INVESTMENT POLICY OF NEPALESE COMMERCIAL BANKS

(A Study of Selected Nepalese Listed Commercial Banks)

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has been prepared as approved by this Department in the prescribed format of the Faculty of Management. This thesis is forwarded for examination.

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VIVA-VOCE SHEET

We have conducted the viva –voce examination of the thesis presented

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INVESTMENT POLICY OF NEPALESE COMMERCIAL BANKS

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Degree of Master's in Business Studies (M.B.S.)

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DECLARATION

I hereby declare that the work reported in this thesis entitled **"Investment Policy of Nepalese Commercial Banks (A Study of Selected Nepalese Listed Commercial Banks)"** submitted to Office of the Dean, Faculty of Management, Tribhuvan University, is my original work done in the form of partial fulfillment of the requirement for the Master's Degree in Business Study (M.B.S.) under the supervision of **Mr. Dev Raj Shrestha**, Lecturer of Post Graduate Campus, Biratnagar.

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TABLE OF CONTENTS

CHAPTER – II REVIEW OF LITERATURE

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS

A.D	:	Anno Domini
A/C	:	Account
AGM	:	Annual General Meeting
ATM	:	Automatic Teller Machine
B.S.	:	Bikram Sambat
CAPM	:	Capital Assets Pricing Model
CBs	:	Commercial Banks
CDs	:	Certificate of Deposit
Co.	:	Company
CRR	:	Cash Reserve Ratio
CV	:	Coefficient of Variation
EBL	:	Everest Bank Limited
FY	:	Fiscal Year
GDP	:	Gross Domestic Product
Govt.	:	Government
HBL	:	Himalayan Bank Limited
HMG	:	His Majesty's Government
i.e.	:	That is
IFIC	:	International Finance Investment and Commercial Bank
IMF	:	International Monetary Fund
JVBs	:	Joint Venture Banks
LC	:	Letter of Credit
Ltd.	:	Limited
Mkt.	:	Market
MSCI	:	Morgan Stanley Capital International
NEPSE	:	Nepal Stock Exchange
NIBL	:	Nepal Investment Bank Limited
NPAT	:	Net Profit After Tax

NRB	:	Nepal Rastra Bank
NYSE	:	New York Stock Exchange
OLS	:	Ordinary Least Squares
P	:	Page
P & D	:	Purchase and Discount
PV	:	Present Value
PVT.	:	Private
R&R	:	Risk and Return
RBB	:	Rastriya Banijya Bank
RWA	:	Risk Weighted Assets
SCBL	:	Standard Chartered Bank Limited
SEBO	:	Securities Board
TBs	:	Treasury Bills
TOI	:	Total outside Investment
TU	:	Tribhuvan University
US	:	United States

CHAPTER – I

INTRODUCTION

1.1 Background

Development of every nation depends on different activities among which economic activities are considered as the backbone of development of the nation. The economy of the nation is strictly based on the proper and efficient utilization of available natural resources with well planned management, strategy and up to date information. The utilization of resources results its appreciation of the wealth of individual and the nation.

For the strengthening the economy of any country both the private and public sector should play a great role. Both private and public sector have been contributing to our nation. Integrated and speedily development of the country is possible only when competitive banking service reaches nook and corners of the country. Commercial banks occupy an important place in the framework of every economy because they provide capital for the development of industry, trade, business and other resources deficit sectors by investing the saving collected as deposits. All the economic activities of each and every country are greatly influenced by the commercial banking business of the country.

Banks are the essential part of the business activities which are established to safeguard people's money and thereby using the money in making loans and investments. There are several commercial banks operating inside and outside valley. Every bank invests its money in some profitable financial sector, which may result in profitable business in the long range. An investment is the commitment of money that is expected to generate additional money. Human nature doesn't satisfy for whatever he/she at present tends to have more than whatever he/she has. So expecting the additional return he/she tends to sacrifice the current resources. Whenever we talk about the return risk too must not be avoided, because in every type of return, risk is involved. "Every investment entails some degree of risk, it requires at present certain sacrifice for a future uncertain benefits" (Francis 1998:1)

The network of a well-organized financial system of the country has great bearing in capital formation. It collects scattered financial resources from the masses and invests them among those engaged in commercial and economic activities of the country. It has been well established that the economic activities of any country can hardly be carried forward without the assistance and support of financial institutions. Financial institutions have catalytic role in the process of economic development. Thus, commercial banks have become the heart of financial system. A key factor in the development in the country is the mobilization of domestic resources and their investment for productive use to the various sectors. To make it more effective, CBs formulate sound investment policies, which help maximize quality of investment and eventually contribute to the economic growth of a country.

A portfolio is usually defined as a combination of assets. It is a collection of securities. Portfolio provides the highest possible return for any specified degree of 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 proactive among the investors having their funds in more than one asset. Successful formulation and effective implementation of investment policy is the prime requisite for the successful performance of banks. Good investment policy has a positive impact on economic development of the country and vice-versa. 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 in the country is the mobilization of domestic resources and their investment for productive use to the various sectors by commercial banks. Investment portfolio is one which the incomer or profit of the bank depend upon directly to minimize risk, a bank must diversity its investment on different sectors which is known as portfolio investment. Investment portfolio means to reduce risk and divided the investment in different sectors by the means of risk. Portfolio analysis considers the determination of future risk and return in holding various blends of individual securities.

1.1.1 Commercial Banks

A banks is a business organization that receive and holds deposit funds other, makes loans and extend credit and transfers funds by written order deposit. According to Nepal Commercial Banks Act 2031 “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 2031:25). Commercial Banks are those financial institutions deal in accepting deposits to persons 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 banks are organization on a joint stock company system, primarily for the purpose of earning profit. They can either of the branches banking type, with a large network of branches, or of the unit banking type as we see in the United States, where a bank’s operation is confined to single office or to a few branches within a strictly limited area.

“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.” (Ronald 2000 345-346)

Commercial banks is a heart of financial system they hold the deposits of many person, Government establishment. Business unit, they make fund available through their lending and investing activities to borrower, individuals, business firms and service from producers to customers and the financial activities of the government. They provide a large portion is affected. These fact shows that the commercial banking system of nation is import to the functioning of the economy.

In this way commercial banks are those banks, which are engaged in commercial banking transaction and exclude from description. From the above definition of commercial bank, it can be defined as a bank is a financial institution, which performs widest range of economic and financial functions of any business firm in the economy. The commercial banks are these financial institutions, which collect scattered saving of people and provide loan against proper technical helps and suggestions, administrative suggestion, safe 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 of country and invest in highly return yielding firm. It develops saving habits in people. CB's plays vital role for development of a developing country. Banks provides internal resources for developing country's economy. It collect diversified capital from different part of country through its own branches.

1.1.2 Investment Policy

The word investment sounds very good and attractive that is why every individual in the world is interested in it. In layman's sense, there is always a return if there is investment. This return may be favorable as well as unfavorable to the investor's stand point. Investment brings forth vision of profit, risk, speculation and wealth. For the uninformed, Investing may result in disaster. In general sense, investment means to pay out money to get more. But in the broadest sense, investment means the sacrifice of current money for future money.

"Investment brings forth vision of profit, risk, speculation and wealth. For the uninformed, investing may result in disaster. In general sense; investment means to pay out money to get more. But in the broadest sense, investment means the sacrifice of current money for future money. Two different attributes are generally involved time and risk. The sacrifice takes place in the present and is certain. The reward comes later, if at all, and the magnitude is generally uncertain." (Sharpe, Alexander and Baily 2003:1) Investment is employment of funds with the aim of achieving addition income

or growth in value. It involves the commitment of resources that have been saved or put away from current consumption, in the hope that some benefits will acquire in the future. Investment generally involves real assets and financial assets. Real assets investment involves some kinds of tangible assets such as building, land, machinery; factory etc. and financial assets investment are pieces of paper representing an indirect claim to real assets held by someone else. Real assets are generally less liquid than financial assets.

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. A portfolio is usually defined as a combination of asset.

“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.” (Western and Brigham 1992:245)

“Portfolio means a collection or group of assets.” (Gitman 1990:243)

Investment portfolio refers to an investment that combines several assets. It is a collection of securities. “Portfolio means the lists of holdings in securities owned by an investor or institution.” (Oxford Dictionary 1997:173). Portfolio theory deals with the selection of optimal portfolios 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.

Portfolio is a collection of investment securities for example, if you owned some of SCBL stock, some Nepal Insurance Co. Ltd. stock, some Soaltee Hotel Ltd. stock, some Kathmandu finance Ltd. Stock, some Salt trading ltd. stock, some Nepal lever ltd. stock, some Bottlers Nepal Ltd. stock you would be holding seven stock portfolios. 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. Investment portfolio is one which the income or profit of the banks depend upon directly. Hence, the banks should never invest its fund in those securities; difference may cause a great loss. It must not invest its funds into speculative businessman who may be bankrupt at once and who may earn millions in a minute. The bank should accept that type of securities which are commercial, durable, marketable stable, transferable and high market prices. A commercial bank can maximize its volume of wealth through maximization of return on their investments and lending. So they must invest their funds where they gain maximum profit. The profit of commercial banks mainly depends on the interest rate, volume, period of loan and nature of investment in different securities. While investing excess funds in different securities or at the lending period, the banks should keep in mind that the people deposit money at the bank in different account with confidence that the bank will repay their money when they need. Similarly a bank should not lay all its eggs on the same basket i.e. to minimize risk; a bank must diversify its investment on different sectors. Diversification of loan or investment 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.

Investment policy of any bank depends upon the riskiness of their assets they hold and the return from their investment. Most of commercial banks invest in the risky asses like hire purchase, auto loan, SME etc from which they gain more earnings but to maintain the risky portfolio they have to invest in other fixed income securities such as government bonds, treasury bills even the earning rate is lower.

1.1.3 Growth of Nepalese Commercial Banks

The evolution of the organized financial system in Nepal has a more recent history than in other countries of the world. Banking history of Nepal is not more than six decade. In Nepalese context, the history of development of modern bank started from the establishment of “Nepal Bank Ltd.” in 1937. With put forth effort of government and public, as a commercial bank with 10 million authorized capital. Then the government

felt the requirement of a central bank and established “Nepal Rastra Bank” in 1956. As a Central bank under NRB act 1956, it played leading role in development in banking in Nepal and also controlled the monetary culture in the country. Likewise, rising of banking function gets popular and more complicated, thus NRB suggested for the establishment of another commercial bank and in 1966, “Rastriya Banijya Bank” was established as a fully government owned commercial bank, now its branches are diversified all over the country. As the country moved towards economic liberalization in 1980, foreign banks were invited to operate in Nepal. The financial scenario has changed with the introduction of JVB’s in 1984. The number of commercial banks has been increasing. Since then, various financial institution like, JVB’s, Domestic commercial banks, Development banks, Finance companies, Co-operative banks Credit Guarantee Corporation, Employee Provident Fund, National Insurance Corporation, NEPAL Stock Exchange have come into existence to cater the financial needs of the country thereby assisting financial development of the country.

In 1990 after reestablished of democracy, the government took the liberal policy in banking sector. As an open policy of Government of Nepal’s to get permission to invest in banking sector from private and foreign investor under commercial bank act 1975, different private banks are getting permission to establish with the joint venture of other countries. The development of commercial banks in Nepal is categorized in three phases on the basis of financial institutions policies adopted by the country from time to time. They are:

CB’s prior to 1980’s ----- CB’s of 1980’s------ CB’s post 1990’s

There are only two banks prior to 1980’s they are NBL and RBB. All the three commercial banks of 1980’s were established as JVB. Similarly six commercial banks of past 1990’s were also come into operating as JVB’s. latest banks including Nepal Industrial and Commercial Bank Ltd., Laxmi Bank Ltd., Kumari Bank Ltd., Lumbini Bank Ltd., Machhapuchhre Bank Ltd., Siddhartha Bank Ltd., Global Bank Ltd., Citizen Bank Ltd., Prime Bank Ltd., Sunrise Bank Ltd., Bank of Asia Nepal Ltd and Kist Bank Ltd were established by private sector. Consequently the names of the banks

are also changed. Nepal Arab Bank Ltd., Nepal Grindleys Bank Ltd., Nepal Indosuez Bank Ltd., Nepal Bank of Ceylon Ltd., are known as Nabil Bank Ltd., Nepal Standard-Chartered Bank Ltd., Nepal Investment Bank Ltd., Nepal Credit & Commercial Bank Ltd., respectively.

Taking an overview of financial institutions providing banking facility in Nepal, there are 26 commercial banks, 74 finance companies, 59 development banks, 12 micro credit development banks and 17 co-operative societies licensed by NRB (Banking and Financial Statistics www.nrb.org.np: July 2009)

Nowadays, there are 26 commercial banks operating in Nepalese financial market along with 9 joint ventures with foreign investors.

Table: 1.1

List of Licensed Commercial Banks

Mid-July 2009

S.No.	Commercial Banks	Operation Date (A.D)	Head Office
1.	Nepal Bank Ltd	1937/11/15	Kathmandu
2.	Rastriya Banijya Bank Ltd	1966/01/23	Kathmandu
3.	NABIL Bank Ltd	1984/07/16	Kathmandu
4.	Nepal Investment Bank Ltd	1986/02/27	Kathmandu
5.	Standard Chartered Bank Nepal Ltd	1987/01/30	Kathmandu
6.	Himalayan Bank Ltd	1993/01/18	Kathmandu
7.	Nepal SBI Bank Ltd	1993/07/07	Kathmandu
8.	Nepal Bangladesh Bank Ltd	1993/06/05	Kathmandu
9.	Everest Bank Ltd	1994/10/18	Kathmandu
10.	Bank of Kathmandu Ltd	1995/03/12	Kathmandu
11.	Nepal Credit & Commerce Bank Ltd	1996/10/14	Siddharthanagar
12.	Lumbini Bank Ltd.	1998/07/17	Narayangadh
13.	Nepal Industry and Commercial Bank Ltd	1998/07/21	Biratnagar
14.	Machhapuchhre Bank Ltd	2000/10/03	Pokhara
15.	Kumari Bank Ltd	2001/04/03	Kathmandu

16.	Laxmi Bank Ltd	2002/04/01	Birgunj
17.	Siddhartha Bank Ltd	2002/12/24	Kathmandu
18.	Agriculture Development Bank Ltd	1968/01/02	Kathmandu
19.	Global Bank Ltd	2007/01/02	Birgunj, Parsa
20.	Citizen Bank Ltd	2007/06/21	Kathmandu
21.	Prime Bank Ltd	2007/09/24	Kathmandu
22.	Sunrise Bank Ltd	2007/10/12	Kathmandu
23.	Bank of Asia Nepal Ltd	2007/10/12	Kathmandu
24.	DCBL Bank Limited	2001/10/12	Kathmandu
25.	NMB Bank Limited	1996/11/26	Kathmandu
26.	Kist Bank Limited	2009/ 05/07	Kathmandu

(Source: http://bfr.nrb.org.np, 2009)

After the announcement of liberal and free market economic based policy, Nepalese banks and financial sectors are having greater network and access to national and international markets. They have to go with their portfolio management very seriously and superiority. Most of other commercial banks are providing new schemes like Insurance to depositor, which is an extra bonus to encourage them to deposit their surplus in such banks. Credit card system is other attractive feature of commercial banks i.e NABIL credit card, visa of NIBL, credit card of HBL has launched in market for their clients. EBL introduced cumulative deposit scheme (CDS) and facilities for Nepalese living in gulf countries for transfer of their savings to their home in Nepal by entering into drawing arrangements with exchange houses in UAE, Bahrain and Kuwait. And provided housing, vehicle and education loan to people, that means invest in other areas.

If commercial banks and financial institutions has to gain prosperity without delay, they should immediately start to improve customer service quality at high standards to reflect tremendous opportunities in the markets for their customers benefits like managing their risk, giving them the advantage of global strength, insights and philosophy because this can make the customer take full confidence to expands their transaction further more with best approach and feel secured for each investment made to earn superior returns over time. Therefore commercial banks should be aware and at

every moment while providing service to their customers and should have better judgment on the quality of service whether they could satisfy their customers up to their expectation and have been able to attract others as many to meet the objectives or not as a result of the quality in service delivered. Actually for commercial banks the customers act as the soul which help in correcting the problems of service providers with which the provides can identify the defects of the gaps to minimize them in time through strong and intensive analysis of their service market research team.

Nepal being listed among least developed countries, the commercial banks has played a catalytic role in the economic growth. Its investments range from small scale cottage industries to all types of social and commercial loans and large industries. Generally the investment of the commercial banks 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 commercial banks used their funds as loan and advances. The guidelines given by NRB play a significant role in the composition of bank portfolio. Since the constraints framework provided by the central bank is for economic enhancement, it can be hypothesized that the composition of bank portfolio has a considerable impact on national economy. Portfolio management activities of Nepalese banks are in developing stage, however, on the other hand most of the joint venture banks are not doing such activities so far.

1.2 Focus of the Study

Modern banking history of Nepal began from the establishment of Nepal Bank Ltd in 1936. In 1956 Nepal Rastra Bank came in existence as a central bank of our country. The focus of the study is on portfolio analysis on investment of selected commercial bank in Nepal. This study is designed to describe to minimized risk and maximized return by portfolio management and existing situation of portfolio management of commercial bank in Nepal. And to measure the financial performance of selected five listed banks in NEPSE, their risk, return, trend and portfolio patterns etc. On the other hand, the study would provide information to management of the bank that would help them to take collective action. Further from the study, the shareholders would get

information to make decision while making investment on share of various banks. There are following focus of study given below:

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

1.3 Statement of Problem

Commercial banks are the backbone of the Nepalese economy at present. Nepal being listed among least developed countries, the establishment of commercial bank in this sector has added more bricks in the construction of Nepalese economy. Its investment range from small-scale cottage industries to large industries in making investment in loans and government securities one may always wonder which investment is better. 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 behavior. The investments planning of the commercial banks in Nepal heavily depend upon the rules and regulation provided by the central banks. The composition of asset portfolio of the banks is influenced by the policy of the central bank.

Nowadays Nepalese commercial banks do not seem to be capable to invest their funds in more profitable sector where there is risk. They are found to more interest in investment in less risky and liquid sector i.e. treasury bills, development bonds, National savings, Shares and Debenture etc. according to short/ long term investment policy. They have to follow all the instruction and guidelines of NRB to have clear vision towards investment portfolio. They have to pay attention towards proper matching of deposit and investment portfolio, which decreases financial problem enforcing commercial banks.

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. Due to heavy rules and regulation by government policy, there are most important problems in investment climate prevailing in Nepal.

There are various problems in resources mobilization by commercial banks in Nepal. The most important problem is poor investment climate prevailing in Nepal due to heavy regulatory procedure uncertain government policy portfolio analysis between various types of investment 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 it's usefulness, hesitation of taking risk, lack of proper techniques to run such activities in the best and successful manner; less developed capital market, very limited opportunity 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 commercial banks can have sufficient liquidity and security. Banking competition is increasing day per day but investment opportunity is not comparatively extended. Now, commercial banks have to face competition with each other's and many more financial institutions.

Under such situation, the present study will try to analyze investment of commercial banks, portfolio analysis of commercial banks in their investment, return on various types of investment, portfolio risk and return. Therefore, this study will deal with the following issues.

- What is the relationship of investment with total deposits, loan and advances, net income?

- 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?
- Whether commercial banks effectively utilize portfolio concept in their investment to minimize risk and maximize return or not?
- Which bank has the largest degree of financial risk measured in terms of portfolio risk?
- How do the banks behave for portfolio variables?
- Is investment portfolio directed towards objectives of profit maximization?

1.4 Objectives of the Study

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

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

1.5 Significance of the Study

Banks are playing vital role in the economic development of the country. Without banking facilities, the growth and the economic development becomes slow. The main objectives of commercial banks is to earn profit by proper mobilization of resources in Nepalese commercial banks, they don't have clear view towards effective investment. They are found to be making investment only on short term basis, only few banks invest on long terms nowadays. There is hesitation to invest on long terms projects because they are much more safety minded. They do not seem to be capable to invest

their funds in more profitable sector. They are found to be more interested in investment in less risky and highly liquid sectors. There are various ways to minimize risk, but the bank are not aware of this and do not pay any attention toward such field i.e. they do not think about portfolio investment.

The main significance of this study of investment policy of Nepalese commercial banks is to help how to minimize risk on investment and maximize return through portfolio analysis. The researcher has undertaken this study to analyze the existing portfolio investment of Nepalese commercial banks and point out the various weakness and defects inherent in it and provide package of suggestion for its improvement.

There are following significance of the study

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

1.6 Limitations of Study

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

This study has employed secondary data published by and collection from selected banks.

- Among the various commercial banks, only five commercial banks are taken under study.
- The study covers a period of 6 fiscal years which will be tabulated and processed for drawing conclusion.
- The accuracy of the research work will be dependent on data provided by concerned organization.

- Time factor is major limitation of this study.
- This study concentrates only on those factors, which are related with investment portfolio analysis and available in the form required for analyzing the different issues.

1.7 Organization of the Study

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

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

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

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

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

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

CHAPTER - II

REVIEW OF LITERATURE

In this chapter, the focus has been made on the review of literature relevant to the investment portfolio analysis of commercial banks in Nepal. For this study, different Journals, Article, Books, Annual Reports, and some research paper related with this topic has been reviewed. During the review of this research, in depth study and theoretical investigation regarding portfolio's aspects and their present application and potentialities made. Investment "Range of investment held by an investor, company etc." (Oxford Dictionary 1994:272) A portfolio simply represents the having their funds in more than one assets. The combination of investment assets is portfolio.

2.1 Conceptual Framework

The banks are such types of institutions, which deal in money and substitute for money. They also deal with credit and credit instruments. Good circulation of credit is essential for the existence of the bank. Unsteady and unevenly flow of credit always harms the banks and lastly to the economy as a whole. Hence to collect funds and mobilize them in a good investment is not a joke for such an institution. An investment of fund may be the question of life and death of the bank. Thus the banker must think seriously before making an investment decision.

2.1.1 Concept of Investment

The word investment sounds very good and attractive that is why every individual in the world is interested in it. In layman's sense, there is always a return if there is investment. This may be favorable as well as unfavorable to the investor's stand point.

"Investment brings forth vision of profit, risk, speculation and wealth. For the uninformed, investing may result in disaster. In general sense; investment means to pay out money to get more. But in the broadest sense, investment means the sacrifice of current money for future money. Two different attributes are generally involved time and risk. The sacrifice takes place in the present and is certain. The reward comes later,

if at all, and the magnitude is generally uncertain." (Sharpe, Alexander and Baily 2003:1) Investment is employment of funds with the aim of achieving addition income or growth in value. It involves the commitment of resources that have been saved or put away from current consumption, in the hope that some benefits will acquire in the future. Investment generally involves real assets and financial assets. Real assets investment involves some kinds of tangible assets such as building, land, machinery, factory etc. and financial assets investment are pieces of paper representing an indirect claim to real assets held by someone else. Real assets are generally less liquid than financial assets.

"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 and Reilly 2004:298-299)

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

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

From the definition given above, it is clear that an investment means to trade a known rupee amount today for some expected future stream of payment or benefits. A commercial bank must always mobilize its funds and other deposits to profitable secured and marketable sector so that it earn a handsome amount of profit as well as it should be secured and can be converted into cash as per the requirement.

"Investors rarely place their entire wealth into a single asset or investment. Rather, they construct a portfolio or group of investment. Portfolio is simply a combination of two

or more securities or asset." [Ibid} But risk analysis in a portfolio context is not so simple.

"The expected return of a portfolio is simple a weighted average of the expected return of the securities comparing that portfolio. The weight is equal to the proportion of total funds invested in each security (The weight must sum to 100 percent)", [bid p.96]

"The return is total gain or loss experience on an investment over a given period of time. It is commonly measured as the changes in value plus the annual income received, usually expressed as percent of the beginning of period investment value.
Expected or actual or required rate of return on any asset express as

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

Where,

R = actual return or expected return or required rate of return it refers to a particular time period in the past (Future)

D_t = cash received from the asset at the end of time period t

P_t = value of asset at time period t

P_{t-1} = value of asset at time period t-1

This formula can be used to determine both actual one period price returns (when based on historical figure), as well as expected one period returns (when based on expected dividend and price). Also note that the term in parenthesis in the number of above equation represents the capital gain or loss during the period." [bid.p98]

This explanation of investment on asset is based on the historical dividend and price data or its expected future data. The return can be defined on their basis of probability distribution of alternative outcome.

2.1.2 Objective of Investment

The objective of investment is to increase systematically the individual's wealth, defined as assets minus liabilities. Investment requires that an individual invest money in assets that will generate the desired wealth when it is needed for retirement, children's education, or other financial goals. Consequently, most investments are undertaken to provide as increase in wealth.

The higher the level of desired wealth, the higher the return that must be received. An investor seeking higher returns must be willing to face higher levels of risk. While wealth maximization may remain an investor's investment objective over a lifetime, age or family circumstances will necessarily force the investor to change his/her investment approach.

2.1.3 Importance of Investment

Banks are playing vital role in the economic development of the country. Without banking facilities, the growth and the economic development becomes slow. The main objective of commercial banks is to earn profit by proper mobilization of resources in Nepalese commercial banks. They are found to be more interested in investment in less risky and highly liquid sectors. There are various ways to minimize risk, but the bank are not aware of this and do not pay any attention toward such field i.e. they do not think about portfolio investment.

The main importance of this study of investment policy of Nepalese commercial banks is to help how to minimize risk on investment and maximize return through portfolio analysis. The researcher has undertaken this study to analyze the existing portfolio investment of Nepalese commercial banks and point out the various weakness and defects inherent in it and provide package of suggestion for its improvement.

There are following importance of the study with reference to investment;

- Existing situation of portfolio analysis on investment of commercial banks in Nepal.
- Profitability situation of commercial banks and comparing with each other.
- Loan and advance portfolio analysis of commercial banks in Nepal.

- Risk and return analysis of commercial bank in Nepal.

2.1.4 Source of Investment Uncertainty (Elton, Edwin J., 2001:13-17)

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

i. Interest rate risk

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

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

ii. Purchasing Power risk (Inflation risk)

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

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.

iii. 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 fairly consistently from low point, this upwards trend is called a bull market and when the security index declines from peak point to the next trough is called bear market. During bearish period the price of the stocks falls but in the bullish market that usually rise more than enough to compensate for the bear market lose. So, the alternating bull and bear market forces create a perennial source of investment risk.

iv. 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 prices of the firm's securities will already have declined to near zero.

v. Liquidity Risk

It is variability of return which results from price discounts given or sales commission paid in order to sell the asset with out delay. Perfectly liquid assets are highly marketable and suffer no liquidation costs but liquid assets are not readily marketable. Hence, liquid assets required large price discounts and sales commissions in order to affect a quick sell.

vi. Call-ability Risk

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

vii. Convertibility Risk

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

viii. Political Risk

It is the risk that caused by changing in the political environment that affect the 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.

ix. 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 prices of the securities issued by competing firms tend 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.

2.1.5 Investment Alternatives

"In the market, a wide range of investment alternatives are available to an individual investor." (Cheney and Moses 1995:8) 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 have 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

- Treasury Notes - Treasury Bonds
- Saving Bonds - Agency Securities
- Municipal Securities - 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) Pension Funds b) Mutual Funds c) Closed End Companies

2.1.6 Feature of a Sound Lending and Investment Policy

The income and profit of the bank depends upon its lending procedures, lending policy and investment of its funds in different securities. 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 crucially significant for the promotion of commercial savings of a backward country like Nepal.

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

i. Safety and Security

The bank should never invest its funds in those securities, which are too volatile i.e. which are subject to too much depreciation and fluctuations because a little difference may cause a great loss. It must not invest its funds into speculative businessman who may be bankrupt at once and who may earn millions in a minute also. Security means adequate collateral having good value. This can be easily sold off if required at any point of time. The bank should accept that type of securities, which are commercial, durable and marketable having fair market value. For this purpose 'MAST' should be applied while reaching investment decision, where MAST stands for,

M = Marketability

A = Ascertain ability

S = Stability

T = Transferability

ii. Profitability

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

iii. Liquidity

Liquidity is the ability of the firm to satisfy its short-term obligations as they come due. Generally, people used to deposit their earnings in the different accounts of the banks, having confidence that the bank will repay their money whenever it is needed. In order

to maintain the confidence to the depositors, the bank must always be ready to meet current or short-term obligations when they become due for repayment.

iv. Purpose of Loan

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

v. Diversification

"A bank should not lay all its eggs on the same basket." This saying is very important to the bank and it should always be careful not to grant loan in only one sector. To minimize risk, a bank must diversify its investment on different sectors.

Diversification of loan 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.

vi. Tangibility

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

vii. 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 funds.

viii. National Interest

In additional to its own profitability the bank should also consider the national interest. Even though the bank cannot get maximum return from such investment, it should carry out its obligation towards the society and the country. The bank is required to invest on such sectors as per the government and Nepal Rastra Bank's instruction. Investment on government bonds, priority and deprived sector lending are the examples so such investments.

2.1.7 Portfolio Analysis

"A portfolio is a bundle 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 normative 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 then a weighted average of variance. As a result an investor can reduce portfolio risk by adding another security with greater individual risk then any other securities in the portfolio. The seemingly curious result occur because risk greater on the covariance among the return of individual securities.

"Portfolio analysis is to develop a portfolio that has the maximum return at whatever level of risk the investor deems appropriate. A portfolio is a collection of investment securities." (Weston and Brigham 1992:123) The portfolio of asset usually offers advantages of reduction risk through diversification. A stock or securities held, as part of a portfolio is less risky than the same stock held in isolation. The objective of portfolio analysis is to develop a portfolio that has the maximum return at whatever level of risk the investor deems appropriate.

Most financial assets are not held in isolation, rather they are held as pars of portfolios. "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 and Copeland 2003: 366) Portfolio management is the process of selecting a bundle of securities that provides the investing organization a maximum yield for a given level of risk or alternatively ensuring minimum level of risk for a given level of return. It can be also taken as risk and return management. Its aims to determine an appropriate asset mix which attains optimal level of risk and return. The objective of portfolio management is to analyze different individual assets and delineate 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 dominates all other investments.

"Portfolio theory was originally proposed by Harry M. Markowiz in 1952". (Cheney and Moses 1995: 162) The theory is concerned with selection of an optimal portfolio by a risk adverse 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 investor will select only efficient portfolios. Portfolio theory can be used to determine the combination of these securities that will create the set of efficient portfolios. The selection of the optimal portfolio depends on the investor's performance for risk and return.

2.1.8 Portfolio Analysis and Diversification

Risk is defined as the changes of financial loss or more formally the variability of the actual return from the expected return associated with a given assets. The greater the variability of return on assets said to be riskier asset and the more certain the return from an assets, the less variability and therefore the less risk. No investment with be undertaken unless the expected rate of return is high enough to compensate the investor for the perceived risk of the investment.

