

INTEREST RATE STRUCTURE AND ITS RELATIONSHIP WITH DEPOSIT AND LENDING OF COMMERCIAL BANKS

**(A Case Study of Nabil Bank, Bank of Kathmandu,
Himalayan Bank Ltd. and Everest Bank Ltd.)**

By

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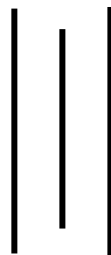
2nd Year Exam Symbol No.: 6939

A Thesis Submitted to:

Office of the Dean

Faculty of Management

Tribhuvan University



In partial fulfillment of the requirement for the degree of

Master of Business Studies (MBS)

Kathmandu, Nepal

June 2011

RECOMMENDATION

This is to certify that the thesis

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Entitled:

**INTEREST RATE STRUCTURE AND ITS RELATIONSHIP WITH DEPOSIT AND
LENDING OF COMMERCIAL BANKS**

**(A Case Study of Nabil Bank, Bank of Kathmandu,
Himalayan Bank Ltd. and Everest Bank Ltd.)**

*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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*And found the thesis to be the original work of the student and written
according to the prescribed format. We recommend the thesis to be
accepted as partial fulfillment of the requirement for the degree of
Master of Business Studies (MBS)*

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DECLARATION

I hereby declare that the work reported in this thesis entitled “**Interest Rate Structure and Its Relationship with Deposit and Lending of Commercial Banks (A Case Study of Nabil Bank, Bank of Kathmandu, Himalayan Bank Ltd. and Everest Bank Ltd.)**” 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 degree of Master of Business Studies (MBS) under the supervision of **Sita Dhital** of Shanker Dev Campus, T.U.

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2nd Year Exam Symbol No.: 6939

ACKNOWLEDGEMENT

This thesis entitled "*Interest Rate Structure and Its Relationship with Deposit and Lending of Commercial Banks (A Case Study of Nabil Bank, Bank of Kathmandu, Himalayan Bank Ltd. and Everest Bank Ltd.)*" has been prepared in the form as required by Office of the Dean, Faculty of Management, Tribhuvan University for the partial fulfillment of master degree in business study.

I am very grateful to my thesis advisor Sita Dhital, of Shanker Dev Campus TU, who provided me continuous support and guidance from every corner. Due to the great and valuable support, I am able to accomplish this thesis.

I would like to express sincere gratitude to my friends for encouraging and helping to prepare this thesis.

Lastly, I offer my heartily thanks to all my family members as well as those who is providing valuable support to fulfill this thesis.

Bishnu Kumari Aryal

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CHAPTER - I

INTRODUCTION

1.3 Background of the Study

Financial institution can be considered as the catalyst of the economic growth of the country. The development process of a country involves the mobilization and development of resources. There is range of banking institutions performing different functions. Among the banks, development banks play the vital role for the development of the country.

Nepal's economy is in the earlier stage of economic development where financial (Banking) sector need to play crucial role in order to accelerate this pace as these sector can accumulate scattered saving for capital formulation. Developing country such as Nepal aspires for a rapid economic growth, which required additional capital formulation with the sufficient amount of investment. No one can deny the fact that a country requires favorable economic environment to achieve economic development. Financial institution plays vital role to support the country's economic development.

Banking system has evolved itself as an integral part of trade, commerce and industry. At present, no banker can survive for long run without appropriate footing of economy and no economy can operate without proper application of banking system in state. Although the business of banking is as old as authentic history, banking institutions have few simple operations up to the satisfaction of individual wants.

This is to be developed by complicated mechanism of modern banking to the satisfaction of the whole community with secure speedy application of capital with slow seeking employment.

To provide capital and technical assistance for the development of basic infrastructure of the country is the objective of Development Banks. In Nepal, development Banks are established under the provision Development Bank Act, 2052 and Company act or the investment and development of particular sector of country.

Development bank creates the proper environment in the country for the development of rural, industrial and agricultural sectors of the country. Development banks provides short-term and long-term loan to the industries and they provide capital, technical assistance, managerial and administrative suggestions to the development of industrial, agricultural and rural sector to the country.

Interest rate is vital tool for shaping economy. It plays important role in borrowing and lending. The rate of interest is really a ratio of two qualities of the money. It is a cost of borrowing divided by the amount of money actually borrowed, usually expressed on an annual percentage basis. The cost of borrowing money measured in rupee per year per rupee borrowed is the interest rate. When we examine how money affects economic activity, we should focus and the interest rate, which is often called the price of money. It is a rent paid for the use of money. In other words, people must pay opportunity to borrow money. Financial institutions as financial intermediaries collect money from savers in the form of deposit and provide that for business sector in the form of loan (Shrestha, 2009).

An appropriate interest rate structure affects the deposit and lending of any financial institutions, which in turn affects the economic upliftmen of the whole country. It affect of both saving and investment. Interest rate sends price signals to borrowers, lenders, savers and investors. Higher rate of interest generally brings greater volume of savings and stimulates the lending of fund. Lower rate of interest on the other hand tends to dampen the flow of savings and reduce lending activity. Higher interest tends to reduce the volume of borrowing and capital investment and lower interest rate stimulate borrowing and investment spending.

1.4 Introduction of Sample Bank

a) Nabil Bank

Nabil Bank Limited, the first foreign joint venture bank of Nepal, started operations in July 1984. Nabil was incorporated with the objective of extending international standard modern banking services to various sectors of the society. Pursuing its objective, Nabil provides a full range of commercial banking services through its 47 points of representation across the kingdom and over 170 reputed correspondent banks across the globe.

Nabil, as a pioneer in introducing many innovative products and marketing concepts in the domestic banking sector, represents a milestone in the banking history of Nepal as it started an era of modern banking with customer satisfaction measured as a focal objective while doing business.

Operations of the bank including day-to-day operations and risk management are managed by highly qualified and experienced management team. Bank is fully equipped with modern technology which includes ATMs, credit cards, state-of-art, world-renowned software from Infosys Technologies System, Banglore, India, Internet banking system and Telebanking system.

b) Bank of Kathmandu

Bank of Kathmandu Limited has become a prominent name in the Nepalese banking sector. With the capital of 45% of the local promoters, 30% of Siam Commercial Bank of Thailand and 25% of the general public, BOK was established on 12th March 1995. The share pattern has already changed and the Nepalese promoters and general public hold 97.70% and financial institutions hold 2.07% and some companies are holding 0.23%.

Bank of Kathmandu is committed to delivering quality service to customers, generating good return to shareholders, providing attractive incentives to employees and serving the community through stronger corporate social responsibility endeavor.

Bank of Kathmandu Limited (BOK) has today become a landmark in the Nepalese banking sector by being among the few commercial banks which is entirely managed by Nepalese professionals and owned by the general public.

c) Himalayan Bank Limited

The bank was incorporated in 1992 by a few distinguished business personalities of Nepal in partnership with Employees Provident Fund and Habib Bank Limited, one of the largest commercial Banks of Pakistan. Banking operation was commenced from January 1993. Despite the cut-throat competition in the Nepalese Banking sector, Himalayan Bank has been able to maintain a lead in the primary banking activities- Loans and Deposits.

Legacy of Himalayan lives on in an institution that's known throughout Nepal for its innovative approaches to merchandising and customer service. Products such as Premium Savings Account, HBL Proprietary Card and Millionaire Deposit Scheme besides services such as ATMs and Tele-banking were first introduced by HBL. Other financial institutions in the country have been following HBL lead by introducing similar products and services. Therefore, HBL stand for the innovations that bank bring about in this country to help our Customers besides modernizing the banking sector. With the highest deposit base and loan portfolio amongst private sector banks and extending guarantees to correspondent banks covering exposure of other local banks under HBL's credit standing with foreign correspondent banks, HBL believe lead the banking sector of Nepal.

d) Everest Bank Ltd.

EBL established in 1994 and started its operation's with its first branch at Naya Baneshwor, Kathmandu with a small capital. Now its Head office is situated Lazimpat Kathmandu with view and objective of extending professionalized and efficient banking services to various segments of the society, EBL joined hands with Panjab National Bank (PNB) India as its joint venture partner in 1997. PNB is the largest public sector Bank of India having 111 years of banking history with more than 4400 offices all over India and is known for its strong systems and procedures and a distinct work culture. Drawing its strength from its joint venture partner. EBL has been steadily growing in its size and operation ever since its inception and today it has established itself as a leading private sector bank of the nation.

1.3 Statement of the Problem

Interest rate is an essential tool in the field of finance and economics. Based on Economic theory, savings increase as increase in interest rate while investment increases as decrease in interest rate. Generally, when interest provided in deposits is very less people keep their surplus funds idle. Same case occurs when interest charge on lending is high the possible investors do not borrow funds for investment. Thus hampering the economic development of country. The interest rate plays important role for the banking development. The favorable investment climate has appropriate interest rate. It is seen that the commercial banks has to shoulder more risk and uncertainty in an investment. The banks gain some profit now as well as they has lot

of risk and bad debts. They are facing the problems on refund of investment as if government owned bank more but in another parts commercial bank were making good profit in competition each other. They are generating new ideas and providing the various facilities to allure the bank customer. The interest is a price of money. The interest rate is different in depositor and lender. That difference in margin is the gain of bank. In earlier day, the interest rate charged and offered by a financial institutions and commercial banks was regulate by central bank, but now these institutions are free to fix their own interest rate. Depositor wants to increase the interest rate because they have invested more money and collect more interest. Likewise, investor wants to decrease the interest rate because they borrowed money from bank at low cost of interest.

Commercial banks can play vital role by adopting effective interest rate policy on deposits and lending for encourage investment in every sector of economy. But it is true that commercial banks are establishes with profit motives and interest rate may affect its profits too. An appropriate interest rate can divert investment in proper field. In short, interest on deposit must be able to increase the amount of deposit by encouraging people to save their income. On the other hand, the lending rate of interest must be attractive to the borrowers, that they will be able to enjoy benefits by utilizing borrowed fund. This is possible only when the fund-seeking people will be able to earn more than what they pay as interest on borrowing funds. But, whether our country is able to attain such situations or not is a matter of concern for us. Based on discussion made, this study attempts to answer the following questions.

1. What are the interest rate structures of commercial banks in Nepal?
2. What is the relationship of interest rate with deposit amount and lending amount of commercial banks?
3. Is the interest rate on deposit of commercial Banks can attract to the depositors?
4. Is the lending rate of commercial banks can attract to the borrower or investor?
5. Is the interest rate spread satisfactory or not?

1.6 Objectives of the Study

The main objectives of this study is to know the overall influence of interest rate on deposit and lending of commercial banks as well as to identify whether the interest

rate spread is satisfactory or not. Besides this, the other specific objectives are as given below.

- To analyze the interest rate structure of commercial banks.
- To study the influence (i.e. relationship) of interest rate to deposit amount in sample banks.
- To explore the sensitivity of interest rate to the lending amount.
- To examine the position of interest rate spread and loan and advance ratio of sample Commercial banks.

1.5 Significance of the Study

Interest is simply the price-borrowed fund. Higher interest generally brings a lending investment. Lower interest rate on the other hand discourages the saving and encourages the investment. Higher the inflation, higher will be the interest rate. The theory may or may not come true in context of developing country like Nepal as most of the theories of financial markets and institutions are determined and developed by the study conducted by developed countries.

Many studies have been made in various topics related to financial management. The topic being an important aspect for the economic development of the country has not been much emphasized, so this study has been done to be familiar with interest rate structure of commercial banks and to know whether it influences deposits and loans. It is crucial task of top-level management to fix interest rate. Even though people have more saving and even need more money for investments, are not they usually familiar with the interest rate structure of banks. In this study, major functions of commercial banks will be analyzed by using various mechanisms. Since this study deals with the part of the managerial function. It is hoped in some extent this study will help the policy makers to formulate strong policy regarding interest rate charged on deposits and lending in Nepalese context. This study will also be useful to various parties such as further researcher, students, teachers, financial institutions, investor, business organization, and general individual to get useful information about interest rate deposits and lending.

1.6 Limitation of the Study

This study will be limit by the following factors.

- This study includes only four commercial banks (NABIL, BOK, HBL and EBL) as sample for this study.
- This study is base on the data from Fiscal year 2004 to 2010.
- The reliability of this study depends upon the information provided by commercial banks and published data.
- Study ignores other financial institutions other then sample banks.
- Most of the data used in study are of secondary type.
- Many factors affect the deposit and lending of Commercial banks. However, this study is focuses on the interest rate only.

1.7 Organization of the Study

This study is organized into five chapters. Each chapter concentrates to some aspects of the study of ‘Interest rate structure and its influence on deposit and lending of commercial banks in Nepal’. The rationale behind this kind of schemes is to follow a simple research methodology approach. The contents of each parts of this study are briefly mentioned below:

Chapter - I: - Introduction

Chapter - II: - Review of Literature

Chapter -III: - Research Methodology

Chapter - IV: - Data Presentation and Analysis

Chapter - V: - Summary, Conclusion and Recommendation

First chapter includes the introduction part of the study. This chapter deals with the general introductions, problem statement, focus and objectives of the study, limitation of the study and organization of the study.

The second chapter provides an understanding of the subject matter and gives on insight of past studies until date. It is divided into conceptual /theoretical review and review of related studies.

The third chapter describes about the research design, sample selection, sources of data, data collection procedure, and tools for analysis of study, which are planned for conducting this study.

The fourth chapter deals with the presentation and analysis of collected data and information. The generated results after the application of research method on data are analyzed and interpreted in this chapter.

The fifth chapter deals with the summary, conclusion and recommendations. In this chapter, the major findings of the study are elucidated. The summary of entire study is comprised. Conclusion of the study is also included in this chapter. As well as, possible and viable recommendations is presented in this chapter.

Bibliography, appendixes and other related materials are presented at the last of the thesis report.

CHAPTER - II

REVIEW OF LITERATURE

This part of study deals with review of past literature and research made in the country and across. Review of literature is divide in to,

- Theoretical Review
- Concept of deposit
- Concept of Lending
- Review of Previous Thesis

2.1 Theoretical Review

This part of study deals with concept of commercial banks, meaning of interest, interest rate level, theories of interest rate , factor affecting interest rates etc.

2.1.3 Concept of Commercial Bank

Commercial banks are the major financial institutions. It occupies the an important place in the framework of every economy because they provide capital for the development of industry, trade and business and other resource deficit sectors by investing the saving collected as deposits. Besides these commercial banks renders numerous services to their customer in views of facilitating their economic and social life. Commercial banks has become the heart of financial system (Shrestha, 2009).

Bank is a financial intermediary accepting deposits and granting loans, it offer the widest menu of services provide by any financial institutions (Rose, 2003:4).

A commercial bank is a corporation, which accepts demand deposits subject to cheque and makes short-term loans to business enterprises, regardless of the scope of its other services (American Institute of Banking, 1972:345).

According to The Commercial Bank Act of Nepal 2031” A commercial bank is a bank, which deals in exchanging currency, accepting deposits, giving loans and doing commercial transaction”.

Commercial bank is engaged in performing the routine banking business of accepting the deposits of public and granting loans. A commercial bank receives money from the depositors and lends it to trade, commerce and industry. Commercial bank allows its customers to draw cheque against their deposits. In addition to the primary function of receiving deposits and lending, to it also takes a wide variety of function like collection of cheque, bills, dividends, payment of insurance premium, subscription, rent, and salary, transfer of fund, purchase and sale of securities etc on behalf of customer. Apart from the agency functions, the banker also provides certain general utility services like safe custody deposits and safe deposits locker facilities, issuing of traveler's cheque, credit cards, debits cards, ATM, LC, gift cheque or vouchers. It can also act as a referee and guarantor of its customers.

The role of banks is more significant in financing the private sector. It is true that the growth of private sectors solely depends upon banking. Banking is the mother industry that caters to the development of industry, trade and commerce. In a rapid developing economy, the banker has to play a more effective role in national reconstruction. After all banking can be said to be the basic activity in planning. Bank advances and investments are indicatives of the role played by them in the economic development of the country (Kohn, 1999).

2.1.4 Concept of Interest Rate

As we know that interest rate is one of the important variables in economics and finance. Generally payment made by a borrower to the lender for the money borrowed and is expressed as a rate percent per year is simply known as interest. But in economics widely different views have been put forth from the time to Aristotle to present day. Aristotle recognized only animal husbandry and stock rising as two legitimate industries whose product could be lent and interest earned on them.

An interest rate is the rate at which interest is paid by a borrower for the use of money that they borrow from a lender. For example, a small company borrows capital from a bank to buy new assets for their business, and in return the lender receives interest at a predetermined interest rate for deferring the use of funds and instead lending it to the borrower. Interest rates are normally expressed as a percentage rate over the period of one year.

A rate which is charged or paid for the use of money. An interest rate is often expressed as an annual percentage of the principal. It is calculated by dividing the amount of interest by the amount of principal. Interest is a payment for the use of money. Therefore, when savers deposit their savings in banks bank pays certain amount of interest on saving amount because it uses same money to lend other customers. The interest rate is the price charged to borrower for the loan of money. This price is unique because it is a price of credit but unlike other prices in the economy the rate of interest is really a ratio of a two quantities: the total required fee a borrower must pay a lender to obtain the use of credit for a stipulated period divided by the amount of credit actually made available to the borrower.

Interest is also payment for uses of money people must pay interest in borrow money. Banks and financial institutions pay interest for borrowed money and they charged interest to lender for invested amount. Interest bearing is the cost at used lending money. Interest rate is a medium of collecting funds for lending money. It is the cost of holding period at a specific time. It is also called compensation for the used of borrowed funds.

As a financial intermediary commercial banks and finance companies as well as government should take care about interest rate so that idle saving can be utilize for investment in productive sectors of the economy, employment, income, as well as whole economy may rise.

Interest rate in the free market economy is determined by the free interplay of the demand and supply forces. Although interest rate is mainly influenced by various factors are demand and supply of lonable fund. If supply increases and demand remains constant, interest rates in the market decrease. Similarly, if demand for loanable fund increases and supply remain constant, interest rates in the market increase. However, Nepalese economy has not yet developed to that level such that free market can determine the interest rates (Shrestha, 2009).

Nepal Rastra Bank as a guardian, fixes the terms had conditions regarding the interest and other activities of financial institutions in Nepal. Nevertheless, recent years banks are permitted to fix the interest rate they charge and offer on loan and deposits. As carver said, interest is the income, which goes to the owner of capital.

According to Prof. Wicksell, "Interest is payment made by the borrowers of capital by virtue of its productivity as a reward for his (capitalist's) abstinence."

Interest is the amount paid to the creditor in return to a debt borrowed by a debtor for a fixed period at time. As the reward of their factors of production, this market is also a reward of other factor of production this interest is also a reward paid to the capitalist for the use of capital.

According to the classical economists, it is only by postponing consumption that capital can be created since to abstain consumption is disagreeable and painful or the lender is paid in the form of interest. The people abstain consumption they save and thus interest becomes the reward for saving. Saving, however doesn't involve sacrifice of abstinence on the path of rich. To avoid the fallacy, Marshall substituted the word 'waiting' for abstinence and thus interest is than rewarded for waiting.

The Austrians led by John Roe and Bohm Bawerk and followed by Fisher in American Considered interest to be the premium for time preference. People prefer present to the future and hence they attach more importance to present goods. In order to induce them to postpone enjoyment of goods from the present to future, they must be compensated in the form of interest. Interest is thus the difference between the present enjoyment and future enjoyment of same goods.

The neo-classical economists, however, define it as the price for the use of loanable funds. But the modern economists in their effort to avoid these divergent and controversial views about the nature of interest, have explained it in terms of productivity, saving, liquidity preference and money. In other words, interest is simultaneously the reward for the pure yield of capital, for saving, for the foregoing of liquidity and the supply of money.

- Gross and pure interest: The payment which the borrower makes to lender excluding the principal is gross interest. Net interest is the payment for the use of capital or money only. It is normally the same, during a period of time even in different markets.

- Reward for risk taking: The Lender exposes himself to risk when he/she lends money. Gross interest includes the reward for risk-taking. The greater the risk element the higher will be the rate of gross interest. Unsecured loans are more risky than secured loans and they carry high premium rate i.e. interest rate.
- Reward for inconvenience: when a lender loans money he/she forgoes its use for the duration of the loan. His/her money is locked up and cannot be used for money profitable purpose of , if he/she needs this amount for his personal use, he/she will have to undergo the inconvenience of arranging it from some other sources. In fixing the rate of interest the lender includes in it the reward for such inconvenience.
- Reward for management: The lender has to incur expenditure in keeping proper accounts of the borrowers. He/she buys account books and even maintains staff. He/She has to remind the borrowers and sometimes has to file a suit for the recovery of loans. The payment that the lender receives from the borrower also includes the expenses for management.
- Pure interest is what remains with the lender after deducting the reward for risk taking, management and inconvenience from gross interest.

2.1.3 Interest Rate Levels

Funds are allocated among the borrowers by interest rate, firms with the most profitable investment opportunities are willing and able to pay the most for capital, so they tend to attract it away from less efficient firms or from those whose products are not in demand. Of course, our country is not completely free in the sense at being influenced only by market forces. The federal government has agencies that help designated individuals or groups obtain credit favorable terms among those eligible for this kind of assistance are small businesses, certain minorities and firms willing to build plants in areas with high unemployment. Still most capital in the use is allocated through the price system.

2.1.4 Functions of the Rate of Interest in the Economy

The rate of interest performs several important functions in the economy.

- It helps to guarantee that current savings will flow into investment to promote economic growth.

- It relates the available supply of credit, generally providing loan able funds to those investment projects with the highest expected returns.
- It brings balance the supply of money with the public's demand for money (Rose, 2003:113).

It is also an important tool of government policy through its influence government meridians control over the volume of saving and investment. If the economy is growing too slowly and unemployment is rising. The government can use this tool to lower interest rates in order to stimulate borrowing and investment and accelerate the production and development. On the other hand, an economy experiencing rapid inflation has traditionally called for a government policy of higher interest rates to slow both borrowing and spending.

2.1.5 Theories of Interest Rate

Various interest rate theories have been propounded by various economists, which describe how interest rate is determined in various situations. There are variations of interest rates in financial market which is due to the risk premium associated with the issuer. Even securities issued by the same borrowers often carry a variety of interest rates. In this section, we focus upon those basic forces that influence the level of different interest rates.

To uncover these basic rate determination forces, simplified assumption is made. It is assumed that there is one fundamental interest rate in the economy known as the pure or real rate of interest, which is the component of all interest rates. The closest approximation to this pure rate in the real world is the market yield on the government bonds minus inflation. The rate of interest of treasury bond is called risk free rate of interest, which consists of real rate of interest plus premium for inflation. It is a rate of return presenting no risk of financial loss to the investor and representing the opportunity cost of holding idle cash because the investor can always invest in no risk bonds and earn this minimum rate of return. Once pure rate of interest is determined, all other interest rates may be determined from it by examining the expected future inflation and special characteristics of the securities of the securities issued by individual borrowers. For example, only the government can borrow at risk free interstate, other borrowers pay higher rates due to the greater risk of loss attached to their securities.

Once the pure interest rate is determined, all other interest rates may be determined from it by examining the special characteristics of the securities issued by individual borrowers. For example, only the government can borrow at approximately the pure or risk-free interest rate other borrowers pay higher than this rate due to the higher risk of losses attached to their securities. Difference in liquidity, marketability, and maturity are other important factors causing interest rates to differ from the pure or risk-free rate. First, however, we must examine the forces that determine the pure or risk free interest rate itself. 5 Various theories have been propounded by various economists in different time explaining the pure/risk-free interest rates. All these theories of interest rate include the notion of inflation, i.e., the decrease in purchasing power of money (Johnson, 1993).

Difference in liquidity marketability and maturities are other important factors causing interest rate to differ from the pure or risk free rates some well-known theories interest rates are as follows.

2.1.5.1 The Classical Theory of Interest Rates

One of the oldest, theories concerning the determinants of the pure or risk free interest rate is the classical theory of interest rates, developed during 18th and 19th. Centuries by a number of British economists and elaborated by Irving fisher (1930) earlier in this century. The classical theory argues that the interest is determined by two forces first is supply of savings, derived mainly from households and second the demand for investment capital, coming mainly from the business sector.

Supply of Saving

Savings by Households

Individuals and families carry out most of the saving in modern industrialized economics. For these households, saving is simply abstinence from consumption of current savings. It is therefore equal to the difference between current income and current consumption expenditures. In making this decision on the timing and amount of saving to be done, households typically, consider several factors: the size of current and long-term income, the desired savings target, and the desired proportion of income to be set aside in the form of savings (i.e. the propensity to save). Generally, the volume of household savings rises with income. Higher income families and

individuals tend to save more and consume less relative to their total income than families with lower income. Although income levels probably dominate saving decisions, interest rates also play an important part. Interest rates affect an individual's choice between current consumption and saving for future consumption. The classical theory of interest assumes that individuals have a definite time preference for current enjoyment of goods and services over future enjoyment. Therefore, the only way to encourage an individual or family to consume less now and save more is offer a higher rate of interest on current savings. If more were saved in the current period at a higher rate of return, future consumption and future enjoyment would be increased. Higher interest rates increase the attractiveness of saving relative to spending, encouraging more individuals to substitute current saving and future consumption, for some quantity between interest rates and the volume of savings. Higher interest rates bring forth a greater current volume of savings (Joshi, 2006).

Saving by Business Firms

Not only households but also business firms save. Most businesses hold savings balances in the form of retained earnings (as reflected in their equity or net worth accounts). In fact, the increase in retained earnings reported by business each year is a key measure of the volume of current business saving, which supplies most of the money for annual investment spending by business firms.

