

# CHAPTER - ONE

## INTRODUCTION

### 1.1 Background & Introduction of the Study:

As we know Bank is a financial institution acts as an intermediary between the individuals who lend and who borrows the money. "Bank is the place of business where credits are opened by the deposit or collection of money or currency subject to be paid or remitted or loaned or stocks, bonds, bullion and bills of exchange and promissory notes are received for discount and sale." (*Extract: Shiras, 1999:48*)

Therefore, Bank is a financial institution that collects idle funds, mobilizing them into productive sector, which in return turns out to be an overall development of the country depending on the performance of the bank.

A bank is an institution, which deals in money, receiving it on deposit from customers, honoring customer's drawings against such deposits on demand, collecting cheques for customers and lending or investing surplus deposits until they are required for repayment. In the present days, various types of banks are established, for instance, industrial bank, commercial bank, agricultural bank, joint stock bank, cooperative bank and development bank. Modern banks are more advanced than the ancient ones. Banks are providing various kinds of debit card, credit and prepaid cards for easy deposits, withdrawals and payments. This is because of the growth in population , changes occurred in the industrial field and trade , the beginning of the competitive age and changes in the people's ideology and due to the dependence on each other.

### 1.2. Evolution of Bank

The word Bank developed from Italy. Bank was called BENKO in Italian terms, which, later on, started to be called BANK by Englishmen, and this spread all over the world. In Italian language BENKO means BENCH. In ancient time, Sunar and Saraphi were exchanging money by putting on the bench. For this reason, the banking carries out the work of exchanging money, providing loans, accepting deposits and transferring the money. Thus, Modern banking system originated in Medieval Italy.

The first bank called “Bank of Venice” which was established in Venice in Italy in 1157 A.D. to finance the monarch in his wars. But the modern banking started after the introduction of banking act 1883 A.D. at United States of America. So, this trend of banking slowly began to increase and spread initially all over the world.

### **1.3. Development of Bank in Nepal**

Firstly, In Nepal on the preliminary stage, Prime Minister Ranodip Singh has established “Tezarath Adda” in 1877 A.D. in Kathmandu, which was fully subscribed by the government and grant loan for government employees. This played a vital role in banking system. This establishment helped the general public to provide credit facilities at very low interest rate but only the collateral of gold and silver. Several branches were opened in different part of the country. Tezarath Adda did not accept any deposit that may be the main reason it faced many financial problem in absence of saving mobilization.

Secondly, the need of banking institution was realized and in the year 1937 A.D. “Nepal Bank Limited” was established as the first banking institution. It is the first bank in the banking history of Nepal. Then the essentiality of another bank was realized to control over all the financial aspect of the country and “Nepal Rastra Bank” as the country’s central bank was established in 1956 and then “Ratriya Banijya Bank” the second commercial bank was established in 1966. After 1984 the government gradually liberalized and opened up the financial sector, resulting in the rapid entry of the foreign banks. Later, with the grand opening of Nabil Bank Ltd. in 1984 other commercial banks started emerging in the private sectors. As a result now there are altogether 26 commercial banks operating at different parts of the country.

Thirdly, at present, the banking sector is more liberalized and there are various types of bank working in modern banking system. This includes central, development and commercial banks. Evolution of the information technology has revolutionized the banking sector is saving lots of time and money by implementing IT. Technology has changed the traditional method of the services of bank. Invention of different software and hardware, which are very essential and available for functioning bank such as Banking software, ATM, E-banking, Mobile Banking and card like Debit card, Credit card, Prepaid card etc which helps the customer as well as banks to

operate and conduct their activities more efficiently and effectively. This helps bank to generate more customers, goodwill and profit.

Lastly, it is estimated that today's banking sector besides of these developments in banking sector of Nepal there are only few banks working in rural sector.

#### **1.4. Classification of Bank & Financial Institution in Nepal**

<b>Institutions</b>	<b>No. of institutions</b>
Commercial Banks	26
Developments Banks	63
Finance Companies	77
Central Bank	1
Micro Credit Development Bank	15
Co-operative Institutions	16
Non government Organization (NGOs)	45

*(Source: Website of Nepal Rastra Bank, www.nrb.org.np)*

Financial intermediation helps to promote economic growth through the process of saving mobilization and promotion of productive investment in the country. In this process, financial institutions generally pay certain prevailing rate of interest on deposit and receive the higher rate of interest from lending. The differential interest margin is basically incentives to financial institution to cover their operational costs and contribute to the worth of the equity holder. The determination of interest rate is more and less governed by the market forces. But the differential rate is mostly influenced by operational efficiencies and profits margins of financial institutions i.e. commercial banks.

In other words financial intermediation has two fold viz. deposit and credit. Mainly commercial banks used to possess this sort of fold. They get money from one side in the form of deposit and they provide it to borrower in other side. It always charged higher interest rate in comparison to depositors and the differences between there will be the profit of commercial banks.

As an instrument of monetary policy, interest rate is being used to mobilize savings, to influence bank liquidity and to determine cost of credit etc. Modern economic

thinking acknowledges the important role of interest rate policy as a demand management technique to achieve both internal and external balance by ensuring efficient allocation as well as mobilization of financial resources in an economy.

Interest rate policy in Nepal was directly controlled and regulated by the central bank i.e. NRB before the economy was completely liberalized in 1991. The control on interest rate in the earlier period was motivated by a number of factors.

- ) First, there was limited competition in the banking system as the two largest Government controlled bank dominated the market.
- ) Second, the direct control of deposit rates was potentially effective for mobilizing domestic saving at a higher level of interest rates.
- ) Third, the direct control of interest rates provided a convenient vehicle for Concessionary credit allocation to the priority sector. (*Bista, 2048: 73*)

But the regulation of the financial system aimed at the control of the economy rather than the foster the safety and soundness of financial institutions. The interest rate was completely liberalized in Aug 31, 1989, paving the way for determination of interest by market forces. The financial sector liberalization measures included, among others, the deregulation of interest rates, free entry and exit arrangement of commercial banks and removal of statutory liquidity ratio. After the reform measures particularly after the fully deregulation (liberalization) of the interest rate regime in 1989, it was expected that there would be competitive behavior among commercial banks and financial institutions which will prompt the banks to provide higher interest rate on deposits while charging competitively lower interest rate on lending. It was also envisaged that, while doing so, banks could increase the quantum of financial intermediation and thus profit from it. Consequently, it was expected that competition would further bring down the interest rate spread, which would contribute to the economic growth by benefiting both the depositors and the borrowers alike.

But the following the deregulation of interest rates, the deposit rate particularly those of commercial banks, however, went on declining whereas the lending rates either remained constant or declined marginally causing the spread to go up. This spread rate of commercial banks has a direct bearing on saving and investment and thus on

economic growth of the country because the commercial banks hold dominant portion of financial intermediation.

This study attempts to evaluate the impact of structural change in interest rates on deposit and portfolio lending and glance into the possibilities of further reforming the prevailing interest rate regime.

## **1.5 Brief study of the selected Banks:**

In this section brief introduction of only two banks is given which is supposed to be useful to finish research work smoothly.

### **1.5.1. Bank of Kathmandu Ltd (BoK):**

After restoration of democracy in Nepal as well as liberalization there comes many Banks in Nepal. Bank of Kathmandu is also one of the Bank establish to give banking facilities in Nepal. This bank was incorporated in 1993 and came into operation in March 2005. The main objective of this bank to open is:

- ) To identify business prospects not yet catered by then existing commercial banks and offer new banking products and services.
- ) To introduce modern banking technology facilitating bank and business operations and transactions.