As per oxford-advanced learner's dictionary by A.S Hornby "risk is the possibility or chance of meeting danger or suffering loss." [A.S Hornby, (1996), "Oxford Advance

Learners Dictionary", Oxford University Press, New York). But in the context of investment, let's first consider a couple of examples. Assume that you buy a one year Treasury Bill (T-bill) to yield 8%. If you hold it for the full year, you will realize a government guaranteed 8% return on your investment not more, less. Now, buy a share of common stock for any company and hold it for one year. The cash dividend that you anticipate receive may or may not materialize as expected. And, what is more, the year –end price or the stock might be much less than expected may be even less than you started with. Thus, your actual return on this investment may differ substantially from your expected return. If we define the risk the variability of returns from those that are expected, the T-bill would be a risk free security while the common stock would be riskily security the greater the variability, the riskier the securities is said to be." [O.cit, Van Horne Jamesc.]

"Investment risk can be reduced by including more than one alternative or categories of assets in the portfolio and by including more than one asset from each category. Hence, diversification is essential to the creation of an efficient investment because it can reduce the variability of returns around the expected return. This diversification may significantly reduce risk without a corresponding reduction in the expected rate of return on the portfolio." (Weston and Copeland 2003: 366)

"Diversification is the one important means 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)

Diversification is an attempt to reduce risk by investing among various financial instruments and industries. Most investment professionals agree that, although it does not guarantee against loss. Diversification is the most important step to reaching your long range financial goals minimizing risk. Diversification helps to eliminate some degree of total risk. Since diversification risk can be avoided, investor did not compensate for bearing such risk, it happens due to unprofessionally and internal

problems. Investor will be rewarded only for taking market risk which is also know as unavoidable risk and systematic risk. Diversification in the investment or making portfolio in security level or in industry level protect against volatility and uncertainty at rate of return.

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:

i) Simple Diversification

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 10 to 15 randomly selection securities can eliminate almost all diversifiable risk. Simple diversification reduces a portfolio's total diversification risk to zero and only the undiversification risk remains.

ii) Superfluous Diversification

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

In this context, Clarks adds that superfluous diversification usually result in the following portfolio management problems.

- Impossibility of good portfolio management

- Purchase of lackluster performers
- High search costs
- High transaction costs

Although more money is spent to manage a superfluously diversified portfolio, there will most likely to 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.

iii) Diversification Across Industries

Some investment counselors advocate selecting securities from different industries to achieve better diversification. It is certainly better to follow this advice than to select all the securities in a portfolio from one industry. 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.

iv) Superfluous Diversification Across Quality Rating Categories

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

v) Markowitz Diversification

Markowitz Diversification 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. There is a nature trade off between risk return in the market but at any given level of expected return, Markowitz diversification can reduce risk more than simple diversification. Applying diversification to a collection of potential investment assets with a computer is Markowitz portfolio analysis. It is a scientific way to manage a portfolio and its results are quite interesting. Since, Markowitz portfolio analysis considers both the risk

and return of dozen and hundreds of different securities simultaneously. It is a more powerful method of analyzing a portfolio than using intuition.

2.1.9 Portfolio Risk and Return

Portfolio risk return measured during the time interval is required. Two kinds of risk can be estimated the portfolio (a) market risk or systematic risk measured by its beat (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 portfolios. Banks, pension funds, insurance companies, mutual funds, and other financial institutions are required by law to hold diversified portfolios. Even individual investors- at least those whose security holding constitute a significant part of their total wealth- generally hold stock portfolios, not the stock of only one firm. This begin the case, from an investor’s standpoint the fact that a particular stock goes up or down is not very important; what is important is the return on his or her portfolio, and the portfolio’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)

i. Portfolio Expected Return

The expected return of a portfolio should depend on the expected return of each of the securities contained in the portfolio. It also seems logical that the amounts invested in each security should be important. The portfolio return is the weighted average expected return of the individual stocks in the portfolio, with weights being the fraction of the total portfolio invested in each stock. The portfolios expected return is defined in equation as follows;

$R_p \; \mathrm{X} W_1 K_1 \, \Gamma W_2 K_2 \, \Gamma \ldots\ldots\ldots\ldots \Gamma W_n K_n$

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 Return for Stock 2

ii. Portfolio Risk

Portfolio risk is the risk as a whole for the specific portfolio. In totally, what is the risk of wealth is the risk of portfolio. Calculation of portfolio risk is not as easy as 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. This introduces the concept of covariance or correlation; that is to say the degree by which the returns of 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.

iii. Measuring Portfolio Risk

"The measurement of a portfolio risk is not as a straight forward as the calculation of a portfolio's expected return. In order to calculate the risk of a portfolio, consideration must be given not only to the risk of the individual assets in the portfolio and their relative weights but also to 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 1995: 653)

Individual's assets or securities are more risky than the portfolio. 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

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

Taking the square root of both sides the risk of the portfolio in term of its standard deviation is (Francis; 6th Edition: 236)

$$\pm_p = \sqrt{\sum_{i=1}^{n}\sum_{j=1}^{n} x_i x_j Cov_{ij}}$$

Where,

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

$Cov_{ij}\ \mathrm{X}\sigma_i\sigma_j\rho_{ij}$

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

x_i = weight of security i.

x_j = weight of security j.

2.1.10 Correlation Coefficient and Portfolio Risk

Closely related to covariance is the statistical measure known 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 deviations;

$\sigma_{ij}\ \mathrm{X}\rho_{ij}\sigma_i\sigma_j$

Where ρ_{ij} denotes the correlation coefficient between the return on security i and the return on security j. 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. 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), and then the proper combination of the two securities can reduce unsystematic risk even up to zero. So, the positive correlation between securities return is not so beneficial and vice-versa. A zero coefficient i.e. the

two variables are note related to each other. So changes in one variable are independent of changes in the other. So, when securities in a portfolio are perfectly negative correlated i.e. $\rho XZ1$ all risk can be diversified away but when securities are perfectly positively correlated, diversification does not good whatever. In the typical care, "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 two securities are perfectly positively correlated i.e. $\rho X1$, 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." (Van Horne 1998: 334)

2.1.11 Systematic Risk

Systematic risk is that portfolio 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 if stock often called aggressive stock and slope less than one called defensive stock.

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

- War
- Inflations
- 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 or Diversifiable Risk is the portion of the total risk which is unexplained by overall market movements. Since it happens due to internal causes, it is diversifiable by increasing the efficiencies and effectiveness for the productivity of the organization. This kind of risk is diversifiable risk 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." (Van Horne 1998: 55-59)

"Events such as labor strikes, management errors inventions, advertising, campaigns, shifts in consumer taste and lawsuits cause unsystematic variability in the value of a market asset. Since unsystematic 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". (Weston and Copeland 2003:366)

2.1.12 Market Portfolio

"The market portfolio is the unanimously 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 is 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: 6th edition 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 to systematic or non diversifiable risk. The volatility of the 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 1995: 690)

The market portfolio holds a special place in modern in 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.

2.1.13 Loan Procedure

- Relationship manager will collect basic required document from the loan client. The required document may be different according to which type of loan the client wants to take.
- The request of the client is analyzed and documents provided by client will be verified whether the client can repay the loan amount or not according to EMI (Equal Monthly Installment) or EQI (Equal Quarterly Installment) or quarterly basis.
- Primarily, relationship manager should know about the income source of the client from which he/she will make a payment.
- Secondarily, relationship manager should know about the collateral that client will provide.
- Credit worthiness of the client should also be examined.

- The relationship manager should get information from credit information bureau whether the client is black listed or not.
- If the client will pledge the fixed asset collateral it should be known whether it is third party collateral or guthi land.
- Relationship manager should analyze whether the request falls under NRB directives/ circular.
- If the request is under NRB directives and circular, credit approval package should be prepared by relationship manager and forwarded it to the top management.
- After getting approved, it goes for implementation process then loan related security document (personal guarantee, corporate guarantee and other security) should be collected from the client as required.
- If security is land and building then valuation of the property is done from the Bank authorized valuator and it should be approved by top level management.
- If the client will provide fixed asset collateral, then mortgage the fixed asset collateral in favor of the bank and if hire purchase loan then vehicle should be registered in favor of the Bank.
- After obtaining the required security document it should get verified by legal department of the bank and it is implemented as per the client request.

2.1.14 Factors Affecting Investment Portfolio Decision

i. Amount of Investment

While determining the investment portfolio the finance manager should actually consider the amount of fund available with organization. Trading and manufacturing organization deal in securities only for the purpose of best utilization of their available surplus cash resource. The amount of surplus fund available with them will therefore decide the quantum of their investment in securities.

ii. Objective of Investment Portfolio

While determining the investment portfolio we should be clear about objective of making investment in securities. The objective may differ organization to organization. While an organization looking for investment of provident fund of its employees can

think of having in its investment portfolio only such securities which can assure safety of the fund and its return.

iii. Selection of Investment

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

iv. Timing of Purchase

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

2.2 Review of Previous Studies

This section is developed to the review of major related literature concerning portfolio in different countries. But in Nepal there are very few studies can be 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 reviewed from international context and Nepalese context.

2.2.1 Review from International Context

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

The Harry M. Markowitz's Study (1952)

Markowitz entitled the portfolios theory establishes a relationship between a portfolios 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 effecting 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 reason able 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 principal. That is, for only given level of risk, investors prefer assets with a highest expect return to assets with lower expected return, for the expected return, for assets with the same expected return, investors prefer lower to higher risk.
- 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 X $R_i \mid X_i$

R_p X$R_1X_1 \Gamma R_2X_2 \Gamma R_3X_3 \Gamma \ldots\ldots\ldots\ldots \Gamma R_nX_n$

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:

The portfolio risk: $\pm_p^2$ X$X_1^2 \mid \sigma_1^2 \Gamma X_2^2 \mid \sigma_2^2 \Gamma 2X_1 \mid X_2 \mid \sigma_1 \mid \sigma_2 \mid \rho_{12}$

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.

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

The Edward J. Kane and Stephen A. Buser's study (1979)

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.

It is the rational for a firm to engage round of asset diversification on behalf of its shareholder's even when all assets are priced efficiently and available for direct purchase by shareholders. As away of testing their perspective empirically, they estimates 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 from relatively uniform diversification clientele. For firm, marginal benefits for diversification takes reduction in the cost equity funds 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 of 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 at 500 million. Beyond this point marginal diversification costs are independent of bank size.

2.2.2 Review from Nepalese Context

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.

Till this date, there are not many articles available in the published form related to investment portfolio management in Nepal Mr. Shiba Raj Shrestha, Deputy Chief Officer of Nepal Rastra Bank, Banking Operation Department, has given a short glimpse on the "Portfolio Management in Commercial Bank, theory and practice." [Shrestha, Shiba Raj, "Portfolio Management in Commercial Bank, theory and practice" Nepal Bank Patrika, Baisakh Masanta, 2055] Mr Shrestha has highlighted the following issues in the articles.

The portfolio management becomes very important both for individuals as well as insititutional investors. Investors like to select a best mix of investment assets subject to the following aspects.

- Higher return which is comparable with alternative opportunities available according to the risk class of investors.
- Good liquidity with adequate safety of investment.
- Certain capital gains.
- Maximum tax concession.
- Flexible investment
- Economic, efficient and effective investment mix.

In view of above aspects, following strategies are adopted.

- Do not hold any single security i.e. try to have a portfolio of different securities.
- Do no put all the eggs in one basket i.e. to have a diversified investment. (Making investment in different sectors)

- Choose such a portfolio of securities, which ensures maximum return with minimum risk or lower of return but with added objective of wealth maximization.

Shrestha (1997) has presented the following approaches to be adopted for designing a good portfolio and its management.

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

Researcher has presented two types of investment analysis techniques i.e. fundamental analysis and technical analysis to consider any securities such as equity, debenture or bond and other money and capital market instruments.

According to Shrestha, the portfolio management activities of Nepalese Commercial Banks at present are in nascent stage. However, on the other hand, most of the banks are not doing such activities so far because of the following reasons:

- Unawareness of the clients about the services available.
- Hesitation of taking risk by the clients to use such facility.
- Lack of proper techniques to run such activities in the best and successful manner.
- Less developed capital market and availability of few financial instruments in the financial market.

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

Shrestha has thrown following concluding remarks.

- The survival of the banks depends upon their own financial health and various activities.
- In order to develop and expand the portfolio management activities successfully, the investment management methodology of a portfolio manager should reflect standards and give their clients the benefits of global strengths, local insights and prudent philosophy.
- With the disciplined and systematic approval for the selection of appropriate countries, financial assets and the management of various risks, the portfolio manager could enhance the opportunity for each investor (client) to earn superior returns overtime.
- The Nepalese banks having a great network and access to national and international capital markets have to go for portfolio management activities for the increment of their fee based income as well as to enrich the client base and to contribute in national economy.

Shrestha, S. (1998) has given a short glimpse on article entitled "*Portfolio Management in Commercial Banks, Theory and Practices"*. (Nepal Bank Patrika 1998) Mr. Shrestha in his article has highlighted the followings issues;

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

For fulfilling those aspects, 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 mention short transitory view on portfolio management in Nepalese commercial banks. Nowadays number of banks & financial institution are operating in this sector are having greater networks and access to national and international markets. They have to geo 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 banks 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 fundamentals analysis to consider any securities such as equity, debenture or bond and other money and capital market instrument. He has suggested that the 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.

On the basis of his article, the portfolio management activities of Nepalese commercial banks at present is in nascent stage. However, on the other hand most of the banks are doing such activities so fat because of following reasons. Such as unawareness of the client about the service available, hesitation of taking risk by the client to use such facilities, lack of proper techniques to run such activities in the best and successful manner, less development of capital market and availability of few financial investment in the financial market.

He has given the following conclusion for smooth running and operation of commercial banks and financial institution.

- For surviving commercial banks should depend upon their own financial health and various activities.

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

Timilsina, Y. (1999) has published an article on *"Managing Investment Portfolio"*. He is however, confronted with problems of managing investment portfolio particularly in times 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.

Commercial banks have continuously been reducing interest rates on deposits. Many depositors are exposed to the increasing risk of non-refund of their deposits because of the mismanagement in some of the banks and finance institutions and accumulation of huge non-performing assets with them.

Few depositors of cooperative societies lost their deposits because some of these cooperatives were closed down because of their inability to refund public deposits. An investor in days of crisis has to make an effort to minimize the risk and at least earn a reasonable rate of return on his aggregate investment.

An investment in equity share can earn dividend income as well as capital gain, in the form of bonus share and right share until an investor holds it and capital profit when he sells it in the stock market. As returns from equity investments have fluctuated within a very wide range, investors feel it much difficulty to balance risk and reward in their

equity portfolio. As a matter of fact, investors in equity shares should invest for a reasonable long time frame in order to manage the risk.

Making investment in fixed deposits with commercial banks is a normal practice among the common people. Normally fixed deposits with banks are considered risk-less, but they also are not 100% free of risk. You should select a bank to put your deposit therein, which has sound financial health and high credibility in banking business. In times of crisis if you select a sick bank deposit your money there is high probability that your money could be returned back.

An investor may have option of making investment in government bonds 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.

Thapa, C. (2003) has published an article on The Kathmandu Post daily of 9th March 2003 entitled *"Managing Banking Risk"*, in his article he has accomplished the subsequent issues.

Banking and financial service are among the fastest growing industries in developed world and are also emerging as cornerstones in 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 make the lending. The second is undiversifiable risk and it is correlated across borrower, countries, and industries. Such risk is not under control of the firm and bank.

On the basis of his article 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 lending 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 fame, 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.

Mahat, L.D (2004) has published an article on 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 output 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 ratio 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.

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 the 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.

2.3 Review of Unpublished Thesis

Bajracharya (2047), [Bodhi B. Bajracharya, "*Monetary policy and Deposit Mobilization in Nepal*", Rajat Jayanti Smarika, RBB, Kathmandu, NRB 2047:93-97] in his article "Monetary Policy and Deposit Mobilization in Nepal", has concluded that mobilization of the domestic saving is one of the prime objectives of the monetary policy in Nepal and Commercial intermediary for generating in the form of deposit of private sector and providing credit to the investor in different sectors of the economy.

Bista (2048), "*Nepal Ma Aadhunik Banking Byabastha*", has made an attempt to highlight some of the important factors which have contributed to the efficiency and performance of joint venture banks. He concluded that the establishment of joint venture banks a decade ago marks the beginning of modern banking era in Nepal. The joint venture banks have brought many new banking techniques such as computerization hypothecation consortium finance and modern fee bases activities into the economy. [Bhagat Bista, Nepal Ma Aadhunik Banking Byabastha (Indu Chhapakhana, Kupondole, Lalitpur 2048 B.S)]

Shrestha (2054), "*A Study on Deposit and Credit of Commercial Banks in Nepal*", Nepal Rastra Bank Samachar, (Kathmandu, NRB 2054 B.S)[, in his articles, "A study on deposits and Credit of Commercial Banks in Nepal" has concluded that the credit

deposits ratio would be 51.3% other things remaining the same, in 2004 A.D, which was the lowest under the period of review. So he had strongly recommended that the commercial banks should try to give more credit entering new field as far as possible, otherwise, they might not be able to absorb even their total expenses.

Likewise, **Sharma** wrote an article, "Joint *Venture Bank in Nepal: Co-existing or Growing Out"*. In his words, it would be definitely unwise for Nepal not to let the JVBs operate in the country and not to take an advantage of them as additional means of resource mobilization as well as harbinger of new era in ban king. But it will certainly be unfortunate for the country to develop JVBs and the costs of the domestic banks. So far one should admit frankly no different treatment has been extended to the domestic and JVBs at least from the government side, which is commendable. If His Majesty's Government keeps on the stance oft treating the domestic and JVBs equally deposit lather's bargaining strength and if the JVBs also show their alacrity to come forward to share the trails and tribulations of this poor country, both types of banks will coalesce and co-exist complementing each other and contributing to the nation's accelerated development. On the contrary, if the JVBs use their strength against trading into the number, some path of developing along with domestic banks and the government, they will eventually grow out the domestic banks from the more profitable urban areas and lucrative urban sectors unless remedying by the determination of the government." [Murari Raj Sharma "Joint Venture Banks in Nepal Co-existing or Growing Out." (His Majesty's Government Year 1988) pp.31-42]

2.4 Review of Thesis

Bajracharya (2000) conduct a study on "*Investment of Commercial Banks in Priority Sector*" with the objective of;

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

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

Researcher used to various financial tools to analyze the data to support the conclusion. The major ratios like total investment to total deposit ratio, loan and advances to total deposit ratio, net profit to total asset ratio, investment on government securities to total outside investment ratio etc. Other financial tools like return on portfolio return on loan and advances, return on share and debenture, return on government securities are used to find the relevance and significance of the samples. To process the financial data, some common statistical tools like co-variance, coefficient of variation, mean and trend analysis are used.

Major Findings:

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

Khaniya (2003), in her thesis entitled "*Investment Portfolio Analysis of Joint Venture Banks*". The study is based on five joint 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 exiting investment policies taken by Nabil in various sectors.
- To study portfolio structure of Nabil Bank Ltd. In investment as compared to other joint venture banks.
- Preference given by Nabil Bank Ltd. For investment between loan investment, investment in real fixed assets, investment in financial assets.

Researcher used to various financial tools to analyze the data to support the conclusion. The major ratios like total investment to total deposit ratio, loan and advances to total deposit ratio, net profit to total asset ratio, investment on government securities to total outside investment ratio etc. Other financial tools like return on portfolio return on loan and advances, return on share and debentures, return on government securities are used to find the relevance and significance of the samples. To process the financial data, some common statistical tools like co-variance, coefficient of variation, mean and trend analysis are used.

Major Findings:

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 low position in the industry because of having lowest mean return on shareholder's 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 ahs 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.
- The coefficient of correlation between loans and advance in private sector and portfolio return if joint venture banks come out to be r_{xy} = -0.6. Therefore it indicates that there is negative correlation between loans and advances in private sector and portfolio return of five JVBs in Nepal.

Shrestha (2005) in her 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 objective 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.

Various tools are used to analyze the data to support the conclusion. Trend analysis showed the trends of NEPSE Index. Risk and return tools like Beta Coefficient, Portfolio risk and return, Expected return, holding period return along with statistical tools like CV, Standard Deviation, Correlation and Regression are used to find out the relevance of data collected.

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 a risk of 84.98% and 60.86% respectively.
- The correlation of stock, return and market shows that all of the banks stock are highly positive correlated 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 are aggressive.
- 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 1^{st} and HBL is 4^{th}. The Treynor’s performance once measures shows that performance of stock and NBBL is 1^{st} and HBL is 4^{th}. Likewise Jenson’s performance measure shows the performance of stock of SCBL is 1^{st} and NBBL is 4^{th} among the banks.

- Among four banks optimal portfolio return and risk shows that return NBBL is highest i.e. 32.7% and return if 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%.

Poudyal (2006) conduct a study on "*A study on Portfolio Analysis of Commercial Banks in Nepal*" with the objective of

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

Using common financial tools like ratios, portfolio returns, portfolio risk, systematic and unsystematic risks, and researcher tired to give up the insights of financial performance. To process the financial data, some common statistics tools like correlation, covariance, and coefficient of determinant are used to find the relevance and significance of the samples.

Major Findings:

The industrial mean ratio of investment to total deposit is 21.86%. The only EBL has a greater ratio above industrial mean ratio i.e. 24.77>21.8. But other banks have lower investment to total deposit ratio than industrial mean ratio. It shows that EBL has effective mobilization its deposit on investment to generate the return. But other banks are investing its deposits in lower ratio than average industry ratio. Similarly, the CV of EBL is the lowest i.e. 19.9%. Lower ratio indicates that cost consistent which is better than high consistent. The industry CV ratio is 32.37%. The EBL and HBL have the lesser CV ratio to the comparison with industrial CV ratio. It shows variability of ratio of EBL and HBL is the most consistent.

Among four commercial banks HBL has invested its more funds on government securities (i.e. risk free assets) and lesser fund on share and debenture (i.e. risky assets). All banks have invested more than 83% amount in government securities. Only BOKL has invested it's 0.63% on non-resident sector. None of the banks have invested any amount on NRB bond.

All of the selected commercial banks are granting very high amount its loan and advances to private sector. NIBL and HBL have given second priority to government enterprise and EBL and BOKL give second priority to foreign bills purchase and discount. EBL and BOKL have granted very low (less than 1%) loan and advance to government enterprises.

BOKL stock has the highest expected return i.e. 8.34% and HBL has lowest expected return i.e. -8.82%. NIBL has also negative return i.e. -7.71%. The market expected return is -6.47%. The risk of BOKL is the highest i.e. 57.14% and HBL has 36.03% respectively. The market risk is 15.68%. In conclusion we can say that higher the risk the return and vice versa.

Total risk of BOKL stock is highest and total risk of HBL stock is lowest among four commercial banks.

HBL has the highest portfolio return i.e. 4.85%, NIBL stock has lowest (i.e. negative -1.19%) portfolio return and it has the highest portfolio risk i.e. 8.46%. It means NIBL invest its amount in risky assets so it become in loss. EBL and BOKL have a portfolio return of 4.79% and 4.80% respectively and portfolio risk is 0.28% and 5.77% respectively. It shows that the portfolio return of three banks is not so different but risk of BOKL is higher than HBL and EBL.

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

2.5 Research Gap

Portfolio investment refers to an investment that combines several assets i.e. diversification of total investment into government securities, loan and advances into private sectors. For that, various financial and statistical tools as well as regression and regression models are build to measure the interrelationships of the concerned variables of the concerned banks.

The concerned variables are: Loan & advances, government securities and portfolio return. It studies how individual bank manage its loan & advances. It also focuses on the investment of government securities and how the portfolio return varies in different banks.

Commercial banks cannot utilize whole of its fund raised through deposit and borrowing into loans and advance. To fulfill the gap between borrowing and lending banks rather goes for investment. From the above study the researcher founds the gaps that researcher has failed to analyze the financial performance of commercial banks in terms of investment strategies.

More specifically, researcher has taken the samples which are more bullish in current market and try to find out how they have managed the investment portfolio that made them success in unprecedented way. In this research, researcher has try to diagnosis that good portfolio investment lead directly on the financial performance of the banks in long run and help to maximize market price of share.

Finally, the sample taken from the research purpose are unique that has hardly taken in previous study in a single batch for study purpose. This study will focus overall financial indicators that may or may not affect the financial performance of commercial banks in consideration with portfolio management. In this research, researcher presents the current data up to beginning of 2009.

CHAPTER - III

RESEARCH METHODOLOGY

This chapter includes different dependent and independent variables, types of research design, research questions and hypothesis sample, data collection activities, technique of analysis etc.

3.1 Research Design

To achieve this study descriptive and analytical research designs have been used.

3.2 Population and Sample

Under the study of investment portfolio analysis of Nepalese commercial banks, the total number of commercial banks including domestic and joint venture banks operating in the Nepal is the population. At present there are twenty six licensed commercial banks are running in Nepal. All 26 licensed Nepalese Commercial Banks will consider as the total population. Out of them, this study will be concern with five Commercial Banks as a sample. In this sample, banks are taken according to their rapid growth rate and gradually growth rate which head office is in Kathmandu by which we can compare about the investment portfolio of this bank. The selected sample banks for the analysis are as follows;

- Nabil Bank Ltd
- Nepal Investment Bank Ltd
- Standard Chartered Bank Ltd.
- Himalayan Bank Ltd.
- Everest Bank Ltd

Population size = 26

Sample size = 5

Sample percentage = 19.23 %

3.3 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.

3.4 Data Collection and Processing Techniques

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 Economic Bulletin etc. were obtained from respective offices.

Hence, in this study the available data, information, figures and facts were checked, rechecked, edited and tabulated for computation.

3.5 Data Analysis Tools

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

a) Financial Tools

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

I. Ratio Analysis

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

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

1. Total Investment to Total Deposit Ratios

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

$$\text{Total Investment to Total Deposit Ratio X} \frac{\text{Total Investment}}{\text{Total Deposit}}$$

2. Loan and Advances to Total Deposit Ratio

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

$$\text{Loan and Advances to Total Deposit Ratio X} \frac{\text{Loan and Advances}}{\text{Total Deposit}}$$

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

3. Net Profit to Total Assets Ratio

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

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

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.

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

TOI = Loan Advances + Bill Purchased + Discounted + All types of Investment

5. Investment on Share and Debenture to Total Outside Investment

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

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

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;

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

7. Return on Loan and Advances

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

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

8. Return on Share

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

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

II. Risk on Individual Assets

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

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

Where,

$\pm$ = Standard Deviation or risk

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

R = rate of return on individual assets

n = no. of years

III. Return on Portfolio

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

Portfolio return $= R_p = W_A R_A + W_B R_B + ... + W_N R_N$

Where,

R_p = Portfolio return

W_A = Weight of investment invested in stock 'A'

W_B = Weight of investment invested in stock 'B'

R_A = Return for stock 'A'

R_B = Return for stock 'B'

IV.Risk on Portfolio

The portfolio risk is measured by either variance or standard deviation of returns. The portfolio risk is affected by the variance of return as well as the covariance between the return of individual assets included in the portfolio and respective weights.

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

$$\pm_p \text{X}\sqrt{W_A{}^2\pm_A{}^2\ \Gamma W_B{}^2\pm_B{}^2\ \Gamma W_C{}^2\pm_C{}^2\ \Gamma 2Cov_{AB}\ |W_A\ |W_B\ \Gamma 2Cov_{AC}\ |W_A\ |W_C\ \Gamma \\ 2Cov_{BC}\ |W_B\ |W_C}$$

Where,

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

$\pm_A, \pm_B, \pm_C$ = Standard Deviation of A, B and C

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

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

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

V. Co-Variance

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

Symbolically

$$Cov.fj\&mAX\rho_{jm}\sigma_j\sigma_m$$

VI.Coefficient of Variation

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

$$C.V\ \text{X}\frac{\sigma_j}{R_j}$$

Where,

σ_j = Standard deviation of securities j.

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

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

VII. Portfolio Performance Measure

Sharpe's Portfolio Performance Measure

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

$$S_p \text{ X} \frac{Risk \text{ Pr} emium}{TotalRisk} \qquad = \frac{\overline{r_p} \text{ Z} r_f}{\pm_p}$$

Where,

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

$\overline{r_p}$ = Average return on portfolio, r_f = Risk free rate of return

$\pm_p$ = Standard deviation of portfolio

b) Statistical Tools

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

I. Karl Person's Coefficient of Correlation

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

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

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

If r = 1 there is perfect positive relationship

If r = -1 there is perfect negative relationship

If r = 0 there is no correlation at all

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

II. Mean

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

$$\bar{X} = \frac{1}{N}\sum x_1 + x_2 + x_3 + \ldots\ldots\ldots + x_n$$

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

III. Trend Analysis

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

Y = a + bx

Where,

Y = the value of dependent variable

a = Intercept of trend line

b = Slope of trend line

x = Value of the independent variable

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

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

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

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

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

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

For the calculation of Mean, Standard Deviation, Coefficient of Variation, Correlation Coefficient and Regression Equation, MS-Excel and SPSS software are used.

CHAPTER IV

DATA PRESENTATION AND ANALYSIS

The chapter is devoted to the presentation, analysis, interpretation and scoring the empirical finding of the study through a defined research methodology. Getting at the study objectives, a set of financial and statistical tools has been applied. Data collected from several sources have been inserted in the tabular form in terms of homogeneity of data. Tables compiled for the analysis have been presented in Annexes. Necessary graphs and diagrams have been included to clarify the actual status of the banks. This section analyzes the investment portfolio of commercial banks through the following tools:

- Risk and return analysis of individual assets and investment portfolio
- Analysis of ratio
- Least Square Linear Trend Analysis

4.1 Investment Portfolio Risk and Return Analysis of Commercial Bank

Bank is a vital element in the investment analyzing process hence calls for adequate attention. Investment involving greater risk expects higher return than the investment with lower risk. The relationship between risk and return is perceived by individuals based on their attitude for compensation.

The main aim of risk and return is to appraise investment performance to explore combination of investments maximizing returns and minimizing risk or accomplishing both. Risk, however enjoys a pivotal role in the investment analysis. Commercial banks or investors generally avoid invest their money in one risky asset only. Nevertheless, they tend to hold portfolio of several assets to diversify the investment risk. On the portfolio context, the contribution of each asset to the portfolio risk is the portion of relevant risk of the asset.

The measurement of return in rupees or percentage is a simple statistical process, while the measure of risk involves a complex process. Risk can be measured in many ways using statistical techniques, such as range, semi-inter quartile range, mean deviation, standard deviation and coefficient of variance etc. Among them, standard deviation is commonly used for measuring risk on investment. In this section, standard deviation and coefficient of variation are adapted as measuring tools for risk and return. Then it has been endeavored to explore the effects of portfolio diversification.

4.1.1 Return on Individual Investment

4.1.1.1 Return on Government Securities

Government securities are the fixed income securities issued by the government. These securities are the ones among the safest of all investments, as government is quite unlikely to default on interest or principal repayments. The return on government securities, such as Treasury Bills, Development Bonds and National Saving Bonds etc can be calculated as follows:

The return on government securities is obtained by dividing interest income from government by total investment on government securities expressed as:

Return on Government Securities $= \frac{\text{Interest Income from Government Securities}}{\text{Total Investment on Government Securities}}$

The average rate of return on Government Securities $= \sum_{t=1}^{n} \frac{R_g}{n}$,

Where n = Number of years (periods)

The following tables (4.1 – 4.6) depict the return on government securities of NABIL, NIBL, SCBL, EBL, HBL and banking industry.

