

CHAPTER I

INTRODUCTION

Background of the Study

Nepal is a least developed country where most of the people live under poverty line. They are not able to manage minimum physical facilities which are necessary for human beings. In other hand, Nepal is a landlocked and agricultural country where more than 70% people are farmers but due to lack of scientific farming tools, lack of farming knowledge, proper irrigation and other essential facilities in all parts of the country, development of the country cannot be depended upon agriculture. Therefore, it has been proved that the development of country is not possible without industrialization. Industrial sector plays vital role in the development of any country. Therefore, now days, all the countries are centralized on industrialization, so the nature of its economic infrastructure. One of the basic elements in achieving a self-reliant growth of the economy and for sustaining the desire level of economic development is because of accelerated rate of investment or capital formation in economy. The rate of investment or capital formation depends upon the efficiency of the financial system. A developed financial system is a hallmark of any free enterprises or mixed economy. Hence, investment portfolio is one such tool that helps for proper utilization of resources.

In reality, banks are predominant component in the financial structure of the nation. They play double role in the Nepalese developing economy providing safeguard against risk, uncertainties and unfortunate happenings. It also thoroughly exploits long-term firms. Although, other sectors such as manufacturing, financial and trading sectors are playing vital role in the economy, we cannot underestimate the contribution of commercial banks. In fact, all the activities of each and every country are greatly influenced by the commercial banking business of the country. Commercial banks are established with a strong view to develop economy in healthy way and they occupy an important place in the economic framework of the country by providing capital for the development of industry, trade and business organizations.

Banks are the fundamental part of the business activities which are established to safeguard people's money and thereby using the money in making loans and investments. Simply, an investment is the commitment of money, which is expected to generate additional money. Human nature does not satisfy for whatever s/he has at present s/he tends to have more than whatever s/he has. Therefore, s/he used to sacrifice the current resources for additional return because we cannot avoid risk when we expect return. Every investment entails some degree of risk, it requires at present certain sacrifice for a future uncertain benefits. Therefore, the portfolio management has been emerged with the help of risk and return concept.

Investment portfolio is one which the income or profit of the bank depends upon directly to minimize risk, a bank must diversify its investment on different sectors which is known as portfolio investment. Investment portfolio means to reduce risk and divide the investment in different sectors by the means of risk.

Simply, a portfolio can be defined as a collection of investment securities. Portfolio theory deals with the selection of optimal portfolios that provides the highest possible return for any specified degree of risk or the lowest for any specified rate of return. Portfolio analysis considers the determination of future risk and return in holding various blends of individual securities. In other words, portfolio can also be defined as a collection of investments all owned by the same individual or organization. These investments often include stocks, which are invested in individual business; bonds, which are invested in debt that are designed to earn interest; and mutual funds, which are essentially pools of money from many investors that are invested by professionals or according to indices. Portfolio management is basically concerned with efficient management of portfolio investment in financial assets. It can be defined as an art of handling funds to preserve not only its original value but also to get an adequate return with the level of assumed risk.

The portfolio that provides the highest rate of return with least possible amount of risk is the real investment portfolio. Portfolio simply represents the practice among the investors of having their funds in more than one asset. Successful formation and effective implementation of investment policy is the prime requisite for the successful performance of banks. A good investment policy

attracts both borrower and lenders, which helps the investment operation of the bank to be efficient and profitable by minimizing the inherent risk. A key factor in the development of the country is the mobilization of domestic resources and their investment for productive use to the various sectors by commercial banks.

Commercial Banks and Investment Portfolio

A bank is a business organization that receives and holds deposit funds, other makes loans and extends credit and transfers funds by written order deposit. According to Nepal Commercial Banks Act 2031 B.S. “A Commercial bank refers to such type of bank other than specified banks related to cooperative, agricultural, industrial and other which deals in money exchange, accepting deposits and advancing loans etc.” (*Commercial Bank Act; 2031:2*)

Commercial banks are those financial institutions deal in accepting deposits to person and institutions and giving loans against securities. They provide working capital needs of trade industry and even to agricultural sectors. Moreover, commercial banks also provide technical and administrative assistance to industries, trade and business enterprises. CB’s poll together the saving of the community and arrange them for the productive use. They transfer monetary source from saver to users. In addition to above, the main purpose is to uplift the backward sector of economy.

Commercial bank is a corporation which accepts demand deposits subject to check and makes short term loans to business enterprises, regardless of the scope of its other service (*Guenther; 1972:345-346*).

Therefore, commercial banks can be defined as those financial institutions, which collect scattered saving of people and provide loan against proper technical helps and suggestions, administrative suggestion, save keeping of valuable collectives of bills, cheques, and overdraft facilities and provide modern banking facilities to industries and commerce. CB’s collect fund as a saving from public and invest in highly return yielding firm. CB’s play vital role in the economic development of a country.

“Portfolio means a collection or group of assets” (*Gitman; 1990:243*). “A portfolio simply represents the practice among the investor of having their

funds in more than one asset. The combination of investment assets is called a portfolio” (*Weston and Brigham; 1992:245*)

Investment portfolio refers to an investment that combines several assets. It is a collection of securities. Portfolio means the lists of holding in securities owned by an investor or institution (*Oxford Dictionary; 1997*). Portfolio analysis considers the determination of future risk and return in holding various blends of individual securities. Portfolio expected return is a weighted average of the expected return of the individual securities.

A portfolio is collection of investment securities. Portfolio theory deals with the selection of optimal portfolio; that is, portfolio that provides the highest possible return for any specified degree of risk or the lowest possible risk for any specified rate of return.

Brief history of the Sample Companies

Since there are a number of commercial banks have been established in Nepal, only five commercial banks are taken as sample for the study. The study is carried out especially for Everest Bank Ltd., Himalayan Bank Ltd., NABIL Bank Ltd., Nepal Investment Bank Ltd. and Standard Chartered Bank Ltd.

Everest Bank Ltd. Everest Bank Ltd. was incorporated in October 18, 1994 as a joint venture with Punjab National Bank; one of the largest commercial bank in India having over 3700 branches and more than 300 foreign corresponds around the globe. PNB is providing the top management service to EBL under a Technical Service Agreement signed between the two institutions. EBL, thus has advantage of the banking expertise and financial strength of its partner. It has authorized capital of Rs. 750 million, Issued capital of Rs. 465 million and Paid up capital of Rs. 455 million. EBL has eleven branches in various parts of the country. It has many more objectives as follows:

- Evolve and position the bank as a progressive, cost effective and customer friendly institution providing comprehensive financial and related services.
- Integrating frontiers of technology and servicing various segments of society.

- Committed to excellence in serving the public and also excelling in corporate values.

Himalayan Bank Limited. Himalayan Bank Limited was established in 1992 as a joint venture bank with Habib Bank Ltd. of Pakistan under the company Act 1964. HBL is the first JVB managed by Nepalese chief executive. It has authorized capital of Rs. 1000 million, Issued capital of Rs. 650 million and Paid up capital of Rs. 536.25 million. HBL has 14 branches in various parts of the country. It has many more objectives as follows:

- To become preferred provider of quality financial services in the country.
- Provide modern banking facilities and to provide loan to sectors like agriculture, industries and commercial.
- To become a Leading Bank of the country by providing premium products and services to the customers.

NABIL Bank Limited. NABIL Bank Limited is the first commercial bank was incorporated in 1984. Dubai Bank Ltd. was the initial joint venture partner with 50% equity investment. The share owned by Dubai Bank Ltd. were transferred to Emirates Bank International Limited. Dubai sold its entire 50% equity holding to National bank limited, Bangladesh. National bank Ltd., Bangladesh is managing the bank in accordance with the technical services. Agreement signed between NABIL and the bank on June 1995. The present configuration consist of 50% share capital of National bank Ltd., Bangladesh, 10% of NIDC, 9.66% of Rastriya Beema Sansthan, 0.34% of Nepal Stock Exchange and 30% of Nepalese public. The bank has changed its name as NABIL bank Ltd. It has authorized capital of Rs. 500 million, Issued capital and Paid up capital of Rs. 491.65 million each. Bank has 18 branches in various parts of the country. It has many more objectives as follows:

- To be the investment of choice, for regulators.
- To be an outstanding corporate citizen in all the communities work in.

Nepal Investment Bank Limited. Nepal Investment Bank was established in January 21, 1986 as a joint venture bank under the company Act 1964. Initially the bank was managed by 'Banque Indosuez' Paris, in accordance with joint venture and technical services. 50% of the share of

Nepal Indosuez bank Ltd. held by credit Agricole Indosuez was sold to the Nepalese promoters on April 25, 2002 as per the transaction record of NEPSE. After this, the name of the company was changed to Nepal Investment Bank Ltd. by its 15th AGM. It has authorized capital of Rs. 590 million, Issued capital and Paid up capital of Rs. 295.293 million each. The bank has altogether 12 branches. It has many more objectives as follows:

Standard Chartered Bank Nepal Limited. Nepal Grindlays Bank Limited (now Standard Chartered Bank Nepal Limited) was established in 1987 as a joint venture bank with ANZ Grindlays Bank, UK. In August 2000, the ownership of ANZ Grindlays Bank, UK, was transferred to SCB, Australia. The bank, at present is managed and controlled by SCBL, Australia with a new name SCBNL in 2001. SCBL hold 50% of the total equity capital investment, 35% by Nepal Bank Limited and remaining 15% by general public investors. It has authorized capital of Rs. 1000 million, Issued capital of Rs. 500 million and Paid up capital of Rs. 374.64 million. SCBNL has providing various banking services to its customers through branches in various parts of the country. It has many more objectives as follows:

- Provide modern banking facilities and to provide loan to sectors like agriculture, industries and commercial.

Statement of the Problems

Commercial banks can be defined as the backbone of the Nepalese economy at present. It plays vital role in the Nepalese developing economy by investing in range from small-scale cottage industries to large industries in making investment in loans and government securities. It can be hypothesized that bank portfolio variables like loans, investment, cash reserve, deposit and borrowing affects the national income. And also how the government policy affects these variables, such as the effect of an interest rate on the banks portfolio variables is of great concern. Therefore, when monitoring money and credit conditions, the central bank has to keep an eye on bank portfolio behaviour. The investment planning of the commercial banks in Nepal is heavily depends upon the rules and regulation provided by the central banks. The composition of asset portfolio of the banks is influenced by the policy of the central bank.

With the prevailing economic recession in the country, there has been lower investment in the agriculture, manufacturing, industrial and financial sectors. Lower volume of investment is causing lower growth of gross domestic product and hence foreign trade deficit is increasing day by day. Commercial banks are also directly affected by this economic turmoil and are facing difficulties in furnishing their loans and advances towards the profitable sectors. Therefore, people always want to invest their investment in the safe market with good return.

There are various problems in resources mobilization by commercial banks in Nepal. The most important problem is poor investment climate prevailing due to heavy regulatory procedure, uncertain government policy, portfolio analysis between various types of investment made by commercial banks are most important subject, which helps to minimize risk by diversifying total risk to different sectors. But portfolio management activities of Nepalese commercial banks are in developing stage. There are various reasons behind not using such activities openly by commercial banks; such as unawareness about portfolio management and its usefulness, hesitation of taking risk, lack of proper techniques to run such activities in the best and successful manner, less developed capital market, limited opportunities for exercising the portfolio management.

NRB has also played important role to make commercial banks as well as financial institutions to invest their funds in good sector, which affect the investment portfolio. NRB has imposed many rules and regulations so that commercial banks can have sufficient liquidity and securities. Banking competition is increasing day by day but investment opportunity is not comparatively extended. Now commercial banks have to face competition with each other and many more financial institutions.

Nowadays, Nepalese commercial banks do not seem to be capable of investing their funds in more profitable sector where there is risk. They are found to be more interested in investing in less risky and liquid sector i.e. treasury bills, development bonds, National savings, shares & debenture etc. This is due to sound investment policy of commercial banks and lack of portfolio management. Nepalese commercial banks have not formulated their investment policy in an organized manner. They have no consideration

towards portfolio optimization. They just rely upon the instruction and guidelines of NRB. They do not have their own clear vision towards investment portfolio.

Therefore, the main purpose of the study is to analyze investment of commercial banks, portfolio analysis of commercial banks in their investment, return on various types of investment, portfolio risk and return. Apart from this, this study will deal with the following issues:

- What is the relationship of investment with total capital deposits, loan and net income etc?
- What is the relationship of investment with total capital deposits, loan and net income etc?
- How far have commercial banks been able to transfer monetary resources from savers to users?
- How do commercial banks manage their risk and return using portfolio diversification?
- Which bank has the largest degree of financial risk measured in terms of portfolio risk?
- Is investment portfolio directed towards objectives of profit maximization?

Focus of the Study

Nepal's modern banking history inaugurated from the establishment of Nepal Bank Ltd. in 1936. Nepal Rastra Bank came in existence as a central bank of our country in 1956. The focus of the study is on investment portfolio of selected commercial banks in Nepal. This study is designed to explain minimized risk and maximized return by portfolio management and existing situation of portfolio management of commercial bank in Nepal. And to measure the financial performance of selected five listed banks in NEPSE, their risk, return, trend, and portfolio patterns etc. Further from the study, the shareholders would get information to make decision while making investment on share of various banks. Similarly, the study would provide information to management of the banks that help them to take proper action. There are following focus of study given below:

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

Objective of the Study

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

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

Significance of the Study

Portfolio Management plays a vital role in the economic growth of the country. Lack of portfolio management will seriously erode the financial viability of the company and company could not able to sustain in long run. Every business firm performs economic activities, which affects the economic condition of the state and financial condition of the firm. So, an investor, paying to manage his portfolio has right to insist on knowing what sort of performance was obtained. Moreover, it is very necessary to formulate a monetary and economic strategy of the country.

The foremost significance of this study of investment portfolio of commercial banks in Nepal is to help how to minimize risk on investment and maximize return through portfolio analysis. Therefore, it is felt significant to the investors to be more concentrating in the area of investment portfolio. The study is expected to fill research gap and add to the inputs to financial literature relating to investment portfolio. The research findings may be valuable to respective companies taken as sample companies. It will be helpful to aware the investors about investing funds. It will be useful to policy makers to

formulate policy by new findings. Similarly, financing agencies, stock exchanges and stock traders, interested persons and experts may also take benefit from this study. Finally, it will support the future researcher by providing important findings and valuable information regarding the investment portfolio of commercial banks.

Limitation of the Study

There are some limitations while making analysis. Basically shortage of time, reliability of statistical tool used and lack of research experience are the main limitations and other limitations are as follows:

1. The study period covers a period of eight fiscal years.
2. All the data are secondary in nature. Mostly published financial documents, other related journals, magazines and books, booklets will be used. Therefore, the outcome may depend on the reliability of secondary data.
3. This study is mainly focused on the investment portfolio analysis of sample commercial banks.
4. This study will be done for the partial fulfillment of the Master's Degree of Business Management (MBS).

Chapter Scheme

The study has been divided into five different segments to make the study more systematic namely in the form of:

Chapter One : Introduction

Chapter Two : Review of Literature

Chapter Three : Research Methodology

Chapter Four : Presentation and Analysis of Data

Chapter Five : Summary, Findings, Conclusion and Recommendation

The contents of each of the chapters of this study are briefly mentioned here:

Chapter One describes the general background, brief profiles of the sample companies, statement of problem, objectives of the study, significant of the study and limitation of the study.

Chapter Two contains the theoretical analysis and brief review of related literature available. It also includes a discussion on the conceptual reviews as well as review of major studies in general.

Chapter Three deals with the research methodology, which consists of research design, source of data, and information along with different analytical financial as well as statistical tools, which have been applied in the study.

Chapter Four deals with data collection procedure presentation and analysis of data by using different financial and statistical tools and techniques.

The last, Chapter five includes summary, findings, conclusions and recommendations. The bibliography and appendices are incorporated in the end of the study.

CHAPTER II

REVIEW OF LITERATURE

Review of literature is the study of past research studies and relevant materials. It is an advancement of existing knowledge and comprehensive study of subject matter. This chapter reviews the concepts concerning the subject matter that are written on textbooks on one hand. On the other hand, it reviews the previous studies which are related to the subject matter of this study. For this study, different annual reports, articles, journals, books, and some research papers interrelated with this topic have been reviewed.

Conceptual Framework

Today, the changing nature of competition and increasing pressure of globalization: investment management became the most critical determinants. It is not so simple to determine the investment area for the investors. However, the functioning and growth of economy depends on the readily available funds to finance the increased needs not only of government and business but also of individuals. In the present context, it has been widely accepted that expansion of private investments should be the main importer for economic growth, employment generation and catalyst to attract foreign direct capital. Therefore, we cannot avoid the role of investment portfolio in business world.

Definition of Investment

Simply, investment can be defined as a systematic and scientific way of using excess funds to get maximum return with lower risk. In broader sense, investment means the sacrifice of certain present value for future value. Two different attributes are generally involved: time & risk. The sacrifice takes place in the present and is certain. The reward comes later, if at all, and the magnitude is generally uncertain (*Sharpe, Alexander and Bailey; 2003:11-15*)

Investment is mobilization of funds with the plan of achieving extra income or growth in value. It involves the assurance of resources that have been saved or put away from current consumption, with the hope that some benefits will grow in the future. Investment generally involves real assets and financial assets.

Real assets investment involves some kinds of tangible assets such as machinery, factory, building, land, etc. and financial assets Investment are paper representation of an indirect claim to real assets held by someone else. Real assets are generally less risky than financial assets. In Layman's view, there is always a return if there is investment. This may be favourable as well as unfavourable to the investor's stand point.

“Investment is the current commitment of funds for a period of time to derive a 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 & Reilly; 1987:238*)

Investment explores future vision of profit, risk, speculation & wealth. “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 & Joehnk; 1990:112-115*).

Basis of Investment Uncertainty

There is a popular Chinese Proverb that, “Those who dare to fail greatly will achieve greatly.” Here, every investment involves uncertainties that make future return risky. Some of the sources of uncertainty that put in to investment risk may be classified as follows:

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

Default risk. Default risk is that portion of investment's total risk that resulting from 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 losses from default risk usually result from the securities prices falling as the financial integrity of a firm weaken. So, by the time bankruptcy occurs, the market price of the firm's securities will already have declined to near zero.

Market risk. It is the risk that arises from the variability in market returns resulting from alternating bull and bear market forces. When a security index rises and then declines from peak point to the next trough is called bear market. During bearish period price of the stock falls but in the bullish market that usually rises more than enough to compensate for the bear market loss. So, the alternating bull and bear market forces create a perennial source of investment risk.

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

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

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

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

Purchasing power risk (inflation risk). It is the variability of return which an investor suffers because of inflation. The rate of inflation is measured by consumer price index.

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

Where,

CPI_t = consumer price index in period t.

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

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

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

Political risk. It is the risk that caused by changing in the political environment that affect the asset's market value. Political risks arise from the exploitation of a politically weak group for the benefit of a politically strong group, with the effects of various to improve their relative position increasing the variability of return from the affected asset. Regardless of whether the change that causes political risk is sought by political or by economic interests, the resulting variability of return is called political risk.

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

Total risk = Interest rate risk+ purchasing power risk +market risk
+management risk +default risk +liquidity risk +call-
ability risk +convertibility risk +taxability risk +political
risk +industry risk + other risk factors

Investment Alternatives

In the market, a wide range of investment alternatives are available to an individual investor (Cheney & Moses; 10th edition:8). Traditionally, there are various investment alternatives like, common stocks, preferred stock and bank as financial assets. But with the increase in financial market concept and principles, a lot of other financial alternatives mesh roomed. Commercial bankers, investment bankers and brokers provide the financial manager with detailed information on each of the forms of investment listed. The financial manager should keep up to date on these characteristics and follow the principle of making investment selections that maturities yields and risks

appropriate to the firm. 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
 - a) Short term debt securities
 - i. Negotiable certificate of deposit
 - ii. Commercial paper
 - iii. Banker's acceptance
 - iv. Treasury bills
 - b) Intermediate and long term debt securities
 - i. Treasury notes
 - ii. Treasury bonds
 - iii. Saving bonds
 - iv. Agency securities
 - v. Municipal securities
 - vi. Corporate bonds
3. Derivative Securities
 - a) Options
 - b) Commodity future
 - c) Financial future
 - d) Options on future
 - e) Rights
 - f) Warrants
4. Hybrid Securities
 - a) Convertible preferred
 - b) Convertible bonds
5. Real Assets
 - a) Precious metals
 - b) Real estate
 - c) Collectibles
6. International Investment
 - a) Multinational corporations
 - b) Foreign stocks traded on a local exchange
 - c) American depository Receipts

7. Other Investment alternatives

- a) Mutual funds
- b) Pension funds
- c) Closed end companies

Feature of a Sound Lending and Investment Policy

The efficiency of a bank regarding income and profit depends upon its lending policy and procedures and investment of its funds in different securities. It should be noted that the greater the credit created by the banks, the higher will be the profitability. A sound lending and investment policy is not only prerequisite for banks profitability, but also significant for the promotion of commercial savings. Many authors have outlined some of the main characteristics for sound lending and investment policies, which must be considered by the commercial banks.

Safety and security. Bank should avoid investing its funds in those securities, which are too unstable and unpredictable i.e. which are subject to too much depreciation and fluctuations because a little variation may cause a great failure. It must not invest its funds into tentative businessman who may be bankrupt at once and who may earn millions in a minute also. Thus, while investing in those fields security requires. Security stands for adequate collateral having good value, which ensures that it can be easily sold off if required. Bank should accept that type of securities, which are commercial, durable and marketable having fair market value.

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

Liquidity. Generally, people used to deposit their earning in different accounts of the banks, having confidence that the bank will repay their money whenever it is needed. Here, liquidity is the ability of the firm to satisfy its short-term obligations as they come payable. In order to maintain confidence to the depositors, bank must always be ready to meet current or short-term obligations when they become due for repayment.

Purpose of loan. Bank should always know that why and upon what considerations a customer need loan. If a borrower wrongly use the loan granted by the bank, he can never repay it, therefore, in order to avoid this situation each and every bank should demand all the essential detailed information about the scheme of project.

Diversification. The bank should avoid granting loan in only one sector. In order to minimize risk, a bank must diversify its investment on different sectors. Diversification of loan helps to avoid loss according to the law of average because if securities of a company deprived, there may be appreciation in the securities of other companies. In this way the loss can be minimized or recovered.

Tangibility. A commercial bank should choose tangible security to an intangible one. Even 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.

Legality. Illegal issued securities may cause problems to the investors. Therefore, all commercial banks should follow the directives of NRB, Ministry of Finance and other relevant organization at the time of mobilizing bonds.

National interest. In additional to its own profitability the bank should also consider the national interest. Even through 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. Investment on government bonds, priority and deprived sector lending are the examples so such investments.

Portfolio Analysis

Portfolio theory was originally proposed by Harry M. Markowitz in 1952 A.D. "A portfolio is a collection of investment securities" (Weston & Brigham; 1992:123). "Portfolio analysis is to build up a portfolio that has the maximum return at whatever level of risk the investor deems appropriate" (Cheney & Moses; 1999:162). The portfolio of asset generally offers advantage of reduction risk through diversification. The objective of portfolio analysis is to

develop a portfolio that has the maximum return at whatever level of risk the investor deems appropriate. Thus, a stock or securities held, as part of a portfolio is less risky than the same stock held in isolation.

“A portfolio is a bunch of combination of individual assets or securities” (Pandey; 1997:329). If investor holds a well diversified portfolio, then his concern should be the expected return and risk of portfolio rather than individual assets or securities. The portfolio theory provides a suitable approach to the investors’ decision to investment in assets or securities under risk. Portfolio expected return is a weighted average of the expected return of individual securities but the portfolio is sharp contrast, can be something less than a weighted average of variance. By this, an investor can something diminish portfolio risk by adding another security with greater individual risk than any other securities in the portfolio.

“Most financial assets are not held in isolation, rather they are held as part of portfolio. Portfolio theory deals with selection of optimal portfolios i.e. portfolios that provide the highest possible return for any specified degree of risk or the lowest possible risk for any specified rate of return” (Weston & Copeland; 1988:366).