The critical element determining the amount of business savings is the level of business profits. If profits are expected to rise, businesses will be able to draw more heavily on earnings and capital markets for funds. The result is a reduction in the demand for credit and a tendency toward lower interest rates. In the other hand, when profits fall but firms do not cut back on their investment plans, they are forced to make heavier use of money and capital markets for investment funds. The demand for credit rises, and interest rates may rise as well (Joshi, 2006).

Although the principal determinant of business saving is profits, interest rates also play a role in the decision of what proportion of current operating costs and long term investment expenditures should be financed internally and what proportion externally. Higher interest rates in the money and capital markets typically encourage firms to use internally generated funds more heavily in financing projects, conversely, lower

interest rates encourage greater use of external funds from the money and capital markets.

Saving by Government

Government saving appears to be unintended saving that arises when government receipts unexpectedly exceed the actual amounts of expenditures. Government saves less regularly than households and businesses. Income flows in the economy (out of which government tax revenues arise) and the timing of government spending programs are the dominant factors affecting government savings.

The Demand for Investment Funds

The savings made by business government and households are important determinants of interest rate but they are only one side. The other side is investment spending made by business firms, government and in some cases households. Business requires huge amount of funds each year to purchase equipment, machinery and inventories and to support the construction of new buildings and other physical facilities.

The majority of business expenditures for these purposes consist of what economists call replacement investment. However, according to classical economist, interest rate and investable fund have inverse relationship. At low rates of interest more investment projects become economically viable and the other hand, if the rate of interest rises to high levels, fewer investment projects will be pursued and fewer funds will be required from the financial markets (Samuelson and Nordhus, 1999).

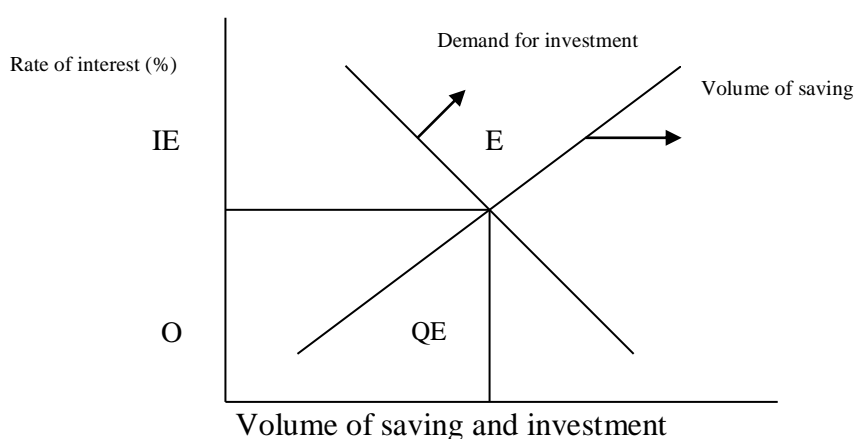
The Equilibrium Rate of Interest in the Classical Theory of Interest

In classical economy the interest rates in the financial markets are determined by the interplay of the supply specifically; the equilibrium rate of interest is determined at the point where the quantity of savings supplied to the market is exactly equal to the quantity of funds demanded for investment.

The market rate of interest moves towards its equilibrium level increases supply and demand forces change so fast that the interest rate rarely has an opportunity to settle in at a specific equilibrium level. At any given time, the rate is probably above or below its true equilibrium level but moving toward that equilibrium. If the market rate is

temporarily above equilibrium, the volume of savings exceeds the demand for investment capital creating an excess supply of savings savers will offer fund at lower and lower rates until the market interest rate approaches equilibrium. Similarly, if the market rate is temporarily below equilibrium, investment demand exceeds the quantity at saving available. Business firm will bid up interest rate until it approaches the level at which the quantity saved equals to quantity of funds demanded for investment purpose.

Figure 2.1
Equilibrium Rate of Interest in the Classical Theory



(Source: Rose, 1997:213)

2.1.5.2 The Liquidity Preference Theory of Interest Rate

In this theory, the main theme is the supply and demand for loanable funds (i.e. lending & borrowing) determines the interest rate. This explanation emphasizes the flow of funds by suppliers of loanable funds (lenders) and the flow of funds by the demanders of loanable funds (borrowers). It is a monetary theory of interest since it focuses on the financial factors that influence interest rates (i.e. borrowing and lending). In addition, the loanable fund theory is a short-run, partial equilibrium explanation in which some factors produce a change in the interest rate, but there is no analysis of the long-run impact of this change in the interest rate and on the level of employment, income, and production of the resulting impact of changes in employment, income and production on the interest rate. Rather, the loanable fund theory focuses on the factors that underlay the supply and demand schedules for loanable funds and on their interaction (Samuelson and Nordhus ,1999).

2.1.5.3 The Loanable Fund Theory of Interest Rate

A view that overcomes many of the limitations of earlier theory is the loanable funds theory of interest rate. This view argues that the risk free rate is determined by the interplay of two forces the demand for and supply of credit (loanable funds). The demand for loanable funds consists of credit demands from domestic businesses, consumers and governments and borrowing in the domestic market by foreigners. The supply of loanable funds stems from four sources via Domestic savings, hoarding demand for money, money creation by the banking system, and lending in the domestic market by foreign individuals and institutions.

The classical theory of interest has been called a long-term exploration of interest rates because it focuses on the public's thrift habits and the productivity of capital-factors that tend to change slowly. During the 1930s, British economist John Maynard Keynes (1936) developed a short-term theory of the rate of interest that, he argued, was more relevant for policy makers and for explaining near-term changes in interest rates. This theory is known as the liquidity preference theory of interest rates. Interest rate under this theory is determined by the interplay for demand and supply of liquidity (Rose, 1997: 2000).

The Demand for Liquidity

Keynes argued that the rate of interest is really a payment for the use of resource, money. Business and individual prefers to hold money for carrying out daily transactions and also as a precaution against future cash needs even though its yield is low or nonexistent. Investors in fixed income-securities, such as corporate and government bonds, frequently desire to hold money as a haven against declining security prices. Interest rates, therefore, are the prices that must be paid to induce money holder to surrender a perfectly liquid assets and hold other assets that carry more risk. At times the preference for liquidity grows very strong. Unless the government expands the money supply, interest rates will rise.

In the theory of liquidity preference, only two outlets for investor funds are considered: bonds and money (including bank deposits). Money provides perfect liquidity (instant spending power); bonds pay interest but cannot be spent until converted into cash. If interest ratio rises, the market value of loans paying a fixed

rate of interest falls; the investor could suffer a capital loss if those bonds were converted into. on the other hand , a fall in interest rates results in higher bond prices the bond holder will experience a capital gain if his or her bonds are sold for cash. According to classical theorists, it is irrational to hold money because it provided little or no return. To Keynes, however, the holding of money could be a perfectly rational act if interest rates were expected to rise, because rising rates can result in substantial losses for investors in bond. Keynes observed that the public demand money fro three different purposes. The transaction motive represents the demand for money to purchase goods and services.

Some money also must be held as a reserve for future emergencies and to cover extraordinary expresses. The speculative motive arise we live in a world of uncertainty and cannot predict exactly what expenses or opportunities will arise in the future. Short- term changes in the interest rates were attributed by Keynes to a third motive for holding money- the speculative motive that stems from uncertainty about the future prices of bond. Keynes assumed that money demanded for transaction and precautionary purposes is dependent on level of national income, business sales, and prices whereas money demanded for speculative motive is dependent on short-term interest rate. Therefore, the total demand for money in the economy is simply the sum of transactions, precautionary, and speculative demands.

The Supply of Money

Another major element determining interest rates in liquidity preference theory is the supply of money. In modern economies, the money supply id controlled, or at least closely regulated by government. Because government decisions concerning the size of the money supply presumable and guided by the public welfare, not by the level of interest rate, we assume that the supply of money is inelastic with respect to the rate of interest.

The Demand for Loan able Funds Consumer (Household) Demand for Loan able Found

Domestic consumers demand loan able funds to purchase a wide variety of goods and services on credit. Recent research indicates that consumers are not particularly

responsive to the rate interest when they seek credit but focus installment payments, maturity and size of installment payments (Joshi, 2006).

Domestic Business Demand for Loadable Funds

The credit demands of domestic business generally are more repressive to changes in the rate of interest than in consumer borrowing. Most business credit is for such investment purposes as the purchase of inventories and new plant and equipment. The Quantity of loan able funds demanded by the business sector increases as the rat of interest falls (Joshi, 2006).

Government Demand for Loadable Funds

Government demand for loadable funds is a growing factor in the financial markets but does not depend on the level of interest rates. Government decision on spending and borrowing depends in response to social needs and the public welfare not the rate of interest. Moreover in case of central government, it has power both to tax and to create demand on the other hand, is slightly inelastic their borrowing activities by legal interest rate ceilings. When open market rate rises above the ceiling, some state and local governments are prevent from offering their securities to the public.

Total Demand for Loadable Funds

The total demand for the loan able fund is the sum of domestic consumer, business and government credit demands. These demand curve slopes downward and to the right with respect to the rate of interest. Higher rate of interest lead some business, consumers and governments to cartel their borrowing plans, lower rates forth more credit demand (Joshi, 2006).

Supply of Loan able Funds

The major sources of supply of loadable fund are from two sources.

1. The amount of saving by households, business, governments,
2. The amount of new money creates by the commercial banking system.

Domestic Saving

Saving refers to the post provident of current consumptions. The decision to save is the decision to forget current consumption in order to have a larger quantity of

consumption the future. Individual or household save for a variety of reasons but there is little evidence to suggest that the quantity of loan able funds supplied through saving is clearly influence by the level of the interest rate. A higher interest rate represents a greater reward to saver for postponing current consumption and thus might be expect to produce a higher quantity of savings some individuals. In general case, the quantity of saving of saving supplied by individuals is principally determined by the level of income and it is influenced to lesser degree by the level of interest rates. Business saving refers the net income after takes of the firm, less any cash dividends i.e. retained earnings. There is little reason to believe that the volume of saving at business firm is strongly influence by the level of interest rates. For government, the volume of saving is define as the difference between revenues and expenditures. Such that saving exists when revenues exceed expenditure (budget surplus).

Creation of New Money

Although the volume of savings is the principal source of loan able fund in the financial markets, the supply of the loadable funds may be increase through the creation of new money beyond the amount made possible by current saving. The amount of new money created is determine jointly by the actions of commercial banking system and the central bank loans, purchase securities, and create to make through the credit creation process. However, the ability of commercial bank to create money is limited by the central banks using its monetary policy tools like open market operations, reserve requirement changes and discount rate changes.

Total Supply of Loadable Funds

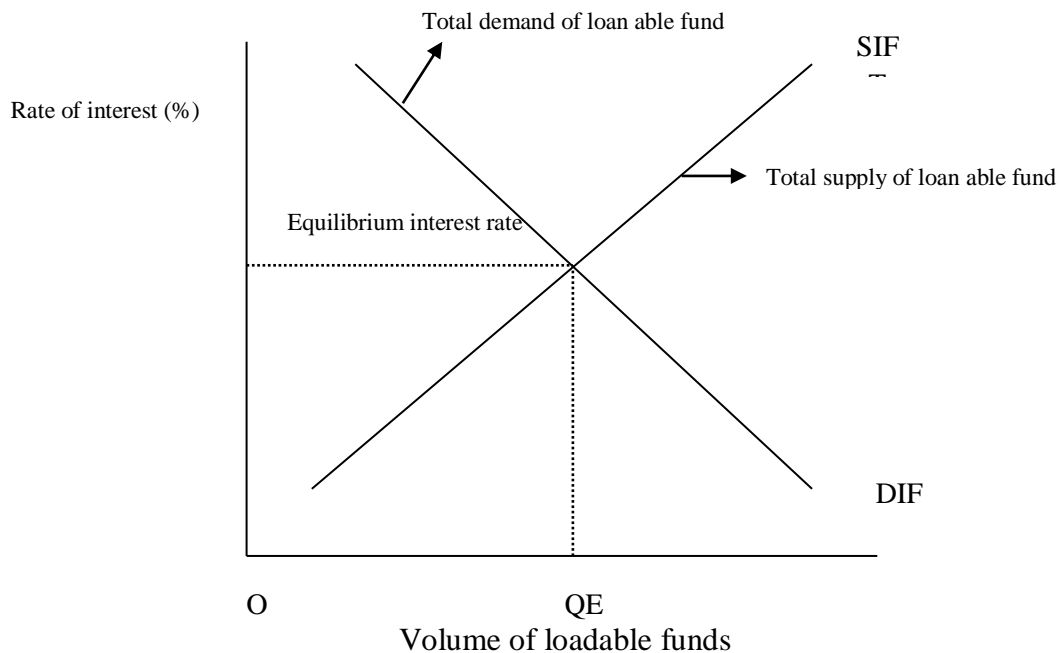
The total supply of loadable funds including domestic saving, foreign lending, disharding of money, and new credit created by the domestic banking system.

The Equilibrium Rate of Interest in the Loan able Fund Theory

The two forces of supply and demand for loan able funds determine not only the volume of lending and borrowing going on in the economy but also the rate of interest. The interest rate tends toward the equilibrium point at which the supply of loan able funds. This point of equilibrium is shown in the following figure where it is the equilibrium rate of interest rate and QE is volume of loan able funds (credit)

Figure 2.2

The Equilibrium Rate of Interest in Loadable Funds Theory



(Source: Rose, 1998:203)

In the figure 2.2 DT stand as a total demand of loan able fund and the ST refer supply at the loan able fund, if the interest rate is temporarily above equilibrium, the quantity of loan able funds supplied by domestic savers and foreign lenders, by the banking system and from the disordering of money exceeds the total demand for learnable funds, and the rate of interest will be bid down on the other hand, if the interest rate is temporarily below equilibrium loan able funds demand will exceed the supply. Borrower will build up the interest rate until it settles at equilibrium once again.

2.1.5.4 Rational Expectancy Theory of Interest

The rational expectancy theory assumes that equilibrium interest rate depends upon the changes in investor's expectation regarding future security prices and return. Investor's decision towards the borrowing and lending funds come from the availability of new information. When new information appears about investment, saving or the money supply, investors begin immediately to translate that new information into decisions to borrow and lend funds. So rapid is the process of the market digesting new information that security prices and interest rates presumably impound the new data from virtually, the moment they appear. In absence of new

information, next period's interest rate. In other words the knowledge of past interest rate will not be a reliable foresaid of future interest rate. In a perfectly efficient market, it is impossible to win excess returns continuously by trading on publicly available information (Joshi, 2006).

The important assumptions and conclusions of the rational expectation theory are that:

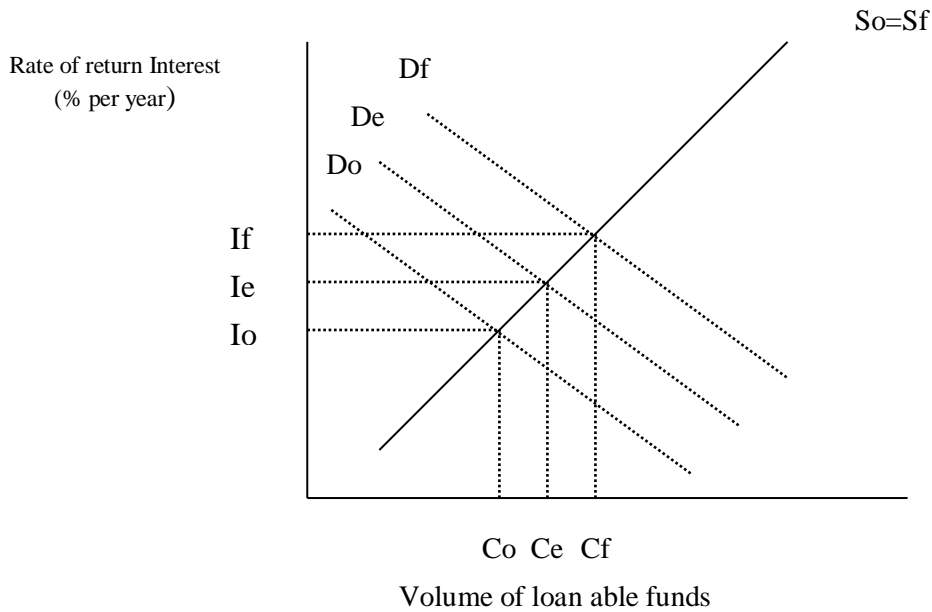
- The price of securities and interest rates should reflect all available information and the market uses all this information to establish a probability distribution expected future prices and interest rates.
- Changes in rates and security prices are correlated only with unanticipated, not anticipated information.
- The correlation between rates of return in successive time periods is zero.
- No unexploited opportunities for profit (above a normal return) can be found securities' market.
- Transaction and storage costs for securities are negligible and information costs small relative to the value of securities traded.
- Expectation concerning future security prices and interest rates are formed rationally and efficiently.

If the money and capital markets are highly efficient in the way we have described, this implies that interest rate will always be at or very near their equilibrium levels. Any deviations from the equilibrium rate dictated by demand and supply forces will be almost instantly eliminated by security trader who hope to consistently earn windfall profit from correctly guessing whether interest rates are 'too high'(and therefore will probably rise) are unlikely to be successful in the long run. Interest rates fluctuations around equilibrium are likely to be random and momentary. If market participants were expecting increased demand for credit (with supply unchanged), an unexpected announcement of reduced credit demand implies lower interest rates in the future. Similarly, a market expectation of less credit demands in the future (with supply unchanged), a market expectation of less credit demands in the future (with supply unchanged); implies that interest rate will rise. We can illustrate the foregoing points about the rational expectation theory of interest by modifying the loanable funds theory of interest so that its demand and supply schedules reflect not just actual

demand and supply but also the expected demand for and supply of loan able funds. The following figure depicts the equilibrium rate of interest under rational expectation theory. 'Do' and 'so' reflect the actual demand and supply of loan able funds in current period, while 'Df' reflects the actual demand for loan able funds that will prevail in the next (future) time period. The supply of loan able funds is assumed to be the same in both time periods. (So=Sf).

Figure 2.3

Equilibrium Interest Rates Under Rational Expectation Theory



Now imagine that the current period, the government makes an unexpected announcement of its increased need to more money in future period 'F' but due to an usually large budget deficit. The result is as a new expected demand for loan able funds curve 'De', projected to prevail in the next future period 'F' but as viewed by borrowers and lenders today in time period 'O'. In this case, the equilibrium interest rate in the current period will not be 'Io', but rather 'Ie', where the expected demand curve 'De' intercepts the actual the actual supply curve. 'So', the equilibrium quantity of loan able funds traded in the current period then will be 'Ce' not 'Co'. This is because, according to the rational expectation theory, borrowers and lenders will act as rational agents, using all the information they posses (including expected events) to price financial assets today. When the future periods arrives, the equilibrium interest rate will rise to rate 'if' and the quantity of loan able funds traded then will be 'Df'. The equilibrium rate moves upward because the demanded for loan able funds in

period 'F' is more than expected future loan able- funds demanded as seen by market participants in period 'O'.

Suppose, on the other hand, that actual loan able-funds demanded in period 'F' increases upward and beyond 'Do' but by a smaller amount than was anticipated by investors in the market in the market in period 'O'. Demand schedule 'Df' would then fall somewhere between 'Do' and 'De'. The equilibrium interest rate (with supply curve unchanged) would be lower than i.e. laying somewhere between 'Io' and 'Ie'.

2.1.6 Change in Interest and its Influence upon Volume of an Asset

The prices of a security and its yield or rate of return or interest rate are inversely related. A rise in interest rate implies a decline in price; conversely, a fall in yield is associated with a rise in the security's price.

The investing funds in financial asset can be viewed from two different perspectives, the borrowing and lending of money or the buying and selling of securities. The equilibrium rate of interest from the lending of funds can be determined by the interaction of the supply of loan able funds and the demand for loan able funds. Demanders of loan able funds (borrowers) supply securities to the financial market place, and suppliers of loan able funds (lenders) demand securities as on investment. Therefore; the equilibrium rate of return or yield on security and the equilibrium price of that security are detraind at the same instant and are simply different aspects of the same phenomenon, the borrowing and lending of loan able funds.

The inverse relationship between interest rates and security prices can be seen quite clearly, when we allow the supply and demand curves to change. For example, in the face of continuing inflation, consumers and business firms accelerate their borrowings, increasing the demand for loan able curves slides upward and to the right with the supply of loan able funds unchanged. This increasing demand for loan able funds also means that the supply curve. Both a new loan able equilibrium price for securities and higher equilibrium interest rate for loan able funds results.

Conversely suppose consumers decide to save more expanding the supply of loan able funds, then the supply of loan able funds curve slide downward. But with more

savings, the demand for securities curve must rise, sliding upward as those added savings are invested in securities. The result is a rise in the equilibrium price of securities and a decline in the equilibrium interest rate.

2.1.7 Factors Affecting Interest Rates

In the preceding section, we examined the factors that cause the interest rate or yield on one security to be different from the interest rate yield on another. These factors included the maturity period or term of a loan and expected inflation. In this section, our focus is upon to learn why not one but, in fact, thousands of different interest rates exist in the economy.

a) Marketability

One of the most important considerations for an investor is whether a market exists for those assets he/she would like to acquire. Can an asset be sold quickly, or must the investor wait sometime before suitable buyers can be found? This is the question of marketability and financial instruments vary widely in terms of the ease and speed with which they can be converted into cash. Investors (lenders) are conscious about the marketability of securities and if security is less marketable, they seek compensation for that inconvenience (i.e. waiting for the securities to be converted into cash). Therefore a less marketable security carries higher interest rate while a readily marketable security carries relatively a smaller interest rate.

Marketability is positively related to size (total sale or total assets) and reputation of the institution issuing the securities and to the number of similar securities outstanding. Marketability is a decided advantage to the security purchaser (lender of funds). In contrast, the issuer of securities is not particularly concerned about any difficulties, the purchaser may encounter in the resale (secondary) market unless lack of marketability significantly influences securities sales in the primary market.

b) Default Risk

Another important factor causing interest rate to differ one from another is the degree of default risk carried by individual securities. Investor's securities face many different kinds of risk, but one of the most important is default risk-the risk that a borrower will not make all promised payments at the agreed-upon times. All

securities except government securities are subject to varying degree of default risk. The yield on a risky security is positively related to the risk of borrower default as perceived by investor's yield on risky security.

Yield on Risky Security = Risk-Free Rate of Interest + Default Risk Premium

The higher the default risk associated with a risky security, the higher the default risk premium on that security and greater the required rate of return (yield) that must be attached to the security as demanded by investors in the market place. Any adverse development, such as a downturn in economy or serious financial difficulties that makes a borrower appear riskier will lead the market to assign a higher default risk premium to his security. And if risk-free rate remains unchanged, the security's risky yield must rise and its price must decline.

c) Prepayment Risk

Many corporate bonds and mortgages, most municipal bonds, and some government bonds issued in today's financial markets carry a call privilege. This provision of bonds contract (indenture) grants the borrowers the option to retire all or a portion of a bond issue by buying back the securities in advance of maturity. The call privilege is an advantage to the security issuer because it grants greater financial flexibility and the potential for reducing future interest costs. On the other hand, the call privilege is a distinct disadvantage to the security buyer, who may suffer a decline in expected holding-period yield of the security is called. Therefore, securities that carry a call privilege generally set at lower prices and higher interest rates than non callable securities moreover; there is an inverse relationship between the length of the call deferment period and the required rate of interest on callable securities. The longer the period of deferment and, therefore, the longer the investor is protected against early redemption, the lower the interest rate the borrower must pay (Rose, 2003:287).

d) Servicing Cost

Some financial claims are difficult to service. This means that the process of collecting interest and principal payments providing accurate records or monitoring the ongoing credit position of the borrowing involves considerable operating costs.

Lenders must be compensated for the servicing costs. This cost is included in the interest rate charged and is referred to as the servicing cost (Thygerson, 1995).

e) Exchange Rate Risk

Today's financial markets have become more global, there has been a significant growth in the borrowing and investment in foreign financial claims. A US company establishing manufacturing facility in Nepal might be inclined to issue shares and or bonds denominated in Nepalese rupees rather than US dollars. Investors also have available to them many investments involve exchange rate risk. This risk relates to the possibility that the rate of exchange between the domestic currency and foreign denominated currency will than go because of numbers of factors. The primary risk for this borrower is that the values of the currency borrowed rises in relation to the domestic currency. This result in an unexpected cost on the international loans, since the loan would have to be repaid in the foreign currency that has risen in value relate to the domestic. This potential change in currency values must be reflected in computing the cost of borrowing (Sheatha, 2009).

f) Call Privileges

Many corporate bonds and mortgages all most all municipal revenue bonds and some government bonds issued in today's financial markets carry a call privilege. This provision of the bond contract grants that the borrower has the option to restore all or a portion of a bond issued by buying back the securities in advance of maturity. Bondholders usually are informed of a call through a notice in a newspaper of general circulation, while holders of record of registered bonds are mortified directly. Normally when the call privilege is exercised, the issuer will pay the investor the call price, which equals the securities face name plus a call the size of the call penalty is set forth in the indentures and generally varies inversely with the number of years remaining to maturity and the length of the call deferment period. In the case of a bond, one year's worth of coupon income is often the minimum call penalty required (Thapa, 2008).

g) Taxability

The final factor influencing the change in interest rate is taxability. Financial claim income is typically subject to taxation. Taxes imposed by federal, state, and local

governments have a profound effect on the returns earned by investors on financial assets. Since the value of financial claim subject to taxation is based on its anticipated cash flow, taxation acts to reduce those cash flows. Not all incomes are taxable equally. Thus, higher the tax lower will be the cash flow and higher the interest rate and vice versa (Thapa, 2008).