Table 4.1
Return on Government Securities of NABIL Bank Ltd

(Rs. in thousands)

FY	Interest on Govt. Securities	Investment on Govt. Securities	Return on Govt. Securities (R_g) %
2004	192,761.00	3,672,626.00	5.25
2005	151,064.00	2,418,432.00	6.25
2006	130,197.00	2,301,464.00	5.66
2007	132,229.00	4,808,348.00	2.75
2008	198,442.00	4,646,883.00	4.27
2009	269,187.00	3,706,103.00	7.26
Total	**1,073,880.00**	**21,553,856.00**	**31.44**
Average	**178,980.00**	**3,592,309.33**	**5.24**

Source: Annexes 1(c) and 1 (g)

The table no. 4.1 shows that in an average NABIL generate 5.24 % return in the investment made in government securities. It indicates highly fluctuating trend of NABIL in the return on government securities. During the study period the greatest return is 7.26% in the year 2009 and lowest is 2.75% in the year 2007.

Table 4.2

Return on Government Securities of Nepal Investment Bank Ltd

(Rs. in thousands)

FY	Interest on Govt. Securities	Investment on Govt. Securities	Return on Govt. Securities (R_g) %
2004	35,868.00	2,001,100.00	1.79
2005	56,550.00	1,948,500.00	2.90
2006	82,420.00	2,522,300.00	3.27
2007	78,494.00	3,256,400.00	2.41
2008	99,991.00	3,155,000.00	3.17
2009	140,698.00	2,531,300.00	5.56
Total	**494,021.00**	**15,414,600.00**	**19.10**
Average	**82,336.83**	**2,569,100.00**	**3.18**

Source: Annexes 1(c) and 1 (g)

The table no. 4.2 shows that in average NIBL generate 3.18% return on the investment made in government securities. However, it demonstrates inconsistent trend of NIBL in the return on government securities. During the study period the greatest return is 5.56% in the year 2009 and the lowest is 1.79% in the year 2004.

Table 4.3

Return on Government Securities of Standard Chartered Bank Nepal Ltd (SCBL)

(Rs. in thousands)

FY	Interest on Govt. Securities	Investment on Govt. Securities	Return on Govt. Securities (R_g) %
2004	380,441.00	7,948,217.00	4.79
2005	331,663.00	7,203,066.00	4.60
2006	355,291.00	8,644,856.00	4.11
2007	326,550.00	7,107,937.00	4.59
2008	319,606.00	8,137,615.00	3.93
2009	406,326.00	9,998,754.00	4.06
Total	**2,119,877.00**	**49,040,445.00**	**26.09**
Average	**353,312.83**	**8,173,407.50**	**4.35**

Source: Annexes 1(c) and 1 (g)

The table no. 4.3 shows that in an average SCBL generate 4.35 % return in the investment made in government securities. It indicates almost consistent trend of SCBL in the return on government securities. During the study period the greatest return is 4.79 in the year 2004 and the lowest is 3.93 in the year 2008.

Table 4.4

Return on Government Securities of Himalayan Bank Ltd (HBL)

(Rs. in thousands)

FY	Interest on Govt. Securities	Investment on Govt. Securities	Return on Govt. Securities (R_g) %
2004	170,332.00	3,431,728.00	4.96
2005	149,131.00	5,469,729.00	2.73
2006	172,242.00	5,144,313.00	3.35
2007	191,559.00	6,454,873.00	2.97
2008	201,310.00	7,471,668.00	2.69
2009	354,949.00	4,212,300.00	8.43
Total	**1,239,523.00**	**32,184,611.00**	**25.13**
Average	**206,587.17**	**5,364,101.83**	**4.19**

Source: Annexes 1(c) and 1 (g)

The table 4.4 shows that in an average HBL generate 4.19% return on an investment made in government securities. It shows no fixed trend of HBL in the return on government securities. During the study period the greatest return is 8.43% in the year 2009 and the lowest is 2.69% in the year 2008.

Table 4.5

Return on Government Securities of Everest Bank Ltd (EBL)

(Rs. in thousands)

FY	Interest on Govt. Securities	Investment on Govt. Securities	Return on Govt. Securities (R_g) %
2004	92,509.00	2,466,428.00	3.75
2005	77,993.00	2,100,289.00	3.71
2006	97,272.00	3,322,443.00	2.93
2007	128,566.00	4,704,632.00	2.73
2008	180,219.00	4,821,605.00	3.74
2009	289,765.00	5,146,046.00	5.63
Total	**866,324.00**	**22,561,443.00**	**22.49**
Average	**144,387.33**	**3,760,240.50**	**3.75**

Source: Annexes 1(c) and 1 (g)

The table no. 4.5 shows that in an average EBL generate 3.75% return on an investment made in government securities. It shows no fixed trend of EBL in the return on government securities. During the study period the greatest return is 5.63 in the year 2009 and the lowest is 2.73% in the year 2007.

Table 4.6

Return on Government Securities of Banking Industry

(Rs. in thousands)

FY	Interest on Govt. Securities	Investment on Govt. Securities	Return on Govt. Securities (R_g) %
2004	871,911.00	19,520,099.00	4.47
2005	766,371.00	19,140,016.00	4.00
2006	837,422.00	21,935,376.00	3.82
2007	857,398.00	26,332,190.00	3.26
2008	999,568.00	28,232,671.00	3.54
2009	1,460,925.00	25,594,503.00	5.71
Total	**5,793,595.00**	**140,754,855.00**	**24.79**
Average	**965,599.17**	**17,594,356.88**	**4.13**

Source: Annexes 1(c) and 1 (g)

The table no. 4.6 shows that in an average, banking industry generates 4.13% return on an investment made in government securities. It demonstrates a fair decreasing trend of

banking industry in the return on government securities. During the study period the greatest return is 5.71% in the year 2009 and the lowest is 3.26% in the year 2007.

The following table 4.7 displays the return on government securities of sample banks and banking industry.

Table 4.7

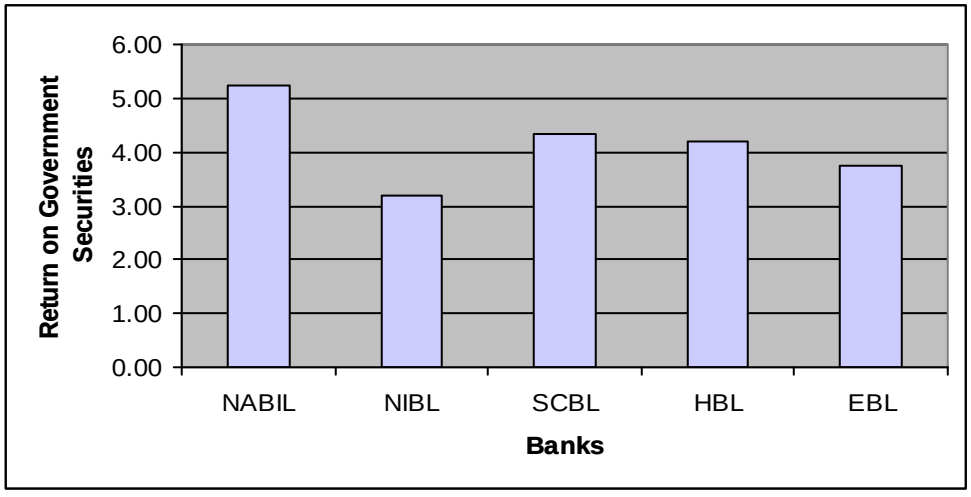
Return on Government Securities of Sample Banks and Banking Industry (%)

Year	NABIL	NIBL	SCBL	HBL	EBL	Banking Industry
2004	5.25	1.79	4.79	4.96	3.75	4.47
2005	6.25	2.90	4.60	2.73	3.71	4.00
2006	5.66	3.27	4.11	3.35	2.93	3.82
2007	2.75	2.41	4.59	2.97	2.73	3.26
2008	4.27	3.17	3.93	2.69	3.74	3.54
2009	7.26	5.56	4.06	8.43	5.63	5.71
Total	**31.44**	**19.10**	**26.08**	**25.13**	**22.49**	**24.80**
Average	**5.24**	**3.18**	**4.35**	**4.19**	**3.75**	**4.13**

Source: Table 4.1 to 4.6

Figure 4.1

Return on Government Securities of Sample Banks



From the above analysis, the average return on government securities of NABIL, NIBL, SCBL, HBL, EBL and Banking Industry is 5.24%, 3.18%, 4.35%, 4.19%, 3.75% and 4.13 % respectively. It can be observed that NABIL is the highest mean return on government securities of the five sample banks. Likewise, SCBL has the

moderate mean return on government securities, while NIBL has the lowest mean return on government securities.

From the above table, it is evident that NABIL and SCBL only have higher mean return on government securities than mean return on government securities of banking industry while rest have lower mean return in comparison to banking industry.

4.1.1.2 Return on Loan and Advances

Loan and advances are the major source income for commercial banks. The facility of granting loan and advances is one of the important services which customers of commercial banks can enjoy. Hence to realize their objectives, the commercial banks invest in several sectors like agriculture, industry and commercial sectors to earn a good return from loan and advances. The return on loan and advances is computed by dividing total interest earned from loan and advances to total amount of loan and advances. Thus,

Return on Loan and Advances $= \frac{\text{Interest earned from loan and advances}}{\text{Total Loan and Advances}}$

Average return on Loan and Advances $= \frac{R_l}{n}$, where n= number of years

The following tables (4.8 to 4.13) depict the return on loan and advances of NABIL, NIBL, SCBL, HBL, EBL and banking industry.

Table 4.8

Return on Loan and Advances of NABIL Bank Ltd

(Rs. in thousands)

FY	Interest on Loan and Advances	Investment on Loan and Advances	Return on Loan and Advances (R_L) %
2004	761,616.00	8,548,657.00	8.91
2005	831,830.00	10,946,737.00	7.60
2006	988,417.00	13,278,782.00	7.44
2007	1,167,255.00	15,903,024.00	7.34
2008	1,496,244.00	21,759,460.00	6.88
2009	2,182,647.00	27,999,012.00	7.80
Total	**7,428,009.00**	**98,435,672.00**	**45.96**

Average	**1,238,001.50**	**16,405,945.33**	**7.66**

Source: Annual Reports of NABIL and Annexes 1(e) and 1(h)

The table no. 4.8 shows that in an average NABIL generates 7.66% return in the investment made in loan and advances. It indicates a gradual decline trend of NABIL in the return on loan and advances. During the study period the greatest return is 8.91% in the year 2004 and the lowest return is 6.88% in the year 2008.

Table 4.9

Return on Loan and Advances of NIBL Bank Ltd

(Rs. in thousands)

FY	Interest on Loan and Advances	Investment on Loan and Advances	Return on Loan and Advances (R_L) %
2004	663,016.00	7,338,566.00	9.03
2005	769,195.00	10,453,164.00	7.36
2006	964,689.00	13,178,152.00	7.32
2007	1,302,122.00	17,769,100.00	7.33
2008	1,907,261.00	27,529,305.00	6.93
2009	2,906,055.00	36,827,157.00	7.89
Total	**8,512,338.00**	**113,095,444.00**	**45.86**
Average	**1,418,723.00**	**18,849,240.67**	**7.64**

Source: Annual Reports of NIBIL and Annexes 1(e) and 1(h)

The table no. 4.9 shows that in an average NIBL generates 7.64% return on the investment made in loan and advances. However, it demonstrates inconsistent trend of NIBL in the return on loan and advances. During the study period the greatest return is 9.03% in the year 2004 and the lowest return is 6.93% in the year 2008.

Table 4.10

Return on Loan and Advances of SCBL Bank Ltd

(Rs. in thousands)

FY	Interest on Loan and Advances	Investment on Loan and Advances	Return on Loan and Advances (R_L) %
2004	558,006.00	6,693,862.00	8.34
2005	581,664.00	8,420,868.00	6.91
2006	596,622.00	9,206,280.00	6.48
2007	728,589.00	10,790,148.00	6.75
2008	872,690.00	13,963,984.00	6.25
2009	1,104,047.00	13,880,703.00	7.95
Total	**4,441,618.00**	**62,955,845.00**	**42.68**
Average	**740,269.67**	**10,492,640.83**	**7.11**

Source: Annual Reports of SCBIL and Annexes 1(e) and 1(h)

The table no. 4.10 shows that in an average SCBL generate 7.11% return in the investment made in loan and advances. It indicates a gradual decreasing trend of SCBL in the return on loan and advances. During the study period the greatest return is 8.34% in the year 2004 and the lowest return is 6.25% in the year 2008.

Table 4.11

Return on Loan and Advances of HBL Bank Ltd

(Rs. in thousands)

FY	Interest on Loan and Advances	Investment on Loan and Advances	Return on Loan and Advances (R_L) %
2004	970,166.00	12,919,631.00	7.51
2005	1,122,392.00	13,451,168.00	8.34
2006	1,140,687.00	15,761,977.00	7.24
2007	1,242,850.00	17,793,724.00	6.98
2008	1,444,245.00	20,179,995.00	7.16
2009	1,861,045.00	25,519,519.00	7.29
Total	**7,781,385.00**	**105,626,014.00**	**44.52**
Average	**1,296,897.50**	**17,604,335.67**	**7.42**

Source: Annual Reports of HBL and Annexes 1(e) and 1(h)

The table no. 4.11 shows that in an average HBL generates 7.42% return in the investment made in loan and advances. It shows no fixed trend of HBL in the return on loan and advances. During the study period the greatest return is 8.34% in the year 2005 and the lowest return is 6.98% in the year 2007.

Table 4.12

Return on Loan and Advances of EBL Bank Ltd

(Rs. in thousands)

FY	Interest on Loan and Advances	Investment on Loan and Advances	Return on Loan and Advances (R_L) %
2004	563,137.00	6,095,841.00	9.24
2005	633,625.00	7,900,015.00	8.02
2006	770,826.00	10,136,254.00	7.60
2007	967,178.00	14,082,686.00	6.87
2008	1,329,695.00	18,836,432.00	7.06
2009	1,852,128.00	24,469,556.00	7.57
Total	**6,116,589.00**	**81,520,784.00**	**46.36**
Average	**1,019,431.50**	**13,586,797.33**	**7.73**

Source: Annual Reports of EBL and Annexes 1(e) and 1(h)

The table no. 4.12 shows that in an average EBL generates 7.73% return in the investment made in loan and advances. It shows a general decreasing trend of EBL in the return on loan and advances. During the study period the greatest return is 9.24% in the year 2004 and the lowest return is 6.87% in the year 2007.

Table 4.13

Return on Loan and Advances of Banking Industry

(Rs. in thousands)

FY	Interest on Loan and Advances	Investment on Loan and Advances	Return on Loan and Advances (R_L) %
2004	3,515,941.00	41,596,557.00	8.45
2005	3,938,706.00	51,171,952.00	7.70
2006	4,461,241.00	61,561,445.00	7.25
2007	5,407,994.00	76,338,682.00	7.08
2008	7,050,135.00	102,269,176.00	6.89
2009	9,905,922.00	128,695,947.00	7.70
Total	**34,279,939.00**	**461,633,759.00**	**45.07**

Average	**5,713,323.17**	**76,938,959.83**	**7.51**

Source: Banking and Financial Statistics NRB and Annexes 1(e) and 1(h)

The table no. 4.13 shows that in an average the banking industry generates 7.51% return on an investment made in loan and advances. It demonstrates an inconsistent trend of banking industry in the return on loan and advances. During the study period the greatest return is 8.45 % in the year 2004 and the lowest return is 6.89% in the year 2008.

The following table 4.14 displays the return on loan and advances of sample banks and banking industry.

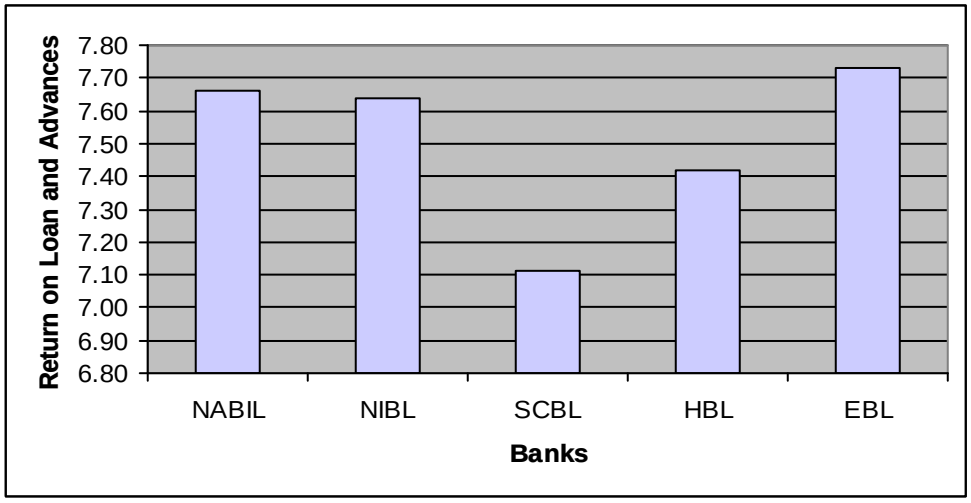
Table 4.14

Return on Loan and Advances of Sample Banks and Banking Industry (%)

Year	NABIL	NIBL	SCBL	HBL	EBL	Banking Industry
2004	8.91	9.03	8.34	7.51	9.24	8.45
2005	7.60	7.36	6.91	8.34	8.02	7.70
2006	7.44	7.32	6.48	7.24	7.60	7.25
2007	7.34	7.33	6.75	6.98	6.87	7.08
2008	6.88	6.93	6.25	7.16	7.06	6.89
2009	7.80	7.89	7.95	7.29	7.57	7.70
Total	**45.97**	**45.86**	**42.68**	**44.52**	**46.36**	**45.07**
Average	**7.66**	**7.64**	**7.11**	**7.42**	**7.73**	**7.51**

Figure 4.2

Return on Loan and Advances of Sample Banks



From the above analysis, the average return on loan and advances of NABIL, NIBL, SCBL, HBL, EBL and Banking Industry is 7.66%, 7.64%, 7.11%, 7.42%, 7.73% and 7.51% respectively. It can be observed that NABIL is the highest mean return on loan and advances among the five sample banks. Likewise, NIBL has the moderate mean return on loan and advances, while SCBL has the lowest mean return on loan and advances.

4.1.1.3 Return on Share and Debenture

The return on share and debenture comprise dividend yield and capital gain yield (change in market price. In other words, return is the combination of capital gain yield and individual yield. Capital gain yield (loss) can be calculated by the difference the current year price and the last year price with respect to the last year price. However, dividend yield is calculated by dividend per share divided by market price per share. Market price is the mean return on the selected companies which is represented by market return of the study.

The information about the dividend received and the dividend by the commercial banks are insufficiently available. In absence of such information calculation on return on share and debenture is generally infeasible. Hence, it has been assumed to calculate the necessary return on share and debenture by using market return. The average market

return on share and debenture is the average return of bank from the investment on share and debenture.

Market return can be calculated by taking difference between the market indexes divided by the closing market index in time (n-1). Here, the dividend is ignored.

Market return $fR_s AX \frac{P_t \; Z P_{tZ1}}{P_{tZ1}}$

Where R_s = Return on market, P_t = NEPSE index at time t, and P_{tZ1} = NEPSE index at time t-1

Average Return on Share and Debenture $fR_s AX \frac{R_s}{n}$, where n = number of years

Table 4.15

Market Return on Share and Debenture of Banking Industry

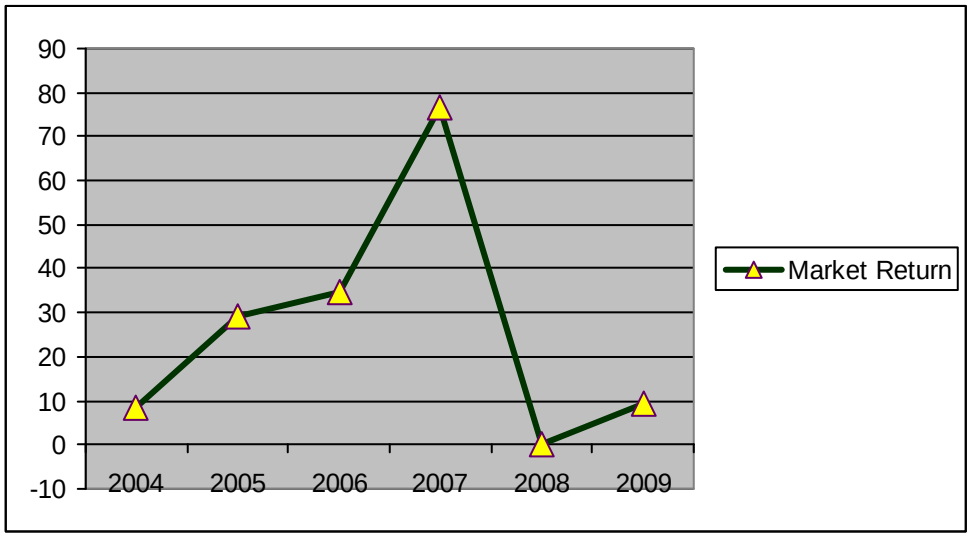
(In Percentage)

FY	**NEPSE Index**	**Market Return**
2004	222.04	8.38
2005	286.87	29.19
2006	386.83	34.84
2007	683.95	76.81
2008	683.90	-0.01
2009	749.10	9.53
Total		158.74
Average		**26.46**

Source: SEBO and Annex 6(a)

Figure 4.3

Return on Share and Debenture of Banking Industry



The table 4.15 above depicts the return on share and debenture of banking industry is highly fluctuating 8.38 in the year 2004 to 76.81 in the year 2007. These fluctuations in returns are mainly contributed by the volatility of the share prices in the market. The changes in dividends also lead the variability of return on share to some extent.

The average market return on share and debenture of banking industry is 26.46 during the review period. It is higher than the rate of return on other assets like government securities and loan and advances.

4.1.2 Risk on Individual Investment

4.1.2.1 Risk on Government Securities

The risk on government security is computed as follows:

Risk on Government Securities $\pm_g = \sqrt{\frac{\sum (R_g - \overline{R_g})^2}{n - 1}}$

Where R_g = Return on government securities; $\overline{R_g}$ = Average rate of return on government securities; $\pm_g$ = Standard Deviation on government securities; n = no. of years.

The following tables 4.16 to 4.21 present the risk (Standard Deviation of return) on government securities of NABIL, NIBL, SCBL, HBL, EBL and banking industry.

Table 4.16

Risk on Government Securities of NABIL (In Percentage)

Year	Return on Government Securities (R_g)	$(R_g - \bar{R}_g)$	$(R_g - \bar{R}_g)^2$
2004	5.25	0.01	0.0001
2005	6.25	1.01	1.0201
2006	5.66	0.42	0.1764
2007	2.75	-2.49	6.2001
2008	4.27	-0.97	0.9409
2009	7.26	2.02	4.0804
Total	**31.44**	**0.00**	**12.4180**
Average	**5.24**		
SD (σ_g)	**1.5759**		

Source: Annual Reports of NABIL and Annex 4

The table 4.16 shows that the average return on government securities of NABIL is 5.24% and the standard deviation which represents risk is 1.5759. It reveals that the risk on investment on government securities of NABIL is 1.5759 which indicates the riskiness of government securities. On observation, NABIL experiences greater riskiness on government securities as compared to all other sample banks.

Table 4.17

Risk on Government Securities of NIBL (In Percentage)

Year	Return on Government Securities (R_g)	$(R_g - \bar{R}_g)$	$(R_g - \bar{R}_g)^2$
2004	1.79	-1.39	1.9414
2005	2.90	-0.28	0.0803
2006	3.27	0.09	0.0075
2007	2.41	-0.77	0.5980
2008	3.17	-0.01	0.0002
2009	5.56	2.38	5.6485
Total	**19.10**	**0.00**	**8.2759**

Average	**3.18**		
SD (σ_g)	**1.2865**		

Source: Annual Reports of NIBL and Annex 4

The table 4.17 shows that the average return on government securities of NIBL is 3.18% and standard deviation which represents risk is 1.2865. It reveals that the risk on government securities is 1.2865 which indicates the riskiness on government securities. Comparing to SCBL and EBL, NIBL exhibits higher riskiness on government securities.

Table 4.18

Risk on Government Securities of SCBL (In Percentage)

Year	**Return on Government Securities (R_g)**	**$(R_g - \bar{R}_g)$**	**$(R_g - \bar{R}_g)^2$**
2004	4.79	0.44	0.1965
2005	4.60	0.25	0.0642
2006	4.11	-0.24	0.0560
2007	4.59	0.24	0.0592
2008	3.93	-0.42	0.1736
2009	4.06	-0.29	0.0822
Total	**26.08**	**0.00**	**0.6317**
Average	**4.35**		
SD (σ_g)	**0.3554**		

Source: Annual Reports of SCBL and Annex 4

The table 4.18 shows that the average return on government securities of SCBL is 4.35% and the standard deviation which represents risk is 0.3554. It reveals that the risk on investment on government securities of SCBL is 0.3554 which indicates the riskiness on government securities. The standard deviation clearly indicates that there is some minimal risk associated with government securities despite general assumption of no-risk on such type of securities.

Table 4.19

Risk on Government Securities of HBL (In Percentage)

Year	Return on Government Securities (R_g)	$(R_g - \bar{R}_g)$	$(R_g - \bar{R}_g)^2$
2004	4.96	0.77	0.5955
2005	2.73	-1.46	2.1267
2006	3.35	-0.84	0.7028
2007	2.97	-1.22	1.4843
2008	2.69	-1.50	2.2450
2009	8.43	4.24	17.9917
Total	**25.13**	**0.00**	**25.1461**
Average	**4.19**		
SD (σ_g)	**2.2426**		

Source: Annual Reports of HBL and Annex 4

The table 4.19 shows the average return on government securities of HBL is 4.19% and standard deviation which represents risk is 2.2426. It reveals that the risk on investment on government securities of HBL is 2.2426 which indicate the riskiness on government securities. It is evident that HBL also displays lower riskiness on government securities than NABIL.

Table 4.20

Risk on Government Securities of EBL (In Percentage)

Year	Return on Government Securities (R_g)	$(R_g - \bar{R}_g)$	$(R_g - \bar{R}_g)^2$
2004	3.75	0.00	0.0000
2005	3.71	-0.04	0.0015
2006	2.93	-0.82	0.6697
2007	2.73	-1.02	1.0370
2008	3.74	-0.01	0.0001
2009	5.63	1.88	3.5407
Total	**22.49**	**0.00**	**5.2489**
Average	**3.75**		
SD (σ_g)	**1.0246**		

Source: Annual Reports of EBL and Annex 4

The table 4.20 shows that the average return on government securities of EBL is 3.75% and the standard deviation which represents risk is 1.0246. It reveals that the risk on government securities of EBL is 1.0246 which indicates the riskiness on government securities. It is visible that EBL displays lower riskiness on government securities than NIBL and NABIL.

Table 4.21

Risk on Government Securities of Banking Industry (In Percentage)

Year	Return on Government Securities (R_g)	$(R_g - \bar{R}_g)$	$(R_g - \bar{R}_g)^2$
2004	4.47	0.34	0.1133
2005	4.00	-0.13	0.0178
2006	3.82	-0.31	0.0982
2007	3.26	-0.87	0.7627
2008	3.54	-0.59	0.3520
2009	5.71	1.58	2.4859
Total	**24.80**	**0.00**	**3.8299**
Average	**4.13**		
SD (σ_g)	**0.8752**		

Source: Annual Reports of all sample Banks and Annex 4

The table 4.21 shows the average return on government securities of banking industry is 4.13%, where as the standard deviation which represents risk is 0.8752. It reveals that the risk on investment on government securities of banking industry is 0.8752 which indicates the riskiness on government securities.

Table 4.22

Risk on Government Securities of Sample Banks and Banking Industry (%)

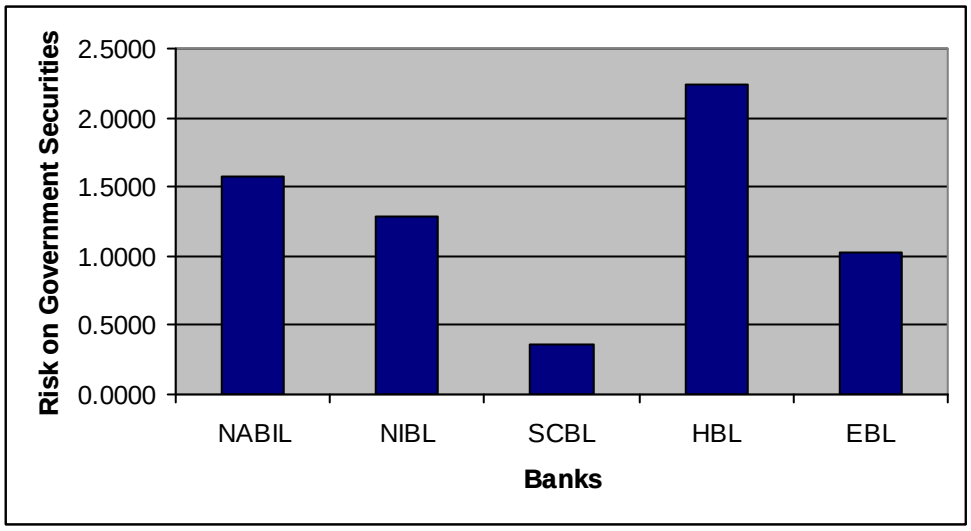
Year	NABIL	NIBL	SCBL	HBL	EBL	Banking Industry
2004	5.25	1.79	4.79	4.96	3.75	4.47
2005	6.25	2.90	4.60	2.73	3.71	4.00
2006	5.66	3.27	4.11	3.35	2.93	3.82
2007	2.75	2.41	4.59	2.97	2.73	3.26
2008	4.27	3.17	3.93	2.69	3.74	3.54
2009	7.26	5.56	4.06	8.43	5.63	5.70
Total	**31.44**	**19.10**	**26.08**	**25.13**	**22.49**	**24.79**
Average	**5.24**	**3.18**	**4.35**	**4.19**	**3.75**	**4.13**

SD (σ_g)	**1.5759**	**1.2865**	**0.3554**	**2.2426**	**1.0246**	**0.8752**

Source: Annual Reports of commercial banks and Annex 4

Figure 4.4

Risk on Government Securities of Sample Banks



The above table 4.22 shows the risk (Standard deviation of return) on government securities of banking industry is 0.4601. Similarly the risk on government securities of NABIL, NIBL, SCBL, HBL and EBL are 1.5759, 1.2865, 0.3554, 2.2426 and 1.0246 respectively. From the above analysis, it is evident that HBL has the highest risk on government securities among five commercial banks. NABIL, NIBL and EBL have moderate risk and SCBL has the lowest risk on government securities.

4.1.2.2 Risk on Loan and Advances

The risk on loan and advances can be calculated as follows:

Standard Deviation on Loan and Advances $\pm_l = \sqrt{\frac{\sum (R_l - \overline{R_l})^2}{n-1}}$

Where, R_l = Return on Loan and Advances

$\overline{R_l}$ = Average Return on Loan and Advances

$\pm_l$ = Standard Deviation on Loan and Advances

n = Number of year

The following tables 4.23 to 4.28 present the risk (Standard Deviation of return) on Loan and Advances of NABIL, NIBL, SCBL, HBL, EBL and banking industry.