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 or alternatively ensuring minimum level of risk for a given level of return. It can be also assumed as risk and return management. Its aims to determine a suitable asset mix which accomplishes optimal level of risk and return. The objective of portfolio management is to analyze different individual assets and demarcate efficient portfolios. 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 efficient frontier dictates all other investments.

Portfolio theory can be applicable in order 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. The theory is concerned with selection of optimal portfolio by a risk avers

investor. A risk adverse investor is an investor who selects a portfolio that maximizes expected return for any given level of risk or minimizes risk for any given level of expected returns. A risk adverse investor will select only efficient portfolios.

Portfolio Analysis and Diversification

Diversification is an effort to reduce risk by investing among a range of financial instruments and industries. Most investment professionals concur that, although it does not guarantee against loss, diversification is the most important step to reaching the long range financial goals, minimizing risk. Diversification helps to reduce some degree of total risk. Since diversification risk can be avoided, investor do not compensate for bearing such risk, it happens due to un-professionalism and internal problems. Investor will be rewarded only for taking market risk which is also know as unavoidable risk and systematic risk. Diversification in investment or making portfolio in security level or in industry level protects against volatility and uncertainty at rate of return.

Investment risk can be condensed 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 be creation of an efficient investment because it can reduce the variability of returns around the expected return. This diversification may significantly reduce risk without a corresponding reduction in the expected rate of return on the portfolio (*Francis; 1998:228*).

Diversification is the one important means that control portfolio risk. Investments are made in a wide variety of assets so that exposure to the risk of any particular securities is 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 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 a company deprived, there may be appreciation in the securities of other companies. In this way the loss can be minimized or recovered. Different diversification techniques for reducing a portfolio risk are as follows:

Simple diversification. Simple diversification reduces a portfolio's total diversification risk to zero and only the un-diversification risk remains. Simple diversification can be understood as "not putting all the eggs in one basket". The idea behind this is that we can reduce investment risk simply 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 consisting of different randomly selected securities can eliminate almost all diversifiable risk.

Superfluous diversification. Superfluous diversification refers to the investors diffusing 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 a large number of assets requires knowledge of the liquidity of each investment return, tax liability and thus becomes impossible without specific knowledge. Although more money is spent to manage a superfluously diversified portfolio, there will most likely be no concurrent improvement in the portfolio's performance. Thus, superfluous diversification may lower the net return to the portfolio's owners after the portfolio's management expenses are deducted.

Markowitz diversification. Markowitz diversification may be defined as combining assets which are less than perfectly positively correlated in order to reduce portfolio risk without sacrificing portfolio return. It can sometime reduce below the un-diversifiable level. 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. 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.

Diversification across industries. Some experts suggest that 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. Since all the industries are highly correlated with one another, diversification across industries is not much better than simply selecting securities randomly. The non diversification variability can not be diversified away simply by selecting securities from different industries.

Superfluous diversification across quality rating categories. Superfluous diversification across quality rating categories is investing in only similar 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.

Portfolio Risk and Return

Two kinds of risk can be estimated with the portfolio (market risk or systematic risk measured by its beta (b) total risk, measured by its standard deviation. The total risk is the combination of systematic risk and unsystematic risk.

Most financial assets neither are nor held in isolation; rather, they are held as parts of portfolio. Banks, pension funds, insurance companies, mutual funds, and other financial institutions are required by law to hold diversified portfolio. Even individual investors- at least those whose security holding constitute a significant part of their total wealth-generally hold stock portfolio, not the stock of one firm. This begins the case, from an investor’s standpoint the return on his or her portfolio’s 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)

Portfolio expected return. The portfolio return is the weighted average expected return of individual stocks in the portfolio, with weights being the fraction of the total portfolio invested in each stock. The portfolios expected return is defined in equation as follows;

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

Where,

R_p = Portfolio expected return

W_1 = Weight for stock 1

W_2 = Weight for stock 2

K_1 = Expected return for stock 1

K_2 = Expected for stock 2

The expected return of a portfolio should depend on the expected return of each of the securities contained in the portfolio. It also seems logical that the amounts invested in each security should be important.

Portfolio risk. Calculation of portfolio risk is not easier in comparison to portfolio return. The portfolio risk depends upon the risk of each securities and the 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. Portfolio risk is the risk as a whole for the specific portfolio. In brief, what is the risk of wealth is the risk of portfolio. This introduces two assets vary or change together. 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.

Measuring portfolio risk. To determine 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 the extent to which the asset's returns move together. The degree to which the assets returns move together is measured by the covariance or correlation coefficient. By combining the measures of individual assets risk, relative asset weights and the co. movement of asset's return the risk of the portfolio can be estimated (*Cheney and Moses; 1997:653*)

How is the risk of portfolio measured? As discussed above, risk is means used in terms of variance or standard deviation. However, the standard of a portfolio is not simply the weighted average of standard deviation of individual securities. So, the portfolio risk is measured as:

Variance of portfolio

$$\sigma_p^2 = \sum_{i=1}^n \sum_{j=1}^n x_i x_j Cov_{ij}$$

Taking the square root of both sides the risk of the portfolio in terms of its standard deviation is; (*Francis; 1998:236*)

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

Where,

Cov_{ij} = Covariance between securities i and j.

$\text{Cov}_{ij} = \rho_{ij} \sigma_i \sigma_j$

ρ_{ij} = correlation coefficient between i and j.

x_i = weight of security i

x_j = weight of security j

Portfolio risk in case of two assets. The standard deviation (risk) of return for two assets portfolio is given by:

$$\sigma_p = \sqrt{X_A^2 x_A^2 \sigma_A^2 + X_B^2 x_B^2 \sigma_B^2 + 2X_A x_A X_B x_B \text{Cov}_{AB}} \quad \text{OR}$$

$$\sigma_p = \sqrt{X_A^2 x_A^2 \sigma_A^2 + X_B^2 x_B^2 \sigma_B^2 + 2X_A x_A X_B x_B \rho_{AB} \sigma_A \sigma_B}$$

Where,

X_A, X_B = Weights of securities A and B

σ_A, σ_B = Standard deviation of A and B

ρ_{AB} = Correlation coefficient between A and B

Cov_{AB} = Covariance between securities A and B

Portfolio risk in case of N-securities. In some cases calculation of risk becomes somewhat complicated when a huge number of securities are combined to form a portfolio. Based on the logic of portfolio risk in a two assets case, the portfolio risk in N-Securities can be calculation as follows:

$$\begin{aligned} \sigma_p^2 &= n \left[\frac{1}{2} \right]^2 x \text{ avg. variance} + (n^2 - n) \left[\frac{1}{n} \right]^2 x \text{ avg. covariance} \\ &= \left[\frac{1}{n} \right] x \text{ avg. variance} + \left[1 - \frac{1}{n} \right] x \text{ avg. covariance} \end{aligned}$$

When, n is very large i.e. number of securities are very large, the portfolio variance will become approximately equal to the average covariance because the value of first part will become insignificant.

When the number of securities in portfolio increases, the covariance terms become more important relative to the variance terms. In a two security portfolio, there are two own variance terms and two covariance terms. For the four security portfolio, there are four own variance terms and twelve covariance terms. For a large portfolio then, total risk depends primarily on covariance among securities. For example, with a forty security portfolio there are 40 own variance in the matrix and 1560 covariance terms. This can be seen by examining the matrix.

For four securities, the matrix of co variances for possible Paris wise combination would be (*Horne; 1998:55*)

1,1	1,2	1,3	1,4
2,1	2,2	2,3	2,4
3,1	3,2	3,3	3,4
4,1	4,2	4,3	4,4

The diagonal element 1,1, 2,2, 3,3, 4,4 show variances and remaining elements show co variances. In this matrix of sixteen elements, four elements represented variances and remaining twelve elements represented covariance.

Correlation Coefficient and Portfolio Risk

Correlation between the return of two securities helps to identify the level of risk reduction in portfolio construction and provides possibility of eliminating some risk without reducing potential returns. Closely related to covariance is the statistical measure know as correlation. In fact, the covariance between two random variables is equal to the correlation between the two random variables times the product of their standard deviation.

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

Where, ρ_{ij} denotes the correlation coefficient between the return on security I and the return on security j. If the correlation is perfectly positive (or +1) then the portfolio cannot reduce any level of risk. On the contrary, if the correlation is perfectly negative (or -1), then the proper combination of the two securities can reduce unsystematic risk even upto zero. So, the positive correlation

between securities return is not so beneficial and vice versa. A zero coefficient i.e. the two variables are not related to each other. So changes in one variable are independent of changes in the other. So, when securities in a portfolio are perfectly negatively correlated i.e. $\rho = -1$ all risk can be diversified away but when securities are perfectly positively correlated, diversification does not good whatever. In the typical case, correlations among the individual stocks are positive but less than +1, some, but not all risk can be eliminated (*Weston and Brigham; 1992:127*).

In other words, when the returns of two securities are perfectly positively correlated i.e. $\rho = 1$, the portfolio variance is just equal to the variance of individual securities. If the returns of securities are perfectly negatively correlated the portfolio variance is zero i.e. the combination of such securities completely reduces the risk. When the return of securities are weakly positively correlated the portfolio variance is less than the variance of individual securities. The portfolio variance under weakly negative correlated returns of securities has reduced more than when the returns were weakly positively correlated (*Horne; 1998:334*).

Market Portfolio

The market Portfolio is the collectively declarable Portfolio consisting of all the securities where the Proportion invested in each security corresponds to its relative market value. The relative market value of the security divided by the sum of the aggregate market value of all securities. The return on the market portfolio is the weighted average return on all capital assets (*Francis; 1998:254*).

Since, the market portfolio contains all risky assets in proportion to their market value, it is by definition, a perfectly diversified portfolio. The market portfolio is, therefore subject only systematic or non diversifiable risk. The volatility of market portfolio is due to macroeconomic factors that affect all risky assets and not to economy or industry specific factors. Volatility in return created by unsystematic risk, this risk can be diversified away by adding risky assets to a portfolio (*Cheney and Moses; 1997:690*).

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 investors hold the market portfolio in combining with a desired amount of risk free borrowing and lending.

Portfolio Risk of a Risky and a Risk free Securities

A risky free security is one which has a zero variance or standard deviation consequently the covariance between the risk free securities and the 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 a 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,

$$\sigma_p = W_j \times \sigma_j$$

Where,

$$\begin{aligned} \sigma_j &= \text{Standard deviation of risky securities} \\ W_j &= \text{Weight of risky securities in a portfolio} \end{aligned}$$

The total risk of the portfolio can be partitioned into two parts. They are Undiversifiable risk/Market risk/Systematic risk/Diversification risk/Company specific risk/Unsystematic risk /unique risk

Systematic risk. Systematic risk is that portion of total variability in return caused by market factors that simultaneously affect the prices of all securities. The systematic nature of these price changes makes them immune to much of the risk reduction effects of diversification, thus systematic risk called undiversifiable risk. Changes in the economy, political and sociological environment that affects security market are the source of systematic risk. Systematic variability of return found in nearly all securities to varying degree because most securities tend to move together in a systematic manner. Systematic risk is the market risk which could be avoidable.

The systematic risk lies in the overall stock within market measured by beta (β). The beta of the stock is the slope of the characteristics line between return for the stock and those for the market. Beta depicts the sensitivity of the security's excess return to that of the market portfolio. If the slope is one, it

means that excess vary proportionately with excess return for the market as a whole. If the slope steeper than one means that the stock's excess return varies more than proportionately with the excess return of the market portfolio. In other words, it is more systematic risk than the market as whole. This type of stock often called aggressive stock and slope less than 1 called defensive stock.

The undiversifiable risk is caused by such factor which systematically affect all firms such as;

- War
- Inflation
- Recession
- Interest rates policy
- Corporate tax rate policy

Since all securities will tend to be negatively affected by these factors, systematic risk can not be eliminated by diversification therefore, an investor will expect a compensation for bearing this risk.

Unsystematic risk. Unsystematic risk of diversifiable risk the portion of is the total risk which is unexplained by overall market movements. Since it happens due to internal causes, it is diversifiable by increasing the efficiencies and effectiveness for the productivity of the organization. This kind of risk is diversifiable risk or avoidable risk. Unsystematic risk can be reduced as more and more securities are added to a portfolio. Various studies suggest that 15 to 20 securities selected randomly are sufficient to eliminate most of the Unsystematic risk of a portfolio (Horne; 1998:55-69).

“Events such as labour strikes, management errors inventions, advertising, campaigns, and shifts in consumer taste and lawsuits cause Unsystematic variability in the value of a market asset. Since Unsystematic security price movements are statistically independent from each other, and so they may be averaged to zero when different assets are combined to form a diversified portfolio. Therefore, Unsystematic risk is also called diversifiable risk (Francis; 1998:265).

Factors affecting Investment Portfolio

Amount investment. While determining the investment portfolio the finance manger should actually consider the amount of fund available with organization. Trading and manufacturing organization deal in securities only for the purpose of the 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.

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.

Selection of investment. This is an essential decision which a finance manger 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 which selection of industries, selection of companies etc.

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

Some Important Terms

The study in this section comprises of some important banking terms for which efforts have been made to clarity the meaning, which are frequently used in this study, which are given below.

Loan and advance. Loan, advance and overdraft are the main source of income for a bank. Bank deposits can cross beyond a desired level but the level of loans, advances and overdraft will never cross it. The facilities of granting loan, advances and overdraft are the main service in which customers of the bank can enjoy.

Funds borrowed from banks are much cheaper than those borrowed from unorganized money lenders. The demand for loan has excessively increased due to cheaper interest rate. Furthermore, an increase in economic and business activities always increases the demand for funds. Due to limited resources and increasing loan, there is some fear that commercial banks and other financial institutions too may take more preferential collateral while granting loans causing unnecessary botheration to the general customers. Such loan from these institutions would be available on special request only and there is a chance of utilization of resources in economically less productive fields. There lies the undesirable effect of low interest rate.

In addition to this, some portion of loan, advances and overdraft includes that amount which is given to staff of the bank for house loan, vehicle loan, personal loan and others, in mobilization of commercial banks fund, loan, advances and overdraft have occupied a large portion.

Investment on government securities, shares and debentures. Though a commercial bank can earn some interest and dividend from the investment on government securities, shares and debentures, it is not the major portion of income, but it is treated as a second source of banking business. A commercial bank may extend credit by purchasing government securities bond and shares for several reasons. Some of them are given as:

- It may want to space its maturates so that the inflow of cash coincide with expected withdrawals by depositors or large loan demands of its customer.
- It may wish to have high-grade marketable securities to liquidate if its primary reserve becomes inadequate.
- It may also be forced to invest because the demand for loans has decreased or is not sufficient to absorb its excess reserves.

However, investment portfolio of commercial bank is established and maintained primarily with a view of nature of banks liabilities that is since depositors may demand funds in great volume without previous notice to banks. The investment must be of a type that can be marketed quickly with little or no shrinkage in value.

Investment on other company's shares and debentures. Due to excess funds and least opportunity to invest these funds in much more profitable sector and to meet the requirement of NRB directives, many commercial banks have to utilize their funds to purchase shares and debentures of many other financial and non-financial companies. Nowadays most of the commercial banks have purchased regional development banks, NIDC and other development banks shares.

Other use of fund. A commercial bank must maintain the maximum bank balance with REB i.e. 6% for fixed deposits and 8% for each of current and saving deposit account in local currency. Similarly 3% cash balance of local cash balance, in local currency, accounts must be maintained in the value of the bank. Again a part of the fund should be used for bank balance in foreign bank and to purchase fixed assets like land, building furniture, computers, stationery etc.

Off-balance sheet activities. Off-balance sheet activities involve contracts for future purchase and sale of assets and all these activities are contingent obligations. These are not recognized as assets or liabilities on balance sheet. Some good examples of these items are letter of credit, letter of guarantee, bills of collections etc. Nowadays, such activities are stressfully highlighted by some economist and finance specialists to expand the modern transaction of a bank.

Deposits. For a commercial bank, deposit is the most important source of the liquidity. For bank's financial strength, it is treated as a barometer. In the word of Eugene, "a bank's deposits are the amount that it owes to its customers." Deposit is the lifeblood of the commercial bank. Though, they constitute the great bulk of bank liabilities, the success of a bank greatly depends upon the extent to which it may attract more and more deposits. For accounting and analyzing purpose, deposits are categorized in three headings. They are; current deposits, saving deposits, fixed deposits, etc.

Review of Previous Studies

This section is developed to the review of related literatures concerning investment portfolio in different countries. But there are very few studies have been found in the topic of portfolio analysis on investment of commercial banks in Nepal. For this study, various books, journals, articles and past thesis are reviewed. It is a review from international context and from Nepalese context.

Review from International Context

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

The John D. Martin and Robert C. Klemkosky's study. According to John D. Martin and Robert C. Klemkosky's, 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 estimate pf portfolio risk.

In their study “the effect of Homogeneous stocks groupings on portfolio risk” (*Martin and Klemkosky; Vol.49:239-246*) tried to assess the impact of homogeneous stock groupings on portfolio risk. According to them portfolio risk is defined in terms of the variance in portfolio return for both zero and full covariance care. To support their study, they used following linear function.

$$\overline{R_{it}} = r_i + s_i (\overline{R_{mt}} + \overline{e_{it}})$$

Where,

r_i = Constant whose value is such that the expected value of $\overline{e_{it}}$ is zero.

s_i = A measure of the 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 $n = 2, 3, \dots, N$ stocks, using both the Zero-covariance model and the full covariance model was as follows:

Zero covariance Model

$$\sigma^2(\bar{R}_p) = \sum_{i=1}^n (x_i \sigma_i)^2 + (x_i^2 \sigma_i^2) \sigma^2(\bar{E})$$

Where,

$$\sigma^2(\bar{R}_p) = \text{variance in market return}$$

x_i = proportion of the total portfolio invested in stock i

n = no. of stocks in portfolio

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

Full Co-variance Model

$$\sigma^2_{full}(\bar{R}_p) = \frac{\sum_{t=1}^m (R_{pt} - \bar{R}_p)^2}{m}$$

$$R_{pt} = \sum_{i=1}^n x_i R_{it}$$

$$(\bar{R}_p) = \sum_{t=1}^m \frac{R_{pt}}{m}$$

m = no. of period

In their study, they were selected four homogeneous groups to test their model. A total of 150 form stock including 40 growth stock, 44 cyclical stock, 44 stable stocks and 22 oil stock. They further used Wilcox on matched pairs, signed rank test for each of the portfolio size containing two to ten securities to test the statistical significance difference of the portfolio risk between zero covariance estimates and full covariance estimate.

The total result reveals that group effect was so large that they resulted in the zero covariance estimate of portfolio variance being significantly less than the full covariance estimate at the 5% level for portfolios containing only four growths stocks, four cyclical stocks, four stable stocks and two oil stocks. Similarly, the percentage of the portfolio variance attributable to the market risk of the portfolio was used to measure the extent of portfolio diversification.

In the absence of the group effects, the closer to unity will be the ratio of portfolio market risk to the total risk. The proportion of the portfolio's risk attributable to group effects varied from group to group.

The Edward J. Kane and Stephen A. Buser's study. His study of the Edward J. Kane and Stephen A. Buser in the title “portfolio diversification at Commercial Banks” (*Kane and Buser; 1979:19-31*) deals how a firm performs a useful function by holding a portfolio of efficiently priced securities.

According to them, it is the rational for a firm to engage round of asset diversification on behalf of its shareholders even when all assets are priced efficiently and available for direct purchase by shareholders. As away of testing their perspective empirically, they estimate regression model designed to explain the number of distinct of U.S. treasury and federal agency debt held in a time series of cross section of large U.S. commercial banks. They interpret the systematic pattern of the diversification observed for large U.S. commercial banks as evidence that banks stockholder for a relatively uniform diversification clientele. For firm, marginal benefits fro diversification takes reduction in the cost equity funds offered by its specific clientele of stockholders. To maximize the value of the firm, these offered by its specific clientele of stockholders. To maximize the value of the firm, these benefits must be weight against the explicit and implicit marginal cost of diversification.

E.J. Kane and S.A. Buser drown following concluding remarks.

- Even wealthy investors should be sensitive to administrative costs associated with selecting, evaluating, managing and continually keeping track of a large number of securities.
- Either homemade of firm produced diversification reduces the variance of shareholder's portfolio return. If homemade of firm produced diversification bears inordinately high levels of information risk. Some benefits of the firm produce diversification might not be reproducible by individual investors acting on their own.
- Investors with even modest resources, the stock pf financial institutions should be relatively less attractive than the stock of that avoid extensive diversification costs by engaging in specialized activities.

- Marginal diversification costs decline as bank size increases. But level off when total deposits reach and 500 million. Beyond this point, marginal diversification costs are independent of bank size.

The Paul D. Berger and Ziv Bodies Study. Paul D. Berger and Ziv Bodies have presented and proved three propositions regarding optimal portfolio selection in the winner-take-all environments. The three propositions discussed by them are as follows:

Proposition 1

Any investor seeking to maximize the expected utility of his wealth of his wealth will select a portfolio which maximizes the probability of his winning the contest i.e. of yielding the highest return. This is so regardless of the investors attitude towards risk.

Proposition 2

If not short or buying on margin is allowed, then the probability of a portfolio of two or more securities beating every single security in the portfolio is zero.

Proposition 3

If there are more than two securities to choose from, one cannot select the optimal security though a series of pair wise is interior to all the others in respective pair wise comparison might be the best in choice among more than two of them.

According to them, the signal most important behavioral implication of the propositions above is that an individual engaged in a winner-take-all investment contest will tend not to diversify his portfolio, even if he is risk averse. It is conjectured that is very highly positively correlated so as to approximate a single stock as closely as possible (*Berger and Bodie; Vol.34:233-236*).

The Harry M. Markowitz's study. According to the Markowitz, the portfolio theory establishes a relationship between a portfolio's 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 the risk of these

returns for the individual securities. The portfolio model developed by Markowitz is based on the following reasonable assumptions (*Markowitz; 1952:77-91*).

- The risk of an individual asset or portfolio is based on the variability of returns (standard deviation or variance)
- Investors depend solely on their estimates of return and risk in making their investment decisions. This means that an investor's utility (indifference) curves are only a function of expected return and risk.
- Investors adhere to the dominance principle. That is for only given level of risk, investors prefer assets with a highest expected return to assets with lower expected return, for the expected return, for assets with the same expected return, investors prefer lower to higher risk.

According to the Markowitz, the expected return of the portfolio is the weighted average of the expected returns of the individual assets in the portfolio. The weights are defined as the portion of the investor's wealth invested in a particular asset.

$$R_p = R_i \times X_i$$

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

Where,

R_p = expected return to portfolio.

R_i = expected return to security.

X_i = the proportion of total portfolio investment in security.

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

$$\sigma_p^2 = X_1^2\sigma_1^2 + X_2^2\sigma_2^2 + 2X_1X_2r_{12}\sigma_1\sigma_2$$

Where,

X_1 = proportion of funds invested in security 1

X_2 = proportion of funds invested in security 2

σ_1^2, σ_2^2 = variance of the returns on securities 1 and 2

r_{12} = correlation between the return of 1 and 2

The Mark Britten Jones study. According to Mark Britten Jones in his study “The sampling error in Estimates of mean variance efficient portfolio weights” (*Britten; 1999:655-668*). The mean variance analysis is important for both practitioner and researchers in finance. For practitioners, theory suggests that mean-variance efficient portfolios can play an important role in portfolio management applications. For researchers in finance, mean-variance analysis is central to many asset pricing theories as well as to empirical test of those theories.

The test that he has presented can be implemented in a simple and intuitive manner that is formally identical to the standard, inference procedures use for OLS regression coefficients. For practitioners this procedure could be used to assess the precision of the weights of a sample efficient portfolio. For researchers in finance, this procedure provides a simple and flexible way of testing a given portfolio’s efficiency and of testing hypothesis concerning the weights of efficient portfolios.

