by CBs. Himalayan Bank be on second position by investing 21.16% of the total investment on govt. securities made by CBs.

Similarly lowesst CV of EBL shows the more consistency in investment. NABIL has highest CV which means there is high variability in investment on govt. securities. From average mean and CV analysis, it is clear that SCBL, HBL and NABIL are the banks which mobilize maximum funds comparative to other banks on govt. securities and NIBL is in the last position with average mean 11.81% in total investment.

### 4.1.2 Investment on share and debenture

Commercial banks are interested to invest their funds in share and debenture of other companies. Such as they invest in finance, banks, rural micro finance company, companies and regional development banks. Some companies whose shares are hold by commercial banks like NIDC capital marked, Nepal Oil Corporation, Nepal housing development finance co. ltd., rural

development banks, Insurance Corporation etc. The structure of investment on share and debenture by commercial banks are shown below:

**Table 4.3**
**Structure of Investment on Shares and Debentures held By CBs**

**(Rs. In '000')**

| FY | SCBL | NIBL | NABIL | EBL | HBL | CBs |
|---|---|---|---|---|---|---|
| **2005/06** | 15343 | 17738 | 27563 | 19887 | 39909 | 120440 |
| **2006/07** | 44943 | 35253 | 57853 | 19887 | 73424 | 231360 |
| **2007/08** | 106043 | 59945 | 80551 | 16225 | 89558 | 352322 |
| **2008/09** | 106925 | 64270 | 82501 | 17107 | 93883 | 364686 |
| **2009/10** | 106925 | 66645 | 159857 | 17107 | 78882 | 429416 |
| **Total** | **380179** | **243851** | **408325** | **90213** | **375656** | 1498224 |
| **Average** | **76035.8** | **48770.2** | **81665** | **18042.6** | **75131.2** | **299644.8** |

*Source: Annual Reports of CBs from 2005/06 to 2009/10*

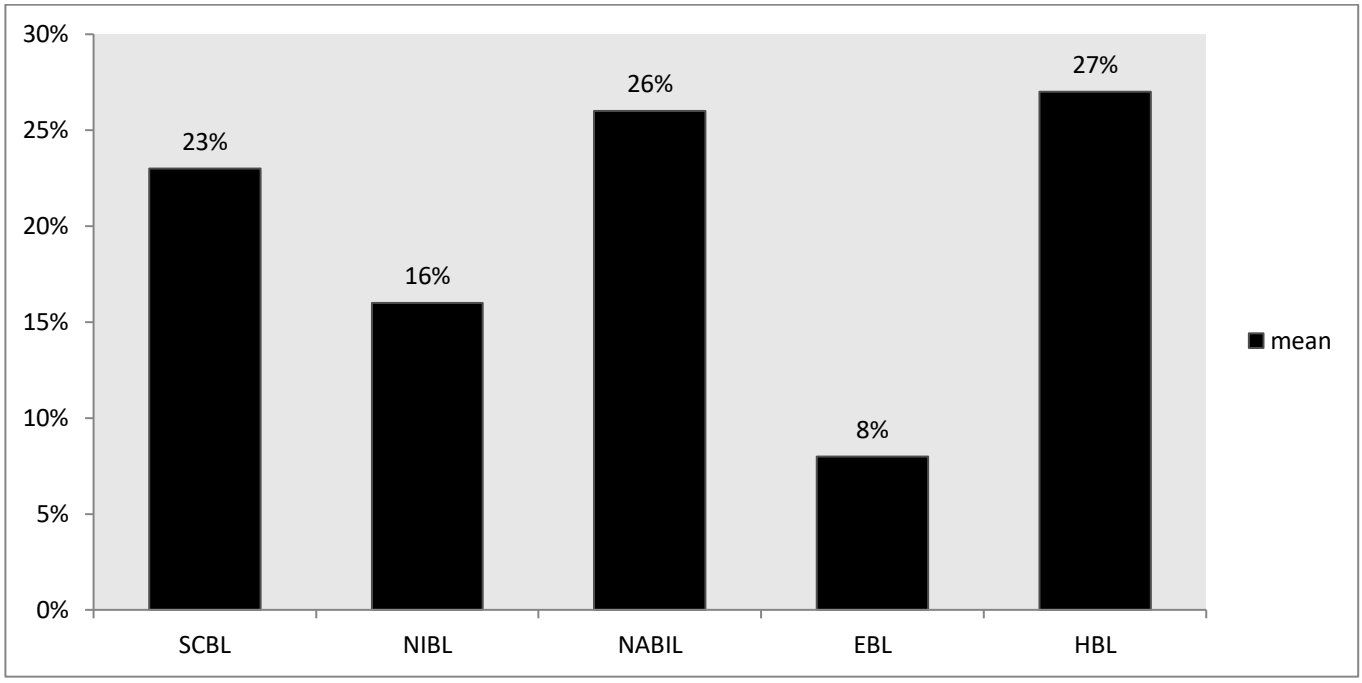
**Table 4.4**
**% share of investment on Shares and Debentures of each bank**

| FY | SCBL | NIBL | NABIL | EBL | HBL |
|---|---|---|---|---|---|
| **2005/06** | 12.74% | 14.73% | 22.89% | 16.51% | 33.14% |
| **2006/07** | 19.43% | 15.24% | 25.01% | 8.60% | 31.74% |
| **2007/08** | 30.10% | 17.01% | 22.86% | 4.61% | 25.42% |
| **2008/09** | 29.32% | 17.62% | 22.62% | 4.69% | 25.74% |
| **2009/10** | 24.90% | 15.52% | 37.23% | 3.98% | 18.37% |
| **Mean** | **23.30%** | **16.02%** | **26.12%** | **7.68%** | **26.88%** |
| **S.D** | **7.27** | **1.23** | **6.28** | **5.26** | **5.89** |

*Source: Table 4.3*

**Figure 4.2**

**Percentage coverage of share and debentures held by CBs**




The above table shows that CBs are very low involved on investment of shares and debentures of other companies. The investment of Nepalese CBs on other company's shares shows that HBL has been investing highest among other CBs i.e. 26.88%. Similarly EBL has least mean which means that EBL invest very low amount in shares and debentures. Among the five commercial banks, HBL covers highest shares i.e 26.88% and EBL covers lowest shares i.e 7.68% of total investment on shares and debentures made by CBs.

### 4.1.3 Investment on loan and advances

Commercial bank collects money from deposit and invests them into various higher return sector of economy. Commercial banks invest their funds in various sector like agriculture, industry & commercial sector etc. Commercial bank should mobilize its funds by investing them as loan and advances. The investment structure of loan and advances of CBs are tabulated below;

## Table 4.5
## Structure of investment on loan and advance held by CBs

**(Rs. in '000')**

| FY | SCBL | NIBL | NABIL | EBL | HBL | CBs |
|---|---|---|---|---|---|---|
| **2005/06** | 8637277 | 12613561 | 12681666 | 9770920 | 14395845 | 58099269 |
| **2006/07** | 10252469 | 17010464 | 15305910 | 13623689 | 16831889 | 73024421 |
| **2007/08** | 13115285 | 26618771 | 21159853 | 18317168 | 19257717 | 98468794 |
| **2008/09** | 12925267 | 35745532 | 27431772 | 23782347 | 24512658 | 124397576 |
| **2009/10** | 15714981 | 40115744 | 32227527 | 27529907 | 27835083 | 143423242 |
| **Total** | **60645279** | **132104072** | **108806728** | **93024031** | **102833192** | 497413302 |
| **Average** | **12129055.8** | **26420814.4** | **21761345.6** | **18604806** | **20566638.4** | **99482660.4** |

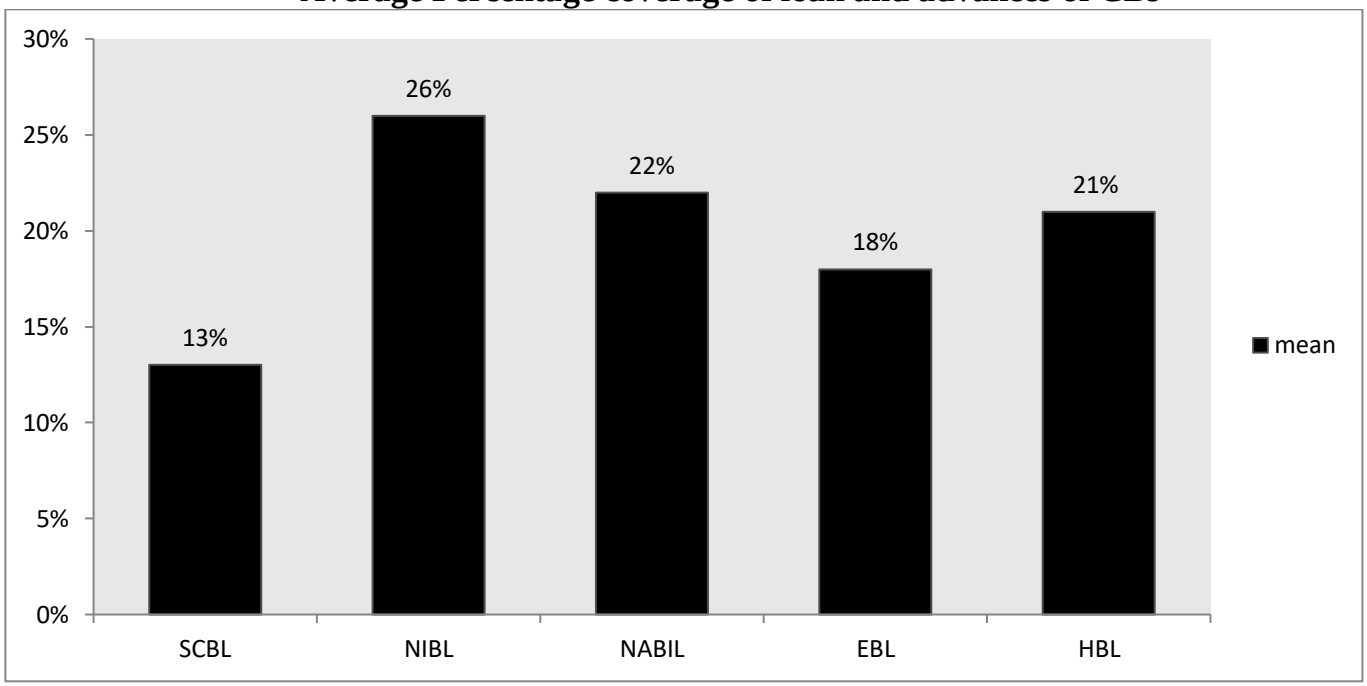
*Source: Annual Reports of CBs from 2005/06 to 2009/10*

## Table 4.6
## % share of investment on loan and advances of each bank

| FY | SCBL | NIBL | NABIL | EBL | HBL |
|---|---|---|---|---|---|
| **2005/06** | 14.87% | 21.71% | 21.83% | 16.82% | 24.78% |
| **2006/07** | 14.04% | 23.29% | 20.96% | 18.66% | 23.05% |
| **2007/08** | 13.32% | 27.03% | 21.49% | 18.60% | 19.56% |
| **2008/09** | 10.39% | 28.73% | 22.05% | 19.12% | 19.71% |
| **2009/10** | 10.96% | 27.97% | 22.47% | 19.19% | 19.41% |
| **Mean** | **12.72%** | **25.75%** | **21.76%** | **18.48%** | **21.30%** |
| **S.D** | **1.95** | **3.07** | **0.57** | **0.96** | **2.46** |
| **C.V.** | **15.33** | **11.92** | **2.62** | **5.19** | **11.55** |

*Source: Table 4.5*

**Figure 4.3**
**Average Percentage coverage of loan and advances of CBs**




The above table shows that NIBL has the highest amount of investment on loan and advances i.e 25.75% among the five commercial banks. NABIL in the second position and SCBL in the last position i.e 21.76% and 12.72% of loan and advances among five commercial banks. NABIL has less CV which shows the consistency of investment on loan and advances. Therefore it shows that NIBL is the best bank among the five CBs on the basis of utilization of resources in the sector of loan and advances.

## 4.2 Analysis of 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 percentage. 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. The purpose of this chapter is to evaluate and analyze financial position and performance of the commercial banks. In this section, only those major ratios which are mainly related to the investment mechanism of commercial banks are calculated and analyzed.

### a. Investment to total deposit ratio

This ratio 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 government securities like treasury bills, development bonds, and national saving bonds, special bond etc, shares of other companies. It is calculated as;

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

In general, 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 CBs is shown in table below;

**Table 4.7**
**Investment to total deposit ratio (%)**

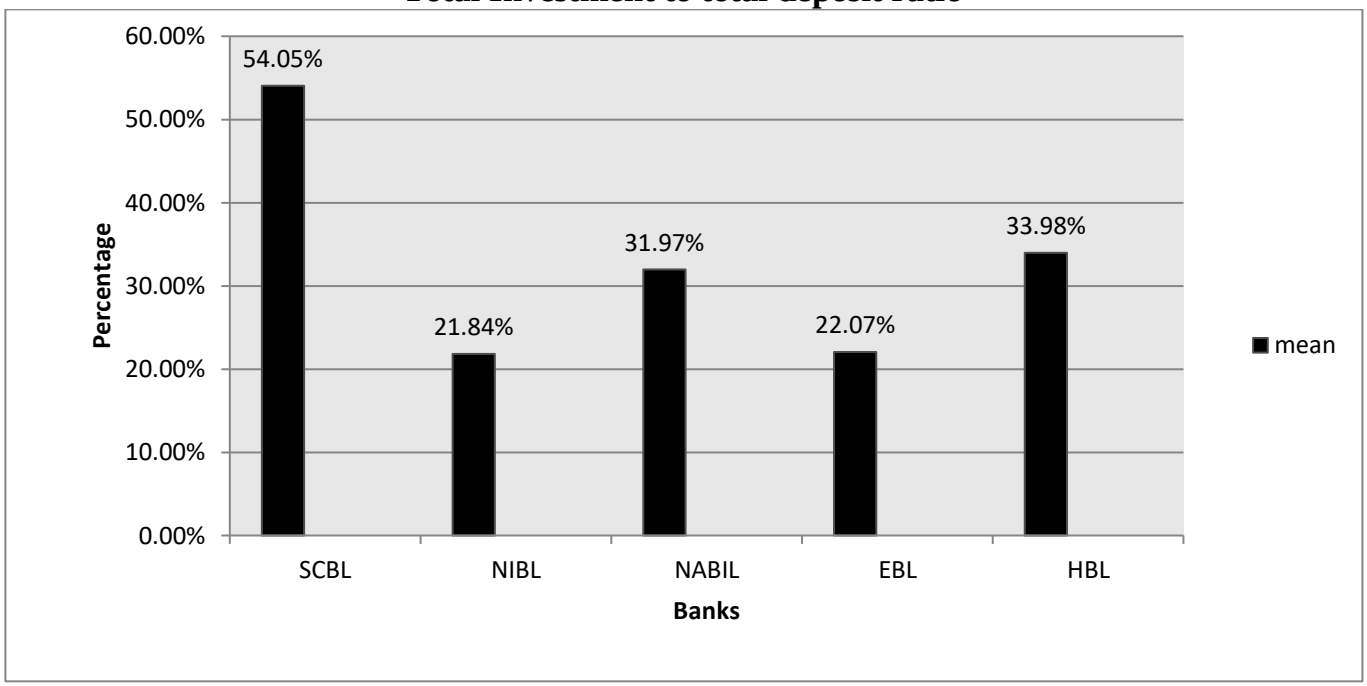
| FY | SCBL | NIBL | NABIL | EBL | HBL |
|---|---|---|---|---|---|
| **2005/06** | 55.71% | 29.60% | 31.93% | 30.43% | 41.10% |
| **2006/07** | 54.99% | 26.57% | 38.32% | 27.41% | 39.35% |
| **2007/08** | 46.74% | 19.95% | 31.14% | 21.10% | 41.89% |
| **2008/09** | 56.41% | 15.85% | 28.99% | 17.85% | 25.12% |
| **2009/10** | 56.41% | 17.24% | 29.46% | 13.56% | 22.45% |
| **Mean** | **54.05%** | **21.84%** | **31.97%** | **22.07%** | **33.98%** |
| **S.D** | **4.13** | **5.98** | **3.75** | **6.88** | **9.4** |

*Source: Appendix 1 (d,e)*

Industry average mean = 32.78%

Industry average CV = 21.12%

**Figure 4.4**
**Total Investment to total deposit ratio**




The above table and figures shows that the ratios of investment to total deposit of CBs are in fluctuating trend. The mean investment to total deposit of SCBL is the highest i.e 54.05%. Similarly HBL and NABIL has second and third highest ratio of investment to total deposit with 33.98% and 31.97%. On the basis of average ratio, it can be said that SCBL and HBL capacity to mobilize its deposit on investment is better than others because their mean ratio is higher than average ratio on CBs 32.78%. On the other hand NIBL, NABIL & EBL mobilize their deposit on investment is not as good as compare to SCBL and HBL.