Table 4.23

Risk on Loan and Advances of NABIL (In Percentage)

Year	Return on Loan and Advances (R_l)	$(R_l - \bar{R}_l)$	$(R_l - \bar{R}_l)^2$
2004	8.91	1.25	1.5625
2005	7.60	-0.06	0.0036
2006	7.44	-0.22	0.0484
2007	7.34	-0.32	0.1024
2008	6.88	-0.78	0.6084
2009	7.79	0.13	0.0169
Total	**45.96**	**0.00**	**2.3422**
Average	**7.66**		
SD (σ_l)	**0.6844**		

Source: Annual Reports of NABIL and Annex 5

The table 4.23 shows that the average return on loan and advances of NABIL is 7.66% and the standard deviation which represents risk is 0.6844. It reveals that the risk on investment on Loan and Advances of NABIL is 0.6844 which indicates the riskiness on loan and advances. Observing the status of riskiness on loan and advances, NABIL displays third highest step than EBL and SCBL.

Table 4.24

Risk on Loan and Advances of NIBL (In Percentage)

Year	Return on Loan and Advances (R_l)	$(R_l - \bar{R}_l)$	$(R_l - \bar{R}_l)^2$
2004	9.03	1.39	1.9228
2005	7.36	-0.28	0.0803
2006	7.32	-0.32	0.1045
2007	7.33	-0.31	0.0982
2008	6.93	-0.71	0.5088
2009	7.89	0.25	0.0608
Total	**45.86**	**0.00**	**2.7755**
Average	**7.64**		
SD (σ_l)	**0.7451**		

Source: Annual Reports of NIBIL and Annex 5

The table 4.24 shows that the average return on loan and advances of NIBIL is 7.64% and the standard deviation which represents risk is 0.7451. It reveals that the risk on investment on Loan and Advances of NABIL is 0.7451 which indicates the riskiness on loan and advances. On comparison, NIBL exhibits lower riskiness than SCBL and EBL.

Table 4.25

Risk on Loan and Advances of SCBL (In Percentage)

Year	Return on Loan and Advances (R_l)	$(R_l - \bar{R}_l)$	$(R_l - \bar{R}_l)^2$
2004	8.34	1.23	1.5047
2005	6.91	-0.20	0.0413
2006	6.48	-0.63	0.4011
2007	6.75	-0.36	0.1320
2008	6.25	-0.86	0.7453
2009	7.95	0.84	0.7000
Total	**42.68**	**0.00**	**3.5245**
Average	**7.11**		
SD (σ_l)	**0.8396**		

Source: Annual Reports of SCBL and Annex 5

The table 4.25 shows that the average return on loan and advances of SCBL is 7.11% and the standard deviation which represents risk is 0.8396. It reveals that the risk in investment on loan and advances of SCBL is 0.8396 which indicates the riskiness on loan and advances.

Table 4.26

Risk on Loan and Advances of HBL (In Percentage)

Year	Return on Loan and Advances (R_l)	$(R_l - \bar{R}_l)$	$(R_l - \bar{R}_l)^2$
2004	7.51	0.09	0.0081
2005	8.34	0.92	0.8464
2006	7.24	-0.18	0.0324
2007	6.98	-0.44	0.1936
2008	7.16	-0.26	0.0676
2009	7.29	-0.13	0.0169
Total	**44.52**	**0.00**	**1.1650**
Average	**7.42**		

SD (σ_l)	**0.4827**		

Source: Annual Reports of HBL and Annex 5

The table 4.26 shows that the average return on loan and advances of HBL is 7.42% and the standard deviation which represents risk is 0.4827. It reveals that the risk on investment on loan and advances of HBL is 0.4827 which indicates the riskiness on loan and advances. It is evident that HBL has lower riskiness on loan and advances than all other sample banks.

Table 4.27

Risk on Loan and Advances of EBL (In Percentage)

Year	**Return on Loan and Advances (R_l)**	**$(R_l - \bar{R}_l)$**	**$(R_l - \bar{R}_l)^2$**
2004	9.24	1.51	2.2902
2005	8.02	0.29	0.0860
2006	7.60	-0.13	0.0160
2007	6.87	-0.86	0.7339
2008	7.06	-0.67	0.4444
2009	7.57	-0.16	0.0245
Total	**46.36**	**0.00**	**3.5951**
Average	**7.73**		
SD (σ_l)	**0.8479**		

Source: Annual Reports of EBL and Annex 5

The table 4.27 shows that the average return on loan and advances of EBL is 7.73% and the standard deviation which represents the risk is 0.8479. It reveals that the risk on investment on Loan and Advances of EBL is 0.8479 which indicates the riskiness on loan and advances. EBL has higher riskiness on loan and advances than SCBL.

Table 4.28

Risk on Loan and Advances of Banking Industry (In Percentage)

Year	**Return on Loan and Advances (R_l)**	**$(R_l - \bar{R}_l)$**	**$(R_l - \bar{R}_l)^2$**
2004	8.45	0.94	0.8805
2005	7.70	0.19	0.0355

2006	7.25	-0.26	0.0685
2007	7.08	-0.43	0.1863
2008	6.89	-0.62	0.3865
2009	7.70	0.19	0.0355
Total	**45.07**	**0.00**	**1.5927**
Average	**7.51**		
SD (σ_l)	**0.5644**		

Source: Annual Reports of sample banks and Annex 5

The table 4.28 shows that the average return on loan and advances of banking industry is 7.51% and the standard deviation which represents risk is 0.5644. It reveals that the risk on investment on loan and advances of banking industry is 0.5644 which indicates the riskiness on loan and advances.

Table 4.29

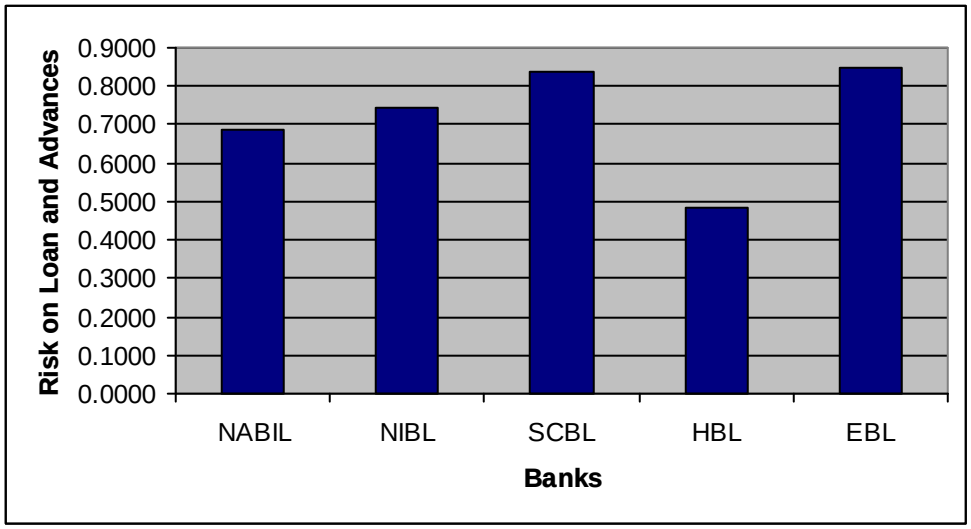
Risk on Loan and Advances of Sample Banks and Banking Industry (%)

Year	NABIL	NIBL	SCBL	HBL	EBL	Banking Industry
2004	8.91	9.03	8.34	7.51	9.24	8.45
2005	7.60	7.36	6.91	8.34	8.02	7.70
2006	7.44	7.32	6.48	7.24	7.60	7.25
2007	7.34	7.33	6.75	6.98	6.87	7.08
2008	6.88	6.93	6.25	7.16	7.06	6.89
2009	7.80	7.89	7.95	7.29	7.57	7.70
Total	**45.97**	**45.86**	**42.68**	**44.52**	**46.36**	**45.07**
Average	**7.66**	**7.64**	**7.11**	**7.42**	**7.73**	**7.51**
SD (σ_l)	**0.6844**	**0.7451**	**0.8396**	**0.4827**	**0.8479**	**0.5644**

Source: Annual Reports of commercial banks and Tables 4.23 – 4.28

Figure 4.5

Risk on Loan and Advances of Sample Banks



The above table 4.29 shows the risk (Standard Deviation of return) on loan and advances of banking industry is 2.8579. Similarly the risk on loan and advances of NABIL, NIBL, SCBL, HBL and EBL are 0.6844, 0.7451, 0.8396, 0.4827 and 0.8479 respectively. From the above analysis, it is evident that NIBL has the highest risk on loan and advances among five commercial banks. SCBL, EBL have moderate risk and HBL has the lowest risk on loan and advances.

4.1.2.3 Risk on Share and Debenture

Market Risk can be calculated as follows.

Risk on Share and Debenture $\pm_s = \sqrt{\frac{\sum (R_s - \overline{R_s})^2}{n-1}}$

Where R_s = Return on share and debenture

$\overline{R_s}$ = Average rate of return on share and debenture

$\pm_s$ = Standard Deviation on return on share and debenture

n = number of years

Table 4.30

Risk on Share and Debenture of Banking Industry (In Percentage)

Year	NEPSE Index	Market Return	$(R_s - \overline{R_s})$	$(R_s - \overline{R_s})^2$
2004	222.04	8.38	-18.08	326.71
2005	286.87	29.11	2.66	7.05
2006	386.83	34.91	8.45	71.49
2007	683.95	76.81	50.36	2535.63
2008	683.90	-0.01	-26.47	700.40
2009	749.10	9.53	-16.93	286.46
Total	**3012.69**	**158.73**	**16.93**	**3927.72**
Average		**26.46**	**0.00**	
SD (σ_l)				**28.03**

Source: Annex 6(b)

The table 4.30 listed above reveals the risk (Standard Deviation) of return on share and debenture of banking industry. The standard deviation of return on share and debenture of banking industry is 28.03. The standard deviation portrays more risk than investment on loan and advances and government securities. Thus it is clear that investment on share and debenture is more risky.

4.1.3 Return on Investment Portfolio

The return on portfolio is the weighted average of the expected returns of the individual stock in the portfolio, with the weights being the proportion of the investment on each security in the portfolio equation. Commercial banks invest their funds in government securities, share and debenture and loan and advances. The weight of investment on various assets and their portfolio of returns can be calculated as below;

Calculation of Portfolio Return $f R_P$

Portfolio Return $f R_P$ X $W \mid R$

X $W_1 R_1 \Gamma W_2 R_2 \Gamma W_3 R_3$

$$\text{Proportion Weight (W)} \; X \frac{\text{Investment in each asset}}{\text{Total Outside Investment}}$$

Where,

R_P = Portfolio Return

W_1 = Proportion of investment on government securities.

W_2 = Proportion of investment on loan and advances

W_3 = Proportion of investment on share and debenture.

R_1 , R_2 and R_3 = Return on government securities, loan and advances, share and debenture respectively.

Table 4.31

Portfolio Return on Investment of NABIL (In Percentage)

S.No.	Assets	Average Rate of Return (R)	Proportion Weight (W)
1	Return on Government Securities (R_g)	5.24	0.1774
2	Return on Loan and Advances (R_l)	7.66	0.8102
3	Return on Share and Debenture (R_s)	26.46	0.0124
	Portfolio Return (R_p)	7.464	1

Source: Annual Reports of NABIL, Annex 7 and 16

From the above table 4.31 the expected return on portfolio of NABIL is 7.464 which is more than that of mean rate of return on investment on government securities i.e. 7.464>5.24, but less than that of mean rate of return on investment on loan and advances i.e. 7.464<7.66 and share and debenture i.e. 7.3464<26.46.

Table 4.32

Portfolio Return on Investment of NIBL (In Percentage)

S.No.	Assets	Average Rate of Return (R)	Proportion Weight (W)
1	Return on Government Securities (R_g)	3.18	0.1198
2	Return on Loan and Advances (R_l)	7.64	0.8786
3	Return on Share and Debenture (R_s)	26.46	0.0016
	Portfolio Return (R_p)	7.136	1

Source: Annual Reports of NIBL, Annex 7 and 16

From the above table 4.32 the expected return on portfolio of NIBL is 7.136 which is more than that of mean rate of return on investment on government securities i.e. 7.136>3.18, but less than that of mean rate of return on investment on loan and advances i.e. 7.136<7.64 and share and debenture i.e. 7.136<26.46.

Table 4.33

Portfolio Return on Investment of SCBL (In Percentage)

S.No.	Assets	Average Rate of Return (R)	Proportion Weight (W)
1	Return on Government Securities (R_g)	4.35	0.4366
2	Return on Loan and Advances (R_l)	7.11	0.5605
3	Return on Share and Debenture (R_s)	26.46	0.0028
	Portfolio Return (R_p)	5.958	0.9999

Source: Annual Reports of SCBL, Annex 7 and 16

From the above table 4.33 the expected return on portfolio of SCBL is 5.958 which is more than that of mean rate of return on investment on government securities i.e. 5.958>4.35, but less than that of mean rate of return on investment on loan and advances i.e. 5.958<7.11 and share and debenture i.e. 5.929<26.46.

Table 4.34

Portfolio Return on Investment of HBL (In Percentage)

S.No.	Assets	Average Rate of Return (R)	Proportion Weight (W)
1	Return on Government Securities (R_g)	4.19	0.2329
2	Return on Loan and Advances (R_l)	7.42	0.7644
3	Return on Share and Debenture (R_s)	26.46	0.0027
	Portfolio Return (R_p)	6.719	1

Source: Annual Reports of HBL, Annex 7 and 16

From the above table 4.34 the expected return on portfolio of HBL is 6.719 which is more than that of mean rate of return on investment on government securities i.e.

6.719>4.19, but less than that of mean rate of return on investment on loan and advances i.e. 6.719<7.42 and share and debenture i.e. 6.719<26.46.

Table 4.35

Portfolio Return on Investment of EBL (In Percentage)

S.No.	Assets	Average Rate of Return (R)	Proportion Weight (W)
1	Return on Government Securities (R_g)	3.75	0.2162
2	Return on Loan and Advances (R_l)	7.73	0.7811
3	Return on Share and Debenture (R_s)	26.46	0.0027
	Portfolio Return (R_p)	6.92	1

Source: Annual Reports of EBL, Annex 7 and 16

From the above table 4.35 the expected return on portfolio of EBL is 6.920 which is more than that of mean rate of return on investment on government securities i.e. 6.920>3.75, but less than that of mean rate of return on investment on loan and advances i.e. 6.920<7.73 and share and debenture i.e. 6.920<26.46.

Table 4.36

Portfolio Return on Investment of Banking Industry (In Percentage)

S.No.	Assets	Average Rate of Return (R)	Proportion Weight (W)
1	Return on Government Securities (R_g)	4.13	0.2326
2	Return on Loan and Advances (R_l)	7.51	0.7629
3	Return on Share and Debenture (R_s)	26.46	0.0044
	Portfolio Return (R_p)	6.806	0.9999

Source: Banking and Financial Statistics of NRB, Annex 7 and 16

From the above table 4.36 the expected return on portfolio of Banking Industry is 6.806 which is more than that of mean rate of return on investment on government securities i.e. 6.806>4.13, but less than that of mean rate of return on investment on loan and advances i.e. 6.806<7.51 and share and debenture i.e. 6.806<26.46.

Table 4.37

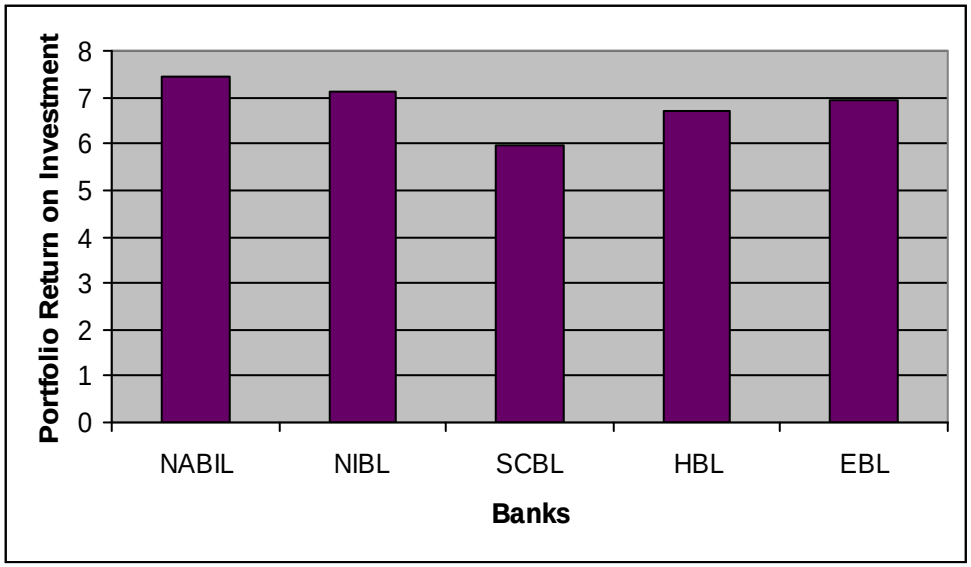
Portfolio Return on Investment of sample commercial banks and banking industry (%)

S.No.	Assets	NABIL	NIBL	SCBL	HBL	EBL	Banking Industry
1	Return on Government Securities (R_g)	5.24	3.18	4.35	4.19	3.75	4.13
2	Return on Loan and Advances (R_l)	7.66	7.64	7.11	7.42	7.73	7.51
3	Return on Share and Debenture (R_s)	26.46	26.46	26.46	26.46	26.46	26.46
	Portfolio Return (R_p)	7.464	7.135	5.958	6.719	6.92	6.806

Source: Banking and Financial Statistics of NRB, Tables 4.31-4.36

Figure 4.6

Portfolio Return on Investment of Sample Banks



The above table 4.37 displays the portfolio returns of NABIL, NIBL, SCBL, HBL, EBL and Banking Industry are 7.464%, 7.135%, 5.958%, 6.719%, 6.920% and 6.806% respectively. From the above analysis, it is seen that 7.66% of its total outside investment in loan and advances and 26.46% of its total outside investment on share and debenture which generate higher return and only 3.18% of its total investment in government securities which yields lower return.

4.1.4 Risk on Investment Portfolio

Expected risk on a portfolio is the function of the proportions invested in the components, the risky ness of the components and correlation of returns on the component securities. It is measured by standard deviation. However the standard deviation of portfolio is not simply the weighted average of standard deviation of individual securities. The portfolio risk is affected by the association of movement of returns of two securities. The degree to which the assets return move together is measured by the covariance. Hence, by combining the measures of individual assets risk, relative asset weights and the co-movement of asset returns (covariance) the risk of the portfolio can be estimated. Thus prior to the calculation of portfolio risk on investment, covariance between two assets return should be calculated.

Calculation of Correlation Coefficient

Table 4.38

Portfolio Risk on Investment of NABIL (In Percentage)

S.No.	Assets	Risk (Standard Deviation)	Correlation Coefficient
1	Risk on Government Security (σ_g)	1.5759	r_{gl} = 0.3149
2	Risk on Loan and Advances (σ_l)	0.6844	r_{gs} = -0.5790
3	Risk on Share and Debenture (σ_s)	28.03	r_{ls} = -0.2341
	Portfolio Risk (σ_p)	0.1077	

Source: Annual Reports of NABIL, Annex 8 and 9

From the above table 4.38, the expected risk of portfolio (Standard deviation) of NABIL is 0.1077% which is considerably less than the expected risk on investment of share and debenture 0.1077% < 28.03% and loan and advances 0.1077%<1.5759%. The risk of investment portfolio of NABIL has considerably reduced owing to the negative correlation between and returns of investment on loan and advances and share and debenture (r_{ls} = -0.2341). Hence it is clear from the above analysis that the lower the correlation coefficient, the lower the risk of the portfolio. In other words, combining assets with negative correlation (r<o) will significantly reduce the risk of the portfolio.

Table 4.39

Portfolio Risk on Investment of NIBL (In Percentage)

S.No.	Assets	Risk (Standard Deviation)	Correlation Coefficient
1	Risk on Government Security (σ_g)	1.2865	r_{gl} = 0.2164
2	Risk on Loan and Advances (σ_l)	0.7451	r_{gs} = -0.0297
3	Risk on Share and Debenture (σ_s)	28.03	r_{ls} = -0.2836
	Portfolio Risk (σ_p)	0.6937	

Source: Annual Reports of NIBL, Annexes 8 and 9

From the above table 4.39, the expected risk of portfolio (standard deviation) of NIBL is 0.6937% which is considerably less than the expected risk on investment on share and debenture 0.6937%<28.03% and loan and advances 0.6937%<0.7451%. The risk of investment portfolio of NIBL has considerably reduced owing to the negative correlation between returns of investment on government securities and share and debenture (r_{gs} = -0.0297), returns of investment on loan and advances and share and debenture (r_{ls} = -0.2836) and returns on investment on government securities and loan and advances (r_{gl} = 0.2164).

Table 4.40

Portfolio Risk on Investment of SCBL (In Percentage)

S.No.	Assets	Risk (Standard Deviation)	Correlation Coefficient
1	Risk on Government Security (σ_g)	0.3554	r_{gl} = 0.4572
2	Risk on Loan and Advances (σ_l)	0.8396	r_{gs} = 0.3813
3	Risk on Share and Debenture (σ_s)	28.03	r_{ls} = -0.3203
	Portfolio Risk (σ_p)	0.5516	

Source: Annual Reports of SCBL, Annexes 8 and 9

From the above table 4.40, the expected risk of portfolio (standard deviation) of SCBL is 0.5516% which is considerably less than the expected risk on investment on share and debenture 0.5516%<28.03, loan and advances 0.5516%<0.8396% and investment on government securities i.e. 0.5516%<0.3554%. The risk of investment portfolio of SCBL has considerably reduced owing to the negative correlation between returns of investment on government securities and share and debenture (r_{gs} = 0.3813), returns of

investment on loan and advances and share and debenture (r_{ls} = -0.3203) and returns of investment on government securities and loan and advances (r_{gl} = 0.4572). Hence, it is clear that from the above analysis that the lower correlation coefficient, the lower the risk of the portfolio. In other words, combining assets with negative correlation (r<0) will significantly reduce the risk of the portfolio.

Table 4.41

Portfolio Risk on Investment of HBL (In Percentage)

S.No.	Assets	Risk (Standard Deviation)	Correlation Coefficient
1	Risk on Government Security (σ_g)	2.2426	r_{gl} = -0.1377
2	Risk on Loan and Advances (σ_l)	0.4827	r_{gs} = -0.3767
3	Risk on Share and Debenture (σ_s)	27.53	r_{ls} = -0.2039
	Portfolio Risk (σ_p)	0.5667	

Source: Annual Reports of HBL, Annexes 8 and 9

From the above table 4.41, the expected risk of portfolio (standard deviation) of HBL is 0.5667% which is considerably less than the expected risk on investment on share and debenture 0.5667%<28.03, loan and advances 0.5667%<0.4827% and investment on government securities i.e. 0.5667%<2.2426%. The risk of investment portfolio of HBL has considerably reduced owing to the negative correlation between returns of investment on government securities and share and debenture (r_{gs} = -0.3767) and returns of investment on loan and advances and share and debenture (r_{ls} = -0.2039). Hence, it is clear that from the above analysis that the lower correlation coefficient, the lower the risk of the portfolio. In other words, combining assets with negative correlation (r<0) will significantly reduce the risk of the portfolio.

Table 4.42

Portfolio Risk on Investment of EBL (In Percentage)

S.No.	Assets	Risk (Standard Deviation)	Correlation Coefficient
1	Risk on Government Security (σ_g)	1.0246	r_{gl} = 0.1790
2	Risk on Loan and Advances (σ_l)	0.8479	r_{gs} = -0.6265
3	Risk on Share and Debenture (σ_s)	28.03	r_{ls} = -0.4250
	Portfolio Risk (σ_p)	0.7531	

Source: Annual Reports of EBL, Annexes 8 and 9

From the above table 4.42, the expected risk of portfolio (standard deviation) of EBL is 0.7531% which is considerably less than the expected risk on investment on share and debenture 0.7531%<28.03 and loan and advances 0.7531%<0.8479%, it is also less than government securities i.e. 0.7531%<1.0246%. The risk of investment portfolio of HBL has considerably reduced owing to the negative correlation between returns of investment on government securities and share and debenture (r_{gs} = -0.6265) and returns of investment on loan and advances and share and debenture (r_{ls} = -0.4250). Hence, it is clear that from the above analysis that the lower correlation coefficient, the lower the risk of the portfolio. In other words, combining assets with negative correlation (r<0) will significantly reduce the risk of the portfolio.

Table 4.43

Portfolio Risk on Investment of Banking Industry (In Percentage)

S.No.	Assets	Risk (Standard Deviation)	Correlation Coefficient
1	Risk on Government Security (σ_g)	0.8752	r_{gl} = 0.5719
2	Risk on Loan and Advances (σ_l)	0.5644	r_{gs} = -0.5219
3	Risk on Share and Debenture (σ_s)	28.03	r_{ls} = -0.3435
	Portfolio Risk (σ_p)	0.5298	

Source: Annual Reports of all sample banks, Annexes 8 and 9

From the above table 4.43, the expected risk of portfolio (standard deviation) of banking industry is 0.5298% which is considerably less than the expected risk on investment on share and debenture 0.5298%<28.03 and loan and advances 0.5298%<0.5644% as well as on government securities i.e. 0.5298<0.8752%. The risk of investment portfolio of sample banking industry has considerably reduced owing to the negative correlation between returns of investment on government securities and share and debenture (r_{gs} = -0.5219) and returns of investment on loan and advances and share and debenture (r_{ls} = -0.3435). Hence, it is clear that from the above analysis that the lower correlation coefficient, the lower the risk of the portfolio. In other words,

combining assets with negative correlation (r<0) will significantly reduce the risk of the portfolio.

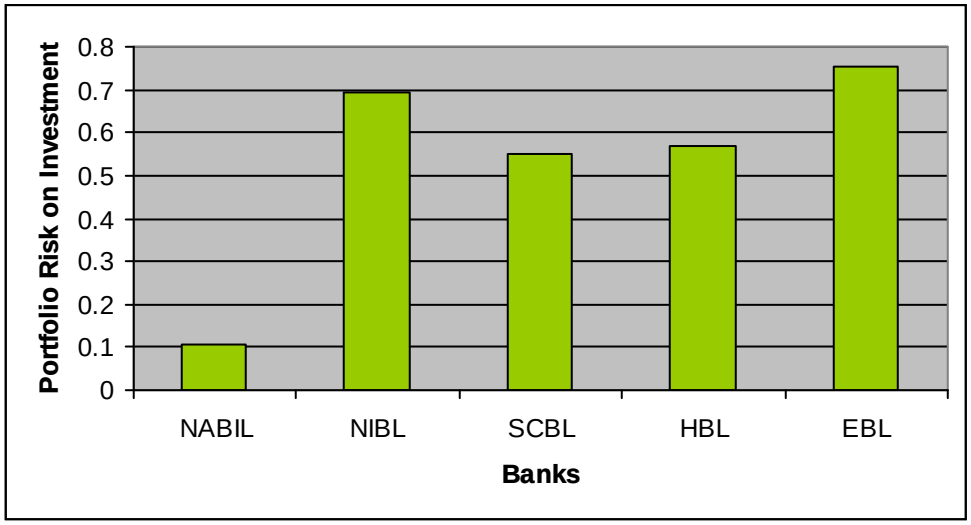
Table 4.44

Portfolio Risk on Investment of Sample Banks (In Percentage)

Asset	NABIL	NIBL	SCBL	HBL	EBL	Banking Industry
Risk on Government Security (σ_g)	1.5759	1.2865	0.3554	2.2426	1.0246	0.8752
Risk on Loan and Advances (σ_l)	0.6844	0.7451	0.8396	0.4827	0.8479	0.5644
Risk on Share and Debenture (σ_s)	28.03	28.03	28.03	28.03	28.03	28.03
Portfolio Risk (σ_p)	0.1077	0.6937	0.5516	0.5667	0.7531	0.5298

Figure 4.7

Portfolio Risk on Investment of Sample Banks



The above table 4.44 presents the portfolio risk on investment of NABIL, NIBL, SCBL, HBL, EBL and banking industry as 0.1077%, 0.6937%, 0.5516%, 0.5667%, 0.7531% and 0.5298% respectively. From the above analysis, it is found that EBL has the highest portfolio risk on investment on various assets, while NABIL has the lowest portfolio risk on investment on various assets.

From the above calculation, it is evident that investing the total funds on loan and advances and share and debenture is more risky than that of investment on government securities. However, average return on investment on loan and advances and share and debenture is more than that of average return on investment on government securities. Thus, investing wealth is more than one security helps minimize the risk.

4.1.5 Investment on Government Treasury Bills to Total Investment (%)

Table 4.45

FY	NABIL	NIBL	SCBL	HBL	EBL
2004	37.58	51.81	53.96	29.94	94.34
2005	15.54	49.53	52.45	41.22	88.01
2006	19.78	45.02	56.16	41.93	79.08
2007	45.62	50.05	44.23	51.42	72.51
2008	38.01	45.86	51.39	53.72	63.98
2009	169.09	34.19	44.67	44.86	56.66
Total	**325.62**	**276.46**	**302.88**	**263.08**	**454.58**
Average	**54.27**	**46.08**	**50.48**	**43.85**	**75.76**

From the above table 4.45, it shows NABIL has invested higher amount on government treasury bills in comparison to other sample commercial banks. Similarly, NIBL invested lower amount on government treasury bills.

4.1.6 Investment on other Government Securities to Total Investment (%)

Table 4.46

FY	NABIL	NIBL	SCBL	HBL	EBL
2004	0.00	0.00	0.00	0.44	3.11
2005	263.88	0.00	2.59	0.26	12.09
2006	88.26	0.00	1.91	0.27	6.81
2007	17.68	0.00	1.11	6.18	30.16
2008	22.66	0.00	0.88	4.26	48.91
2009	101.55	0.00	0.34	7.80	52.64
Total	**494.03**	**0.00**	**6.83**	**19.21**	**153.71**
Average	**82.34**	**0.00**	**1.14**	**3.20**	**25.62**

From the above table 4.46, it shows NABIL has invested higher amount on other government securities too in comparison to other sample commercial banks. Whereas, NIBL bank does not invest in other government securities and only minimum amount has been invested by SCBL in other government securities.

4.1.7 Investment on Corporate Share to Total Investment (%)

Table 4.47

FY	NABIL	NIBL	SCBL	HBL	EBL
2004	0.00	0.69	0.18	1.23	0.72
2005	4.12	0.09	0.26	0.83	1.03
2006	2.24	0.70	0.21	0.87	0.06
2007	1.42	1.08	0.75	1.21	0.55
2008	2.13	1.90	1.48	1.25	0.50
2009	4.49	2.54	1.18	2.40	0.51
Total	**14.38**	**7.01**	**4.07**	**7.79**	**3.37**
Average	**2.40**	**1.17**	**0.68**	**1.30**	**0.56**

From the above table 4.47, it shows NABIL has invested higher amount on corporate shares in comparison to other sample commercial banks. Similarly, EBL invested lower amount on corporate share whereas, NIBL, HBL and SCBL invested minimum amount as compared to NABIL.