In his study he has used regression procedure for inference on portfolio weights as follows:

$$X = [X_{it} \dots X_{kt} \dots X_{kt}]$$

Where,

K_t is the excess returns in some period t .

$$K = 1 \dots K$$

The T observations of excess return are contained in the $T \times K$ matrix X ;

$$X = \begin{bmatrix} X_i & \dots & X \\ & & \frac{1}{T} \end{bmatrix}$$

Note that a portfolio of risky assets and a risk-less has an excess return that is determined solely by the weighs and excess return of the risky assets.

On his study he used following three theorem:

Theorem 1

Ordinary least squares (OLS) regression of a constant 1 on to a set of assets excess returns X , without an intercept term is

$$X_{b+u} = 1$$

Where,

X = excess returns on portfolio.
 b = weights on risky assets in the portfolio.
 u = deviation in the portfolio's return from 1.

Theorem 2

The Gibbons, Ross and Shanken (GRS) F- test for the efficiency of a given portfolio with weights 'g' can be implemented by the standard OLS F- statistic associated with the linear restriction that portfolio weights in regression are proportional to the weights of the given portfolio. Under multivariate normality the F (OLS) statistic

$$F(OLS) = \frac{\frac{SSR_r - SSR_u}{(k-1)}}{\frac{SSR_u}{(T-K)}}$$

Where,

SSR_u = sum of squared residuals from the unrestricted regression
 SSR_r = the sum of squared residuals from the regression
 T = no. of observations

Theorem 3

Denoting a set of efficient portfolio weights by b, we can test the linear restriction,

$$R_b = 0$$

Where R is a matrix of restrictions by the standard OLS F-statistic associated with the restriction R_b = 0 applied to the regression in equation. Thus,

$$F(OLS) = \frac{\frac{SSR_r - SSR_u}{q}}{\frac{SSR_u}{(T-K)}}$$

Where,

q = no. of linear restrictions i.e. no. of rows of R
 K = no. of assets
 T = no. of observations

According to Mark Britten Jones study, the composition of an international efficient portfolio is of interest, not only from the practical viewpoint of

investors seeking to optimize their risk return tradeoff, but also from a theoretical viewpoint to examine the magnitude and effect of sampling error in estimates of the composition of an efficient international equity portfolio. He used monthly data from Morgan Stanley capital international (MSCI) for the year 20 year period from Jan 1977 to Dec 1996, for the equity market of II developed countries. Over the full 20 years period, the standard errors of the estimates are larger. The smallest standard error is for the United States, which at 47% is almost half of total portfolio value.

In summary, the regression approach to portfolio analysis provides a new and simple tool for the empirical analysis of mean-variance problems. Using this approach, we derive exact formal inference procedures for hypothesis about the weights of efficient portfolios. Furthermore, it shows how it implements the GRS-F test for portfolio efficiency using linear restriction on a single linear OLS regression. Finally, the inference procedure is used to show the importance and magnitude of sampling error in estimates of the weights of an international mean-variance efficient portfolio.

The Jack E. Gaumnitz's study. Several articles have been written conjuring the appraisal and performance of investment of portfolio many of these studies compare portfolio returns over time only and while recognizing the importance of variability of risk to a portfolio, no explicit determining is made of this latter component.

Jack E. Gaumnitz, assistant professor university of Kansas fulfilled this gap in his research work in title "Appraising performance on investment portfolios" (*Gaumnitz; 1970:555-560*). The main purpose of his study were to present evidence on the portfolio return as the sole criterion in measuring portfolio performance in lieu of theoretically correct return variability of return measure and to examine portfolio strategy given the results to maximizing return or minimizing variability in order to maximize stockholder utility. To support his study he used capital market line.

$$E(R_p) = r^* + \frac{r - r^*}{\sigma_r} x \sigma_{RP} \quad \text{OR}$$

$$R_p = r^* + \sigma_{RP}$$

Where,

$E(R_p)$ = The overall rate of return on the investors portfolio with standard deviation of σ_{RP} .

r^* = The risk less rate of return.

r = Return on the portfolio with a standard deviation of σ_r .

$$= \frac{r - r^*}{\sigma_r} \text{ (Market price of risk)}$$

In this model, it was clear that the portfolio with highest value will be one that allows the investors to attain his highest indifference curve through borrowing or lending at the risk less rate. Thus, the investor wants to select that mutual fund or other portfolio that maximizes β . Since $\beta = \frac{r - r^*}{\sigma_r}$, β can be maximized

either by minimizing σ_r or by trying to maximize the return r . To test relationships between β , r and σ_r . He has selected several investment portfolios. He had used 100 portfolios for the year 1960-63 and 51 portfolios for the year 1964-65 included 59 mutual funds, 45 random portfolios, 45 cluster portfolios and 2 standard and poor. From his study he concluded that

- The mean return on a portfolio used as a good portfolio performance can be used as a good proxy for the theoretically correct β value. Which in incorporates both the return and variability of return measures.
- Portfolio managers will generally have the greatest success in maximizing the portfolio's β value if they attempt to maximize that portfolio's return rather than try to minimize its risk. That means investment in the stock with high expected return than stable income is due to the return measures dominated this risk measures in the calculation of β value.

Review from Nepalese Journals, Articles and Reports

In Nepal, there are very few independent study found in the topic of investment portfolio of commercial banks in Nepal. However, here are some independent studies which are related to the present study which are carried out before few years, which can give intellectual ground in this study because such types of study in this subject matter is not available recently. In this section, effort has been made to examine and review of some related articles in different economic journals, magazines, newspapers and other related books and

publication. There are very limited study materials related to this topic, which are presented in the following ways.

Mr. Shiv Raj Shrestha (1998) has given a short glimpse on article entitled “*Portfolio Management in Commercial Banks; Theory and Practices*” (Nepal Bank Patrika; vol.iv:61)

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

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

- Do not hold any signal 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.

He has mentioned short transitory view on portfolio management in Nepalese commercial banks. Nowadays number of banks & financial institutions are operating in this sector are having greater networks and access to national and international markets. They have to go with their portfolio management very seriously and superiority to get success to increase their regular income as well as to enrich the quality service to their clients. In this competitive and market oriented open economy, each commercial bank and financial institution has to play a determining role by widening various opportunities for the sake of expanding provision of best service to their customers.

In this context, he has presented two types of investment analysis techniques i.e. fundamental analysis to consider any securities such as equity, debenture or bond and other money and capital market instrument. He has suggested that banks having international joint venture network can also offer admittance to global financial markets. He has pointed out the requirement of skilled labors, proper management information system in joint venture banks and financial institution to get success in portfolio management and customer assurance.

Prabhakar Ghimere (1999) has published an article on Rising Nepal of 13th May 1999 entitled “Investment Trends”, in which he has mentioned that most of the commercial banks of Nepal are ready to pay the penalty in spite of investing on rural, priority sector, poverty and deprived areas. In the directives of Nepal Rastra Bank it is clearly mentioned that all the commercial banks (under NRB) should invest 12% of its total investments to the priority sectors. Out of this 12%, they should invest 3% to the lower class of countrymen. However, these commercial banks are unable to meet the requirements of NRB.

In the light of above, foreign joint venture banks use to justify that they don't have any network among these priority areas. So, if investment is made to these areas, operation cost will be very high, that exceeds the penalty if investment won't be made. That is why they are interested in paying penalty rather than investing in priority sectors.

Chandra Thapa (2003) published an article on The Kathmandu Post daily of 9th March 2003 entitled “*Managing a 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 cornerstones for other developing and undeveloped nations as well. Bank primary function is to trade risk. Risk cannot be avoided by the bank but can only be managed. There exist two types of risk. The first is the diversifiable risk or the firm specific risk which can be mitigated by maintaining an optimum and diversified portfolio. This is due to the fact that when one sector does not do well the growth in another might offset the risk. Thus, depositor must have the knowledge of the sectors in which there banks have made the lending. The second is undiversifiable risk and it is correlated across borrowers, countries and industries. Such risk is not under control of the firm and bank.

According to Mr. Thapa, risk management of the banks is not only crucial for optimum trade off between risk and profitability, but is also one of the deciding factors for overall business investment leading to growth of economy. Managing risk not only needs sheer professionalism at the organizational level, but appropriate environments also need to develop. Some of the major environmental problems of Nepalese banking sector are under government

intervention, relatively weak regulatory frame, if we consider the international standard, meager corporate governance and the biggest of all is lack of professionalism. 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 conducive regulatory frame work.

L.D. Mahat published an article in The Kathmandu Post daily of 28th April, 2004 entitled “*Efficient Banking*”. In his article, he has accomplished the efficiency of banks 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 outputs produced. An increase in productivity means that more output can be produced from the same inputs or the same outputs can be produced from fewer inputs. Interest expense to interest income ration shows the efficiency of banks in mobilizing resource at lower cost and investing in high yielding asset. In other words, it reflects the efficiency in use of funds.

According to Mr. Mahat, the analysis of operational efficiency of banks will help one in understanding the extant of vulnerability of banks under the changed scenario and deciding whom to bank upon. This may also help in inefficient banks to upgrade their efficiency and be winner in the situations developing due to slowdown in the economy. The regulators should also be concerned on the fact that the banks with unfavorable ratio may bring catastrophe in the banking industry.

Mr. Yogendra Timilsina has published an article on “*Managing Investment Portfolio*” on May 2004. He is however, confronted with problems of managing investment portfolio particularly in time of economic slowdown like ours. 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.

An investor may have option of making investment in government bond or debentures. In history, we have examples that a government can nationalize the private property of its citizens, cancel out old currency notes, and can

convert the new investment into some conditional instrument. But in democracy, there is no probability that the government would default to repay money back. This is comparatively risk free investment, but yields low return.

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. One can draw a safe side conclusion to invest all the money he has only in government securities, but this is not a rational decision. 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 the whole money in equity shares. Stock market these days is much dwindling and notoriously unpredictable; therefore this too is not a wise decision. Therefore, a portfolio, which consists of only one class of financial assets, is not a good portfolio.

Review of Legislative Provisions

In this section, the review of legislative framework under which the commercial banks are operating has been discussed. The legislative environment has significant impact on the commercial banks establishment, their mobilization of resources. All the commercial banks have to conform to the legislative provisions specified in the commercial bank Act. 2031 and the rules and regulations formulated to the facilities the smooth running of commercial banks. Commercial banks will help in banking business by opening its branches in the different parts of the country under the direction of NRB. To mobilize banks deposit in different sectors of the different parts of the nation to prevent them from the financial problems, central bank i.e. NRB may establish a legal framework by formulating various rules and regulations. These directives must have direct or indirect impact while making decision. In order to achieve balanced economic growth in the country, commercial banks are directed by the central bank. To regulate commercial banks effectively and efficiently, the central bank issued following directives for the commercial banks.

Regulation of Credit Operation

Commercial banks are required to extend 40% of total loans to productive sector and 12% to priority sector including deprived sector. The commercial banks were directed to disburse credit to the deprived sector. According to the latest instruction, the commercial banks were required to extend the following proportion of their total outstanding loans to deprived sector is presented.

Table 2.1
Deprived Sector Credit Ceiling

S. No.	Name of the Banks	Required deprived sector lending (as % of total outstanding loan)
1.	Nepal Bank Ltd.	3%
2.	Rastriya Banijya Bank Ltd.	3%
3.	NABIL Bank Ltd.	3%
4.	Nepal Investment Bank Ltd.	3%
5.	Standard Chartered Bank Nepal Ltd.	3%
6.	Himalayan Bank Ltd.	3%
7.	Nepal SBI Bank Ltd.	3%
8.	Nepal Bangladesh Bank Ltd.	3%
9.	Everest Bank Ltd.	3%
10.	Bank of Kathmandu Ltd.	3%
11.	Nepal Credit & Commerce Bank Ltd.	2.25%
12.	Lumbini Bank Ltd.	1.75%
13.	Nepal Industry & Commercial Bank Ltd.	1.75%
14.	Machhapuchhre Bank Ltd.	1.25%
15.	Kumari Bank Ltd.	1.25%
16.	Laxmi Bank Ltd.	1.25%
17.	Siddhartha Bank Ltd.	1.25%

(Source: Economic Report, NRB 2005)

Until and unless NRB issues further notices on it, all the commercial banks having the deprived sector lending obligation below the ratio of 3% were required to increase such ratio by additional 0.5 basis points every year until the ratio became 3%. However, the commercial banks who had already met the lending ratio at 3% could continue the same every year.

Bank rate and Re-lending

In view of decline in liquidity situation and persistent sluggishness in the economy, NRB changed the mandatory cash reserve ratio effective mid-July 2005 under the policy of monetary ease for reducing the cost of capital in the broader goal of promoting dynamism in the economic activities. Accordingly,

effective from FY2004/05, the mandatory cash deposit ratios to be maintained with the NRB has been changed from the present multiple ratios of 7.0% of the domestic demand and deposit saving and 4.5% of the fixed deposit to a single ration of 6.0% of the total domestic deposit liability. The present requirement for the commercial banks to maintain 2.0% of the total domestic deposits in their vaults has also been eliminated in the light of on-going management reform in the Rastriya Banijya Bank and the Nepal Bank Ltd. while other banks have been found efficient to manage their financial resources.

As regards the refinance rate, on going rates of 2.0% for the export credit in foreign currency, 4.5% for the rural development banks and the export credit in domestic currency and 5.5% for all other loans have been retained. Rate for the loan to the sick industries, however, has been reduced from 3.0% to 2.0%. Accordingly, the commercial banks have been directed to reduce their interest rate on loans from 6.5% to 5.5%. Facilities provided to the sick industries will also be extended to the industrial district based (sick) industries. A total of Rs.1.5 billion has been allocated for the refinance of such industries.

Table 2.2
Changes in the Cash Reserve Ratio

Item	Dec 2003	July 2004	July 2005
(a) Cash Deposit mandatory for the commercial banks	-	-	6*
(1) Total domestic current and saving deposit liability	7.0	7.0	-
(2) Total domestic fixed deposit liability	4.5	4.5	-
(b) Cash in vault	3.0	2.0	-

(Source: Economic survey FY 2004/05)

*in aggregate

Priority Sector Lending

Directed program of priority sector lending in the context of limited number of commercial banks in the field and controlled financial policy regime was justified. But, in the present context of liberal financial policy and developing and expanding financial sector, such program seems loosing its place. In order to make the banks more professional in their management and to utilize the indirect rather than direct tools of monetary management now found to be more effective this directed program will be gradually phased out by FY2007/08. Accordingly, commercial banks in FY2003/04 are required to lend a minimum

of 6.0% of the total outstanding loan amount. However, the mandatory loan flow to the deprived class has been continued with variable ratios of 0.25% to 3.0% for the new and the old banks. Under the directives of NRB, penalty will be waived for up to 25% shortfall in the mandatory lending to the priority and deprived sector by the commercial banks in FY 2002/03. (Economic Survey; 2005:50)

Table 2.3
Priority Sector Lending

Items	2002/03	2003/04	2004/05	2005/06	2006/07	2006/07
Percent of total outstanding loan	7.0	6.0	4.0	2.0	2.0	Not compulsory

(Source: economic Survey FY 2004/05)

Provision of Capital Fund

Commercial banks are required to maintain primary capital and capital fund in terms of a percentage of their risk weighted assets as follows:

Table No. : 2.4
Provision of Capital Fund

Fiscal Year	Primary Capital (%) of RWA)	Capital Fund (% of RWA)
2002/03	4.5	9.0
2003/04	5.0	10.0
2004/05	5.5	11.0

(Source: Economic Survey 2005)

Classification of loans and provisioning for bad debt. Credits and purchases of bills by the commercial banks have been classified as secure, less secure, doubt-full and bad for the purpose adequate provisioning. Accordingly commercial banks are required to make provisions for possible losses as follows:

- 1% for secure loan
- 25% for less secure
- 50% for doubtful
- 100% for bad loans

Limits set for lending and other facilities. Funds based loan to an individual, firm company or mutually trusted borrowers not exceed 25% of the primary capital and non fund and extra balance sheet facilities like LC

Guarantee, Acceptances, and Commitment etc. not to exceed 50% of primary capital. For loans made prior to issuance of the directives, banks are required to adjust the ratios by the following dates;

Table 2.5

Limits set for Lending and Other Facilities

Cut off date	Fund based loans (% of primary capital)	Non-fund base loans (%) of primary capital)
15 July 2004	not exceeding 40%	not exceeding 75%
15 July 2005	not exceeding 25%	not exceeding 50%

Policy and format for financial information. Formats of financial information and accounting for commercial banks with explanatory notes have been designed and circulated to the commercial banks, for their use. The note includes formats of accounting notes to accompany with the financial statements, balance sheets, profit and loss accounts and their allocation. Explanatory notes on various accounting terms have also been included in the said circulation.

Institutionalizing good governance. Official and staff of the bank management are expected to exhibit high integrity and capability to deal efficiently with the sophistication and diversities of the modern banking business. Accordingly, code of conduct also for banks employees, provision of audit committee and limitations to lending operations are some of the important highlights of the requirements to be met by the bank.

Guidelines for Investment in Stocks and Securities

Commercial banks are also required to minimize exposures to risks involved in investing the deposits of the savers and other financial resources at their disposal in earning assets.

Statistical information and reporting. Commercial banks are required to compile and submit their financial reports keeping in view.

- Nepal Rastra Bank Act.
- Commercial Bank Act.
- International Accounting System.
- Nature and Type of their Respective transaction.
- Directives of the Nepal Rastra Bank.
- Monetary and Financial Statistics Manual 2000 of the IM

Investment Management Regulation

A commercial bank formulating, a written policy may decide to invest in shares and securities of an organized institution. However, such investment is restricted to 10% of paid up capital of the organization. However, the cumulative amount of such investment in all the companies in which the bank has financial interest shall be limited to 20% of the paid up capital of the bank. But the total amount of investment in share and securities of organized institution is restricted to 30% of the paid up capital of the bank (*Directives to CBs: No.8:81-82*).

Provision for minimize liquidity risk. Commercial banks are required monitor their liquidity risk. This is to minimize risk inherent in the activities and portfolio of the banks. According to the regulation a gap found between maturing assets and maturing liabilities is the liquidity risk. They are monitoring their assets and liabilities in the basis of maturity period. Maturity periods such as 0-90, 91-180, 181-270, 271-365 days and above 1 year are classified for the purpose of checking.

Review from M.B.S. Thesis

Manilata Manandhar, (2003), conducted her M.B.S. thesis entitled “*Analysis of Risk and Return on Common Stock Investment of Commercial Bank in Nepal.*” The main objective of the study is to analyze risk & return on common stock investment of CBs and other objectives are as follows:

- To examine risk & return on common stock of NABIL, BOKL, HBL, NBBL, NIBL.
- To calculate risk & return of their portfolio.
- To identify whether stocks of selected companies are over-priced, under-price and equilibrium priced.

Major Finding:

- Stocks have greater volatility risk than other investment, which takes a random and unpredictable path. Stock market is risky in the short term and it is necessary to prepare the investors for it. This study used the historical data of five years starting from FY 053/054 to 057/058 and found that FY 057/058 is best for banking sector according to market capitalization.

- Expected return of the common stock of BOKL is maximum (i.e. 1.267) due to the effect of unrealistic annual return. Similarly, expected return of the common stock of NIBL is found minimum (i.e.0.4917). On the basis of sector-wise comparison, expected return on banking sector (i.e.67.39%) is higher and others sector is the least (i.e.0.65%).
- Risks associated with common stock investment of different selected companies are 1.3949, 0.4154, 0.7392, 0.6798 and 0.1429 of BOKL, NABIL, HBL, NBBL, and NIBL respectively. In the context of comparison of banking sector with other sector expected return is greater than that of other sectors. Standard deviation of other sector is greater than that of other sectors. CV of others sector is greater than that of others.
- One of the main significance of beta coefficient is in capital asset pricing model (CAPM). CAPM is a model that describes the relationship between risks and return BOKL, NABIL, HBL, NBBL's beta coefficient is 2.30, 2.01, 1.0853, 1.7632 and 1.7441 respectively, which is greater than one. Therefore such banks common stocks are more volatile with market. On the other hand, NIBL's beta coefficient is 0.3461, which is less than one, therefore common stock of NIBL is said to be less volatile with market.
- Stock of all banks in this study are said to be under priced. These companies' common stocks are worth to purchase, as their expected return is greater than required rate of return. Portfolio return is greater than portfolio risk of two banks (i.e. NBBL & HBL).

Khaniya (Banjade), Kalpana, (2003), conducted her M.B.S. thesis entitled "*Investment Portfolio Analysis of Joint Venture Banks.*" The study is based on five venture banks and they are; NABIL, SCBNL, HBL, NBBL & EBL. The general study of the present study is to identify the current situation of investment portfolio of joint venture banks in Nepal. The specific objectives are as follows:

- To analyze the risk and return ratios of commercial banks.
- To evaluate the financial performance of joint venture banks.
- To study existing investment policies taken by Nabil in various sectors.
- To study portfolio structure Nabil Bank Ltd. In investment as compared to other joint venture banks.

- Preference given by Nabil Bank Ltd. for investment between loan investments, investment in real fixed assets, investment in financial assets.

Major finding:

Based on the analysis of the various data remarkable finding are drawn up. 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 position in the industry because of having lowest mean return on shareholders fund resulting from the negative returns in the fiscal years 1995/96 and 1996/97. SCBNL has the highest mean return and EBL has the lowest return. Expect EBL, all other four banks i.e. NABIL, SCBNL, HBL and NBBL have good performance.
- Among other joint venture banks, SCBNL has the highest return and EBL has above mean return than industry average. SCBNL and EBL mobilizes the funds in investment title is higher than the standard ratio.
- NABIL, SCBNL and HBL are investing low amount of deposits on loans and advance which is lower than industry average and NBBL and EBL have invested a high amount of deposits to loans and advances title which is higher than industry average. NABIL is investing the highest amount of funds on NRB bond as compared to other JVBs i.e. 3%. NBBL has invested no amount of funds in this title and EBL has invested the lowest of funds i.e. 0.4% and SCBNL and HBL have invested above industry average.
- SCBNL has the highest EPS and EBL has the lowest EPS. Similarly, HBL also has above mean EPS than industry average and that of NBBL is lower than industry average. HBL has the lowest beta coefficient among the five JVBs which means that the systematic risk of HBL is the lowest among JVBs. The portfolio return of NBBL is 94%. This return is the average of capital gain yield and dividend yield.

Sabita Shah, (2004) conducted her M.B.S. thesis entitled “*Impact of Interest Rate Structure on Investment Portfolio of Commercial Banks in Nepal*”. The main objective of the study is to analyze the interest rates structure and its

impact on various activities of commercial banks. Other objectives are as follows;

- To present the concrete picture of the interest rates structure before and after liberalization.
- To study the relationship between interest rates and other economic variables like deposit, loan and advances, total investment and credit flow of commercial banks.
- To evaluate the trends of deposit, loan and advances, total investment and credit position of commercial banks.
- To analyze loans and advances in different sectors of investment portfolio of commercial banks.
- To analyze loans and advances in different sectors of investment portfolio of commercial banks.
- To study the current impact of deregulation on interest rate and its effects on related fields.

Major finding:

- The interest rates on saving deposit are less or more constant in five years of before liberalization, but it started to decline after liberalization. In the same way, the fixed deposit rates also started to decline after liberalization. Thus the deposit is increasing at decreasing rate. The lower rates of interest rates decrease deposit. Deposit rate is the most important determinant of the deposit collection.
- The amount of deposit increased after liberalization, but the growth rate in average comparison to before liberalization increased only by 0.44%. Thus the deposit had not increased more even after the existence of liberalization is due to the declining deposit rates.
- Credit/Loan and advances are also influenced by the lending rates. Increment in lending rates decreases the growth percent of credit flow. In this analysis except agriculture and general use and purpose sector, the other sector growth rate is found to be increasing after liberalization instead of increasing lending rates. So it can be said that this increasing is not only due to changing lending rates but also other factors i.e. income, inflation, competition which indirectly affects credit flow of CBs.