**b) Loan and Advance to total deposit ratio**

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

$$\frac{Loan\ and\ advances}{Total\ deposit}$$

The ratio of loan and advances to total deposit of various CBs are shown in the table below;

**Table 4.8**
**Loan and advance to total deposit ratio (%)**

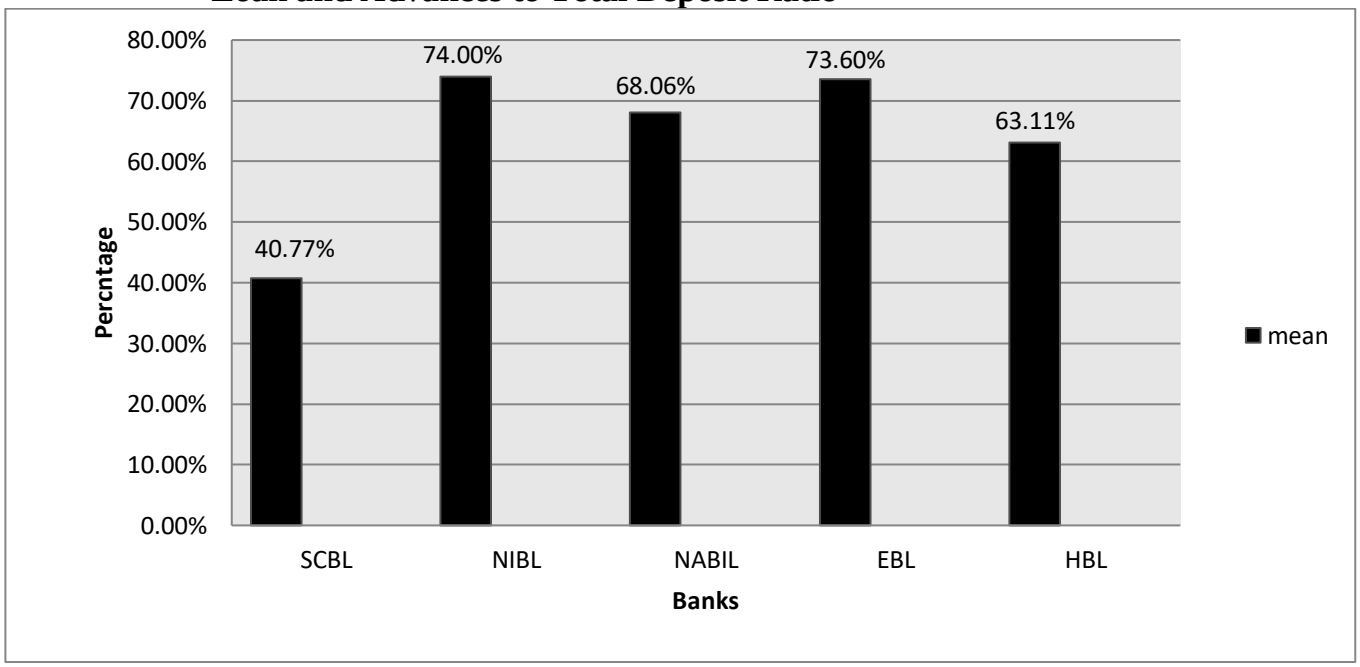
| FY | SCBL | NIBL | NABIL | EBL | HBL |
|---|---|---|---|---|---|
| **2005/06** | 37.45% | 66.64% | 65.55% | 70.79% | 54.34% |
| **2006/07** | 41.60% | 69.46% | 65.57% | 74.91% | 56.02% |
| **2007/08** | 44.09% | 77.26% | 66.30% | 76.40% | 60.48% |
| **2008/09** | 36.03% | 76.55% | 73.45% | 71.37% | 70.68% |
| **2009/10** | 44.67% | 80.08% | 69.44% | 74.54% | 74.01% |
| **Mean** | **40.77%** | **74.00%** | **68.06%** | **73.60%** | **63.11%** |
| **S.D** | **3.89** | **5.68** | **3.41** | **2.41** | **8.81** |
| **C.V.** | **9.54** | **7.68** | **5.01** | **3.27** | **13.96** |

*Source: Appendix 1 (c,e)*

Industry Average mean = 63.91%

Industry Average CV = 7.89%

**Figure 4.5**
**Loan and Advances to Total Deposit Ratio**




From the above table, the mean loan and advances to total deposit ratio of NIBL is highest i.e. 74.00% and SCBL is at lowest ratio i.e. 40.77% among the five CBs and other banks NABIL, EBL, HBL has a mean ratio of 68.06%, 73.60% and 63.11% respectively. The industrial average mean ratio is 63.91%. It can be said that NIBL, NABIL and EBL capacity to mobilize its deposit on loan and advances is better than average ratio of CBs.

The CV of EBL is lowest i.e 3.27% which indicates that the investment of EBL is most uniform. HBL has the highest CV ratio i.e. 13.96% among five commercial banks which indicates that the investment of HBL is more fluctuating. The lowest CV is better than highest CV. The industrial average CV is 7.89%. NIBL, NABIL & EBL have a lowest CV than industrial average CV. So, it can be concluded that HBL is the most effective, SCBL & NIBL is moderate effective and NABIL, EBL is least effective to mobilize its deposit on loan and advances.

### c) Government securities to total deposit ratio

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

$$\frac{Investment\ in\ government\ securities}{Total\ deposit}$$

The ratio of government securities to total deposit of various CBs are shown in the table below;

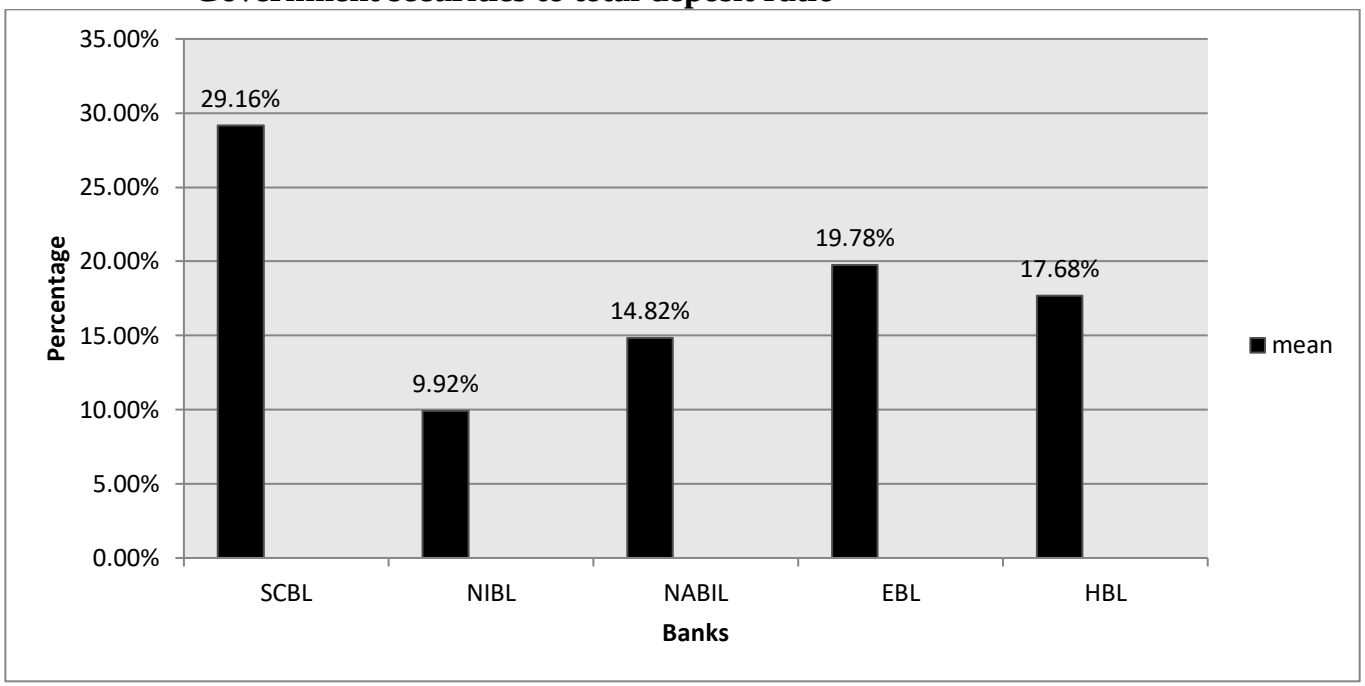
**Table 4.9**
**Government securities to total deposit ratio (%)**

| FY | SCBL | NIBL | NABIL | EBL | HBL |
|---|---|---|---|---|---|
| **2005/06** | 37.49% | 13.33% | 11.90% | 25.71% | 19.42% |
| **2006/07** | 28.84% | 13.30% | 20.60% | 25.87% | 21.48% |
| **2007/08** | 27.36% | 9.16% | 14.56% | 20.11% | 23.46% |
| **2008/09** | 27.87% | 5.42% | 9.92% | 15.44% | 12.15% |
| **2009/10** | 24.25% | 8.39% | 17.11% | 11.79% | 11.87% |
| **Mean** | **29.16%** | **9.92%** | **14.82%** | **19.78%** | **17.68%** |
| **S.D** | **4.96** | **3.4** | **4.22** | **6.23** | **5.37** |
| **C.V.** | **17.01** | **34.27** | **28.48** | **31.5** | **30.37** |

Industry Average mean = 18.27%

Industry Average CV = 28.33%

**Figure 4.6**
**Government securities to total deposit ratio**




The above table shows that the mean of government securities to total deposit ratio of SCBL is the highest i.e 29.16% and NIBL is the lowest i.e 9.92%. The mean ratio of other banks NABIL, EBL and HBL are 14.82%, 19.78% and 17.68% respectively. As compared to the average mean ratio i.e. 18.27%, SCBL and EBL have secure investment in government securities than other commercial banks.

The CV ratio of SCBL is lowest i.e. 17.01% among five commercial banks which indicates that investment of SCBL is more consistent. NIBL has the highest CV ratio i.e. 34.27% among five commercial banks which indicates that investment of NIBL is insecure. The industrial average CV ratio is 28.33%, SCBL has a lowest CV than industrial average CV.

**d) Return on total assets**

This ratio measures the financial performance or effectiveness of the bank in using its overall resources. It measured in terms of relationship between net profit and total assets. The higher ratio indicates the effective utilization of resources and yields higher returns for the banks and vice-versa. This ratio is calculated by dividing net profit after tax by total assets.

$$\frac{Net\ profit\ after\ tax}{Total\ assets}$$

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

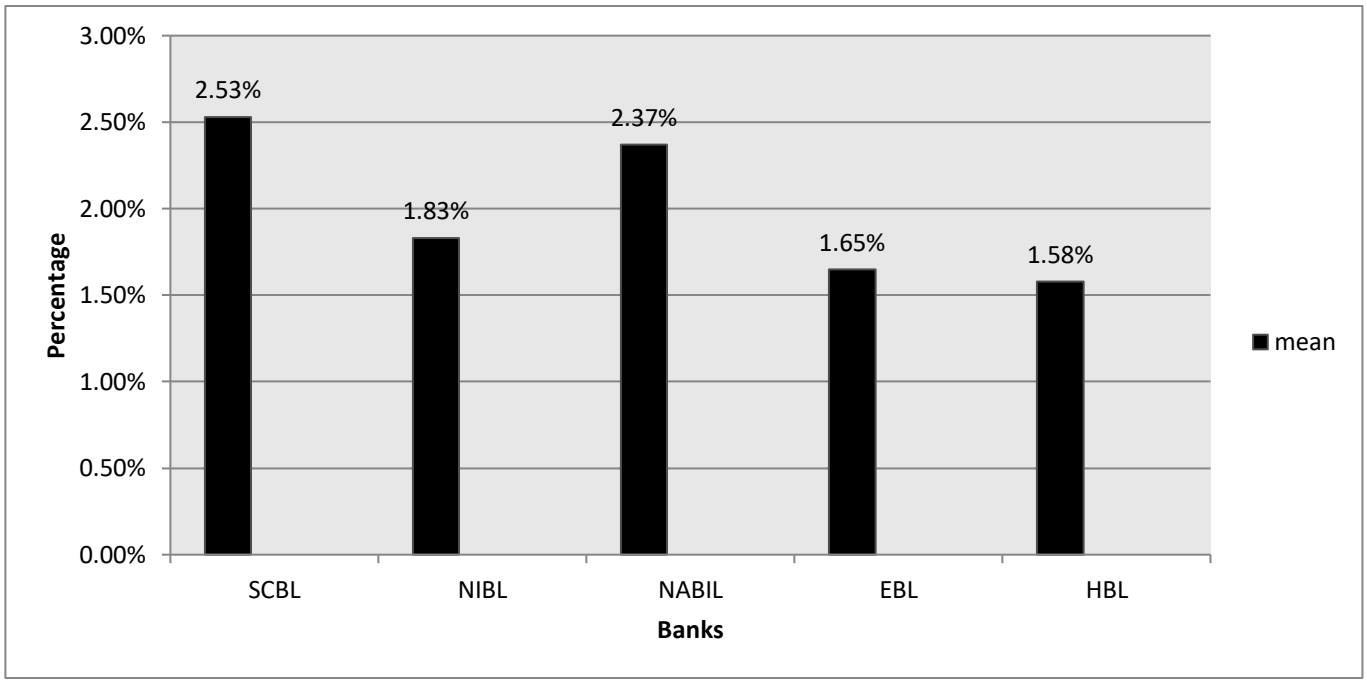
**Table 4.10**
**Return on total assets (%)**

| FY | SCBL | NIBL | NABIL | EBL | HBL |
|---|---|---|---|---|---|
| **2005/06** | 2.56% | 1.64% | 2.84% | 1.49% | 1.55% |
| **2006/07** | 2.42% | 1.82% | 2.47% | 1.38% | 1.47% |
| **2007/08** | 2.46% | 1.79% | 2.01% | 1.66% | 1.76% |
| **2008/09** | 2.53% | 1.70% | 2.35% | 1.73% | 1.91% |
| **2009/10** | 2.70% | 2.21% | 2.19% | 2.01% | 1.19% |
| **Mean** | **2.53%** | **1.83%** | **2.37%** | **1.65%** | **1.58%** |
| **S.D** | **0.11** | **0.22** | **0.31** | **0.24** | **0.28** |
| **C.V.** | **4.35** | **12.02** | **13.08** | **14.55** | **17.72** |

Industry Average mean = 1.99%

Industry Average CV = 12.34%

**Figure 4.7**
**Return on total assets ratio**




The figure shows that SCBL has the highest mean return and HBL has the lowest return on total assets i.e. 2.53% and 1.58% among the five commercial banks. The average mean ratio is 1.99%.

Similarly, SCBL has the lowest CV i.e.4.35% which is the most consistent than other banks and the highest CV ratio of HBL is 17.72% which is highly variable among five banks.

**e) Investment on shares and debenture to total outside investment**

This ratio measures that the extent on which the banks are successful to mobilize their total outside investment on purchase of share and debenture of other companies where the total outside investment consists of loan and advances, bills purchased, discounted and investment. A high ratio indicates more portion of investment on share and debenture out of total outside investment and vice-versa. This ratio can be calculated by dividing investment on share and debenture by total outside investment.