4.1.8 Investment on Foreign Banks to Total Investment (%)

Table 4.48

FY	NABIL	NIBL	SCBL	HBL	EBL
2004	97.00	85.73	54.99	207.65	2.18
2005	209.39	98.65	48.85	128.28	0.49
2006	303.23	120.65	58.11	124.99	19.05
2007	94.13	98.10	106.81	87.09	7.21
2008	131.82	116.15	79.29	80.64	4.27
2009	366.15	189.92	109.33	112.72	20.82
Total	**1,201.73**	**709.19**	**457.38**	**741.37**	**54.03**
Average	**200.29**	**118.20**	**76.23**	**123.56**	**9.00**

From the above table 4.48, it shows NABIL has utilized higher amount in investment of foreign banks whereas EBL utilizes very less amount in investment of foreign

banks. Similarly, NIBL falls on moderate position on investment of their amount on foreign banks as compared to other sample commercial banks.

4.1.9 Investment on Corporate Bonds and Debenture to Total Investment (%)

Table 4.49

FY	NABIL	NIBL	SCBL	HBL	EBL
2004	1.01	0.00	0.00	0.00	0.00
2005	62.55	0.00	0.00	0.00	0.00
2006	6.27	0.00	0.00	0.00	0.00
2007	5.61	0.00	0.00	0.00	0.00
2008	6.41	0.00	0.12	0.00	2.62
2009	14.82	0.00	0.09	0.00	2.52
Total	**96.66**	**0.00**	**0.21**	**0.00**	**5.14**
Average	**16.11**	**0.00**	**0.04**	**0.00**	**0.86**

From the above table 4.49, it shows NABIL has invested higher amount on corporate bonds and debenture in comparison to other sample commercial banks whereas NIBL does not invest any. Similarly, EBL invested very lower amount on corporate bonds and debenture as compared to NABIL bank.

4.2 Analysis of Ratio and Interpretation

Ratio analysis is the process of establishing the significant relationship between the variables of financial statement to provide a meaningful understanding of the performance and the financial position of a firm. As a tool of financial analysis, ratio can be expressed in percentage. With the help of ratio analysis, the quantitative judgment can be obtained very easily and timely with respect to financial performance of the firm. In this section, major ratios related to the investment mechanism of commercial banks are calculated and analyzed.

4.2.1 Total Investment to Total Deposit Ratio

The ratio is used to measure the ability of banks to successfully mobilize the total deposits of investment. This ratio is obtained by dividing total investment by total deposit as expressed below.

$$\text{Total Investment to Total Deposit Ratio } X\frac{\text{Total Investment}}{\text{Total Deposit}}$$

In general, the high ratio is the indicator of high success to mobilize the banking funds as investment and vice-versa.

The following table (4.45) shows the ratios of total investment to total deposit of sample commercial banks.

Table 4.50

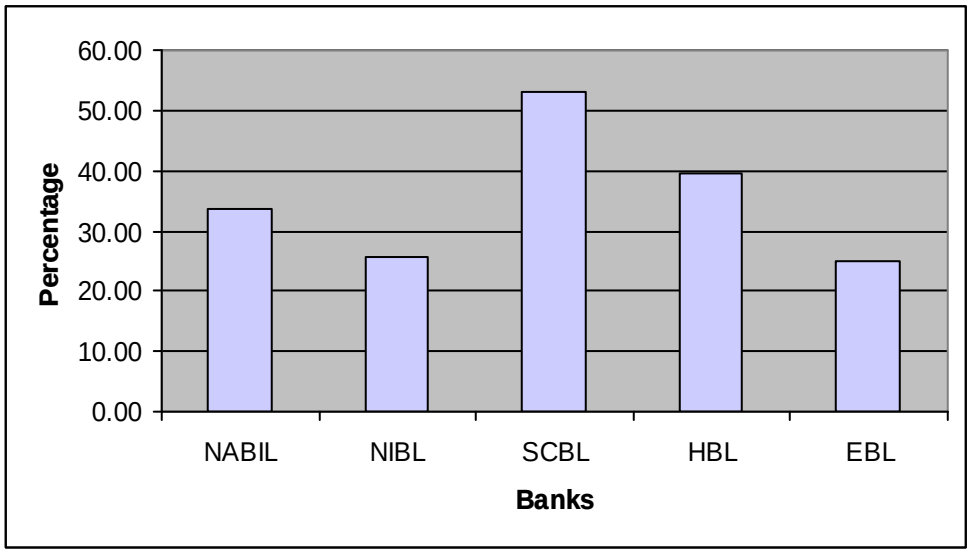
Total Investment to Total Deposit Ratio (%)

Year	NABIL	NIBL	SCBL	HBL	EBL	Banking Industry
2004	41.33	33.51	53.68	42.22	31.44	42.78
2005	29.33	27.60	50.11	47.13	21.08	38.18
2006	31.95	29.60	55.67	41.10	30.44	39.08
2007	38.37	26.57	54.99	39.35	27.41	37.96
2008	31.23	19.97	46.74	41.89	21.11	32.35
2009	29.12	15.85	56.48	25.12	17.66	28.31
Total	**201.33**	**153.10**	**317.67**	**236.81**	**149.14**	**218.66**
Mean	**33.56**	**25.52**	**52.95**	**39.47**	**24.86**	**36.44**
SD	**5.08**	**6.48**	**3.75**	**7.49**	**5.63**	**5.20**
C.V	**15.15**	**25.40**	**7.08**	**18.98**	**22.65**	**14.27**

Source: Annual Reports of related banks from year 2004 to 2009 and Annexes

Figure 4.8

Total Investment to Total Deposit Ratio



The comparative table 4.50 and figure 4.8 reveal that the ratio of total investment to total deposit of sample commercial banks has quite fluctuating trend during the study period of year 2004 to 2009. The mean investment to total deposit of SCBL is the highest at the 52.95%. Likewise HBL has the second highest of investment to total deposit with 39.47%. NABIL stood at the third position (33.56%). Gauging at the average ratio it can be inferred that SCBL, HBL and NABIL capacity of mobilizing deposit on investment is more than others, since their mean ratio are higher than the average ratio on commercial banks 36.44%. However, the mobilization of deposit on investment by NIBL and EBL is comparatively lower than overall commercial banks.

Nevertheless, the coefficient of variation (C.V) in the ratio of SCBL is the lowest (7.08%). Likewise, the C.V in the ratio of NIBL is the most successful in utilizing its resources on investment among the banks. Next stands EBL in utilizing its resources on investment. However, other banks are poor in utilizing their deposits on investment.

4.2.2 Investment on Government Securities to Total Outside Investment Ratio

This ratio is very useful for understanding to what extent the commercial banks are successful to mobilize their total outside investment on different types of government securities to maximize the income. The ratio is computed by dividing investment on government securities by total outside investment.

Investment on Government Securities to Total Outside Investment Ratio

$$X \frac{\text{Investment on Government Securities}}{\text{Total Outside Investment (TOI)}}$$

A high ratio indicates the efficiency of firms in overall investment on government securities and vice-versa.

The table 4.51 shows investment on government securities to total outside investment ratio.

Table 4.51

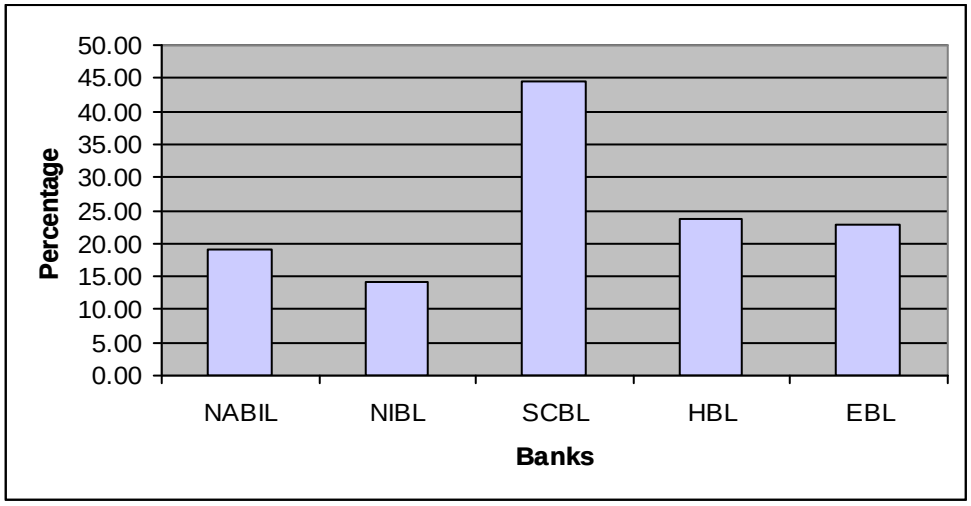
Investment on Government Securities to Total outside Investment Ratio (%)

Year	NABIL	NIBL	SCBL	HBL	EBL	Banking Industry
2004	29.73	21.39	54.24	20.94	28.75	31.83
2005	17.52	15.94	46.06	28.85	20.96	27.09
2006	14.67	16.05	48.43	24.56	24.24	26.14
2007	22.90	15.46	39.85	26.54	25.02	25.56
2008	17.38	10.26	36.63	26.93	20.29	21.52
2009	11.56	6.42	41.67	14.12	17.38	16.52
Total	**113.76**	**85.52**	**266.88**	**141.94**	**136.64**	**148.66**
Mean	**18.96**	**14.25**	**44.48**	**23.66**	**22.77**	**24.78**
SD	**6.47**	**5.21**	**6.39**	**5.39**	**4.04**	**5.22**
C.V	**34.12**	**36.55**	**14.37**	**22.78**	**17.72**	**21.07**

Source: Annual Reports of related banks from year 2004 to 2009, Annexes

Figure 4.9

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



Among the five selected banks, SCBL has the highest investment (44.48%) on government securities to total outside investment. It means SCBL utilizes the highest percentage of total outside investment into government securities amounting to 44.48%. Similarly, NIBL invests lowest fraction (14.25%) of total outside investment into government securities.

The Coefficient of variation of NIBL is the highest (36.55%), which indicates that the ratios of NABIL are the least consistent. SCBL has the lowest C.V (14.38%). It depicts the given ratios of SCBL is the most consistent among five banks.

From the above analysis, it can be concluded that the mobilization of total outside investment into government securities of SCBL is the highest among the other commercial banks that is proved by the highest ratios and lower C.V. Likewise, HBL and EBL have moderate position. However NIBL falls on the weakest position for the mobilization of total outside investment into government securities.

4.2.3 Investment on Loan and Advances to Total Outside Investment Ratio

This ratio is very useful for understanding the capacity of banks to mobilize their total outside investment on loan and advances for profit generating purposes. This ratio is calculated by dividing investment on loan and advances by total outside investment.

Investment on Loan and Advances to Total Outside Investment Ratio

$$X \frac{\text{Investment on Loan and Advances}}{\text{Total Outside Investment (TOI)}}$$

A high ratio of loan and advances to total outside investment indicates better mobilization of depositors' fund on loan and advances and vice-versa. Nevertheless, it should be noted that too high ratio might be better from its liquidity point of view.

The table 4.52 shows that the ratio of investment on loan and advances to total outside investment.

Table 4.52

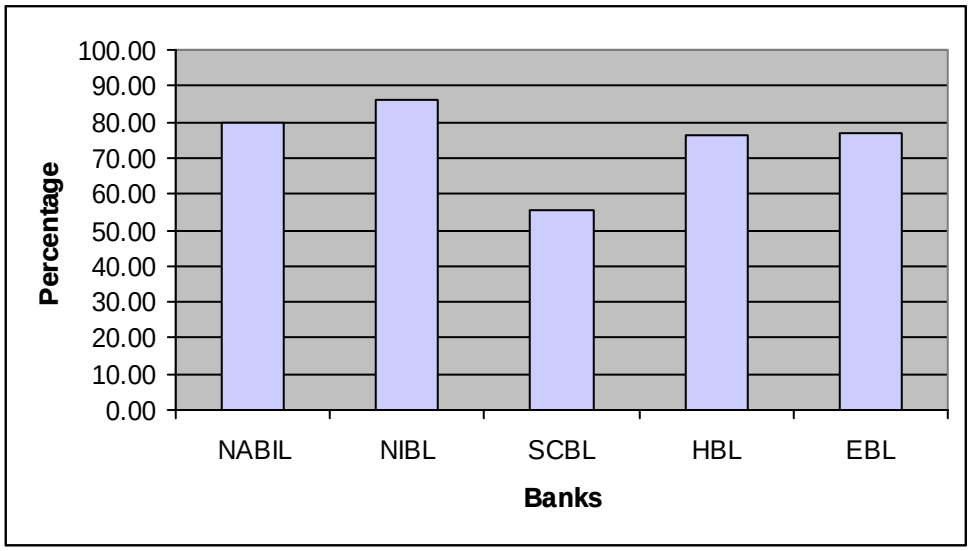
Investment on Loan and Advances to Total outside Investment Ratio (%)

Year	NABIL	NIBL	SCBL	HBL	EBL	Banking Industry
2004	69.19	78.46	45.68	78.85	71.05	67.83
2005	79.32	85.51	53.85	70.94	78.84	72.44
2006	84.66	83.84	51.57	75.25	73.96	73.37
2007	75.73	84.37	60.49	73.16	74.88	74.10
2008	81.41	89.54	62.86	72.74	79.28	77.96
2009	87.33	93.42	57.85	85.56	82.62	83.07
Total	**477.64**	**515.14**	**332.30**	**456.50**	**460.63**	**448.77**
Mean	**79.61**	**85.86**	**55.38**	**76.08**	**76.77**	**74.80**
SD	**6.51**	**5.14**	**6.31**	**5.37**	**4.22**	**5.19**
C.V	**8.18**	**5.98**	**11.39**	**7.06**	**5.50**	**6.94**

Source: Annual Reports of related banks from year 2004 to 2009, Annexes

Figure 4.10

Investment on Loan and Advances to Total outside Investment Ratio (%)



The above table 4.52 shows that the ratio of investment on loan and advances to total outside investment is not fixed. Among the five selected banks, the mean loan and advances to total outside investment of NIBL is the highest (85.86%). Similarly NABIL stood at the second position taking 79.61% and EBL stood third position (76.77%). Based on the average rate, it can be inferred that NIBL, NABIL and EBL possess better capacity to mobilize total outside investment into loan and advances.

The C.V of EBL is lowest (5.50%). It indicates that EBL is consistent investing its total outside investment in loan and advances. However, SCBL is less consistent (11.39%), because its C.V is the highest among five sample banks.

4.2.4 Calculation Ratio of Non-performing Assets to Total Assets

Table 4.53

Year	NABIL	NIBL	SCBL	HBL	EBL
2004	3.35	2.47	1.83	8.88	1.7
2005	1.32	2.69	2.69	7.44	1.63
2006	1.38	2.07	2.13	6.60	1.27
2007	1.12	2.37	1.83	3.61	0.8
2008	0.74	1.12	0.92	2.36	0.68
2009	0.8	0.58	0.66	2.16	0.48

Source: AGM Report of Different Banks 2004-2009

From the above table 4.53, it shows decreasing trend in NPA from the year 2004 to 2009 in five sample commercial banks. EBL has remarkably low percentage of NPA as compared to other commercial banks and it is continuously decreasing, showing sound management in recovery management. Similarly, HBL has remarkably high percentage of NPA in the year 2004 and it is continuously decreasing, showing sound management in recovery management. Likewise, other commercial banks also have remarkably decreasing trend of NPA, showing sound management in recovery management. Lower the NPA shows negative effects with higher profitability. Overall, all five sample commercial banks maintained to lower NPA in these six years.

4.2.5 Investment on Share and Debenture to Total Outside Investment Ratio

This ratio reflects the extent to which banks are successful to mobilize their total outside investment on purchase of share and debentures. It is computed by dividing investment on share and debenture by total outside investment.

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

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

A higher ratio indicates more portions of share and debenture out of total outside investment and vice-versa.

The table 4.52 presents investment on shares and debenture to Total outside Investment Ratio.

Table 4.54

Investment on share and debenture to Total outside Investment Ratio (%)

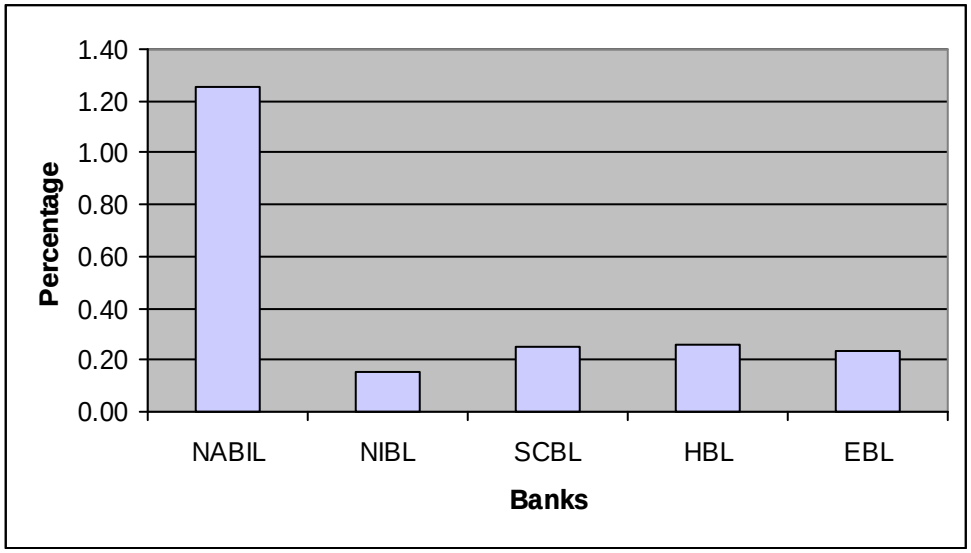
Year	NABIL	NIBL	SCBL	HBL	EBL	Banking Industry
2004	0.18	0.15	0.08	0.21	0.20	0.16
2005	3.01	0.15	0.09	0.21	0.19	0.72
2006	0.66	0.11	0.09	0.19	0.14	0.23
2007	1.37	0.17	0.25	0.30	0.11	0.45
2008	1.21	0.19	0.52	0.32	0.43	0.52
2009	1.11	0.16	0.48	0.31	0.34	0.47
Total	**7.54**	**0.93**	**1.51**	**1.54**	**1.41**	**2.55**
Mean	**1.26**	**0.16**	**0.25**	**0.26**	**0.24**	**0.43**
SD	**0.96**	**0.03**	**0.20**	**0.06**	**0.21**	**0.20**

C.V	**76.34**	**16.77**	**81.17**	**22.75**	**87.16**	**47.32**

Source: Annual reports of related banks from year 2004 to 2009, Annexes

Figure 4.11

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



The comparative table 4.52 listed above reveals that investment on share and debenture to total outside investment has a fluctuating trend. It shows that banks invest a minor portion of its total outside investment on share and debenture of other companies. Among five commercial banks, NABIL has the highest ratio (1.26%) on share and debenture to total outside investment. This means among five banks NABIL utilized highest percentage of total outside investment on share and debenture. Similarly, NIBL has the lowest ratio (0.16%) on share and debenture on total outside investment. This means NIBL invests lowest portion of total outside investment.

Likewise, the C.V of SCBL is the highest (80.62%). This shows that the ratio of the bank is less consistent and more variable. The lowest C.V (16.77%) of NIBL shows that it has the least variability in the investment on share and debenture to total outside investment.

From the above analysis, it can be concluded that the commercial banks are less successful to mobilize their resources in the field of share and debentures of other

companies. They invested very nominal part of total outside investment on share and debentures of the other companies.

Lastly it can also be concluded that the investment on share and debenture to total outside investment ratio of the selected five commercial banks is pretty low.

4.2.6 Return on Total Assets Ratio

This ratio measures the profitability of banks in terms of total assets. The ratio is vital for measuring financial performance of the firms or the effective utilization of resources in different sectors and yields a higher return for banks. This ratio is calculated by dividing net profit after tax (NPAT) by total assets, as stated below.

$$\text{Return to Total Assets Ratio X} \frac{\text{Net Profit After Tax (NPAT)}}{\text{Total Assets}}$$

The return on total assets of different commercial banks are presented below,

Table 4.55

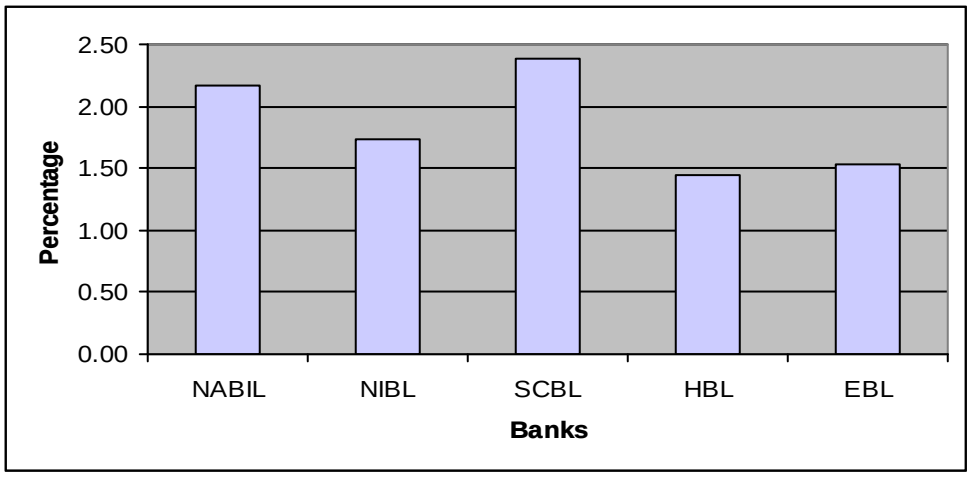
Return on Total Assets (%)

Year	NABIL	NIBL	SCBL	HBL	EBL	Banking Industry
2004	0.27	1.13	1.85	1.02	1.49	0.61
2005	3.05	1.42	2.46	1.07	1.45	1.84
2006	2.86	1.61	2.56	1.50	1.49	2.01
2007	2.47	2.77	2.42	1.43	1.38	2.05
2008	2.01	1.77	2.46	1.73	1.66	1.93
2009	2.35	1.68	2.53	1.88	1.73	2.02
Total	**13.01**	**10.38**	**14.28**	**8.63**	**9.20**	**10.46**
Mean	**2.17**	**1.73**	**2.38**	**1.44**	**1.53**	**1.74**
SD	**1.00**	**0.56**	**0.26**	**0.34**	**0.13**	**0.56**
C.V	**45.97**	**32.24**	**11.12**	**23.98**	**8.67**	**32.12**

Source: Annual Reports of related banks from year 2004 to 2009, Annexes

Figure 4.12

Return to Total Assets (%)



During the study period, NABIL earned the highest ratio (3.05%) in the year 2005. While examining the mean ratio, SCBL has the highest ratio (2.38%) and HBL has the lowest (1.44%) among five commercial banks.

The lowest C.V of EBL (8.67%) shows that the return on total assets of EBL is the most consistent among five banks. Similarly, the highest C.V in the ratios of NABIL (45.97%) shows that the return on total assets is highly variable among five banks.

Finally, it can be concluded that SCBL is the best bank in relation to return on total assets ratio. This means SCBL utilized its resource more efficiently than other banks. Likewise the ratio of NABIL also reflects that it is also successful in utilization of its overall resources. The profitability position of HBL is the weakest in relation to the return on total assets among five commercial banks during the study period.

4.2.7 Proportion of investment on Government Securities including Corporate Securities to paid up capital

NABIL	NIBL	SCBL	HBL	EBL
6.37	2.65	15.97	6.52	9.08

Source: Annex 17

From the above table, it can be seen that proportion of investment on government securities including corporate securities to paid up capital of the sample bank are below

10%. It means NABIL, NIBL, HBL and EBL agrees with the NRB directive 21. Except SCBL bank whose proportion is 15.97% , it violates with NRB directive 21.

4.2.8 Proportion of Loan and Advances to Total Deposit Ratio

NABIL	NIBL	SCBL	HBL	EBL
69.98	75.22	40.92	62.18	75.87

Source: Annex 1(b) and Annex 16

According to NRB directives, CD ratio must be 80%. Above all sample banks tried to maintain CD ratio according to NRB directives.

4.3 Least Square Linear Trend Analysis

Trend analysis is a statistical tool to highlight the previous trend and forecast the future. The purpose of the trend analysis in this section is to analyze the trend of investment on various assets particularly government securities, loan and advances, share and debentures of the sample banks and forecast for next four years.

Here, the method of least square is used to calculate the trend value. In this method, the trend line between the dependent variable y and the independent variable x (time) is represented by,

y = a+bx, where y = dependent variable, a = y intercept, b = slope of the trend line,

x = independent variable (time)

To determine the straight line trend, we should determine the value of a and b.

To make the calculation easy the deviation of the independent variable is taken from the middle of the time period so that, $x \text{ X} 0$, then the values of a and b are calculated by:

$a \text{ X} \frac{y}{n}$, and $b \text{ X} \frac{xy}{x^2}$

4.3.1 Trend Analysis of Investment on Government Securities

In this section it has been endeavored to calculate the trend values of investment on government securities of sample banks. Efforts are directed towards analyzing the total investment on government securities of commercial banks for 6 years from 2004 to 2009.

Table 4.56

Trend analysis of Investment on Government Securities of NABIL

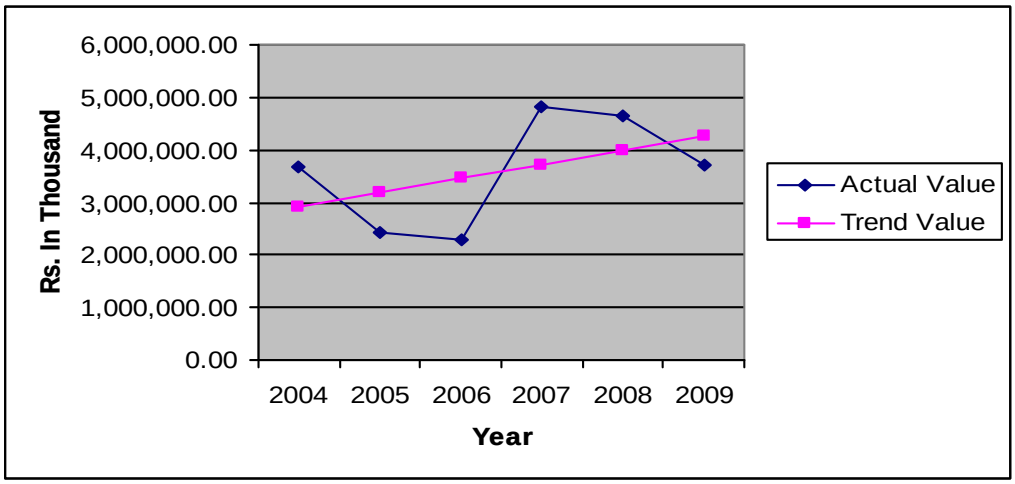
(In Thousand)

Year	X = (t-2006.5)	Actual Value	Trend Value Y_g = 3592309.33+267417.77x
2004	-2.5	3,672,626.00	2923764.91
2005	-1.5	2,418,432.00	3191182.68
2006	-0.5	2,301,464.00	3458600.45
2007	0.5	4,808,348.00	3726018.22
2008	1.5	4,646,883.00	3993435.99
2009	2.5	3,706,103.00	4260853.76
		21,553,856.00	**21553855.98**

Source: Annual Reports of NABIL and Annex 15(a)

Figure 4.13

Trend and Actual Value Investment on Government Securities of NABIL



From the above table 4.56, the positive slope of the trend line shows the investment trend of NABIL on government securities is increasing by Rs.267417.77 each year and expected to reach Rs. 4260853.76 at the end of 2009. Therefore it is clear that investment on government securities of NABIL has increased 1.46 times (4260853.76/2923764.91).

According to the objective of the study, the trend analysis of various assets related with the investment has been calculated. The growth rate (increasing or decreasing value of the trend) in government securities, loan and advances and share and debenture of all sample banks has been presented below.

Table 4.57

Major Findings from Ratios of Different Commercial Banks

S.NO	Growth Rate (b)	NABIL	NIBL	SCBL	HBL	EBL
1	Government Securities	267417.77	200131.43	329126.1	320549.63	655549.34
2	Loan and Advances	3780405.31	5807495.03	1547069	2434790.5	3674978.8
3	Share and Debenture	44824.49	11314.60	24407.97	13730.06	19162.86

From the above table 4.57, it shows EBL has higher growth rate on government securities i.e. 655549.34 as compared to other sample commercial bank. Similarly, NIBL has higher growth rate on loan and advances i.e. 5807495.03 whereas SCBL has lower growth rate on loan and advances i.e. 1547069.00 among other sample commercial banks. Like wise, NABIL has higher growth rate on share and debenture i.e. 44824.49 among other sample banks where as NIBL gains lower growth rate on share and debenture i.e. 11314.60 as compared to other five commercial banks.

4.4 Major Findings of the study

Based on the analysis of various data remarkable findings are gathered. The major findings are presented below:

4.4.1 Findings from Risk and Return Analysis

Major findings from risk and return on various investment assets in which commercial banks invest their funds and portfolio made from such assets can be summarized as follow:

Table 4.58

Major Findings from Risk and Return of different commercial banks (%)

S.NO	Assets		NABIL	NIBL	SCBL	HBL	EBL
1	Govt. Securities	Return (R_g)	5.24	3.18	4.35	4.19	3.75
		Risk (σ_g)	1.5759	1.2865	0.3554	2.2426	1.0246
2	Loan and Advances	Return (R_l)	7.66	7.64	7.11	7.42	7.73
		Risk (σ_l)	0.6844	0.7451	0.8396	0.4827	0.8479
3	Share and Debenture	Return (R_s)	26.46	26.46	26.46	26.46	26.46
		Risk (σ_s)	28.03	28.03	28.03	28.03	28.03
4	Investment Portfolio	Return (R_p)	7.463	7.136	5.958	6.72	6.92
		Risk (σ_p)	0.1077	0.6937	0.5516	0.5667	0.7531

- The return on government securities of NABIL (5.24) was highest as compared to the lowest return achieved by NIBL (3.18) and that of the industry average of (4.13).
- The average return on loan and advances of NABIL, NIBL, SCBL, HBL, EBL and Banking Industry was 7.66%, 7.64%, 7.11%, 7.42%, 7.73% and 7.51% respectively. It can be observed that NABIL has the highest mean return on loan and advances among

the five sample banks and banking industry average while SCB remained below the industry average.

- The return on share and debenture of banking industry was found to be highly fluctuating 8.38 in the year 2004 to 76.81 in the year 2007. These fluctuations in returns were mainly contributed by the volatility of the share prices in the market. The changes in dividends also lead the variability of return on share to some extent. The average market return on share and debenture of banking industry is 26.46 during the review period which is higher than the rate of return on other assets like government securities and loan and advances.
- The risk (Standard deviation of return) on government securities of banking industry is 0.4601. Similarly the risk on government securities of NABIL, NIBL, SCBL, HBL and EBL are 1.5759, 1.2865, 0.3554, 2.2426 and 1.0246 respectively. From the above data, it is evident that HBL has the highest risk on government securities among five commercial banks. NABIL, NIBL and EBL have moderate risk and SCBL has the lowest risk on government securities.
- The risk (Standard Deviation of return) on loan and advances of banking industry is 2.8579. Similarly the risk on loan and advances of NABIL, NIBL, SCBL, HBL and EBL are 0.6844, 0.7451, 0.8396, 0.4827 and 0.8479 respectively. From the above data, it is evident that NIBL has the highest risk on loan and advances among five commercial banks. SCBL, EBL have moderate risk and HBL has the lowest risk on loan and advances.
- The risk (Standard Deviation) of return on share and debenture of banking industry is 28.03. The standard deviation portrays more risk than investment on loan and advances and government securities. Thus it is clear that investment on share and debenture is more risky.
- The portfolio risk on investment of NABIL, NIBL, SCBL, HBL, EBL and banking industry as 0.1077%, 0.6937%, 0.5516%, 0.5667%, 0.7531% and 0.5298% respectively. From the analysis, it was found that EBL has the highest portfolio risk on investment on various assets, while NABIL has the lowest portfolio risk on investment on various assets.