2.2 Deposit

2.2.1 Concept of Deposit

Deposit is the sum of money lodged with bank, discount house or other financial institutions. Deposit is nothing more than the assets of an individual that is given to the bank for safekeeping with an obligation to get something (interest) from it. To a bank, these deposits are liabilities. Commercial bank Act 2031 defines "Deposits" as the amount deposited in a current, savings or fixed accounts of a bank or financial institution. The deposits are subject to withdrawals by means of cheque on a short notice by customers. There are several restrictions on these deposits, regarding the amount of deposit, number of withdraw etc. These are considered more as investments and hence they earn some interest. The rate of interest varies according to the nature of deposits. The bank attracts deposits from customers by offering different rates of interest and different kinds of facilities. Though the bank plays an important role in influencing the customer to part with his funds and open deposit accounts with it, it is ultimately the customer who decides whether she/he should deposit his surplus funds in current deposit a/c, saving deposit a/c. or fixed deposit all. Bank deposits arise in two ways. When the banker receives cash, it credits the customer's account, it is known as primary or a simple deposit. People deposit cash in the banking system and there by convert one form of money, cash, into another form, bank money. They prefer to keep their money in deposit primary accounts and issue cheques against them to their creditors. Deposits also arise when customers are granted accommodation in the form of loans when a bank grants a loan to a customer it doesn't usually pay cash but simply credits the customer's account with the amount of loan (Shrestha and Bhandari, 2001).

2.2.2 Types of Deposit

There are mainly three types of deposits in banks in practice. There are:

a. Current Deposit

A current deposit is a running account with amounts continuously. These accounts are also called demand depositor and demand liabilities since the banker is under the obligation to pay money in such deposits on demand. The account never becomes time barred, because the limitation does not run until the customer on the bank for the payment of deposit makes a demand. These accounts are generally opened by business houses, public institutions, corporate bodies and other organizations whose banking transactions are numerous and frequent. As these deposit are payable on demand, banker is obliged to keep larger cash reserves than are needed in the case of fixed and saving deposits. This type of account is just a facility offered by a bank to its customers. So such deposit doesn't yield and interest return (Shrestha, 2009).

b. Saving Deposit

According to commercial bank act 2031 saving accounts means "An account of amounts deposited in a bank for saving purpose". The saving deposit bears the features of both the current and fixed period's deposits. Saving account is mainly meant for no trading customers who have some potential for saving and who don't have numerous transactions entering their account. While opening the account the minimum compensating balance differ according to the banks rule. Similarly, there is also divergence as to how much amount of money can be withdrawn. But it the customers want to with draw more money from the bank which is not allowed by it but if he/she gives pre-information to the banks, he/she can withdrawn more money. The bank fixes the minimum and maximum amount of with draw able through a cheque from this deposit. It the bank goes into liquidation, priority is given to the saving deposit holders (Shrestha, 2009).

c. Fixed Deposit

Under the commercial bank act 2031 "Fixed account means an account of amounts deposited in a bank for certain period of time." The customers opening such account deposit their money in the account of for fixed period. Usually, only the person or institution who wants to gain more interest opens such type of account high interest rate paid to this deposit as compare to saving deposit. The bank and the customer can

take benefit from this deposit. The bank invests this money on the productive sector and gains profit and the customer too can be made his financial transaction stronger by getting more interest from this deposit. The principal amount with interest must be return to the customer after expiry of fixed time. Bank generally gives loans up to 90% of the deposit against the security of the deposit for this bank charge. Some higher interest than the interest allowed on the deposit.

2.2.3 Importance of Deposit

Deposit arises from saving. An individual's income equals consumption plus saving she/he deposits the saved part of income in the bank and gets interest from it. Banks in turn lend this money and earn profit by charging high interest rates. The borrowers from banks, invests this fund in productive sectors yielding more return than the interest on borrowed fund. This investment leads to create new employment opportunity in the economy. Ultimately due to new employment the purchasing power of the economy increase and finally G.D.P. and growth of the economy occurs. It means that the deposit has very important rule in the economy. If the volume of deposit is low, the investment in the economy also lags behind due to lack of resources. The deposit of banks is the accumulated capital, which can directly invest. There is a great need of such deposit in the development countries. Deposit includes the idle money of the public, bank being the inter mediator to accept this sort of money and help to canalize this in productive sector. Therefore, the importance of banks and financial intermediaries is larger in present context (Shrestha and Bhandari, 2058).

2.3 Lending (Credit)

2.3.1 Concept of Lending (Credit)

Credit is the provision of resources (such as granting a loan) by one party to another party where that second party does not reimburse the first party immediately, thereby generating a debt, and instead arranges either to repay or return those resources (or material(s) of equal value) at a later date. Any movement of financial capital is normally quite dependent on credit, which in turn is dependent on the reputation or creditworthiness of the entity that takes responsibility for the funds. In credit transaction, the lender (or banks) must have confidence in the borrower that s/he will be able to repay the money. In credit transactions, the creditor turns over to the debtor

to repay an equivalent amount usually money in future plus an added sum called interest. In other words, the commercial bank earns profit by lending the amount in terms of loan or credit and in return, it gets interests. Bank loans are classified as: A) Loans and advances, b) Overdrafts c) cash credit d) discounting of bills and so on (Shrestha and Bhandari, 2008: 255).

If credit is made to the government, the credit is known as public credit and if the private transacts credit for his own purpose, the credit becomes private. There are certain distinctions between public and private credit. Bank credit refers to the credit taken by the banks. Bank is the major sources of credit to both private and public debtors, sometimes bank take credit. There is another type of credit known investment credit and commercial credit which can be divided according to the purposes of using credit. The former refers to the credit, which is purposes; similarly, another classification is consumer's credit and producers' credit.

2.3.2 Factors affecting the Volume of Lending

The volume of credit with in a country depends upon different factors. Some of the factors the volumes of credit are as follows:

1) Credit (Lending) Rate

If the bank credit rate is very high then, the volume of credit expansion is less and vice versa. It means that the volume of credit and interest rate of credit has inverse relation. People invest very little in productive sectors when the interest rate is high in the market economy.

2) Rate of Return

If the rate of return is high, people inclined to invest more people earn more profit and they become able to afford higher rate of interest along with timely repayment of loan.

3) Investment Opportunity

If the investment opportunity with in the country is high, the volume of credit becomes higher. The basic thing for investment stimulation is easy and cheap credit etc.

4) Pace of Financial Development

If there, are enough banking facilities to provide loans in easy terms, the volume of credits may be high? It is due to the lack of cheap moneylenders that rural people are deprived of loan. If the banking facility with in the nation is expanded, the volume of credit rises.

5) Basic Infrastructure

Like transportation marketability, availability of raw materials plays an important role in raising the volume of credit in the country.

6) Political Situation

Political situation, especially political instability, is also one of the major causes of low volume of credit. In such a case, none would like to risk his capital in new ventures. The present condition of the country is the glaring example of this. In addition to aforementioned point, other factors like trade condition, currently condition are also the factors affecting the volume of credit.

2.4 Review of Previous Thesis

In the preparation of this thesis, there are some research papers and thesis related this study, which contribute some idea and help in the presentation of this study regarding to this thesis, there are very few thesis and research papers submitted to libraries of Tribhuvan University and its wing colleges on the same topics. Nevertheless, beside this, there are some other theses that are related to this study to some intent. The review and the extract from them presented in this section.

Rajbhandary (1978) conducted a study on "*The Interest Rate Structure of Commercial Banks in Nepal*". The objective of the study was to the relation of interest rate with saving and fixed deposits; with loans and advances, and with interest earning (i.e. interest received on loan minus interest paid on deposit).

The analysis concludes that the time deposits are positively and significantly correlated with the interest rates. There is significant correlation between the saving deposits and the rate of interest. Fixed deposit is more sensitive to the interest rate revision done by NRB. The correlation between the growth of fixed deposits and the

interest rate particularly from 1974 to 1977 is most significant. But the relation between the interest rates and the loan and advances is less significant. Among all the sectors, the private sector seems most sensitive to the interest rate change. Most of the loans too correlated positively if absolute cumulative figures are taken. But the growth rate of total loans and advances except investment on HMG securities is negatively correlated more with the weighted average rate of interest since 1973. The growth of loans to private sector is also negatively correlated with interest rate since 1971. Negative correlation between loans and interest rate meant that loans decrease at higher rate and vice-versa.

The net interest earning is depended upon interest coverage. The total interest received and the total interest paid significantly correlated in the case of both of the banks i.e. Nepal Bank limited and Rastra Banijya Bank the sample organization of the study. He is in view that NRB can well monitor the credit flow and profits of the commercial banks in Nepal by manipulating the demand for and supply of money.

Khatri (1980) was conducted a study titled "*Interest Rate Structure and It's Relation with Deposits Inflation and credit in Nepal.*" The objective of his study was to show the relationship between interest rate and other economic variables like deposit, inflation and credit flow. The study concludes the following, according that thesis, the objectives were.

- a. To present a concrete picture of the interest rate structure in Nepal.
- b. To predict the relationship between interest rate and other economic variables like deposit, inflation and credit flow in Nepal.
- c. To analyze the impact and implementation of the policy of interest rate of Nepal Rastra Bank.

In this study, he found that rate of interest is directly affected by the rate of inflation. He found that the price level of Nepal is liked with Indian prices and also found very high inflation during his study period. His suggestion to commercial banks is to fix the confessional interest rate in order to promote, the cottage and small scale industries and to monetarists to consider the rate of inflation while determining to consider the rate of inflation while determining the interest rate on deposits.

The inflation within our country has been very high since few years. In fact, the prices in Nepal are affected by the movement in Indian price level rather than by domestic monetary expansion. Prices in Nepal are linked with Indian because of the 500 miles open boarder and the availability of Indian goods and currency. There is consolidated type of money and capital markets in Nepal. Commercial bank branches are concentrated in the urban areas. Regarding deposit mobilization in the present context the urban area has occupied more than 80% and the flow of credit is also centralized only in urban areas on the other hand the volume of deposit has overcome the volume of credit which means to say that banks are not getting new investment opportunities.

Shrestha (1990) entitled “*Interest Rate and Its Impact Upon Resource Mobilization and Utilization*” also seems relevant to review here, since his study is too old, interest rate at the time was purely the central bank’s phenomenon. He, in his study, has concluded that the frequent change in interest rates was disliked by customers except changing the interest rates as directed by NRB. Shrestha has suggested that the commercial banks to quote stable rate as far as possible. He also recommended that the method of calculating interest should be used in such a way that the previous customers and depositors who are already involved in banking transaction should not be affected adversely. He also suggested charging high interest rate on loan to luxury goods as in unproductive sectors and a lower rate on productive and small scale industries.

Bhandari (1998) upon the title of “*The Impact of Interest Rate Structure on Investment Portfolio of Commercial Banks of Nepal.*” He concludes the following:

- a. Rates of commercial banks have been fluctuating deposits and lending rates were increases immediately after liberalization of the interest rate an August 31, 1989 but however, started to decline which have helped in increasing the credit flow.
- b. Interest rate structure has direct influence a profitability of commercial banks, decreasing lending rate helps to increase the profitability through increasing the credit.
- c. Deposits are more interest rate conscious and positively co-related.
- d. Loans and advances of commercial banks have been found to be continuously increasing with the decline in interest rates.

- e. Effective interest rate structure helps in proper utilization of resources as measured by loan to deposit ratio.
- f. Most of the banks are having similar interest rate structure, which lessens the importance of liberalization of interest rate.

Dangol (2003) "*Impact of Interest Rate on Financial Performance of Commercial Banks*" concludes:

- a. Most of the commercial banks contradict the general financial theories.
- b. The relation between amount of deposits and interest rate and deposit, in general concept, must be positive. However, deposits are increasing despite the clearest in the general level of interest. The result of such phenomenon is that there are fewer investment opportunities for the banking sectors as well as general investors.
- c. The relation between total amount of loan and the lending rate is negative and significant. However, the change for flow is not proportionate with the change in the lending rate.
- d. Correlation between interest rate and inflation is not significant.
- e. Correlation, between interest rate is responsible to shape the profitability of banks but also the operating efficiency also has major influence on it.

Bhatta (2004) in the topic, "*Interest Rate and its Effect on Deposit and Lending*". In this study the disseminator tries to portrait the relation of interest rate with deposit and lending amount. Her findings and the findings made by Chettri are seems to be different. According to Chettri's finding, all the relation matches the theory. But other matters are same as Chettri's. The conclusion drawn by Bhatta is as follows:

- a. Deposit rates of all sample banks under study are in decreasing trend, meaning that every year deposit rates of sample banks under study have decreased.
- b. Lending rates of all sample banks under study are also in decreasing trend, means that every year lending rates of sample banks under study have decreased.
- c. Analysis shows that interest rate on lending are far higher than deposit rates of sample banks. The correlation coefficient between these two variables, (deposit rate and lending rates) of sample banks comes highly positive.

- d. The simple correlation coefficient between deposit rate and deposit amount of sample banks are highly negative. However, out of them, correlation coefficient analysis of one-sample banks is found to be negative.
- e. The correlation analysis between lending rate and lending amount of all sample banks under study comes highly negative. This relation between two variable of sample banks matches with the theory which says with the increase in lending rate, lending amount decreases and vice versa.

Finally her conclusion about her own words, as follow:

“There is significant relationship between deposit rate and deposit amount and lending rate and landing amount of almost all commercial banks except one. Test of significant for correlation coefficient between inflation rate and deposit and lending rate shown that these variables are not correlated.”

Dongol (2007), entitled “*Impact of Interest Rate on Financial Performance of Commercial Banks*” concludes that most of the commercial bands contradict the general financing theories. The relation between amount of deposit and interest rate on deposit, in general concept must be positive. But deposits are increasing despite the decrease in the general level of interest. The result of such phenomenon is that there are fewer investment opportunities for the banking sector as well as general investors. The relation between total amount of loan and the lending rate is negative and significant. However, the change in the total amount of loan flow is not proportionate with the change in the lending rate.

Correlation between interest rate and inflation is not significant. Not only interest rate is responsible to shape the profitability of banks but also the operating efficiency also has major influence on it.

Shrestha (2008) on the “*Interest Rate Structure and Its Influence on Deposit and Lending of Joint Venture Banks in Nepal*” concludes:

- a. The interest rate on both deposit and lending of all sample banks are in decreasing trend.
- b. The saving deposit amount and saving interest rate have negative relationship.
- c. Fixed deposit amount and fixed interest rate shows negative relationship.

- d. One of variables that affect the demand of fund (lending activity) is lending interest rate.
- e. Interest rate on deposit does not attractive for the depositors; as every year deposit rate of sample, banks are seen deceasing. So it may also be concluded that commercial banks are not conceived in collecting deposit as interest rate on deposit is too less.
- f. lending rate of sample banks it can be concluded that interest rate on lending attract borrowers investors as lending rate of sample banks have decreased every year to provide better opportunities for the borrowers investors.

Koirala (2009) entitles “*Interest rate Behavior of Commercial Banks and finance company in Nepal*”. Has concluded Rate of commercial Banks have been fluctuating. Deposits and lending rates were increased immediately after liberalization of the interest rate on August 31, 2007 but, however, started to decline which have helped in increasing the credit flow. Interest rate structure has direct influence on profitability of commercial banks. Decreasing lending rate helps to increase the profitability through increasing the credit. Deposits are more interest rate conscious and positively co-related. Loans and advances of commercial banks have been found to be continuously increasing with decline in interest rates. Loans and advances of commercial banks have been found to be continuously increasing with the decline in interest rate.

Effective interest rate structure helps in proper utilization of resources as measured by loan to deposit ratio. Most of the banks are having similar interest rate structure with lessens the importance of liberalization of interest rate.

2.5 NRB Directives and Interest Rate in Nepal

Taking the reference of history on interest rates, we observe different changes in interest rate. The sole controller for regulating interest rate in Nepal is central bank, Nepal Rastra Bank. In the beginning, the interest rate charged and offered by banks and financial institutions was mentioned at a lower level with a view to stimulate real income and employment. However, dramatic change had been made time to time. Regulation of interest rate by Nepal Rastra Bank made in the early stage of financial market development taking the period from 1955 to 1965. However, NRB gradually

began to liberalize the determination of interest rate on a phase-wise basis according to compatibility of the banks and the financial institutions that have developed in the country. In the early mid 1980's Nepal has adapted liberal economic policy. Number of finance companies and commercial banks began to develop and government made the liberal policy in maintaining the interest rate were encouraged for commercial banks, established under joint venture in association with foreign banks in private sectors. Similarly, deregulated of interest rate was applied to under financial companies established finance company acts. Likewise, other financial institutions like development banks, micro financial institutions. NGOs and licensed cooperative under, NRB also made competitive in the determination of interest. The central bank, the sole institution authorized to determine the interest rate as per NRB act. There are full discretions to NRB in determining interest rate structure of banks and financial institutions taking from the period 1960 to 1975.

On 16 November 1984, government had provided autonomy in offering the interest rate on saving and time deposit to the extent of 1.5% and 1% points respectively above the prevailing rates. In 1986, financial institutions got freedom in fixing their interest rates in their deposits and loans. In addition, there was also limitation on the interest rate on different loans provided for the productive and priority and full deprived sector. However, there was limitation imposed on certain sectors of lending such as the rate of maximum of 15% on the priority sectors loan. Moreover, for other kinds of loans financial institutions were given freedom to maintain the interest rate structure. In this way, government provided freedom as well as limitation on the determination of interest rate.

On August 22, 1992, Nepal Rastra Bank issued directives to commercial banks and financial institutions to spell clearly out the interest rate on deposits. Nepal Rastra Bank also instructed the bank and financial institutions to limit their interest rate spread on deposit and credit at 6 % within the mid-December 1993. A further instruction to banks and financial institutions was issue in 2002, and now the interest rate spread require to maintained by commercial banks and financial institutions has been removed.

The interest rate regime in Nepalese perspective changed from rigid control and monopoly of NRB to from 1960 to 1980 to that of ultimate deregulation of interest rate and removal of spread from 1882 to 2002. At present there is complete freedom to have competitive system as an important part of government's liberalization policy. In this way interest rate became a market determined phenomena rather than a regulated phenomena. The process of interest rate deregulation became a major indicative factor of the financial system reform in the country.

CHAPTER - III

RESEARCH METHODOLOGY

This part of study deals with research design adopted and its other factors like population & Sample, sources of data & collection procedure, tools for data analysis and presentation, and statistical tools.

3.1 Research Design

The research design used in this study is descriptive and exploratory.

3.2 Population and Sample

The population for the study comprises bank and non-bank financial institutions totaled 248 out of them, 27 are commercial banks, 79 development banks, 79 finance companies, 18 micro- credit development banks, 15 savings & credit cooperatives and 45 NGOs (www.nrb.gov.np). The populations of the study are 27 commercial banks. The sample banks are as follows.

- NABIL Bank
- Bank of Kathmandu Ltd(BOK)
- Everest Bank Limited (EBL)
- Himalayan Bank Limited (HBL)

3.3 Sources of Data and Collection Procedure

This study is based on secondary data that are collected from the annual report, balance sheet, prospectus, newspaper, internet and other sources. Interest rate as well as amount and their organizational profiles were collect through personal visit and from their websites.

3.4 Tools for Data Analysis and Presentation

This study requires more statistical tools rather than financial tools for analysis and presentation. So emphasis is given on statistical tools however, some financial tools are also used to meet the objectives of the study.

3.4.1 Statistical Tools

Arithmetic Mean (\bar{X})

Arithmetic mean is a given set of observation is their sum divided by the number of observation. In such case, all items are equally important. It depicts the characteristic of the whole group. It is an envoy of the entire mass of homogeneous data. Generally, the average value lies somewhere in between the extremes i.e. the largest and the smallest items. It is calculate as follows:

$$\text{Arithmetic Mean}(x) = \text{Mean} (\bar{X}) = \frac{X_1+X_2+X_3}{n}$$

$$\text{Mean} (\bar{X}) = \frac{X_1+X_2+X_3\dots\dots\dots X_n}{n}$$

Where,

ΣX = Sum of the sizes of items

(\bar{X}) = Mean

N = Number of items

Standard Deviation (σ)

Karl Pearson first introduced the concept of standard deviation in 1983. Standard deviation is the positive square root of the arithmetic average of the squares of all deviation measured from the arithmetic overage of the series. The standard deviation measures the absolute dispersion of a distribution. The greater the amount of dispersion the greater the standard deviation i.e. greater will be the magnitude of the values from their mean. A small standard deviation means a high degree of uniformity of the observation as well as homogeneity of a serves.

Standard deviation is denoting by a Greek letter ' σ ' (sigma) and is calculating as follows:

$$\text{Standard deviation (S. D.) } (\sigma) = \sqrt{\frac{\Sigma(X_n-\bar{X})^2}{n-1}}$$

Where,

\bar{X} =The average (mean)

X_n = the individual observation

n = Total number of observation

Correlation Coefficient

The correlation analysis is the technique used to measure the closeness of the relationship between the variables. It helps in determining the degree of relationship between two or more variables. It describes not only the magnitude of correlation but also its direction. The coefficient of correlation is a number, which indicates to what extent two variables, are relate with each other and to what extent variations in one leads to the variation in the other.

$$\text{Simple Correlation Coefficient (r)} = \frac{N \sum x_1 x_2 - (\sum x_1)(\sum x_2)}{\sqrt{N \sum x_1^2 - (\sum x_1)^2} \sqrt{N \sum x_2^2 - (\sum x_2)^2}}$$

Correlation may be positive or negative which lies between ± 1 . Simple correlation between interest rate on deposit and deposit amount interest rate on lending and credit or lending amount is compute in this thesis. The correlation between interest rate on deposit and deposit amount is positive. Interest rate on lending and lending amount is negative when inflation increases, interest rate also increases in same direction and vice versa. For our study, following reference is used.

- Correlation may be positive or negative and ranges from -1 to +1 when $r = +1$ there is positive or negative and ranges when $r = -1$ there is perfect negative.
- Correlation, when $r = 0$, there is no correlation and when $r < 0.5$ then there is low degree of correlation.
- When 'r' lies between 0.7 to 0.999 (or -0.7 to -0.999) there is high degree of positive or negative correlation.
- When 'r' lies between 0.5 to 0.699, there is a moderate degree of correlation.

Coefficient of Determination (r^2)

The coefficient of determination is the primary way to measure the extent or strength of the association that exists between two variables, x and y. It refers to a measure of the total variance in a dependent variable that is explained by its linear relationship to an independent variable. The coefficient of determination is denoted by R^2 and the value lies between zero and infinity. The closer to infinity means greater the explanatory power. A value of one can occur only if the explained diagram falls exactly on the regression line. The R^2 is always a positive number. It cannot tell

whether the relationship between the two variables is positive or negative. The square of the simple correlation coefficient is called coefficient of determination and it is very useful in interpreting the value of simple correlation coefficient. The main significance of the coefficient of determination is to represent the portion of total variations due to independent variable.

Coefficient of Determination (r^2) = $(r)^2$

t - Test for Significance of Correlation Coefficient

If 'r' is the observed sample correlation coefficient of 'n' pairs of observations from bi-variate normal population the test statistics for significance of correlation under null hypothesis is given.

$$t = \frac{r}{\sqrt{1-r^2}} \times \sqrt{n-2}$$

Where,

n = No. of observations from bi-variate normal population

t = t- distribution

r = Simple Correlation Coefficient

3.4.2 Financial Tools

Financial tools are used to examine the strength and weakness of performance. In this study, financial tools like interest rate spread and ratios have been used. Ratio is the mathematical relationship between two accounting figures. Ratio analysis is used to compare a firm's financial performance and status to that of other firms or to it over time.

The qualitative judgment regarding financial performance of a firm can be done with the help of ratio analysis. Therefore, only those ratios have been covered in this study as required by the study.

Loan and Advance to Total Deposit Ratio

This ratio is calculated to find out how successfully the banks are utilizing their total deposits on loan and advances for profit generating purpose. A ratio helps us showing

the relationship between loans and advances, which are grant, and the total deposit collected by the bank. A high ratio indicates better mobilization of collected deposit and vice versa. It should be note that too high ratio might not be better from liquidity point of view. This ratio is calculate by dividing loan and advances by total deposits. This can be stat as below:

$$\text{Loan and Advance to Total Deposit Ratio} = \frac{\text{Loan and Advance}}{\text{Total Deposits}}$$

Interest Rate Spread

Interest rate spread is a difference between interest rate on lending and interest rate on deposit. Generally, banks charge more interest rate on landing than they provide interest rate on deposits. Interest rate spread is calculated as fallow.

$$\text{Interest Rate Spread} = \text{Interest Rate an Lending} - \text{Interest Rate an Deposit}$$

Higher spread shows the bank charge high rate for the borrowers than they provide for depositors.

Research Hypothesis

Testing of hypothesis is one of the important aspects of the research study. It is the quantitative statement about the population parameter. In other words, it is an assumption that is made about the population parameter and then its validity. By testing the hypothesis we can find out whether it deserves the acceptance or rejection of the hypothesis. The acceptance of hypothesis means there is no any sufficient evidence provided by the sample to reject it and does not necessarily imply that it is true. The main goal of testing of hypothesis is to test the characteristics of hypothesized population parameter based on sample information whether the difference between the population parameter and sample statistic is significant or not. The hypotheses formulated for this study are as follows:

First Hypothesis

1) Hypothesis between Deposit Interest Rate and Deposit Amount

Null Hypothesis, H_0 : $\rho = 0$, i.e. population correlation coefficient is zero. In other words, the variables (deposit interest rate and deposit amounts) are not significantly correlated in Nepalese financial market.