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

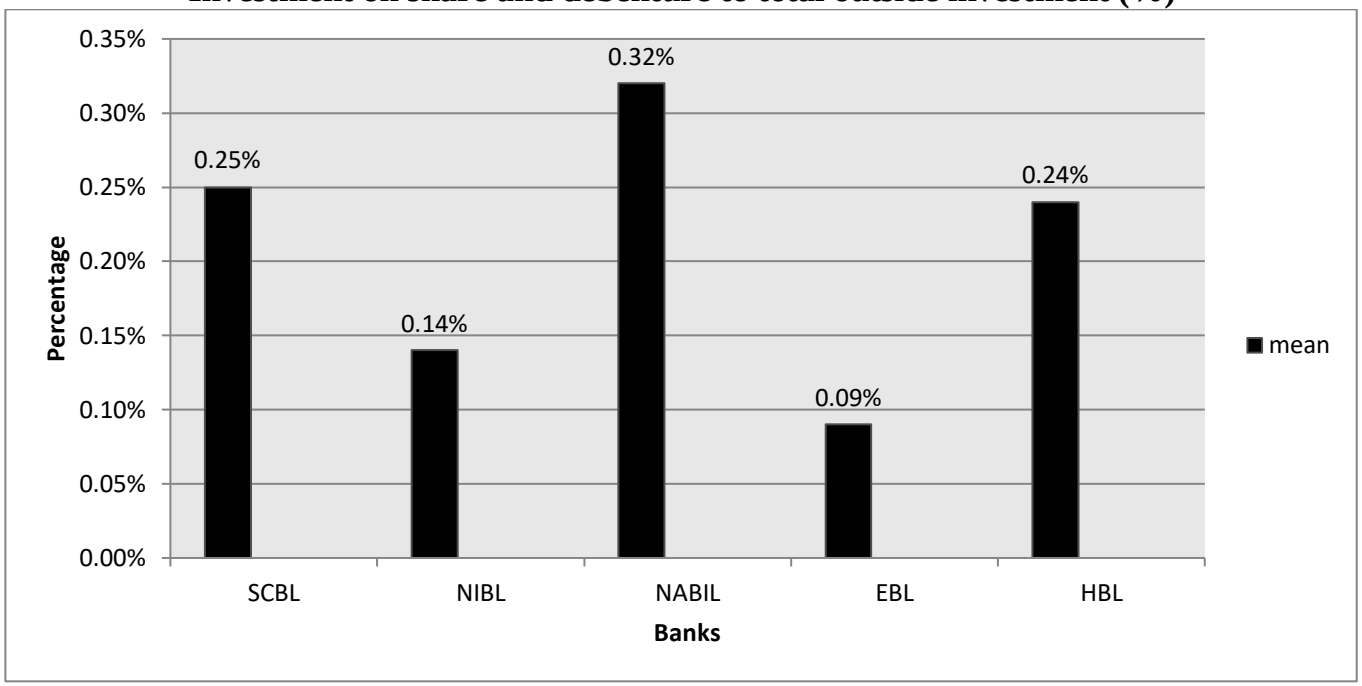
The ratio of investment on share and debenture to total outside investment of various CBs are shown below in table;

**Table 4.11**
**Investment on share and debenture to total outside investment (%)**

| FY | SCBL | NIBL | NABIL | EBL | HBL |
|---|---|---|---|---|---|
| **2005/06** | 0.07% | 0.10% | 0.14% | 0.14% | 0.16% |
| **2006/07** | 0.19% | 0.15% | 0.24% | 0.11% | 0.25% |
| **2007/08** | 0.38% | 0.18% | 0.26% | 0.07% | 0.27% |
| **2008/09** | 0.32% | 0.15% | 0.61% | 0.06% | 0.28% |
| **2009/10** | 0.30% | 0.14% | 0.35% | 0.05% | 0.22% |
| **Mean** | **0.25%** | **0.14%** | **0.32%** | **0.09%** | **0.24%** |
| **S.D** | **0.12** | **0.03** | **0.18** | **0.04** | **0.05** |
| **C.V.** | **48** | **21.43** | **56.25** | **44.44** | **20.83** |

Industry Average mean = 0.21%
Industry Average CV = 38.19%

**Figure 4.8**
**Investment on share and debenture to total outside investment (%)**




The above table and figure shows that the commercial banks invest very low portion of its total outside investment on share and debenture of other companies. Among the five CBs, NABIL has highest ratio on share and debenture to total outside investment ratio i.e 0.32% that means NABIL mobilize highest percentage of total outside investment into shares and debentures. On the other hand, EBL has lowest ratio i.e 0.09% that means EBL invest lowest parts of total outside investment on share and debenture. HBL has the lowest CV i.e. 20.83% among the five commercial bank which shows the variability of investment. It is concluded that the CBs are not successful to mobilize their resources in the field of share and debenture of other companies.

**f) Investment on government securities to total outside investment**

This ratio is use to know the extent on which the banks are successful in mobilizing its total outside investment on different types of government securities. CBs seems to be interested to invest their deposit on government securities like treasury bills, development bonds, national saving bonds and insurance bond etc. This ratio is calculated by dividing investment on government securities by total outside investment.

$$\frac{Investment\ on\ government\ securities}{Total\ outside\ investment}$$

Thus, the high ratio indicates the better mobilization of funds on government securities and vice-versa. The following table shows the ratio of investment on government securities to total outside investment of various CBs;

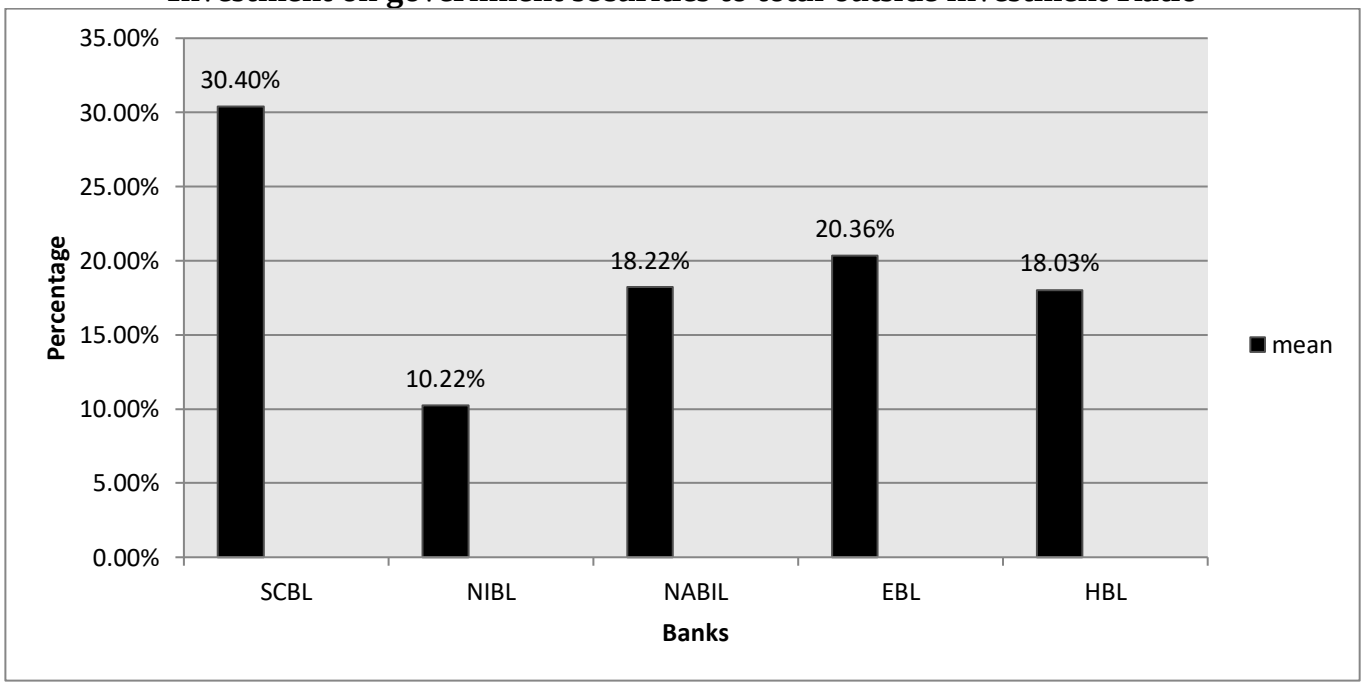
**Table 4.12**
**Investment on government securities to total outside investment (%)**

| FY | SCBL | NIBL | NABIL | EBL | HBL |
|---|---|---|---|---|---|
| **2005/06** | 39.69% | 13.72% | 12.05% | 25.34% | 20.15% |
| **2006/07** | 29.55% | 13.69% | 19.63% | 25.23% | 22.40% |
| **2007/08** | 29.46% | 9.31% | 14.84% | 20.61% | 22.75% |
| **2008/09** | 29.48% | 5.80% | 27.28% | 17.25% | 12.57% |
| **2009/10** | 23.83% | 8.58% | 17.29% | 13.37% | 12.26% |
| **Mean** | **30.40%** | **10.22%** | **18.22%** | **20.36%** | **18.03%** |
| **S.D** | **5.74** | **3.44** | **5.8** | **5.17** | **5.22** |
| **C.V.** | **18.88** | **33.66** | **31.83** | **25.39** | **28.95** |

Industry Average mean = 19.45%

Industry Average CV = 27.74%

**Figure 4.9**
**Investment on government securities to total outside investment Ratio**



From the above table and figures, it can be said that there is highly invest in government securities than in other investment because of secured on it. SCBL has the highest invest on government securities to total outside investment i.e 30.40% among five CBs and NIBL has the lowest ratio i.e 10.22% which means the lowest invest on government securities to total outside investment.

NIBL has the highest CV i.e. 33.66% which shows the least consistent and SCBL has the lowest CV i.e. 18.88% which shows the most consistent among five CBs.

From above analysis, it can be concluded that the mobilization of total outside investment into government securities of SCBL is higher among the five CBs which is proved by highest mean ratio and lowest CV.

### 4.3 Analysis of profit and NPA of CBs

The major source of profit making for commercial banks are investments on various kinds of securities like government securities such as treasury bills, development bonds, national saving bonds etc and loan, shares & debenture of other companies. Loans are the primary earning assets of most of the bank.

**Table 4.13**
**Net Profit of CBs**

**(Rs. in '000')**

| FY | SCBL | | NIBL | | NABIL | | EBL | | HBL | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Total Profit | Increment profit (%) | Total Profit | Increment profit (%) | Total Profit | Increment profit (%) | Total Profit | Increment profit (%) | Total Profit | Increment profit (%) |
| **2005/06** | 658756 | - | 350536 | - | 635262 | - | 237291 | - | 457458 | - |
| **2006/07** | 691668 | 5.00 | 501399 | 43.04 | 673960 | 6.09 | 296409 | 24.91 | 491823 | 7.51 |
| **2007/08** | 818921 | 18.40 | 696732 | 38.96 | 746468 | 10.76 | 451219 | 52.23 | 635869 | 29.29 |
| **2008/09** | 1025115 | 25.18 | 900619 | 29.26 | 1031053 | 38.12 | 638733 | 41.56 | 752835 | 18.39 |
| **2009/10** | 1085872 | 5.93 | 1265950 | 40.56 | 1138571 | 10.43 | 831766 | 30.22 | 508,798 | -32.42 |
| **Total** | **4280332** | | **3715236** | | **4225314** | | **2455418** | | **2846783** | |

*Source: Annual report of CBs from 2005/06 to 2009/10*

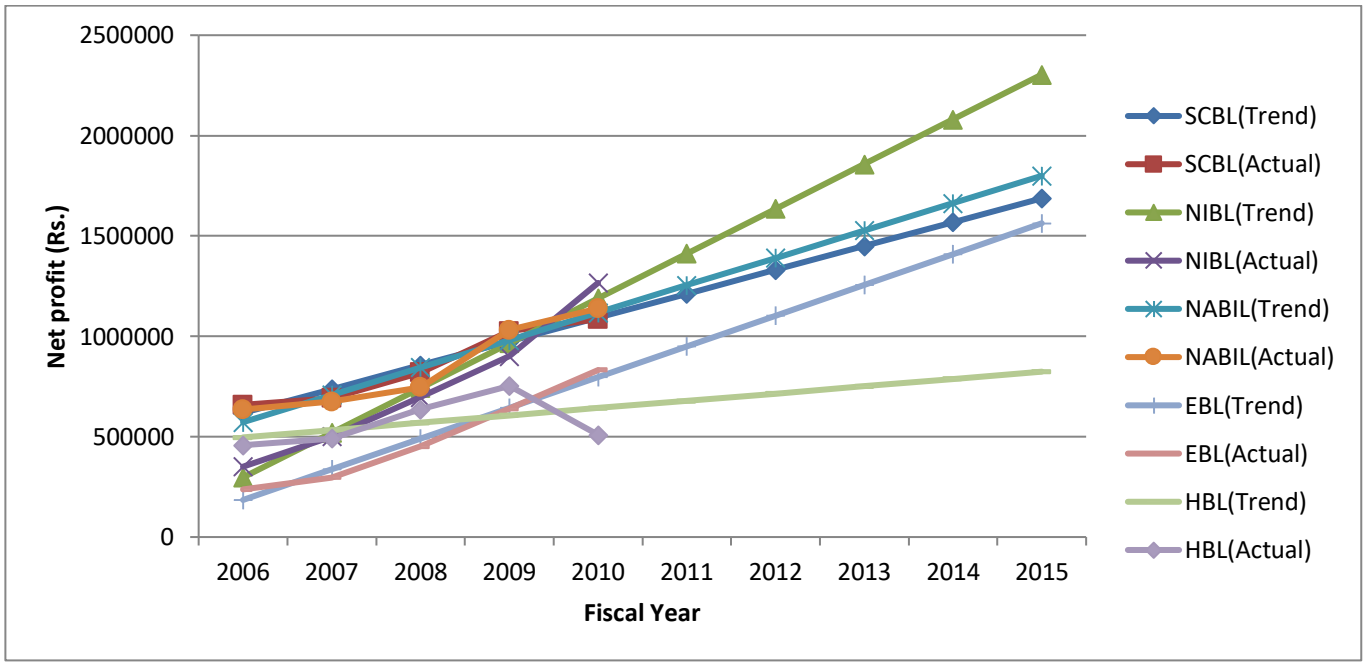
**Table 4.14**
**Trend value of Net Profit**

| Year (t) | x | SCBL | | NIBL | | NABIL | | EBL | | HBL | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Trend | Actual | Trend | Actual | Trend | Actual | Trend | Actual | Trend | Actual |
| **2006** | **-2** | 618530.6 | 658756 | 297037.6 | 350536 | 572320.6 | 635262 | 184828.8 | 237291 | 496618.2 | 457458 |
| **2007** | -1 | 737298.5 | 691668 | 520042.4 | 501399 | 708691.7 | 673960 | 337956.2 | 296409 | 532987.4 | 491823 |
| **2008** | **0** | 856066.4 | 818921 | 743047.2 | 696732 | 845062.8 | 746468 | 491083.6 | 451219 | 569356.6 | 635869 |
| **2009** | **1** | 974834.3 | 1025115 | 966052 | 900619 | 981433.9 | 1031053 | 644211 | 638733 | 605725.8 | 752835 |
| **2010** | **2** | 1093602.2 | 1085872 | 1189056.8 | 1265950 | 1117805 | 1138571 | 797338.4 | 831766 | 642095 | 508,798 |
| **2011** | **3** | 1212370.1 | | 1412061.6 | | 1254176.1 | | 950465.8 | | 678464.2 | |
| **2012** | **4** | 1331138 | | 1635066.4 | | 1390547.2 | | 1103593.2 | | 714833.4 | |
| **2013** | **5** | 1449905.9 | | 1858071.2 | | 1526918.3 | | 1256720.6 | | 751202.6 | |
| **2014** | **6** | 1568673.8 | | 2081076 | | 1663289.4 | | 1409848 | | 787571.8 | |
| **2015** | **7** | 1687441.7 | | 2304080.8 | | 1799660.5 | | 1562975.4 | | 823940.4 | |

*Source: Table 4.13, Appendix 3*

**Figure 4.10**

**Net Profit of CBs**




From the above figure, it shows that the net profit of CBs is increasing each year. Similarly, the increment in profit (%) of CBs is shown in the table 4.13 which are not consistent. The table 4.14 shows the trend and actual value of total profit of the CBs for five years i.e up to 2010 and forecast of the same for next five years i.e. up to 2015. The least square method is used to determine the trend value. The figure shows that the trend and actual value of net profit of NIBL

is higher than other CBs comparatively which proves NIBL the best commercial bank of the year 2009/10 thereby predicting it to be the most profit making bank till yr 2015. NIBL net profit has been increasing by Rs.223004.8 each year and is expected to reach Rs. 2304080.8 at the end of year 2015.