From the above data, it is evident that investing the total funds on loan and advances and share and debenture is more risky than that of investment on government securities. However, average return on investment on loan and advances and share and debenture is more than that of average return on investment on government securities. Thus, investing funds in more than one security helps minimize the risk.

4.4.2 Findings from analysis of Ratios

From the analysis of ratios of different commercial banks, major findings can be summarized as follows:

Table 4.59

Major Findings from Analysis of Ratios of Different Commercial Banks (%)

S.NO	Ratios		NABIL	NIBL	SCBL	HBL	EBL
1	Total Investment to Total Deposit	Mean	33.56	25.52	52.95	39.47	24.89
		SD	5.08	6.48	3.75	7.49	5.63
		CV	15.15	25.4	7.08	18.98	22.65
2	Govt. Securities to Total Outside Investment	Mean	18.96	14.25	44.48	23.66	22.77
		SD	6.47	5.21	6.39	5.39	4.04
		CV	34.12	36.55	14.37	22.78	17.72
3	Loan and Advances to Total outside Investment	Mean	79.61	85.86	55.38	76.08	76.77
		SD	6.51	5.14	6.31	5.37	4.22
		CV	8.18	5.98	11.39	7.06	5.5
4	Share and Debenture to Total Outside Investment	Mean	1.26	0.16	0.25	0.26	0.24
		SD	0.96	0.03	0.2	0.06	0.21
		CV	76.55	16.77	80.62	22.99	88.94
5	Return on Total Assets	Mean	2.17	1.73	2.38	1.44	1.53
		SD	1	0.56	0.26	0.34	0.13
		CV	45.97	32.24	11.12	23.98	8.67

) The mean investment to total deposit of SCBL is the highest at the 52.95%. Likewise HBL has the second highest of investment to total deposit with 39.47%. NABIL stood at the third position (33.56%). From the data it is eveident that SCBL, HBL and NABIL capacity of mobilizing deposit on investment is more than others, since their mean ratio are higher than the average ratio on commercial banks 36.44%.

However, the mobilization of deposit on investment by NIBL and EBL is comparatively lower than overall commercial banks.

- Among the five sample banks, SCBL has the highest investment (44.48%) on government securities to total outside investment. It means SCBL utilizes the highest percentage of total outside investment into government securities amounting to 44.48%, where as the Coefficient of variation of NIBL is the highest (36.55%), which indicates that the ratios of NABIL are the least consistent. SCBL has the lowest C.V (14.38%). It depicts the given ratios of SCBL is the most consistent among five banks. From the analysis, it can be concluded that the mobilization of total outside investment into government securities of SCBL is the highest among the other commercial banks that is proved by the highest ratios and lower C.V. Likewise, HBL and EBL have moderate position. However NIBL falls on the weakest position for the mobilization of total outside investment into government securities.
- The ratio of investment on loan and advances to total outside investment among the five selected banks if compared, the mean loan and advances to total outside investment of NIBL is the highest (85.86%). Similarly NABIL stood at the second position taking 79.61% and EBL stood third position (76.77%). Based on the average rate, it can be inferred that NIBL, NABIL and EBL possess better capacity to mobilize total outside investment into loan and advances. The C.V of EBL is lowest (5.50%). It indicates that EBL is consistent investing its total outside investment in loan and advances. However, SCBL is less consistent (11.39%), because its C.V is the highest among five sample banks.
- From the decreasing trend in NPA from the year 2004 to 2009 in five sample commercial banks it is evident that bank has been well managing their assets. EBL has remarkable lower percentage of NPA as compared to other commercial banks and it is continuously decreasing, showing sound asset management. Similarly, HBL has remarkably high percentage of NPA in the year 2004 and it is continuously decreasing, showing sound management in recovery management. Lower the NPA means lower negative effects with higher profitability.
- The comparative study reveals that investment on share and debenture to total outside investment has a fluctuating trend. It shows that banks invest a minor portion

of its total outside investment on share and debenture of other companies. Among five commercial banks, NABIL has the highest ratio (1.26%) on share and debenture to total outside investment. This means among five banks NABIL utilized highest percentage of total outside investment on share and debenture. Similarly, NIBL has the lowest ratio (0.16%) on share and debenture on total outside investment. This means NIBL invests lowest portion of total outside investment.

Likewise, the C.V of SCBL is the highest (80.62%). This shows that the ratio of the bank is less consistent and more variable. The lowest C.V (16.77%) of NIBL shows that it has the least variability in the investment on share and debenture to total outside investment.

) During the study period, NABIL earned the highest ratio (3.05%) in the year 2005. While examining the mean ratio, SCBL has the highest ratio (2.38%) and HBL has the lowest (1.44%) among five commercial banks.

The lowest C.V of EBL (8.67%) shows that the return on total assets of EBL is the most consistent among five banks. Similarly, the highest C.V in the ratios of NABIL (45.97%) shows that the return on total assets is highly variable among five banks.

Finally, it can be concluded that SCBL is the best bank in relation to return on total assets ratio. This means SCBL utilized its resource more efficiently than other banks. Likewise the ratio of NABIL also reflects that it is also successful in utilization of its overall resources. The profitability position of HBL is the weakest in relation to the return on total assets among five commercial banks during the study period.

CHAPTER – V

SUMMARY, CONCLUSION AND RECOMMENDATION

This chapter summarizes the entire study, draws the conclusions from the study and presents the recommendation for further improvement. Summary incorporates a brief description of the whole study. Conclusions are drawn on the analysis of relevant data using various financial and statistical tools that presents strength, weakness, opportunities and threats of the commercial banks. Recommendations are presented in terms of suggestions prepared based on findings and conclusion.

5.1 Summary

Commercial banks are the major financial institutions which occupy very important place in the framework of every economy. They play a vital role in the capital formation, proper utilization of the collected resources and provide a host of banking services. Commercial banks collect money from the public providing sound interest and subsequently gain profit through lending it in business organization, industry, agriculture sectors etc. Hence it can be stated the main task of commercial banks is to mobilize idle resources in productive areas by collecting it from scattered sources for generation of the profit. Bank plays the intermediary role between saving and investment caters the credit needs of the customers and the investment requirements of the savers. Thus it is evident that the efficient and stable banking systems are essential for an orderly economic growth.

Successful formulation and effective implementation of the investment policy is the prime requisite for refined performance of the commercial banks. In the similar manner, a good investment policy has a positive impact on the economic development of the country and vice-versa. Bank should attract its customers through implementing the best or competitive investment policy. It helps increase the quality of the banking service as well as quality deposit and investment in various sectors. Investment management of a bank is guided by the investment policy adopted by the bank. The bank investment policy fosters the investment operation of the bank to be efficient and

profitable by minimizing the interest risk. Thus the commercial bank should mobilize its deposits and the other funds to profitable, secured, stable and marketable sectors to earn a good profit.

Investment portfolio is the collection of securities. It simply represents the practice among investors having their funds on more than one asset. Portfolio theory deals with the selection of optimal portfolio. In other words, portfolio provides the highest possible return for any specified return. The income or profit of the bank entirely depends upon the investment decision. Considering the fact, the bank should never invest its funds in individual security alone, which is subject to massive depreciation and fluctuations. Banks should accept those types of securities which are commercial, marketable, stable, liquid and profitable. A bank should not lay all its eggs in one basket, which means, to minimize risk a bank must diversify its investment on different sectors and different securities.

To achieve the objective of the study, various analysis, such as risk and return analysis of individual assets as well as investment portfolio, ratio analysis and trend analysis have been launched. Five commercial banks are taken as reference for analysis. During the research work, a brief review of literature has been conducted. In this connection various textbooks and published journals have been reviewed. The required data for the study were collected from the concerned banks, NRB, NEPSE and SEBO. To meet the need and objectives, the secondary data were complied, processed, and tabulated for the better presentation.

With respect to risk and return analysis, return on the government securities is low but it is lower risk. In the similar manner, the loan and advances give more return than the government securities, but it has also higher risk than government securities. Likewise, share and debentures are also high risky securities which provide higher return.

Regarding ratio analysis, different ratios related with investment portfolio have been used. The total investment to total deposit ratio of SCBL is found to be the highest in

comparison to the other four sample commercial banks. It observed a major portion of its investment on government securities. Hence its profitability position is lower than NABIL. The analysis indicates the commercial banks invested very nominal percentage of total outside investment on share and debenture of the other companies.

Nevertheless, increasing ratio of share and debenture is greater than increasing ratio of loan and advances. Furthermore, increasing ratio of loan and advances is more than the increasing ratio of government securities.

5.2 Conclusion

Regarding the analysis and interpretation of data, following conclusions have been derived.

5.2.1 Risk and Return Analysis

The general assumption is that there is little risk on government securities. It is proved from the above conducted analysis. The standard deviation of the government securities is the lower than standard deviation of other securities.

The risk and return and the standard deviation both are higher than other assets. Hence it is clear from the analysis that the investment on share and debenture is highly risky than the other assets.

Portfolio return is slightly lower than the average return from loan and advances, and share and debenture, but higher than that of government securities. Likewise, the risk on investment portfolio is less than that of risk on share and debenture and loan and advances, but is higher than that of risk on government securities.

5.2.2 Ratio Analysis

All sample banks accorded first priority for investing their resources on loan and advances. Likewise, the sample banks offered second priority to government securities and the least priority to share and debenture.

The sample banks are hesitant to mobilize their resources on share and debenture of the other companies. They invest quite a nominal percentage of total outside investment on share and debenture.

The return on total asset ratio indicates NABIL has utilized its resources efficiently among the selected banks. The profitability status of NIBL, SCBL and EBL is moderate, while HBL is the weakest in profitability position during the study period.

5.2.3 Trend Analysis

Investment on share and debenture is increasing rapidly than the investment on loan and advances. Likewise the investment on loan and advances is rapidly increasing than government securities. The investment plan is the challenging subject on the commercial banks. The success of the commercial banks heavily depends on planning of investment. The successful formulation and effective implementation of investment policy should be developed by adopting portfolio concept. Commercial banks should mobilize their resources on secured, stable, profitable, liquid and marketable securities for achieving their goal. However, it is not feasible to achieve such goal in absence of the portfolio concept. Investment portfolio is the risk mitigating mechanism, which helps minimize risk and maximize return through diversification.

Based on the analysis and findings of the study, commercial banks are weak to invest their resources in more liquid assets and less risky sectors. Furthermore, the commercial banks are unable to capitalize the opportunities by making suitable combination of investment portfolio.

From risk and return analysis and individual investment assets, it can be inferred that investment on loan and advances is better than investment on share and debenture or

investment on government securities, because loan and advances provides fixed interest income. Hence commercial banks are interested to invest their greater chunk of resources on loan and advances in various economic sectors, since return from loan and advances are less volatile than other assets. On the other hand, the return from share and debenture displays wide fluctuation. Owing to the high fluctuation of return from share and debenture, commercial banks invested a very nominal percentage of the total investments into share and debenture. This shows that commercial banks are more interested to invest their funds in the less risky sectors.

From the resource utilization point of view, commercial banks mostly mobilize their resources on loan and advances. They provide low priority to mobilize their funds on government securities.

The trend analysis of commercial banks depicts that investment on government securities, that on loan and advances, and investment on share and debenture are gradually increasing. In comparison, increasing ratio on share and debenture is the highest among loan and advances and government securities. In the similar manner, investment on loan and advances is more rapidly increasing than government securities during the period of years 2004 to 2009.

5.3 Recommendation

Based on the analysis, findings and conclusions of study following recommendations are put forth to counteract the feeble situation.

During the study period, all selected sample banks invested a very low proportion of their total outside investment on share and debenture of the other companies. Therefore all selected sample banks are suggested to accord more priority to investment on share and debenture.

All sample banks have ineffectively utilized portfolio management concept. The investment of these banks is strongly dominated by loan and advances. They generate

inadequate return for the banks. Hence they should have a compendium of optimum portfolios of different securities.

The sample commercial banks are inefficiently utilizing resources particularly in the productive sectors. Hence, they should identify new investment sectors through efficient investment programs in retail banking such as education loan, housing loan, automobile loan, small-medium enterprise loan, youth self-employment loan, green energy sector oriented consortium loan etc.

The total investment fund with respect to total deposit of EBL is pretty low. Hence, it calls for identifying the new investment sectors, and efficient as well as effective investment in those sectors.

The profitability position of NABIL is near to satisfaction. However, its investment on various assets is less stable. Hence the bank should upgrade its stability status and decrease the variability of investment.

SCBL has utilized its total deposits more efficiently than other sample banks. Hence, it should keep up its current investment position and endeavor to diversify its investment on various assets.

The portfolio return of SCBL should augment its investment on share and debentures to increase its portfolio return.

The profitability position of HBL is the weakest in relation to return on total assets. Hence, the bank should effectively utilize its overall resources to achieve the highest profit margins.

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ANNEX 1

a) Total Investment

(In Rs '000)

FY	NABIL	NIBL	SCBL	HBL	EBL	All Banks
2004	5,836,068.00	3,862,483.00	11,360,328.00	9,292,103.00	2,535,657.00	32,886,639.00
2005	4,277,953.00	3,934,189.00	9,702,553.00	11,692,342.00	2,128,932.00	31,735,969.00
2006	6,180,658.00	5,602,869.00	12,838,555.00	10,889,031.00	4,201,324.00	39,712,437.00
2007	8,956,309.00	6,505,680.00	13,553,233.00	11,822,985.00	4,985,119.00	45,823,326.00
2008	9,966,562.00	6,879,424.00	13,927,194.00	13,340,177.00	5,061,158.00	49,174,515.00
2009	10,874,806.00	7,403,112.00	20,260,496.00	8,710,691.00	5,950,080.00	53,199,185.00
Total	**46,092,356.00**	**34,187,757.00**	**81,642,359.00**	**65,747,329.00**	**24,862,270.00**	**252,532,071.00**
Average	**7,682,059.33**	**5,697,959.50**	**13,607,059.83**	**10,957,888.17**	**4,143,711.67**	**42,088,678.50**

Source: Annual Report of Commercial Banks

b) Total Deposit

(In Rs '000)

FY	NABIL	NIBL	SCBL	HBL	EBL	All Banks

2004	14,119,032.00	11,524,680.00	21,161,442.00	22,010,333.00	8,063,902.00	76,879,389.00
2005	14,586,609.00	14,254,474.00	19,363,470.00	24,810,012.00	10,097,693.00	83,112,258.00
2006	19,347,399.00	18,927,306.00	23,061,032.00	26,490,852.00	13,802,446.00	101,629,035.00
2007	23,342,285.00	24,488,056.00	24,647,021.00	30,048,418.00	18,186,254.00	120,712,034.00
2008	31,915,047.00	34,451,726.00	29,743,999.00	31,842,789.00	23,976,299.00	151,929,860.00
2009	37,348,256.00	46,698,100.00	35,871,721.00	34,681,345.00	33,322,946.00	187,922,368.00
Total	**140,658,628.00**	**150,344,342.00**	**153,848,685.00**	**169,883,749.00**	**107,449,540.00**	**722,184,944.00**
Average	**23,443,104.67**	**25,057,390.33**	**25,641,447.50**	**28,313,958.17**	**17,908,256.67**	**120,364,157.33**

Source: Annual Report of Commercial Banks

c) Investment on Government Securities (In Rs '000)

FY	**NABIL**	**NIBL**	**SCBL**	**HBL**	**EBL**	**All Banks**
2004	3,672,626.00	2,001,100.00	7,948,217.00	3,431,728.00	2,466,428.00	19,520,099.00
2005	2,418,432.00	1,948,500.00	7,203,066.00	5,469,729.00	2,100,289.00	19,140,016.00
2006	2,301,464.00	2,522,300.00	8,644,856.00	5,144,313.00	3,322,443.00	21,935,376.00
2007	4,808,348.00	3,256,400.00	7,107,937.00	6,454,873.00	4,704,632.00	26,332,190.00
2008	4,646,883.00	3,155,000.00	8,137,615.00	7,471,668.00	4,821,605.00	28,232,771.00
2009	3,706,103.00	2,531,300.00	9,998,754.00	4,212,300.00	5,146,046.00	25,594,503.00
Total	**21,553,856.00**	**15,414,600.00**	**49,040,445.00**	**32,184,611.00**	**22,561,443.00**	**140,754,955.00**
Average	**3,592,309.33**	**2,569,100.00**	**8,173,407.50**	**5,364,101.83**	**3,760,240.50**	**23,459,159.17**

d) Investment on Share and Debenture

(In Rs '000)

FY	NABIL	NIBL	SCBL	HBL	EBL	All Banks
2004	22,220.00	13,895.00	11,195.00	34,265.00	17,114.00	98,689.00
2005	415,724.00	17,738.00	13,348.00	39,909.00	19,387.00	506,106.00
2006	104,192.00	17,738.00	15,343.00	39,909.00	19,082.00	196,264.00
2007	286,958.00	35,253.00	44,943.00	73,424.00	19,887.00	460,465.00
2008	323,236.00	59,945.00	114,536.00	89,558.00	101,152.00	688,427.00
2009	354,931.00	64,270.00	115,418.00	93,883.00	102,034.00	730,536.00
Total	**1,507,261.00**	**208,839.00**	**314,783.00**	**370,948.00**	**278,656.00**	**2,680,487.00**
Average	**251,210.17**	**34,806.50**	**52,463.83**	**61,824.67**	**46,442.67**	**446,747.83**

e) Investment on Loan and Advances (In Rs '000)

FY	NABIL	NIBL	SCBL	HBL	EBL	All Banks
2004	8,548,657.00	7,338,566.00	6,693,862.00	12,919,631.00	6,095,841.00	41,596,557.00
2005	10,946,737.00	10,453,164.00	8,420,868.00	13,451,168.00	7,900,015.00	51,171,952.00
2006	13,278,782.00	13,178,152.00	9,206,280.00	15,761,977.00	10,136,254.00	61,561,445.00
2007	15,903,024.00	17,769,100.00	10,790,148.00	17,793,724.00	14,082,686.00	76,338,682.00
2008	21,759,460.00	27,529,305.00	13,963,984.00	20,179,995.00	18,836,432.00	102,269,176.00
2009	27,999,012.00	36,827,157.00	13,880,703.00	25,519,519.00	24,469,556.00	128,695,947.00
Total	**98,435,672.00**	**113,095,444.00**	**62,955,845.00**	**105,626,014.00**	**81,520,784.00**	**461,633,759.00**
Average	**16,405,945.33**	**18,849,240.67**	**10,492,640.83**	**17,604,335.67**	**13,586,797.33**	**76,938,959.83**

f) Total Outside Investment (In Rs '000)

FY	NABIL	NIBL	SCBL	HBL	EBL	All Banks
2004	12,354,728.00	9,353,561.00	14,653,275.00	16,385,626.00	8,579,384.00	61,326,574.00
2005	13,800,958.00	12,224,482.00	15,637,283.00	18,960,806.00	10,019,767.00	70,643,296.00

2006	15,684,438.00	15,718,190.00	17,851,136.00	20,944,856.00	13,704,758.00	83,903,378.00
2007	20,998,330.00	21,060,753.00	17,838,002.00	24,322,021.00	18,807,205.00	103,026,311.00
2008	26,729,578.00	30,744,250.00	22,216,135.00	27,740,839.00	23,759,189.00	131,189,991.00
2009	32,060,045.00	39,422,728.00	23,994,875.00	29,825,703.00	29,615,601.00	154,918,952.00
Total	**121,628,077.00**	**128,523,964.00**	**112,190,706.00**	**138,179,851.00**	**104,485,904.00**	**605,008,502.00**
Average	**20,271,346.17**	**21,420,660.67**	**18,698,451.00**	**23,029,975.17**	**17,414,317.33**	**100,834,750.33**

Here, total outside investment includes the investments on government securities, loan and advances and share and debentures.

g) Interest on Government Securities

(In Rs '000)

FY	NABIL	NIBL	SCBL	HBL	EBL	All Banks
2004	192,761.00	35,868.00	380,441.00	170,332.00	92,509.00	871,911.00
2005	151,064.00	56,550.00	331,663.00	149,131.00	77,993.00	766,401.00
2006	130,197.00	82,420.00	355,291.00	172,242.00	97,272.00	837,422.00
2007	132,229.00	78,494.00	326,550.00	191,559.00	128,566.00	857,398.00
2008	198,442.00	99,991.00	319,606.00	201,310.00	180,219.00	999,568.00
2009	269,187.00	140,698.00	406,326.00	354,949.00	289,765.00	1,460,925.00
Total	**1,073,880.00**	**494,021.00**	**2,119,877.00**	**1,239,523.00**	**866,324.00**	**5,793,625.00**
Average	**178,980.00**	**82,336.83**	**353,312.83**	**206,587.17**	**144,387.33**	**965,604.17**

h) Interest on Loan and Advances

(In Rs '000)

FY	NABIL	NIBL	SCBL	HBL	EBL	All Banks
2004	761,616.00	663,016.00	558,006.00	970,166.00	563,137.00	3,515,941.00
2005	831,830.00	769,195.00	581,664.00	1,122,392.00	633,625.00	3,938,706.00

2006	988,417.00	964,689.00	596,622.00	1,140,687.00	770,826.00	4,461,241.00
2007	1,167,255.00	1,302,122.00	728,589.00	1,242,850.00	967,178.00	5,407,994.00
2008	1,496,244.00	1,907,261.00	872,690.00	1,444,245.00	1,329,695.00	7,050,135.00
2009	2,182,647.00	2,906,055.00	1,104,047.00	1,861,045.00	1,852,128.00	9,905,922.00
Total	**7,428,009.00**	**8,512,338.00**	**4,441,618.00**	**7,781,385.00**	**6,116,589.00**	**34,279,939.00**
Average	**1,238,001.50**	**1,418,723.00**	**740,269.67**	**1,296,897.50**	**1,019,431.50**	**5,713,323.17**

i) Total Asset

(In Rs '000)

FY	**NABIL**	**NIBL**	**SCBL**	**HBL**	**EBL**	**All Banks**
2004	167,454,886.00	13,463,937.00	23,642,060.00	25,729,787.00	9,608,570.00	239,899,240.00
2005	17,064,082.00	16,390,652.00	21,781,679.00	28,871,343.00	11,792,126.00	95,899,882.00
2006	22,329,971.00	21,732,081.00	25,767,352.00	30,579,808.00	15,959,285.00	116,368,497.00
2007	27,253,393.00	18,073,517.00	28,596,689.00	34,314,868.00	21,432,574.00	129,671,041.00
2008	37,132,759.00	39,405,959.00	33,335,788.00	36,857,624.00	27,149,343.00	173,881,473.00
2009	43,867,398.00	53,596,754.00	40,587,468.00	40,046,686.00	36,916,849.00	215,015,155.00
Total	**315,102,489.00**	**162,662,900.00**	**173,711,036.00**	**196,400,116.00**	**122,858,747.00**	**970,735,288.00**
Average	**52,517,081.50**	**27,110,483.33**	**28,951,839.33**	**32,733,352.67**	**20,476,457.83**	**161,789,214.67**

j) Net Profit

(In Rs '000)

FY	**NABIL**	**NIBL**	**SCBL**	**HBL**	**EBL**	**All Banks**
2004	455,311.00	152,671.00	437,800.00	263,052.00	143,566.00	1,452,400.00
2005	520,114.00	232,147.00	536,245.00	308,277.00	170,810.00	1,767,593.00

2006	639,262.00	350,536.00	658,748.00	457,458.00	237,280.00	2,343,284.00
2007	673,960.00	501,399.00	691,668.00	491,823.00	296,409.00	2,655,259.00
2008	746,468.00	698,673.00	818,921.00	635,869.00	451,219.00	3,351,150.00
2009	1,031,053.00	900,619.00	1,025,116.00	752,835.00	638,733.00	4,348,356.00
Total	**4,066,168.00**	**2,836,045.00**	**4,168,498.00**	**2,909,314.00**	**1,938,017.00**	**15,918,042.00**
Average	**677,694.67**	**472,674.17**	**694,749.67**	**484,885.67**	**323,002.83**	**2,653,007.00**

ANNEX 2

Calculation of Return on Government Securities of NABIL
Here,

R_g X31.44

$\overline{R_g}$ X$\frac{R_g}{n}$ X$\frac{31.44}{6}$ X5.24%

Calculation of Return on Government Securities of NIBL
Here,

R_g X19.10

$\overline{R_g}$ X$\frac{R_g}{n}$ X$\frac{19.10}{6}$ X3.18%

Calculation of Return on Government Securities of SCBL
Here,

R_g X26.09

$\overline{R_g}$ X$\frac{R_g}{n}$ X$\frac{26.09}{6}$ X4.35%

Calculation of Return on Government Securities of HBL
Here,

R_g X25.13

$\overline{R_g}$ X$\frac{R_g}{n}$ X$\frac{25.13}{6}$ X4.19%

Calculation of Return on Government Securities of EBL

Here,

$$R_g \text{ X } 22.49$$

$$\overline{R_g} \text{ X } \frac{R_g}{n} \text{ X } \frac{22.49}{6} \text{ X } 3.75\%$$

Calculation of Return on Government Securities of Banking Industry
Here,

$$R_g \text{ X } 24.79$$

$$\overline{R_g} \text{ X } \frac{R_g}{n} \text{ X } \frac{24.79}{6} \text{ X } 4.13\%$$

ANNEX 3

Calculation of Return on Loan and Advances of NABIL
Here,

R_l X45.96

$\overline{R_l}$ X$\frac{R_l}{n}$ X$\frac{45.96}{6}$ X7.66%

Calculation of Return on Loan and Advances of NIBL
Here,

R_l X45.86

$\overline{R_l}$ X$\frac{R_l}{n}$ X$\frac{45.86}{6}$ X7.64%

Calculation of Return on Loan and Advances of SCBL
Here,

R_l X42.68

$\overline{R_l}$ X$\frac{R_l}{n}$ X$\frac{42.68}{6}$ X7.11%

Calculation of Return on Loan and Advances of HBL
Here,

R_l X44.52

$\overline{R_l}$ X$\frac{R_l}{n}$ X$\frac{44.52}{6}$ X7.42%

Calculation of Return on Loan and Advances of EBL
Here,

$$R_l \text{ X } 46.36$$

$$\overline{R_l} \text{ X } \frac{R_l}{n} \text{ X } \frac{46.36}{6} \text{ X } 7.73\%$$

Calculation of Return on Loan and Advances of Banking Industry
Here,

$$R_l \text{ X } 45.07$$

$$\overline{R_l} \text{ X } \frac{R_l}{n} \text{ X } \frac{45.07}{6} \text{ X } 7.51\%$$

ANNEX 4

Calculation of Risk on Government Securities of NABIL

Here, $(R_g - \overline{R_g})^2 = 12.4180$, $\overline{R_g} = 5.24$

Now, $\pm_g \text{X}\sqrt{\frac{(R_g - \overline{R_g})^2}{n - 1}} \text{X}\sqrt{\frac{12.4180}{6 - 1}} \text{X}1.5759$

Calculation of Risk on Government Securities of NIBL

Here, $(R_g - \overline{R_g})^2 = 8.2759$, $\overline{R_g} = 3.18$

Now, $\pm_g \text{X}\sqrt{\frac{(R_g - \overline{R_g})^2}{n - 1}} \text{X}\sqrt{\frac{8.2759}{6 - 1}} \text{X}1.2865$

Calculation of Risk on Government Securities of SCBL

Here, $(R_g - \overline{R_g})^2 = 0.6317$, $\overline{R_g} = 4.35$

Now, $\pm_g \text{X}\sqrt{\frac{(R_g - \overline{R_g})^2}{n - 1}} \text{X}\sqrt{\frac{0.6317}{6 - 1}} \text{X}0.3554$

Calculation of Risk on Government Securities of HBL

Here, $(R_g - \overline{R_g})^2 = 25.1461$, $\overline{R_g} = 4.19$

Now, $\pm_g \text{X}\sqrt{\frac{(R_g - \overline{R_g})^2}{n - 1}} \text{X}\sqrt{\frac{25.1461}{6 - 1}} \text{X}2.2426$

Calculation of Risk on Government Securities of EBL

Here, $(R_g - \overline{R_g})^2 = 5.2489$, $\overline{R_g} = 3.75$

Now, $\pm_g \times \sqrt{\frac{(R_g - \overline{R_g})^2}{n-1}} \times \sqrt{\frac{5.2489}{6-1}} \times 1.0246$

Calculation of Risk on Government Securities of Banking Industry

Here, $(R_g - \overline{R_g})^2 = 3.8299$, $\overline{R_g} = 4.13$

Now, $\pm_g \times \sqrt{\frac{(R_g - \overline{R_g})^2}{n-1}} \times \sqrt{\frac{3.8299}{6-1}} \times 0.8752$

ANNEX 5

Calculation of Risk on Loan and Advances of NABIL

Here, $(R_l \; Z\overline{R_l})^2 = 2.3422,\ \overline{R_l} = 7.66$

Now, $\pm_l \; X\sqrt{\frac{(R_l \; Z\overline{R_l})^2}{n \; Z1}} \; X\sqrt{\frac{2.3422}{6 \; Z1}} \; X0.6844$

Calculation of Risk on Loan and Advances of NIBL

Here, $(R_l \; Z\overline{R_l})^2 = 2.7755,\ \overline{R_l} = 7.64$

Now, $\pm_l \; X\sqrt{\frac{(R_l \; Z\overline{R_l})^2}{n \; Z1}} \; X\sqrt{\frac{2.7755}{6 \; Z1}} \; X0.7451$

Calculation of Risk on Loan and Advances of SCBL

Here, $(R_l \; Z\overline{R_l})^2 = 3.5245,\ \overline{R_l} = 7.11$

Now, $\pm_l \; X\sqrt{\frac{(R_l \; Z\overline{R_l})^2}{n \; Z1}} \; X\sqrt{\frac{3.5245}{6 \; Z1}} \; X0.8396$

Calculation of Risk on Loan and Advances of HBL

Here, $(R_l \; Z\overline{R_l})^2 = 1.1650,\ \overline{R_l} = 7.42$

Now, $\pm_l \; X\sqrt{\frac{(R_l \; Z\overline{R_l})^2}{n \; Z1}} \; X\sqrt{\frac{1.1650}{6 \; Z1}} \; X0.4827$

Calculation of Risk on Loan and Advances of EBL

Here, $(R_l - \overline{R_l})^2 = 3.5951$, $\overline{R_l} = 7.73$

Now, $\pm_l = X\sqrt{\frac{(R_l - \overline{R_l})^2}{n-1}} = X\sqrt{\frac{3.5951}{6-1}} = X0.8479$