- CBs investment in government and other securities highly increased in the year liberalization, which is due to the lack of proper utilization of collected resources. But started to decline after two years of liberalization and reached to negative point due to the higher rate and enough promising investment opportunities available in private sectors.
- There is no significant relation between saving deposit and interest rates before and after liberalization but no significant relationship between fixed deposit and interest rates. Purpose wise loan and lending rates before and after liberalization is significant relationship. There is significant relationship between commercial and industrial sector loan before and after liberalization and no relation between agriculture, general use and purpose and service sector loan before and after liberalization.

Natasha Shrestha, (2005) conducted her M.B.S. thesis entitled “*Portfolio Analysis of Common Stock of Commercial Banks in Nepal.*” The main objective of the study is to find out level of portfolio risk and return on stock of commercial bank investment and other objectives are

- To analyze the trend of NEPSE index.
- To analyze the risk and return of common stock of reviewed banks.
- To analyze the market price movement of the common stock.
- To try to find out the best portfolio from NEPSE.

Major Findings:

- Expected return of HBL stock is highest i.e. 53.68% and NABIL is lowest i.e. 32.72% among the banks. NBBL and SCBL have expected return of 47.05% and 39.02% respectively. The risks of NBBL is highest i.e. 93% and SCBL has a lowest risk i.e. 55.42% HBL and NABIL have the risk of 84.98% and 60.86% respectively.
- The correlation of stock, return and market shows that all of the banks stocks are highly positive correlates with the market. The correlation values of common stock of all bank with the markets is nearly equal + 1. Stock of NBBL is highest positive correlation which has values of +0.918 and HBL is lowest positive correlated which has a value of +0.82.

- All of banks beta of common stock is greater than 1. Beta greater than 1 implies that stocks are more volatile than market or said to be aggressive stock. NBBL has the highest beta i.e. 2.1785 and SCBL has the lowest beta i.e. 1.2142. All of the stocks aggressive.
- NABIL has a highest portion of un-diversifiable risk i.e.975 only 3% of its risk is diversifiable risk on total risk. HBL has lowest portion of un-diversifiable risk i.e. 67%, only 33% of its risk on total risk is diversifiable risk. NBBL and SCBL have 86% and 79% of un-diversifiable risk and 14% and 29% of risk on total risk is diversifiable risk respectively.
- NBBL has highest portfolio return i.e. 7.98% and highest portfolio risk i.e. 21.70%. NBBL has invested its more funds on risky assets and fewer funds on risk free assets. So there exist highest risks as well as return. The principle "higher the risk, higher the return" is applied for it. Likewise, HBL has the lowest portfolio return i.e. 5.33% and portfolio risk 0.35%. It has invested more of its fund in on risk free assets and least fund in risky market. The principle "no risk, no gain" is applied for it.
- The performance measure shows the ranking stock by different method. The Sharpe's performance shows that performance of stock of SCBL is 1st and HBL is 4th. The Treynor's performance once measures shows that performance of stock of NBBL is 1st and HBL is 4th. Likewise Jensen's performance measure shows the performance of stock of SCBL is 1st and NBBL is 4th among the banks.
- Among four banks, optimal portfolio return and risk shows that return NBBL is highest i.e. 32.7% and return of HBL is lowest i.e. 24.9% and HBL has a highest portfolio risk of i.e.61% and SCBL has a lowest portfolio risk of 34.8%.

CHAPTER III

RESEARCH METHODOLOGY

Research methodology is the process of arriving at the solution of the problem through planned and systematic dealing with the collection, analysis and interpretation of facts and figures. Research is a systematic method of finding right solution for the problem whereas research methodology refers to the various sequential steps to adopt by a researcher in studying a problem with certain objectives in view. In other words, research methodology refers to the various methods of practices applied by the researcher in the entire aspect of the study. It is the plan, structure and strategy of investigations conceived to answer the research question or test the research hypothesis. Research design is used to control variance (*Wolff and Pant; 2002:51*). It includes different dependent & independent variables, types of research design, research questions and hypothesis sample, data collection activities, technique of analysis etc.

Research Design

The present study is mainly based on two type 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. Finally research design is the plan, structure and strategy of investigations conceived so as to obtain answers to research questions and to control variances. To achieve this study descriptive and analytical research designs have been used.

Population and Sample

At present there are 17 licensed commercial banks are running in Nepal. Under the study of investment portfolio analysis of Nepalese commercial banks, all 17 commercial banks will be considered as population. Out of which five commercial banks are taken as a sample. Sample banks are taken according to their rapid growth rate and gradually growth rate. The selected sample banks

for the analysis are: Everest Bank Limited, Himalayan Bank Limited, Nabil Bank Limited, Nepal Investment Bank Limited and Standard Chartered Bank Limited. Therefore, Sample Percentage is 29.41%.

Sources of Data

This study mainly based on secondary data. Concerned banks, Nepal Rastra Bank, SEBO, and different library are the providers of the data. The review of literature of the proposed study was based on the text books, official publications, journals, unpublished thesis, web site etc. The necessary data and information at macro level have been collected from relevant institutions and authorities such as NRB Ministry of Finance, NEPSE, SEBO and their respective publications similarly the required micro level data derived from annual reports of selected banks, SEBO and NEPSE. In addition to above, supplementary data and information were collected from different library such as library of Shankar Dev Campus, T.U. Central library, SEBO etc. The major sources of data and information are as follows

Quarterly Economic Bulletin, NRB, 2004/05

Main Economic Indicators of Nepal, NRB (Monthly Report 2005)

NRB Economic Report, NRB

Non-Banking Financial Statistics, NRB

Banking and Financial Statistics, NRB

Economic Survey, Ministry of Finance

Annual Reports of Concern Commercial Banks (from 1997/98 to 2004/05)

Annual Report of SEBO Nepal

Trading Report of NEPSE

Journal of Finance

Journal of Business

Previous Research Studies, Dissertation and Articles on the Subject

Various Text Books

Different Libraries

Different Website Related to study

Data Collection and Processing Techniques

Although, the study mainly used secondary data, high level of efforts and more time was paid to get data. Official publications like Economic Survey, Annual Reports, Banking and Non-Banking Financial Statistics, Economic Bulletin etc. were obtained from respective offices. Mainly most of the data are taken from the library of SEBO. To some extent, informal interview was scheduled and conducted to obtain more information and reality about the various published data, investment policies of the banks, portfolio concept in the field of investment etc.

Due to poor data base, the data obtained from the various sources cannot be directly used in their original form. Further they need to be verified and simplified for the purpose of analysis. Hence, in this study the available data, information, figures and facts were checked, rechecked, edited and tabulated for computation. Similarly, according to the need and objectives, the secondary data were compiled, processed tabulated and graphed if necessary for the better presentation.

Data Analysis Tools

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

Financial Tools

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

Ratio Analysis. The relationship between the two accounting figures expressed mathematically is known as ratio. Ratio analysis is used to compare a firm's financial performance and status to that of other firms or to itself on time (*Gitman; 1990:275*).

Likewise, ratio refers to the numerical or quantitative relationship between two items or variables. In simple language it is one number expressed in term of another and can be worked out by dividing the number to the other i.e. it is calculated by dividing one items of the relationship with the other (*Munakarmi; 2002:204*). In financial analysis, ration is used as an index of yardstick for evaluating the financial position and performance of the firms. Since, this study mainly moves around investment portfolio of CBs. Only such ratios which are related to investment of CBs are taken here. Hence, in this study the following ratios are calculated and analyzed.

1. Total Investment to Total Deposit Ratios

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

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

2. Loan & Advances to Total Deposit Ratio

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

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

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

3. Net Profit to Total Assets Ratio

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

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

4. Investment on Government Securities to Total outside investment Ratio

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

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

TOI = loan \$advances + bill purchased + discounted + all types of investment

5. Investment on Share & Debenture to Total Outside Investment

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

$$\frac{\text{Investment on Share \& Debenture}}{\text{Total outside Investment}}$$

6. Return on Government Securities

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

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

7. Return on Loan & Advances

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

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

8. Return on Share & Debentures

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

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

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

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

Where,

= Standard deviation or risk

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

R = rate of return on individual assets

n = no. of years

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

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

Where,

R_p = Portfolio return

W_A = Weight of investment invested in stock 'A'

W_B = Weight of investment invested in stock 'B'

R_A = Return for stock 'A'

R_B = Return for stock 'B'

Risk on Portfolio. The portfolio risk is measured by either variance or standard deviation of returns. The portfolio risk is affected by the variance of return as well as the covariance between the return of individual assets included in the portfolio and respective weights. The portfolio risk can be calculated in term of its standard deviation as:

$$\dagger_p = \sqrt{W_A^2 \dagger_A^2 + W_B^2 \dagger_B^2 + W_C^2 \dagger_C^2 + 2Cov_{AB} \times W_A \times W_B + 2Cov_{AC} \times W_A \times W_C + 2Cov_{BC} \times W_B \times W_C}$$

Where,

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

- $\sigma_A, \sigma_B, \sigma_C$ = Standard deviation of A, B and C
- COV_{AB} = Co-variance between assets A and B
- COV_{BC} = Co-variance between assets B and C
- COV_{AC} = Co-variance between assets A and C

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

$$\text{Cov}(j \& m) = \sigma_{j,m}$$

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

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

Where,

σ_j = Standard deviation of securities j

\bar{R}_j = Average return on securities j

The CV thus defines the risk associated with each dollar of expected return in terms of ratio of the standard deviation of return to the expected return.

Portfolio Performance Measure

Sharpe's Portfolio performance measure. Portfolio performance evaluation on the basis of return only will be insufficient; therefore, it is necessary to consider both risk and return. The Sharpe ratio measures the amount of return from an investment portfolio for a given level of risk. It does this by dividing a measure of portfolio variability (the standard deviation of its returns over a specific period) into the excess returns generated by the portfolio over a risk free rate of return for the same period. The higher the resulting

number (index), the better is the portfolio performance. This ratio is used to rank the performance of investment funds.

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

$$= \frac{\bar{r}_p - r_f}{\sigma_p}$$

Where,

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

\bar{r}_p = Average return on portfolio

r_f = Risk free rate of return

σ_p = Standard deviation of portfolio

Statistical Tools

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

Karl Person's Coefficient of correlation. Correlation Coefficient is statistical tools for measure of the relative association between two variables series; it describes how much linear co-movement exists between two variables. Karl Person's measure, know as personas correlation coefficient between two variables (series) X & 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

$r = -1$ there is perfect negative relationship

$r = 0$ there is no correlation at all

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

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

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

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

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

$$Y = a + bx$$

Where,

Y = The value of dependent variable

a = Intercept of trend line

b = Slope of trend line

x = Value of the independent variable

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

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

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

Since, $\sum x = 0$

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

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

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

CHAPTER IV

DATA PRESENTATION AND ANALYSIS

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

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

For the title of the thesis, the investment portfolio of commercial bank is analyzed with the help of following tools:

Investment Operations of Commercial Banks

Ratio Analysis

Risk and Return Analysis of Individual Securities and Portfolio Investment

Financial Performance of Individual as well as Portfolio Investment

Trend Analysis

Before we proceed to the financial tools, it might be better to show a short glimpse of the periodical closing equity price in order to know the efficiency of the inter banks as shown in Nepal Stock Exchange Annual report.

Table 4.0

Closing Price of equity

Fiscal Year	EBL	HBL	NABIL	NIBL	SCBL	NEPSE Index
1997/1998	184	755	430	700	840	176.31
1998/1999	407	1000	700	822	1162	216.92
1999/2000	980	1700	1400	1401	1985	360.7
2000/2001	750	1500	1500	1150	2144	348.13
2001/2002	430	1000	735	760	1575	227.54
2002/2003	445	836	740	795	1640	204.86
2003/2004	680	840	1000	940	1745	222.04
2004/2005	870	920	1505	800	2345	286.67

(Source: NEPSE Annual Report)

The above table clearly shows that among the banks, SCBL has the highest closing price of Rs.2345 in the fiscal year 2004/2005. Similarly, there is a closing price of Rs.1505 of NABIL in the same year. However, there is a close counter with HBL and EBL with highest closing equity price with Rs.920 and Rs.870 respectively.

Investment Operations of Commercial Banks

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

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

Investment on Government Securities

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

As According to the annual reports (1997/1998 to 2004/2005) furnished by commercial banks, the structure of their Investment on government securities are as follows:

Table 4.1
Structure of Investment on Government Securities (Rs. in '000)

FY	EBL	HBL	NABIL	NIBL	SCBL	CBs
1997/98	111054	970877	673425	10000	1025501	2790857
1998/99	184912	459448	1402848	90000	2669880	4807088
1999/00	257612	2206921	1233822	-	3338672	7037027
2000/01	822996	2025252	2767959	300000	4811010	10727217
2001/02	1538897	2588562	4120294	224400	5784723	14256876
2002/03	1599350	3347102	3588772	400000	6581348	15516572
2003/04	2466428	3431728	3672626	2001100	7948217	19520099
2004/05	2100289	5469729	2413939	1948500	7203066	19135523
Total	9081538	20499619	19873685	4974000	39362417	93791259
Average	1135192.3	2562452.4	2484210	710571	4920302	11723907.4

(Source: Annual Reports of CBs from FY 1997/98 to 2004/05)

Table 4.2
Percentage Share of Investment on Government Securities

FY	EBL	HBL	NABIL	NIBL	SCBL
1997/98	3.98*	34.78	24.12	0.36	36.74
1998/99	3.85	9.56	29.18	1.87	55.54
1999/00	3.66	31.36	17.53	-	47.44
2000/01	7.67	18.88	25.8	2.79	44.85
2001/02	10.79	18.16	28.9	1.57	40.57
2002/03	10.31	21.57	23.13	2.58	42.41
2003/04	12.64	17.58	18.81	10.25	40.72
2004/05	10.97	28.58	12.61	10.18	37.64
Mean	7.98	22.56	22.51	4.22	43.24
S.D.	3.45	7.83	5.42	3.89	5.75
C.V.	43.23**	34.7	24.07	92.18	13.29

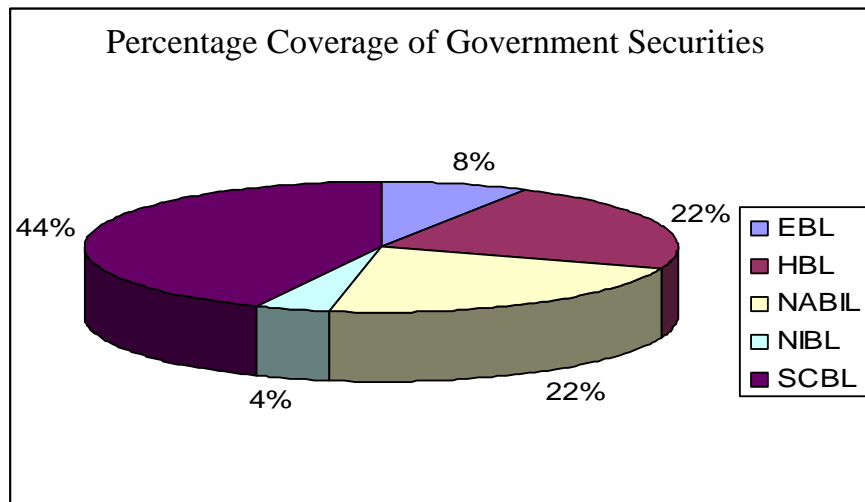
(Source: Table 4.1 & Appendix 1(b))

$$* = \frac{1025501}{2790857} = 0.3674 = 36.74\% \text{ (Data on table no.4.2 is calculated as}$$

same way)

$$**C.V. = \frac{S.D.}{Mean} = \frac{5.75}{43.24} = 0.1329 = 13.29\%$$

Figure 4.1



The above table reveals that most of the CBs made investment on government securities. The investment on government securities of SCBL is highest among other banks. The NIBL has been found to have investment on govt. securities lower comparative to other banks. The mean % of this bank is only 3.70%. Similarly the SCBL covers more shares i.e.43.24% of the total investment on govt. securities made by CBs. NABIL by on 2nd position by investing 22.51% of the total investment on govt. securities made by CBs. Similarly the lowest C.V. of SCBL shows the more consistency in investment.

NIBL has highest CV which means there is high variability in investment on govt. securities. From above analysis about the investment structure of CBs on the govt. securities reveal there is no similar trend of investment on govt. securities made by CBs. From average mean & CV analysis, it is clear that SCBL, NABIL & HBL are the banks which mobilize maximum funds comparative to other banks on govt. securities. NIBL stood at the last position sharing average 4.22% in total investment.

Investment on Share and Debenture

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

Table 4.3
Structure of Investment on Shares & Debentures (Rs. in '000)

FY	EBL	HBL	NABIL	NIBL	SCBL	CBs
1997/98	-	3101	9725	7500	6000	26326
1998/99	2500	9496	16512	12695	11195	52398
1999/00	2500	9494	16120	12695	11195	52004
2000/01	3700	10691	18820	12695	11195	57101
2001/02	17114	34265	22220	13895	11195	98689
2002/03	17114	34265	22220	13895	11195	98689
2003/04	17114	34265	22220	13895	11195	98689
2004/05	19387	39909	27363	17738	13348	117745
Total	79429	175486	155200	105008	86518	601641
Average	11347	21935.8	19400	13126	10814.8	75205.1

(Source: Annual Reports of CBs from FY 1997/98 to 2004/05)

Table 4.4
Percentage Share of investment in Shares & Debentures

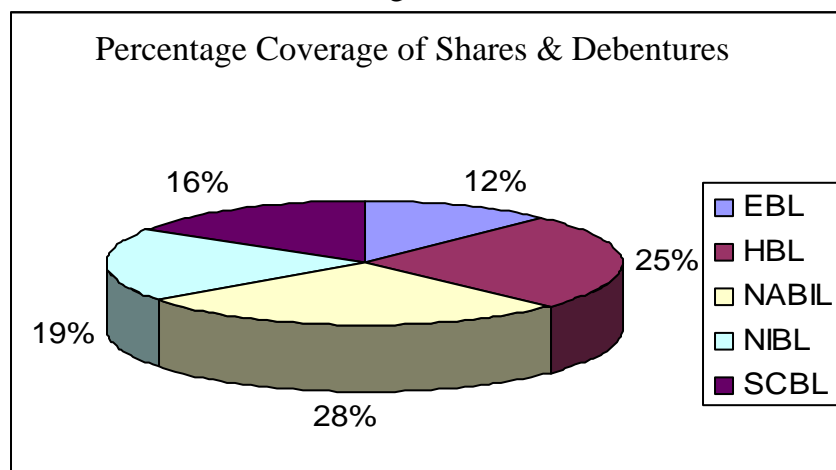
FY	EBL	HBL	NABIL	NIBL	SCBL
1997/98	-	11.78	36.94	28.48	22.79*
1998/99	4.77	18.12	31.51	24.23	21.37
1999/00	4.81	18.26	30.99	24.41	21.53
2000/01	6.48	18.72	32.96	22.23	19.6
2001/02	17.34	34.72	22.51	14.08	11.34
2002/03	17.34	34.72	22.51	14.08	11.34
2003/04	17.34	34.72	22.51	14.08	11.34
2004/05	16.46	33.9	23.23	15.06	11.33
Mean	12.07	25.61	27.9	19.58	16.33
S.D.	5.85	9.12	5.46	5.5	5.05
C.V.	48.46	35.61	19.56	28.08	30.92

(Source: Table 4.3)

$$* = \frac{6000}{26326} = 0.2279 = 22.79\% \text{ (Data on table no. 4.4 is calculated as same ways)}$$

The above table shows that CBs made very low parts on Shares & Debentures of other companies. The investment of Nepalese CBs on other companies' shares shows HBL has been investing highest among other CBs. But from the point of % coverage it stood at 2nd position after NABIL. Similarly, EBL has least mean, which say that HBL invest lowest amount in share & debenture, its investment is more consistent than other banks. It has been revealed that there is no any proper trend of investing on share & debenture of CBs. But all banks take part in such investment. Among the above five listed commercial banks, it is quite clear that NABIL covers highest shares i.e. 27.90% and EBL covers lowest shares i.e. 12.07% of total investment on shares & debentures made by CBs.

Figure 4.2



Investment on Loan and Advances

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

Table 4.5
Structure of Investment on Loan & Advance (Rs. in '000)

FY	EBL	HBL	NABIL	NIBL	SCBL	CBs
1997/98	805645	4031190	4891785	1566551	4027982	15323153
1998/99	1316005	5144469	5396819	1298325	3970646	17126264
1999/00	2230781	6891268	6902187	1984239	4658170	22666645
2000/01	2959446	8651735	7993282	2318907	5660803	27584173
2001/02	3923601	10200552	7135536	2518057	5248362	29026108
2002/03	4882788	10001848	7454262	5648032	5574061	33560991
2003/04	5860541	11635308	7953759	6917796	6322852	38690256
2004/05	7589332	12088708	10465266	9933084	7831626	47908016
Total	29568139	68645078	58192896	32184991	43294502	231885606
Average	3696017.4	8580635	7274112	4023124	5411813	28985701

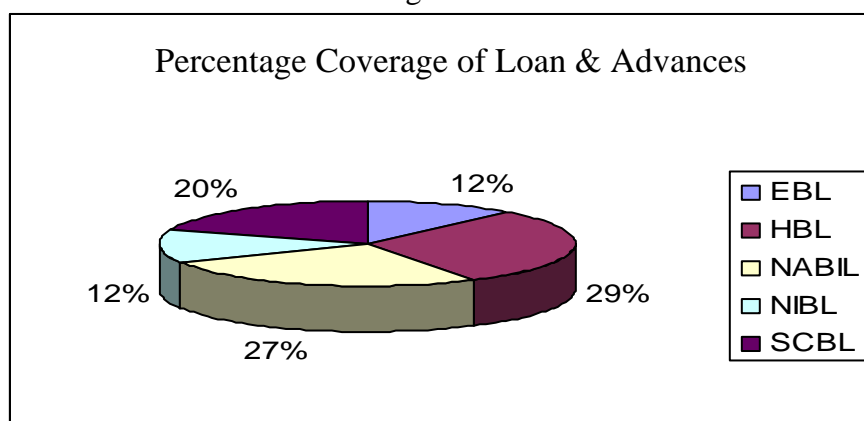
(Source: Annual Reports of CBs from FY 1997/98 to 2004/05)

Table 4.6
Percentage Share of Investment on Loan & Advances

FY	EBL	HBL	NABIL	NIBL	SCBL
1997/98	5.26	26.31	31.92	10.22	26.28
1998/99	7.68	30.04	31.51	7.58	23.18
1999/00	9.84	30.4	30.45	8.75	20.55
2000/01	10.73	31.36	28.98	8.41	20.52
2001/02	13.52	35.14	24.58	8.67	18.08
2002/03	14.55	29.8	22.21	16.83	16.61
2003/04	15.15	30.07	20.56	17.88	16.34
2004/05	15.84	25.23	21.84	20.73	16.34
Mean	11.57	29.79	26.5	12.38	19.73
S.D.	3.57	2.33	4.4	4.87	3.38
C.V.	30.85	7.82	16.6	39.33	17.13

(Source: Table 4.5)

Figure 4.3



From the above table no. 4.5 & 4.6 shows that HBL has the highest shares i.e.29.79% on loan and advances among five CBs throughout the review period from 1997/98 to 2004/05. NABIL takes at the second position and EBL take last position covering 11.57% loan & advances among five CBs. HBL has less CV which indicates the consistency of investment on loan and advances.