**Table 4.15**
**NPA of CBs**

**(Rs. in '000')**

| **FY** | **SCBL** | **NIBL** | **NABIL** | **EBL** | **HBL** | CBs |
|---|---|---|---|---|---|---|
| **2005/06** | 195932 | 272493 | 180404 | 129235 | 1037350 | 1815414 |
| **2006/07** | 197017 | 387743 | 177518 | 113178 | 639833 | 1515289 |
| **2007/08** | 128719 | 300796 | 158583 | 127310 | 470730 | 1186138 |
| **2008/09** | 91041 | 213907 | 223779 | 117985 | 549294 | 1196006 |
| **2009/10** | 98135 | 254034 | 486281 | 43705 | 1024665 | 1906820 |

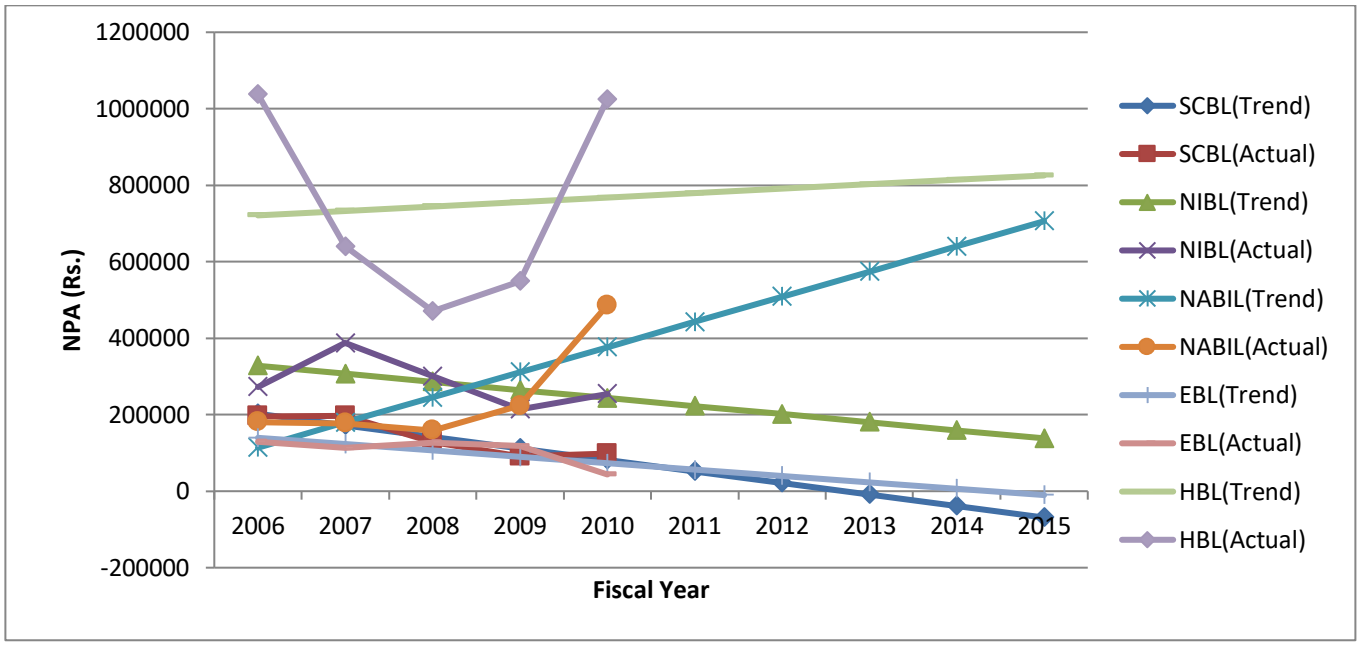
*Source: Annual Reports of CBs from 2005/06 to 2009/10*

**Table 4.16**
**Trend value of NPA**

| Year (t) | x | SCBL | | NIBL | | NABIL | | EBL | | HBL | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Trend | Actual | Trend | Actual | Trend | Actual | Trend | Actual | Trend | Actual |
| **2006** | **-2** | 202482.8 | 195932 | 327945.4 | 272493 | 113710.2 | 180404 | 139533.2 | 129235 | 721192.6 | 1037350 |
| **2007** | -1 | 172325.8 | 197017 | 306870 | 387743 | 179511.5 | 177518 | 122907.9 | 113178 | 732783.5 | 639833 |
| **2008** | **0** | 142168.8 | 128719 | 285794.6 | 300796 | 245313 | 158583 | 106282.6 | 127310 | 744374.4 | 470730 |
| **2009** | **1** | 112011.8 | 91041 | 264719.2 | 213907 | 311114.5 | 223779 | 89657.3 | 117985 | 755965.3 | 549294 |
| **2010** | **2** | 81854.8 | 98135 | 243643.8 | 254034 | 376916 | 486281 | 73032 | 43705 | 767556.2 | 1024665 |
| **2011** | **3** | 51697.8 | | 222568.4 | | 442714.5 | | 56406.7 | | 779147.1 | |
| **2012** | **4** | 21540.8 | | 201493 | | 508519 | | 39781.4 | | 790738 | |
| **2013** | **5** | -8616.2 | | 180417.6 | | 574320.5 | | 23156.1 | | 802328.9 | |
| **2014** | **6** | -38773.2 | | 159342.2 | | 640122 | | 6530.8 | | 813919.8 | |
| **2015** | **7** | -68930.2 | | 138266.8 | | 705923.5 | | -10094.5 | | 825510.7 | |

*Source: Table 4.15, Appendix-3*

**Figure 4.11**
**NPA of CBs**




From the above table and figure shows the non performing assets of the commercial banks. The non performing assets indicates those assets which could not be recover by bank such as non performing loan which involves the bad debt, loss, doubtful loans. The figure shows the NPA of CBs which are not consistent i.e ups and down in every year. Similarly, the table shows the trend value of NPA of CBs for five years i.e up to 2010 and forecast of the same for next five years i.e. up to 2015. The figure shows the trend and actual value of NPA of SCBL and EBL is lower than other CBs comparatively which proves SCBL and EBL the best commercial bank of the year 2009/10 thereby predicting these banks will have the least NPA till yr 2015. SCBL and EBL NPA has been decreasing by Rs.30157 and Rs.16625.3 each year and is expected to reach Rs. 68930.2 and 10094.5 at the end of year 2015.

### 4.4 Investment portfolio risk and return analysis of CBs

The main purpose of risk and return analysis is to evaluate the investment performance and to explore combination of investment that maximize returns, minimize the risk. Generally, higher risk will indicate higher return. The risk minimization is not possible by holding only type of asset securities. Therefore to minimize the risk the investment should be diversifying. Risk plays a central role in the analysis of investments. CBs or investors always hold a portfolio of many assets instead of holding a only one risky assets. The portfolio of assets usually offers the advantage of reducing risk through diversification. The portfolio return is simply the weighted

average of the expected returns on the individual assets. The portfolio risk is affected by the variances of return as well as the covariance between the returns of the individual assets included in the portfolio and their respective weights.

### 4.4.1 Risk and Return on individual investment

There is always linear relationship between risk and return. If the return goes on increasing, the risk also increases. Hence a rational investor has to consider the various aspects relating to the risk and return associated with the investment while taking an investment decision. In this section, standard deviation and coefficient of variation are taken as the measuring tools of risk and mean return is taken as to measure expected return.

**Risk and Return on Government Securities**

Government securities are the safest of all the investments. These securities are the fixed income securities issued by the government. The govt. cannot sell equity shares. Hence, they increase their required fund from internal loan by issuing treasury bills, treasury bonds, and development bonds, national saving bonds etc. The risk and return on government securities is calculated by dividing interest income on govt. securities by total investment on govt. securities i.e;

Return on govt. securities $(R_g) = \frac{Interest\ income\ from\ govt.securities}{Total\ investment\ on\ govt.securities}$

Average rate of return $(\overline{R_g}) = \frac{\sum_{t=1}^{n} R_g}{n}$

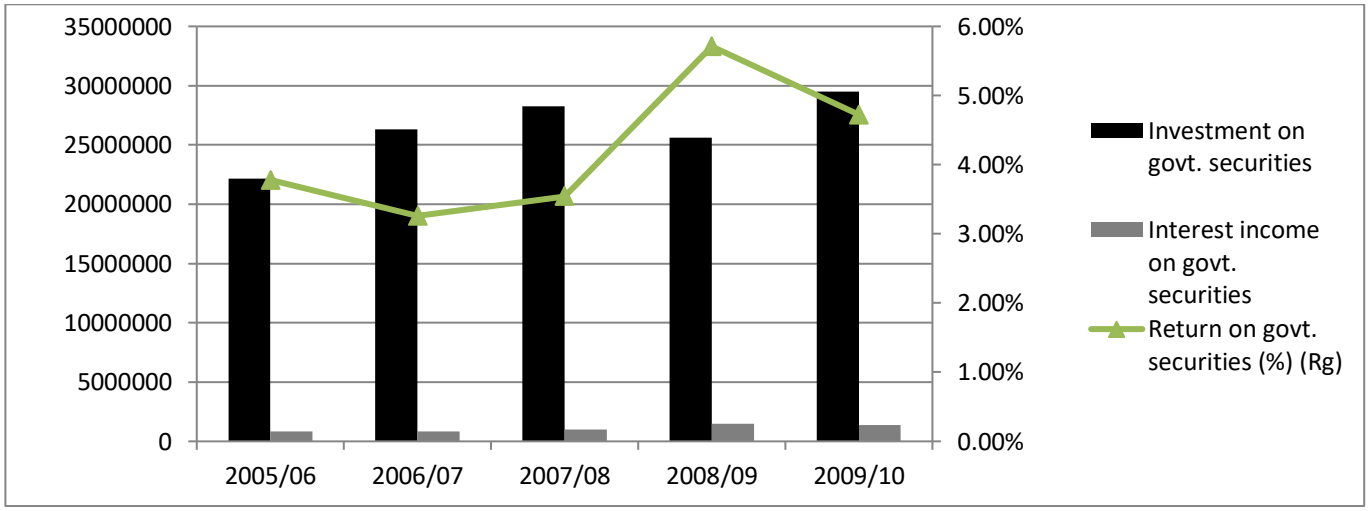
Risk on govt. securities $(\sigma_g) = \sqrt{\frac{\sum_{t=1}^{n}(R_g - \overline{R_g})^2}{n-1}}$

**Table 4.17**
**Calculation of Risk and Return on Government securities of CBs**

| FY | Investment on govt. securities | Interest income on govt. securities | Return on govt. securities (%) $(R_g)$ | $(R_g - \overline{R_g})^2$ (%) |
|---|---|---|---|---|
| **2005/06** | 22161547 | 837422 | 3.78% | *0.18% |
| **2006/07** | 26332190 | 857398 | 3.26% | 0.88% |
| **2007/08** | 28232769 | 999568 | 3.54% | 0.44% |
| **2008/09** | 25594500 | 1460925 | 5.71% | 2.28% |
| **2009/10** | 29494650 | 1391873 | 4.72% | 0.27% |
| **Total** | **131815656** | **5547186** | **21.01%** | **4.05%** |

*** = (3.78-4.20)$^2$ = 0.18%**

**Figure 4.12**
**Return on Government securities of CBs**




We have,

$\sum R_g$ = 21.01%

n = 5

Then, $\overline{R_g} = \frac{\sum R_g}{n} = \frac{21.01}{5} = 4.20$

$\overline{R_g} = 4.20\%$

Now, Risk of Govt. securities;

Standard deviation $(\sigma_g) = \sqrt{\frac{\sum_{t=1}^{n}(R_g - \overline{R_g})^2}{n-1}} = \sqrt{\frac{4.05}{5-1}} = 1.01\%$

$\therefore (\sigma_g) = 1.01\%$

Again,

Coefficient of variation $(CV) = \frac{\sigma_g}{\overline{R_g}} = \frac{1.01}{4.20} = 0.24$

$\therefore CV_g = 0.24$

The above table shows that in average, the return on govt. securities is 4.20% and standard deviation is 1.01%. The return on govt. securities has no fixed trend. Similarly there is no fixed trend on investment on government securities and interest income from government securities. The return trend from FY 2005/06 to 2009/10 is ups and down. Generally, there is no any risk on government securities but the result of standard deviation and coefficient of variation shows there is risk on govt. securities. The reason is due to the more fluctuating on investment on govt. securities. It is concluded that the higher variability of return on investment on govt. securities is due to lack of proper investment on various securities. Therefore to lower the variability on return on government securities there should be proper investment on various securities i.e. balanced allocation of funds on various government securities such as treasury bills, development bonds, national saving bond etc and fixed income percentage rate.

**Risk and Return on Loan and Advances**

The investment on loan and advances is the main sources of income for CBs. Mainly the CBs invest their funds in various sectors like agriculture, industry, service sector, commercial sectors and other sectors etc. The risk and return on investment in the form of loan and advances can be calculated as follows;

Return on loan and advances $(R_l) = \frac{Interest\ income\ on\ loan\ and\ advances}{Total\ investment\ on\ loan\ and\ advances}$

Average return on loan and advances $\left(\overline{R_l}\right) = \frac{\sum R_l}{n}$

Now, risk on loan and advances;

Standard deviation $(\sigma_l) = \sqrt{\frac{\sum_{t=1}^{n}\left(R_l - \overline{R_l}\right)^2}{n}}$

Coefficient of variation $(CV_l) = \frac{\sigma_l}{\overline{R_l}}$

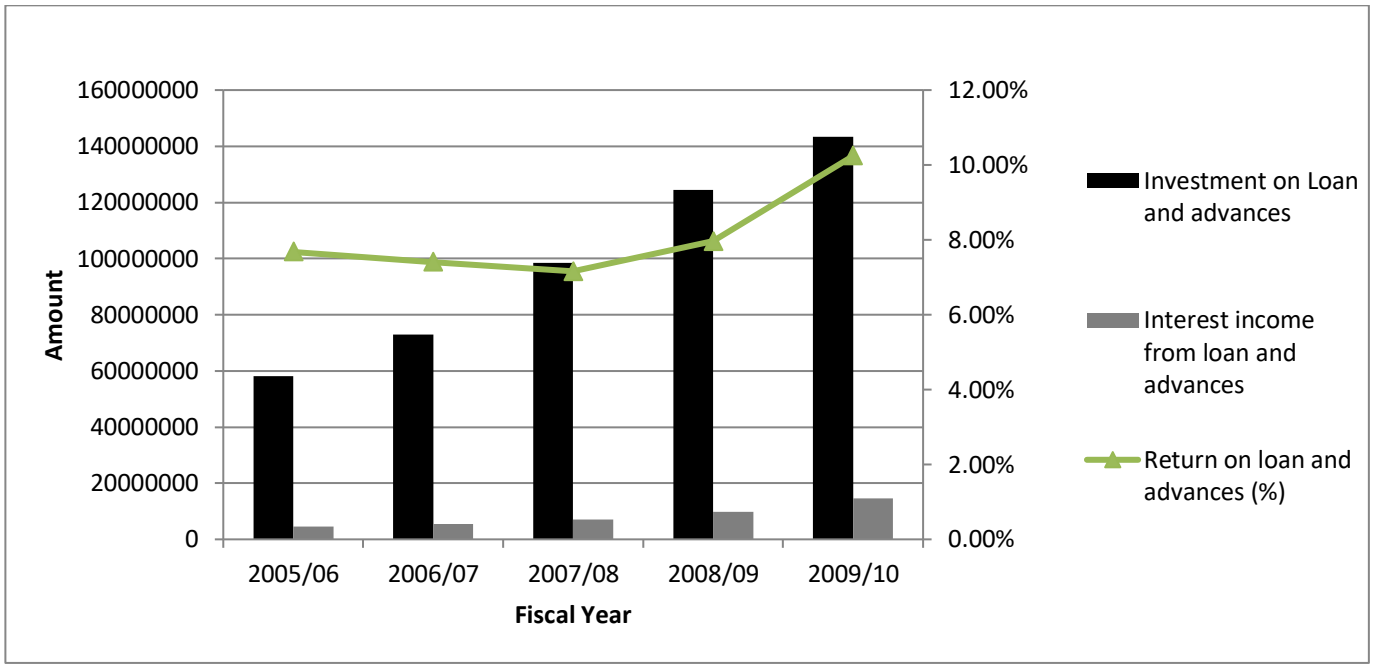
**Table 4.18**
**Calculation of risk and return on loan and advances of CBs**

| **FY** | **Investment on Loan and advances '000'** | **Interest income on Loan and advances '000'** | **Return on loan and advances (%)** $(R_l)$ | $\left(R_l - \overline{R_l}\right)^2$ **(%)** |
|---|---|---|---|---|
| **2005/06** | 58099269 | 4461238 | 7.68% | *0.17 |
| **2006/07** | 73024421 | 5407994 | 7.41% | 0.46 |
| **2007/08** | 98468794 | 7050135 | 7.16% | 0.86 |
| **2008/09** | 124397576 | 9905922 | 7.96% | 0.02 |
| **2009/10** | 143423242 | 14688906 | 10.24% | 4.62 |
| **Total** | **497413302** | **41514195** | **40.45%** | **6.13** |

*Source: Appendix 1(c,j,l)*

$* = (7.68 - 8.09)^2 = 0.17\%$

**Figure 4.13**
**Return on Loan and Advances of CBs**




Now, Average rate of return $\left(\overline{R_l}\right) = \frac{\sum R_l}{n} = \frac{40.45}{5} = 8.09\%$

Again,

Standard deviation $(\sigma_l) = \sqrt{\frac{\sum_{t=1}^{n}\left(R_l - \overline{R_l}\right)^2}{n}} = \sqrt{\frac{6.13}{5}} = 1.11\%$

Coefficient of variation $(CV_l) = \frac{\sigma_l}{\overline{R_l}} = \frac{1.11}{8.09} = 0.14$

The above table and figure shows that the return on investment on loan and advances has no any fixed trend. During the study period, the highest return is 10.24% in 2009/10 and the lowest return is 7.16% in 2007/08. The average return is 8.09% which means the CBs generate 8.09% return on investment made on loan and advances. The standard deviation is 1.11% and coefficient of variation is 0.14 shows the risk on return of loan and advances.