Calculation of Risk on Loan and Advances of Banking Industry

Here, $(R_l - \overline{R_l})^2 = 1.5927$ $\overline{R_l} = 7.51$

Now, $\pm_l = X\sqrt{\frac{(R_l - \overline{R_l})^2}{n-1}} = X\sqrt{\frac{1.5927}{6-1}} = X0.5644$

ANNEX 6

(a) Calculation of Market Return on Share and Debenture

(In Percentage)

FY	NEPSE Index	Market Return
2004	222.04	8.38
2005	286.87	29.19
2006	386.83	34.84
2007	683.95	76.81
2008	683.90	-0.01
2009	749.10	9.53
Total		158.74

Source: SEBO

NEPSE Index in year 2003 = 204.86

Here R_s =158.74

Now, $\overline{R_s}$ X$\frac{R_s}{n}$ X$\frac{158.74}{6}$ X26.46

(b) Calculation of Market Risk on Share and Debenture

Year	NEPSE Index	Market Return	$(R_s - \overline{R_s})$	$(R_s - \overline{R_s})^2$
2004	222.04	8.38	-18.08	326.71
2005	286.87	29.11	2.66	7.05
2006	386.83	34.91	8.45	71.49
2007	683.95	76.81	50.36	2535.63
2008	683.90	-0.01	-26.47	700.40
2009	749.10	9.53	-16.93	286.46

Total	**3012.69**	**158.73**	**16.93**	**3927.72**
Average		**26.46**	**0.00**	
SD ($\square_1$)				**28.03**

Source: SEBO

Here, $(R_s \; Z\overline{R_s})^2 = 3927.72$

$$\pm \; X\sqrt{\frac{(R_s \; Z\overline{R_s})^2}{n \; Z1}} \; X\sqrt{\frac{3927.72}{6 \; Z1}} \; X 28.03$$

ANNEX 7

Calculations of Portfolio return on Investment of NABIL

Portfolio return (R_P) X $W \mid R$ X $W_1R_1 \Gamma W_2R_2 \Gamma W_3R_3$

= 0.1774 x 5.24 + 0.8102 x 7.66 + 0.0124 x 26.46 = 7.463

Calculations of Portfolio return on Investment of NIBL

Portfolio return (R_P) X $W \mid R$ X $W_1R_1 \Gamma W_2R_2 \Gamma W_3R_3$

= 0.1198 x 3.18 + 0.8786 x 7.64 + 0.0016 x 26.46 =7.136

Calculations of Portfolio return on Investment of SCBL

Portfolio return (R_P) X $W \mid R$ X $W_1R_1 \Gamma W_2R_2 \Gamma W_3R_3$

= 0.4366 x 4.35 + 0.5605 x 7.11 + 0.0028 x 26.46 = 5.958

Calculations of Portfolio return on Investment of HBL

Portfolio return (R_P) X $W \mid R$ X $W_1R_1 \Gamma W_2R_2 \Gamma W_3R_3$

= 0.2329 x 4.19 + 0.7644 x 7.42 + 0.0027 x 26.46 = 6.72

Calculations of Portfolio return on Investment of EBL

Portfolio return (R_P) X $W \mid R$ X $W_1R_1 \Gamma W_2R_2 \Gamma W_3R_3$

= 0.2162 x 3.75 + 0.7811 x 7.73 + 0.0027 x 26.46 = 6.920

Calculations of Portfolio return on Investment of Banking Industry

Portfolio return (R_P) X $W \mid R$ X $W_1R_1 \Gamma W_2R_2 \Gamma W_3R_3$

= 0.2326 x 4.13 + 0.7629 x 7.51 + 0.0044 x 26.46 = 6.806

ANNEX 8

(a) Calculation of Correlation Coefficient and Covariance between various Investment Securities of NABIL

Year	Return on Govt. Securities (Rg)	Return on Loan and Advances (Rl)	Return on Share & Debenture (Rs)	Rg x Rl	Rg x Rs	Rl x Rs	(Rg)2	(Rl)2	(Rs)2
2004	5.25	8.91	8.38	46.78	44.00	74.67	27.56	79.39	70.22
2005	6.25	7.60	29.11	47.50	181.94	221.24	39.06	57.76	847.39
2006	5.66	7.44	34.91	42.11	197.59	259.73	32.04	55.35	1218.71
2007	2.75	7.34	76.81	20.19	211.23	563.79	7.56	53.88	5899.78
2008	4.27	6.88	-0.01	29.38	-0.04	-0.07	18.23	47.33	0.00
2009	7.26	7.80	9.53	56.63	69.19	74.33	52.71	60.84	90.82
Total	**31.44**	**45.97**	**158.73**	**242.58**	**703.90**	**1193.68**	**177.16**	**354.55**	**8126.92**

Now,

Correlation Coefficient between R_g & R_l

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

$$r_{gl} = \frac{6 \times 242.58 - 31.44 \times 45.97}{\sqrt{6 \times 177.16 - (31.44)^2} \sqrt{6 \times 354.55 - (45.67)^2}} = 0.3149$$

Correlation Coefficient between R_g & R_s

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

$$r_{gs} = \frac{6 \times 703.90 - 31.44 \times 158.73}{\sqrt{6 \times 177.16 - (31.44)^2} \times \sqrt{6 \times 8126.92 - (158.73)^2}} = -0.5790$$

Correlation Coefficient between R_l & R_s

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

$$r_{ls} = \frac{6 \times 1193.68 - 45.97 \times 158.73}{\sqrt{6 \times 354.55 - (45.97)^2} \times \sqrt{6 \times 8126.92 - (158.73)^2}} = -0.2341$$

$Cov_{gl} = r_{gl} \times \sigma_g \times \sigma_l = -0.3149 \times 1.5759 \times 0.6894 = -0.3421$

$Cov_{gs} = r_{gs} \times \sigma_g \times \sigma_s = -0.5790 \times 1.5759 \times 28.03 = -25.58$

$Cov_{ls} = r_{ls} \times \sigma_l \times \sigma_s = -0.2341 \times 0.6844 \times 28.03 = -4.490$

(b) Calculation of Correlation Coefficient and Covariance between various Investment Securities of NIBL

Year	Return on Govt. Securities (Rg)	Return on Loan and Advances (Rl)	Return on Share & Debenture (Rs)	Rg x Rl	Rg x Rs	Rl x Rs	(Rg)2	(Rl)2	(Rs)2
2004	1.79	9.03	8.38	16.16	15.00	75.67	3.20	81.54	70.22
2005	2.90	7.36	29.11	21.34	84.42	214.25	8.41	54.17	847.39
2006	3.27	7.32	34.91	23.94	114.16	255.54	10.69	53.58	1218.71
2007	2.41	7.33	76.81	17.67	185.11	563.02	5.81	53.73	5899.78
2008	3.17	6.93	-0.01	21.97	-0.03	-0.07	10.05	48.02	0.00
2009	5.56	7.89	9.53	43.87	52.99	75.19	30.91	62.25	90.82
Total	**19.10**	**45.86**	**158.73**	**144.95**	**451.64**	**1183.60**	**69.08**	**353.30**	**8126.92**

Now,

Correlation Coefficient between R_g & R_l

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

$$r_{gl} = \frac{6 \times 144.95 - 19.10 \times 45.86}{\sqrt{6 \times 69.08 - (19.10)^2} \sqrt{6 \times 353.30 - (45.86)^2}} = 0.2164$$

Correlation Coefficient between R_g & R_s

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

$$r_{gs} = \frac{6 \times 451.64 - 19.10 \times 158.73}{\sqrt{6 \times 69.08 - (19.10)^2} \sqrt{6 \times 8126.92 - (158.73)^2}} = -0.0297$$

Correlation Coefficient between R_l & R_s

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

$$r_{ls} = \frac{6 \times 1183.60 - 45.86 \times 158.73}{\sqrt{6 \times 353.30 - (45.86)^2} \sqrt{6 \times 8126.92 - (158.73)^2}} = -0.2836$$

$Cov_{gl} = r_{gl} \times \sigma_g \times \sigma_l = 0.2164 \times 1.2865 \times 0.7451 = 0.2074$

$Cov_{gs} = r_{gs} \times \sigma_g \times \sigma_s = -0.0297 \times 1.2865 \times 28.03 = -1.0709$

$Cov_{ls} = r_{ls} \times \sigma_l \times \sigma_s = -0.2836 \times 0.7451 \times 28.03 = -5.923$

(c) Calculation of Correlation Coefficient and Covariance between various Investment Securities of SCBL

Year	Return on Govt. Securities (Rg)	Return on Loan and Advances (Rl)	Return on Share & Debenture (Rs)	Rg x Rl	Rg x Rs	Rl x Rs	(Rg)2	(Rl)2	(Rs)2
2004	4.79	8.34	8.38	39.95	40.14	69.89	22.94	69.56	70.22
2005	4.60	6.91	29.11	31.79	133.91	201.15	21.16	47.75	847.39
2006	4.11	6.48	34.91	26.63	143.48	226.22	16.89	41.99	1218.71
2007	4.59	6.75	76.81	30.98	352.56	518.47	21.07	45.56	5899.78
2008	3.93	6.25	-0.01	24.56	-0.04	-0.06	15.44	39.06	0.00
2009	4.06	7.95	9.53	32.28	38.69	75.76	16.48	63.20	90.82
Total	**26.08**	**42.68**	**158.73**	**186.19**	**708.74**	**1091.42**	**113.99**	**307.12**	**8126.92**

Now,

Correlation Coefficient between R_g & R_l

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

$$r_{gl} = \frac{6 \times 186.19 - 26.08 \times 42.68}{\sqrt{6 \times 113.99 - (26.08)^2} \sqrt{6 \times 307.12 - (42.68)^2}} = 0.4572$$

Correlation Coefficient between R_g & R_s

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

$$r_{gs} = \frac{6 \times 708.74 - 26.08 \times 158.73}{\sqrt{6 \times 113.99 - (26.08)^2} \sqrt{6 \times 8126.92 - (158.73)^2}} = 0.3813$$

Correlation Coefficient between R_l & R_s

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

$$r_{ls} = \frac{6 \times 1091.42 - 42.68 \times 158.73}{\sqrt{6 \times 307.12 - (42.68)^2} \sqrt{6 \times 8126.92 - (158.73)^2}} = -0.3203$$

$Cov_{gl} = r_{gl} \times \sigma_g \times \sigma_l = -0.4572 \times 0.3554 \times 0.8396 = -0.1364$

$Cov_{gs} = r_{gs} \times \sigma_g \times \sigma_s = -0.3813 \times 0.3554 \times 28.03 = -3.798$

$Cov_{ls} = r_{ls} \times \sigma_l \times \sigma_s = -0.3203 \times 0.8396 \times 28.03 = -7.538$

(d) Calculation of Correlation Coefficient and Covariance between various Investment Securities of HBL

Year	Return on Govt. Securities (Rg)	Return on Loan and Advances (Rl)	Return on Share & Debenture (Rs)	Rg x Rl	Rg x Rs	Rl x Rs	(Rg)2	(Rl)2	(Rs)2
2004	4.96	7.51	8.38	37.25	41.56	62.93	24.60	56.40	70.22
2005	2.73	8.34	29.11	22.77	79.47	242.78	7.45	69.56	847.39
2006	3.35	7.24	34.91	24.25	116.95	252.75	11.22	52.42	1218.71
2007	2.97	6.98	76.81	20.73	228.13	536.13	8.82	48.72	5899.78
2008	2.69	7.16	-0.01	19.26	-0.03	-0.07	7.24	51.27	0.00
2009	8.43	7.29	9.53	61.45	80.34	69.47	71.06	53.14	90.82
Total	**25.13**	**44.52**	**158.73**	**185.72**	**546.42**	**1164.00**	**130.40**	**331.50**	**8126.92**

Now,
Correlation Coefficient between R_g & R_l

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

$$r_{gl} = \frac{6 \times 185.72 - 25.13 \times 44.52}{\sqrt{6 \times 130.40 - (25.13)^2} \times \sqrt{6 \times 331.50 - (44.52)^2}} = -0.1377$$

Correlation Coefficient between R_g & R_s

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

$$r_{gs} = \frac{6 \times 546.42 - 25.13 \times 158.73}{\sqrt{6 \times 130.40 - (25.13)^2} \times \sqrt{6 \times 8126.92 - (158.73)^2}} = -0.3767$$

Correlation Coefficient between R_l & R_s

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

$$r_{ls} = \frac{6 \times 1164.00 - 44.52 \times 158.73}{\sqrt{6 \times 331.50 - (44.52)^2} \times \sqrt{6 \times 8126.92 - (158.73)^2}} = -0.2039$$

$Cov_{gl} = r_{gl} \times \sigma_g \times \sigma_l = -0.1377 \times 2.2426 \times 0.4827 = -0.1491$

$Cov_{gs} = r_{gs} \times \sigma_g \times \sigma_s = -0.3767 \times 2.2426 \times 28.03 = -23.679$

$Cov_{ls} = r_{ls} \times \sigma_l \times \sigma_s = -0.2039 \times 0.4827 \times 28.03 = -2.7587$

(e) Calculation of Correlation Coefficient and Covariance between various Investment Securities of EBL

Year	**Return on Govt. Securities**	**Return on Loan and**	**Return on Share &**	**Rg x Rl**	**Rg x Rs**	**Rl x Rs**	**(Rg)2**	**(Rl)2**	**(Rs)2**

	(Rg)	Advances (Rl)	Debenture (Rs)						
2004	3.75	9.24	8.38	34.65	31.43	77.43	14.06	85.38	70.22
2005	3.71	8.02	29.11	29.75	108.00	233.46	13.76	64.32	847.39
2006	2.93	7.60	34.91	22.27	102.29	265.32	8.58	57.76	1218.71
2007	2.73	6.87	76.81	18.76	209.69	527.68	7.45	47.20	5899.78
2008	3.74	7.06	-0.01	26.40	-0.04	-0.07	13.99	49.84	0.00
2009	5.63	7.57	9.53	42.62	53.65	72.14	31.70	57.30	90.82
Total	**22.49**	**46.36**	**158.73**	**174.45**	**505.02**	**1175.97**	**89.55**	**361.80**	**8126.92**

Now,

Correlation Coefficient between R_g & R_l

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

$$r_{gl} = \frac{6 \times 174.45 - 22.49 \times 46.36}{\sqrt{6 \times 89.55 - (22.49)^2} \sqrt{6 \times 361.80 - (46.36)^2}} = 0.1790$$

Correlation Coefficient between R_g & R_s

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

$$r_{gs} = \frac{6 \times 505.02 - 22.49 \times 158.73}{\sqrt{6 \times 89.55 - (22.49)^2} \sqrt{6 \times 8126.92 - (158.73)^2}} = 0.6265$$

Correlation Coefficient between R_l & R_s

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

$$r_{ls} = \frac{6 \times 1175.97 - 46.36 \times 158.73}{\sqrt{6 \times 361.80 - (46.36)^2} \times \sqrt{6 \times 8126.92 - (158.73)^2}} = -0.4250$$

$$Cov_{gl} = r_{gl} \times \sigma_g \times \sigma_l = -0.1790 \times 1.0246 \times 0.8479 = -0.1555$$

$$Cov_{gs} = r_{gs} \times \sigma_g \times \sigma_s = -0.6265 \times 1.0246 \times 28.03 = -17.99$$

$$Cov_{ls} = r_{ls} \times \sigma_l \times \sigma_s = -0.4250 \times 0.8479 \times 28.03 = -10.10$$

(f) Calculation of Correlation Coefficient and Covariance between various Investment Securities of Banking Industry

Year	Return on Govt. Securities (Rg)	Return on Loan and Advances (Rl)	Return on Share & Debenture (Rs)	Rg x Rl	Rg x Rs	Rl x Rs	(Rg)2	(Rl)2	(Rs)2
2004	4.47	8.45	8.38	37.77	37.46	70.81	19.98	71.40	70.22
2005	4.00	7.70	29.11	30.80	116.44	224.15	16.00	59.29	847.39
2006	3.82	7.25	34.91	27.70	133.36	253.10	14.59	52.56	1218.71
2007	3.26	7.08	76.81	23.08	250.40	543.81	10.63	50.13	5899.78
2008	3.54	6.89	-0.01	24.39	-0.04	-0.07	12.53	47.47	0.00
2009	5.71	7.70	9.53	43.97	54.42	73.38	32.60	59.29	90.82
Total	**24.80**	**45.07**	**158.73**	**187.70**	**592.04**	**1165.18**	**106.34**	**340.14**	**8126.92**

Now,

Correlation Coefficient between R_g & R_l

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

$$r_{gl} = \frac{6 \times 187.70 - 24.80 \times 45.07}{\sqrt{6 \times 106.34 - 24.80^2} \times \sqrt{6 \times 340.14 - 45.07^2}} = 0.5719$$

Correlation Coefficient between R_g & R_s

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

$$r_{gs} = \frac{6 \times 592.04 - 24.80 \times 158.73}{\sqrt{6 \times 106.34 - 24.80^2} \times \sqrt{6 \times 8126.92 - 158.73^2}} = -0.5219$$

Correlation Coefficient between R_l & R_s

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

$$r_{ls} = \frac{6 \times 1165.18 - 45.07 \times 158.73}{\sqrt{6 \times 340.14 - 45.07^2} \times \sqrt{6 \times 8126.92 - 158.73^2}} = -0.3435$$

$$Cov_{gl} = r_{gl} \times \sigma_g \times \sigma_l = 0.5719 \times 0.8752 \times 0.5644 = 0.2825$$

$$Cov_{gs} = r_{gs} \times \sigma_g \times \sigma_s = -0.5219 \times 0.8752 \times 28.03 = -12.80$$

$$Cov_{ls} = r_{ls} \times \sigma_l \times \sigma_s = -0.3435 \times 0.5644 \times 28.03 = -5.466$$

ANNEX 9

Calculation of Standard Deviation of Portfolio Investment of NABIL

$$\pm_p X\sqrt{W_g^2\pm_g^2\Gamma W_l^2\pm_l^2\Gamma W_s^2\pm_s^2\Gamma 2W_gW_lCov_{gl}\Gamma 2W_gW_sCov_{gs}\Gamma 2W_lW_sCov_{ls}}$$

$$\pm_p X\sqrt{\begin{array}{l}f0.1774\AA^2 \mid f1.5759\AA^2\Gamma f0.8102\AA^2 \mid f0.6844\AA^2\Gamma f0.0124\AA^2 \mid f28.03\AA^2\\ \Gamma 2 \mid 0.1774 \mid 0.8102 \mid 0.3421\Gamma 2 \mid 0.8102 \mid 0.0124 \mid fZ25.11\AA\Gamma 2 \mid 0.8102 \mid 0.0124 \mid fZ4.4108\AA\end{array}}X0.1077$$

Calculation of Standard Deviation of Portfolio Investment of NIBL

$$\pm_p X\sqrt{W_g^2\pm_g^2\Gamma W_l^2\pm_l^2\Gamma W_s^2\pm_s^2\Gamma 2W_gW_lCov_{gl}\Gamma 2W_gW_sCov_{gs}\Gamma 2W_lW_sCov_{ls}}$$

$$\pm_p X\sqrt{\begin{array}{l}f0.1198\AA \mid f1.2865\AA\Gamma f0.8786\AA \mid f0.7451\AA\Gamma f0.0016\AA \mid f28.03\AA\\ \Gamma 2 \mid 0.1198 \mid 0.8786 \mid 0.2074\Gamma 2 \mid 0.1198 \mid 0.0016 \mid fZ1.0518\AA\Gamma 2 \mid 0.8786 \mid 0.0016 \mid fZ5.817\AA\end{array}}X0.6937$$

Calculation of Standard Deviation of Portfolio Investment of SCBL

$$\pm_p X\sqrt{W_g^2\pm_g^2\Gamma W_l^2\pm_l^2\Gamma W_s^2\pm_s^2\Gamma 2W_gW_lCov_{gl}\Gamma 2W_gW_sCov_{gs}\Gamma 2W_lW_sCov_{ls}}$$

$$\pm_p X\sqrt{\begin{array}{l}f0.4366\AA \mid f0.3554\AA\Gamma f0.5605\AA \mid f0.8396\AA\Gamma f0.0028\AA \mid f28.03\AA\\ \Gamma 2 \mid 0.4366 \mid 0.5605 \mid 0.1364\Gamma 2 \mid 0.4366 \mid 0.0028 \mid f3.7307\AA\Gamma 2 \mid 0.5605 \mid 0.0028 \mid fZ7.4034\AA\end{array}}X0.5516$$

Calculation of Standard Deviation of Portfolio Investment of HBL

$$\pm_p X\sqrt{W_g^2\pm_g^2\Gamma W_l^2\pm_l^2\Gamma W_s^2\pm_s^2\Gamma 2W_gW_lCov_{gl}\Gamma 2W_gW_sCov_{gs}\Gamma 2W_lW_sCov_{ls}}$$

$$\pm_p X\sqrt{\begin{array}{l}f0.2329\AA \mid f2.2426\AA\Gamma f0.7644\AA \mid f0.4827\AA\Gamma f0.0027\AA \mid f28.03\AA\\ \Gamma 2 \mid 0.2329 \mid 0.7644 \mid fZ0.1491\AA\Gamma 2 \mid 0.2329 \mid 0.0027 \mid fZ23.256\AA\Gamma 2 \mid 0.7644 \mid 0.0027 \mid fZ2.7095\AA\end{array}}X0.5667$$

Calculation of Standard Deviation of Portfolio Investment of EBL

$$\pm_p X\sqrt{W_g^2\pm_g^2\Gamma W_l^2\pm_l^2\Gamma W_s^2\pm_s^2\Gamma 2W_gW_lCov_{gl}\Gamma 2W_gW_sCov_{gs}\Gamma 2W_lW_sCov_{ls}}$$

$$\pm_p X\sqrt{\begin{array}{l}f0.2162\AA \mid f1.0246\AA\Gamma f0.7811\AA \mid f0.8479\AA\Gamma f0.0027\AA \mid f28.03\AA\\ \Gamma 2 \mid 0.2162 \mid 0.7811 \mid f0.1555\AA\Gamma 2 \mid 0.2162 \mid 0.0027 \mid fZ17.67\AA\Gamma 2 \mid 0.7811 \mid 0.0027 \mid fZ9.9206\AA\end{array}}X0.7531$$

Calculation of Standard Deviation of Portfolio Investment of Banking Industry

$$\pm_{p} X \sqrt{W_{g}^{2} \pm_{g}^{2} \Gamma W_{l}^{2} \pm_{l}^{2} \Gamma W_{s}^{2} \pm_{s}^{2} \Gamma 2 W_{g} W_{l} Cov_{gl} \Gamma 2 W_{g} W_{s} Cov_{gs} \Gamma 2 W_{l} W_{s} Cov_{ls}}$$

$$\pm_{p} X \sqrt{\begin{array}{l} \int 0.2326 Å \mid \int 0.8752 Å \Gamma \int 0.7629 Å \mid \int 0.5644 Å \Gamma \int 0.0044 Å \mid \int 28.03 Å \\ \Gamma 2 \mid 0.2326 \mid 0.7629 \mid 0.2825 \Gamma 2 \mid 0.2326 \mid 0.0044 \mid \int Z 12.574 Å \Gamma 2 \mid 0.7629 \mid 0.0044 \mid \int Z 5.3372 Å \end{array}} X 0.5298$$

ANNEX 10

Calculation of Mean, S.D, C.V of Total Investment to Total Deposit Ratio
Total Investment to Total Deposit Ratio of NABIL (%)

Year	Ratio	$(x-\bar{x})$	$(x-\bar{x})^2$
2004	41.33	7.78	60.45
2005	29.33	-4.23	17.85
2006	31.95	-1.61	2.58
2007	38.37	4.82	23.18
2008	31.23	-2.33	5.41
2009	29.12	-4.44	19.67
Total	**201.33**	0.00	**129.14**
Mean	**33.56**		

Source: Annual Reports of NABIL

Standard Deviation $(\pm)\,X\sqrt{\frac{\int x - \bar{x}\text{Å}}{n}}\,X5.08$

Coefficient of Variance $(C.V)\,X\frac{\pm}{=}\,|100\,X\frac{5.08}{33.56}\,|100\,X15.00$

Total Investment to Total Deposit Ratio of NIBL (%)

Year	Ratio	$(x-\bar{x})$	$(x-\bar{x})^2$
2004	33.51	7.99	63.89
2005	27.60	2.08	4.34
2006	29.60	4.08	16.67

2007	26.57	1.05	1.11
2008	19.97	-5.55	30.77
2009	15.85	-9.67	93.44
Total	**153.10**	0.00	**210.23**
Mean	**25.52**		

Source: Annual Reports of NIBL

Standard Deviation $(\pm) X\sqrt{\frac{\int x - \bar{x}}{n}} X 6.48$

Coefficient of Variance $(C.V) X\frac{\pm}{x} | 100 X\frac{6.48}{25.52} | 100 X 25.40$

Total Investment to Total Deposit Ratio of SCBL (%)

Year	**Ratio**	**$(x-\bar{x})$**	**$(x-\bar{x})^2$**
2004	53.68	0.72	0.52
2005	50.11	-2.85	8.11
2006	55.67	2.71	7.35
2007	54.99	2.03	4.13
2008	46.82	-6.14	37.68
2009	56.48	3.52	12.40
Total	**317.75**	0.00	**70.20**
Mean	**52.96**		

Source: Annual Reports of SCBL

Standard Deviation $(\pm) X\sqrt{\frac{\int x - \bar{x}}{n}} X 3.75$

Coefficient of Variance $(C.V) X\frac{\pm}{x} | 100 X\frac{3.75}{52.96} | 100 X 7.08$

Total Investment to Total Deposit Ratio of HBL (%)

Year	Ratio	$(x-\bar{x})$	$(x-\bar{x})^2$
2004	42.22	2.75	7.57
2005	47.13	7.66	58.70
2006	41.10	1.63	2.66
2007	39.35	-0.12	0.01
2008	41.89	2.42	5.86
2009	25.12	-14.35	205.87
Total	**236.81**	0.00	**280.69**
Mean	**39.47**		

Source: Annual Reports of HBL

Standard Deviation $(\pm) X\sqrt{\frac{\int x - \bar{x}\text{Å}}{n}} X7.49$

Coefficient of Variance $(C.V) X\frac{\pm}{\bar{x}} | 100 X\frac{7.49}{39.47} | 100 X18.98$

Total Investment to Total Deposit Ratio of EBL (%)

Year	Ratio	$(x-\bar{x})$	$(x-\bar{x})^2$
2004	31.44	6.55	42.90
2005	21.08	-3.81	14.52
2006	30.44	5.55	30.80
2007	27.41	2.52	6.35
2008	21.11	-3.78	14.29
2009	17.86	-7.03	49.42
Total	**149.34**	0.00	**158.28**
Mean	**24.89**		

Source: Annual Reports of EBL

Standard Deviation $(\pm) X\sqrt{\frac{\int x - \bar{x}Å}{n}} X5.63$

Coefficient of Variance $(C.V) X\frac{\pm}{=}{}_{x} |100 X\frac{5.63}{24.89} |100 X22.65$

Total Investment to Total Deposit Ratio of Banking Industry (%)

Year	Ratio	$(x-\bar{x})$	$(x-\bar{x})^2$
2004	42.78	6.34	40.15
2005	38.18	1.74	3.02
2006	39.08	2.64	6.95
2007	37.96	1.52	2.30
2008	32.35	-4.09	16.76
2009	28.31	-8.13	66.15
Total	**218.66**	0.00	**135.33**
Mean	**36.44**		

Source: Annual Reports of Commercial Banks

Standard Deviation $(\pm) X\sqrt{\frac{\int x - \bar{x}\AA}{n}} X5.20$

Coefficient of Variance $(C.V) X\frac{\pm}{\bar{x}} |100 X\frac{5.20}{36.44} |100 X14.27$

ANNEX 11
Calculation of Mean, S.D, C.V of Investment on Government Securities to Total Outside Investment Ratio

Investment on Government Securities to Total outside Investment Ratio of NABIL (%)

Year	**Ratio**	**$(x-\bar{x})$**	**$(x-\bar{x})^2$**
2004	29.73	10.77	115.99
2005	17.52	-1.44	2.07
2006	14.67	-4.29	18.40
2007	22.90	3.94	15.52
2008	17.38	-1.58	2.50
2009	11.56	-7.40	54.76
Total	**113.76**	0.00	**209.25**
Mean	**18.96**		

Source: Annual Report of NABIL

Standard Deviation $(\pm) X\sqrt{\frac{\int x - \bar{x}Ã}{n-1}} X6.47$

Coefficient of Variation $(C.V) X\frac{\pm}{\bar{x}} |100 X\frac{6.47}{18.96}| 100 X34.12$

Investment on Government Securities to Total outside Investment Ratio of NIBL (%)

Year	**Ratio**	**$(x-\bar{x})$**	**$(x-\bar{x})^2$**
2004	21.39	7.14	50.93
2005	15.94	1.69	2.84
2006	16.05	1.80	3.23
2007	15.46	1.21	1.46
2008	10.26	-3.99	15.95
2009	6.42	-7.83	61.36

Total	**85.52**	0.00	**135.77**
Mean	**14.25**		

Source: Annual Report of NIBL

Standard Deviation $(\pm) X\sqrt{\frac{\int x - \bar{x}Å}{n-1}} X5.21$

Coefficient of Variation $(C.V) X\frac{\pm}{=}_{x} |100 X\frac{5.21}{14.25} |100 X36.55$

Investment on Government Securities to Total outside Investment Ratio of SCBL (%)

Year	**Ratio**	**$(x-\bar{x})$**	**$(x-\bar{x})^2$**
2004	54.24	9.76	95.26
2005	46.06	1.58	2.50
2006	48.43	3.95	15.60
2007	39.85	-4.63	21.44
2008	36.63	-7.85	61.62
2009	41.67	-2.81	7.90
Total	**266.88**	0.00	**204.31**
Mean	**44.48**		

Source: Annual Report of SCBL

Standard Deviation $(\pm) X\sqrt{\frac{\int x - \bar{x}Å}{n-1}} X6.39$

Coefficient of Variation (C.V) $X \frac{\pm}{\bar{x}} | 100 X \frac{6.39}{44.48} | 100 X 14.37$

Investment on Government Securities to Total outside Investment Ratio of HBL

Year	**Ratio**	**$(x-\bar{x})$**	**$(x-\bar{x})^2$**
2004	20.94	-2.72	7.38
2005	28.85	5.19	26.97
2006	24.56	0.90	0.82
2007	26.54	2.88	8.31
2008	26.93	3.27	10.71
2009	14.12	-9.54	90.95
Total	**141.94**	0.00	**145.14**
Mean	**23.66**		

Source: Annual Report of HBL

Standard Deviation $(\pm) X \sqrt{\frac{\int x - \bar{x} Å}{n-1}} X 5.39$

Coefficient of Variation (C.V) $X \frac{\pm}{\bar{x}} | 100 X \frac{5.39}{23.66} | 100 X 22.78$

Investment on Government Securities to Total outside Investment Ratio of EBL (%)

Year	Ratio	$(x-\bar{x})$	$(x-\bar{x})^2$
2004	28.75	5.98	35.72
2005	20.96	-1.81	3.29
2006	24.24	1.47	2.15
2007	25.02	2.25	5.05
2008	20.29	-2.48	6.17
2009	17.38	-5.39	29.09
Total	**136.64**	0.00	**81.46**
Mean	**22.77**		