Alternative Hypothesis H_1 : $\rho \neq 0$, i.e. population correlation coefficient is not equal to zero. In other words, the variables (deposit interest rate and deposit amounts) are correlated significantly.

Second Hypothesis

2) Hypothesis between Credit Interest and Credit or Loan Amounts

Null Hypothesis H_0 : $\rho = 0$, i.e. population correlation coefficient is zero. In the words, the variables (credit interest and credit or loan amounts) are not correlated in Nepalese commercial banks.

Alternative Hypothesis H_1 : $\rho \neq 0$, i.e. population correlation coefficient is not equal to zero. In other words, credit interest rate and credit or loan amounts are correlated.

Third Hypothesis

3) Hypothesis between Interest Rate on Deposit and Interest Rate on Lending

Null Hypothesis H_0 : $\rho = 0$ i.e. population correlation coefficient is zero. In the words, there does not exist any correlation between interest rate on deposit and interest rate on lending.

Alternative Hypothesis H_1 : $\rho \neq 0$ i.e. population correlation coefficient is not equal to zero. In other words, there exist correlation between interest rate on deposit and interest rate on lending.

CHAPTER - IV

PRESENTATION AND ANALYSIS OF DATA

This part of study consists of various analyses of interest rate and its effects on deposit and lending amount of sample banks. For example, interest rate on deposit and lending, deposit collection and loan & advance of each selected organization from Nepalese financial system. The study is categorized in three parts, presentation, analysis and interpretation.

4.2 Interest Rate Structure in Nepal

Table 4.1
Structure of Interest Rates

(Percent per Annum)

	Mid-July						
	2004	2005	2006	2007	2008	2009	2010
Nepal Rastra Bank							
Bank Rate	5.5	5.5	6.25	6.25	6.25	6.5	6.5
Refinance Rates	2.0-4.5	1.5-3.0	1.5-3.5	1.5-3.5	1.5-3.5	1.5-3.5	1.5-3.5
Government Securities							
Treasury Bills (91 days)	1.47	3.94	3.25	2.77	5.13	6.80	8.13
National Saving Certificate	6.5-13.0	6.5-13.0	6.0-8.5	6.0-8.5	6.0-7.75	6.0-8.0	6.0-10.0
Development Bonds	3.0-8.0	3.0-8.0	3.0-6.75	3.0-6.75	5.0-8.0	5.0-9.0	5.0-9.0
Inter bank Rate	0.71	4.71	2.13	3.03	3.61	3.66	6.57
Commercial Banks							
Deposit Rates							
Savings Deposits	2.0-5.0	1.75-5.0	2.0-5.0	2.0-5.0	2.0-6.50	2.0-7.5	2.0-12.0
Time deposits							
1. Month	2.0-3.5	1.75-3.5	1.5-3.5	1.5-3.5	1.5-3.75	1.5-5.25	1.75-8.0
3. months	2.0-4.0	1.5-4.0	1.5-4.0	1.5-4.0	1.50-6.75	1.5-6.0	1.75-9.5
6 Months	2.0-4.5	2.5-4.5	1.75-4.5	1.75-4.5	1.75-6.75	1.75-7.0	2.75-10
1 Year	2.75-5.75	2.25-5.0	2.25-5.0	2.25-5.0	2.5-6.0	2.5-9.0	4.75-11.5
2 Years and Above	3.0-6.0	2.5-6.05	2.5-6.4	2.5-5.5	2.75-6.75	2.75-9.5	5.0-13.0
Lending Rates							
Industry	8.5-13.5	8.25-13.5	8.0-13.5	8.0-13.5	7.0-13.0	8.0-13.5	8.0-13.5
Agriculture	10.5-13.5	10.0-13.5	9.5-13.0	9.5-13.0	9.5-12.0	9.5-12.0	9.5-13.0
Export Bills	4.0-11.5	4.0-12.0	5.0-11.5	5.0-11.5	5.0-11.5	6.5-11.0	4.0-18.0
Commercial Loans	9.0-14.5	8.0-14.0	8.0-14.0	8.0-14.0	8.0-13.5	8.0-14.0	8.0-14.0
Overdrafts	10.0-16.0	5.0-14.5	6.5-13.5	6.0-14.5	6.5-13.5	6.5-13.5	7.0-18.0
Cash Reserve Ratio(CRR)							
With NRB	6.0	5.0	5.0	5.0	5.0	5.5	5.5
Cash in Vault	-	-	-	-	-	-	-

Sources: Macro Economics Indicators of Nepal, NRB, Research Department, Statistics Division, Mid- July 2010.

(Note: The Average Lending Rate of Any Sector is Calculated by Adding the two Rates and Divided if by for Example for Industrial Sector Average Lending Rate it is Calculated as $(8.50 + 14.0) / 2 = 11.25\%$)

According to the structure of interest rate in presented in table 4.1, both lending and deposit rates were declining during the period 2004 to 2007 mid July. Then it had increasing trend. This case may be due to the interest rate on government securities i.e. treasury bills. According to table, the interest rate of T-bills however has been increased from 1.47% to 3.94% and again decreased from 3.94% to 2.77%. Then the interest rate of T- bill has been increase from 2.77% to 8.13%. As per principle, interest rate T-bills, are the bases of all interest rate many interest rates. Therefore, decline in interest rate may lead to decline in interest of others and vice versa. The interest rate of national saving certificate has been decrease from 7.0% - 13.0% to 6.0% - 8.5 %. Similarly, the interest rate of development bond remains same i.e., 3.0-8.0 from 2004 and 2005, than 3.0-6.75 in 2006 & 2007, 5.0-8.0 in 2008, and 5.0-9.0 in 2009 and 2010.

The interbank interest rate was 4.71% on 2004 Mid July, but it decreased to 3.66% when it came during the mid July of 2009 and increased in 2010. It seems that Nepalese commercial banks excess liquidity and now a day they are faced liquidity crisis. Most of commercial bank classified their deposits into two sections saving deposit and time deposits and offered the different interest rates or them. Talking about saving deposit the interest rates ranges from 2.0%-5.0% in the year 2004 but this rate declined to ranges 2.0%- 5.0% when it came to the year of 2007 then it will be increased by 2.0%-12.0% in mid July of 2010. If the mean is taken then the average interest rate on 2004, 2005, 2006, 2007, 2008, 2009 and 2010 are 3.5%, 3.375%, 3.5%, 3.5%, 4.25%, 4.75% and 7.0% respectively. In the same way, the interest rate on time deposits also shows the decreasing trend in 2007 and increasing trend in 2010. In Nepalese economy, time deposits are classified in five categories: 1 month, 3 months, 6 months, 1 year, 2 years and above. In one month time deposits interest rate, the table shows the decreasing in interest, the maximum interest rate ranges was 2.0% to 3.5% in 2004 where as this table has been decreased to 1.75% to 8.0% in 2010. For 3 months time deposit rates, the maximum interest rate was 1.75% to 9.5% in 2010. Similarly, in the 6 months time deposit rates also showed the decreasing tendency till 2009 then increasing in 2010. The lowest range was 2.5 at the beginning but it reached to 1.75% in 2009 and increased in 2.75% in 2010. In case of 1-year rate, the lowest range fluctuates less than minimum range of it. From figure, it is clear that in 2004, the lowest range rate was 3.0% but this rate falls up o 2.5% when

it was in 2009 and increased 4.75% in 2010. Nevertheless, there was more fluctuation in maximum range i.e. it increased to 5% from highest 11.5%. During last 2 years and above interest rate, is also increased in last year due to lack of liquidity.

For lending also, the table shows that average interest rate also fell during the seven years period. However, in case of lending there was wide range in maximum and minimum range. The range or spread of maximum rate and minimum rate was low in case of deposit. The lending rate is categorized in five parts: Industry, Agriculture, export bills, commercial loans and overdrafts. Among the entire highest rate was for overdrafts. If the average of all is taken then industrial sector lending rate was 11%, 10.875%, 10.75% ,10.75%,10.0%, 10.75% and 10.75% respectively on past seven years. It shows that on past seven years that interest rate of industry was around 11% on average. Similarly for agriculture sector the average interest rate was 11.75%, 11.5%, 11.25%, 11.25%, 10.75, 10.75% and 11.25% respectively on past seven years. This shows that agriculture lending rate was cheaper when it reaches to 2009. For export bills that average rate was 7.75%, 8%, 8.25% ,8.25 % ,8.25%, 8.75% and 11.0% respectively for commercial loans that average lending rate was 11.75%, 11%, 11% ,11%, 10.75%, 11.0% and 11.0% respectively and finally for overdrafts it was 13%, 9.75%, 10.5% ,10.25%,10.0%, 10.0% and 12.5% respectively on past seven years.

4.2 Deposit and Interest Rate

In this section, detail study is made on deposit and interest rate of each of the sample banks. For this study, only saving and fixed deposits are considered because current deposit is not paid with interest.

Prior to entering into the main topics, it is preferable to take a glance on the interest rate structure on different types of deposits. This is essential because the interest rates are generally different in magnitude for every sample bank. Their differences are due to the numerous factors like maturity period, policy of bank, goodwill of organization and so on. In real world government, owned bank and banks with high reputation and goodwill have lower deposit rates. Similarly, finance companies, co-operative and development bank quotes higher interest rate on deposits than commercial banks do.

4.2.1 NABIL Bank Limited. (NABIL)

The general structure of deposit interest rate of NABIL Bank Ltd in seven Fiscal Years is shown below.

Table 4.2
Interest Rate Structure on Deposit of NABIL as on Mid July

Deposit	2004	2005	2006	2007	2008	2009	2010
Saving	2.5	3.0	2.0	2.0	2.0	2.0	3.0
Fixed							
7 Days	-	-	-	-	-	-	-
14Days	1.75	2.5	2.5	1.75	3.0	-	-
1 Months	2.25	3	3	2	3.5	4.0	8.0
3 Months	2.75	3.25	3.25	2.75	6.75	5.0	9.0
6 months	3	3.5	3.5	3.0	6.75	6.0	10.0
1 year	3.50	4.0	4.0	3.5	5.0	8.0	10.5
2 yrs / above	4.0	4.0	4.25	4.25	6.5	8.5	13.0
Whole Mean	2.82	3.32	3.21	2.75	4.79	5.58	8.92
Fixed Deposit Mean	2.87	3.37	3.41	2.87	5.25	6.3	9.90
Std. Deviation	Whole mean =2.0574%			Fixed deposit mean =2.447%			

Source: Banking and Financial Statistics: Volume 47-54, NRB

From the table 4.2, the deposit interest rates of NABIL on different time period are fluctuating. There is decreasing tendency of interest rate to 2007 then increasing tendency of interest rate. The interest rate on savings deposit in the beginning year was 2.5% and decreased to 2% in 2009 then increasing by 3.0%. Here, we can notice 20.0% reduction during past 7 years. The bank quotes the interest rate of fixed deposit in different short term period like 7 Days, 14 Days, 1 months, 2 months, 3 months, 6 months, 1 year and above 2 years. During seven year period, In first four year the rate of interest of fixed deposit for 14 Days, 2 months, 3 months, 6 months, and 1 year decrease but 1 month and 2 year above is increase. Then 2008, 2009 and 2010 the fixed deposit interest rate had increasing trend. The fixed deposit mean is 2.8715 in 2004 then increasing to 3.37 in 2005, again increased to 3.41 in 2006. It then significantly decreased to 2.88 in 2008 but reached at 5.25, 6.3 and 10.1 in 2008, 2009 and 2010.

The whole mean also show the similar trend to fixed deposits where it is highest at 8.92 in 2010 after facing significant drop at 2.87 in 2008. The deviation is measured

by standard Deviation, which is 2.0574% of whole mean and 2.447% of fixed deposit mean each year interest rate.

Correlation Coefficient, Coefficient of Determination and t-statistic of NABIL

The correlation coefficient between saving deposit interest rate and saving deposit amount and fixed deposit interest rate and fixed deposit amount of NABIL bank is as follows.

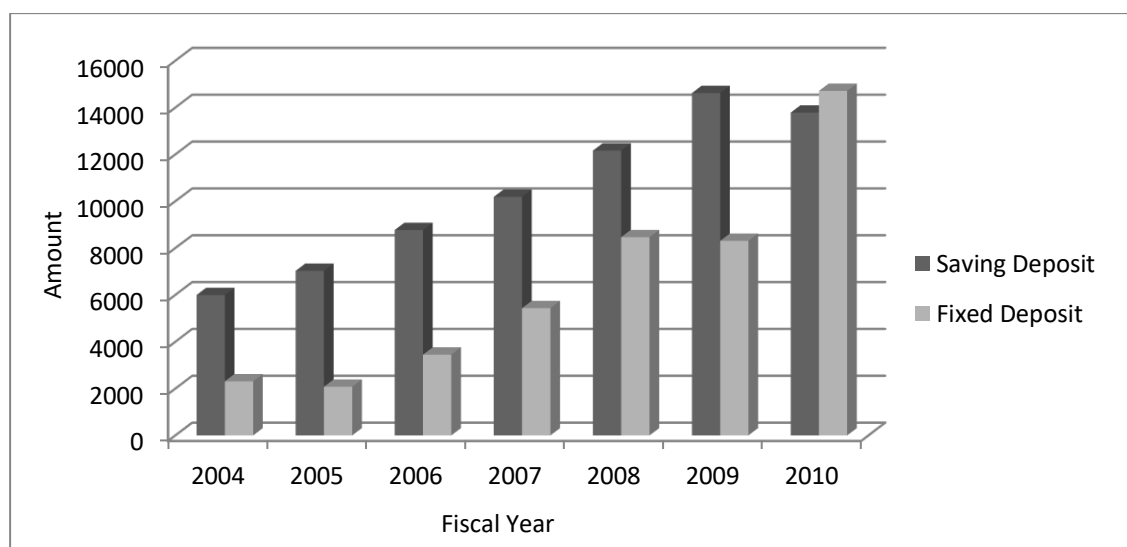
Table 4.3
Relationship between Interest Rate and Deposit Amount of NABIL

Year(1)	Saving Deposit Interest Rate (2)	Saving Deposit Amount (in million)(3)	Fixed Deposit Interest Rate (4)	Fixed Deposit Amount (in million)(5)			
2004	2.5	5994.1	2.87	2310.6			
2005	3.0	7026.4	3.37	2078.6			
2006	2.0	8770.8	3.41	3450.2			
2007	2.0	10187.4	2.875	5435.2			
2008	2.0	12159.97	5.25	8464.1			
2009	2.0	14620.4	6.3	8310.7			
2010	3.0	13783.59	10.1	14711.16			
Correlation	$r_{23} = -0.2223$		$r_{45} = 0.9545$				
Coe. of Det.	$r^2_{23} = 0.0494$		$r^2_{45} = 0.9111$				
t-statistic	t-cal = 0.5098	t-tab = 2.571	Insignificant		t-cal = 7.1572	t-tab = 2.571	Significant

Source: Banking and Financial Statistics: Volume 47-54, NRB

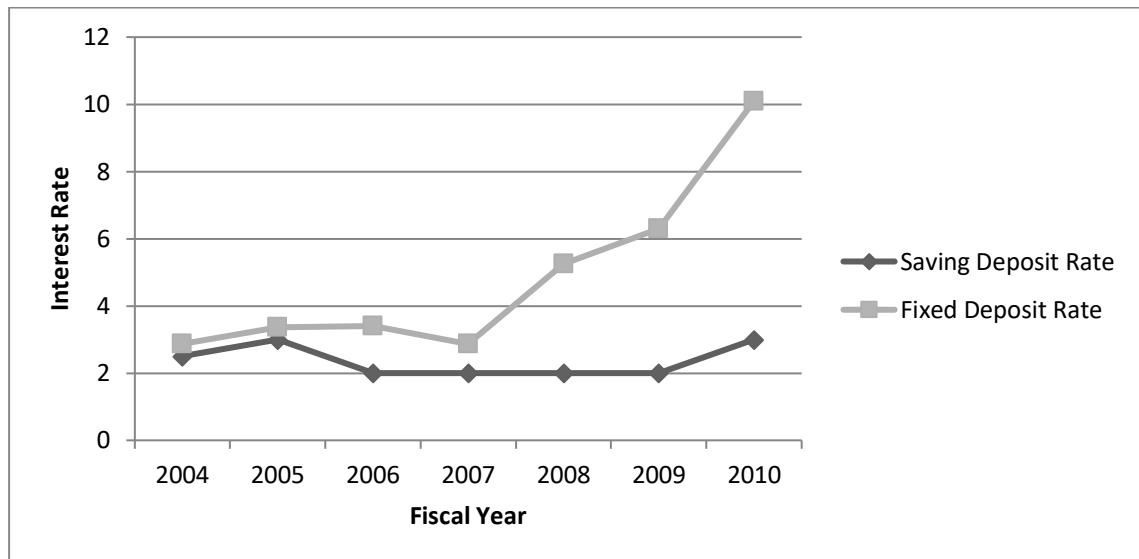
Figure 4.1

Deposit Amount of NABIL During Different Fiscal Year



Source: Table 4.3

Figure 4.2
Interest Rates of NABIL on Saving and Fixed Deposit



Source: Table 4.3

The table 4.3 indicates the total amount of fixed deposit and saving deposits and the interest rates offered on such deposits by NABIL on seven years starting from FY 2004 to FY 2010. The table portrays that the saving deposit interest rate has been decrease by greater magnitude but last year it is increasing. Saving deposit amount has been in increasing order since 2009 it is decreasing. However, the case of fixed deposit interest rate is different and the case for fixed deposit is somewhat different. Up to 2004, 2005, and 2006 to 2007 the interest rate and deposit amount of fixed deposit is also not supporting substitution theory. It indicates that with decrease in interest rate, fixed deposit amount increase and vice-versa.

According to table 4.3, the interest rate on saving deposit has been decreased from 2.5 to 2 during six FYs. In 2005 and 2010, the interest rate on saving deposit is increase by 3% then the declining tendency is small. In the same period the deposit amount was Rs 5994.1 million but this amount increases to Rs 14620.4 million and last year it is decrease to 13783.59.

Similarly for fixed deposit, the table 4.3 show that the total amount of fixed deposit and interest rate on fixed deposit offered by NABIL on seven consequent FYs started from FY 2004 to FY 2010. The table reveals that average fixed interest rate has been

decreased from FY 2004 to 2010 and increased in FY 2005 and 2006 then decreased in FY 2007 and increased to FY 2008, 2009 and 2010. The table shows that in the FY 2004, there is no effect on fixed deposit amount by the declination of interest rate but after the FY 2005, decrease in interest rate also decreases of fixed deposit amount and vice versa. In this regards, the substitution effect holds true in the case of fixed deposit. To verify the above trend, it is necessary to calculate the correlation and t-statistics. If correlation coefficient is calculated for saving deposit and deposit amount, then it is $r_{23} = -0.2223$. The negative correlation coefficient indicates that they have inverse relationship among each other. Decrease in interest rate is followed by on increase in saving deposit amount and vice versa. The coefficient is determination between these two variables $r_{23}^2 = 0.0494$ which means that total variation in dependent variable (saving deposit amount) has been explained by independent variables interest rate to the enters 4.94% and remaining is the effect of other factors. At last, the value of t- statistics for saving deposit and saving interest is found to be 0.5098 ($t_{cal} = 0.5098$). The tabulated value for this condition at 5%, level of significance with 5 degree of freedom is 2.571. it means that in this case t-calculated is less then t –tabulated. So null hypothesis is accepted. This means that there is no significant correlation between saving deposit and interest rate.

Similarly for fixed deposit, the calculated value for t is 7.1572 ($t - cal = 7.1572$). This value is greater than t – tabulated. Therefore, in this case, the magnitude of correlation coefficient is highly significant.

4.2.2 Bank of Kathmandu (BOK)

As similar to previous part, it is better to present the general interest rate structure before entering to the main analysis. The interest rate structure for BOK on saving and fixed deposits for past seven year FYs are presented on the table 4.4.

Table 4.4
Interest Rate Structure on Deposit of BOK

Deposit	2004	2005	2006	2007	2008	2009	2010
Saving	2.75	2.5	2.5	2.25	2.25	2.25	2.25
Fixed							
7 Days	2.0	1.5	1.5	1.5	2.0	2.0	3.0
14Days	2.5	2.0	2.0	2.0	2.5	2.5	3.5
1 Months	3.0	2.5	2.5	2.5	3.0	3.0	4.0
3 Months	3.5	3.0	3.0	3.0	3.5	3.5	4.5
6 months	4.0	3.5	3.5	3.25	4.0	4.0	6.0
1 year	4.5	4.5	4.5	3.75	5.0	5.0	8.5
2 yrs / above	4.75	5.25	5.25	4.25	5.5	5.5	9.0
Whole mean	3.37	3.09	3.09	2.81	3.47	3.47	5.094
Fixed deposit mean	3.46	3.17	3.17	2.89	3.64	3.64	5.5
Std. Deviation	Whole Mean = 0.6939			Fixed Deposit Mean = 0.8015			

Source: Banking and Financial Statistics: Volume 47-54, NRB

The table 4.4 portrays the interest rate of BOK on saving and fixed deposits. All the interest rate on deposit is on decreasing trend except in FY 2008, 2009 and FY 2010. The interest rate on saving deposit shows that it was 2.75 and it is decrease 2.5 in 2005 and 2006 and finally interest rate on saving deposit declined to 2.25 in 2007 to onward. This is 18.18% reduction during 7-year period. Likewise, the interest rate of fixed deposit also decreases during the first four year then it also increase. The average interest rate for fixed deposit account is 3.46, 3.17, 3.17, 2.8, 3.64, 3.64 and 5.5 for FY 2004 to FY 2010 respectively. The deviation is measured by standard deviation of whole mean is 0.6939 and fixed deposit mean is 0.8015 of each year interest rate.

Correlation Coefficient, Coefficient of Determination and t-statistics of BOK

The correlation coefficient between saving deposit interest rate and saving deposit amount and fixed deposit interest rate and fixed deposit amount of BOK is as follows.

Table 4.5

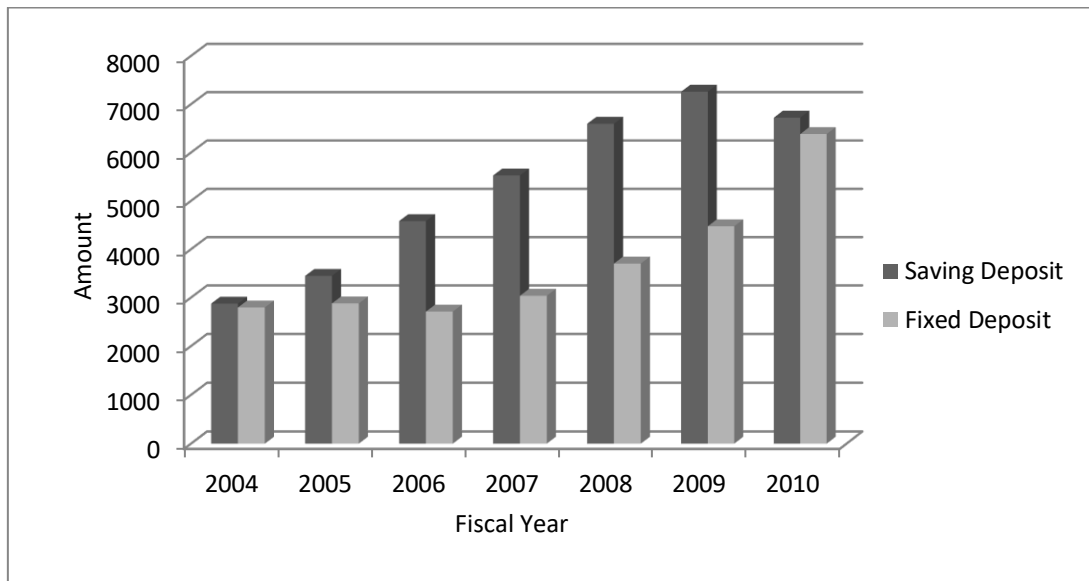
Relationship between Interest Rate and Deposit Amount of BOK

Year (1)	Saving Deposit Interest Rate (2)	Saving Deposit Amount (in million)(3)	Fixed Deposit Interest Rate (4)	Fixed Deposit Amount (in million)(5)		
2004	2.75	2873.8	3.46	2793.7		
2005	2.5	3447.5	3.179	2878.9		
2006	2.5	4582	3.179	2709.8		
2007	2.25	5526.8	2.89	3037.2		
2008	2.25	6596.1	3.64	3703.2		
2009	2.25	7260.3	3.64	4474.6		
2010	2.25	6723.17	5.5	6383.6		
Correlation	$r_{23} = -0.9160$		$r_{45} = 0.9362$			
Coe. of Det.	$r^2_{23} = 0.8391$		$r^2_{45} = 0.8765$			
t-statistic	t-cal = 5.1063	t-tab = 2.571	Significant	t-cal = 5.9569	t-tab = 2.571	Significant

Source: Banking and Financial Statistics: Volume 47-54, NRB

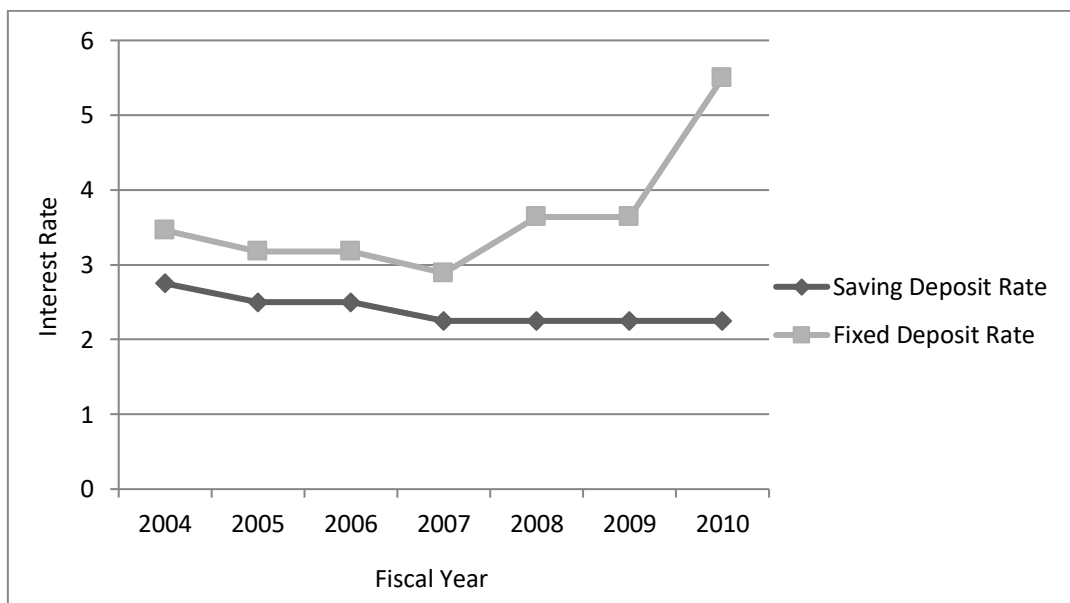
In table no, 4.5 saving amount deposit rates are arranged in systematic way from FY 2004 to FY 2009 except 2010. The table shows that interest rate of saving deposit has been decreased by greater magnitude. Nevertheless, the fixed deposit interest rate seems increasing till 2008 and constant in 2009 and increasing 2010. Here saving deposit amount and saving deposit interest rate are moving in opposite direction that is decreasing (constant) interest rate increase the amount of deposit and vice- versa. Therefore they should have negative relationship. This indicates that the condition for BOK is also opposite to the substitution theory. The figure shows that BOK collected more funds on fixed deposit in last seven FYs.