**Risk and Return on Shares and Debentures**

The return on share and debenture consider dividend yield and capital gain yield where capital gain yield is the changes in market price. Capital gain yield can be calculated by difference between this year price and last year price with respect to last year price and dividend yield can be

calculated by dividend per share divided by market per share. Market return is the mean return of the selected companies; standard deviation measures the risk which helps the investor to take decision on the investment. Therefore market return and standard deviation are the most important factors to analyze the risk and return. For this purpose, five companies are selected from listed companies in NEPSE.

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

Return on share and debenture $(R_s) = Capital\ gain\ yield\ + dividend\ yield$

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

Risk on share and debenture $(\sigma_s) = \sqrt{\frac{(R_s - \overline{R_s})^2}{n-1}}$

Average return on share and debenture $(\overline{R_s}) = \frac{\sum R_s}{n}$

Coefficient of variation $(CV_s) = \frac{\sigma_s}{\overline{R_s}}$

Where,

$P_t$= Average closing price of year't'

$P_{t-1}$ = Average closing price of year't-1' or previous year

$D_t$ = Dividend per share

**Table 4.19**
**Closing price and Dividend of CBs**

| **Selected Co** | **2004/05** | **2005/06** | | **2006/07** | | **2007/08** | | **2008/09** | | **2009/10** | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $P_t$ | $P_t$ | $D_t$ | $P_t$ | $D_t$ | $P_t$ | $D_t$ | $P_t$ | $D_t$ | $P_t$ | $D_t$ |
| **SCBL** | 2345 | 3775 | 140 | 5900 | 130 | 6830 | 130 | 6010 | 100 | 3279 | 70 |
| **NIBL** | 800 | 1260 | 20 | 1729 | 5 | 2450 | 7.5 | 1388 | 20 | 705 | 25 |
| **NABIL** | 1505 | 2240 | 85 | 5050 | 140 | 5275 | 100 | 4899 | 85 | 2384 | 70 |
| **EBL** | 870 | 1379 | 25 | 2430 | 40 | 3132 | 30 | 2455 | 30 | 1630 | 30 |
| **HBL** | 920 | 1100 | 35 | 1760 | 40 | 1980 | 45 | 1760 | 43.56 | 816 | 36.84 |
| **Total** | **6440** | **9754** | **305** | **16869** | **355** | **19667** | **312.5** | **16512** | **278.56** | **8814** | **231.84** |
| **No. of observation** (n) | **5** | **5** | | **5** | | **5** | | **5** | | **5** | |
| **Average** ($P_t$) | **1288** | **1951** | | **3374** | | **3933** | | **3302** | | **1763** | |

*Source; Annual Report of NEPSE, Trading Report of 2005 to 2010*

**Table 4.20**

**Calculation of Dividend Yield $\left[\frac{D_t}{P_t}\right]$**

**(In percentage)**

| Selected Company | 2005/06 | 2006/07 | 2007/08 | 2008/09 | 2009/10 |
|---|---|---|---|---|---|
| **SCBL** | 3.71 | 2.20 | 1.90 | 1.66 | 2.13 |
| **NIBL** | 1.59 | 0.29 | 0.31 | 1.44 | 3.55 |
| **NABIL** | 3.79 | 2.77 | 1.90 | 1.74 | 0.29 |
| **EBL** | 1.81 | 1.65 | 0.96 | 1.22 | 1.84 |
| **HBL** | 3.18 | 2.27 | 2.27 | 2.48 | 4.51 |
| **Total** | **14.08** | **9.18** | **7.34** | **8.54** | **12.32** |
| **No. of observation (n)** | **5** | **5** | **5** | **5** | **5** |

*Source; Table 4.17*

**Table 4.21**

**Calculation of Capital Yield and Dividend Yield on Share and Debenture of CBs**

| Fiscal Year | Avg. closing price$(P_t)$ | % change in price (Capital Yield) | Avg. Dividend Yield $\left[\frac{D_t}{P_t}\right]$ | Return on share and debenture $(R_s)$ | $\left(R_s - \overline{R_s}\right)^2$ |
|---|---|---|---|---|---|
| **2004/05** | 1288 | - | - | - | |
| **2005/06** | 1951 | **51.48 | 2.82 | ***54.3 | 1337.36 |
| **2006/07** | 3374 | 72.94 | 1.84 | 74.78 | 3254.70 |
| **2007/08** | 3933 | 16.57 | 1.47 | 18.04 | 0.10 |
| **2008/09** | 3302 | -16.04 | 1.71 | -14.33 | 1027.84 |
| **2009/10** | 1763 | -46.61 | 2.46 | -44.15 | 3829.13 |
| **Total** | | | | **88.64** | **9449.13** |

*Source; Table 4.17 and 4.18*

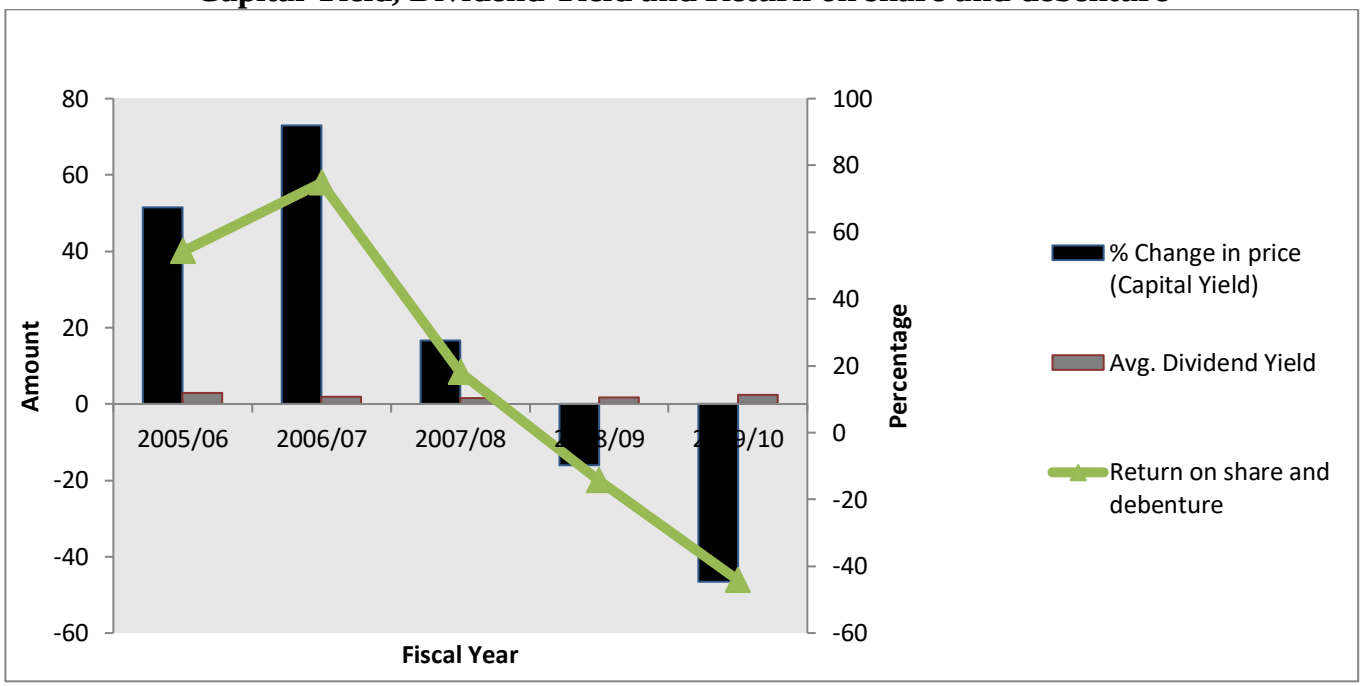
We know,

**Capital Yield $= \frac{P_t - P_{t-1}}{P_{t-1}} = \frac{1951-1288}{1288} = 51.48\%$

Return on share and debenture $(R_s) = Capital\ Yield\ + Dividend\ Yield$

$$***= 51.48 + 2.82 = 54.30$$

**Figure 4.14**
**Capital Yield, Dividend Yield and Return on share and debenture**




The average rate of return on share and debenture $(\overline{R_s}) = \frac{\sum R_s}{n} = \frac{88.64}{5} = 17.73\%$

Now,

Risk on share and debenture $(\sigma_s) = \sqrt{\frac{(R_s - \overline{R_s})^2}{n-1}} = \sqrt{\frac{(9449.13)}{5-1}} = 48.60\%$

Coefficient of variation $(CV_s) = \frac{\sigma_s}{\overline{R_s}} = \frac{48.60}{17.73} = 2.74$

The above table and figure reveals that the return of investment on share and debenture of CBs shows wide fluctuation i.e 54.30% in 2005/06 and -44.15 in 2009/10 respectively. These fluctuations in return are mainly caused by volatility of the share prices in the market. The change in dividends also contributed to the variability of shares return in some extent. The average rate of return on share and debenture of CBs is 17.73% which is higher than rate of return of other assets like government securities and loan and advances. Standard deviation and Coefficient of variation is 48.60% and 2.74 shows high degree of risk and variability of return on share and debenture. So it shows that investment on share and debenture is more risky investment alternative for CBs or investors.

### 4.4.2 Risk and Return on Investment Portfolio;

**Portfolio Return on investment**

The portfolio return is simply the weighted average of expected return of the individual stock in the portfolio with weight being the proportion of investment on each security. Generally, CBs invest their funds in government securities, Loan and advances and shares and debentures. The weight of the investment on various assets and their average rate of return are presented below;

**Table 4.22**
**Calculation of weight of investment on various assets**

| S.No. | Assets | Investment Amount Rs. in '000' | Proportion weight (w) | Average rate of return (R) |
|---|---|---|---|---|
| 1. | Government Securities | 131815656 | 0.2090 | 4.20 |
| 2. | Share and Debenture | 1498224 | 0.0024 | 17.73 |
| 3. | Loan and Advances | 497413302 | 0.7886 | 8.09 |
| | **Total** | **630727182** | | |

*Source; Appendix 1 (a), (b),(c),(k),(l) and above table*

Proportion weight$= \frac{131815656}{630727182} = 0.2090$

Now,

Portfolio Return $(R_p) = \sum W \times R = 0.2090 \times 4.20 + 0.0024 \times 17.73 + 0.7886 \times 8.09$

$$= 0.073$$

$$\therefore Portfolio\ return\ on\ investment\ of\ CBs(R_p) = 7.30\%$$

**Portfolio Risk on Investment**

The portfolio risk on investment is measure by the variance or standard deviation of the return on portfolio. The portfolio risk is affected by the association of movement of returns of two securities and the degree to which the assets return move together is measure by covariance. Hence, by combining the measures of individual assets risk, relative asset weights and the co-movement of assets return (Covariance), the risk of the portfolio can be estimated. Therefore

firstly the covariance between two assets return should be calculated and then portfolio risk can be calculated.

Therefore,

$$r = \frac{N\sum XY - \sum(X)\sum(Y)}{\sqrt{N\sum X^2 - (\sum X)^2}\ \sqrt{N\sum Y^2 - (\sum Y)^2}}$$

Now, the calculation shown in Appendix-3 we can get

Correlation coefficient between govt. securities and Loan and advances;

$r_{gl}$ = 0.47

Correlation coefficient between govt. securities and Share and debenture;

$r_{gs}$ = -0.77

Correlation coefficient between share and debenture and Loan and advances;

$r_{ls}$ =-0.76

Here,

| **Standard deviation** | **Weight** | **Correlation coefficient** |
|---|---|---|
| $\sigma_s = 48.60$ | $W_s = 0.0024$ | $r_{gl} = 0.47$ |
| $\sigma_l = 1.11$ | $W_l = 0.7886$ | $r_{gs} = -0.77$ |
| $\sigma_g = 1.01$ | $W_g = 0.2090$ | $r_{ls} = -0.76$ |

Now,

Covariance

$Cov_{gl} = r_{gl} \times \sigma_g \times \sigma_l$

$= 0.47 \times 1.01 \times 1.11 = 0.526917$

$$Cov_{ls} = r_{ls} \times \sigma_l \times \sigma_s$$

$$= -0.76 \times 1.11 \times 48.60 = -40.99896$$

$$Cov_{gs} = r_{gs} \times \sigma_g \times \sigma_s$$

$$= -0.77 \times 1.01 \times 48.60 = -37.79622$$

Now,

The standard deviation of the portfolio investment $(\sigma_p)$ for three assets can be calculated as follows;

$$\sigma_p = \sqrt{{W_g}^2{\sigma_g}^2 + {W_s}^2{\sigma_s}^2 + {W_l}^2{\sigma_l}^2 + 2Cov_{gs}W_gW_s + 2Cov_{ls}W_lW_s + 2Cov_{gl}W_gW_l}$$

$$\sqrt{(0.2090)^2(1.01)^2 + (0.0024)^2(48.60)^2 + (0.7886)^2(1.11)^2 + 2 \times -37.79622 \times 0.2090 \times 0.0024 + 2 \times -40.99896 \times 0.7886 \times 0.0024 + 2 \times 0.526917 \times 0.2090 \times 0.7886}$$

$$= 0.89\%$$

Therefore, standard deviation of the portfolio investment of CBs $(\sigma_p) = 0.89\%$

The risk of the portfolio is considerably less than the expected risk of investment on government securities i.e. $0.89 < 1.01$, Loan and advances i.e. $0.89 < 1.11$ and share and debenture $0.89 < 48.60$. There is moderate positive correlation between the government securities and loan and advances i.e.0.47. However, there is highly negative correlation between government securities and share and debenture i.e -0.77 and also between loan and advances and share and debenture i.e.-0.76. The risk of the portfolio is minimum because of the diversification effect created by the negatively correlated investment alternatives.

The portfolio return on investment is 7.30% which is less than average rate of return on investment of share and debenture and loan and advances i.e. $7.30\% < 17.73\% < 8.09\%$ respectively, but it is more than average rate of return on investment of government securities i.e. $7.30\% > 4.20\%$. The return on portfolio is minimum due to the lower proportion of investment on

share and debenture which has the highest return of 17.73% comparing with other two alternatives.

## 4.5 Test of Investment Portfolio Performance

Under 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, the three portfolio performance models are used which are shown below;

### 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. William Sharpe developed a ratio called Sharpe ratio to evaluate the portfolio performance. The Sharpe ratio also called an index of portfolio performance measures the amount of return from an investment portfolio for a given level of risk. The higher the index, the better is the portfolio performance.