Bank of Kathmandu collects deposits (deposits mobilization), lends deposits to credits, Bank of Kathmandu was established under company act 1964 and a new commercial bank act 1974. Bank of Kathmandu has gone to public share and total of 100%, 42% of the total share is taken by Promoters and 58% is distributed to general public.

Bank of Kathmandu's head office is located at Kamaladi, Kathmandu. This bank has opened many branches in Nepal to provide banking services efficiently and continuously. This bank has opened many branches in major cities in Nepal and they all are interconnected through Anywhere Branch Banking System (ABBS), a facility which enables its customer to do banking transactions from any of these branches irrespective of their having accounts in the other branch. (*Website of BoK*)

### **1.5.2 Nepal Bangladesh Bank Ltd (NBBL):**

It was also established in 1993 A.D as joint venture bank with IFIC Bank Ltd of Bangladesh under Nepalese company act. The bank is managed by IFIC Bank Ltd. Bangladesh in accordance with the joint venture and technical services agreement signed between it and Nepalese promoters. This owns 50% of its structure by IFIC Bangladesh, 4.92% by Organized Institutions, 1.25% by Financial Institutions, 30% by General Public and 13.83% by others. (*Website of NBBL*)

### **1.6 Statement of the Problem:**

Only after Second World War, the acceleration of economic development slowly started among developing countries. But they are still facing various hindrances in the way of economic development. However each hindrance is different for each nation. Nepal, due to its own peculiar condition is facing numerous problems. Nepal has to build up infrastructure for the economic development. The main among numerous problems is the lack of capital.

Nepal remains in abject poverty, the origin of which are political, social, economic and some extent difficult geographical settings. The economy is characterized by redundant unskilled labors and acute shortage of skilled manpower and capital. The economic scenario suggests a periodical case in that there is a dearth of financial resources and wherewithal on the one hand and the existence of underutilization of available factor of production on the other hand.

For many years, the indigenous individual, wealthy agriculturist landlords, merchants and traders conducted some banking activities. These unorganized private moneylenders used to extend loans to the people on the collateral of land, house, and precious metals. This resulted in worsening the economic condition of the poor people. In today's world investment is needed highly in every sector of the economy. For that banking and financial institutions are also equally important for providing credit at cheaper rate and enhance deposits providing higher interest rate. People keep their savings idle because they are provided with less interest. In lending, investors are charged high interest rate so the investment is not done in the useful and priority sector. Instead investment is done in unproductive and wasteful sector. Thus Nepal is

lacing institution that mobilize saving into productive channel. Majority of people are in need of money to invest in productive sector. Even to use new technology more capital is needed which can be possible to get only from banks with low interest rate. If financial intermediaries like bank and finance companies do not play important role in channeling savings to productive sector how could it be possible to compete in the international market and to develop the countries' economy. The general policy and practices followed by Nepal with respect to interest rate charged and offered by banks and financial institutions is a subject of great debate, especially in recent years. The basic problem arises from fact that Nepal Rastra Bank, the central bank of the country, maintains, and is expected to continue, selective and discretionary controls on the interest structure of banks and financial institutions. It has however, not been able to develop consistent interest rate policy. Changes in interest rate offered and charged by commercial banks can be used to attain basic national economic goals. It follows from this approach that money and capital in developing economy are complementary assets so that raising the real rate of interest on money would tend to increase both the volume of real financial savings and investment and subsequently, the growth rate of the economy. As a result interest rate plays a very important role in underdeveloped country like Nepal where the demand for capital is increasing at every field of the economy. 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, so 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 while borrowing. Thus the appropriate interest rate policy contributes to accelerate the economic development of the nation. But, whether Nepal is able to attain such situation or not is a matter of concern for us. With the above-discussed problem this study attempts to answer the following questions:

1. What are the interest rates offered and charged by different commercial banks of Nepal on deposits and loans?
2. How much has the interest rate been fluctuated within different time period?
3. How far change in interest rate has influenced total amount of deposits and loan advances?

4. What are the different ways banks charges interest rate on deposits and loans?

### **1.7 Objectives of the Study:**

The main objective of the study is to analyze the interest rates structures and its impact on lending and deposits of BoK and NBBL. Other objectives are listed below.

1. To present the concrete picture of the interest rates structure of sampled two banks in different time period.
2. To evaluate the relationship between interest rate and loans.
3. To examine the relationship between interest rate and deposits.
4. To make recommendation on the basis of finding.

### **1.8 Significance of the Study:**

Interest rate structure being very much sensitive, but also crucial aspect of economic development, much research work has not been found on this topic. Many researchers have not been provided more emphasis about its effect on economic development. Even Depositors and loan holders do not seriously undertake their own exploitation of Commercial banks though high spread rate of interest. So this study will be helpful to public to understand interest rate structure of Commercial banks. Interest rate charged by Commercial banks on loan influences the investment habit of people and again interest offered on deposit also effect on deposit collection and saving mobilization of the nation. This study will also help the policy makers to make strong policy regarding interest rate charged on deposits and lending and also help to teachers, researchers, students & common people providing some valuable information about interest rate, deposit and lending.

### **1.9 Limitations of the Study**

This study is being based on secondary data extracted from published sources is not exact and hundred percent genuine. Though there are many financial institutions in the financial system including banks, finance companies, micro- credit development banks, and ruler development banks play significant role in economic development by accepting deposits and then lending to public. But whole study based on comparative study of two leading banks. Resources-time, money constraints and inaccessibility of sufficient information limit this study.

## **1.10 Organization of the Study**

The proposed study was classified as follows:

- (A) Introduction
- (B) Review of Literature
- (C) Research Methodology
- (D) Data Analysis and Presentation
- (E) Summary, Conclusion and Recommendation

## **CHAPTER - TWO**

### **REVIEW OF LITERATURE**

It is an integral and mandatory process in research works that consist of reviewing research studies and other relevant proposition in the related area of the study so that all kind of information, conclusion and discrepancies could be known and further study can be conducted. The impact of interest rate structure in deposit collection and its mobilization through loans is an important aspect of financial field. So this study intends to find the impact of interest rate change in deposit and lending of commercial banks. Thus, to have feedback this chapter devotes on the conceptual framework, revision of interest rate policy, theories of Interest Rates and review of books, papers, thesis, articles and policy document.

#### **2.1 The Conceptual Framework**

Conceptually, interest is both a payment and receipt for the use of money, interest therefore can be considered from the above two viewpoints. If the interest is paid, it can be considered as a 'cost'. On the other hand, if interest is received it can be considered as a 'return'. Since money can earn a return over a period of time, interest rates are often considered as an expression of the time value of money. Usually interest rates are expressed in percentages.

Interest factor is the main factor in fund-based activities of commercial banks. In recent years interest rate policy has intensified greatly for a number of reasons including an increasing dissatisfaction with performance of fiscal policy for economic stabilization. Interest rate affects on the collection of deposits, mobilization of savings and profit position.

Interest rate policy as a monetary instrument was employed by the NRB since September 1966. The basic objectives behind the changes in interest rates has been to strike tradeoff between bank resources and bank lending, to give a positive real rates of interest to depositors and encourage savings to make efficient and rational allocation and use of bank resources, and to contribute to price stability and favorable position of balance of payment. There is a negative relationship existing between

interest rate and deposits. This implies that increase in interest rate was followed by decrease in the amount of deposits. (*Rimal, 2049: 93*)

As a form of income accruing to its owner for the use of capital, interest has been subject of deep and fierce controversy from very early times. Philosophers, religious, leaders, Social reformers and statesman all had expressed their views on the desirability or otherwise of accepting the payment of interest on the part of the lenders.