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

Investment Portfolio Analysis

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

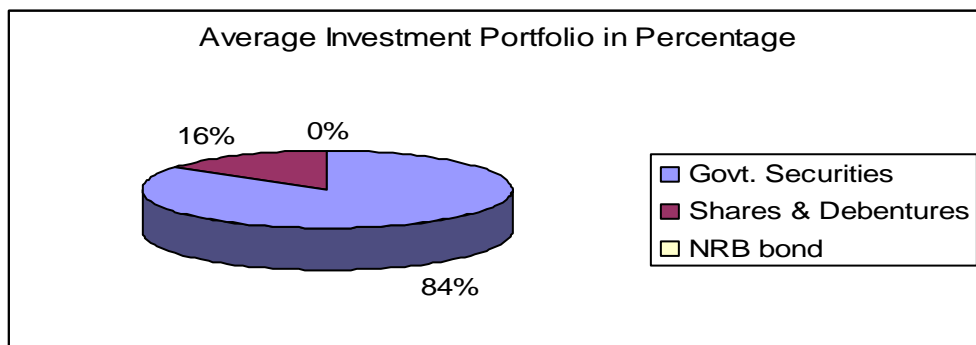
The portfolio of making investment by five commercial banks i.e. SCBL, NIBL, NABIL, EBL, HBL has been analyzed in the table. (*Detail on appendix 2.a*)

Table 4.7
CBs Average Investment Portfolio in Percentage

Name of Banks	Govt. Securities	Shares & Debentures	NRB bond
EBL	98.58%	1.42%	0%
HBL	92.25%	7.75%	0%
NABIL	91.24%	8.76%	0%
NIBL	55.84%	44.16%	0%
SCBL	83.73%	16.27%	0%
Industry Average	84.33%	15.67%	0%

(Source: Banking & Financial Statistics, NRB, Mid July 2005 No. 43)

Figure 4.4



The above table shows the average investment portfolio of five commercial banks. SCBL is investing 83.73% on government securities, 16.27% of fund on shares & debentures and 0% of its fund in NRB bond. It shows that SCBL is investing its more funds on government securities, some of its fund on share & debenture and not any fund on NRB bond.

NIBL is not investing any fund on NRB bond i.e. 0%. It is investing high amount on government securities. The mean percentage investment on government securities is 55.84% and the mean percentage investment on share & debenture is 44.16%.

NABIL is investing very high amount of fund on government securities. Mean percentage of investing on government securities is 91.24%. Investment made in share & debenture is very low i.e. 8.76% only and NABIL has not invested any amount of funds on NRB bond i.e. 0%.

EBL is not investing its any amount of funds in NRB bond so its mean percentage ratio investment in NRB bond is 0%. EBL is investing higher amount of funds on government securities. Its mean percentage ratio investment on government securities is 98.58% and it is investing very low amount of its fund on share & debenture, its mean percentage ratio investment on share & debenture is 1.42%.

HBL is not investing its any amount of funds in NRB bond so its mean percentage ratio investment in NRB bond is 0%. HBL is investing higher amount of funds on government securities. Its mean percentage ratio investment on government securities is 92.25% and it is investing very low amount of its fund on share & debenture, its mean percentage ratio investment on share & debenture is 7.75%.

Loan and Advance Portfolio Analysis

Commercial bank provides loan and advance form the money which it receives by way of the person against the personal security of borrowers or against the security of movable and immovable properties. The major portion of short term investment of CBs is the loan and advance provided to various sector of the market. Mainly commercial banks are providing their funds to government enterprises, private sectors and foreign bills purchase and discount.

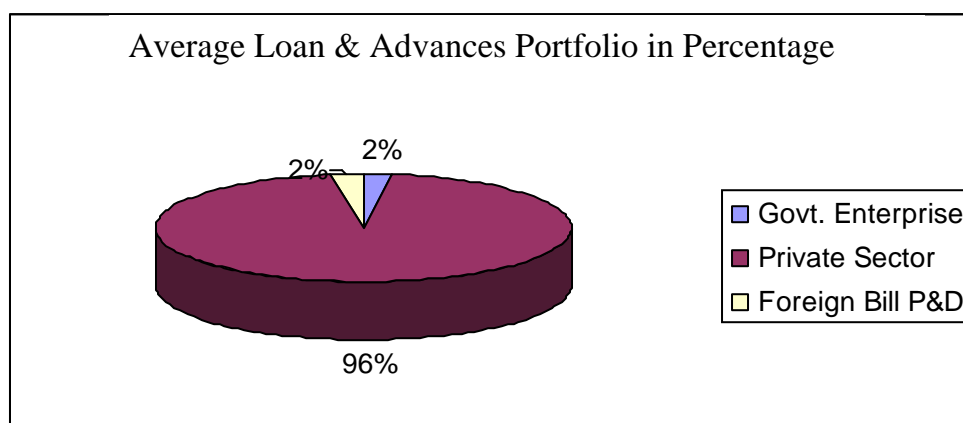
The portfolio of making loans & advance by five banks SCBL, NIBL, NABIL, EBL & HBL has been analyzed in the table. (Detail on appendix 2.b)

Table 4.8
CBs Average Loan & Advances Portfolio in Percentage

Name of Banks	Govt. Enterprise	Private Sector	Foreign Bills P&D
EBL	1.08%	97.01%	1.91%
HBL	3.89%	94.12%	1.99%
NABIL	1.36%	95.26%	3.38%
NIBL	1.41%	96.32%	2.27%
SCBL	3.65%	93.70%	2.65%
Industry Average	2.28%	95.28%	2.44%

(Source: Banking & Financial statistics, NRB, Mid July 2005 No. 43)

Figure 4.5



The above table shows the average loans and advance portfolio of five commercial banks. SCBL is providing very high amount of its loans & advances to the private sector. The mean percentage of loans & advances to the private sector is 93.70%. SCBL has given second priority to government enterprise. The mean percentage of government enterprise is 3.65%. The bank has finally given priority to foreign bills P&D with the mean percentage of 2.65%.

NIBL is providing a very high amount of its loans & advances to the private sector. The mean percentage of loans & advances to the private sector is 96.32%. It has given second priority to foreign bills P&D. The mean percentage on it is 2.27%. And finally it invests on government enterprise with mean percentage of 1.41%.

NABIL has provided very high amount of its loans & advances to private sector. The mean percentage of loans & advances to private sector is 95.26%. It has given a second priority to foreign bills P&D. The mean percentage of loans & advances to foreign bills P&D is 3.38% which is the highest as compared to other commercial banks. Lastly it has given a priority in providing loans & advances to government securities with mean percentage of 1.36%.

Analysis of Ratios

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

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

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

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

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

High ratio is the indicator of high success to mobilize the banking funds as investment and vice-versa. The ratio of investment to total deposit of EBL, HBL, NABIL, NIBL, and SCBL are shown in table below: *(From Appendix 1.d & 1.e)*

Table 4.9
Investment to Total Deposits Ratio (%)

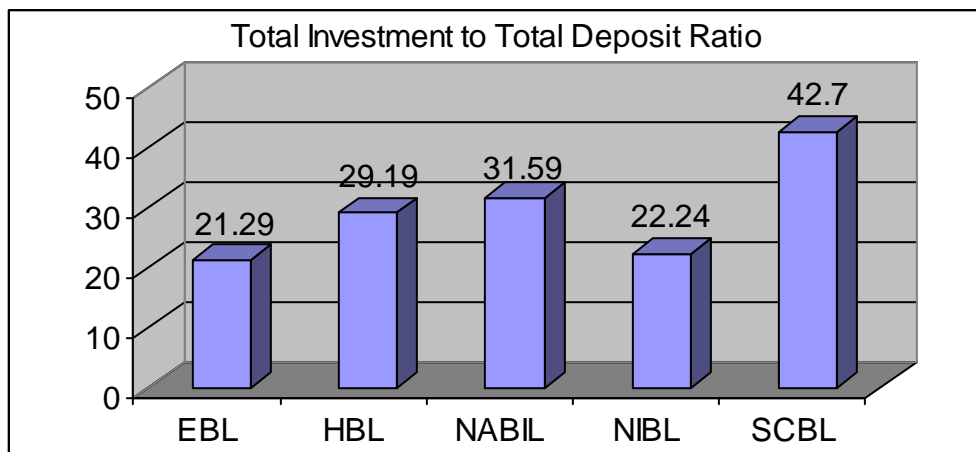
FY	EBL	HBL	NABIL	NIBL	SCBL
1997/98	19.37	12.63	10.92	0.68	12.09
1998/99	14.52	4.8	15	4.21	24.01
1999/00	8.51	15.78	9.79	0.43	26.66
2000/01	19.71	23.29	48.64	46.29	61.95
2001/02	30.97	49.18	52.88	43.65	58.58
2002/03	24.7	48.35	44.85	21.52	54.47
2003/04	31.44	32.36	41.33	33.51	53.68
2004/05	21.08	47.12	29.27	27.6	50.18
Mean	21.29	29.19	31.59	22.24	42.7
S.D.	7.28	16.52	16.57	17.53	17.61
C.V.	34.19	56.59	52.45	78.82	41.24

(Source: Annual Reports of CBs from FY 1997/98 to 2004/05)

$$\text{Industry Average Mean} = 29.40\% \left(\frac{42.70 + 22.24 + 31.59 + 21.29 + 29.19}{5} \right)$$

$$\text{Industry Average CV} = 52.65\% \left(\frac{41.24 + 78.82 + 52.45 + 34.19 + 56.59}{5} \right)$$

Figure 4.6



From the above listed comparative table and figures reveals that the ratio of investment to total deposits of CBs are in fluctuating trend throughout the review period i.e. from the FY 1997/98 to 2004/05. The mean investment to total deposit of SCBL is the highest at the 42.70%. Similarly NABIL has second highest ratio of investment to total deposit with 31.59%. From the

point of view of average ratio it can be said that the SCBL & NABIL capacity to mobilize its deposit on investment is better than others because their mean ratio are higher than average ratio on CBs 29.40% on the other hand HBL, EBL, NIBL mobilized their deposit on investment is not so good as compare to overall CBs.

But the coefficient of variation in the ratio of EBL is the lowest i.e. 34.19%. Similarly the CV in the ratio of NIBL is the highest i.e. 78.82% indicates more inconsistent among other. So, it is clear that SCBL is the most successful in utilizing its resources on investment among other five banks. Similarly NABIL moderate in utilizing resources on investment. Other banks are not so successful in utilizing its deposits on investment than other CBs.

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

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

Table 4.10
Loan & Advance to Total Deposit Ratio (%)

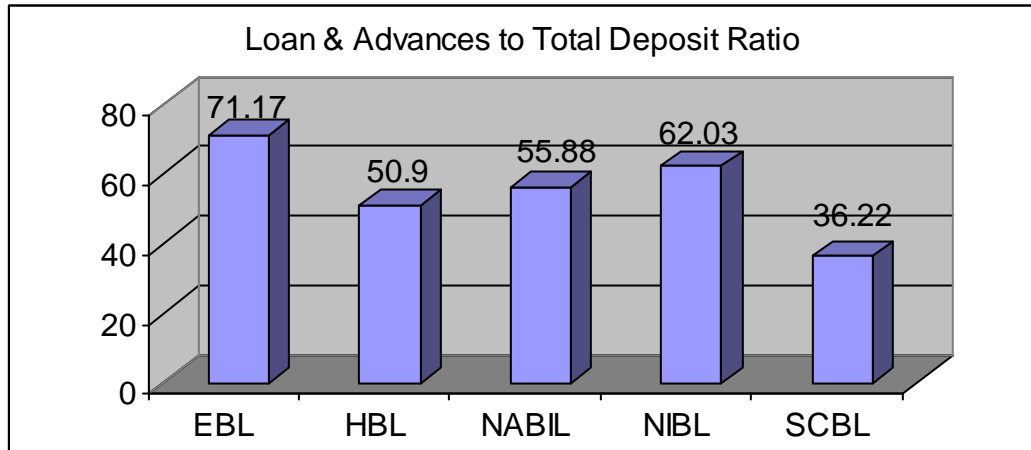
FY	EBL	HBL	NABIL	NIBL	SCBL
1997/98	71.62	52.26	55.98	60.67	47.22
1998/99	67.52	52.64	57.02	53.23	35.56
1999/00	72.96	49.07	54.01	66.51	37.07
2000/01	64.69	49.35	50.47	54.48	36.69
2001/02	71.77	54.78	46.02	60.32	33.14
2002/03	72.93	47.53	55.43	71.29	29.72
2003/04	72.68	52.86	56.33	60.03	29.88
2004/05	75.16	48.72	71.75	69.68	40.5
Mean	71.17	50.9	55.88	62.03	36.22
S.D.	3.17	2.39	6.92	6.2	5.39
C.V.	4.45	4.69	12.38	9.99	14.88

(Source: Annual Report of CBs from FY 1997/98 to 2004/05) (From Appendix 1.e & 1.g)

Industry Average Mean = 55.24%

Industry Average CV = 9.28%

Figure 4.7



In the above table, the mean loans and advances to total deposit ratio of EBL is highest i.e. 71.17% and SCBL is lowest ratio i.e. 36.22% among five commercial banks. Other banks NIBL, NABIL, HBL have a mean ratio of 62.03%, 55.88%, 50.90% respectively. The industrial average mean ratio is 54.82%. It can be said that EBL & NIBL capacity to mobilize its deposit on loan and advance is better than average ratio of CBs.

The CV ratio of EBL is lowest i.e. 4.45% among five commercial banks which indicates that the investment as EBL is the most uniform. SCBL has the highest CV ratio i.e. 14.88% among five commercial banks, it indicates that the investment of SCBL is more fluctuating. The lowest CV is better than highest CV. The industrial average CV ratio is 9.28%. EBL, HBL have a lowest CV than industrial average CV. So it can be concluded that EBL is the most effective, NABIL, NIBL is moderate effective and SCBL & NABIL are least effective to mobilize its deposit on loan and advances.

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

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

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

The following table shows the ratios of net profit after tax to total assets ratio of various CBs. (From Appendix 1.f & 1.g)

Table 4.11
Return on Total Assets (%)

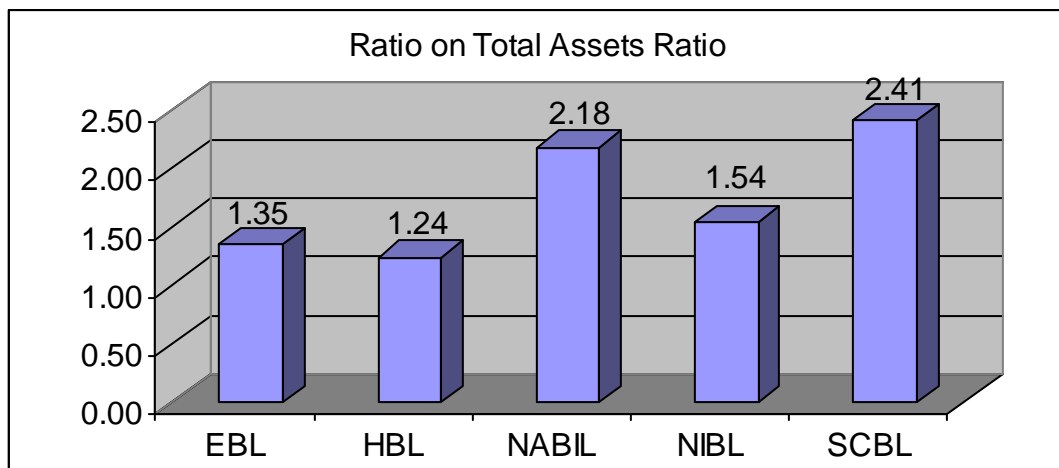
FY	EBL	HBL	NABIL	NIBL	SCBL
1997/98	1.77	1.56	1.59	2.82	2.85
1998/99	1.11	1.47	2.3	1.47	2.76
1999/00	1.21	1.26	2.19	1.91	2.33
2000/01	1.34	1.42	1.59	1.10	2.23
2001/02	1.29	1.10	1.54	1.15	2.6
2002/03	1.17	0.91	2.51	1.300	2.42
2003/04	1.49	1.06	2.72	1.15	2.27
2004/05	1.45	1.11	3.02	1.43	1.80
Mean	1.35	1.24	2.18	1.54	2.41
S.D.	0.20	0.21	0.53	0.54	0.31
C.V.	14.81	16.93	24.31	35.06	12.86

(Source: Annual Report of CBs from FY 1997/98 to 2004/05)

Industry Average Mean = 1.74%

Industry Average CV = 20.79%

Figure 4.8



The comparative table and figure shows that commercial banks has mixed trend on their return to total assets ratio. Among five CBs, SCBL has the highest mean return and HBL has the lowest return on total assets i.e. 2.41% & 1.24%. The overall average mean of CBs is 1.74%. However NABIL also have mean return above average mean of CBs i.e. & 2.18%.

Similarly looking at CV among the five CBs, SCBL has the lowest CV i.e. 12.86% which is the most consistent than other banks. And, the highest CV in the ratios of NIBL i.e. 35.06% shows the return on total assets of NIBL is highly variable among five banks. Lastly, it is concluded that SCBL is the best bank in relation to return on total assets ratio because it utilized overall resources efficiently than other bank. The profitability position of HBL is the weakest in relation to return on total assets during study period among five CBs.

Investment on Share & Debenture to Total outside Investment. The ratio between investment on share & debenture and total outside investment reflects the extent on which the banks are successful to mobilize their total outside investment on purchase of shares & debenture of other companies to generate income.

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

$$\frac{\text{Investment on Share \& Debenture}}{\text{Total outside Investment}}$$

Where,

$$\text{TOI} = \text{Loan \& Advances} + \text{Bill purchased and discounted} + \text{Investment}$$

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

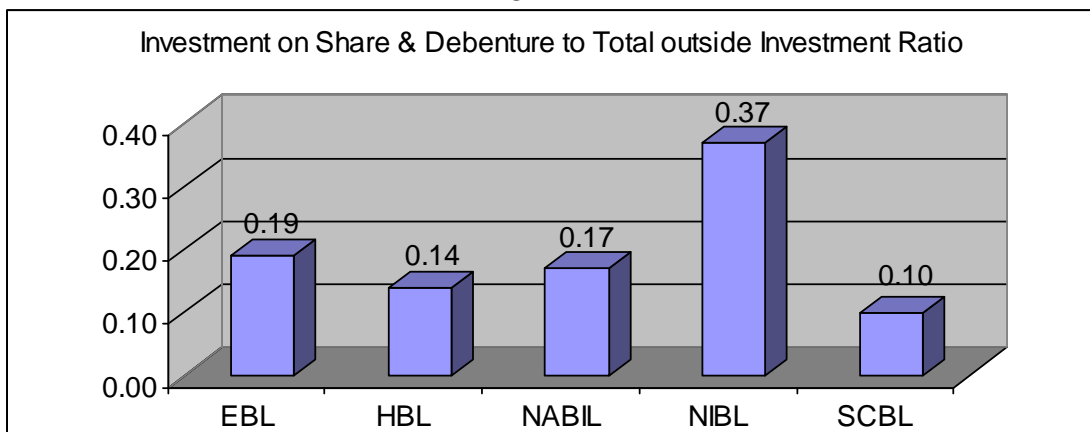
The following table shows the ratios of investment on share & debentures to total outside investment ratio of various CBs. (*From Appendix 1.b & 1.h*)

Table 4.12
Investment on Share & Debenture to Total outside Investment Ratio (%)

FY	EBL	HBL	NABIL	NIBL	SCBL
1997/98	-	0.05	0.16	0.44	0.11
1998/99	0.15	0.16	0.23	0.84	0.17
1999/00	0.10	0.10	0.19	0.61	0.14
2000/01	0.09	0.08	0.12	0.29	0.07
2001/02	0.30	0.19	0.14	0.32	0.08
2002/03	0.26	0.17	0.16	0.19	0.07
2003/04	0.20	0.16	0.15	0.13	0.06
2004/05	0.20	0.17	0.18	0.13	0.07
Mean	0.19	0.14	0.17	0.37	0.10
S.D.	0.07	0.05	0.03	0.23	0.04
C.V.	36.84	35.71	17.65	62.16	40

(Source: Annual Report of CBs from FY 1997/98 to 2004/05)

Figure 4.9



The comparative table shows that CBs has fluctuating trend on their investment on share & debentures to total outside investment. In share & debenture very low portion of the total outside investment is invest. Among five commercial banks NIBL has invested higher amount on share & debenture i.e. 0.37% of total outside investment while SCBL has invested lower amount on share & debenture i.e. 0.10% only.

NABIL has the lowest CV i.e. 17.65% among the five CBs, which shows that the variability of the ratios between investment on share & debenture and total outside investment is most uniform among the other CBs. Similarly, NIBL has the highest CV i.e. 62.16% which shows that it has mover variability in investment on share & debenture to total outside investment.

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

Investment on Government Securities to Total outside Investment. This ratio is very useful to know in which extent the CBs are successful in mobilizing their total outside investment on different types of government securities to maximize the income. Since government securities are highly liquid, to some extent, CBs seem to be interested to utilize their deposits by purchasing government securities. This ratio is calculated by dividing investment on government securities by total outside investment this can be stated as:

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

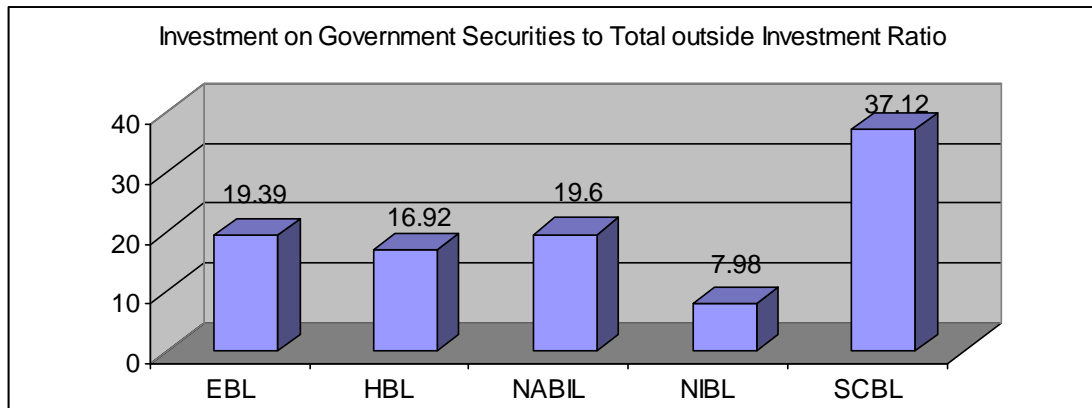
A high ratio indicated better mobilization of fund as investment on government securities and vice-versa. The following table shows the ratios of investment on government securities to total outside investment ratio of various CBs. (From Appendix 1.a & 1.h)

Table 4.13
Investment on Government Securities to Total outside Investment Ratio (%)

FY	EBL	HBL	NABIL	NIBL	SCBL
1997/98	10.19	18.68	10.90	0.59	19.40
1998/99	11.22	7.95	19.46	5.94	39.54
1999/00	10.18	23.38	14.37	-	40.68
2000/01	21.06	15.60	17.27	6.82	31.40
2001/02	27.28	14.32	26.35	5.12	39.51
2002/03	24.37	16.59	26.03	5.35	41.36
2003/04	29.29	16.15	26.18	18.20	44.73
2004/05	21.55	22.68	16.25	13.85	40.36
Mean	19.39	16.92	19.60	7.98	37.12
S.D.	7.32	4.58	5.59	5.53	7.56
C.V.	37.75	27.07	28.52	69.30	20.37

(Source: Annual Report of CBs from FY 1997/98 to 2004/05)

Figure 4.10



The comparative table shows that there is highly invest in government securities than in other investment portion because of secured on it. On government securities SCBL has the highest invest on government securities to total outside investment i.e. 37.12% among five CBs. Similarly NIBL invest lowest parts of total outside investment to government securities because it has lowest investment on government securities to total outside investment i.e. 7.98%.

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

Investment Portfolio Risk and Return Analysis

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

The main purpose of risk and return analysis is to appraise investment performance and to explore combinations of investments that maximize returns, minimize risk or achieve both. The risk minimization, in particular is

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

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

Risk and Return on Individual Investment

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

coefficient of variation. Therefore standard deviations and coefficient of variation are taken as the measuring tools of risk and return.