*Sharpe index of portfolio performance* $\left(S_p\right) = \frac{Risk\ Premium}{Total\ risk} = \frac{\overline{r}_{p-}r_f}{\sigma_p}$

Where,

$S_p = Sharpe\ index\ of\ portfolio\ performance$

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

$r_f = Risk\ free\ rate\ of\ return$

$\sigma_p = Standard\ deviation\ of\ portfolio$

$\overline{r}_{p-}r_f = Risk\ premium\ for\ portfolio$

Sharpe's portfolio performance measure is used to test whether the portfolio in investment made by CBs is appropriate or not. The performance of various investment assets is calculated in table below;

**Table 4.23**
**Performance of Various Investment Assets**

| S.No. | Investment Assets | Average Return $(\overline{R_p})$ | Standard deviation $(\sigma_p)$ | Sharpe's measure of performance $(S_p) = \frac{\bar{r}_{p-} r_f}{\sigma_p}$ |
|---|---|---|---|---|
| 1. | Government Securities | 4.20 | 1.01 | -3.76 |
| 2. | Loan and Advances | 8.09 | 1.11 | 0.08 |
| 3. | Share and debenture | 17.73 | 48.60 | 0.20 |
| 4. | Investment Portfolio | 7.30 | 0.89 | -0.79 |

*Source; From above calculation*

Risk free rate of return$(r_f)$=8% (NRB)

The above calculation shows that, $S_s > S_l > S_p > S_g$ which indicates that investment on share and debenture is better than loan and advances, loan and advances is better than investment portfolio and investment portfolio is better than government securities. Therefore, the portfolio made by CBs among various investment assets is not so good. 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.

## 4.6 Trend Analysis

The purpose of this study is to analyze the trend of total investment, total deposit and individual investment on government securities, Share and debenture and Loan and advances of the CBs and future value for coming five years i.e. up to 2015.

The least square method is used to determine the trend value. The equation is;

$y = a + bx$

Where,

$a = y\ intercept$

$b = slope\ of\ trend\ line$

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

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

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

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

Under this topic, effort has been made to analyze trend of total investment and total deposit of the CBs for five years i.e. up to 2010 and forecast of the same for next five years i.e. up to 2015. The following table shows the trend values of total investment and total deposit of CBs.

**Table 4.24**
**Trend value of total investment and total deposit of CBs**

**(Rs. in million)**

| Year (t) | X=t-2008 | Total Investment | | Total Deposit | |
|---|---|---|---|---|---|
| | | Trend Value | Actual Value | Trend Value | Actual Value |
| 2006 | -2 | 40857.52 | 39718.48 | 98402.19 | 101629.03 |
| 2007 | -1 | 44766.26 | 45811.52 | 126043.67 | 120712.83 |
| 2008 | 0 | 48675.00 | 49116.35 | 153685.15 | 151929.86 |
| 2009 | 1 | 52583.74 | 53121.48 | 181326.63 | 187922.37 |
| 2010 | 2 | 56492.48 | 55607.18 | 208968.11 | 206231.66 |
| 2011 | 3 | 60401.22 | | 236609.59 | |
| 2012 | 4 | 64309.96 | | 264251.07 | |
| 2013 | 5 | 68218.70 | | 291892.55 | |
| 2014 | 6 | 72127.44 | | 319534.03 | |
| 2015 | 7 | 76036.18 | | 347175.51 | |

*Source; Appendix 1 (d) and (e)*

Trend line for total investment of CBs;

$y_c = a + bx$

$= 48675 + 3908.74\ x$

Trend line for total deposit of CBs;

$y_c = 153685.15 + 27641.48\ x$

**Figure 4.15**
**Trend and Actual value of total investment of CBs**

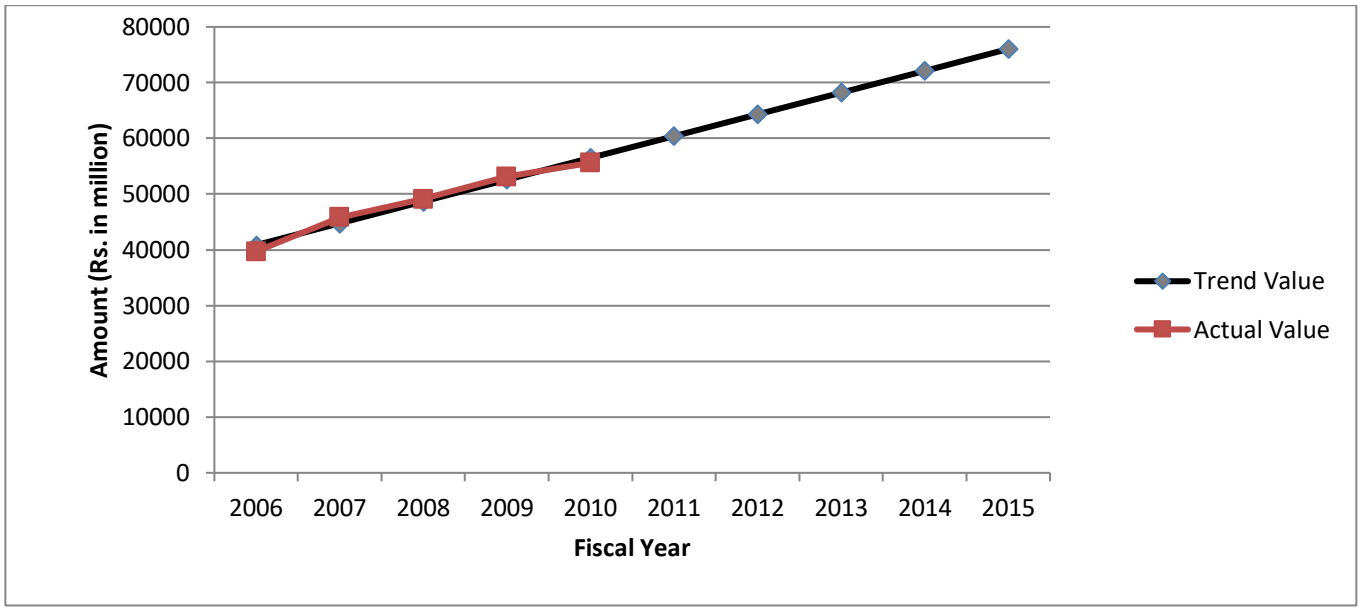
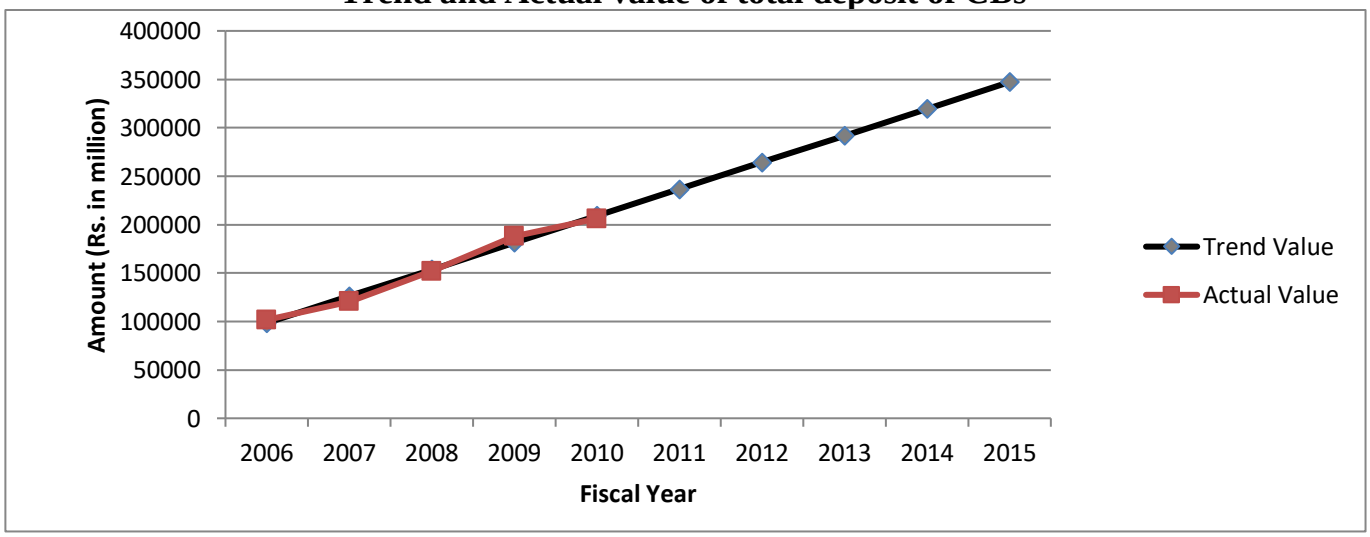



**Figure 4.16**
**Trend and Actual value of total deposit of CBs**



The above table and figure shows that the CBs total investment has been increasing by Rs.3908.74 million each year and is expected to reach Rs.76036.18 million at the end of year 2015. Similarly the total deposits of CBs are also in increasing trend by Rs.27641.48 million each year and are expected to reach Rs.347175.51 million at the end of year 2015.

### 4.6.2 Trend Analysis of Investment on Various Assets

Here, three assets like government securities, Loan and advances and share and debenture are taken for analysis. The effort has been made to analyze individual investment for five years i.e. up to 2010 and forecast of the same for next five years. The following table shows the trend values of 10 years i.e. from 2006 to 2015 of CBs investment on different assets i.e. government securities, loan and advances and share and debenture.

**Table 4.25**
**Trend Value of Investment on Government securities, Loan and advances and share and debenture of CBs**

**(Rs. in million)**

| Year (t) | X=t-2008 | Investment on Government securities | | Investment on share and debentures | | Investment on Loan and Advances | |
|---|---|---|---|---|---|---|---|
| | | Trend Value | Actual value | Trend Value | Actual Value | Trend Value | Actual Value |
| **2006** | -2 | 23577.43 | 22161.55 | 149.39 | 120.44 | 55078.46 | 58099.27 |
| **2007** | -1 | 24970.28 | 26332.19 | 224.52 | 231.36 | 77280.56 | 73024.42 |
| **2008** | 0 | 26363.13 | 28232.77 | 299.65 | 352.32 | 99482.66 | 98468.79 |
| **2009** | 1 | 27755.98 | 25594.50 | 374.78 | 364.69 | 121684.76 | 124397.58 |
| **2010** | 2 | 29148.83 | 29494.65 | 449.91 | 429.42 | 143886.86 | 143423.24 |
| **2011** | 3 | 30541.68 | | 525.04 | | 166088.96 | |
| **2012** | 4 | 31934.53 | | 600.17 | | 188291.06 | |
| **2013** | 5 | 33327.38 | | 675.3 | | 210493.16 | |
| **2014** | 6 | 34720.23 | | 750.43 | | 232695.26 | |
| **2015** | 7 | 36113.08 | | 825.56 | | 254897.36 | |

*Source; Appendix 1 (a), (b) and (c)*

Trend line of investment on government securities of CBs is;

$y_c = 26363.13 + 1392.85\ x$

Trend line of investment on share and debenture of CBs is;

$y_c = 299.65 + 75.13\ x$

Trend line of investment on Loan and advances of CBs is;

$y_c = 99482.66 + 22202.1\ x$

**Figure 4.17**
**Trend and Actual value of Investment on Govt. securities**

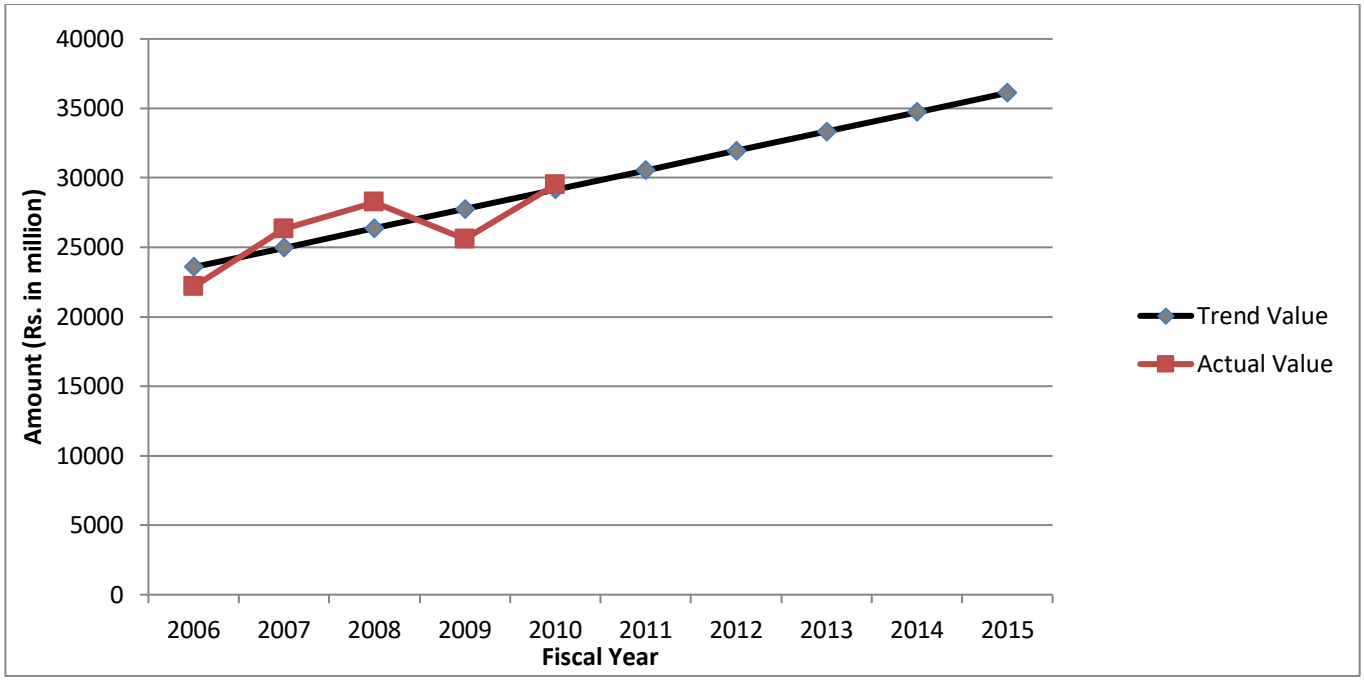


**Figure 4.18**
**Trend and Actual Value of investment on Share and debenture**

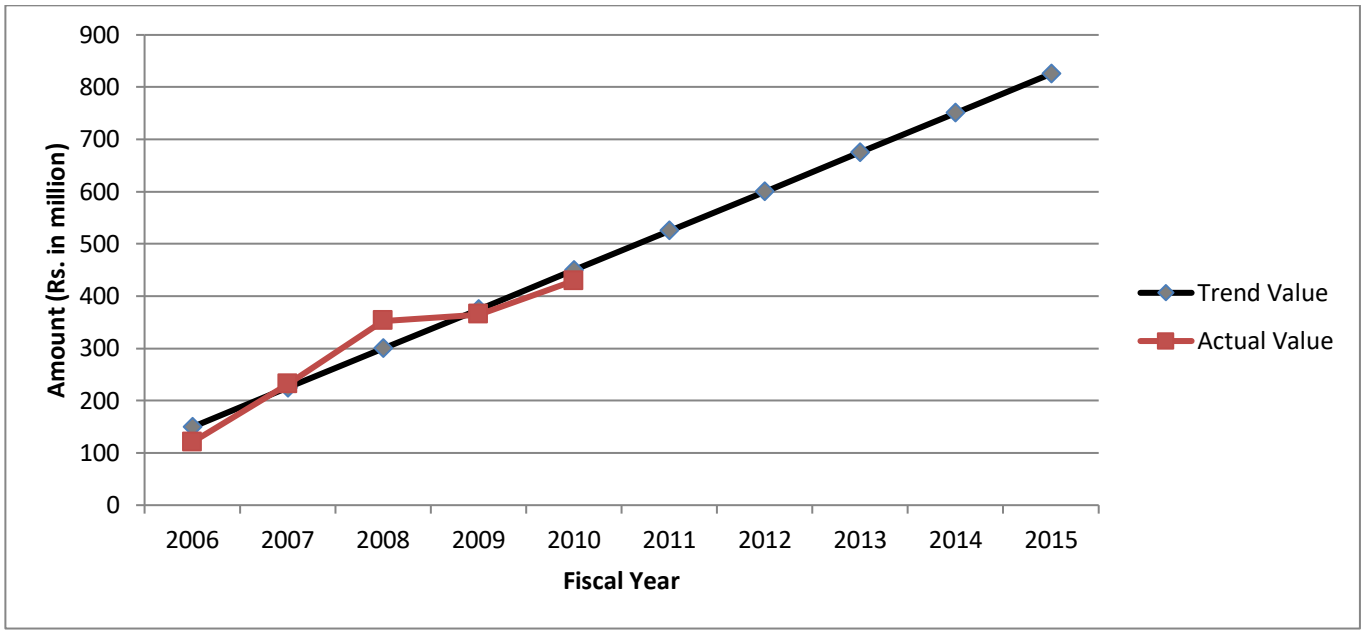
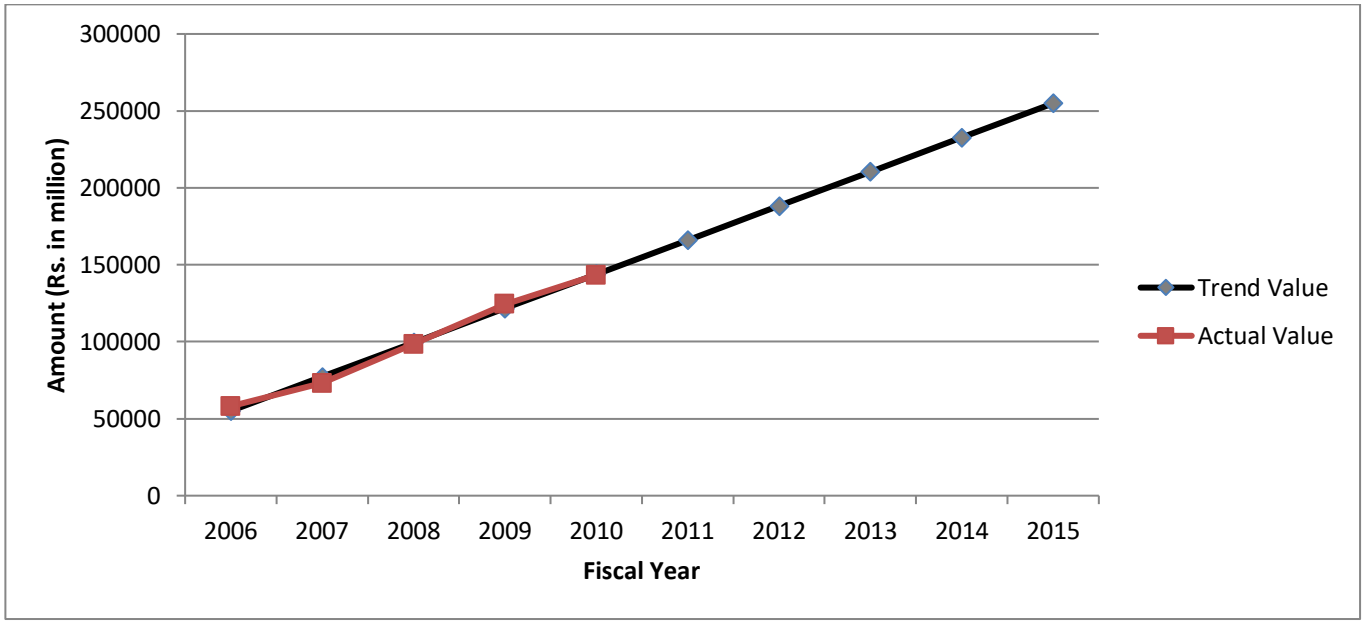