Various economists in following ways define interest rate, one of the components of monetary economics;

According to the Keynes community's liquidity preferences and quantity of money determines the level of rate of interest. These three things liquidity preferences, quantity preferences (quantity of money) and rate of interest are negatively correlated. At low rate of interest the liquidity preference of community is high and it is low at high rate of interest. It is Keynes who gave interest rate a small but significant role. (*Seth, 1979:84*)

The neo-classical as the modern theory of the rate of interest is an offspring of the marriage between classical and Keynesian theory. Hicks developed this in 1937. He gave birth to a new theory by combining the above theories. Following the classical approach, investment has been treated as a negative function of interest rate while saving has been regarded as a positive function of interest rate. Similarly, following the Keynesian approach, the liquidity preference or the demand for the money has been treated as a function of income and the rate of interest while the supply of the money has been treated as being autonomously determined by the monetary authorities.

From the above theories and definition it has been cleared that there are four determinants (along with income) of the rate of interest. These are saving functions, the investment function, the liquidity preference function, and supply of money. Thus the study includes two determinants i.e. saving and investment functions of commercial banks.

Thus Deposit collection and fund mobilization in different sector is the main function of Commercial Banks. Commercial Banks are also generated income from fee-based activities rather than always depending upon fund based activities. Interest factor is the main factor in fund activities of Commercial banks. Interest rate affects on the collection of deposits, lending, and mobilization of saving and profit position. From appropriate interest rate, Commercial Banks fix their decision that “whether to control the loans to flow the saving”.

The level of interest rate is set by the interaction of supply and demand of Fund. Generally, the higher interest rates attract more deposits and lower interest rates on loans attract more loans and vice –versa. However, in Nepal, due to existence of some uncommon practices, the interest rate does not seem to have such impacts on deposits and credits. We may notice that, at some time there is increase in loan demand in spite of rising rates or increase in deposits even when deposit rates are reduced. People deposit in the banks not only for interest earning but also for safety. Funds from the banks are much cheaper than that from unorganized moneylenders. Therefore, loan demand in bank always tends to increase even at higher interest rate. Furthermore, an increase in economic and business activity always increase funds demand.

Thus the interest rate is the price of money, the price of renting the use of the resources for a specified period of time. Again, it is the price a borrower must pay to secure scarce loanable funds from a lender for an agreed upon time period. The rate of interest is really a ratio of two quantities: the money cost of borrowing divided by the amount of money actually borrowed, usually expressed on an annual percentage basis. An important aspect of interest rate policy is the setting of an appropriate margin between the lending and deposit rate. If the margin is too high, banks will make excessive profits and this lead to waste of saved resources. If it is too low it will discourage intermediation and devitalize financial institutions. Hence it can be concluded that changes in interest rate structure produces either positive or negative impact upon the growth of developing economy. When such amendments are introduced without thinking seriously, the more spread rate effects negatively rather than positive ones.

Interest also includes **Reward for risk taking**. The lender exposes him to risk when he lends money. The greater the risk element the higher rate of gross interest. Unsecured loans are more risky than secured loans and they carry a high premium rate. Interest also termed as **Reward for inconvenience**. When a lender loans money he forgoes its use for the duration of the loan. His money is locked up and cannot be used for more profitable purposes. From above theoretical discussion, we come to know that there is intensive relation of interest rate with other terms which is given below:

### **2.1.1 Interest Rates and Deposit:**

Interest is the price for deposits. A high interest rate diverts the resources from productive tangible assets into financial claims. Interest rate acts as a mark of clearing device in respect of Nepalese imperfect market. "Mentioned that changing interest rates in deposits changes the saving held by the Nepalese individuals. The change in interest rate structure helped to raise the savings, especially from rural areas." (*Panta, 1983:16*)

### **2.1.2 Interest Rates and Lending:**

Interest rate is the reward for lending money. A high interest (lending) rate will discourage the investor's productive efforts and similarly low interest attracts the investor to lend money for business and industrial purpose. NRB, through various attempts, change periodically the interest rate structure typically decreasing lending rate and increasing deposit rate to minimize the spread rate of interest. Thus Negative relationship exists between lending rate and its amount.

### **2.1.3 Interest Rate and Monetary Policy:**

There is a deep relationship between interest rates and monetary policy. Increasing the money stock can lower the interest rates, but this act also produces forces, which will of set the lowering within several months. In order to keep low interest rates it is necessary to increase money stock continuously. But this act generates expectation of rising prices that tend to raise interest rates.

### **2.1.4 Interest Rate and the Profitability:**

“An important aspect of interest rate policy is the setting of an appropriate margin between the lending and deposit rate. If the margin is too high, banks will make excessive profits and this may lead to waste of saved resources. If it is low, it will discourage intermediation and devitalize financial institution.” (*Schulz: NRB 1978*)

The profit of commercial banks, as an accounting identity, is equal to the interest from earning assets less the interest cost on deposit. So the change in interest rate structure has positive impact on profit position.

### **2.1.5 Interest Rates and price level Changes:**

One study depicted that there is a relation between interest rates and price level. They are as follows:

- ) “High” interest rates accompany “high” prices and “low interest rates Accompany “low” prices.
- ) Interest rates and weighted average of past price level changes are correlated with each other.
- ) Interest rate tends to be high when prices are rising and vice-versa.
- ) Interest rate movement lags behind price level changes.

## **2.2 Revision of Interest Rates Policy:**

### **2.2.1 Revision of interest rates policy before liberalizations (1966 to 1989) or NRB’s domination of Interest Rates:**

Interest rates policy as a monetary policy instrument was employed by NRB since September 1966 after a decade of its establishment. Before 1966, there was only one commercial bank i.e. Nepal Bank Limited that was 51% government controlled. Bank interest has been changed only once in 1965 since its establishment in 1938. The reason behind this the Nepal Rastra Bank (NRB), which was established as central banks in April 26, 1956, has been taking increasing interest in the activities of commercial banks. Accordingly, commercial banks and financial institutions had to fix their rates with the prior approval NRB. NRB under dominant role imposed various rules & regulation about interest rate upon commercial banks. The first

attempt of NRB was to make flexible policy in controlling interest rate aimed to increase deposit rate & lending rate also through various exercises and practices. Under this revision of interest rate was held lot of times. There is strong control in interest rate structure up to 3 decade of its establishment. Interest rate was taken as a main weapon of saving mobilization. Even though it was lower at that very period. During this period NRB increased saving and fixed (two and above years) deposit rate up to 8% & 16% respectively and also increased lending rate up to 18%. Second attempt of NRB made downward revision in the interest rate structure in which deposit rate and lending rate decrease significantly but supposed not to be adversely affect on deposit collection and expected to promote investment in productive sectors. (*Website of NRB*)

### **2.2.2 Gradual Liberalization in Interest Rates and Economy before restoration of Democracy:**

Regulation of the financial system aimed at control of the economy rather than foster the safety and soundness of financial system. But the interest rate deregulation, curtailment or elimination of directed credits, lifting entry and exit barriers for financial intermediaries, restructuring of banking system and institution of regulatory and supervisory mechanism are some of the components which open the door of such liberalization.

The era of interest rate liberalization started in November 16, 1984, when NRB granted autonomy to commercial banks to fix the rates of interest over and above the NRB rates by 1.5 and 1 percentage points respectively on saving and term (fixed) deposit. NRB directed commercial banks to reduce the interest rates by 2 percentage points than the normal credit for agricultural and cottage industries in the 18 remote districts.