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

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

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

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

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

Table 4.14

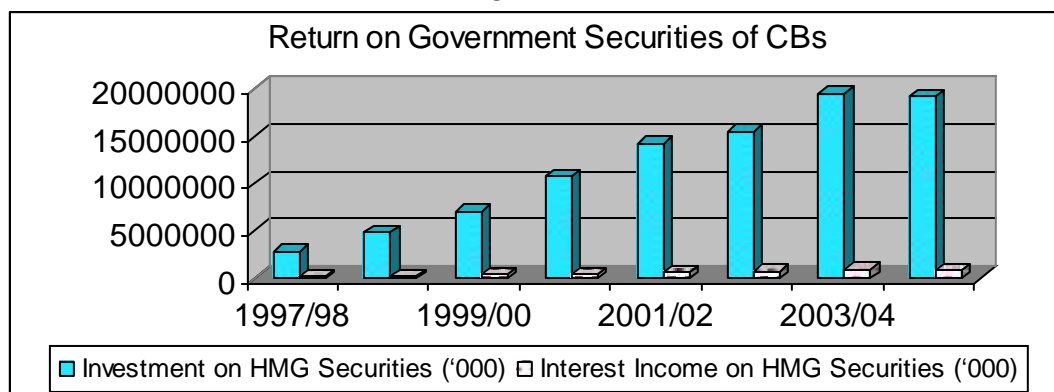
Calculation of Risk & Return on Government Securities of Nepalese CBs

FY	Investment on HMG Securities ('000)	Interest Income on HMG Securities ('000)	Return on HMG Securities (%)	$(R_g - \bar{R}_g)^2$ (%)
1997/98	2790857	211746	7.58	9.06*
1998/99	4807088	162737	3.38	1.41
1999/00	7037027	343535	4.88	0.09
2000/01	10727217	431165	4.02	0.30
2001/02	14256876	571193	4.01	0.31
2002/03	15516572	658918	4.25	0.10
2003/04	19520099	871911	4.46	0.01
2004/05	19135524	766371	4.00	0.32
Total	93791260	4017576	36.61	11.66

(Source: Appendix I (a)(k) & (m))

$$* = (7.58 - 4.57)^2 = 9.06\%$$

Figure 4.11



Here, $\sum R_g = 36.61$

$$n = 8$$

$$\bar{R}_g = \frac{\sum R_g}{n} = \frac{36.61}{8} = 4.57$$

$$\bar{R}_g = 4.57\%$$

Now,

$$\text{Standard deviation } (\dagger_g) = \sqrt{\frac{\sum_{t=1}^n (R_g - \bar{R}_g)^2}{n-1}} = \sqrt{\frac{11.66}{8-1}} = 1.29\%$$

$$(\dagger_g) = 1.29\%$$

Again,

$$\text{Coefficient of Variation (CV)} = \frac{\dagger_g}{\bar{R}_g} = \frac{1.29}{4.57} = 0.28$$

Hence, $CV_g = 0.28$

From above table, it can be concluded that, in average the return on investment on govt. securities made by CBs is 4.57%. Standard deviation is 1.29% which indicates risk on govt. securities. In general concept there is no any risk on government securities but the result of standard deviation and coefficient of variation shows there is risk on such securities. It is mainly due to the more fluctuating nature on investment on government securities. There is no fixed trend to invest on government securities such as treasury bills, national saving bonds, development bonds etc. by CBs its fund on treasury bills and the treasury bills are purchased directly at auction. Hence, the returns on government securities are more volatility. It is concluded that the higher variability of return on investment made on govt. securities is sue to lack of proper investment on various securities.

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

$$\text{Return of Loan \& Advances } (R_L) = \frac{\text{Interest income on Loan \& Advances}}{\text{Investment on Loan \& Advances}}$$

$$\text{Average return on Loan \& Advances } (\bar{R}_L) = \frac{\sum R_L}{n}$$

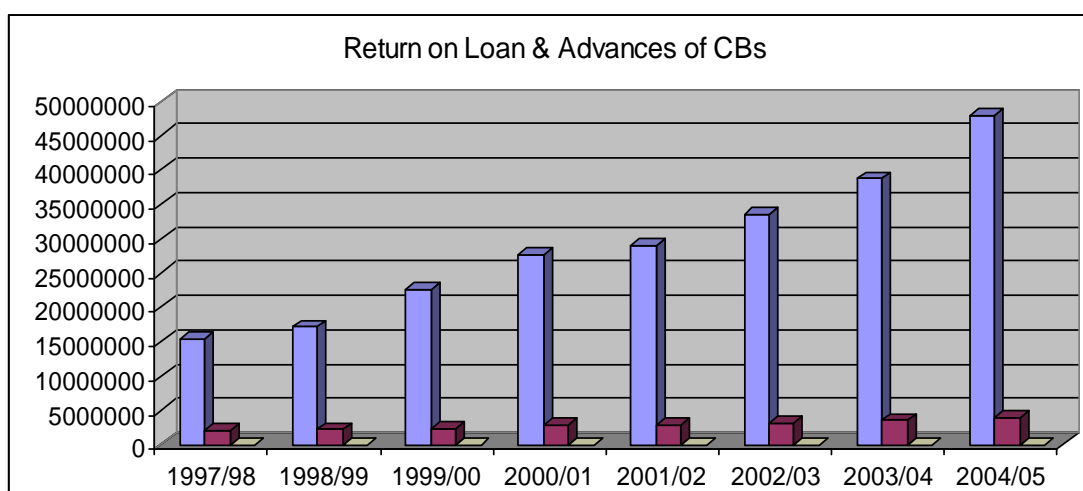
Table 4.15
Calculation of Risk & Return on Loan & Advances of Nepalese CBs

FY	Investment on Loan & Advances ('000)	Interest Income on Loan & Advances ('000)	Return on Loan & Advances (%) (R _L)	(R _L - \bar{R}_L) ² (%)
1997/98	15323153	2181701	14.24	13.61*
1998/99	17126264	2212928	12.92	5.61
1999/00	22666645	2375339	10.48	0.004
2000/01	27584173	2832885	10.27	1.34
2001/02	29026108	2849007	9.82	0.07
2002/03	33560991	3130253	9.32	1.51
2003/04	38690256	3515941	9.09	2.13
2004/05	47908016	3968706	8.28	5.15
Total	231885606	23066760	84.43	28.63

(Source: Appendix 1(e),(i)&(n))

$$* = (14.25 - 10.55)^2 = 13.61\%$$

Figure 4.12



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

$$(\bar{R}_l) = \frac{\sum R_l}{n} = \frac{84.43}{8} = 10.55\%$$

Again,

$$\dagger_l = \sqrt{\frac{\sum (R_l - \bar{R}_l)^2}{n-1}} = \sqrt{\frac{28.63}{8-1}} = 2.02\%$$

$$CV_1 = \frac{\dagger_l}{R_l} = \frac{2.02}{10.55} = 0.19$$

From the above table and figure reveals that the return on investment on loan & advances has no fixed trend. During the period 1997 to 2005 the highest return is 14.24% in 1997/98 and lowest return is 8.28% in 2004/05. The average return 10.55% means that in average the CBs generate 10.55% return on its investment made in loan & advances. The standard deviation 2.02% and coefficient of variation 19% show the risk of return on loan & advances. The variability on return on loan & advances seems to be less than return on government securities.

Risk and Return on Share and Debentures. The return on share & debenture considers dividend yield and capital gain yield. The information about dividend received and capital yield by CBs is not available properly. Due to information disclosure by the concern banks regarding return from share & debenture is insufficient for the calculation purpose. The general assumption has been established to calculate the necessary return on share & debenture by using market return. The market return on share & debenture for this purpose is the average return of the sample companies listed in NEPSE. 14 companies is selected for the study in which 4 from CBs, 3 from insurance, 3 from finance companies, 2 from manufacturing companies, 1 from hotel and 1 from trading company.

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

Return on Share & Debenture (R_s) = Capital gain yield + Dividend yield

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

$$\text{Risk on Share \& Debenture } (\dagger_s) = \sqrt{\frac{(R_s - \bar{R}_s)^2}{n-1}}$$

$$\text{Coefficient of variation } (CV_s) = \frac{\dagger_s}{R_s}$$

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

D_t = Dividend per share (all types of dividend)

Table 4.16
Estimates of Market Parameter

Selected Co.	1997/98		1998/99		1999/00		2000/01		2001/02		2002/03		2003/04		2004/05	
	P_t	D_t	P_t	D_t	P_t	D_t	P_t	D_t	P_t	D_t	P_t	D_t	P_t	D_t	P_t	D_t
NABIL	430	50	700	50	1400	55	1500	40	735	30	740	50	1000	65	1505	165
HBL	755	50	1000	50	1700	75	1500	57.5	1000	35	836	25	840	20	920	20
EBL	184	-	407	15	980	20	750	20	430	20	445	20	680	20	870	20
SCBL	840	70	1162	80	1985	100	2144	100	1575	100	1640	110	1745	110	2345	110
NIBL	700	50	822	30	1401	25	1150	-	760	-	795	20	940	15	800	12.5
	2209		3269		6065		7044		4500		3661		4265		5640	
Observation	5		5		5		5		5		5		5		5	
(P_t)	442		654		1213		1409		900		732		853		1128	

Source: Trading report Vol. 1 to 7, NEPSE and Annual report of SEBO and NEPSE 1997 to 2005

Table 4.17

Calculation of Dividend Yield $\left(\frac{D_t}{P_t}\right)$

In percentage

Selected Co.	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05
NABIL	11.63*	7.14	3.93	2.67	4.08	6.76	6.5	10.96
HBL	6.62	5	4.41	3.83	3.5	2.99	2.38	2.17
EBL	-	3.69	2.04	2.67	4.65	4.49	2.94	2.3
SCBL	8.33	6.88	5.04	4.66	6.35	6.71	6.3	4.69
NIBL	7.14	3.65	1.78	-	-	2.51	1.59	1.56
Total	26.58	22.71	15.42	13.83	18.58	20.95	18.12	20.12
No. of Observation	4	5	5	4	4	5	5	5
Average Dividend Yield	6.64	4.54	3.08	3.45	4.64	4.19	3.62	4.02

Source: Table 4.16

* = $50/430 \times 100\% = 11.63\%$ (other are calculated as same ways)

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

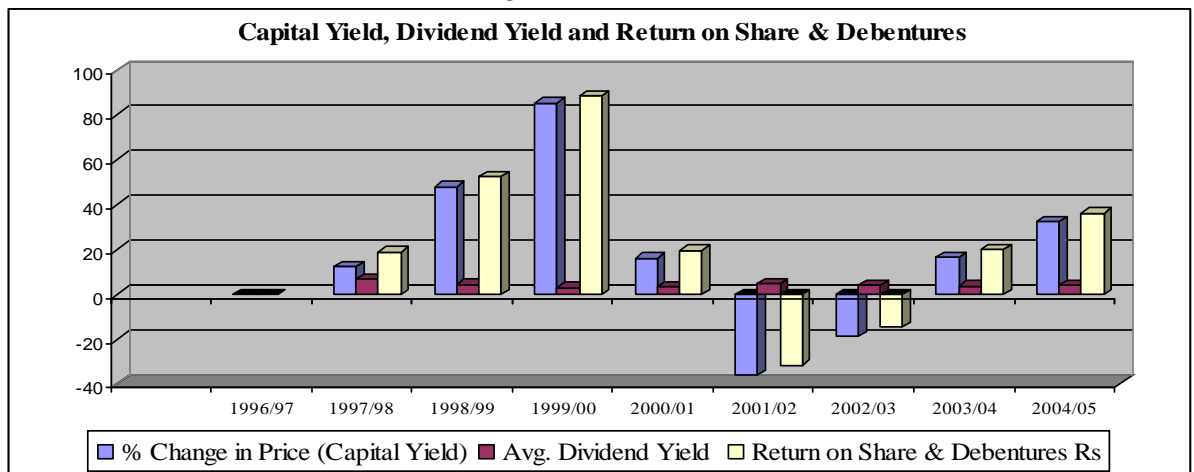
FY	Avg. Closing Price (P_t)	% Change in Price (Capital Yield)	Avg. Dividend Yield $\left(\frac{D_t}{P_t}\right)$	Return on Share & Debentures R_s	$(R_s - \bar{R}_s)^2$
1996/97	393.58*	-	-		
1997/98	442	12.30**	6.64	18.94***	23.13
1998/99	654	47.96	4.54	52.50	826.56
1999/00	1213	85.47	3.08	88.55	4199.04
2000/01	1409	16.15	3.45	19.60	17.22
2001/02	900	-36.12	4.64	-31.48	3050.35
2002/03	732	-18.66	4.19	-14.47	1460.76
2003/04	853	16.53	3.62	20.15	12.96
2004/05	1128	32.23	4.02	36.25	156.25
Total				190.04	9746.27

(Source: Table 4.16 & 4.17))

$$** = \frac{442 - 393.58}{393.58} = 0.1230 = 12.30\%$$

$$*** = 12.30 + 6.64 = 18.94$$

Figure 4.13



The average closing price in year 1996/97 is calculated on the basis of NEPSE index and 1996/97 average closing price

1996/97 NEPSE index = 176.31

1997/98 NEPSE index = 198

Closing price in year 1997/98 = 442

$$\text{Average closing price on 1996/97} = \frac{442}{198} \times 176.31 = 393.58^*$$

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

$$\bar{R}_s = \frac{\sum R_s}{n} = \frac{190.04}{8} = 23.75\%$$

Again,

$$\dagger_s = \sqrt{\frac{\sum (R_s - \bar{R}_s)^2}{n-1}} = \sqrt{\frac{9746.27}{8-1}} = 37.31\%$$

Now,

$$CV_s = \frac{\dagger_s}{\bar{R}_s} = \frac{37.31}{23.75} = 1.57$$

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

It can be observed from above table and figure that the annual rate of return of investment on share & debenture of CBs shows wide fluctuation, ranging from 18.94% in 1997/98 to 88.55% in year 1999/00. These fluctuations in return are caused mainly by volatility of the share prices in the market. The change in dividends also contributed to the variability of the shares return in some extent.

The average rate of return of investment on share & debenture of CBs for eight years during 1997/98 to 2004/05 is 23.75%. Similarly the annual rate of return of investment on share & debenture show a high degree of variability, they deviated on an average by 37.31% from the average rate of 23.75%. This is also reveals by the 157% coefficient of variation.

Risk and Return on Investment Portfolio

Portfolio Return on Investment

The return of a portfolio depends on (i) the expected rate of return of each security contained in the portfolio and (ii) the amount invested in each security. The portfolio return is the weighted average expected return of the individual stock in the portfolio, with weights being the proportion of investment on each security in the portfolio equation. CBs invest their funds in government

securities, share & debenture and loan & advance. The weight of the investment on various assets and their average rate of returns are presented below:

Table 4.19
Calculation of Weight of Investment on Various Assets

S. No.	Assets	Investment Amount Rs.(‘000)	Proportion Weight (w)	Average Rate of Return (R)
1	Government Securities	93791259	0.2875*	4.57
2	Share & Debenture	601641	0.0018	23.75
3	Loan & Advance	231885606	0.7107	10.55
Total		326278506		

(Source: Appendix 1(a), (d), (e), & P. No. 81,83,87)

$$* = \frac{93791259}{326278506} = 0.2875$$

Calculation of Portfolio Return (R_p)

$$\begin{aligned} R_p &= \sum W_x R \\ &= 0.2785 \times 4.57\% + 0.0018 \times 23.75\% + 0.7107 \times 10.55\% \\ &= 8.85\% \end{aligned}$$

Hence, Portfolio Return on Investment of CBs (R_p) = 8.85%

Portfolio Risk on Investment

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

Table 4.20

Calculation of Correlation Coefficient and Covariance between Various Assets

S. No.	Assets	Standard Deviation	Correlation Coefficient	Covariance	Weight(w)
1	Government securities (g)	1.29	0.613	0.00015	0.2875
2	Share & Debenture(s)	37.31	0.032	0.0001	0.0018
3	Loan & Advance(l)	2.02	0.207	0.0015	0.7107

(Calculation details in appendix 3 & P.No.81,83,87,88)

Where,

$$\begin{aligned} \text{Cov}_{gl} &= r_{gl} \times \sigma_g \times \sigma_l \\ &= 0.613 \times 0.0129 \times 0.0202 = 0.00015 \end{aligned}$$

$$\begin{aligned} \text{Cov}_{ls} &= r_{ls} \times \sigma_l \times \sigma_s \\ &= 0.207 \times 0.0202 \times 0.3731 = 0.0015 \end{aligned}$$

$$\begin{aligned} \text{Cov}_{gs} &= r_{gs} \times \sigma_g \times \sigma_s \\ &= 0.032 \times 0.0129 \times 0.3731 = 0.0001 \end{aligned}$$

r_{gl} , r_{ls} and r_{gs} are the correlation coefficient between government securities and loan & advance, loan & advance and share & debenture, government securities and share & debenture respectively.

The standard deviation of portfolio investment (σ_p) be

$$\begin{aligned} \sigma_p &= \sqrt{W_g^2 \times \sigma_g^2 + W_s^2 \times \sigma_s^2 + W_l^2 \times \sigma_l^2 + 2Cov_{gs} \times W_g \times W_s + 2Cov_{ls} \times W_l \times W_s + 2Cov_{gl} \times W_g \times W_l} \\ &= \sqrt{(0.2875)^2 \times (1.29)^2 + (0.0018)^2 \times (37.31)^2 + (0.7107)^2 \times (2.02)^2 + 2 \times 0.0001 \times 0.2875 \\ &\quad \times 0.0018 + 2 \times 0.0015 \times 0.7107 \times 0.0018 + 2 \times 0.00015 \times 0.2875 \times 0.7107} \\ &= 1.48\% \end{aligned}$$

Hence, standard deviation of portfolio on investment of CBs (σ_p) = 1.48%

Portfolio risk and return on investment made by CBs in various assets, which is calculated above is important to note that the expected risk of the portfolio is considerably less than the expected risk of investment on government securities, loan & advances and share & debenture. Due to the low normal correlation between return of investment on loan & advances and share & debenture and investment on government securities and share & debentures, the investment portfolio has considerably reduced. Here, one thing should be noted that, lower the correlation co-efficient, lower the risk of the portfolio i.e. combining assets

with negative or lower correlation will significantly reduce the risk of the portfolio. Risk can be reduced by investing wealth in more than one asset.

The expected return on portfolio 8.85% is less than that of average rate of return of individual investment on share & debentures (23.75%) and investment on loan & advances (10.55%). But investing the total funds in share & debentures and loan & advances is more risky than that of investment on portfolio.

Test of Investment Portfolio Performance

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

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

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

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

Where,

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

σ_i = Standard deviation of Returns

R = Risk less rate of return

S_i = Sharpe's Index of Portfolio Performance

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

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

Table 4.21
Performance of Various Investment Assets

S. No.	Investment Assets	Average Annual Return (%) (r_i)	Standard Deviation of Annual Return (σ_i)	Sharpe's Measure of Performance $S_i = \frac{\bar{r}_i - R}{\sigma_i}$, R=6%
1	Government Securities	4.57	1.29	-1.10
2	Loan & Advance	10.55	2.02	2.25
3	Share & Debenture	23.75	37.31	0.47
4	Investment Portfolio	8.85	1.48	1.92

(Source: From above calculation on P.No. 81,83,87,88)

Risk less rate of interest (R) = 6% (Economic Survey 2005)

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

Trend Analysis

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

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

$$y = a+bx$$

Where,

a = y intercept

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

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

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

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

Table 4.22

Trend Value ($y_c = a + bx$) of Total Investment and Total Deposit of CBs

Rs. In million

Year (t)	X=t-2001.5	Total Investment		Total Deposit	
		Trend Value*	Actual Value	Trend Value**	Actual Value
1998	-3.5	3276.11	3195.08	29225.08	28688.50
1999	-2.5	8197.36	4956.15	37088.48	34790.01
2000	-1.5	13118.61	7090.03	44951.88	45428.79
2001	-0.5	18039.86	24218.64	52815.28	57632.18
2002	0.5	22961.11	30147.70	60678.68	59602.92
2003	1.5	27882.36	29782.02	68542.08	67866.11
2004	2.5	32803.61	32886.63	76405.48	76879.38
2005	3.5	37724.86	31727.67	84268.88	83087.98
2006	4.5	42646.11		92132.28	
2007	5.5	47567.36		99995.68	
2008	6.5	52488.61		107859.08	
2009	7.5	57409.86		115722.48	

(Source: Appendix 1(f) & (g))

Trend line for Total Investment of CBs

$$*y_c = 20500.49 + 4921.25x$$

Trend line for Total Deposit of CBs

$$** y_c = 56746.98 + 7863.40x$$

Figure 4.14

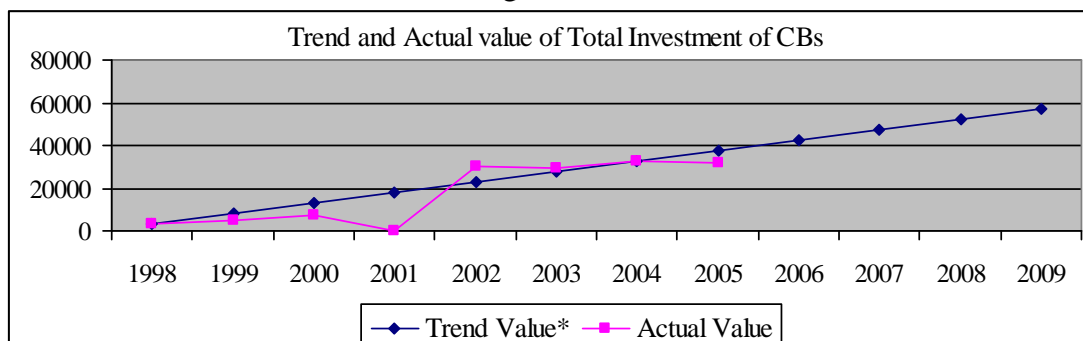
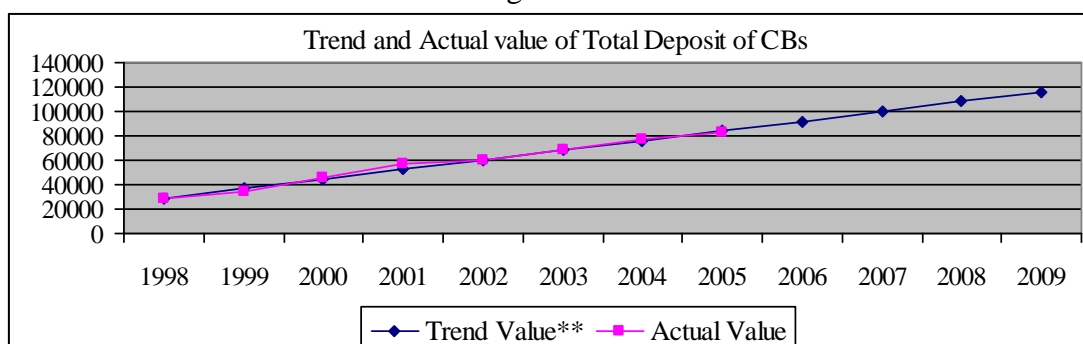


Figure 4.15



From the above table and figure it is clear that CBs total investment has been increasing by Rs.4921.25 million each year and is expected to reach Rs.57409.86 million at the end of year 2009. Likewise total deposit of CBs are in increasing trend and which have been increasing by Rs.7863.40 million every year and is expected to reach Rs.115722.48 at the end of year 2009. Other thing remaining the same the ratio of total investment and total deposit will be 49.60% in year 2009 which is moderate ratio. This shows that deposit utilization position in relation to investment to total deposit ratio is appropriate.

Trend Analysis of Investment on Various Assets. Only three assets are taken i.e. government securities, share & debenture and loan & advance are taken for analysis. For analyze total investment on various assets of CBs for eight years and forecast of the same for next four years till 2009.

The following table shows the trend values of 12 years from 1998 to 2009 of CBs investment on different assets i.e. government securities, share & debentures and loan & advances.