Figure 4.3
Deposit Amount of BOK During Different Year



Source: Table 4.5

Figure 4.4
Interest Rates of BOK on Saving and Fixed Deposit



Source: Table 4.5

The value for correlation between saving deposit and interest rate is -0.9160 ($r_{23} = -0.9160$). This is high degree of negative correlation. It means that during the last seven fiscal years there was share increase in saving deposit amount even though there was share decline in the saving interest rates. The coefficient of determination r^2_{23} is 0.8391 . Similarly, the calculated value for t is 5.1063 for saving account. The

value of tabulated t at 5 degree of freedom and 5% level of significance is only 2.571. So for saving deposit $t_{cal} > t_{tab}$, and hence alternative hypothesis is accepted. It means that there is significant relationship between two variables (deposit amount and interest rate). It means saving deposit keeps increasing when the saving deposit rates goes falling down.

In same manner fixed deposit the value of correlation coefficient is $r_{45} = 0.9362$ which indicates that the two variables have high degree positive correlation relationship. In other words, when increment occurs on one variable then there appears increment on other variables but in high magnitude. To identify the significance or insignificance of this correlation, it is necessary to calculate the value of t-statistics. The calculated value at t is 5.9569. Similarly, the tabulated value for t is 2.571, which is greater than calculated t. As a result, alternative hypothesis is accepted. It means correlation coefficient is significant. Thus from the both study it reveals that substitution effect is applicable for BOK. That means both interest rate and deposit amount variables of BOK are correlated.

4.2.3 Himalayan Bank Limited (HBL)

The general interest rate structure for HBL for saving deposit and fixed deposits during past seven fiscal year is as follows.

Table 4.6
Interest Rate Structure on Deposits of HBL

Deposit	2004	2005	2006	2007	2008	2009	2010
Saving	3.75	2.75	2.0	2.0	2.0	2.25	3.0
Fixed							
7 Days	-	-	-	-	-	-	-
14Days	2.3	1.75	1.75	1.75	2.0	2.50	3.0
1 Months	3.3	2.0	2.0	2.0	2.25	3.25	4.0
3 Months	3.75	2.5	2.5	25.5	2.5	3.75	4.75
6 months	4.0	3.0	3.0	3.0	3.25	4.50	10.0
1 year	5.25	3.75	3.75	3.75	5.5	6.5	11.0
2 yrs / above	5.75	3.75	3.75	3.75	5.5	8.75	11.5
Whole mean	4.01	2.78	2.67	2.67	3.29	4.50	6.75
Fixed deposit mean	4.05	2.79	2.79	2.79	3.5	4.875	7.375
Std. Deviation	Whole mean =1.2189			Fixed deposit mean =1.549			

Source: Banking and Financial Statistics: Volume 47-54, NRB

From table 4.6 shows the deposit interest rate of HBL in seven different FYs. Interest rate of saving deposit of HBL is highest of all year at 3.75 in 2004. Then it will decreasing trend in 2008 then increase by 2.5 in 2009 and also increase by 3.0% in 2010. During the first period out the seven FYs, the declining rate of average interest rate is fast; around one percentage point every year then in 2009 and 2010, the interest rate structure will be increased. The average interest rate is 4.01 in 2004 but it was 2.78, 2.67, 2.67, 3.29, 4.5 and 6.75 in 2005, 2006, 2007, 2008, 2009 and 2010 respectively. It means that decline speed of deposit interest rate of HBL slowed down in FY 2004 to 2007 then the interest rate will increase in FY 2008, 2009 and 2010. The deviation is measured by standard deviation of whole mean is 1.2189% and fixed deposits mean is 1.5491% each year interest rate.

Correlation Coefficient, Coefficient of Determination and t-statistics of HBL

The correlation coefficient between saving deposit interest rate and saving deposit amount and fixed deposit interest rate and fixed deposit amount of HBL is as follows.

Table 4.7

Relationship between Interest Rate and Deposit Amount of HBL

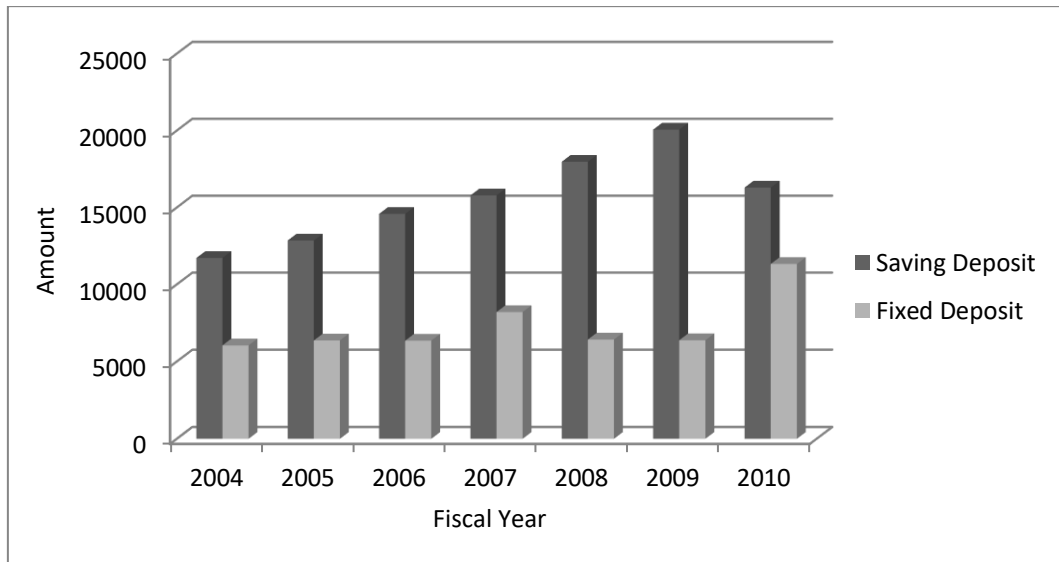
Year (1)	Saving Deposit Interest Rate (2)	Saving Deposit Amount (in million)(3)	Fixed Deposit Interest Rate (4)	Fixed Deposit Amount (in million)(5)		
2004	3.75	11719.7	4.05	6043.7		
2005	2.75	12852.4	2.79	6364.3		
2006	2.0	14582.8	2.79	6350.2		
2007	2.0	15784.7	2.79	8201.1		
2008	2.0	17972.4	3.5	6423.8		
2009	2.25	20061.0	4.875	6377.1		
2010	3.0	16294.7	7.375	11328.6		
Correlation	$r_{23} = -0.6135$		$r_{45} = -0.7467$			
Coe. of Det.	$r^2_{23} = 0.3764$		$r^2_{45} = 0.5576$			
t-statistic	t-cal= 2.20	t-tab = 2.571	Significant	t-cal = 2.5103	t-tab = 2.571	Insignificant

Source: Banking and Financial Statistics: Volume 47-54, NRB

The table 4.7 shows the amount of saving deposit and its interest rate as well as amount of fixed deposit and its interest rate for seven FYs. The table indicates that, in one hand deposit rates are declining where as in other hand deposit amount is increasing in every fiscal years covered by the study. This suggests that interest rate

and deposit amount may have negative relationship i.e. when one variable is found to be increased, other variable is found to be decreased and vice-versa. This situation can be revealed in figure 4.5 in following ways.

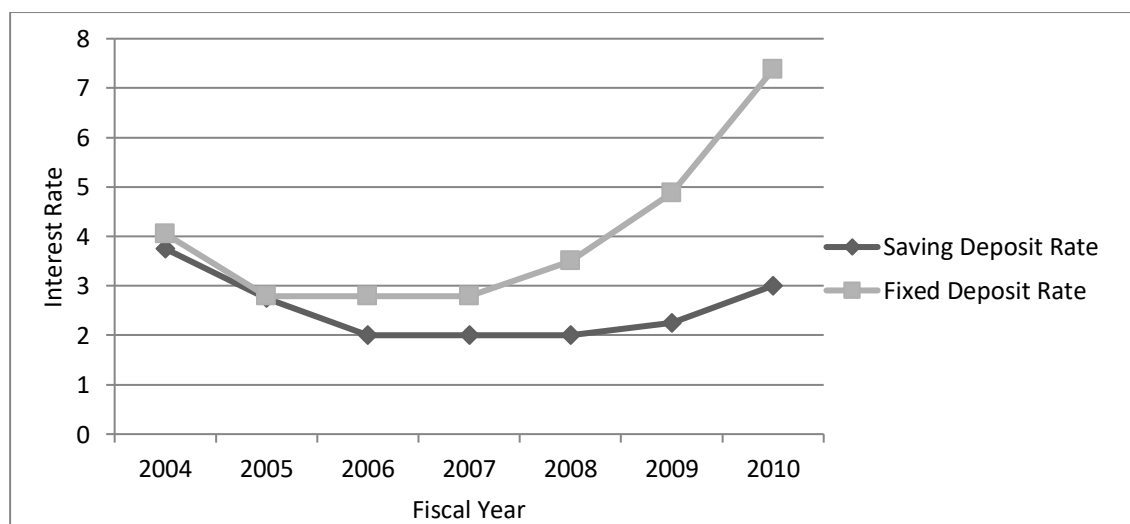
Figure 4.5
Deposit Amount of HBL During Different Year



Source: Table 4.7

The figure 4.5 shows saving deposit amount is continuously rising each year but fixed amount is seems to grow each year with some fluctuation. It means that there is rise and fall for fixed deposit amount. Similarly the interest rate of fixed deposit and saving can also show on figure 4.6.

Figure 4.6
Interest Rates of HBL on Saving and Fixed Deposit



Source: Table 4.7

To quantify the exact relationship between interest rate and deposit amount, it is necessary to calculate the correlation coefficient. The correlation coefficient of saving deposit amount and its interest rate $r_{23} = -0.6135$. It means that these two variables have high negative relationship. However, the two variables do not have direct relationship but correlation coefficient tells that increase in one variable result the decrease in one variable result the decrease in other variables.

The correlation coefficient for fixed deposit rate and amount r_{45} is 0.7467. This is high degree of positive correlation. It means that increase in one variable result the increase in other variables but in high magnitude. In other words, if one variable increases by one percentage, then other variable increase by 0.47%. Therefore both saving and fixed deposit, the case is against the substitution effect. In other words, increase in interest rate should be followed by increase in deposit amount. The coefficient of determination of correlation coefficient of saving deposit r^2_{23} is 0.3764 which indicates that the relation between deposit and interest rate is tied up to level of 37.64 percent and remaining other percentage by other factors. In same manner for fixed deposit, the value of coefficient of determination r^2_{45} is 0.5576.

The value of t-statistics for saving deposit and saving interest is found to be 2.20 (t-cal = 2.20). The tabulated value for this condition 5% level of significance with 5 degree of freedom is 2.571. It means that in this case t-calculation is less than t-tabulated. So null hypothesis is accepted, which means that there is highly insignificant correlation between saving deposit and interest rate. Similarly for fixed deposit, the calculated value for t is 2.5103 (t-cal=2.5103). This value is also smaller than t-tabulated. Therefore, in this case also the magnitude of correlation coefficient is insignificant.

4.2.4 Everest Bank Limited

The general structure of deposit interest rate of Everest Bank Limited (EBL) is show below on the table.

Table 4.8
Interest Rate Structure on Deposit of EBL

Deposit	2004	2005	2006	2007	2008	2009	2010
Saving	4.5	3.25	3.25	3.25	3.0	3.0	3.0
Fixed							
7 Days	-	-	-	-	-	-	-
14Days	3.0	2.5	2.5	-	-	-	-
1 Months	3.5	2.25	2.25	2.75	2.75	2.75	-
3 Months	4.0	2.5	3.0	3.0	3.0	3.0	3.0
6 months	5.0	3.0	3.5	3.5	3.5	3.5	3.5
1 year	5.5	3.5	4.0	4.0	5.0	5.0	5.0
2 yrs/ above	6.0	4.0	4.5	4.5	5.5	5.5	5.5
Whole mean	4.5	2.96	3.25	3.39	3.25	3.25	4.0
Fixed deposit mean	4.5	2.92	3.25	3.47	3.29	3.29	4.25
Std. Deviation	Whole Mean = 0.4986			Fixed Deposit Mean = 0.5371			

Source: Banking and Financial Statistics Volume 45-52, NRB

The table 4.8 shows the interest rate structure of EBL and with calculated average interest rate on all deposits and standard deviation. The whole interest rate in 2004 is 4.5. In FY 2005, it decreases to 2.96. The interest rate is increases in FYs 2006 to 3.25 and again increased to 3.39 decreases to 3.25 in 2008 and 2009 and increase to 4.0 in 2010. Similarly, the average fixed deposit rate is decreasing up to 2005 and increased in 2006 and 2007 then decreasing trend, in last year it is increase in 4.25% The standard deviation of whole mean is 0.4986 and fixed deposit mean is 0.5371 shows the dispersion among the interest within seven FYs time are whole mean is 0.4986% and fixed deposit mean is 0.5371%. It further signifies that rate is much dispersed from of all deposit.

Correlation Coefficient of Determination and t-statistics of EBL

The correlation coefficient between saving deposit interest rate and saving deposit amount and fixed deposit interest rate and fixed deposit amount of EBL is as follows.

Table 4.9

Relationship between Interest Rate and Deposit Amount of EBL

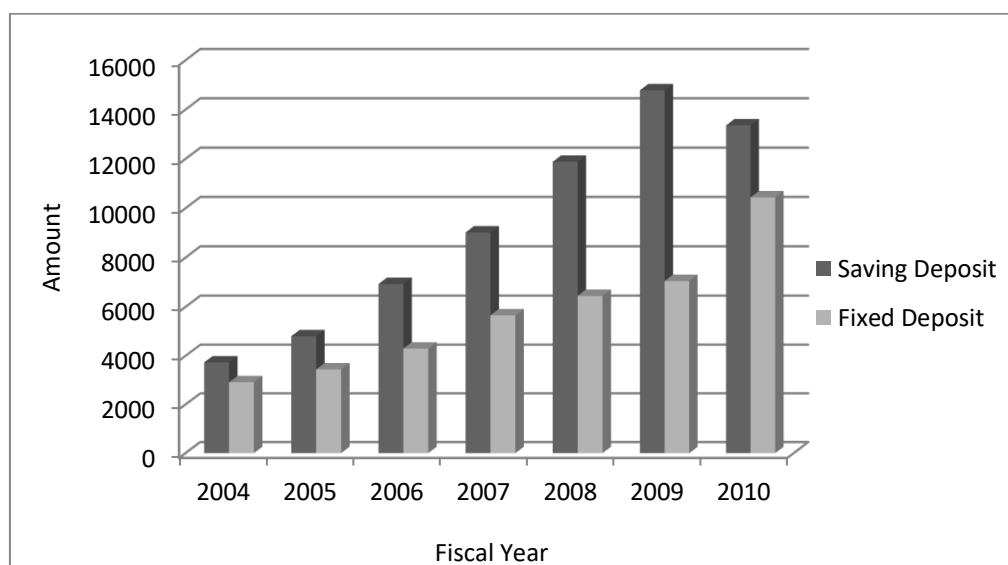
Year (1)	Saving Deposit Interest Rate (2)	Saving Deposit Amount (in million)(3)	Fixed Deposit Interest Rate(4)	Fixed Deposit Amount (in million)(5)		
2004	4.50	3730.7	4.50	2914.1		
2005	3.25	4806.9	2.92	3444.5		
2006	3.25	6929.2	3.25	4298.2		
2007	3.0	9018.0	3.55	5658.7		
2008	3.0	11883.9	3.29	6446.2		
2009	3.0	14782.3	3.29	7049.9		
2010	3.0	13360.0	4.25	10440.3		
Correlation	$r_{23} = -0.7034$		$r_{45} = -0.5530$			
Coe. of Det.	$r^2_{23} = 0.4948$		$r^2_{45} = 0.3058$			
t-statistic	t-cal = 2.213	t-tab = 2.571	Insignificant	t-cal = 0.5028	t-tab = 2.571	Insignificant

Source Banking and Financial Statistics: Volume 47-54, NRB

The table 4.9 shows that interest rate and deposit amount are moving in opposite direction. To get the exact relation it is necessary to calculate the correlation coefficient and t-test. Here the data shows that both saving and fixed deposits are out of substitution effect to verify it the value of correlation and t-statistics is necessary. However, prior to this it is effective if tabular value can be shown on figure as figure 4.7.

Figure 4.7

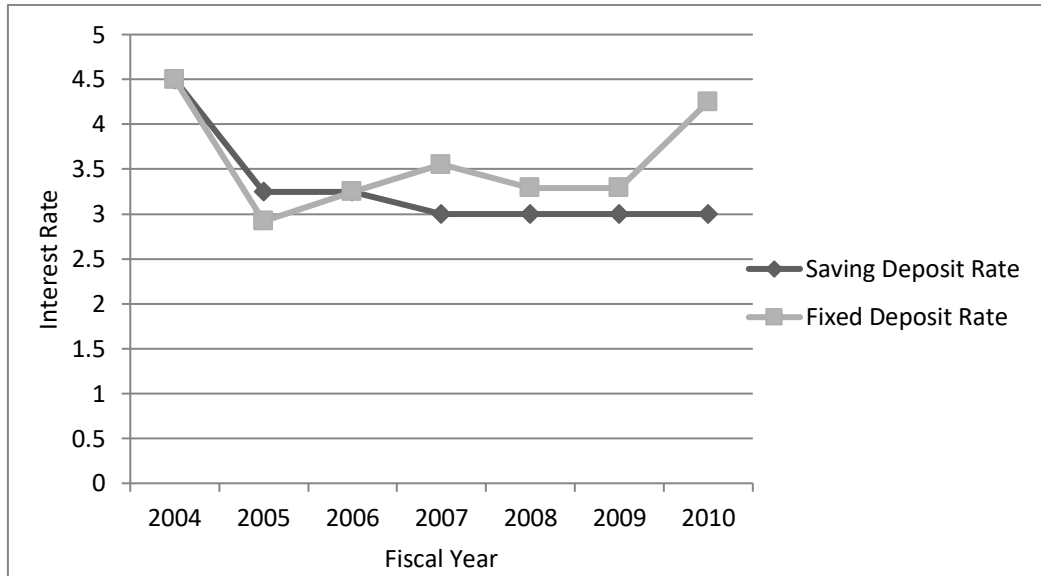
Deposit Amount of EBL During Different Year



Source: Table 4.9

Similarly the relationship between interest rate of saving and fixed deposit can shown in figure 4.8

Figure 4.8
Interest Rates of EBL on Saving and Fixed Deposit



Source: Table 4.9

The figure 4.7 shows the deposit amount of EBL is in increasing trend. The increasing tendency is high for saving deposit but low for fixed deposit. The trend is increasing slowly. Similarly figure 4.8 shows that both the interest rate of fixed and saving deposits is in decreasing tendency except in FYs 2008, 2009 and 2010.

The correlation coefficient for saving deposit and its interest rate is found to be $r_{23} = -0.7034$, which means that deposit amount and its interest rate have high degree of negative correlation. It means increase in one variable result the decrease in other variables. Similarly the coefficient of dependent $r^2_{23} = 0.4948$, which means that the value of dependent variables is dependent on independent variables to the extent of 49.48%. Similarly the t-test for same show that the calculated value of t is 2.213 (t-cal = 2.213). This value is less than the t-tabulated value (t-tab = 2.571) at 5 degree of freedom and 5% level of significance. Therefore, when t-tab > t-cal then null hypothesis is accepted i.e. the variables are not significantly correlated and their relationship is significant.

Similarly for fixed deposit the correlation r_{45} is 0.2194, which is positive relationship. The t-statistics for fixed deposit shows that its calculated value of t is 0.5028, which is smaller than the tabulated value of t i.e. $t_{cal} < t_{tab}$, in such case alternative hypothesis is rejected. This indicates that the two variables are uncorrelated. The analysis of EBL also shows that substitution effect is not applicable for bank.

4.3 Analysis of Lending and Interest Rate

This is second area of the analysis where mainly the relationship between lending interest rate and its effect upon lending amount is attempted to study. Generally, when there is higher interest rate (especially lending or credit rates) in the economy people normally borrow lesser amount than the period when lending rate is low. According to theory, when there is low lending rate, then there should be higher amount of borrowing by the user of fund. Higher amount of borrowing indicates higher investment in the country or higher transaction in trade. This is necessary for the growth of the economy. Therefore, this study tries to explore the relationship between lending rate and lending amount in Nepalese economy.

4.3.1 NABIL Bank Limited (NABIL)

Lending activity of commercial banks can be diversified into different sectors. But according to the publication of Nepal Rastra Bank, Banking and Financial statistics the loan of commercial banks are classified in different sub-sectors like overdraft, export credit, import LC, commercial loan and on. Besides this there are other section (area) when banks provides loan and these areas are placed in the topic of "others". For this study, lending area are categorized as classified by NRB as shown in the table 4.10.

Table 4.10**Lending Rate of NABIL on Different Sectors During Seven Years**

Sector	2004	2005	2006	2007	2008	2009	2010
Overdraft	-	-	-	-	-	-	-
Export credit	11.0	11.0	11.0	10.5	10.5	10.5	14.0
Import LC	11.0	11.0	11.0	10.5	10.5	12.0	14.0
HMG Bond	7.5	7.5	7.5	7.5	7.5	10.0	12.0
BG/CG	9.0	9.0	9.0	7.5	7.5	11.0	16.0
Other Guarantee	10.0	10.0	10.0	8.5	8.5	-	-
Industrial Loan	-	-	-	-	-	-	-
Commercial Loan	-	-	-	-	-	-	-
Priority Sector Loan	13.0	12.0	12.0	11.0	11.0	-	-
Working Capital	12.0	12.0	12.0	11.5	11.5	12.0	15.0
Hire Purchase	12.5	12.5	12.0	12.0	12.0	-	-
Others	13.0	13.0	13.0	12.0	11.5	12.5	17.0
Average Int. Rate (1)	11	10.89	10.83	10.11	10.05	11.33	14.67
Lending Amount (2)	8769.7	11360.3	13278.8	15903	21365.1	27589.9	32268.9
Correlation (r_{12})	0.6608						
Coe. of Det. (r_{12}^2)	0.4367						
t-statistics	t-cal= 1.969		t-tab = 2.571		Insignificant		
Standard deviation	1.4545						

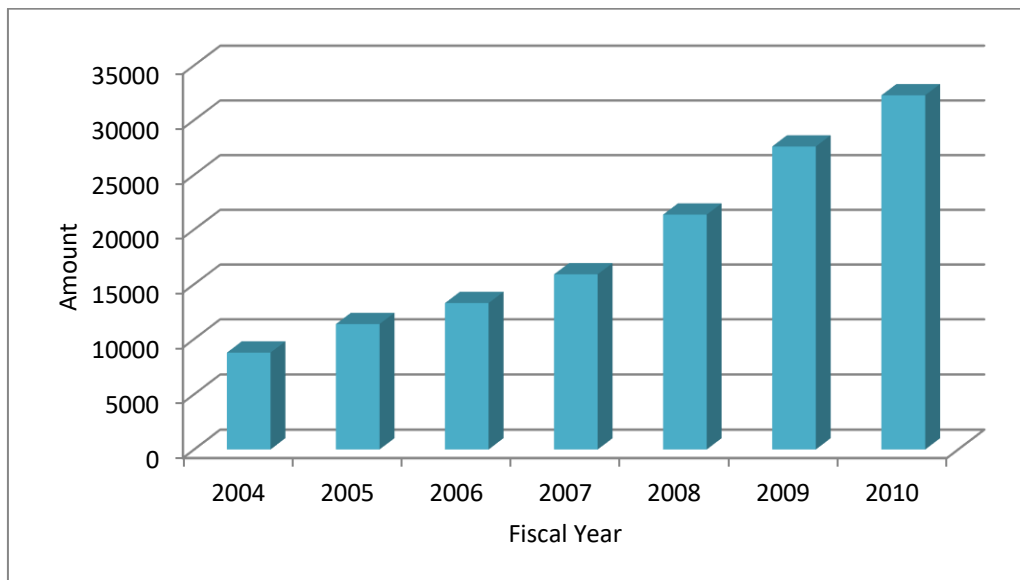
Source: Banking and Financial Statistics Volume 47-54, NRB and Annual Report of NABIL

Table 4.10 shows interest rate on lending on different area are in decreasing trend except 2009 and 2010. The table shows that the maximum interest rate is 17% in FY 2010; minimum rate is 7.5 on FY 2004, 2005, 2006, 2007 and 2008. This shows that the interest rate declined drastically during the six FYs period. Generally the productive sector loan rate (like commercial loan, industrial loan, priority sector loan, working capital rate and so on) and non productive sector loan like loan against government bond, BG/CG and so an are decreasing in similar ratios. According to theory in order to induce the investment in the country or expansion of trade, the productive sector loan should be available at cheaper rate. However, the table shows that these sectors loan were somewhat costlier than other non-productive loan. In the case of 2010, the lending interest rates are increasing rate due to inflation, crises of money and effect of competition of commercial banks.