Interest rate liberalization, could not fully meet the objectives behind this step. The oligopolistic nature of the commercial banking system produced cartelling in interest rate determination. As a result, the lending rates and deposit rates declined faster than the lending rate resulting in widened spread between lending and deposit rates. Interest rate structure could not be transparent and depositors and borrowers were not treated uniformly in terms of interest rate. Thus instead of fair competition in the

market, discrepancies were observed in interest rate structure after its deregulation.  
(Website of NRB)

### **2.2.3 Gradual liberalization of Interest Rate after Restoration of Democracy:**

After the restoration of the democratic government in the country, efforts have been geared to liberalize the economy and liberalization caught its speed in May 1991. As a result many of the business are flourishing up in the country. With the process of liberalization, efforts are underway to remove and deregulate the rigid regulations, minimize the bureaucratic controls, simplify the procedures and to create an appropriate climate for market force to participate in the process of development.

To correct dissatisfaction of 1984 financial liberalization, effective August 22, 1992 NRB issue following directives to banks and other financial institutions.

- ) Interest rate on deposits of at least up to one year to be clearly spelled out,
- ) Fixation of interest rate on flat basis to be stopped,
- ) Interest rate on deposit can only be negotiated on 0.50% on published rate,
- ) The information about the changes in interest rates immediately and in other condition one in every quarter and should be sent to NRB in the prescribed form and should be published in the major newspapers for public information,
- ) Violation of the above-mentioned directions would be punishable according to Bank & Financial Institution act 2063 and NRB Act 2012.

*(Unified Directive-2066, published by NRB)*

## **2.3 Theories of Interest rate**

Various interest rate theories have been propounded by various economists, which describe how interest rate is determined in various situations. Some well-known theories of interest rates are as follows:

### **2.3.1 The classical theory of interest rates: (Peter, 2003: 114,115,119)**

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 18<sup>th</sup> and 19<sup>th</sup> centuries by a number of British economists and elaborated by Irving Fisher (1930) earlier in this century. The classical theory argues that two forces determine the interest: first is

supply of savings, derived mainly from households, and second the demand for investment capital, coming mainly from the business sector.

**Saving by households:** Individuals and families carry out most of the saving in modern industrialized economies. For these households, saving is simply abstinence from consumption spending. Current savings therefore are equal to the difference between current income and current consumption expenditures. In making the 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 incomes. Although income levels probably dominate saving decisions, interest rates also play an important role. 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 over future consumption. A rational individual, it is assumed, will always prefer 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 to 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. The classical theory considers the payment of interest a reward of waiting—the postponement of current consumption in favor of greater future consumption. Higher interest rates increase the attractiveness of saving relative to consumption spending, encouraging more individuals to substitute current saving (and future consumption) for some quantity of current consumption. This so-called substitution effect calls for a positive relationship between interest rates and the volume of savings. Higher interest rates bring forth a greater current volume of savings.

**Savings by business firms:** Not only households, but also business, save and direct a portion of their savings into the financial markets to purchase securities and make loans. Most businesses hold savings balances in the form of retained earnings. In fact, the increase in retained earnings reported by businesses each year is a key measure of

the volume of current business saving. And these retained earnings supply most of the capital for annual investment spending by business firms. Saving depends on two key factors: the level of business profits and the dividend policies of corporations. These two factors are summarized in the retention ratio, the ratio of retained earnings to net income after taxes. This ratio indicates the proportion of business profits retained in the business for investment purposes rather than paid out as dividends to the owners. Experience has shown that dividend policies of major corporations do not change very often. Many corporations prefer to keep their dividend payments level constant or increase them slightly each year, regardless of their current earnings. Any shortfalls in earnings needed for dividend payments are made up through borrowing. The critical element determining the amount of business saving is then, the level of business profits or retained earnings. If profits are expected to rise, business will be able to draw more heavily on earnings retained in the firm and less heavily on the money and capital markets for funds. The result is a reduction in the demand for credit and a tendency toward lower interest rates. On the other hand, when profits fall but firms do not cut back on their investment plans; they are forced to make heavier use of the money and capital markets for investment funds. The demand for credit rises, and interest rates may rise as well. 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.

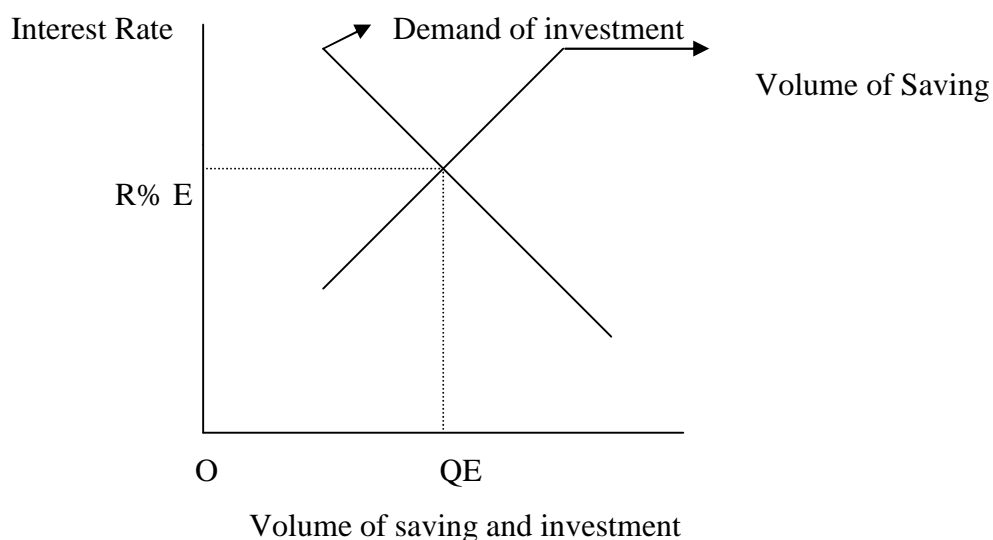
**Savings by government:** Governments also save, though less frequently than households and business. In fact, most government receipts unexpectedly exceed the actual amount of expenditures. Income flows in the economy (out of which government tax revenues arise) and the pacing of government spending programs are the dominant factors affecting government savings. It increases the supply of funds.

**The demand for investment funds:** The major determinant of interest rate we discuss above is saving of Government, Individuals and Business. Saving is the surplus money exceed than their expenditure. The next side of interest rate is the

investment and spending by business, individual and Govt. Investment consists of purchasing of huge Machinery, Plant and Equipment by business firm.

The Classical Economist believed that interest rate is determined by supply of saving and demand of investment. Supply of saving increase if interest rate offering is high and vice versa. But demand of investment increase if interest rate is less provided by bank. Thus supply of saving & demand of investment are two factors that one move co-path with interest and another move in opposite path of interest. During the interaction, Equilibrium point can be obtained where the quantity of saving supplied to the market is exactly equal to quantity of fund demands for investment. It is called equilibrium point of rate of interest.

**Figure.1:** The equilibrium rate of interest in the classical theory



) QE Quantity of money demand and supply

([www.unc.edu/depts/europe/euroeconomics/assets/images/figures/interest\\_rate1.jpg](http://www.unc.edu/depts/europe/euroeconomics/assets/images/figures/interest_rate1.jpg))

As shown in figure, E is equilibrium point of Demand & Supply of Fund and R% is interest Rate.