**Figure 4.19**
**Trend and Actual Value of Investment on Loan and Advances**




The above table and figure shows that the CBs investment on government securities, Loan and advances and share and debenture all are in increasing trend. The investment on govt. securities, loan and advances and share and debenture are increasing by Rs.1392.85 million, Rs.75.13 million and Rs. 22202.1 million respectively. If other things remaining the same, the investment

on govt. securities, share and debenture and loan and advances in 2015 will be Rs.36113.08 million, Rs.825.56 million and Rs.254897.36 million respectively. So, it can be said that the investment of CBs on various assets are increasing each year. Comparatively, increasing ratio in government securities is 1.53 times, in share and debenture is 5.53 times and in loan and advances is 4.63 times.

## 4.7 Major Findings

The major findings of the study are as follows;

**Portfolio Risk and Return on Investment**

- There is positive correlation coefficient between return on investment made by CBs in government securities and loan and advances i.e. 0.47 and there is negative correlation coefficient between return on investment made by CBs in govt. securities and share and debenture and loan and advances and share and debenture i.e. -0.77 and -0.76 respectively. This shows the low degree of negative relationship between assets. Such assets are very useful to make portfolio combination, so that the risk of the portfolio will be significantly reduced.

- From the calculation, the portfolio return is lesser than the individual return of share and debenture and loan and advances but higher than the government securities and the portfolio risk is less than the individual risk of loan and advances, share and debenture and government securities because of the negative correlation between the assets.

**Risk and Return Analysis**

- The average rate of risk and return of share and debenture are higher than other assets. The average return of share and debenture shows wide fluctuation due to changes in share price.

- The average rate of return on govt. securities is 4.20% and coefficient of variation is 24% that is very lowest return comparing with other investment and the risk is also lower than other investment.

- The average rate of return on share and debenture is high but the risk is also high so that the loan and advances is advanced than government securities and government securities is advanced than share and debenture on the basis of individual risk and return.

**Ratio Analysis**

- The ratio of total investment to total deposit of CBs, SCBL is the most successful in utilizing its resources on investment than other CBs. The mean ratio and CV also shows that NABIL and HBL are moderate in utilizing its resources on investment and NIBL and

  EBL are not so successful in better utilizing their total deposits on investment of various assets.
- The loan and advance to total deposit ratio of CBs shows that NIBL is the most successful in utilizing its resources on L & A than other CBs. The mean ratio and CV also shows that EBL and NABIL are moderate in utilizing its resources on L & A and SCBL and HBL are not so successful in better utilizing their total deposits on loan and advances.

- The return on total assets shows that SCBL has the better position among the selected CBs while HBL has the lowest return among the five CBs but NIBL, NABIL and EBL are in moderate position.

- The ratio between investment on S & D and total outside investment shows the extent on which NABIL invest highest portion of total investment into share and debenture. HBL is the more consistent bank in investing its total outside investment on S & D and EBL invest the low portion on S & D to total outside investment.

- The ratio between investment on Government securities and total outside investment shows the extent on which SCBL invest highest portion of total outside investment into government securities with highest mean ratio and lowest CV among five CBs and NABIL, HBL, EBL has moderate position but NIBL has the weakest position for mobilizing of total investment into government securities.

**Analysis of profit and NPA of CBs**

- The net profit of the SCBL, NIBL, NABIL, EBL are increasing in every year which shows the effective financial performance but the profit of the HBL in the FY 2009/10 has been decline comparatively due to the ineffective utilization of portfolio concept on investment in various securities. Similarly, the trend of net profit of the NIBL is higher than other CBs comparatively.

- The trend and actual value of NPA of SCBL and EBL is lower than other commercial banks which are decreasing each year which is the better indication for the CBs.

**Test of Portfolio Performance**

- By using the Sharpe's portfolio performance measure, it indicates that investment on Loan and Advances is better option than that of the investment on share and debenture, investment portfolio and government securities.

- The investment portfolio has lower performance than loan and advances. It shows that CBs are not properly using portfolio concept to increase return and to reduce risk from their investment.

**Trend Analysis**

In trend analysis, the total investment, total deposit and individual investment on share and debenture, loan and advances and government securities of CBs are increasing each year. The investment of CBs on share and debenture is increasing more rapidly than govt. securities and govt. securities are increasing more rapidly than loan and advances.

# CHAPTER – V

## SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This chapter contains summary, major findings, conclusion and recommendation. The brief introduction of all chapters is defined on summary. Findings and conclusions are the analysis of relevant data by using various financial and statistical tools. The recommendation obtains suggestions on the basis of major findings and conclusions.

### 5.1 Summary

The development of any country depends upon the economic development and for the development of economy of any country both the private and public sectors should play a great role. The process of economic development depends upon various factors, the capital formation and its proper utilization plays a vital role for rapid economic development. All the economic activities of any country are greatly influenced by the commercial banking business of the country. Banks are the backbone of the Nepalese economy. They play a vital role in capital formulation, proper utilization of collected funds, providing various type of banking services. Commercial banks are formed by joining two or more enterprise. Commercial banks collect money from public by providing attractive interest and make profit by lending the collected money mainly on business organization, industrial, agriculture sectors etc. The main task of commercial banks is to mobilize the idle resources in productive areas by collecting them from scattered sources and generating profit. So, it can be said that banks provides internal resources for developing country's economy.

In Nepalese content, the history of development of modern banks started from the establishment of Nepal Bank Ltd. in 1937 A.D. Since the year 1990s, Nepal has been adopting liberal policy invite private sector in order to bring healthy competition in the financial sector. The number of various financial institutions like CBs, development banks, finance companies, co-operatives etc. comes into existence to cater the financial needs of the country. Nowadays there are 32 commercial banks operating in Nepal.

Investment portfolio refers to an investment that combines several assets. 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 maximize the return at whatever level of risk. The investment portfolio is the tool which helps to reduce risk and maximize return. The banks should never invest its funds in those securities; difference may cause a great loss. The banks should accept that type of securities which are commercial, durable, marketable, stable, transferable and high market price.

Generally, the investment of CBs include the investment on government securities like treasury bills, development bonds, national saving bond, foreign government securities, shares on government owned companies and non government companies and investment on debentures, similarly the CBs used their funds as loan and advances. Most of the banks are interested to invest their funds in more liquid and less risky sector. The investment planning of the CBs in Nepal heavily depend upon the rules and regulation provided by the central banks. The composition of asset portfolio of the banks is influenced by the policy of central bank.

During the research work, it has been tried to explore investment of CBs in various assets, portfolio management, 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'. To fulfill the objective of the study many analysis has been done like operation of CBs, investment and loan and advance portfolio, risk and return analysis, portfolio risk and return on investment, ratio analysis, trend analysis and portfolio performance test. For the analysis, mainly secondary data are used and which is collected from the related banks, NRB, NEPSE, and SEBO. Different financial and statistical tools are used and secondary data are tabulated and graphed for better presentation from which various conclusion and finding have been drawn.

## 5.2 Conclusions

Commercial banks are performing as financial intermediaries between borrowers and lenders by mobilizing the scattered resources towards the productive investment and it is not possible to achieve such goal without using portfolio concept on the investment strategies which help to reduce risk and increase return on investment. Mostly the CBs are interested to invest their funds

in more liquid and less risky assets. CBs are not so successful to use the portfolio concept to achieve the investment opportunities.

From the analysis of risk and return of individual investment, it is conclude that loan and advances is much better than investment on share and debenture and government securities because of the fixed interest income on loan and advances. So, the CBs are eager to invest their maximum part of investment on loan and advances in different sectors. The average rate of return and risk on share and debentures are advanced than other assets, so that the CBs invested very low portion of resources into share and debenture of other companies.

By comparing the investment portfolio weight set up by the CBs with directives given by the central bank, the banks have not followed the directives. The central banks directives direct not to invest more than 50% in one sector but most of the banks have invested more than 90% of their funds in one sector. From the investment portfolio analysis, CBs are given first priority to invest their funds in govt. sector due to the less risky and second priority given to the share and debenture of other companies and CBs are concentrated in the private sector for the investment in loan and advances. The negative correlation coefficient between various investment assets conclude that the CBs can reduce total risk at minimum level and increase return at higher level. From the financial performance test, it can be proved that CBs are not able to diversify their resources efficiently. According to the Sharpe's portfolio performance test, it can be terminate that Nepalese CBs do not utilize portfolio concept efficiently in their investment.

The trend analysis of CBs conclude that total investment, total deposit, investment on share and debenture, investment on loan and advances, investment on govt. securities are increasing per year.

## 5.3 Recommendations

On the basis of analysis, findings and conclusions, the following suggestions are recommended to overcome the weakness and to improve the present fund mobilization and investment portfolio of Nepalese commercial banks.

- From the return on total assets, the profitability of HBL is in the weakest position. So, the bank should utilize its overall resources effectively to gain the better profit margins.

- SCBL are not so successful in better utilizing their total deposits on loan and advances, so that it is recommended that SCBL should increase investment on loan and advances.

- NIBL should invest more funds in government securities to control the risk.

- Nepalese CBs are not success to formulate the appropriate investment policies and implement them effectively. They are not considering about portfolio optimization. They don't diversify the investment. CBs need to change their investment policy and investment in different sector. Mostly, CBs are interested to invest their funds in securable, less risky and liquid assets. Generally high risk assets give more profit and less risky assets give less profit and from the risky sectors, there is a great opportunity for CBs to get higher return by using portfolio concept.

- The portfolio condition of bank should be regularly revised from time to time. It should always try to maintain the balance in the portfolio condition of the banks. By investing in more than one asset rather than only on one asset, risk can be minimized. From the study, it can be concluded that CBs are more interested to invest on loan and advances but lower part of their funds in govt. securities and share and debenture. The negative correlation between govt. securities and share and debenture, between loan and advances and share and debenture helps to reduce the portfolio risk. So, it is recommended that CBs must diversify suitable proportion of their funds in loan and advances, shares and debenture and government securities.

- From the above study, it is clear that some CBs are able to use portfolio management concept in the field of investment but it is not satisfactory to reduce risk and maximize return in the finest level. So, those CBs should used portfolio management concept 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 | SCBL | NIBL | NABIL | EBL | HBL | CBs |
|---|---|---|---|---|---|---|
| **2005/06** | 8644855 | 2522300 | 2301463 | 3548616 | 5144313 | 22161547 |
| **2006/07** | 7107937 | 3256400 | 4808348 | 4704632 | 6454873 | 26332190 |
| **2007/08** | 8137615 | 3155000 | 4646883 | 4821604 | 7471667 | 28232769 |
| **2008/09** | 9998753 | 2531300 | 3706102 | 5146045 | 4212300 | 25594500 |
| **2009/10** | 8531519 | 4201850 | 7941556 | 4354353 | 4465372 | 29494650 |
| **Total** | **42420679** | **15666850** | **23404352** | **22575250** | **27748525** | **131815656** |
| **Average** | **8484135.8** | **3133370** | **4680870.4** | **4515050** | **5549705** | **26363131.2** |

*Source: Annual Report of CBs from 2005/06 to 2009/10*

### b) Investment on share and debenture

**(Rs. in '000')**

| FY | SCBL | NIBL | NABIL | EBL | HBL | CBs |
|---|---|---|---|---|---|---|
| **2005/06** | 15343 | 17738 | 27563 | 19887 | 39909 | 120440 |
| **2006/07** | 44943 | 35253 | 57853 | 19887 | 73424 | 231360 |
| **2007/08** | 106043 | 59945 | 80551 | 16225 | 89558 | 352322 |
| **2008/09** | 106925 | 64270 | 82501 | 17107 | 93883 | 364686 |
| **2009/10** | 106925 | 66645 | 159857 | 17107 | 78882 | 429416 |
| **Total** | **380179** | **243851** | **408325** | **90213** | **375656** | 1498224 |
| **Average** | **76035.8** | **48770.2** | **81665** | **18042.6** | **75131.2** | **299644.8** |

### c) Investment on Loan and Advances

**(Rs. in '000')**

| FY | SCBL | NIBL | NABIL | EBL | HBL | CBs |
|---|---|---|---|---|---|---|
| **2005/06** | 8637277 | 12613561 | 12681666 | 9770920 | 14395845 | 58099269 |
| **2006/07** | 10252469 | 17010464 | 15305910 | 13623689 | 16831889 | 73024421 |
| **2007/08** | 13115285 | 26618771 | 21159853 | 18317168 | 19257717 | 98468794 |
| **2008/09** | 12925267 | 35745532 | 27431772 | 23782347 | 24512658 | 124397576 |
| **2009/10** | 15714981 | 40115744 | 32227527 | 27529907 | 27835083 | 143423242 |
| **Total** | **60645279** | **132104072** | **108806728** | **93024031** | **102833192** | 497413302 |
| **Average** | **12129055.8** | **26420814.4** | **21761345.6** | **18604806** | **20566638.4** | **99482660.4** |

## d) Total Investment

**(Rs. in '000')**

| FY | SCBL | NIBL | NABIL | EBL | HBL | CBs |
|---|---|---|---|---|---|---|
| **2005/06** | 12847536 | 5602869 | 6178533 | 4200515 | 10889031 | 39718484 |
| **2006/07** | 13553233 | 6505680 | 8945311 | 4984315 | 11822985 | 45811524 |
| **2007/08** | 13902819 | 6874024 | 9939771 | 5059558 | 13340177 | 49116349 |
| **2008/09** | 20236121 | 7399812 | 10826379 | 5948480 | 8710691 | 53121483 |
| **2009/10** | 19847511 | 8635530 | 13670917 | 5008308 | 8444910 | 55607176 |
| **Total** | **80387220** | **35017915** | **49560911** | **25201176** | **53207794** | **243375016** |
| **Average** | **16077444** | **7003583** | **9912182.2** | **5040235.2** | **10641558.8** | **48675003.2** |