Source: Annual Report of EBL

Standard Deviation $(\pm) X\sqrt{\frac{\int x - \bar{x}Å}{n-1}} X4.04$

Coefficient of Variation $(C.V) X\frac{\pm}{\bar{x}} |100 X\frac{4.04}{22.77} |100 X17.72$

Investment on Government Securities to Total outside Investment Ratio of Banking Industry (%)

Year	Ratio	$(x-\bar{x})$	$(x-\bar{x})^2$
2004	31.83	7.05	49.75
2005	27.09	2.31	5.35
2006	26.14	1.36	1.86
2007	25.56	0.78	0.61
2008	21.52	-3.26	10.61
2009	16.52	-8.26	68.17
Total	**148.66**	8.26	**136.35**
Mean	**24.78**		

Source:

Standard Deviation $(\pm) X \sqrt{\frac{\int x - \bar{x}\text{Å}}{n-1}} X 5.22$

Coefficient of Variation $(C.V) X \frac{\pm}{x} | 100 X \frac{5.22}{24.78} | 100 X 21.07$

ANNEX 12

Calculation of Mean, S.D, C.V of Investment on Loan and Advances to Total Outside Investment Ratio

Investment on Loan and Advances to Total outside Investment Ratio of NABIL (%)

Year	**Ratio**	$(x-\bar{x})$	$(x-\bar{x})^2$
2004	69.19	-10.42	108.51
2005	79.32	-0.29	0.08
2006	84.66	5.05	25.54
2007	75.73	-3.88	15.03
2008	81.41	1.80	3.25
2009	87.33	7.72	59.65
Total	**477.64**	0.00	**212.06**
Mean	**79.61**		

Source: Annual Reports of NABIL

Standard Deviation $(\pm) X\sqrt{\frac{\int x - \bar{x}\text{Å}}{n-1}} X6.51$

Coefficient of Variation $(C.V) X\frac{\pm}{\bar{x}} \mid 100 X\frac{6.51}{79.61} \mid 100 X8.18$

Investment on Loan and Advances to Total outside Investment Ratio of NIBL (%)

Year	**Ratio**	$(x-\bar{x})$	$(x-\bar{x})^2$
2004	78.46	-7.40	54.71
2005	85.51	-0.35	0.12
2006	83.84	-2.02	4.07
2007	84.37	-1.49	2.21
2008	89.54	3.68	13.57

2009	93.42	7.56	57.20
Total	**515.14**	0.00	**131.88**
Mean	**85.86**		

Source: Annual Reports of NIBL

Standard Deviation $(\pm) X\sqrt{\frac{\int x - \bar{x}Å}{n-1}} X5.14$

Coefficient of Variation $(C.V) X\frac{\pm}{\bar{x}} |100 X\frac{5.14}{85.86} |100 X5.98$

Investment on Loan and Advances to Total outside Investment Ratio of SCBL (%)

Year	**Ratio**	**$(x-\bar{x})$**	**$(x-\bar{x})^2$**
2004	45.68	-9.70	94.15
2005	53.85	-1.53	2.35
2006	51.57	-3.81	14.54
2007	60.49	5.11	26.08
2008	62.86	7.48	55.90
2009	57.85	2.47	6.08
Total	**332.30**	0.00	**199.11**
Mean	**55.38**		

Source: Annual Reports of SCBL

Standard Deviation $(\pm) X\sqrt{\frac{\int x - \bar{x}Å}{n-1}} X6.31$

Coefficient of Variation (C.V) $X \frac{\pm}{\bar{x}} | 100 X \frac{6.31}{55.38} | 100 X 11.34$

Investment on Loan and Advances to Total outside Investment Ratio of HBL (%)

Year	**Ratio**	**$(x-\bar{x})$**	**$(x-\bar{x})^2$**
2004	78.85	2.77	7.65
2005	70.94	-5.14	26.45
2006	75.25	-0.83	0.69
2007	73.16	-2.92	8.55
2008	72.74	-3.34	11.18
2009	85.56	9.48	89.81
Total	**456.50**	0.00	**144.33**
Mean	**76.08**		

Source: Annual Reports of HBL

Standard Deviation $(\pm) X \sqrt{\frac{\int x - \bar{x} Å}{n-1}} X 5.37$

Coefficient of Variation (C.V) $X \frac{\pm}{\bar{x}} | 100 X \frac{5.37}{76.08} | 100 X 7.06$

Investment on Loan and Advances to Total outside Investment Ratio of EBL (%)

Year	Ratio	$(x-\bar{x})$	$(x-\bar{x})^2$
2004	71.05	-5.72	32.74
2005	78.84	2.07	4.28
2006	73.96	-2.81	7.91
2007	74.88	-1.89	3.58
2008	79.28	2.51	6.29
2009	82.62	5.85	34.20
Total	**460.63**	0.00	**88.99**
Mean	**76.77**		

Source: Annual Reports of EBL

Standard Deviation $(\pm) X\sqrt{\frac{\int x - \bar{x}Å}{n-1}} X4.22$

Coefficient of Variation $(C.V) X\frac{\pm}{\bar{x}} |100 X\frac{4.22}{76.77} |100 X5.50$

Investment on Loan and Advances to Total outside Investment Ratio of Banking Industry (%)

Year	Ratio	$(x-\bar{x})$	$(x-\bar{x})^2$
2004	67.83	-6.97	48.51
2005	72.44	-2.36	5.55
2006	73.37	-1.43	2.03
2007	74.10	-0.70	0.48
2008	77.96	3.16	10.02
2009	83.07	8.27	68.48
Total	**448.77**	-8.28	**135.06**
Mean	**74.80**		

Source: Annual Reports

Standard Deviation $(\pm) X\sqrt{\frac{\int x - \bar{x}\text{Å}}{n-1}} X5.19$

Coefficient of Variation $(C.V) X\frac{\pm}{\bar{x}} |100 X\frac{5.19}{74.80} |100 X6.94$

ANNEX 13

Calculation of Mean, S.D, C.V of Investment on Share and Debenture to Total Outside Investment Ratio

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

Year	**Ratio**	**$(x-\bar{x})$**	**$(x-\bar{x})^2$**
2004	0.18	-1.08	1.1592
2005	3.01	1.75	3.0742
2006	0.66	-0.60	0.3560
2007	1.37	0.11	0.0128
2008	1.21	-0.05	0.0022
2009	1.11	-0.15	0.0215
Total	**7.54**	0.00	**4.6259**
Mean	**1.26**		

Source: Annual Reports of NABIL

Standard Deviation $(\pm) X\sqrt{\frac{\int x - \bar{x}Å}{n-1}} X0.96$

Coefficient of Variation $(C.V) X\frac{\pm}{\bar{x}} |100 X\frac{0.96}{1.26}| 100 X76.34$

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

Year	**Ratio**	**$(x-\bar{x})$**	**$(x-\bar{x})^2$**
2004	0.15	-0.01	0.0000
2005	0.15	-0.01	0.0000
2006	0.11	-0.05	0.0020
2007	0.17	0.02	0.0002
2008	0.19	0.04	0.0012

2009	0.16	0.01	0.0000
Total	**0.93**	0.00	**0.0036**
Mean	**0.16**		

Source: Annual Reports of NIBL

Standard Deviation $(\pm) X\sqrt{\frac{\int x - \bar{x}Å}{n-1}} X0.03$

Coefficient of Variation $(C.V) X\frac{\pm}{\bar{x}} |100 X\frac{0.03}{0.16} |100 X16.77$

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

Year	**Ratio**	**$(x-\bar{x})$**	**$(x-\bar{x})^2$**
2004	0.08	-0.17	0.0295
2005	0.09	-0.16	0.0261
2006	0.09	-0.16	0.0261
2007	0.25	0.00	0.0000
2008	0.52	0.27	0.0720
2009	0.48	0.23	0.0521
Total	**1.51**	0.00	**0.2059**
Mean	**0.25**		

Source: Annual Reports of SCBL

Standard Deviation $(\pm) X\sqrt{\frac{\int x - \bar{x}Å}{n-1}} X0.20$

Coefficient of Variation (C.V) $X\frac{\pm}{x} \mid 100\ X\frac{0.20}{0.25} \mid 100\ X81.17$

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

Year	**Ratio**	**$(x-\bar{x})$**	**$(x-\bar{x})^2$**
2004	0.21	-0.05	0.0022
2005	0.21	-0.05	0.0022
2006	0.19	-0.07	0.0044
2007	0.30	0.04	0.0019
2008	0.32	0.06	0.0040
2009	0.31	0.05	0.0028
Total	**1.54**	0.00	**0.0175**
Mean	**0.26**		

Source: Annual Reports of HBL

Standard Deviation $(\pm)\ X\sqrt{\frac{\int x - \bar{x}\text{Å}}{n-1}}\ X0.06$

Coefficient of Variation (C.V) $X\frac{\pm}{x} \mid 100\ X\frac{0.06}{0.26} \mid 100\ X22.75$

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

Year	Ratio	$(x-\bar{x})$	$(x-\bar{x})^2$
2004	0.20	-0.04	0.0012
2005	0.19	-0.05	0.0020
2006	0.14	-0.10	0.0090
2007	0.11	-0.23	0.0529
2008	0.43	0.20	0.0380
2009	0.34	0.34	0.1156
Total	**1.41**	0.13	**0.2188**
Mean	**0.24**		

Source: Annual Reports of EBL

Standard Deviation $(\pm) X\sqrt{\frac{\int x - \bar{x}Å}{n-1}} X0.21$

Coefficient of Variation $(C.V) X\frac{\pm}{\bar{x}} |100 X\frac{0.21}{0.24}| 100 X87.16$

Investment on Share and Debenture to Total outside Investment Ratio of Banking Industry (%)

Year	Ratio	$(x-\bar{x})$	$(x-\bar{x})^2$
2004	0.16	-0.27	0.0702
2005	0.72	0.30	0.0870
2006	0.23	-0.20	0.0380
2007	0.45	0.03	0.0006
2008	0.52	0.10	0.0090
2009	0.47	0.05	0.0020
Total	**2.55**	0.00	**0.2070**
Mean	**0.43**		

Source: Annual Reports

Standard Deviation $(\pm) X \sqrt{\frac{\int x - \bar{x}}{n-1}} X 0.20$

Coefficient of Variation $(C.V) X \frac{\pm}{\bar{x}} | 100 X \frac{0.20}{0.43} | 100 X 47.31$

ANNEX 14

Calculation of Mean, S.D, C.V of Return on Total Asset

Return on Total Asset of NABIL (%)

Year	Ratio	$(x-\bar{x})$	$(x-\bar{x})^2$
2004	0.27	-1.90	3.6037
2005	3.05	0.88	0.7773
2006	2.86	0.69	0.4784
2007	2.47	0.30	0.0910
2008	2.01	-0.16	0.0251
2009	2.35	0.18	0.0330
Total	**13.01**	0.00	**5.0085**
Mean	**2.17**		

Source: Annual Report of NABIL

Standard Deviation $(\pm) X\sqrt{\frac{\int x - \bar{x}Ã}{n-1}} X1.00$

Coefficient of Variance $(C.V) X\frac{\pm}{\bar{x}} |100 X\frac{1.00}{2.17} |100 X46.12$

Return on Total Asset of NIBL (%)

Year	Ratio	$(x-\bar{x})$	$(x-\bar{x})^2$
2004	1.13	-0.60	0.3600
2005	1.42	-0.31	0.0961
2006	1.61	-0.12	0.0144
2007	2.77	1.04	1.0816
2008	1.77	0.04	0.0016

2009	1.68	-0.05	0.0025
Total	**10.38**	0.00	**1.5562**
Mean	**1.73**		

Source: Annual Report of NIBL

Standard Deviation $(\pm) X\sqrt{\frac{\int x - \bar{x}}{n-1}} X0.56$

Coefficient of Variance $(C.V) X\frac{\pm}{\bar{x}} |100 X\frac{0.56}{1.73} |100 X32.24$

Return on Total Asset of SCBL (%)

Year	**Ratio**	**$(x-\bar{x})$**	**$(x-\bar{x})^2$**
2004	1.85	-0.53	0.2809
2005	2.46	0.08	0.0064
2006	2.56	0.18	0.0324
2007	2.42	0.04	0.0016
2008	2.46	0.08	0.0064
2009	2.53	0.15	0.0225
Total	**14.28**	0.00	**0.3502**
Mean	**2.38**		

Source: Annual Report of SCBL

Standard Deviation $(\pm) X\sqrt{\frac{\int x - \bar{x}}{n-1}} X0.26$

Coefficient of Variance (C.V) $X \frac{\pm}{=}_{x} | 100 X \frac{0.26}{2.38} | 100 X 11.12$

Return on Total Asset of HBL (%)

Year	Ratio	$(x-\bar{x})$	$(x-\bar{x})^2$
2004	1.02	-0.42	0.1750
2005	1.07	-0.37	0.1357
2006	1.50	0.06	0.0038
2007	1.43	-0.01	0.0001
2008	1.73	0.29	0.0851
2009	1.88	0.44	0.1951
Total	**8.63**	0.00	**0.5947**
Mean	**1.44**		

Source: Annual Report of HBL

Standard Deviation $(\pm) X \sqrt{\frac{\int x - \bar{x} Å}{n-1}} X 0.34$

Coefficient of Variance (C.V) $X \frac{\pm}{=}_{x} | 100 X \frac{0.34}{1.44} | 100 X 23.98$

Return on Total Asset of EBL (%)

Year	Ratio	$(x-\bar{x})$	$(x-\bar{x})^2$
2004	1.49	-0.04	0.0019
2005	1.45	-0.08	0.0069
2006	1.49	-0.04	0.0019
2007	1.38	-0.15	0.0235
2008	1.66	0.13	0.0160
2009	1.73	0.20	0.0387
Total	**9.20**	0.00	**0.0889**
Mean	**1.53**		

Source: Annual Report of EBL

Standard Deviation $(\pm) X\sqrt{\frac{\int x - \bar{x}Å}{n-1}} X0.13$

Coefficient of Variance $(C.V) X\frac{\pm}{=}{}_{x} |100 X\frac{0.13}{1.53} |100 X8.72$

Return on Total Asset of Banking Industry (%)

Year	Ratio	$(x-\bar{x})$	$(x-\bar{x})^2$
2004	0.61	-1.13	1.2844
2005	1.84	0.10	0.0093
2006	2.01	0.27	0.0711
2007	2.05	0.31	0.0940
2008	1.93	0.19	0.0348
2009	2.02	0.28	0.0765
Total	**10.46**	0.00	**1.5703**
Mean	**1.74**		

Source: Annual Report of Sample Banks

Standard Deviation $(\pm) X\sqrt{\frac{\int x - \bar{x}\hat{A}}{n-1}} X0.56$

Coefficient of Variance $(C.V) X\frac{\pm}{=}{}_{x} | 100 X\frac{0.56}{1.74} | 100 X32.21$

ANNEX 15

Sample calculation of "Straight Line Trend"

Let the straight line trend between the dependent variable (Total investment) y and the independent variable x (time) to be
Y= a+bx
Thus to find the value of a and b

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

Let Fiscal year 2003/2004 be equal to 2004, FY 2004/2005 be equal to 2005 and so on. Here deviations are considered from the middle of years.

(a) Trend Analysis of Investment on Government Securities of NABIL

Year	Investment on Govt. Securities (y)	x=(t-2006.5)	xy	x^2
2004	3,672,626.00	-2.50	-9,181,565.00	6.25
2005	2,418,432.00	-1.50	-3,627,648.00	2.25
2006	2,301,464.00	-0.50	-1,150,732.00	0.25
2007	4,808,348.00	0.50	2,404,174.00	0.25
2008	4,646,883.00	1.50	6,970,324.50	2.25
2009	3,706,103.00	2.50	9,265,257.50	6.25
Total	**21,553,856.00**	**0.00**	**4,679,811.00**	**17.50**

Since $x = 0$,

$a = \frac{y}{n} = \frac{21553856.00}{6} = 3592309.33$, $b = \frac{xy}{x^2} = \frac{4679811.00}{17.50} = 267417.77$

The straight line trend of government securities of NABIL is
$Y_g = a - bx = 3592309.33 - 267417.77x$

(b) Trend Analysis of Investment on Government Securities of NIBL

Year	Investment on Govt. Securities (y)	x=(t-2006.5)	xy	x^2
2004	2,001,100.00	-2.50	-5,002,750.00	6.25
2005	1,948,500.00	-1.50	-2,922,750.00	2.25
2006	2,522,300.00	-0.50	-1,261,150.00	0.25
2007	3,256,400.00	0.50	1,628,200.00	0.25
2008	3,155,000.00	1.50	4,732,500.00	2.25
2009	2,531,300.00	2.50	6,328,250.00	6.25
Total	**15,414,600.00**	**0.00**	**3,502,300.00**	**17.50**

Since $x = 0$,

$$a = \frac{y}{n} = \frac{15414600.00}{6} = 2569100.00, \quad b = \frac{xy}{x^2} = \frac{3502300.00}{17.50} = 200131.43$$

The straight line trend of government securities of NIBL is
$Y_g = a + bx = 2569100.00 + 200131.43x$

(c) Trend Analysis of Investment on Government Securities of SCBL

Year	Investment on Govt. Securities (y)	x=(t-2006.5)	xy	x^2
2004	7,948,217.00	-2.50	-19,870,542.50	6.25
2005	7,203,066.00	-1.50	-10,804,599.00	2.25
2006	8,644,856.00	-0.50	-4,322,428.00	0.25
2007	7,107,937.00	0.50	3,553,968.50	0.25
2008	8,137,615.00	1.50	12,206,422.50	2.25
2009	9,998,754.00	2.50	24,996,885.00	6.25

Total	**49,040,445.00**	**0.00**	**5,759,706.50**	**17.50**

Since $x = 0$,

$$a = \frac{y}{n} = \frac{49040445.00}{6} = 8173407.50, \quad b = \frac{xy}{x^2} = \frac{5759706.50}{17.50} = 329126.09$$

The straight line trend of government securities of SCBL is

$$Y_g = a + bx = 8173407.50 + 329126.09x$$

(d) Trend Analysis of Investment on Government Securities of HBL

Year	Investment on Govt. Securities (y)	x=(t-2006.5)	xy	x^2
2004	3,431,728.00	-2.50	-8,579,320.00	6.25
2005	5,469,729.00	-1.50	-8,204,593.50	2.25
2006	5,144,313.00	-0.50	-2,572,156.50	0.25
2007	6,454,873.00	0.50	3,227,436.50	0.25
2008	7,471,668.00	1.50	11,207,502.00	2.25
2009	4,212,300.00	2.50	10,530,750.00	6.25
Total	**32,184,611.00**	**0.00**	**5,609,618.50**	**17.50**

Since $x = 0$,

$$a = \frac{y}{n} = \frac{32184611.00}{6} = 5364101.83, \quad b = \frac{xy}{x^2} = \frac{5609618.50}{17.50} = 320549.63$$

The straight line trend of government securities of HBL is

$$Y_g = a + bx = 5364101.83 + 320549.63x$$

(e) Trend Analysis of Investment on Government Securities of EBL

Year	Investment on Govt. Securities (y)	x=(t-2006.5)	xy	x^2
2004	2,466,428.00	-2.50	-6,166,070.00	6.25
2005	2,100,289.00	-1.50	-3,150,433.50	2.25
2006	3,322,443.00	-0.50	-1,661,221.50	0.25
2007	4,704,632.00	0.50	2,352,316.00	0.25
2008	4,821,605.00	1.50	7,232,407.50	2.25
2009	5,146,046.00	2.50	12,865,115.00	6.25
Total	**22,561,443.00**	**0.00**	**11,472,113.50**	**17.50**

Since $x \neq 0$,

$$a = \frac{y}{n} = \frac{22561443.00}{6} = 3760240.50, \quad b = \frac{xy}{x^2} = \frac{11472113.50}{17.50} = 655549.34$$

The straight line trend of government securities of EBL is

$$Y_g = a + bx = 3760240.50 + 655549.34x$$

(f) Trend Analysis of Investment on Loan and Advances of NABIL

Year	Investment on Loan and Advances (y)	x=(t-2006.5)	xy	x^2
2004	8,548,657.00	-2.50	-21,371,642.50	6.25
2005	10,946,737.00	-1.50	-16,420,105.50	2.25
2006	13,278,782.00	-0.50	-6,639,391.00	0.25
2007	15,903,024.00	0.50	7,951,512.00	0.25
2008	21,759,460.00	1.50	32,639,190.00	2.25
2009	27,999,012.00	2.50	69,997,530.00	6.25
Total	**98,435,672.00**	**0.00**	**66,157,093.00**	**17.50**

Since $x = 0$,

$$a = \frac{y}{n} = \frac{98435672.00}{6} = 16405945.33, \quad b = \frac{xy}{x^2} = \frac{66157093.00}{17.50} = 3780405.31$$

The straight line trend of loan and advances of NABIL is

$$Y_l = a + bx = 16405945.33 + 3780405.31x$$

(g) Trend Analysis of Investment on Loan and Advances of NIBL

Year	Investment on Loan and Advances (y)	x=(t-2006.5)	xy	x^2
2004	7,338,566.00	-2.50	-18,346,415.00	6.25
2005	10,453,164.00	-1.50	-15,679,746.00	2.25
2006	13,178,152.00	-0.50	-6,589,076.00	0.25
2007	17,769,100.00	0.50	8,884,550.00	0.25
2008	27,529,305.00	1.50	41,293,957.50	2.25
2009	36,827,157.00	2.50	92,067,892.50	6.25
Total	**113,095,444.00**	**0.00**	**101,631,163.00**	**17.50**

Since $x \neq 0$,

$a = \frac{y}{n} = \frac{113095444.00}{6} = 18849240.67$, $b = \frac{xy}{x^2} = \frac{101631163.00}{17.50} = 5807495.03$

The straight line trend of loan and advances of NIBL is

$Y_l = a + bx = 18849240.67 + 5807495.03x$

(h) Trend Analysis of Investment on Loan and Advances of SCBL

Year	Investment on Loan and Advances (y)	x=(t-2006.5)	xy	x^2
2004	6,693,862.00	-2.50	-16,734,655.00	6.25
2005	8,420,868.00	-1.50	-12,631,302.00	2.25
2006	9,206,280.00	-0.50	-4,603,140.00	0.25
2007	10,790,148.00	0.50	5,395,074.00	0.25
2008	13,963,984.00	1.50	20,945,976.00	2.25
2009	13,880,703.00	2.50	34,701,757.50	6.25
Total	**62,955,845.00**	**0.00**	**27,073,710.50**	**17.50**

Since $x \mathrm{X} 0$,

$$a \mathrm{X} \frac{y}{n} \mathrm{X} \frac{62955845.00}{6} \mathrm{X} 10492640.83, \; b \mathrm{X} \frac{xy}{x^2} \mathrm{X} \frac{27073710.50}{17.50} \mathrm{X} 1547069.17$$

The straight line trend of loan and advances of SCBL is

$Y_l \mathrm{X} a \Gamma bx \mathrm{X} 10492640.83 \Gamma 1547069.17 x$

(i) Trend Analysis of Investment on Loan and Advances of HBL

Year	Investment on Loan and Advances (y)	x=(t-2006.5)	xy	x^2
2004	12,919,631.00	-2.50	-32,299,077.50	6.25
2005	13,451,168.00	-1.50	-20,176,752.00	2.25
2006	15,761,977.00	-0.50	-7,880,988.50	0.25
2007	17,793,724.00	0.50	8,896,862.00	0.25
2008	20,179,995.00	1.50	30,269,992.50	2.25
2009	25,519,519.00	2.50	63,798,797.50	6.25
Total	**105,626,014.00**	**0.00**	**42,608,834.00**	**17.50**

Since $x \mathrm{X} 0$,

$a \mathrm{X} \frac{y}{n} \mathrm{X} \frac{105626014.00}{6} \mathrm{X} 17604335.67$, $b \mathrm{X} \frac{xy}{x^2} \mathrm{X} \frac{42608834.00}{17.50} \mathrm{X} 2434790.51$

The straight line trend of loan and advances of HBL is

$Y_l \mathrm{X} a \Gamma bx \mathrm{X} 17604335.67 \Gamma 2434790.51x$

(j) Trend Analysis of Investment on Loan and Advances of EBL

Year	Investment on Loan and Advances (y)	x=(t-2006.5)	xy	x^2
2004	6,095,841.00	-2.50	-15,239,602.50	6.25
2005	7,900,015.00	-1.50	-11,850,022.50	2.25
2006	10,136,254.00	-0.50	-5,068,127.00	0.25
2007	14,082,686.00	0.50	7,041,343.00	0.25
2008	18,836,432.00	1.50	28,254,648.00	2.25
2009	24,469,556.00	2.50	61,173,890.00	6.25
Total	**81,520,784.00**	**0.00**	**64,312,129.00**	**17.50**

Since $x \mathrm{X} 0$,

$a \mathrm{X} \frac{y}{n} \mathrm{X} \frac{81520784.00}{6} \mathrm{X} 13586797.33$, $b \mathrm{X} \frac{xy}{x^2} \mathrm{X} \frac{64312129.00}{17.50} \mathrm{X} 3674978.60$

The straight line trend of loan and advances of EBL is

$Y_l \mathrm{X} a \Gamma bx \mathrm{X} 13586797.33 \Gamma 3674978.60.30x$

(k) Trend Analysis of Investment on Share and Debenture of NABIL

Year	Investment on Share	x=(t-2006.5)	xy	x^2

	and Debenture (y)			
2004	22,220.00	-2.50	-55,550.00	6.25
2005	415,724.00	-1.50	-623,586.00	2.25
2006	104,192.00	-0.50	-52,096.00	0.25
2007	286,958.00	0.50	143,479.00	0.25
2008	323,236.00	1.50	484,854.00	2.25
2009	354,931.00	2.50	887,327.50	6.25
Total	**1,507,261.00**	**0.00**	**784,428.50**	**17.50**

Since $x \mathrm{X} 0$,

$$a \mathrm{X} \frac{y}{n} \mathrm{X} \frac{1507261.00}{6} \mathrm{X} 251210.17, \quad b \mathrm{X} \frac{xy}{x^2} \mathrm{X} \frac{784428.50}{17.50} \mathrm{X} 44824.49$$

The straight line trend of Share and Debenture of NABIL is

$Y_s \mathrm{X} a \Gamma bx \mathrm{X} 251210.17 \Gamma 44824.49x$

(l) Trend Analysis of Investment on Share and Debenture of NIBL

Year	Investment on Share and Debenture (y)	x=(t-2006.5)	xy	x^2
2004	13,895.00	-2.50	-34,737.50	6.25
2005	17,738.00	-1.50	-26,607.00	2.25
2006	17,738.00	-0.50	-8,869.00	0.25
2007	35,253.00	0.50	17,626.50	0.25
2008	59,945.00	1.50	89,917.50	2.25
2009	64,270.00	2.50	160,675.00	6.25
Total	**208,839.00**	**0.00**	**198,005.50**	**17.50**

Since $x \mathrm{X} 0$,

$$a \mathrm{X} \frac{y}{n} \mathrm{X} \frac{208839.00}{6} \mathrm{X} 34806.50, \quad b \mathrm{X} \frac{xy}{x^2} \mathrm{X} \frac{198005.50}{17.50} \mathrm{X} 11314.60$$

The straight line trend of Share and Debenture of NIBL is

$Y_s = a + bx = 34806.50 + 11314.60x$

(m)Trend Analysis of Investment on Share and Debenture of SCBL

Year	Investment on Share and Debenture (y)	x=(t-2006.5)	xy	x^2
2004	11,195.00	-2.50	-27,987.50	6.25
2005	13,348.00	-1.50	-20,022.00	2.25
2006	15,343.00	-0.50	-7,671.50	0.25
2007	44,943.00	0.50	22,471.50	0.25
2008	114,536.00	1.50	171,804.00	2.25
2009	115,418.00	2.50	288,545.00	6.25
Total	**314,783.00**	**0.00**	**427,139.50**	**17.50**

Since $x = 0$,

$$a = \frac{y}{n} = \frac{314783.00}{6} = 52463.83, \quad b = \frac{xy}{x^2} = \frac{427139.50}{17.50} = 24407.97$$

The straight line trend of Share and Debenture of SCBL is
$Y_s = a + bx = 52463.83 + 24407.97x$

(n) Trend Analysis of Investment on Share and Debenture of HBL

Year	Investment on Share and Debenture (y)	x=(t-2006.5)	xy	x^2
2004	34,265.00	-2.50	-85,662.50	6.25
2005	39,909.00	-1.50	-59,863.50	2.25
2006	39,909.00	-0.50	-19,954.50	0.25
2007	73,424.00	0.50	36,712.00	0.25
2008	89,558.00	1.50	134,337.00	2.25
2009	93,883.00	2.50	234,707.50	6.25
Total	**370,948.00**	**0.00**	**240,276.00**	**17.50**

Since $x = 0$,

$$a = \frac{y}{n} = \frac{370948.00}{6} = 61824.67, \quad b = \frac{xy}{x^2} = \frac{240276.00}{17.50} = 13730.06$$

The straight line trend of Share and Debenture of HBL is
$Y_s = a + bx = 61824.67 + 13730.06x$

(o) Trend Analysis of Investment on Share and Debenture of EBL

Year	Investment on Share and Debenture (y)	x=(t-2006.5)	xy	x^2
2004	17,114.00	-2.50	-42,785.00	6.25
2005	19,387.00	-1.50	-29,080.50	2.25
2006	19,082.00	-0.50	-9,541.00	0.25
2007	19,887.00	0.50	9,943.50	0.25
2008	101,152.00	1.50	151,728.00	2.25
2009	102,034.00	2.50	255,085.00	6.25
Total	**278,656.00**	**0.00**	**335,350.00**	**17.50**

Since $x = 0$,

$$a = \frac{y}{n} = \frac{278656.00}{6} = 46442.67, \quad b = \frac{xy}{x^2} = \frac{335350.00}{17.50} = 19162.86$$

The straight line trend of Share and Debenture of EBL is
$Y_s = a + bx = 46442.67 + 19162.86x$

ANNEX 16

Proportion Weight of Government Securities, Loan and Advances, Share and Debenture

Total Investment	**NABIL**	**NIBL**	**SCBL**	**HBL**	**EBL**	**All Banks**
Government Securities (g)	21,553,856.00	15,414,600.00	49,040,445.00	32,184,611.00	22,561,443.00	140,754,855.00
Loan and Advances (l)	98,435,672.00	113,095,444.00	62,955,845.00	105,626,014.00	81,520,784.00	461,633,759.00
Share and Debenture (s)	1,507,261.00	208,839.00	314,783.00	370,948.00	278,656.00	2,680,487.00
Total	**121,496,789.00**	**128,718,883.00**	**112,311,073.00**	**138,181,573.00**	**104,360,883.00**	**605,069,101.00**
Proportion Weight of g	0.1774	0.1198	0.4366	0.2329	0.2162	0.2326
Proportion Weight of l	0.8102	0.8786	0.5605	0.7644	0.7811	0.7629
Proportion Weight of s	0.0124	0.0016	0.0028	0.0027	0.0027	0.0044
Total	**1**	**1**	**1**	**1**	**1**	**1**