According to Classical Economist, if interest is temporarily above the equilibrium i.e. supply of saving exceed demanded fund, savers offer low interest continuously until interest rate come down equilibrium point. Similarly if interest rate is temporarily below equilibrium i.e. Demand of investment exceed supply of saving, fund holder

demand high interest rate continuously until it reaches to the equilibrium point.  
(Keynes, 1936:276)

### **2.3.2 The Loanable Fund Theory of rate of Interest:** (Wicksell, 1896: 127)

It is advance form of Classical Theory in which many of limitation of previous theory try to overcome. Classical theory especially based on saving and spending of Individual, government & business. But it is mainly based on two forces: the risk free rate of interest is determined by interplay of demand for & supply of credit (loanable fund).

**Total demand for loanable funds:** It is sum of loanable fund demanded by domestic consumer, National business and government and foreign business. Consumers demand loan for purchasing good and service, Business demand loan for purchasing of Machine and Equipment and Government generally demand loan for nation's building and administration. Recent research indicates that consumers are not particularly responsive to the rate of interest when they seek credit but focus instead principally on the nonprice terms of loan, such as the down payment, maturity, and the size of installment payments. This proves that consumer demand for credit is relatively inelastic with respect to the rate of interest. The credit demands for domestic businesses generally are more responsiveness to changes in the rate of interest than in consumer borrowing. Government decisions on spending and borrowing are made in response to social needs and the public welfare not the rate of interest. In recent years foreign banks and corporations, as well as foreign governments, have increasingly entered the huge U.S. financial marketplace to borrow billions of dollars. This huge foreign credit demand is sensitive to the spread between domestic lending rates and interest rates in foreign markets. Higher interest rates lead some businesses, consumers and governments to curtail their borrowing plans: lower interest rates bring forth more credit demand.

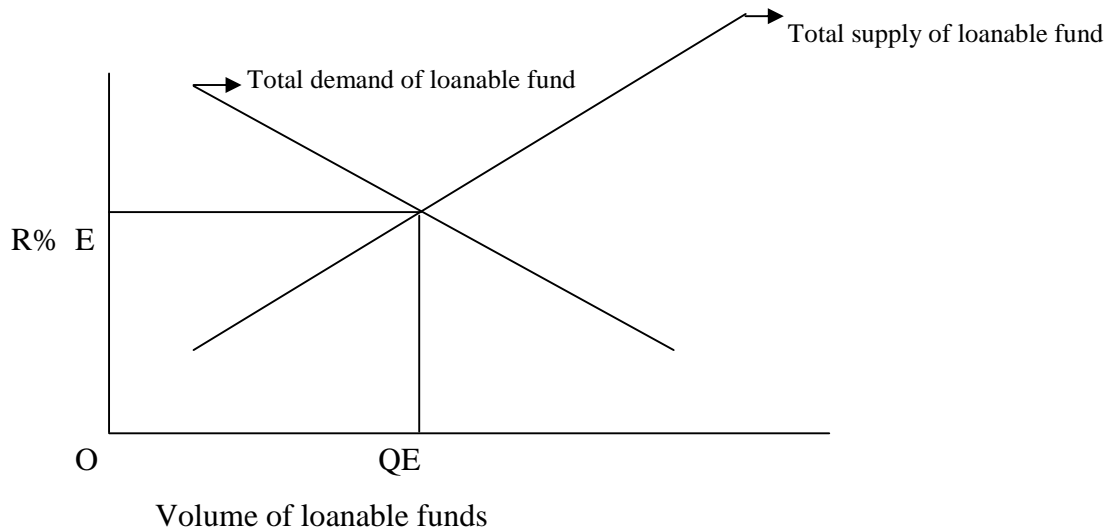
**Total supply of loanable funds:** It is accumulated fund of supply mainly from domestic saving, dishoarding of money, foreign lending and domestic lending from banks. Dishoarding of money is the difference between supply of money and its public demand. Negative hoarding of money i.e. dishoarding created only when supply of money is greater than its demand. Domestic saving is the saving of public if their current income exceed than current expenditure. Businesses, however, also

save, by retaining a portion of current earnings and by adding to their depreciation reserves. Government saving while relatively rare occurs when current revenues exceed current expenditures.

**The equilibrium rate of interest in the loanable funds theory:**

The demand and supply of loanable fund are two forces that determine volume of lending and borrowing as well as rate of interest. The equilibrium point in which demand and supply of loanable fund equal with each other is the equilibrium point of interest.

**Figure 2:** The equilibrium rate of interest in the loanable funds theory



QE: Quantity of money demand and supply

([www.humboldt.edu/~economic/econ104/fed/lfundslg.gif](http://www.humboldt.edu/~economic/econ104/fed/lfundslg.gif))

As shown in above figure, QE is the volume of loanable fund in which total demand and supply of loanable fund equal and R% is equilibrium point of interest rate.

**2.3.3 The Liquidity preference theory of interest:** (Keynes, 1936:121,124,125)

This is Keynes theory of interest rate. According to this theory, interest is the interplay of demand for liquidity and supply of money. The first major element determining interest rates in liquidity preference theory is the demand for liquidity. Keynes argued that the rate of interest is really a payment for the use of scarce resource, money. Business and individuals prefer to hold money for carrying out daily transactions and also as a precaution against future cash needs even though its yield is

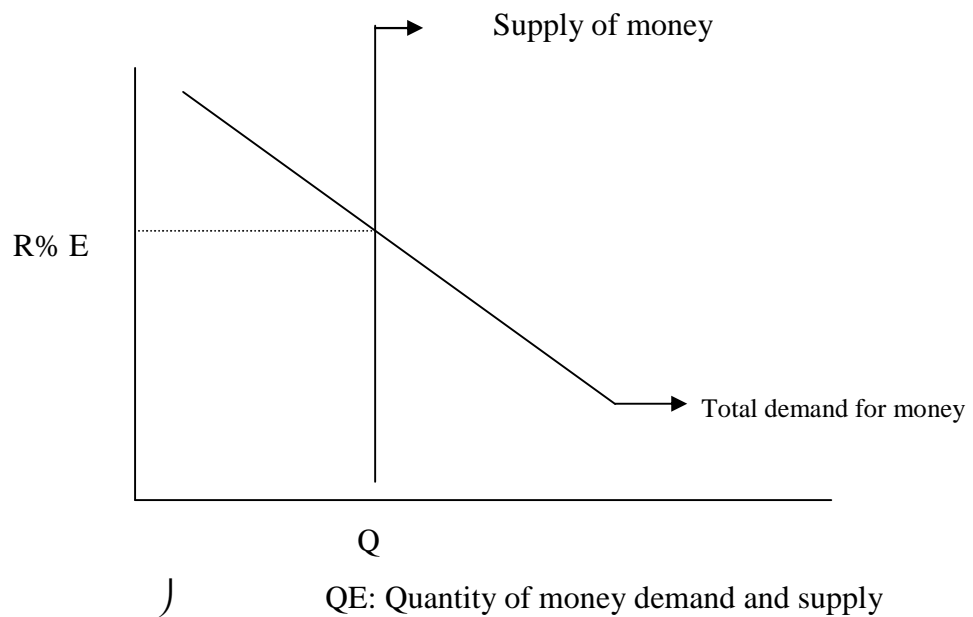
low or nonexistent. Investors in fixed-income securities, such as corporate and government bonds, frequently desire to hold money as a haven against declining security prices. Interest rates, therefore are the price that must be paid to induce money holders to surrender a perfectly liquid asset and hold other assets that carry more risk. At times the preference for liquidity grows very strong unless the government expands the money supply, interest rate 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 rate rise, the market value of bond paying a fixed rate of interest falls; the investor would suffer a capital loss if those bonds were converted into cash. On the other hands, a fall in interest rates results in higher bond prices: the bondholder will experience a capital gain if his or her bonds are sold for cash. To the classical theorists, it was 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 bonds. The total demand for money in the economy is simply the sum of transactions, precautionary, and speculative demands. Because the principal determinant of transactions and precautionary demand is income, not interest rates, these money demands are fixed at a certain level of national income.