If the average of each fiscal year is taken, then the average lending interest rate was 11 (2004), 10.91 (2005), 10.86 (2006), 10.86 (2007), 11.11 (2008), 10.5 (2009) and 14.67 (2010). The standard deviation for average interest rate was 1.4545, which shows the deviation from mean return. The average rate is also in decreasing trend but last three year it is increase. The decreasing tendency was not smooth. It means that the rate declined each year with different rate. In preceding year the declination was quite fast where as the declining tendency was little small in later year. This concludes that interest rate is also in decreasing tendency for past few years except in 2009 and 2010. With agreement to interest rate, the lending amount of NABIL is seen to be in increasing trend. These can be also being present in figure 4.9 and 4.10.

Figure 4.9

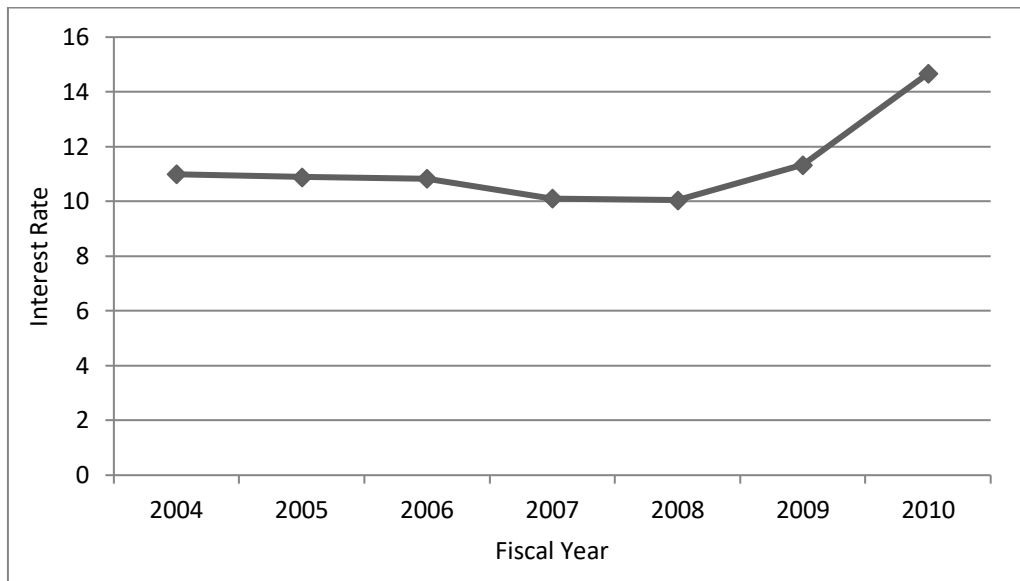
Lending Amount of NABIL on During Different Years



Source: Table 4.10

Figure 4.10

Average Lending Rate of NABIL During Different Years



Source: Table 4.10

Correlation Coefficient, Coefficient of Determination and t-statistics of NABIL

From table 4.10 the correlation coefficient (simple correlation) between lending rate and lending amount r_{12} is 0.6608. It is positive correlation. It indicates that increment in one variable result the increment in other variables in positive moldered magnitude or vice-versa. Decrement in lending interest rate increases the lending amount because people preferred more credit from the bank when bank reduced the lending interest rate. This condition is not matches with the theory. Similarly the coefficient of determination between two variables $(r_{12})^2$ are 0.4367. It means that the relationship between dependent variable and independent variable is defined up to the extent of 43.67%. The remaining percentage is due to other factors.

Similarly the calculate value for NABIL is 1.969 ($t\text{-cal} = 1.969$). This value is less than tabulated value, ($t\text{-tab} = 2.571$) with level of significance 5 and d. f 5. In this condition, H_0 is accepted it means that there is no significant correlation between the two variables. In other words, their relation is in significant. Though the correlation coefficient shows that these two variables have moderate level of correlation but t-statistics verify that their relation is insignificant. In conclusion, the positive relationship between lending rate and lending amount is not exactly applicable for

NABIL. Now it is clear that the increase in lending amount is not significantly due to decrease in lending interest rate.

4.3.2 Bank of Kathmandu (BOK)

BOK grants credit on different area like commercial loan, overdraft, working capital, hire purchases and so on. The sector where BOK supplied credit during last seven FYs and the corresponding interest rate as well as average interest rate during that period is as follows.

Table 4.11
Lending Rate of BOK on Different Sectors During Seven Years

Sector	2004	2005	2006	2007	2008	2009	2010
Overdraft	13.5	13.5	13.5	13.5	13.5	13.5	16.0
Export credit	10.5	10.5	10.5	10.5	10.5	12.5	14.0
Import LC	12.5	12.5	12.5	12.5	12.5	12.5	13.0
HMG Bond	8.0	8.0	8.0	8.0	8.0	10.0	13.0
BG/CG	10.5	-	10.5	10.5	10.5	10.5	12.0
Other Guarantee	8.5	8.5	8.5	8.5	8.5	-	-
Industrial Loan	13.0	13.0	13.0	13.0	13.0	13.0	-
Commercial Loan	13.5	13.5	13.5	13.5	13.5	-	-
Priority Sector Loan	-	-	-	-	-	-	-
Working Capital	13.5	13.5	13.5	13.5	13.5	13.5	15.0
Hire Purchase	12.0	11.0	11.0	11.0	11.0	12.0	15.0
Others	13.5	13.5	13.5	13.5	13.5	12.5	16.0
Average Int. Rate (1)	11.72	11.75	11.63	11.63	11.63	12.22	14.25
Lending Amount (2)	6104.9	6278.5	7586.2	9722.1	12462.6	14946.0	16664.9
Correlation (r_{12})	0.7243						
Coe. of Det. (r_{12}^2)	0.5246						
t-statistics	t-cal=2.349		t-tab = 2.571			Insignificant	
Standard deviation	0.8916						

Source: Banking and Financial Statistics Volume 47-54, NRB and Annual Report of BOK

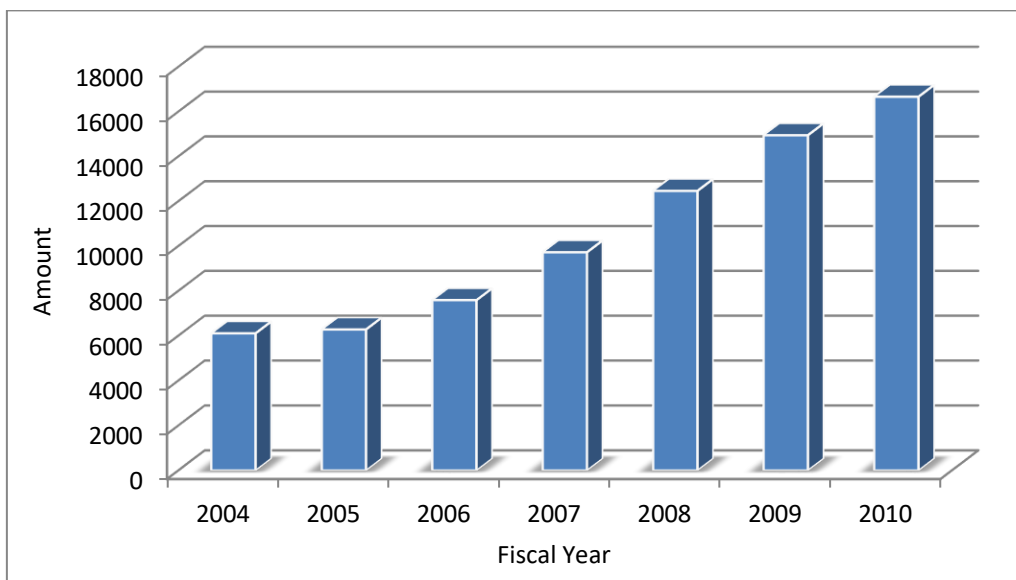
The table 4.11 shows the lending interest rate structure of BOK on seven FYs on different sectors. From table, the interest rates are somewhat greater in value as compared to the interest rate of NABIL. It means that there was some difference in interest rate between two private banks. For example in hire purchase and other NABIL quoted 12 and 13% per annum respectively On FY 2006 where as in the same period BOK quoted the interest rate of 13.0 and 13.5 respectively. Similarly, the

average interest rate of BOK is also higher than average rate of NABIL. These also show the difference in interest rate between two private banks.

Above the table shows, that the maximum rate is 16.0% in FY 2010 and minimum rate is 8.0% in FY 2004, 2005, 2006, 2007 and 2008. The average interest rate is declining slowly during the seven FYs except 2009 and 2010. This phenomenon can be seen clearly with the study of average interest rate. The average interest rate for FYs 2004, 2005, 2006, 2007, 2008 2009 and 2010 are 11.72 11.75, 11.63, 11.63, 11.63 12.22 and 14.25 respectively. The average interest rate shows that the rate has fallen at steady rate. During the period, hire purchase rate are decreasing movement in 2004 to 2008 except 2009, due to crisis of money, worldwide inflation. Export credit, and government bond are also constant 2004 to 2008 then increase in 2009 and 2010. The commercial loan and industrial loan have not changed in sample period.

Here lending amount are increasing every year with a decline in interest rate. To quantify this relationship, it is necessary to calculate correlation coefficient and t-statistics. But prior to this it is fruitful if the trend of lending interest rate and lending amount is shown as in figure 4.11 and 4.12.

Figure 4.11
Lending Amount of BOK on During Different Years

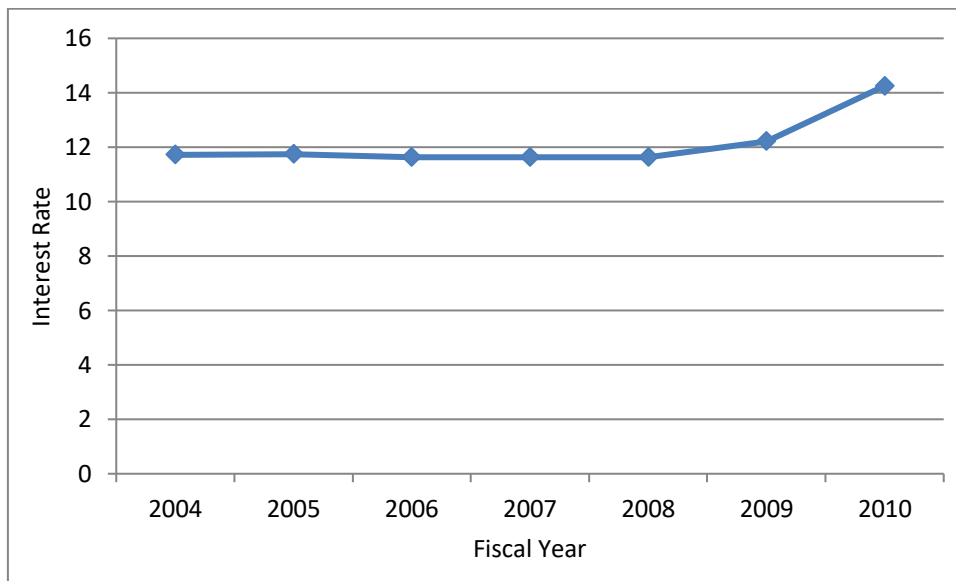


Source: Table 4.11

In this way, the graph of average interest rate of last seven FYs is as follows:

Figure 4.12

Average Lending Rate of BOK During Different Years



Source: Table 4.11

Correlation Coefficient, Coefficient of Determination and t- statistics of BOK

From table 4.11 the correlation coefficient (simple correlation) between lending rate and lending amount r_{12} is 0.7243. According to our classification, this positive correlation is of “high degree”. In this case, it is clear that interest rate on lending and lending amount has inverse relationship. It means they move in same direction i.e. increase in lending rate result increase in total lending amount in high magnitude. This situation is not matches with the actual theory. According to the theoretical concept of lending rate and lending amount people prefer or use more money when the market interest rate is low in the market. The simple determination of correlation coefficient (r^2_{12}) is 0.5246 when total lending amount is taken as dependent variable and lending rate as independent variables then 52.46% of total variation in dependent variable is explained by lending rate and remaining percentage is due to the effect of other variables in the economy.

Test of significance of correlation coefficient between lending rate and lending amount also verify the fact. The calculated value of t-statistics is 2.349 ($t_{cal} = 2.349$). This value is less than tabulated value, $t_{tab} = 2.571$ with level of significance 5 and d. f 5. In this condition, H_0 is accepted. It means that there is no significant correlation

between the two variables. In other words, their relation is insignificant. Though the correlation coefficient shows that these two variables have moderate level of correlation, but t-statistics verify that their relation is insignificant. In conclusion, the positive relationship between lending rate and lending amount is not exactly applicable for BOK. Now it is clear that the increase in lending amount is significantly correlated due to decrease in lending interest rate.

4.3.3 Himalayan Bank Limited (HBL)

The sector where HML granted its credit during last seven FYs and their Corresponding interest rate and lending amount are presented in the table 4.12.

Table 4.12

Lending Rate of HBL on Different Sectors During Seven Year

Sector	2004	2005	2006	2007	2008	2009	2010
Overdraft	13.25	12.0	12.0	10.0	10.0	10.75	11.0
Export credit	9.5	8.75	8.75	8.75	9.75	10.75	16.0
Import LC	12.25	11.75	11.75	9.5	9.5	10.25	16.0
HMG Bond	8.0	6.0	6.0	6.5	7.0	8.0	11.0
BG/CG	10.5	9.25	9.25	8.0	8.0	10.0	16.0
Other Guarantee	10.5	-	-	-	11.0	-	-
Industrial Loan	13.0	12.75	12.75	-	11.5	-	-
Commercial Loan	13.25	12.5	12.5	-	-	-	-
Priority Sector Loan	13.0	12.25	12.25	10.0	-	10.0	-
Working Capital	13.0	13.0	-	-	-	-	-
Hire Purchase	13.0	11.5	11.5	9	9.5	12.0	17.0
Others	15.75	13.5	13.5	12	10.5	11.25	18.0
Average Int. Rate (1)	12.08	11.20	11.025	9.21	9.63	10.37	16.0
Lending Amount (2)	13081.7	13245.0	15516.0	17672.0	20179.6	25519.5	27980.6
Correlation (r_{12})	0.4246						
Coe. of Det. $_{12}^{2)}$	0.1803						
t-statistics	t-cal=1.0487		t-tab = 2.571		Insignificant		
Standard deviation	2.0633						

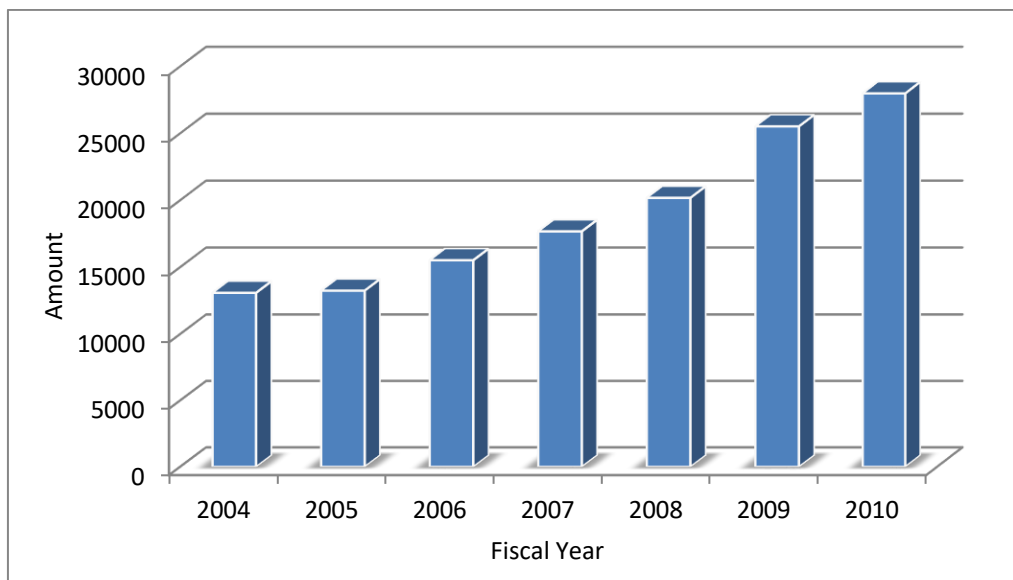
Source: Banking and Financial Statistics Volume 47-54, NRB and Annual Report of HBL

The table 4.12 shows the interest rate of HBL on lending on seven fiscal years granted in different sectors. The average lending interest rate of HBL on 2004 was 12.08% and on FY 2010 was 16.0%. This is 32.45% increase in average lending interest rate

during seven-year period. Conversely, the lending amount of HBL is seen to be in increasing trend. Lending amount of HBL have been raises to 27980.6 million but BOK lending amount raises only up to 16664.9 million respectively in FY 2010. Above study, shows HBL have more lending amount then BOK. This may be due to that HBL lending rate more in comparison to BOK.

Thus lending amount of HBL increases with a decline in lending rate of HBL. This relationship match with the theory. To quantify this relationship, it is necessary to calculate correlation coefficient and t- statistics. Prior to this, it will be helpful if the trend of lending interest rate and lending amount are presented on graph no 1.13 and 4.14 as bellows.

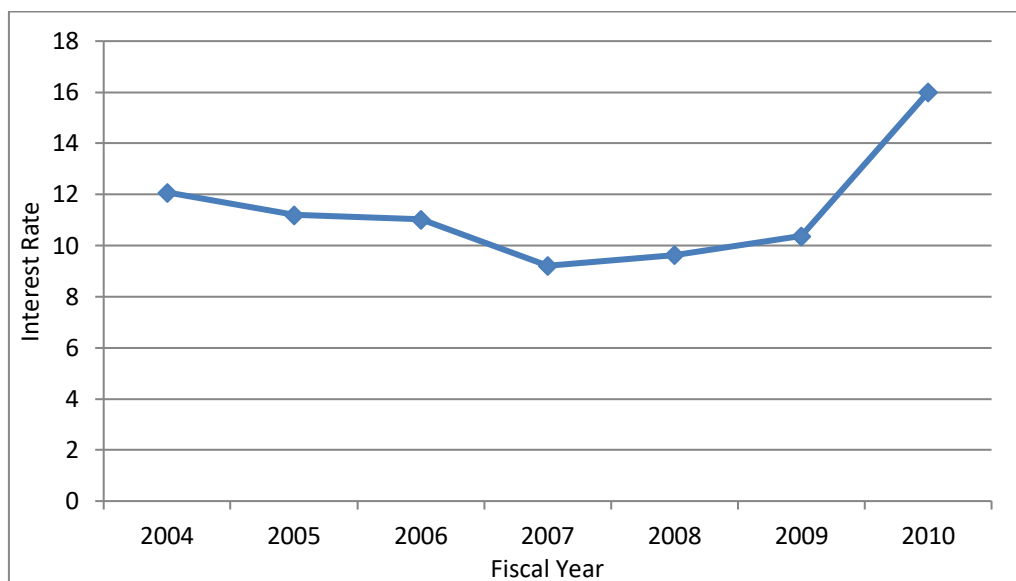
Figure 4.13
Lending Amount of HBL on During Different Years



Source: Table 4.12

Figure 4.14

Average Lending Rate of HBL During Different Years



Source: Table 4.12

Correlation Coefficient, Coefficient of Determination and t- statistics of HBL

The correlation coefficient of HBL between lending amount and lending rate is 0.4246. It is moderate degree positive correlation. It indicates that increment in one variable result the increment in other variables or vice-versa. In this case, decrease in lending interest rate increases the lending amount but in low scale. People preferred more credit from HBL when bank reduced the lending interest rate. Similarly the coefficient of determination between two variables (r^2_{12}) =0.1803. It means that the relationship between dependent variable and independent variable is defined up to the extent of 18.03%. In other words the increase in lending amount by decrease in interest rate is defined up to the extent of 18.03% where as remaining percentage is due to other factors.

Similarly the t- statistics for HBL is 1.0487 (t-cal=1.0487) the tabulated value at 5 level of significance with 5 degree of freedom is 2.571. Comparing the t-tab and t-cal it is clear that t-cal < t-tab, so Null hypothesis is accepted and alternative hypothesis is rejected. It means that the relation shown by correlation coefficient is highly insignificant. That is the relation shown by two variables lending amount and lending rate is weak. The increase in demand of lending amount is not effect to the decrease in lending rate. Therefore, according to t-statistics the lending rate is also not strong as

well as important factor that shape the lending amount. In conclusion, the inverse relation of HBL on two variables is in not agreement with theory.

4.3.4 Everest Bank Limited (EBL)

EBL also grant credit on different area like commercial loan industrial loan, Overdraft, working capital and so on. These rates on the different fiscal years are as follows.

Table 4.13
Lending Rate of EBL on Different Sectors During Seven Years

Sector	2004	2005	2006	2007	2008	2009	2010
Overdraft	12.5	11.5	11.0	11.0	11.0	11.0	11.0
Export credit	10.0	8.5	8.0	8.0	10.0	10.0	10.0
Import LC	11.75	10.0	10.0	10.0	10.0	10.0	10.0
HMG Bond	8.0	6.5	6.0	6.0	8.0	8.0	8.0
BG/CG	10.5	8.5	8.5	8.5	8.5	8.5	8.5
Other Guarantee	-	-	-	-	-	-	-
Industrial Loan	13.0	12.0	11.0	11.0	11.0	11.0	11.0
Commercial Loan	12.5	11.5	11.0	11.0	11.0	11.0	11.0
Priority Sector Loan	13.0	12.0	-	-	-	-	-
Working Capital	12.5	10.5	11.0	11.0	11.0	11.0	11.0
Hire Purchase	13.0	12.0	7.0	10.5	10.5	10.5	10.5
Others	13.5	12.0	11.0	11.0	11.0	11.0	11.0
Average Int. Rate (1)	11.84	10.45	9.45	9.8	10.2	10.2	10.2
Lending Amount(2)	6116.6	7914.4	10124.4	14059.2	18836.4	24469.6	27556.4
Correlation (r_{12})	-0.3428						
Coe. of Det. (r_{12}^2)	0.11785						
t-statistics	t-cal=0.816		t-tab = 2.571		Insignificant		
Standard deviation	0.6966						

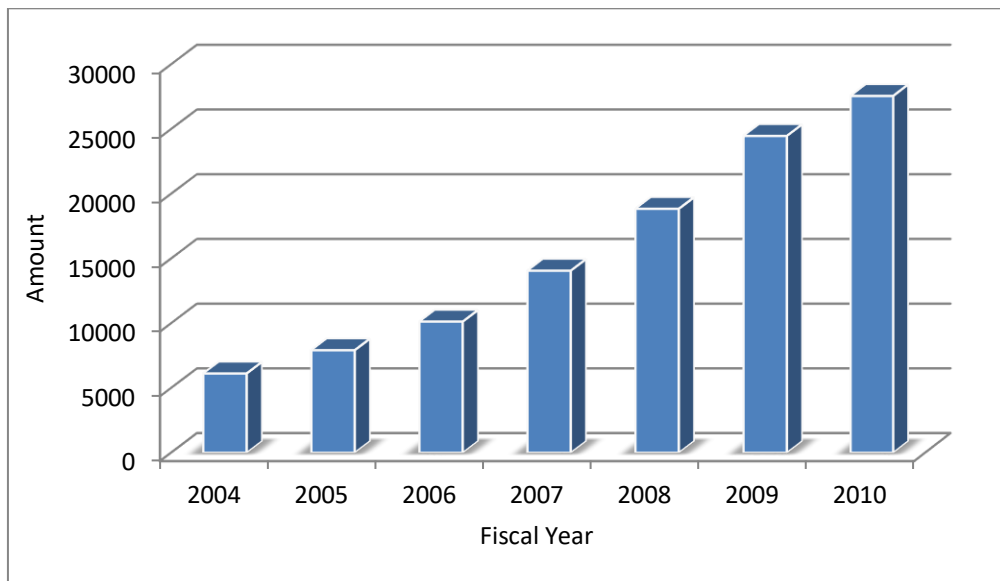
Source: Banking and Financial Statistics Volume 47-54, NRB and Annual Report of EBL

The table 4.13 shows the interest rate of EBL on lending on seven FYs granted in different sectors. With comparison to above, abovementioned bank EBL lending rate was somewhat lower then NABIL and HBL. This may be due to competition because thus banks are commercial banks. The average interest rate of EBL was declining trend. However, the decreasing magnitude is very little. The average interest rate of EBL was decreasing only in decimal percentage. The interest rates of EBL in all sectors are declining in same manner that means declining ration is almost same. It

means that, there was equal fall in interest on each sector loan. In past seven FYs the highest interest rate was 13.5 and minimum interest rate was 6.0 to FYs 2006 and 2007. This is exceptional case. Nevertheless, in the other sector loan the lending interest rate not decreasing by huge magnitude. To see the position it is better to give glance on average lending rate during last seven FYs. The average interest rate was 11.90, 11.90, 10.62, 9.63, 9.92, 10.20 and 20.20 in fiscal year 2003, 2004, 2005, 2006, 2007, 2008 and 2009 respectively.