Table 4.23

Trend Value ($y = a + bx$) of Investment on Government Securities, Share & Debentures and Loan & Advances of CBs Rs. in million

Year (t)	x = t-2001.5	Investment on Govt. Securities		Investment on Share & Debentures		Investment on Loan & Advances	
		Trend Value*	Actual Value	Trend Value**	Actual	Trend Value** *	Actual Value
1998	-3.5	2684.48	2790.85	49.81	26.32	13567.42	15323.15
1999	-2.5	5267.17	4807.08	57.06	52.39	17972.64	17126.26
2000	-1.5	7849.86	7037.02	64.31	52.00	22377.86	22666.64
2001	-0.5	10432.55	10727.21	71.56	57.10	26783.08	27584.17
2002	0.5	13015.24	14256.87	78.81	98.68	31188.30	29026.10
2003	1.5	15597.93	15516.57	86.06	98.68	35593.52	33560.99
2004	2.5	18180.62	19520.09	93.31	98.68	39998.74	38690.25
2005	3.5	20763.31	19135.52	100.56	117.74	44403.96	47908.01
2006	4.5	23346.00		107.81		48809.18	
2007	5.5	25928.69		115.06		53214.40	
2008	6.5	28511.38		122.31		57619.62	
2009	7.5	31094.07		129.56		62024.84	

(Source: Appendix I (a), (d)& (e))

Trend line of Investment on Government Securities of CBs is,

$$*y_c = 11723.90 + 2582.69x$$

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

$$**y_c = 75.19 + 7.25x$$

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

$$***y = 28985.69 + 4405.22x$$

Figure 4.16

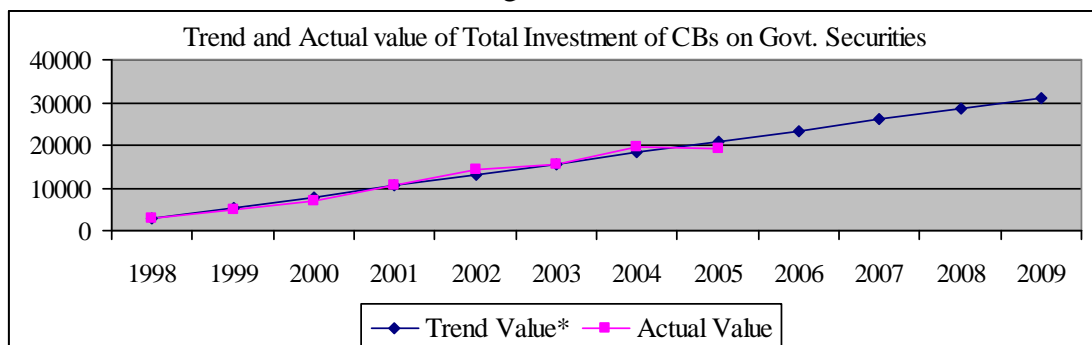


Figure 4.17

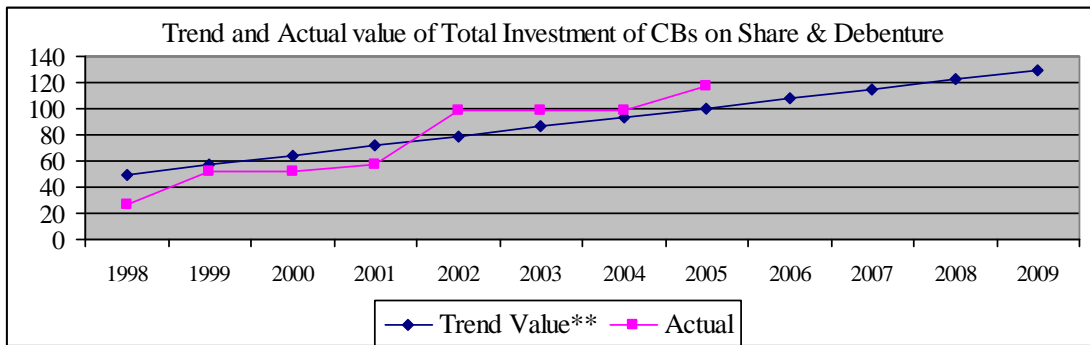
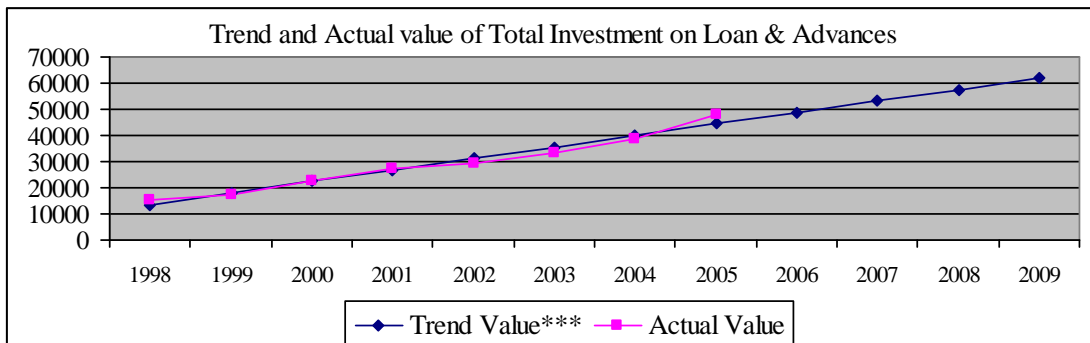


Figure 4.18



From the above table and figure, it is clear that the CBs investment on government securities, share & debenture and loan & advances all are in increasing trend. The investment on government securities, share & debenture and loan & advance are increasing by Rs.2582.69 million, Rs.7.25 million & Rs.4405.22 million per year respectively. If other thing remaining same, the investment on government securities, share & debenture and loan & advance in 2009 will be Rs.31094.07 million, Rs.129.56 million and Rs.53214.40 million respectively, where as such investment in year 2005 is rs.19135.52 million, Rs.117.74 million and Rs.47908.01 million respectively.

Hence, it can be concluded that the investment of CBs on various assets like government securities, share & debenture and loan & advance all are increasing per year. In comparison, increasing ration in government securities is 11.58 times (31094.07/2684.48), in share & debenture is 2.60 times (129.56/49.81) and in loan & advance is 4.5 time (62024.84/13567.42). It shows that investing on government securities and loan & advance are increasing mere rapidly than share & debenture during the period of 1997 to 2009.

Major Findings of the Study

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

Investment Portfolio

- In investment portfolio, the industry average investment on government securities is 84.33%, among the CBs, EBL has invested the highest amount of funds on govt. securities i.e. 98.58% and NIBL has invested lowest 55.84%, other banks SCBL, NABIL & EBL have been invested highest amount of funds on S&D i.e. 1.42%. NABIL & HBL have invested lower than industry average and the industry average in this case is 15.67%, on which NIBL is invested higher than industry average i.e. 33.16%. In case of NRB bonds no banks are investing. There is zero amount of investment.

Loan & Advances Portfolio

- In loan & advances portfolio, the industry average investment on govt. enterprises is 2.28%. Among the CBs HBL has invested the highest amount of funds on govt. enterprises i.e. 3.89% & EBL has invested lowest 1.08%, NIBL & NABIL are below the industry average i.e. 1.41% & 1.36% respectively and HBL is higher the industry average of 3.89%. EBL is investing highest amount of funds on private sector among CBs i.e.97.01% and NIBL has invested above the industry average on private sector i.e. 96.32%. And SCBL & HBL have invested lowest amount of funds on private sector i.e. 93.70% & 94.12% respectively. NABIL is investing the highest amount of funds on foreign bills P&D as compared to other CBs i.e. 3.38%. The industry average in this case is 2.44%. NIBL, EBL & HBL has invested lower than the industry average i.e. 2.27%, 1.91% & 1.99% respectively but SCBL have invested above industry average i.e. 2.65%.

Portfolio Risk & Return on Investment

- There is positive correlation coefficient between return on investment made by CBs in Govt. securities and loan & advanced i.e. 0.613. And

there is low positive correlation coefficient between return on investment made by CBs in Govt. securities and S&D and loan & advance and S&D i.e. 0.032 and 0.207 respectively. This shows the low degree of normal relationship between assets. Such assets are very useful to make portfolio combination, So that the risk of the portfolio will be significantly reduced.

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

Ratio Analysis

- The total investment to total deposits ratio of selected CBs shows that SCBL is the most successful in utilizing its resources on investment than others CBs. The mean ratio & CV also reveals that NABIL & HBL are moderate in utilizing its resources on investment. While NIBL & EBL are not so successful in better utilizing their total deposits on investment of various assets.
- The loan & advance to total deposit ratio of selected CBs shows that EBL is the most successful in utilizing its resources on L&A than other CBs. The mean ratio & CV also reveals that NIBL & NABIL are moderate in utilizing its resources on L&A, while SCBL & HBL are not so successful in better utilizing their total deposits on L&A.
- The return on total assets ratio of selected CBs shows that SCBL utilized its overall resources efficiently than other banks. HBL is the low profitability position among the 5 CBs but NIBL, NABIL & EBL are in moderate in profitability position.
- The ratio between investment on S&D and total outside investment reflects the extent on which the NIBL are successful to mobilize their total outside investment on purchase of S&D of other companies to generate income. But SCBL have low portion of investment on S&D to total outside investment.

- The ratio between investments on Govt. securities and total outside investment reflects the extent on which the SCBL are better mobilization of fund as investment on Govt. securities and NIBL has weakest position for mobilization of funds as investment on Govt. securities.
- SCBL is the best bank among five CBs on the basis of exploitation of resources in the field of govt. securities, on the basis of S&D, NIBL is the best bank among 5 CBs and EBL is the best bank among 5 banks on the basis of exploitation of resources in the field of loan and advances.
- On the basis of investment amount, the CBs gives first priority to invest their resources on loan and advances, then to govt. securities and lastly to share and debentures. Therefore CBs invest highest part of the resources to loan and advances.

Risk & Return

- The average return on govt. securities is 4.57% and its coefficient of variation is 28% which is very low return among other investment but higher risk than L&A investment.
- In broad hypothesis, there is less risk on investment on govt. securities, but here is high risk due to the consideration of difference of year to year return on govt. securities as risk factors. CBs wants to invest in short term basis which return is not fixed because its return is resolute by demand and supply so return is volatile with demand and supply. CBs make faltering to invest on long term govt. securities that provide usual constant return. So that CV of government securities is privileged.
- The average rate of return & CV of loan & advances is higher than the government securities i.e. 10.55% and 19% respectively which shows that the investment on L&A have more fixed trend than govt. securities due to flat interest rate charged to clients on L&A.
- The average rate of risk & return are higher than other assets on S&D. The average return on S&D of CBs shows wide fluctuations due to transform in shares price. This is exposed by the high degree of CV.

- Rate of return of S&D is high but the risk is also high so that loan & advances is advanced than government securities and govt. securities are advanced than S&D according to the individual risk and return.

Test of Portfolio Performance

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

Trend Analysis

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

Tabulation of Major Findings of the Study

Table 4.24
Major findings from Investment Operation

S.N.	Investment Securities		EBL	HBL	NABIL	NIBL	SCBL
1	Govt. Securities	Average	1135192	2562452	2484210	710571	4920302
		% Coverage	7.98	22.56	22.51	4.22	43.24
2	Share & Debentures	Average	11347	21935.8	19400	13126	10814.8
		% Coverage	12.07	25.61	27.9	19.58	16.33
3	Loan & Advances	Average	3696017	8580635	7274112	4023124	5411813
		% Coverage	11.57	29.79	26.5	12.38	19.73

Table 4.25
Major findings from Investment Portfolio Analysis

S.No.		EBL	HBL	NABIL	NIBL	SCBL
1	Govt. Sector	98.58	92.25	91.24	55.84	83.73
2	Share & Debentures	1.42	7.75	8.76	44.16	16.27
3	NRB Bond	0	0	0	0	0

Table 4.26
Major findings from L & A Portfolio Analysis

S. No.		EBL	HBL	NABIL	NIBL	SCBL
1	Govt. Entp.	1.08	3.89	1.36	1.41	3.65
2	Pvt. Sector	97.01	94.12	95.26	96.32	93.7
3	Foreing Bills P&D	1.91	1.99	3.38	2.27	2.65

Table 4.27
Major findings from Risk & Return Analysis

S. No.	Assets	Average Return (R)	Risk	CV
1	Govt. Securities	4.57	1.29	0.28
2	Share & Debentures	23.75	37.31	1.57
3	Loan & Advances	10.55	2.02	0.19
4	Portfolio	8.85	1.48	0.29

Table 4.28
Major findings from Ratio Analysis

S. No.	Ratio		EBL	HBL	NABIL	NIBL	SCBL
1	Investment to Total Deposit	Mean	21.29	29.19	31.59	22.24	42.7
		CV	34.19	56.59	52.45	78.82	41.24
2	L&A to Total Deposit	Mean	71.17	50.9	55.88	62.03	36.22
		CV	4.45	4.69	12.38	9.99	14.88
3	Return on Total Assets	Mean	1.35	1.24	2.18	1.54	2.41
		CV	14.81	16.93	24.31	35.06	12.86
4	Investment on S&D to Total Outside Investment	Mean	0.19	0.14	0.17	0.37	0.1
		CV	36.84	35.71	17.65	62.16	40
5	Investment on Govt. Securities to Total Outside Investment	Mean	19.39	16.92	19.6	7.98	37.12
		CV	37.75	27.07	28.52	69.3	20.37

Table 4.29
Major findings from Financial Portfolio Performance

S. No.	Investment	Sharpe's measure
1	Govt. Securities	-1.10
2	Share & Debentures	0.47
3	Loan & Advances	2.25
4	Portfolio	1.92

Table 4.30
Major findings from Trend Analysis

S. No.	Assets	Slope of Trend Increasing per years (Rs. In million)
1	Total Investment	4921.25
2	Total Deposit	7863.40
3	Investment on Govt.	2582.69
4	Investment on L&A	4405.22
5	Investment on S&D	7.25

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

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

Summary

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

Banks are an essential part of the business activities which are established to safe guard people's money & there by using the money in making loans & investments. CBs collects scattered financial resources from the masses and invests them among those engaged in commercial and economical activities of the country. CBs are those financial institutions deal in accepting deposits to persons and institutions and giving loans against securities and it also provide technical and administrative assistance to industries, trade & business enterprises. CBs are defined as a bank is a financial institution, which performs widest range of economic & financial functions of any business firm in the economy. CBs play a vital role for development of a developing country. Banks provides internal resources for developing country's economy.

The evolution of the organized financial system in Nepal has a moiré recent history than in other countries of the world. In Nepalese content, the history of development of modern banks started from the establishment of Nepal Bank Limited in 1937 A.D. Nowadays there are 17 CBs operating in Nepal financial market which is in increasing due to the country moved towards economic liberalization, financial scenario has changed, and foreign banks were invited to operate in Nepal. For the better performance of CBs, successful formulation and effective implementation of investment policy is the prime requisite. Nowadays there is a very high competition in the banking industries but very less opportunity to make investment. The opportunities are hidden. Thus these CBs should take initiative action in search of the new opportunities, so that they can easily survive in this competitive banking business world and earn profit. A bank manager's investment has a lot to do with the economic health of the country because the bank loans support the growth of new business and trade empowering the economic activities of the country.

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

Generally the investment of the CBs include the investment on government securities like treasury bills, development bonds, national saving bonds, foreign government securities, shares on government owned companies and non government companies and investment on debentures, similarly the CBs use their funds as loan & advances. Most of the banks are interested to invest their fund in more liquid and less risky sector. Nepalese CBs don't have their own clear vision towards investment portfolio. The investment planning of the CBs in Nepal heavily depend upon the rules & regulation provided by the central banks. The composition of asset portfolio of the banks is influenced by the

policy of the central bank. NRB's directives, unsecured climate created by political situation, government policy, Maoists problems etc are the most important problem for banking sector in investment.

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

In investment portfolio, the industry average investment on government securities is 84.33%, among the CBs, EBL has invested the highest amount of funds on govt. securities i.e. 98.58% and NIBL has invested lowest 55.84%, other banks SCBL, NABIL & EBL have been investing highest amount of funds on share & debenture among CBs and EBL have invested lowest amount of funds on S&D i.e. 1.42%. NABIL & HBL have invested lower than industry average and the industry average in this case is 15.67%, on which NIBL has invested higher than industry average i.e. 44.16%. In case of NRB bonds, no banks are investing. There is zero amount of investment. According to the calculation, portfolio return is lesser than the individual return of S&D and L&A but higher than individual return of Govt. securities. And portfolio risk is less than the individual risk of L&A and Govt. securities but very lower risk than individual risk of S&D. This is due to low correlation between assets, which shows that the portfolio reduce risk.

The detail of the major findings is presented later in this chapter. In brief, some of the contrast points are as below.

Following points sum up the above Statements

- The ratio between investments on Govt. securities and total outside investment reflects the extent on which the SCBL are better mobilization of fund as investment on Govt. securities and NIBL has weakest position for mobilization of funds as investment on Govt. Securities.
- The ratio between investment on S&D and total outside investment reflects the extent on which the NIBL are successful to mobilize their total outside investment on purchase of S&D of other companies to generate income. But SCBL have low portion of investment on S&D to total outside investment.
- The loan & advance to total deposit ratio of selected CBs shows that EBL is the most successful in utilizing its resources on L&A than other CBs. The mean ratio & CV also reveals that NIBL & NABIL are moderate in utilizing its resources on L&A, while SCBL & HBL are not so successful in better utilizing their total deposits on L&A.
- The total investment to total deposits ratio of selected CBs shows that SCBL is the most successful in utilizing its resources on investment than others CBs. The mean ratio & CV also reveals that NABIL & HBL are moderate in utilizing its resources on investment. While NIBL & EBL are not so successful in better utilizing their total deposits on investment of various assets.
- On the basis of investment amount, the CBs gives first priority to invest their resources on loan and advances, then to govt. securities and lastly to share and debentures. Therefore CBs invest highest part of the resources to loan and advances.
- The total investment, total deposit and investment on S&D, L&A & govt. securities of CBs are increasing per year. In trend analysis the investment of CBs on S&D is increasing more rapidly than govt. securities and govt. securities is increasing more rapidly than L&A during the period on the study.

- CBs make faltering to invest on long term govt. securities that provide usual constant return. So that CV of government securities is privileged.
- Rate of return of S&D is high, but the risk is also high, so that loan & advances is advanced than government securities and govt. securities are advanced than S&D according to the individual risk and return.
- By using Sharpe's portfolio performance test, it indicates that investment on loan & advances is the superior performance than that of investment on share & debentures, portfolio & govt. securities.
- The portfolio has lower performance than loan & advances, which shows that the CBs are not properly using portfolio concept to reduce risk and increase return from their investment.
- It shows that the CBs are not using proper diversification of funds among various assets.

Conclusions

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

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

companies. Which terminate that the CBs are invested on less risky sectors by which CBs can reduce risk, but reduce on return also? From the various ratios relating with the utilization of resources on investment it can be accomplished that SCBL is the bank which shows better performance on their investment strategies. While EBL, NIBL, NABIL imitate moderate performance in utilization of overall resources. And HBL is the weakest bank to mobilize its total resources in various investment assets among five CBs.

While comparing the investment portfolio weight set up by the CBs with directives given by the central banks, the banks have not followed the directives. Directives direct not to invest more than 50% in one sector but most of the banks have invested more than 90% of their funds into one sector. From investment portfolio analysis, it is accomplished that the CBs are given first priority to invest their funds in the govt. sector due to less risky and second priority given to the share & debentures of other companies. And in the case of investment on loan & advances portfolio CBs are concentration in the private sector due to high return from them and given second priority to foreign bills P&D and lastly on the govt. enterprises due to the less return from them. CBs flow their funds from higher level of return to lower level for return.

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

The trend analysis of the CBs accomplished that totals investment, total deposit, investment on share & debentures, investment on loan & advances, investment on govt. securities are ever-increasing per year. Hence it accomplished that CBs are not proper utilizing portfolio management and scientific diversification approach on investment. They try to maximize their return but do not minimize risk by investing their funds in the appropriate combination of risky and less risky assets. SCBL & NABIL are the bank which shows better performance on investment operation. But EBL is the weakest bank to mobilize its total resources in various investment assets. And NIBL & HBL shows moderate performance in utilizing its resources. From

this it is accomplished that the recently established banks are penetrating the sectors to utilize their resources but glowing established banks are good track of utilization of resources.

Recommendations

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

- In investment portfolio, except NIBL all other four CBs are focusing on govt. securities for their investment as a result of various factors, among which the important ones are government policy & regulation framework of the central banks. Therefore, investment on govt. securities should be decreased and investment on other investment should be increased.
- The profitability position of HBL is the weakest in relation on return on assets. So, the bank should utilize its overall resources effectively to gain the peak profit margins.
- From the analysis of investment operation of CBs, NIBL & EBL increase its total investment by increasing total deposit and increasing investment on government securities.
- HBL & SCBL are not successful in better utilizing their total deposits on loan & advances so that it is recommended that they should increase the amount of loan & advances.
- NIBL should invest more funds in government securities to control the risk.
- Among the five CBs, SCBL is the more excellent bank which is utilizing the investment in various assets and its best position on ratio analysis. The lowest investment on S&D to total outside investment and L&A to total deposit of SCBL is insufficient to reduce existing total risk. So that SCBL is to raise the investment on S&D of other companies and increased in loan & advances.

- Nepalese CBs have not formulated their investment policy in organized manner. They don't diversify the investment. Hence, CBs need to change their investment policy and investment in different sector not only high percentage on risk free assets but also on risky assets. From risky sectors there is a great opportunity for CBs to get higher return by using portfolio concept.
- Portfolio condition of a bank should be regularly revised from time to time. It should always try to maintain the balance in the portfolio condition of the bank. Risk can be minimized by invest in more than one assets not on only one assets. CBs are not pretty booming to invest their funds in various assets. CBs are investing more of the funds on only L&A but lower part of their funds in govt. securities and S&D. Commencing above study, correlation coefficient between investment assets in-ve, which shows the fair opportunities for the CBs to minimize risk by investing in assets in suitable part. So, CBs must diversify appropriate proportion of their funds in the field of share & debentures along with govt. securities.
- It is clear from the able study that some CBs are able to exploit portfolio management concept in the field of investment, which is not satisfactory to reduce risk and maximize return in the finest level. So that CBs should use portfolio management concept usefulness & extend opportunities for exercising the portfolio management in investment.

BIBLIOGRAPHY

BOOKS

- Bajracharya, B.C., (2058) “**Basic Statistics**”, M.K. Publishers and Distributor Kathmandu.
- Bodie, Kane and Marcus, (1995) “**Investment**”, Richard D. Irwin, USA.
- Cheney, John M. and Edward A. Moses, (1999) “**Fundamentals of Investments**”, West Publishing Company, St. Paul
- Elton, Edwin J. and Martin J. Gruber (2001) “**Modern Portfolio Theory and Investment Analysis**” 5th Edition. John Wiley and Sons Inc., Singapore.
- Fisher E. Donald and Ronald J. Jordan (2000). “**Security Analysis and Portfolio Management**” 6th Edition. Prentice Hall of India Pvt. Ltd., New Delhi.
- Frank and Reilly, (1996) “**Investment**” the Dryden press, CBS Publishing Japan Ltd..Japan
- Gitman L.J and Joehnk, (1990), “**Fundamentals of Investment**”, New York
- Gitman, L.J., (1998), “**Principal of Management Finance**”, San Diego State University
- Gupta, S.C., (1987), “**Fundamentals of statistics**”, Himalayan Publishing House, Bombay
- Kothari, C.R. “**Research Methodology Method and Techniques**” 2nd edition, Vikas Publishing House Pvt. Ltd., New Delhi
- Panday, I.M., (1997) “**Financial Management**”, Vikas Publishing House Pvt. Ltd.
- Pradhan, Surendra, “**Basics of Financial Management**”, 2nd edition, Educational Enterprise Pvt. Ltd., Kathmandu

- Singh, Preeti, (2003) **“Investment Management”**, Himalayan Publishing House, Bombay.
- Van Horne, J.C., (1999) **“Financial Management and Policy”**, prentice Hall of India Pvt. Ltd., New Delhi
- Weston, J. Fred and Eugene F. Brigham, (1999) **“Essentials of Managerial Finance”**, The Dryden Press, Chicago
- Weston, J. Fred and Thomas E. Copeland, (1998) **“Managerial Finance”**, The Dryden Press, Chicago.
- William F. Sharpe, Alexander J. Gordon, Baily V. Jeffery, (1996) **“Investment”**, Pentice Hall of India Pvt. Ltd. New Delhi
- Wolff, H.K. and Pant P.R., (1997) **“Social Science Research and Thesis Writing”**, Buddha Academic Enterprises Pvt. Ltd.