The second element determining interest rates in this theory is the supply of money. In modern economies, the supply is controlled or at least closely regulated, by government decision concerning the size of the money supply presumably are guided by the public welfare, not by the level of interest rates; we assume that the supply of money is inelastic with respect to the rate of interest.

**The equilibrium rate of interest in liquidity preference theory:**

The interplay of the total demand for and the supply of money determine the equilibrium rate of interest in the short run. As shown in the figure 2, the equilibrium rate is found at point E, where the quantity of money demanded by the public equals the quantity of money supplied.

**Figure 3:** The equilibrium rate of interest in the liquidity preference theory.



([www.static.flatworldknowledge.com](http://www.static.flatworldknowledge.com))

As shown in above figure, Supply of money is constant i.e. inelastic with interest rate but demand for money is elastic with interest rate. Above this equilibrium rate, the supply of money exceeds the quantity demanded, and some businesses, households and units of government will try to use their balance money by purchasing bonds. The price of bonds will rise, driving interest rates down toward equilibrium point. On the other hand, at rates below the equilibrium the quantity of money demanded exceeds the supply. Liquidity preference theory provides some useful insights into investor behavior and the influence of government policy on the economy and financial system. Liquidity preference theory illustrates how central banks such as Federal Reserve System can influence interest rates in the financial markets, at least in the short term. If higher interest rates are desired, the central bank can reduce the size of the money supply and interest rates will tend to rise (assuming the demand for money is unchanged). If the demand for money is increasing the central bank can bring about higher interest rates by ensuring that the money supply grows more slowly than money demand. In contrast, if the central bank expands the money supply, interest rates will decline in the short term (provided the demand for money does not increase).

#### **2.3.4 Rational Expectancy Theory:**

In recent years, a fourth major theory about the forces determining interest rates has appeared and now appears to be gaining supporters. This is the rational expectations theory of interest rates. It builds on a growing body of research evidence that the money and capital markets are highly efficient institutions on digesting new information affecting interest rates and security prices. The important assumptions and conclusions of the rational expectations theory are that the prices of securities and interest rates should reflect all available information and the market uses all of this information to establish a probability distribution of expected future prices and interest rate; changes in rates and security prices are correlated only with unanticipated information; the correlation between rates of return in successive time periods is zero; expectations concerning future security prices and interest rate are formed efficiently. The rational expectations view argues that forecasting interest rates requires knowledge of the public's current set of expectations. If new information is sufficient to alter those expectations, interest rates must change. It implies that policy makers cannot cause interest rates to move in any particular direction without knowing what the public already expects to happen and indeed, cannot change interest rates at all unless government officials can convince the public that a new set of expectations is warranted.

Nevertheless, the rational expectations view is still in the development stage. One key problem is that it is not known very much about how the public forms its expectations, what data are used, what weights are applied to individual bits of data, and how fast people learn from their forecasting mistakes.

#### **2.4 Economics Factors Affecting Interest Rate:**

Interest is really the yield rate of lender and Investors. We had discussed different theories in which we know the various factors and element that affect the interest rate. From these theories, we come to know that Demand and Supply of money or loanable fund or volume of liquidity in economy surely affect the interest rate. Moreover we have also the following other factors to affect interest rate.

#### **2.4.1. Impact of inflation on interest rate** *(Rose, 2003: 165)*

One of the most serious problems confronting economies around the globe in recent years is inflation. The relationship between interest rates and expected inflation is often referred to as the Fisher effect. Inflation is defined as a rise in the average level of prices for all goods and services. To explore the relationship between interest rate and inflation it is better to distinguish nominal and real interest rates. The nominal rate is the published or quoted interest rate on a security or loan. In contrast real interest rate is the return to the lender or investor measured in terms of its actual purchasing power. An increase in expected inflation automatically increases nominal interest rates. But expected real rate of return tends to be relatively stable over time because it depends on such long-term factor as the productivity of capital is likely to influence only the nominal interest rate, at least in the short run.

#### **2.4.2. Impact of default risk:**

Varying of interest rate caused by degree of default risk associated with different kind of securities. Default risk is the probability of not paying the promised amount on time. There is positive relationship between yield of securities (interest) and degree of default risk. Higher level of default risk requires higher level of interest to compensate its effect and Vice versa. *(Madura, 2007:551)*

#### **2.4.3. Marketability and liquidity:**

Marketability is the capacity of being sold quickly at low transaction costs. A liquid financial asset is readily marketable. Both features of securities closely influence interest rate or yield. Even if an asset is marketable it is not liquid if selling immediately rather than waiting to sell, involves an expected loss. In addition its prices tend to be stable over time and it is irreversible. Because the liquidity feature of financial assets lowers their risk. So the liquid and marketable assets carry lower interest rates than illiquid and less marketable assets.

#### **2.4.4. Impact of budget deficit on interest rates:**

The effects of a budget deficit on interest rates depend both upon the economic situation in which the deficit occurs and the conduct of monetary policy. The

underlying economic situation is important because of the need to distinguish between passive changes in deficits that emerge as a result of fluctuations in economic activity and structural changes in deficits that are created by legislative actions. Interest rates typically fall during recessions because of a decline in private credit demands. At the same time, the deficit rises as a passive response to the decline in economic activity. Therefore, there is an inherent tendency for interest rates to fall as the deficit rises. That is not true for changes in the deficit that are the result of legislative actions. (*Bosworth, 1984: 191*)

## **2.5. Maturity Structure (Term Structure) of Interest Rates**

Interest rate varies according to the maturity of Securities. If two securities are identical in every aspect except maturity, they might have different yield (interest rate). Generally a short-term security has higher interest than one of long-term security because of risk factor. In our real practice, we have to pay high interest rate in short-term loan than long term one. The fixation of short term rates on bank loans at a level higher than the rates on their terms loans and long term loan. Thus the relationship between market rates of interest with term to maturity of same security is called Term Structure of interest rates. Long-term rates tend to change gradually over time while short-term interest rates are highly volatile and often move over wide ranges. Short-term interests rate various per day, per week, per month and per year and to the maximum numbers of year for which it may be considered is three years. However, three years is usually too long for short-term purpose. The short term rates may be defined as interest rate of bank, the Treasury bill rate, the call money rate, the short term deposit rate and the commercial bank rate or any other rates applied by Commercial banks and organizations. Many business enterprises always suggested that the short-term interest rates should be reduced to establish a proper alignment between two kinds of interest rate. People generally held both long term and short-term securities depending on the relative yields. Usually the long term securities tend to fluctuate more in price than the short-term securities, even though their yields do not fluctuates as much. There are various factors, which determine the term structure of interest rate: as risk preference, supply demand conditions, expectations and uncertainty. (*Vaidya, 2000:31*)

## **2.6. Deposits**

Deposits are the real economic variable, which is influenced by the interest rate. It is closely linked to savings in the economy. Personal and Institutional saving influence the volume of Deposits. It is one of major functions of bank. Fixing appropriate interest rate on deposits is very important because it is the cost of resource on one hand and on the other; it is an attraction to the customers' savings. Attractive interest rates and other facilities can also be helpful towards mobilization of the scattered domestic savings as well as attracting foreign saving in banking system. Banks provide various kind of interest according to the term of Deposit. Bank collects money through three type of Deposits i.e. Current Deposit, Saving deposit and Fixed or Term Deposit. Bank provide higher rate of interest in Fixed Deposit according to term of deposit. So fixation of interest rate is very critical and sensitive because too high interest on deposit rate is unprofitable and to low rate is unattractive to the savers. Mostly businessmen favor current deposits because bank allows unrestricted freedom regarding the withdrawal of those deposits. Saving deposits are not intended for current transaction. There are several restrictions on these deposits regarding the amount of deposit, and number of withdrawals etc. They are used more as investments and hence they earn some interest. Besides interest there are other numerous factors other factors that affect deposits as income of people, their saving behavior, foreign investment opportunities, security and future expectations. *(Radhaswami & Vasudevan, 1985: 201)*