In effect of decline in interest rate, the lending amount of EBL is also found to be increasing drastically during the seven fiscal years. The lending amount also increasing radically past sample years. This is what the theory says. However, to know exact relationship it is necessary to compute the correlation coefficient. Prior to it, rational if the data of table 4.13 are present on the figure 4.15 and 4.16.

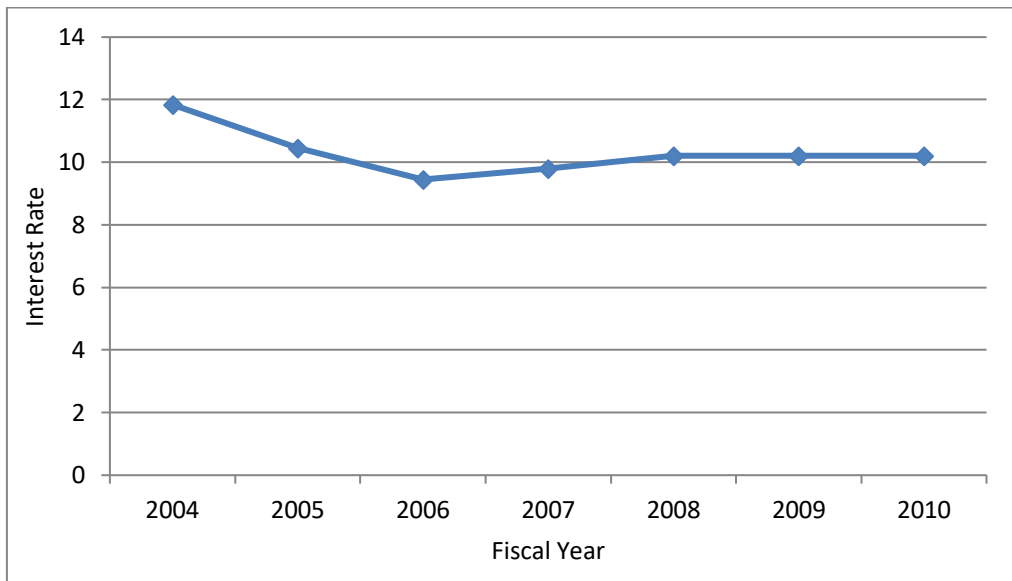
Figure 4.15
Lending Amount of EBL on During Different Years



Source: Table 4.13

Figure 4.16

Average Lending Rate of EBL During Different Years



Source: Table 4.13

Correlation Coefficient, Coefficient of Determination and t- statistics of EBL

By using excel spreadsheet, correlation coefficient, average, standard deviation and other necessary statistics can be calculated. The correlation coefficient between lending rate and lending amount for EBL is -0.3428. This is moderate degree of correlation the negative sign indicates that the two variables have opposite or inverse relationship, meaning decrease in one variables leads to increase in other variables but in little amount. For this case decreases in interest in interest rate stimulates the lending amount or vice-versa. The coefficient of determination for correlation coefficient is 0.1175. In other words the relationship between one variable is defined by another is up to the level of 11.75%.

To verify the correlation coefficient statistically, it is better if t-statistics is used. The calculated value for t is 0.816 (t-cal=0.816). Similarly the tabulated value for t at 5 degree of freedom with 5 level of significance is 2.571 i.e. (t- tab= 2.571). Comparing t-cal and t-tab it is found that t-cal < t-tab so in such case null hypothesis is accepted. It means that there is no correlation coefficient between two variables. In other words, their relation is insignificant. Though the correlation coefficient shows that these two variables have moderate level of correlation but t- statistics verify that inverse relationship between lending rate and lending amount is not exactly applicable for

EBL. Now it is clear that the increase in lending amount is not satisfactory due to decrease in lending interest rate.

4.4 Analysis the Position of Interest Rate Spread and Loan and Advance Ratios

Interest rate spread is a difference between interest rate on lending and interest rate on deposit. Generally, banks charge more interest rate on lending than they provide interest rate on deposits. Similarly, loan and advance to total deposits helps us showing the relationship between loans and advances, which are granted, and the total deposit collected by the bank and also find out how successfully the banks are utilizing their total deposits on loan and advances for profit generating purpose.

4.4.1 NABIL Bank Limited (NABIL)

Position of interest rate spread and loan and advance a ratio of NABIL is given in table 4.14.

Table 4.14

Position of Interest Rate Spread and Loan and Advance Ratios of NABIL

Year	Interest rate on deposit (X ₁)	Deposit amount in million Rs (X ₂)	Interest rate on lending (X ₃)	Loan Amount in Million Rs (X ₄)	Interest rate spread (X ₃ -X ₁)	Loan & advance ratios (X ₄ ÷X ₂)
2004	2.82	14098.0	11	8635.1	8.18	61.25%
2005	3.32	14586.8	10.89	11078.0	7.57	75.94%
2006	3.21	19348.4	10.83	13021.3	7.62	67.29%
2007	2.75	23342.4	10.11	15657.1	7.36	67.08%
2008	4.79	31915.0	10.05	21365.0	5.26	66.69%
2009	5.58	37348.3	11.33	27590.0	5.75	73.87%
2010	8.92	46340.7	14.67	32268.9	5.75	69.63%

Source: Annual Report of NABIL

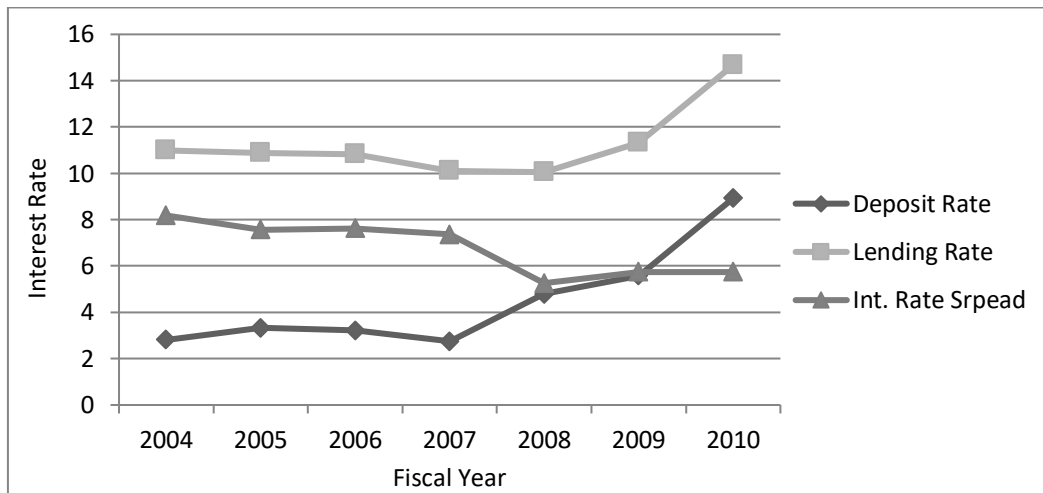
The beyond table shows a clear picture of interest rate on deposits and lending, deposit amount and loan amount for seven FYs of NABIL as well as interest rate spread and total loan & advance ratios. The average spread rate during the period is 8.18%, 7.57%, 7.62%, 7.36%, 5.26% 5.75% and 5.75% in FYs 2004, 2005, 2006, 2007, 2008, 2009 and 2010 respectively. The interest rate spread shows how greater rate charge by NABIL for lending than deposit rate.

From the calculation of loan and advance to total deposit ratios shows that NABIL was able to utilize 61.25% of total deposited fund on loan and advances for profit gestating purposes in 2004. After that, it increases from 2005. The ratio was 75.94% in 2005 than after it was again decreased to 67.29 in 2006, 67.08 in 2007, 66.69% in 2008, and 73.87% in 2009 and also decreases 69.63% in 2010.

Generally, greater loan & advance to total deposit ratio implies the better utilization of total deposits and vice-versa. The table 4.14 can be clarified by the figure 4.17 and figure 4.18.

Figure 4.17

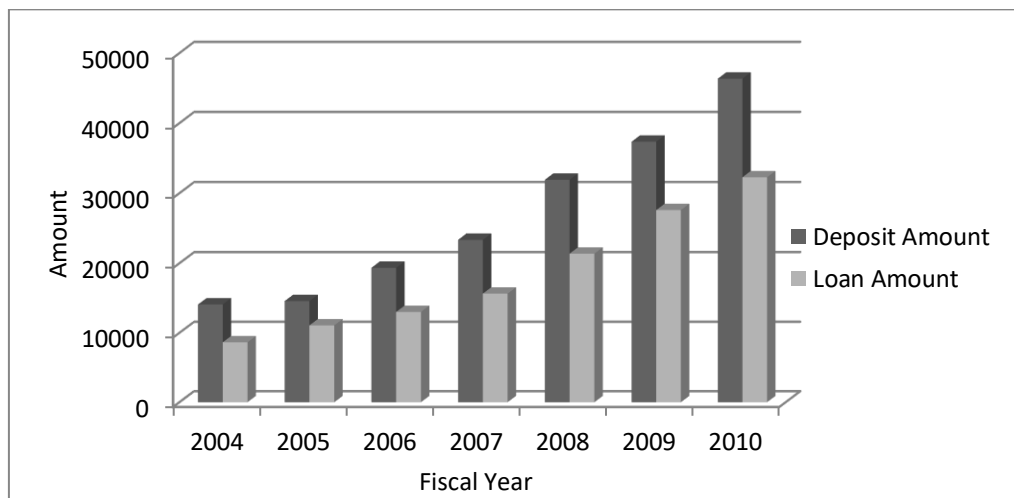
Relationship between Deposit Rate and Lending Rate of NABIL



Source: Table 4.14

Figure 4.18

Deposit Amount and Loan Amount of NABIL During Different Years



Source: Table 4.14

4.4.2 Bank of Kathmandu

The interest rate on deposit and lending, Deposit amount and loan amount for seven years period of BOK as well as interest rate spread and loan and advance ratio is given as follows:

Table 4.15

Position of Interest Rate Spread and Loan and Advance Ratios of BOK

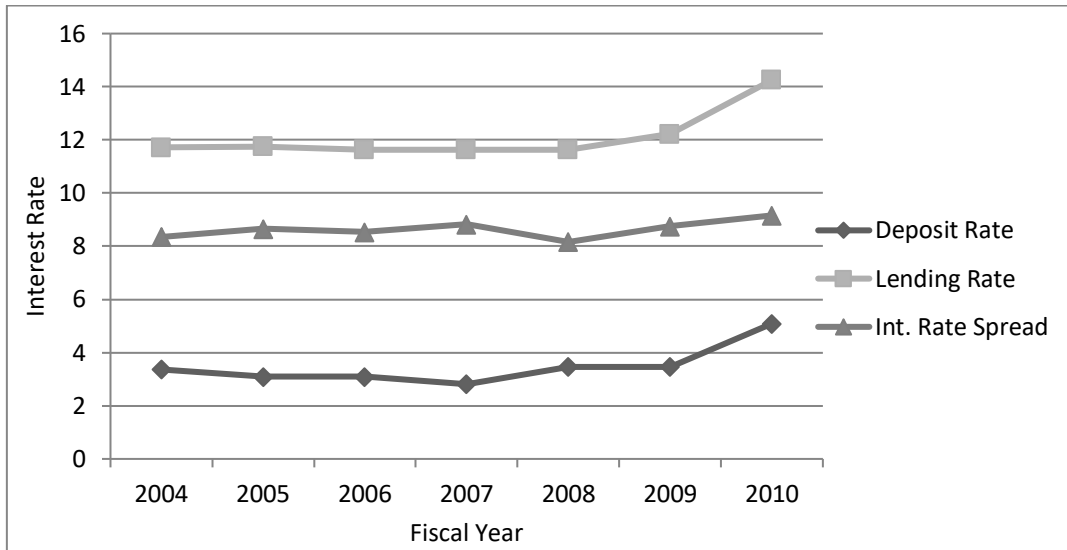
Year	Interest rate on deposit (X₁)	Deposit amount in million Rs (X₂)	Interest rate on lending (X₃)	Loan Amount in Million Rs (X₄)	Interest rate spread (X₃-X₁)	Loan & advance ratios (X₄÷X₂)
2004	3.37	7742.0	11.72	6008.0	8.35	77.60%
2005	3.09	8943.0	11.75	6182.0	8.66	69.12%
2006	3.09	10485.0	11.63	7489.0	8.54	71.42%
2007	2.81	12389.0	11.63	9694.0	8.82	78.24%
2008	3.47	15834.0	11.63	12748.0	8.16	80.51%
2009	3.47	18084.0	12.22	14946	8.75	82.64%
2010	5.09	20315.8	14.25	16665.0	9.16	82.03%

Source: Annual Report of BOK

The above table shows clear figure of interest rate on deposit and lending deposit amount and loan amount for seven years period of BOK as well as interest rate spread and total loan and advances ratios. From the table both deposit rate and lending rate move in same and constant direction. When deposit rate decreases, lending rate also decreases except 2008, 2009 and 2010. The interest rate spread (different between lending rate and deposit rate) shows how greater rate charge by BOK for lending than deposit rate. The table 4.17 shows spread rate is high in year 2005 (i.e. 8.66) that it has decreased to 8.13% in 2003, 8.35% in 2004, 8.54% in 2006, 8.82% in 2007, 8.16% in 2008 and 2009. The relation between interest rate and lending rate of BOK is given in figure 4.19.

Figure 4.19

Relationship between Deposit Rate and Lending Rate of BOK

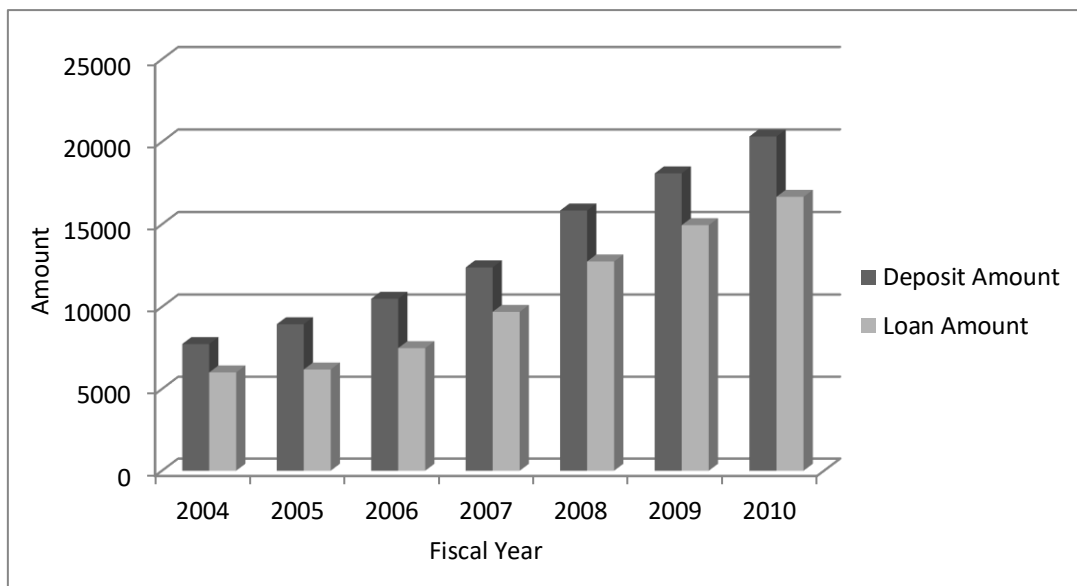


Source: Table No. 4.15

The table also shows the loan and advances to total deposit ratios of BOK for seven years period. The high loan and advance ratio indicate better utilization of deposit fund for profit generating purpose. Loan and advance to total deposit ratio of BOK is 77.60%, 69.12%, 71.42%, 78.24%, 80.51% 82.64% and 82.03% in the FYs 2004, 2005, 2006, 2007, 2008, 2009 and 2010 respectively. The deposit amount and loan amount of BOK can be shown in figure 4.20.

Figure 4.20

Deposit Amount and Loan Amount of BOK During Different Years



Source: Table 4.15

4.4.3 Himalayan Bank Limited (HBL)

The situation of interest rate spread and loan and advance ratio is talk about in subsequent table 4.16.

Table 4.16

Position of Interest Rate Spread and Loan and Advance Ratio of HBL

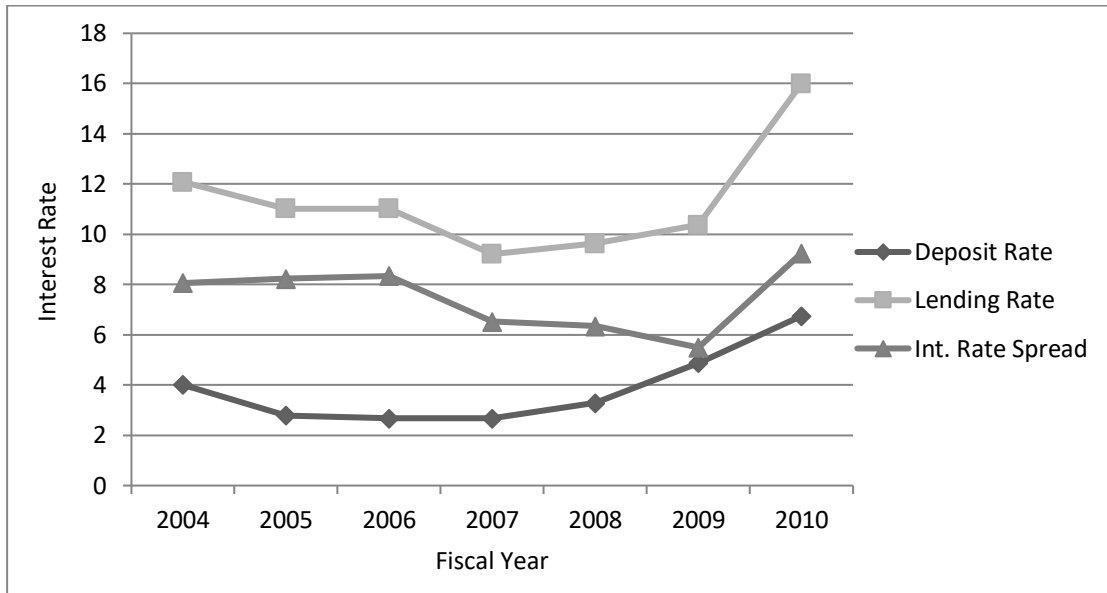
Year	Interest rate on deposit(X_1)	Deposit amount in million Rs (X_2)	Interest rate on lending (X_3)	Loan Amount in Million Rs (X_4)	Interest rate spread (X_3-X_1)	Loan & advance ratios ($X_4\div X_2$)
2004	4.01	22760.9	12.08	13081.7	8.07	57.47%
2005	2.79	24831.1	11.02	13245.0	8.23	53.34%
2006	2.68	26456.2	11.02	15515.7	8.34	58.64%
2007	2.68	29905.8	9.21	17672	6.53	59.09%
2008	3.29	31842.8	9.63	20179.6	6.34	63.37%
2009	4.875	34681.3	10.37	25519.5	5.495	73.58%
2010	6.75	37611.2	16.0	27980.6	9.25	74.39%

Source: Annual Report of HBL

The table 4.16 shows a clear picture of interest rate on deposits and lending, deposit amount and loan amount for seven FYs of HBL as well as interest rate spread and total loan & advance ratios. However, the average spread rate during the period is 8.07% 8.23%, 8.34%, 6.53%, 6.34%, 5.495% and 9.25% in FYs 2004, 2005, 2006, 2007, 2008, 2009 & 2010 respectively. The interest rate spread shows how superior rate charge by HBL for lending than deposit rate. The average spread rate is not stable over seven years period but in past FYs the rate is about to shame that only differs in decimal. The interest rate spread is little bit increased. The relation between deposit rate and lending rate of HBL is presented in figure 4.21.

Figure 4.21

Relationship between Deposit Rate and Lending Rate of HBL

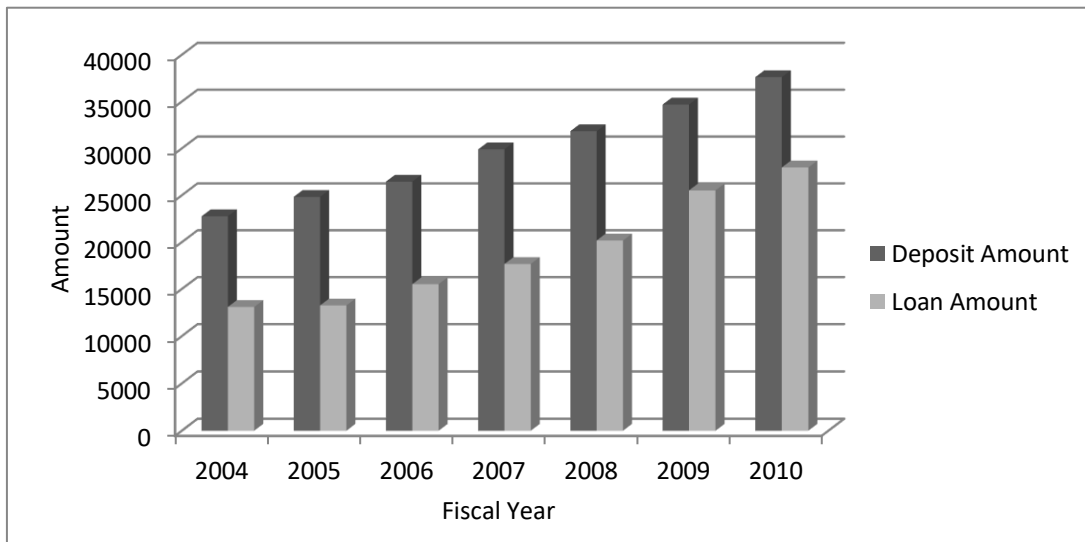


Source: Table 4.16

From the estimate of loan and advance to total deposits ratios shows that HBL was able to utilized 57.47% of total deposited fund on loan and advances for profit generating purposes in 2003. then it was increased trend but it was decrease in 2005 then it was increased to 58.64% to 2006. The greater loan and advance to total deposit ratios implies the better utilization of total deposits and vice-versa. Nevertheless, from the table HBL has not able to better-utilized total deposit fund in past year.

Figure 4.22

Deposit Amount and Loan Amount of HBL During Different Years



Source: Table 4.16

4.4.4 Everest Bank Limited (EBL)

Thesaurus the deposit rate and loan amount lending rate and amount as well as interest rate spread and loan and advance of EBL is given as follows:

Table 4.17

Position of Interest Rate Spread and Loan and Advance Ratios of EBL

Year	Interest rate on deposit (X₁)	Deposit amount (in Million) Rs (X₂)	Interest rate on lending (X₃)	Loan Amount (in Million) Rs (X₄)	Interest rate spread (X₃-X₁)	Loan & Advance ratios (X₄÷X₂)
2004	4.50	8064.0	11.90	6131.1	7.4	76.62%
2005	2.96	10097.8	10.62	7914.0	7.66	78.38%
2006	3.25	13802.5	9.63	10124.0	6.38	73.35%
2007	3.42	19097.7	9.92	14059.2	6.5	73.62%
2008	3.25	23976.3	10.2	18836.4	6.95	78.56%
2009	3.25	33322.9	10.2	24469.6	6.95	73.34%
2010	4.0	36932.3	10.2	27556.4	6.20	74.61%

Source: Annual Report of EBL

The table 4.17 shows a clear picture of interest rate on deposits and lending deposit amount and loan amount for seven years period of EBL as well as interest rate spread and total loan and advance ratios. From the above table both the variable (i.e. deposit and lending rate) move in same direction except last two years' interest rate on deposit was decrease due to computation of financial institutions. When deposit rate decreases landing rate also decreases. However, the average spread rate during the period is 7.40%, 7.66%, 6.38%, 6.5%, 6.95%, 6.95% and 6.20% in FY 2004, 2005, 2006, 2007, 2008, 2009 and 2010 respectively. The interest rate spread shows how greater charge by EBL for lending than deposit rate. From the analysis spread rate of EBL is not constant over seven years period. Range of interest rate spread of EBL during the study period is 6.38% to 7.66%.