Journals and Periodicals

- Berger, Paul D. and Zvi Bodie, **“Optimal Portfolio Selection in a Winner Take all Environments”** Journal of Finance Vol. 34 P.No. – 233-236
- Gaumnitz, Jack E., **“Appraising Performance of Investment Portfolio”** Journal of Finance Vol. 25, June 1970 P.No. -555-560
- Jones, Mark Britten, **“The Sampling Error in Estimates of Mean Variance Efficient Portfolio Weights”** Journal of Finance Vol. 54 No.2, 1999, P.No. – 655-668
- Kane, Edward J. and Stephen A. Buser, **“Portfolio Diversification at Commercial Banks”**, Journal of Finance Vol.34 No. 1, 1979 P.No. – 19-31
- Martin, John D. and Robert C. Klemkosky, **“The Effect of Homogeneous Stock Grouping on Portfolio Risk”** Journal of Business Vol. 49. P.No. -239-246

Shrestha, Shiva Raj, **“Portfolio Management in Commercial Banks, Theory and Practice”** Nepal Bank Patrika, Baishakh 2055

Thapa Chandra, **“Managing Banking Risk”**, The Kathmandu Post, 9th March 2003

Mahat, L.D., **“Efficient Banking”**, The Kathmandu Post, 8th April 2004

Dissertations

Shrestha, Sunity, **“Portfolio Behavior of Commercial Banks in Nepal”**, Mandala Book Point, Kathmandu, 1995 (Based on her Ph.D. thesis “Investment Planning of Commercial Bank in Nepal”, 1993)

Khaniya (Banjade), Kalpana, **“Investment Portfolio Analysis of JVBs in Nepal”** Master Degree Thesis, SDC 2003

Manandhar, Manilata, **“Analysis of Risk and Return on Common Stock Investment of CBs in Nepal”** Master Degree Thesis, SDC 2003

Shah, Sabita, **“Impact of Interest Rate Structure on Investment Portfolio of CBs in Nepal”** Master Degree Thesis, SDC 2004

Shrestha, Natasha, **“Portfolio Analysis of Common Stock of CBs of Nepal”** Master Degree Thesis, SDC 2005

Shrestha, Sunity, **“Investment Planning of CBs in Nepal”** Based on her Ph.D. Thesis 1993

Official Publications

Annual Report – Standard Chartered Bank Ltd., FY 1997/98 – 2004/05

Annual Report – Nepal Investment Bank Ltd., FY 1997/98 – 2004/05

Annual Report – Nabil Bank Ltd., FY 1997/98 – 2004/05

Annual Report – Everest Bank Ltd., FY 1997/98 – 2004/05

Annual Report – Himalayan Bank Ltd., FY 1997/98 – 2004/05

Banking and Financial Statistics – Banking Operation Department, NRB,
No. 43

Directives to Commercial Banks - Directive No. 8, NRB Banking Operation
Department, P.No. -81-82

Economic Report – Research Department, NRB, FY 2004/05

Economic Survey – HMG Ministry of Finance, FY 2004/05

Macro Economic Indicators (Monthly Report), May/June/July 2005,
Research Department, NRB

Non Banking Financial Statistics – Non Banking Regulation Department,
NRB, No. 5,6&7

NRB Samachar – Research Department, NRB 2004

Principal of Bank Operations American Institution of Banking 1972,
P.No. – 345

Trading Report – Research and Planning Division, Nepal Stock Exchange
Ltd., Singadurbar Plaza, Ktm., Nepal, FY 1997 – 2005

Web Sites

www.aaii.com
www.sebonp.com
www.teachmefinance.com
www.emraldinside.com
www.blackwell_sunergy.com
www.searchepnet.com
www.business.com
www.nepalstock.com.np
www.nrb.org.np

APPENDIX - I

Tabulation of available financial data of various CBs

a) Investment on Government Securities						<i>(Rs. in '000')</i>
FY	SCBL	NIBL	NABIL	EBL	HBL	CBs
1997/98	1025501	10000	673425	111054	970877	2790857
1998/99	2669880	90000	1402848	184912	459448	4807088
1999/00	3338672	-	1233822	257612	2206921	7037027
2000/01	4811010	300000	2767959	822996	2025252	10727217
2001/02	5784723	224400	4120294	1538897	2588562	14256876
2002/03	6581348	400000	3588772	1599350	3347102	15516572
2003/04	7948217	2001100	3672626	2466428	3431728	19520099
2004/05	7203066	1948500	2413939	2100289	5469729	19135523
Total	39362417	4974000	19873685	9081538	20499619	93791259
Average	4292785	448185.71	2402386	889192.9	2047383.75	10079933.7

b) % Share of Investment on Government Securities of each Banks (%)

FY	SCBL	NIBL	NABIL	EBL	HBL
1997/98	36.74	0.36	24.12	3.98	34.78
1998/99	55.54	1.87	29.18	3.85	9.56
1999/00	47.44	-	17.53	3.66	31.36
2000/01	44.85	2.79	25.8	7.67	18.88
2001/02	40.57	1.57	28.9	10.79	18.16
2002/03	42.41	2.58	23.13	10.31	21.57
2003/04	40.72	10.25	18.81	12.64	17.58
2004/05	37.64	10.18	12.61	10.97	28.58
Mean	43.24	4.22	22.51	7.98	22.56
S.D.	5.75	3.89	5.42	3.45	7.83
C.V.	13.29**	92.18	24.07	43.23	34.70

c) Calculation of Standard Deviation of govt. Securities (%)

FY	SCBL	NIBL	NABIL	EBL	HBL
1997/98	42.24*	11.15	2.59	16	149.32
1998/99	151.29	3.34	44.48	17.05	169
1999/00	17.64	-	24.8	18.66	77.44
2000/01	2.59	0.82	10.82	0.09	13.54
2001/02	7.12	4.53	40.83	7.89	19.36
2002/03	0.68	1.25	0.38	5.42	0.98
2003/04	6.35	42.9	13.69	21.71	24.8
2004/05	31.36	41.99	98.01	8.94	36.24
Total	259.27	105.98	235.6	95.76	490.68
	5.70**	3.89	5.42	3.45	7.83

$$* = (36.74 - 43.24)^2 = 42.25$$

$$**\dagger = \sqrt{\frac{\sum (R - \bar{R})^2}{n}} = \sqrt{\frac{264.64}{8}} = 5.70$$

d) Investment on Share & Debentures

(Rs. in '000')

FY	SCBL	NIBL	NABIL	EBL	HBL	CBs
1997/98	6000	7500	9725	-	3101	26326
1998/99	11195	12695	16512	2500	9496	52398
1999/00	11195	12695	16120	2500	9494	52004
2000/01	11195	12695	18820	3700	10691	57101
2001/02	11195	13895	22220	17114	34265	98689
2002/03	11195	13895	22220	17114	34265	98689
2003/04	11195	13895	22220	17114	34265	98689
2004/05	13348	17738	27363	19387	39909	117745
Total	86518	105008	155200	79429	175486	601641
Average	10814.75	13126	19400	11347	21935.75	75205.12

e) Investment on Loan & Advances

(Rs. in '000')

FY	SCBL	NIBL	NABIL	EBL	HBL	CBs
1997/98	4027982	1566551	4891785	805645	4031190	15323153
1998/99	3970646	1298325	5396819	1316005	5144469	17126264
1999/00	4658170	1984239	6902187	2230781	6891268	22666645
2000/01	5660803	2318907	7993282	2959446	8651735	27584173
2001/02	5248362	2518057	7135536	3923601	1020052	29026108
2002/03	5574061	5648032	7454262	4882788	10001848	33560991
2003/04	6322852	6917796	7953759	5860541	11635308	38690256
2004/05	7831626	9933084	10465266	7589332	12088708	47908016
Total	43294502	32184991	58192896	29568139	68645078	231885606
Average	5411812.8	4023123.9	7274112	3696017.37	8580635	28985700.8

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

<i>FY</i>	<i>SCBL</i>	<i>NIBL</i>	<i>NABIL</i>	<i>EBL</i>	<i>HBL</i>	<i>CBs</i>
1997/98	1031501	17500	954150	217954	973979	3195084
1998/99	2681075	102695	1420360	283079	468945	4956154
1999/00	3349867	12695	1250943	260112	2216416	7090033
2000/01	9559175	1970277	7704308	901721	4083159	24218640
2001/02	9275884	1822162	8199514	1693036	9157106	30147702
2002/03	10216199	1705240	6031175	1653977	10175435	29782026
2003/04	11360328	3862483	5836068	2535657	9292102	32886638
2004/05	9702553	3934189	4269658	2128932	11692342	31727674
Total	57176582	13427241	35666176	9674468	48059484	164003951
Average	7147073	1678405.1	4458272	1209308.5	6007435.5	20500493.9

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

<i>FY</i>	<i>SCBL</i>	<i>NIBL</i>	<i>NABIL</i>	<i>EBL</i>	<i>HBL</i>	<i>CBs</i>
1997/98	8530025	2582208	87377765	1124903	7713600	28688501
1998/99	11165165	2438893	9464279	1948946	9772735	34790018
1999/00	12565487	2983281	12779509	3057423	14043096	45428796
2000/01	15430051	4256210	15839007	4574508	17532404	57632180
2001/02	15835747	4174762	15506428	5466609	18619375	59602921
2002/03	18755634	7922766	13447661	6694963	21045086	67866110
2003/04	2161441	11524679	14119032	8063902	22010332	76879386
2004/05	19335095	14254574	14585509	10097691	24814012	83087981
Total	103778645	50137373	104480290	41028945	135540640	453975893
Average	12972330.63	6267171.63	13060036.25	5128618.13	16942580	56746986.63

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

<i>FY</i>	<i>SCBL</i>	<i>NIBL</i>	<i>NABIL</i>	<i>EBL</i>	<i>HBL</i>	<i>CBs</i>
1997/98	292369	93839	174795	25033	135969	722005
1998/99	359452	45694	266490	25230	165248	862114
1999/00	392592	72659	329104	41265	199380	1035000
2000/01	430831	56408	291376	69705	277040	1125360
2001/02	479206	57105	271638	84347	235023	1128319
2002/03	506932	116817	416235	94180	212128	1346292
2003/04	537800	152670	455311	143566	263053	1552400
2004/05	539204	232147	518636	170808	308275	1769070
Total	3538386	827339	2723585	654134	1796116	9539560
Average	442298.25	103417.38	340448.13	81766.75	224514.50	1192445

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

<i>FY</i>	<i>SCBL</i>	<i>NIBL</i>	<i>NABIL</i>	<i>EBL</i>	<i>HBL</i>	<i>CBs</i>
1997/98	10256167	3322263	11001285	1416591	8734542	34730848
1998/99	13016971	3106152	11592104	2275014	11244096	41234337
1999/00	16832238	3796700	15024203	3411695	15863740	54928576
2000/01	19357198	5127362	18367148	5202576	19500572	67554856
2001/02	18443102	4973888	17629252	6607170	21315848	68969260
2002/03	20910970	9014249	16562524	8052209	23279348	77819393
2003/04	23642059	13255496	16745486	9608570	24762024	88013635
2004/05	29893578	16274064	17186331	11792126	27844695	102990794
Total	152352283	58870174	124108333	48365951	152544858	536241599
Average	19044035.38	7358771.75	15513541.06	6045743.88	19068107.25	67030199.98

j) Total outside Investment**(Rs. in '000')**

<i>FY</i>	<i>SCBL</i>	<i>NIBL</i>	<i>NABIL</i>	<i>EBL</i>	<i>HBL</i>	<i>CBs</i>
1997/98	5285082	1690971	6178224	1089632	5197046	19440955
1998/99	6752699	1513927	7209290	1647963	5780614	22904493
1999/00	8207037	2083373	8585699	2530292	9441143	30847544
2000/01	15322310	4399302	16028747	3907479	12984437	52642275
2001/02	14639888	4386584	15637408	5641514	18070830	58376224
2002/03	15912022	7477380	13787127	6562437	20177283	63916249
2003/04	17770570	10992608	14025941	8419780	21243971	72452870
2004/05	17845761	14060244	14855828	9747603	24116862	80626298
Total	101735369	46604389	96308264	39546700	117012186	401206908
Average	12716921.13	5825548.63	12038533	4943337.5	14626523.25	50150863.50

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

<i>FY</i>	<i>SCBL</i>	<i>NIBL</i>	<i>NABIL</i>	<i>EBL</i>	<i>HBL</i>	<i>CBs</i>
1997/98	105456	1064	57171	3661	44394	211746
1998/99	67294	1317	72269	3476	18381	162737
1999/00	162859	387	92969	11881	75439	343535
2000/01	229454	9792	107843	19116	64960	431165
2001/02	264953	11027	175579	39740	79894	571193
2002/03	303543	10227	174861	48744	121543	658918
2003/04	380441	35868	192761	92509	170332	871911
2004/05	331633	56550	151064	77993	149131	766371
Total	1845633	126232	1024517	297120	724074	4017576
Average	230704.13	15779	128064.63	37140	90509.25	502197

l) Interest Income on Loan & Advances**(Rs. in '000')**

<i>FY</i>	<i>SCBL</i>	<i>NIBL</i>	<i>NABIL</i>	<i>EBL</i>	<i>HBL</i>	<i>CBs</i>
1997/98	515743	270064	703160	94483	598251	2181701
1998/99	566730	215543	660447	162064	608144	2212928
1999/00	527795	197695	722567	241989	685293	2375339
2000/01	558102	229042	846764	348618	850359	2832885
2001/02	540851	258583	801046	395098	853429	2849007
2002/03	563505	421847	776300	464763	903838	3130253
2003/04	558006	663016	761616	563137	970166	3515941
2004/05	581664	769195	861830	633625	1122392	3968706
Total	4412396	3024985	6133730	2903777	6591872	23066760
Average	551549.50	378123.13	766716.25	362972.13	823984	2883345

m) Return on Government Securities**(Rs. in '000')**

<i>FY</i>	<i>SCBL</i>	<i>NIBL</i>	<i>NABIL</i>	<i>EBL</i>	<i>HBL</i>	<i>CBs</i>
1997/98	10.28	10.64	8.49	3.30	4.57	7.59
1998/99	2.52	1.46	5.15	1.88	4.00	3.39
1999/00	4.88	-	7.54	4.61	3.42	4.88
2000/01	4.58	4.91	4.26	2.32	3.21	4.02
2001/02	1.14	1.35	1.27	2.58	3.09	4.00
2002/03	4.61	2.56	4.87	3.05	6.63	4.25
2003/04	4.78	1.79	5.25	3.75	4.96	4.47
2004/05	4.60	2.90	6.26	3.71	2.73	4.00
Total	37.39	25.61	43.09	25.20	32.61	36.60
Average	4.67	3.66	5.39	3.15	4.08	4.58

n) Return on Loan & Advances**(Rs. in '000')**

<i>FY</i>	<i>SCBL</i>	<i>NIBL</i>	<i>NABIL</i>	<i>EBL</i>	<i>HBL</i>	<i>CBs</i>
1997/98	12.80	17.24	14.37	11.73	14.84	14.24
1998/99	14.27	16.60	12.24	12.31	11.82	12.92
1999/00	11.33	9.96	10.47	10.85	9.94	10.48
2000/01	9.86	9.88	10.59	11.78	9.83	8.61
2001/02	10.31	10.27	11.23	10.07	8.37	9.82
2002/03	10.11	7.47	10.41	9.52	9.04	9.33
2003/04	8.83	9.58	9.58	9.61	8.34	9.09
2004/05	7.43	7.74	8.24	8.35	9.28	8.28
Total	84.94	88.74	87.13	84.22	81.46	82.77
Average	10.62	11.09	10.89	10.53	10.18	10.35

APPENDIX – II

a) Investment Portfolio Analysis (%)

	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	Mean
SCBL									
<i>Govt. Securities</i>	99.43	99.58	99.67	99.77	62.36	64.91	69.96	74.23	83.73
<i>Share & Deb.</i>	0.57	0.42	0.33	0.23	37.64	35.09	30.04	25.77	16.27
<i>NRB Bond</i>	0	0	0	0	0	0	0	0	0
NIBL									
<i>Govt. Securities</i>	57.14	87.63	0	95.94	85.65	22.92	47.96	49.52	55.84
<i>Share & Deb.</i>	42.86	12.37	100	4.06	14.35	77.08	52.04	50.48	44.16
<i>NRB Bond</i>	0	0	0	0	0	0	0	0	0
NABIL									
<i>Govt. Securities</i>	98.88	98.77	98.63	99.28	79.20	99.34	99.34	56.53	91.24
<i>Share & Deb.</i>	1.12	1.23	1.37	0.72	20.80	0.66	0.66	43.47	8.76
<i>NRB Bond</i>	0	0	0	0	0	0	0	0	0
EBL									
<i>Govt. Securities</i>	100	98.67	99.04	99.55	94.49	98.94	99.31	98.65	98.58
<i>Share & Deb.</i>	0	1.33	0.96	0.45	5.51	1.06	0.69	1.35	1.42
<i>NRB Bond</i>	0	0	0	0	0	0	0	0	0
HBL									
<i>Govt. Securities</i>	99.68	97.97	99.57	99.52	98.70	99.15	96.64	46.78	92.25
<i>Share & Deb.</i>	0.32	2.03	0.43	0.48	1.30	0.85	3.36	53.22	7.75
<i>NRB Bond</i>	0	0	0	0	0	0	0	0	0

b) Loan & Advances Portfolio Analysis (%)

	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	Mean
SCBL									
<i>Govt. Entp.</i>	4.12	3.21	7.37	6.08	4.94	0.85	0.10	2.58	3.65
<i>Pvt. Sector</i>	90.23	94.24	88.64	92.48	93.12	98.29	98.90	93.74	93.70
<i>For. Bill P&D</i>	5.65	2.55	3.99	1.44	1.94	0.86	1.00	3.68	2.65
NIBL									
<i>Govt. Entp.</i>	1.49	1.76	1.21	1.03	0.92	1.93	2.33	0.65	1.41
<i>Pvt. Sector</i>	94.92	93.50	96.50	97.09	98.24	96.78	96.08	97.49	96.32
<i>For. Bill P&D</i>	3.59	4.74	2.29	1.88	0.84	1.29	1.59	1.86	2.27
NABIL									
<i>Govt. Entp.</i>	1.51	1.08	1.50	1.20	0.88	0.25	0.23	4.23	1.36
<i>Pvt. Sector</i>	94.50	93.48	93.64	95.66	95.62	96.47	98.23	94.47	95.26
<i>For. Bill P&D</i>	3.99	5.44	4.86	3.14	3.50	3.28	1.54	1.3	3.38
EBL									
<i>Govt. Entp.</i>	0	0	0	0	0	1.19	1.13	6.33	1.08
<i>Pvt. Sector</i>	92.39	96.86	98.26	98.57	99.67	98.44	98.63	93.29	97.01
<i>For. Bill P&D</i>	7.61	3.17	1.74	1.43	0.33	0.37	0.24	0.38	1.91
HBL									
<i>Govt. Entp.</i>	1.40	4.98	2.69	5.85	3.64	6.71	5.86	0	3.89
<i>Pvt. Sector</i>	94.14	93.18	95.60	90.45	96.36	91.67	94.14	97.45	94.12
<i>For. Bill P&D</i>	4.46	1.84	1.70	3.70	0	1.62	0	2.55	1.99

APPENDIX - III

Calculation of Correlation between Various Investment Securities of CBs

Year	Return on Govt. Securities (R_g)	Return on Loan & Advances (R_l)	Return on Share & Debenture (R_s)	$R_g \times R_l$	$R_g \times R_s$	$R_l \times R_s$	$(R_g)^2$	$(R_l)^2$	$(R_s)^2$
1997/98	7.59	14.24	18.94	108.08	143.75	269.70	57.61	202.77	358.72
1998/99	3.39	12.92	52.50	43.80	177.97	678.30	11.49	166.93	2756.20
1999/00	4.88	10.48	88.55	51.14	432.12	928	23.81	109.83	7841.10
2000/01	4.02	10.27	19.60	41.29	78.79	201.29	16.16	105.47	384.16
2001/02	4.00	9.82	-31.48	39.28	-	-309.13	16.00	96.43	991
					125.92				
2002/03	4.25	9.33	-14.47	39.65	-61.49	-135	18.06	87.05	209.38
2003/04	4.474	9.09	20.15	40.63	90.15	183.16	19.98	82.63	406.02
2004/05	4.00	8.21	36.25	32.84	145	297.61	16	67.40	1314.06
Total	36.60	84.36	190.04	396.71	880.37	2113.93	179.11	918.51	14260.6

Now,

Correlation Coefficient between (R_g) & (R_l)

$$r_{gl} = \frac{N \sum R_g R_l - \sum R_g \sum R_l}{\sqrt{N \sum R_g^2 - (\sum R_g)^2} \times \sqrt{N \sum R_l^2 - (\sum R_l)^2}}$$

$$= \frac{8 \times 396.71 - 36.60 \times 84.36}{\sqrt{8 \times 179.11 - (36.60)^2} \times \sqrt{8 \times 918.51 - (84.36)^2}}$$

= 0.613 (normal positive relationship between return on government securities and loan & advances)

Correlation Coefficient between (R_g) & (R_s)

$$r_{gs} = \frac{N \sum R_g R_s - \sum R_g \sum R_s}{\sqrt{N \sum R_g^2 - (\sum R_g)^2} \times \sqrt{N \sum R_s^2 - (\sum R_s)^2}}$$

$$= \frac{8 \times 880.37 - 36.60 \times 190.04}{\sqrt{8 \times 179.11 - (36.60)^2} \times \sqrt{8 \times 14260.60 - (190.04)^2}}$$

= 0.032 (low degree of positive relationship between government securities and share & debenture)

Correlation Coefficient between (R_l) & (R_s)

$$r_{ls} = \frac{N \sum R_l R_s - \sum R_l \sum R_s}{\sqrt{N \sum R_l^2 - (\sum R_l)^2} \times \sqrt{N \sum R_s^2 - (\sum R_s)^2}}$$

$$= \frac{8 \times 2113.93 - 84.36 \times 190.04}{\sqrt{8 \times 918.51 - (84.36)^2} \times \sqrt{8 \times 14260.60 - (190.04)^2}}$$

= 0.207 (low degree of positive relationship between loan & advance and share & debenture)

APPENDIX - IV

A Sample Calculation of Straight Line Trend

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

$$y = a + bx$$

For finding the value of a & b we have

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

Let, FY 1997/98 is equal to 1998, 1998/99 to 1999 & so on. So, deviations are taken from the middle of the years.

Trend Line by Least Square Method

Rs. in million

<i>Year (t)</i>	<i>Total investment of CBs (y)</i>	<i>x=t-2001.5</i>	<i>xy</i>	<i>x²</i>
1998	3195.08	-3.5	-11182.78	12.25
1999	4956.15	-2.5	-12390.37	6.25
2000	7090.03	-1.5	-10635.04	2.25
2001	24218.64	-0.5	-12109.32	0.25
2002	30147.70	0.5	15073.85	0.25
2003	29782.02	1.5	44673.03	2.25
2004	32886.63	2.5	82216.57	6.25
2005	31727.67	3.5	111046.84	12.25
	y=164003.92	x=0	xy=206692.78	x ² = 42

Here,

$$\sum x = 0$$

$$a = \frac{\sum y}{n} = \frac{164003.92}{8} = 20500.49$$

$$b = \frac{\sum xy}{\sum x^2} = \frac{206692.78}{42} = 4921.25$$

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

$$Y_c = a + bx$$

$$= 20500.49 + 4921.25x$$