## **2.7. Lending**

Lending is the process of providing loan to public, institution, and government to support and increase investment activities in the country. Investment is very essential factor in economic development. Fair and Reliable Lending policy of the Commercial bank direct the investment behavior of the people toward productive sectors. This is regular function of bank by which the accumulated deposit money distributes to public as loan. The amount of money which bank lends is invested in various sectors for the health and vitality of the economy. Improper and unsystematic lending may lead to fragile economy. Money is lended to investors in various forms as short-term loan, medium term loan and long-term loan. With the term structure of loan interest rate also varies. Banks charge different percentage of interest rate taking into

consideration the nature of loan. Rates vary also with the degree of credit risk associated with the loan, its maturity, and the size of the borrower and of the loan. In addition, rates on lending are influenced by habit and custom, competition between banks and other sources of funds.

## **2.8. Review of Previous Thesis, Other Papers, Articles & Documents**

### **2.8.1 Review of Papers**

Developed a framework for analyzing the relationship between financial markets and the effects of trade liberalization. They found that the financial markets significantly affect the outcome of trade liberalization. They said that “A rise in interest rates toward market clearing levels, when it is one part of financial reform package, may be an effective means of preventing premature appreciation of the exchange rate. An increase in interest rate raises the demand for interest bearing bank deposits and reduces non tradable prices for a given rate of money expansion and inherited set of inflationary expectations. A rise in interest rates will produce a immediate increase in the volume of bank credit and thus it facilitate supply side adjustments. *(Athukorala and Rajapatirana,1993:23)*

According to the journal of Economic Literature of American Economic Association, “Regarding the definition of interest it is interesting to note some conflicting arguments of two groups. The classical idea was that interest rate was the reward for not spending, i.e. it is the incodement to retrain from spending. In apparent contrast the Keynesian doctrine is that interest is the reward for not hoarding, i.e. it is the inducement to part with liquidity.” *(Tennessee, 1979: Vol. XVII)*

In the economic review of NRB that “Consolidation and liberalization of interest rate reform measure was initiated with a view to provide more option to commercial banks in the mobilization of saving and portfolio management through market determined interest and lending rates.” *(Kafle, 1990: 53)*

Said in their working paper about debt and international finance that “Differential treatment has resulted in average in interest rates well below market rates. Lower interest rates were in part the result of a favorable assessment of default risk, which could be attributed to prudent policies in the borrowing country.” *( Demirgue-Kunt and*

*Detragiactie, 1986:37)*" found that savings and investment decisions are highly interdependent in Asian sector. Interest rate mostly attracts household people to save money for short period. Its influence is less in the long run saving decisions." (Williamson, 1998:324)

There is some relevant evidence on the sensitivity of consumption to interest rates in United States. "Monetary policies have a significant effect on consumer purchase of durable goods and the most appropriate measures of these variables are interest rate." (Michasel, 1967: 1131)

### **2.8.2 Review of Articles**

*"Banking the future on competition"* Mr. Sharma in his article has found that all the Commercial banks are establishing and operation in urban areas and charging higher rate of interest on lending as well they are not analyzing the credit system.

According to him, " Due to lack of investment avenues, banks are tempted to invest without proper credit appraisal and on personal guarantee, whose negative side effects would show colors only after four or five years." (*Sharma, 2000: 13*). He has further included that private Commercial Banks have mushroomed only in urban areas where large volume of banking transaction and activities are possible.

Dr. Shrestha's view in his article, *The main point to be considered in interest rate reform is that such change in interest rate provides fair distribution of fixed deposits according to their length and amount.* This kind of information, if extended to other items, would be a good bare for analysis of bank's liquidity. Although the belief that high interest rate tends to avoid capital flights to India, yet the actual fact is that increase in interest rate of government securities has compelled banks to raise interest rate on deposits and there by making lending to productive sector costly it is advisable to lower interest on government securities enjoying tax advantage so that there will be better effect on deposit and lending rates." (*Shrestha, 1990:67*)

Mr. K.C. in his article, *"Interest rate is one of the main weapons of monetary policy.* The best level of interest should be mentioned for the identification of the opportunities within economic investment. Interest rate changed according to the

change in economic situation or according to the demand and supply of capital. He added the following facts regarding interest rate:

- ) The level of interest depends upon the internal liquidity situation of nation. The change in interest rate is occurred by the deregulation of demand and supply of resources. Interest rate also depends upon the change in real national income, return on alternative income, number of financial institution, financial tools and the capacity of financial institutions.
- ) Less spread shows the ability of financial institutions, but it is necessary to keep appropriate spread level for financial institution to mention then qualified in this sector.
- ) Low rate of interest affects negatively in saving mobilization, flexibility of capital, effective utilization of capital resources and high interest rate affects investment.
- ) The desire of saving money of general people closely related with the rate of Interest on deposits. And the rate of interest on deposits of financial institutions depends upon the liquidity position and loans demanded." (K.C, 2054: 145)

Mr. Pant in his article that "*Management of internal loan affected by the interest rate directly*. Interest rate structure helps government to take decision regarding loans. It also decides about the level of investment, which can invest by the investors. In the case of perfect money and capital market interest rate declare by the supply of money that can be invest and its demand from private sector to government sector. But in developing countries interest rate must be higher because of government's high demand for capital." (Pant, 205:14)

### **2.8.3 Review of Related Thesis**

Shrestha (2007) in his study on, "*Lending Policy of Agricultural Development Bank of Nepal*"(ADB/N)

#### ***Objectives of the study:***

- ) To examine the lending policy of ADB/N
- ) To evaluate the trend of loan investment, outstanding & collection of ADB/N

- ) To analyze the relationship between targeted & actual loan investment & collection.
- ) To study the achievement of purpose-wise term wise loan investment, outstanding & collection ADB/N
- ) To study of improvement of lending loan & collection procedure of ADB/N on the basis of findings on study.

***The major findings of his study were:***

**) Findings from Targeted/Actual Loan Investment, Outstanding and Collection:**

Targeted loan investment and collection is increased every year and weightage growth rates are in fluctuating trend. Percent of targeted loan collection to investment is in fluctuating trend. This indicates that there is some error in standard setting. Actual loan investment and collection is also increased from t-test it is found there is no significant different between targeted/ actual loan investment and collection.

Actual loan outstanding is increased every year and the weightage growth rate is in fluctuating trend, the highest % of collection to outstanding is 53.37% in F/Y 2062/63.

**) Findings from Loan Investment, Outstanding and Collection of purpose Wise:**

Actual loan investment of cereal and cash crop purpose is in fluctuating trend and showed negative growth rate of 13 %. Actual loan collection amount is in fluctuating trend up to -18.74% and outstanding is increased every year and weightage growth rate is in fluctuating trend. The lowest % if loan collection to investment is 80.12% in FY 2060/61. The highest % of loan collection to investment is 100.61% in FY 2062/63. Percent of loan collection to investment seems for cereals cash crop purposed and seems very low % of collection to outstanding ratio.