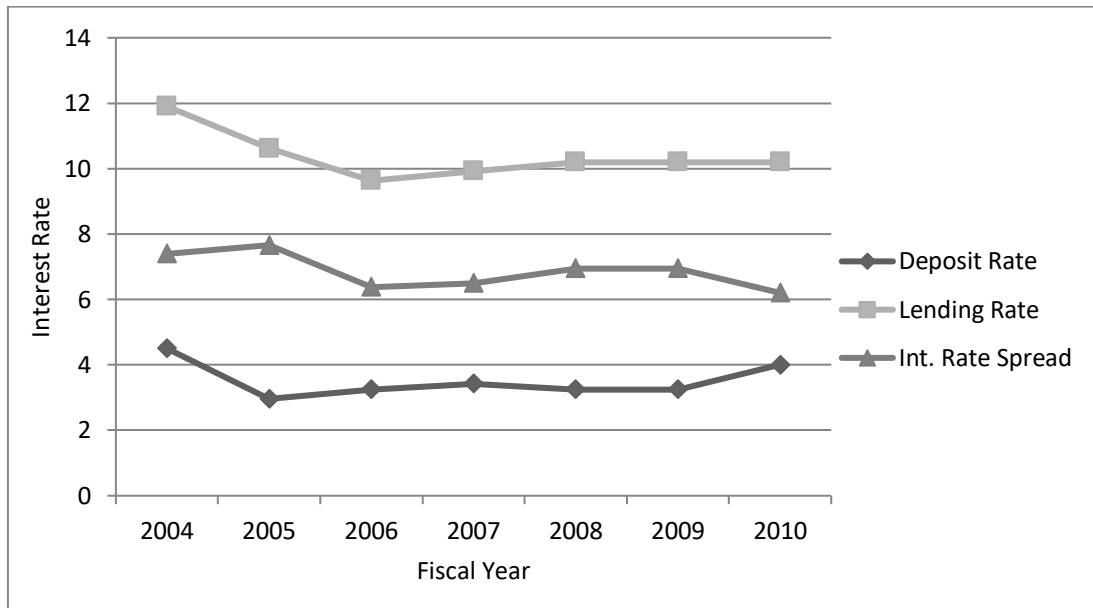
Loan advance to total deposit ratio shows utilization of total deposit fund for loan and advances. Generally, loan and advance to total deposit ratio implies the better utilization of total deposited on loan and advance for profit generating purpose and vice-versa. The table shows that EBL has utilized 76.02%, 78.38%, 73.34%, 73.62%, 78.56%, 73.34% and 74.61% total deposited fund for loan and advances in the

respective year 2004, 2005, 2006, 2007, 2008, 2009 and 2010. The highest ratio of EBL is 78.56 in FY 2008 and lowest ratio is 73.34 in FY 2006 and 2009.

The relationship between deposit rate and lending rate of EBL is given in figure use 4.23.

Figure 4.23

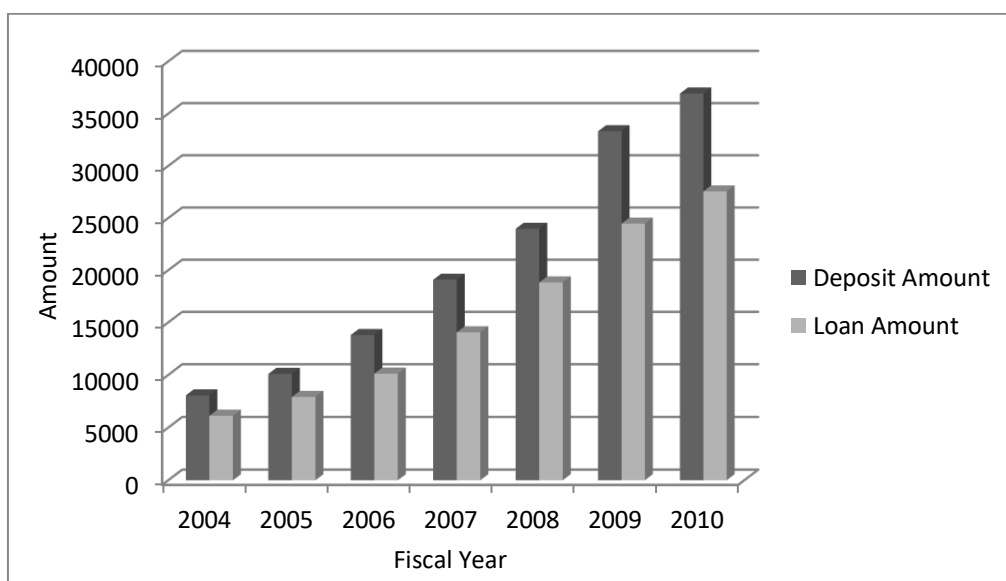
Relationship between Deposit Rate and Lending Rate of EBL



Source: Table 4.17

Figure 4.24

Deposit Amount and Loan Amount of EBL during Different Year



Source: Table 4.17

4.5 Major Findings

From the study, the following three major findings are obtained.

Findings with respect to Sample Banks

a) Relationship between deposit interest rate and deposit amount

According to the substitution theory, there should be strong relationship between the deposit amounts and deposit interest rate. The analysis of substitution effect for the fixed and savings shows that substitution effect does not work for all sample banks.

- For, **NABIL**

The correlation between saving interest rate and deposit amount is $r = -0.2223$ and correlation between fixed interest rate and deposit amount is $r = 0.9545$. Saving interest rate and deposit amount show a negative correlation, which opposes the substitution theory. However, fixed interest rate and deposit amount shows the positive correlation, which supports the substitution theory. Supporting the correlation, the test for significance proved significant and insignificant for these cases.

- For, **BOK**

The correlation for savings showed that $r = -0.9160$ and for Fixed $r = 0.9362$ which indicates one does not support and other supports the substitution theory. In line with the first correlation, the test for correlation further proved that it is significant whereas for second correlation it proved that the test is insignificant.

- For, **HBL**

The correlation for Savings showed that $r = -0.6135$ and for Fixed $r = 0.7467$ saving interest rate and deposit amount show a negative correlation, which does not support the substitution theory. Fixed interest rate and deposit amount shows the positive correlation, which is supports the substitution theory. Despite that, test for correlation of saving and fixed deposit proved that the test is insignificant.

- For, **EBL**

The correlation for Savings showed that $r = -0.7034$ and for Fixed $r = 0.2194$ saving interest rate and deposit amount show a negative correlation which indicate does not

support the substitution theory but Fixed interest rate and deposit amount shows the positive correlation, which is supports the substitution theory. In line with the first correlation, the test for both correlation proved that the test is insignificant.

Concluding from above, the analysis of substitution effect for both fixed and saving deposit shows that substitution effect not supported all sample commercial in saving deposit. The fixed deposit of all sample bank are support the substitution theory. This means that, people are concussing to deposit and interest rates on deposit. Which are falling some year then increase the interest rate. The increasing deposit amount clarifies this fact. NABIL bank is best alternative than other sample bank so it is appropriate for the deposit amount and deposit interest rate.

b) Relationship between lending interest rate and lending amount

According the theory, lending interest rate and lending amount should have inverse relationship but like in deposit, this also does not hold true in all sample banks.

- For, **NABIL**

The correlation between the two variables lending interest rate and lending amount $r = 0.6608$ and the test of correlation prove it and reveals the result of insignificant which denies the existence of inverse relationship between the two.

- For, **BOK**

The correlation between the two variables lending interest rate and lending amount $r = 0.7243$ and the test of correlation proves it and shows the result of insignificant which denies the existence of inverse relationship between the two.

- For, **HBL**

The correlation between the two variables lending interest rate and lending amount $r = 0.4346$ and the test of correlation proves it and shows the result of insignificant which denies the existence of inverse relationship between the two.

- For, **EBL**

The correlation between the two variables lending interest rate and lending amount $r = -0.3428$ but the test of correlation does not prove it and reveals the result of insignificant which denies the existence of inverse relationship between the two.

For all sample banks except EBL have position ship between lending rate and lending amount, which are not support the slaying of theory. The correlation coefficient is positive for all samples except EBL. T- Statistic shows that, t- calculated is less than t- tabulated value for all sample banks. These prove that correlation coefficient is insignificant for all sample banks. Thus, movements in interest rate on lending effect lending amount insignificantly for all sample banks. Concluding from above, the inverse relationship holds all sample bank show a direct relationship in existence between the two variables.

c) Relationship between interest rate spread and loan and advance ratio

According to interest rates Spread and Loan and advance ratios, generally interest rate spread shows how greater rate charged by bank for lending then deposit rate and greater loan and advance to total deposit ratio implies the better utilization of total deposit.

- For, **NABIL**

The interest rate spread of the bank is decreasing trend. It is good for consumer collection. Deposit and lending amount is found in increasing trend and bank however utilizing the collected deposit in terms of loan and advances (i.e. lending) but not properly.

- For, **BOK**

Deposit and lending amount is found in increasing trend and bank however utilizing the collected deposit in terms of loan and advances (i.e. lending) properly.

- For, **HBL**

Deposit amount and lending amount is in increasing trend but loan and advance ratio is not so good that means deposit amount is not properly utilizing by bank.

- For, **EBL**

Deposit amount, loan and advances are satisfactory that means however, the bank is utilizing the deposit amounts in terms of loan and advances.

Concluding from above, the interest rate spread is higher of sample bank except NABIL. The loan and advance to total deposit ratio show the better utilization of total deposit. In this case, the sample banks utilization is satisfactory except NABIL.

CHAPTER - V

SUMMARY, CONCLUSION AND RECOMMENDATIONS

This chapter mainly consists of Summary, Conclusion, Recommendation and Scope for the further study.

5.1 Summary

The economic development of a country depends up on the development of commerce and industry. In addition, there is no doubt; banking promotes the development of commerce because banking itself is the part of commerce. The process of economic development depends upon various factors, however economists are now convinced that capital formation and its proper utilization plays a paramount role in rapid economic development. In 1991 /1992, Nepal adopted an economic liberalization policy. Then gradually introduced several policies and laws such as Industrial Policy 1992, Foreign Direct Investment and Technology Transfer Act 1992, Privatization Act 1992 were introduced in line with liberal economic policy. After the adoption of economic liberalization policy, particularly the liberalization financial sector paved the way for establishment of new banks and non-bank financial institutions into the country. Consequently, by the end of mid – July 2010, NRB licensed bank and non-bank financial institutions totaled 248 out of them, 27 are commercial banks, 79 development banks, 79 finance companies, 18 micro- credit development banks, 15 savings & credit cooperatives and 45 NGOs (*www.nrb.com.np*).

Accepting deposit from savers (household, businesses or government) and transferring the collected deposit to the investment sector (i.e. lending collected amount from depositors to borrowers) is one of the major functions of banking business. Banks are the real intermediaries who transfer saving (i.e. collected deposit) to the needy investors. So that money can be used in the productive sector for economic development. To collect deposit bank provide certain percentage of interest and when amount is loaned outside (which has been collected from savers) certain percentage of interest is charged to them. Even though there are various factors in the economy that effects deposit amount and lending amount interest rate is one of the major economic indicator that affect deposit and lending amount of the banks. This

study was done to clear about interest rate structure of commercial banks and its influence deposit and lending amount. This study was under taken to show between deposit rate and deposit amount and lending rate and lending amount as major objectives.

The review of literature shows that there are many economic and noneconomic factors that influence deposit and lending. However, it also seen that there is relationship of interest rate with deposit amount and lending amount. The volume of deposit amount and lending amount of banks are highly affected by their interest rate. According to the theoretical views, there is positive relationship between interest rate on deposit and deposit amount. That is, when interest rate on deposit increases that attract to the deposit and deposit amount of banks are increases or vice versa. Similarly, there is negative relationship in between interest rate on lending and lending amount of banks. That means with increase in interest rate on lending, lending (loan or investment) amount decreases and vice versa. Various commercial banks and financial companies in Nepal are free to set their own interest rate on deposit and lending. Hence, all banks determine their interest rate as per their own policy purpose or objectives. However, interest rate fluctuates with time and with impact of economic and non-economic factors which in turn affect deposit amount and lending amount of banks.

The effect of interest on deposit and lending amount and interest rate structure on deposit and lending were analyzed from five commercial banks of Nepal for seven years period by using statistical and financial tools mentioned in chapter three. Secondary data were collected from NRB'S economic reports, annual reports of related banks and websites. The analysis of all banks showed average interest rate on deposit; is in decreasing except last two years and deposit amount is in increasing trend. Similarly, interest rate on lending had also same trend. But interest rate on loan and advances (lending) amount was in increasing trend. This trend showed there was opposite relationship between deposit rate and deposit amount; lending rate and lending amount of commercial banks. The statistical analysis also shows that there is insignificant relationship between deposit rate and deposit amount and lending rate and lending amount of most commercial banks except few. The interest rate spread of all the sample banks found to satisfactory except SCBL during last seven fiscal years.

But it was found that most of the banks were not able to use deposit in terms of loan and advances properly except BOK.

5.2 Conclusion

From the presentation and analysis of data; using different financial tools the major findings are tabulated and are presented as follows:

Table 5.1
Summaries of the Findings

Bank		Correlation coefficient		t- statistics		Result
		Saving Int. Rate	Fixed Int. Rate	Saving Int. Rate	Fixed Int. Rate	
NABIL	Deposit	-0.2223	0.9545	0.5098	7.1572	Insig./ Sig.
	Lending	0.6608		1.969		Insignificant
BOK	Deposit	-0.9160	0.9362	5.1063	5.9569	Sig. / Sig.
	Lending	0.7243		2.349		Insignificant
HBL	Deposit	-0.6135	0.7467	2.70	2.5103	Insig. / Insig.
	Lending	0.4246		1.0487		Insignificant
EBL	Deposit	-0.7034	0.2194	2.213	0.5028	Insig. / Insig.
	Lending	-0.3428		0.816		Insignificant

From the analysis of relevant data of sample banks under the study, using various statistical tools mentioned in chapter three and from their findings following conclusions have drawn.

- The interest rate on both deposit and lending of all sample banks are found to be in decreasing trend except in 2008, 2009 and 2010. On the contrary, this fixed deposit amount and lending amount is increasing every year. But saving deposit amount is slightly decreasing last year.
- The saving deposit amount and saving interest rate have negative relationship (i.e. correlation ranging from -0.2223 to -0.7164). It means that they have inverse relationship i.e. one variable increases other variable decreases and vice-versa. This case is against the theory of substitution effect. This may be due to the fact that in last FYs people accumulated most of their funds on saving accounts although they do not receive appropriate interest on it. It may be because of unavailability of other acceptable investment opportunity, in which a separate study can be made. Similarly, the convenience of using saving accounts

provokes the investor to deposit on saving account. Similarly, the excess supply of saving deposit reduces interest rate on saving account.

- To clarify the above conclusion the t-statistic of negative correlation between saving deposit amount and saving interest rate is insignificant except BOK it means that they have strong positive relationship.
- Analysis of fixed deposit amount and fixed interest rate shows positive relationship. According to correlation coefficient, the substitution effects occur for all sample banks in case of fixed deposit that means fixed rate when interest rate on fixed deposit decreases/ increases.
- The t-statistic between fixed deposit interest rate and fixed deposit amount is insignificant except NABIL and BOK. It means that two banks have positive relationship for fixed deposit and one bank have negative relationship.
- One of variables that affect the demand of fund (lending activity) is lending interest rate. Theoretically, there is negative relationship between lending interest rate and lending amount. In this study for four sample banks, it is found that two sample banks have negative correlation between these two variables and NABIL and BOK have positive correlation. By using correlation tools, it can be inferred that all the sample banks have inverse relationship as suggested by theory.
- The t- test for correlation coefficient of each sample bank for negative relationship between lending interest rate and lending amount shows that the t-value for all sample banks is insignificant which means that though the correlation coefficient shows moderate relationship but their relationship is not strong i.e. not significant relationship. Therefore, increase in lending amount is not due to the decrease in lending interest rate but due to other reasons.
- It is also found that lending interest rate of the productive sector loan such as commercial loan, industrial loan, trade credit, working capital loan were decreased lesser in magnitude in comparison to the non- productive sector loan. In case of lending people, use more money when interest rate on lending is low. Almost all banks have lent more money by lowering interest rate on lending. Nevertheless, borrowing has increased on non-productive sectors. But in last year, all sectors loan's interest rate is increase due to crisis of liquidity.

- Based on analysis of sample banks it can be concluded that interest rate on deposit does not attract for the depositors; as every year deposit rate of sample banks are seen decreasing to 2007 but the sample bank has increase the interest rate due to computation of commercial banks and crisis of money. So it may also be concluded that commercial banks are not conceived in collecting deposit as interest rate on deposit is too less.
- From the analysis of lending rate of sample banks it can be concluded that interest rate on lending attract borrowers investors as lending rate of sample banks have decreased every year to provide better opportunities for the borrowers investors. The commercial banks have increased the interest rate until 2008, 2009 and 2010. It shows that the bank has promoted the depositor as well as borrower.
- During the study period, it is found that, there exist the high spread between deposit interest rate and lending interest.

5.3 Recommendations

Based on the above findings and conclusions, certain recommendation can be made here so that the concerned authorities, future researchers, academicians, bankers can get further insights on the present conditions on above topic. It is considered that this research will be fruitful for them to improve the present condition as well as for further research. The major recommendations of this study are as under.

- The interest rate charged by observed banks on savings deposit is not appropriate as a result there is negative correlation between the saving deposit and the interest rate charged on such deposit. It would be worthwhile if NABIL, BOK, EBL & HBL restructure the interest rate on such deposit.
- In addition, the assumed inverse relationship between the lending interest rate and the lending amount in all the observed banks has been insignificant. The observed banks, NABIL, BOK, EBL & HBL, are recommended to adopt the appropriate interest rate.
- There should neither be high interest spread nor be low interest spread. The observed banks are advised to have suitable interest spread.
- The high spread between deposit interest rate and lending interest rate is another factor to be considered. Higher spread merely increases the profit figures of the

banks but at the same time, it reduces the deposit collection and investment in the country. So, NABIL, BOK, EBL & HBL are suggested to reduce the interest spread as minimum as possible.

- In order to generate more capital for the development of the economy, more deposits are needed to be collected by the financial institutions. For this, the financial institutions are suggested to quote higher deposit interest rate as far as possible. Though this situation reduces their profit opportunities, but it will enhance the economic condition of the country in the long run.
- The banks should stop ignoring fixed deposits if their focus is to increase deposits and in future should quote higher fixed deposits interest rates.
- As the central bank of the country, NRB has power to specify the range or spread between lending rate and deposit rate. So NRB is suggested to specify the spread whenever there is higher gap between two interest rates in the country.
- Though the interest rate in free market is determined by the interplay of demand and supply, the concerned parties who fixed the interest rates are suggested to include the inflation premium as far as possible while fixing the interest rates. If the rate of inflation is not considered & real rate comes out to be negative then depositors may withdraw their money and utilize it on non-productive sectors.
- While reducing the lending rate, it is suggested to reduce more on productive sectors than non-productive sectors. If not possible then banks and finance companies can reduce the rate of all sectors proportionately.
- The lending rates of same banks on same sector are found to be different i.e. quoted on range. These types of inconsistency may bring misconception about that organization. So thus are suggested to quote one consistent rate than on range.
- Lending institutions is suggested to invest on new areas as well as to introduce competitive customer oriented schemes on lending and borrowing so that more lending and borrowing can be promoted and overall liquidity problem may be solved.
- From the experience of collecting the secondary data, it is suggested that NRB should pay special attention to publish detail information on timely manner. The

untimely publication of such information may cause negative impact on the efficiency of those whose workings are based on this information.

- Sample institutions are also suggest including their interest rate structure in their annual report and are kindly requested to fully co-operate and sincerely support the research students.

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www.mof.gov.np

www.nabilbank.com

www.nrb.org.np

ANNEXURE

Annex - 1

Calculation of Average Interest Rates and Standard Deviation on Deposit of NABIL

Deposit	2004	2005	2006	2007	2008	2009	2010
Saving	2.5	3.0	2.0	2.0	2.0	2.0	2010
Fixed							
7 Days	-	-	-	-	-	-	
14Days	1.75	2.5	2.5	1.75	3.0	-	-
1 Months	2.25	3	3	2	3.5	4.0	-
3 Months	2.75	3.25	3.25	2.75	6.75	5.0	8.0
6 months	3	3.5	3.5	3.0	6.75	6.0	9.0
1 year	3.50	4.0	4.0	3.5	5.0	8.0	10.0
2 yrs / above	4.0	4.0	4.25	4.25	6.5	8.5	10.5
Whole mean	2.82	3.32	3.21	2.75	4.79	5.58	13.0
Fixed deposit mean	2.87	3.37	3.41	2.87	5.25	6.3	8.92
Std. Deviation	Whole mean =2.0574%			Fixed deposit mean =2.447%			

$$\text{Mean } (\bar{X}) = \frac{\sum X}{n}$$

$$\text{Whole Mean} = \frac{\sum (2.75 + 2.0 + 2.75 + 3.25 + 3.75 + 4.25 + 4.75)}{7} = 2.0574$$

$$\text{Fixed Deposit Mean} = \frac{\sum (2.0 + 2.75 + 3.25 + 3.75 + 4.25 + 4.75)}{6} \text{ and so on.}$$

$$= 2.447\%$$

Calculation of Standard Deviation

1. Standard deviation of whole Mean(Average interest mean)of NABIL

Year	Average Interest(X)	$(X - \bar{X})$	$(X - \bar{X})^2$
2004	2.82	-0.87	0.7569
2005	3.32	-0.37	0.1369
2006	3.21	-0.48	0.2304
2007	2.75	-0.94	0.8836
2008	4.76	1.10	1.21
2009	5.58	1.89	3.5721
2010	8.92	4.44	19.7136
	Ex=31.36		E(X- \bar{X})=26.5035

$$\text{Standard Deviation } S.D(\delta) = \sqrt{\frac{1}{n} \sum (X - \bar{X})^2} = 2.0574\%$$

Calculation of Standard Deviation

Standard Deviation of Fixed Deposit Interest Mean of NABIL

Year	Average Interest(X)	$(X - \bar{X})$	$(X - \bar{X})^2$
2004	2.87	-1.06	1.1236
2005	3.37	-0.56	0.3136
2006	3.41	-0.52	0.2704
2007	2.87	-1.06	1.1236
2008	5.25	1.32	1.7424
2009	6.3	2.37	5.6169
2010	8.92	4.21	17.7241
	E X =32.99		E(X- \bar{X})=27.9146

Standard Deviation

$$S.D(\delta) = \sqrt{\frac{1}{n} \sum (X - \bar{X})^2} = \sqrt{\frac{27.9146}{7}} = 1.9969\%$$

**Correlation Coefficient, Coefficient of Determination and t-statistics of NABIL
For Saving Deposit**

(Rs in Million)

Year	Saving Deposit Interest Rate (X ₁)	Saving Deposit Amount (X ₂)	X ₁ * X ₂	X ₁ ²	X ₂ ²
2004	2.5	5994.1	14985.25	6.25	35929234.81
2005	3.0	7026.4	21079.2	9.0	49370296.96
2006	2.0	8770.8	17541.6	4.0	76926932.64
2007	2.0	10187.4	20374.8	4.0	103783118.8
2008	2.0	12159.97	24319.94	4.0	147864870.4
2009	2.0	14620.4	29240.8	4.0	213756096.2
2010	3.0	13783.59	41350.77	9.0	189387353.3
Sum	16.5	72542.66	168892.36	40.25	817617903.1

$$\text{Simple Correlation Coefficient (r)} = \frac{n \sum X_1 X_2 - (\sum X_1)(\sum X_2)}{\sqrt{n \sum X_1^2 - (\sum X_1)^2} \sqrt{n \sum X_2^2 - (\sum X_2)^2}}$$

$$= \frac{7 \times 168892.77 - (16.50)(72542.66)}{\sqrt{7 \times 40.25 - (16.50)^2} \sqrt{7 \times 817617903.1 - (73542.66)^2}} = -0.2223$$

Student t-statistics for Hypothesis Test

Formula to compute t-calculation

$$t = \frac{r}{\sqrt{1 - r^2}} \times \sqrt{n - 2}$$

NABIL t-calculation for saving deposit interest rate and amount is

$$t = \frac{-0.2223}{\sqrt{1 - 0.0494^2}} \times \sqrt{7 - 2}$$

$$t = -0.5098$$

**Correlation Coefficient, Coefficient of Determination and t-statistics of NABIL
For Fixed Deposit**

(Rs in Million)

Year	Fixed Deposit Interest Rate (X ₁)	Fixed Deposit Amount (X ₂)	X ₁ * X ₂	X ₁ ²	X ₂ ²
2004	2.87	2310.6	6631.422	8.2369	5338872.36
2005	3.37	2078.6	7004.882	11.3569	4320577.96
2006	3.41	3450.2	11765.182	11.6281	11903880.04
2007	2.875	5435.2	15599.024	8.2369	29541399.04
2008	5.25	8464.1	44436.525	27.5625	71640988.81
2009	6.3	8310.7	52357.41	39.69	69067734.49
2010	10.1	14711.16	148582.716	102.01	216418228.5
Sum	34.175	44460.56	286377.161	208.75	408231678.3

$$\text{Simple Correlation Coefficient (r)} = \frac{n \sum X_1 X_2 - (\sum X_1)(\sum X_2)}{\sqrt{n \sum X_1^2 - (\sum X_1)^2} \sqrt{n \sum X_2^2 - (\sum X_2)^2}}$$

$$= \frac{7 \times 286377.161 - (34.175)(44460.56)}{\sqrt{7 \times 208.75 - (34.175)^2} \sqrt{7 \times 408231678.3 - (44460.56)^2}} = 0.9545$$

Student t-statistics for Hypothesis Test

Formula to compute t-calculation

$$t = \frac{r}{\sqrt{1 - r^2}} \times \sqrt{n - 2}$$

NABIL t-calculation for saving deposit interest rate and amount is

$$t = \frac{0.9545}{\sqrt{1 - 0.9111}} \times \sqrt{7 - 2}$$

$$t = 7.1573$$

Note: In this thesis calculation are made by using both calculator and excel worksheet. The method of calculations will be similar for other case also.