## e) Total Deposit

**(Rs. in '000')**

| FY | SCBL | NIBL | NABIL | EBL | HBL | CBs |
|---|---|---|---|---|---|---|
| **2005/06** | 23061032 | 18927306 | 19347399 | 13802445 | 26490852 | 101629034 |
| **2006/07** | 24647021 | 24488856 | 23342285 | 18186254 | 30048418 | 120712834 |
| **2007/08** | 29743999 | 34451726 | 31915047 | 23976299 | 31842789 | 151929860 |
| **2008/09** | 35871721 | 46698100 | 37348256 | 33322946 | 34681345 | 187922368 |
| **2009/10** | 35182721 | 50094725 | 46410701 | 36932310 | 37611202 | 206231659 |
| **Total** | **148506494** | **174660713** | **158363688** | **126220254** | **160674606** | 768425755 |
| **Average** | **29701298.8** | **34932142.6** | **31672738** | **25244051** | **32134921.2** | **153685151** |

## f) Net Profit

**(Rs. in '000')**

| FY | SCBL | NIBL | NABIL | EBL | HBL | CBs |
|---|---|---|---|---|---|---|
| **2005/06** | 658756 | 350536 | 635262 | 237291 | 457458 | 2339303 |
| **2006/07** | 691668 | 501399 | 673960 | 296409 | 491823 | 2655259 |
| **2007/08** | 818921 | 696732 | 746468 | 451219 | 635869 | 3349209 |
| **2008/09** | 1025115 | 900619 | 1031053 | 638733 | 752835 | 4348355 |
| **2009/10** | 1085872 | 1265950 | 1138571 | 831766 | 508,798 | 4830957 |
| **Total** | **4280332** | **3715236** | **4225314** | **2455418** | **2846783** | 17523083 |
| **Average** | **856066.4** | **743047.2** | **845062.8** | **491083.6** | **569356.6** | **3504616.6** |

## g) Total assets

**(Rs. in '000')**

| FY | SCBL | NIBL | NABIL | EBL | HBL | CBs |
|---|---|---|---|---|---|---|
| **2005/06** | 25776332 | 21330138 | 22329971 | 15959285 | 29460390 | 114856116 |
| **2006/07** | 28596689 | 27590845 | 27253393 | 21432574 | 33519141 | 138392642 |
| **2007/08** | 33335788 | 38873306 | 37132759 | 27149343 | 36175532 | 172666728 |
| **2008/09** | 40587468 | 53010803 | 43867398 | 36916849 | 39320322 | 213702840 |
| **2009/10** | 40213320 | 57305413 | 52079726 | 41382761 | 42717125 | 233698345 |
| **Total** | **168509597** | **198110505** | **182663247** | **142840812** | **181192510** | 873316671 |
| **Average** | **33701919.4** | **39622101** | **36532649** | **28568162** | **36238502** | **174663334.2** |

## h) Total outside investment

**(Rs. in '000')**

| FY | SCBL | NIBL | NABIL | EBL | HBL | CBs |
|---|---|---|---|---|---|---|
| **2005/06** | 21782954 | 18379077 | 19101076 | 14001823 | 25531591 | 98796521 |
| **2006/07** | 24055871 | 23792107 | 24491089 | 18648396 | 28820982 | 119808445 |
| **2007/08** | 27621416 | 33870676 | 31304825 | 23398643 | 32837697 | 149033257 |
| **2008/09** | 33915878 | 43641018 | 13585372 | 29833154 | 33503846 | 154479268 |
| **2009/10** | 35804466 | 48953838 | 45939790 | 32564664 | 36425539 | 199688297 |
| **Total** | **143180585** | **168636716** | **134422152** | **118446680** | **157119655** | 721805788 |
| **Average** | **28636117** | **33727343.2** | **26884430.4** | **23689336** | **31423931** | **144361157.6** |

## i) Interest income on government securities

**(Rs. in '000')**

| FY | SCBL | NIBL | NABIL | EBL | HBL | CBs |
|---|---|---|---|---|---|---|
| **2005/06** | 355291 | 82420 | 130197 | 97272 | 172242 | 837422 |
| **2006/07** | 326550 | 78494 | 132229 | 128566 | 191559 | 857398 |
| **2007/08** | 319606 | 99991 | 198442 | 180219 | 201310 | 999568 |
| **2008/09** | 406326 | 140698 | 269187 | 289765 | 354949 | 1460925 |
| **2009/10** | 436305 | 169620 | 330919 | 238993 | 216036 | 1391873 |
| **Total** | **1844078** | **571223** | **1060974** | **934815** | **1136096** | 5547186 |
| **Average** | **368815.6** | **114244.6** | **212194.8** | **186963** | **227219.2** | **1109437.2** |

## j) Interest income on Loan and advances

**(Rs. in '000')**

| FY | SCBL | NIBL | NABIL | EBL | HBL | CBs |
|---|---|---|---|---|---|---|
| **2005/06** | 596622 | 964689 | 988413 | 770827 | 1140687 | 4461238 |
| **2006/07** | 728589 | 1302122 | 1167255 | 967178 | 1242850 | 5407994 |
| **2007/08** | 872690 | 1907261 | 1496244 | 1329695 | 1444245 | 7050135 |
| **2008/09** | 1104047 | 2906055 | 2182647 | 1852128 | 1861045 | 9905922 |
| **2009/10** | 1379284 | 4303311 | 3368728 | 2801332 | 2836251 | 14688906 |
| **Total** | **4681232** | **11383438** | **9203287** | **7721160** | **8525078** | 41514195 |
| **Average** | **936246.4** | **2276687.6** | **1840657.4** | **1544232** | **1705015.6** | **8302839** |

## k) Return on Government securities

**(Rs. in '000')**

| FY | SCBL | NIBL | NABIL | EBL | HBL | CBs |
|---|---|---|---|---|---|---|
| **2005/06** | 4.11% | 3.27% | 5.66% | 2.74% | 3.35% | 3.78% |
| **2006/07** | 4.59% | 2.41% | 2.75% | 2.73% | 2.97% | 3.26% |
| **2007/08** | 3.93% | 3.17% | 4.27% | 3.74% | 2.69% | 3.54% |
| **2008/09** | 4.06% | 5.56% | 7.26% | 5.63% | 8.43% | 5.71% |
| **2009/10** | 5.11% | 4.04% | 4.17% | 5.49% | 4.84% | 4.72% |
| **Total** | **21.80%** | **18.45%** | **24.11%** | **20.33%** | **22.28%** | 21.01% |
| **Average** | **0.0436** | **0.0369** | **0.04822** | **0.04066** | **0.04456** | **0.04202** |

### l) Return on Loan and Advances

**(Rs. in '000')**

| FY | SCBL | NIBL | NABIL | EBL | HBL | CBs |
|---|---|---|---|---|---|---|
| **2005/06** | 6.91% | 7.65% | 7.79% | 7.89% | 7.92% | 7.68% |
| **2006/07** | 7.11% | 7.65% | 7.63% | 7.10% | 7.38% | 7.41% |
| **2007/08** | 6.65% | 7.17% | 7.07% | 7.26% | 7.50% | 7.16% |
| **2008/09** | 8.54% | 8.13% | 7.96% | 7.79% | 7.59% | 7.96% |
| **2009/10** | 8.78% | 10.73% | 10.45% | 10.18% | 10.19% | 10.24% |
| **Total** | **37.99%** | **41.33%** | **40.90%** | **40.22%** | **40.58%** | 40.45% |
| **Average** | **0.07598** | **0.08266** | **0.0818** | **0.08044** | **0.08116** | **0.0809** |

# Appendix – 2

## Calculation of correlation coefficient between various investment securities of CBs

| FY | Return on Govt. securities ($R_g$) | Return on Loan and Advances ($R_l$) | Return on Share and Debenture ($R_s$) | $R_gR_l$ | $R_gR_s$ | $R_lR_s$ | $R_g^2$ | $R_l^2$ | $R_s^2$ |
|---|---|---|---|---|---|---|---|---|---|
| 2005/06 | 3.78 | 7.68 | 54.3 | 29.0304 | 205.254 | 417.024 | 14.2884 | 58.9824 | 2948.49 |
| 2006/07 | 3.26 | 7.41 | 74.78 | 24.1566 | 243.7828 | 554.1198 | 10.6276 | 54.9081 | 5592.0484 |
| 2007/08 | 3.54 | 7.16 | 18.04 | 25.3464 | 63.8616 | 129.1664 | 12.5316 | 51.2656 | 325.4416 |
| 2008/09 | 5.71 | 7.96 | -14.33 | 45.4516 | -81.8243 | -114.0668 | 32.6041 | 63.3616 | 205.3489 |
| 2009/10 | 4.72 | 10.24 | -44.15 | 48.3328 | -208.388 | -452.096 | 22.2784 | 104.8576 | 1949.2225 |
| **Total** | **21.01** | **40.45** | **88.64** | **172.3178** | **222.6861** | **534.1474** | **92.3301** | **333.3753** | **11020.5514** |

Now,

$$r_{ij} = \frac{n\sum R_iR_j - \sum R_i \sum R_j}{\sqrt{n\sum {R_i}^2 - (\sum R_i)^2}\ \sqrt{n\sum {R_j}^2 - \left(\sum R_j\right)^2}}$$

# Appendix – 3

**Calculation of trend analysis of net profit of SCBL**

| **Year (t)** | **net profit of CBs (y)** | $x = t - 2008$ | $xy$ | $x^2$ |
|---|---|---|---|---|
| 2006 | 658756 | -2 | -1317512 | 4 |
| 2007 | 691668 | -1 | -691668 | 1 |
| 2008 | 818921 | 0 | 0 | 0 |
| 2009 | 1025115 | 1 | 1025115 | 1 |
| 2010 | 1085872 | 2 | 2171744 | 4 |
| | $\sum y$ =**4280332** | $\sum x$ =**0** | $\sum xy$ = 1187679 | $\sum x^2$ =**10** |

Now,

For finding the value of a and b, we have

If $\sum x = 0$,

a= $\frac{\sum y}{n} = \frac{4280332}{5} = 856066.4$

b= $\frac{\sum xy}{\sum x^2} = \frac{1187679}{10} = 118767.9$

Now,

The straight line trend for total profit of CBs is;

$y_c = a + bx$

$= 856066.4 + 118767.9\ x$

Thus net profit value calculated in the above shown way as of SCBL for the other CBs (NIBL, NABIL, EBL & HBL).

**Calculation of trend analysis of NPA of SCBL**

| Year (t) | NPA of SCBL (y) | $x = t - 2008$ | $xy$ | $x^2$ |
|---|---|---|---|---|
| 2006 | 195932 | -2 | -391864 | 4 |
| 2007 | 197017 | -1 | -197017 | 1 |
| 2008 | 128719 | 0 | 0 | 0 |
| 2009 | 91041 | 1 | 91041 | 1 |
| 2010 | 98135 | 2 | 196270 | 4 |
| | $\sum y = 710844$ | $\sum x = 0$ | $\sum xy =$ -301570 | $\sum x^2 = 10$ |

Now,

For finding the value of a and b, we have

If $\sum x = 0$,

a= $\frac{\sum y}{n} = \frac{710844}{5} = 142168.8$

b= $\frac{\sum xy}{\sum x^2} = \frac{-301570}{10} = -30157$

Now,

The straight line trend for total profit of CBs is;

$y_c = a + bx$

$= 142168.8 + (-30157)\, x$

Thus NPA value calculated in the above shown way as of SCBL for the other CBs (NIBL, NABIL, EBL & HBL).

**Calculation of trend analysis of total investment**

**(Rs. in million)**

| **Year (t)** | **Total Investment of CBs (y)** | $x = t - 2008$ | $xy$ | $x^2$ |
|---|---|---|---|---|
| 2006 | 39718.48 | -2 | -79436.96 | 4 |
| 2007 | 45811.52 | -1 | -45811.52 | 1 |
| 2008 | 49116.35 | 0 | 0 | 0 |
| 2009 | 53121.48 | 1 | 53121.48 | 1 |
| 2010 | 55607.18 | 2 | 111214.36 | 4 |
| | $\sum y$ =**243375.01** | $\sum x$ =**0** | $\sum xy$ =**39087.36** | $\sum x^2$ =**10** |

Now,

For finding the value of a and b, we have

If $\sum x = 0$,

a= $\frac{\sum y}{n} = \frac{243375.01}{5} = 48675$

b= $\frac{\sum xy}{\sum x^2} = \frac{39087.36}{10} = 3908.74$

Now,

The straight line trend for total investment of CBs is;

$y_c = a + bx$

$= 48675 + 3908.74\, x$

**Calculation of trend analysis of total deposit**

**(Rs. in million)**

| Year (t) | Total deposit of CBs (y) | $x = t - 2008$ | $xy$ | $x^2$ |
|---|---|---|---|---|
| 2006 | 101629.03 | -2 | -203258.06 | 4 |
| 2007 | 120712.83 | -1 | -120712.83 | 1 |
| 2008 | 151929.86 | 0 | 0 | 0 |
| 2009 | 187922.37 | 1 | 187922.37 | 1 |
| 2010 | 206231.66 | 2 | 412463.32 | 4 |
| | $\sum y$ =768425.75 | $\sum x$ =0 | $\sum xy$ =276414.8 | $\sum x^2$ =10 |

$a = \frac{\sum y}{n} = \frac{768425.75}{5} = 153685.15$

$b = \frac{\sum xy}{\sum x^2} = \frac{276414.8}{10} = 27641.48$

The straight line trend for total deposit of CBs be;

$y_c = 153685.15 + 27641.48\, x$

**Calculation of trend analysis of Investment on Government securities of CBs**

**(Rs. in million)**

| Year (t) | Investment on Govt. securities of CBs (y) | $x = t - 2008$ | $xy$ | $x^2$ |
|---|---|---|---|---|
| 2006 | 22161.55 | -2 | -44323.1 | 4 |
| 2007 | 26332.19 | -1 | -26332.19 | 1 |
| 2008 | 28232.77 | 0 | 0 | 0 |
| 2009 | 25594.5 | 1 | 25594.5 | 1 |
| 2010 | 29494.65 | 2 | 58989.3 | 4 |
| | $\sum y$ =131815.66 | $\sum x$ =0 | $\sum xy$ =13928.51 | $\sum x^2$ =10 |

$\sum x = 0,$

$a = \frac{\sum y}{n} = \frac{131815.66}{5} = 26363.13$

$b = \frac{\sum xy}{\sum x^2} = \frac{13928.51}{10} = 1392.85$

The straight line trend for investment on Government securities of CBs be;

$y_c = 26363.13 + 1392.85\, x$

**Trend for investment on share and debenture of CBs**

**(Rs. in million)**

| **Year (t)** | **Investment on share and debenture of CBs (y)** | $x = t - 2008$ | $xy$ | $x^2$ |
|---|---|---|---|---|
| 2006 | 120.44 | -2 | -240.88 | 4 |
| 2007 | 231.36 | -1 | -231.36 | 1 |
| 2008 | 352.32 | 0 | 0 | 0 |
| 2009 | 364.69 | 1 | 364.69 | 1 |
| 2010 | 429.42 | 2 | 858.84 | 4 |
| | $\sum y$ =**1498.23** | $\sum x$ =**0** | $\sum xy$ = 751.29 | $\sum x^2$ =**10** |

$\sum x = 0,$

$a = \frac{\sum y}{n} = \frac{1498.23}{5} = 299.65$

$b = \frac{\sum xy}{\sum x^2} = \frac{751.29}{10} = 75.13$

The straight line trend for investment on Government securities of CBs be;

$y_c = 299.65 + 75.13\, x$

**Trend for investment on Loan and advances of CBs**

**(Rs. in million)**

| **Year (t)** | **Investment on Loan and Advances of CBs (y)** | $x = t - 2008$ | $xy$ | $x^2$ |
|---|---|---|---|---|
| 2006 | 58099.27 | -2 | -116198.54 | 4 |
| 2007 | 73024.42 | -1 | -73024.42 | 1 |
| 2008 | 98468.79 | 0 | 0 | 0 |
| 2009 | 124397.58 | 1 | 124397.58 | 1 |
| 2010 | 143423.24 | 2 | 286846.48 | 4 |
| | **$\sum y$ =497413.3** | **$\sum x$ =0** | **$\sum xy$ =222021.1** | **$\sum x^2$ =10** |

$$a = \frac{\sum y}{n} = \frac{497413.3}{5} = 99482.66$$

$$b = \frac{\sum xy}{\sum x^2} = \frac{222021.1}{10} = 22202.1$$

The straight line trend for total deposit of CBs be;

$$y_c = 99482.66 + 22202.1\, x$$