Actual loan investment, outstanding and collection of marketing purpose is increased every year and growth rate is in fluctuating trend. The lowest % of collection to investment is 71.52% in FY 2057/58 and it is increasing trend %

if collection to outstanding is in increasing trend except F/Y 2059/60 of 62.77%.

Actual loan investment, outstanding and collection of agri-tools and irrigation purpose is in fluctuating trend and growth rate is negative in most of the years. Loan collection amount is increased in first three years and it is in decreasing trend in last three years and growth rate is in declining rate, % of loan collection to investment is fluctuating 67.90% to 147.86% ub FY 2057/58 to 2062/63 respectively, % of collection outstanding ratio seems very low.

Actual loan investment, Outstanding and collection of livestock purpose is increased every year and weightage growth rate is in fluctuating trend. The lowest % of collection to investment is 73.83% in FY 2058/59. Likewise, the highest % of collection outstanding is 42.52% in FY 2062/63. So % collection to outstanding ratio is very low but % of collection to investment ratio is found reasonable.

Actual loan investment, outstanding and collection of agri and cottage industry purpose is increased in almost years and weightage growth rate in fluctuating trend. The lowest % loan collection to investment is 79.35% in FY 2059/90. Likewise the highest % of collection to outstanding is 51.89% in FY 2060/61, % of collection to investment ration is good and % of collection to outstanding ration is seems below then the reasonable.

Nepal (2007) in his study, "*Lending Policy of Commercial Banks in Nepal*"

***Objective of the study:***

- ) To analyze status of non-performing loans
- ) To analyze the portfolio behavior of lending
- ) To measure the commercial bank's lending strength.
- ) To identify major weakness of lending policy of the commercial banks.
- ) To know the volume of contribution made by commercial bank in lending.

***The major findings of his study were:***

- ) Non-interest bearing deposit to total deposit ratio was 13.63% of whole commercial bank. SCBL,HBL and NSBIB have highest ratio and SDB and

MBL have the lower ratio. It found that oldest bank are successful to collected non interest bearing deposit then newly establish banks which decrease their deposit cost.

- ) Loan and advances to total assets ratio of commercial bank is 40.38%. KBL, SBL and Laxmi bank have the higher ratio where as NBL and NIC have the lower ratio. Higher ratio generates the more opportunity of profit.
- ) Loan and advances and investment to total deposit ratio of commercial bank was 75.65%. Higher ratio indicates the fund mobilization power. KBL, SBL and Laxmi bank have the higher ratio where as ADB have the lower ratio.
- ) Cash and bank balance to total deposit ratio of whole commercial banks was 13.12%. RRB, NBL and NCCB have the higher ratio. It indicates that liquidity position is better to serve its customers deposit withdrawal demands. But another way higher ratio also indicated idle cash in bank. So that, this have run average loss in last five year.
- ) Total assets to total liabilities ratio of whole commercial bank is 98.6%. RBB, NBL and ADB have the highest ratio. These banks are able to convert their liabilities as assets by their performance. But other remaining banks are unable to handle their assets. They have idle assets which are not in use. It increases their operating expenses.
- ) Loan loss provision to total loan and advances ratio was 1.09%. HBL have the lowest ratio. HBL manage its loan and advance and makes effort for timely recovered of loan. LBL was badly suffering from this ratio.
- ) Interest expenses of deposit to total deposit ratio of commercial bank is 2.07%. LBL, NCCB, NBBL have the higher ratio. They have costly deposit the other commercial bank. It decreases their profit. RBB and SCBL have the lower ratio.

Ojha (2008) in her study, "*Deposit Mobilization of Commercial Banks*"

***Objective of the study:***

- ) To study the financial position of Nepal SBI Bank Ltd. & Nepal Bangladesh Bank Ltd.
- ) To examine the trend of deposit of Nepal SBI Bank Ltd. & Nepal Bangladesh Bank Ltd.

- ) To examine the trend of loan & investment position of the Nepal SBI Ltd. & Nepal Bangladesh Bank Ltd.
- ) To suggest applicable & appropriate suggestions for the improvement of the selected commercial banks on the basis of findings.

***The major findings of her study were:***

- ) From the average deposits of seven years study period there is an increase of 1.86% in 2001. In the FY 2002 it is increase to 10.12%, the growth rate reached to 7.95% in the FY 2005, then after the growth rate is increased up to 15.38% in 2006 and increased up to 15.88% in FY 2007. The growth rate of deposit is in increasing trend.
- ) The average percentage growth in loan and advances of commercial banks in 2002 is 3.71%. The growth rate continuously increases till 2007, but it increased to 8.60% and reaches to 28.57% in 2007. There is increasing growth of credit in commercial banks.
- ) A continuous rising trend in growth rate of investments has been observed since 2001. After 2001 growth rate of investment is in declining trend. It shows that banks are investing more amounts in loan and advances rather than invest in other field.
- ) The interest rates on deposit and lending have been decreasing for commercial banks these days.

Poudel (2008) in his study, "*Fund Mobilization Policy of Commercial Banks*"

***Objectives of the study:***

- ) To measure the relationship of total deposits with total investment, loan & advances & net profit.
- ) To evaluate the comparative growth ratio on total investment loans & advances, total deposits & net profit of HBL & Nabil Bank Ltd.
- ) To evaluate the comparative growth ratio on total investment, loans & advances, total deposits & net profit of HBL & Nabil Bank Ltd.
- ) To analyze the sources & uses of funds of HBL & Nabil bank Ltd.

***The major findings of his study were:***

From the analysis of the data collected from various sources following findings have been made.

- ) The mean ratio of cash and bank balance to total deposits of Nabil is lower than HBL. It earns the liquidity position of NABIL is lower than HBL. It shows the lower position regarding the meeting of demand of its customer on their deposit at any time than HBL. The ratio of HBL is more consistent and that of Nabil is less consistent.
- ) The average study of cash and bank balance to current assets ratio of HBL is higher than NABIL. It shows that Nabil has taken more risk to meet the daily requirement of its customer's deposit than HBL. The ratio of HBL is more consistent and Nabil has less consistent ratio.
- ) Nabil has invested more portions of current assets on government securities than HBL according to average study. It means Nabil is more sensitive in investment in productive sector than HBL. Analysis shows that investment on government securities of HBL is more consistent and Nabil has less consistent ratio.
- ) The mean ratio of loan and advances to total deposits of HBL is lower than that of NABIL. The ratio of HBL is more consistent and Nabil has less consistent ratio. Nabil has mobilized its collected deposits on investment better than that of HBL. The ratio of HBL is less consistent and Nabil has more consistent ratio. Similarly the loan and advances to total working fund ratio describes that Nabil position is better than HBL. The variability in ratio of HBL is slightly higher than that of Nabil.

The mean ratio of investment on government securities to total working fund of Nabil is higher than that of HBL. Nabil seems more successful to invest its working fund in government securities than HBL. The variability in the ratio of HBL is more consistent than that of Nabil. The mean ratio of investment on shares and debentures to total working fund of HBL seems slightly weaker than that of Nabil has more consistent ratio than that of HBL.

Shrestha (2008) in her study, "*Lending Practices on Himalayan Bank Ltd. & Kumari Bank Ltd.*"

***Objective of the study:***

- ) To determine the impact of deposit in lending practices.
- ) To measure the commercial banks lending strength.
- ) To analyze the different credit facilities.
- ) To recommend some measures on the basis of findings of the study to the concerned bank to improve on lending performance.

***The major findings of her study were:***

Loans and Advances to Shareholder's Equity ratio have gained the significant importance in measuring the capital fund. The highest Loans and Advances to Shareholders Equity ratio is 7.54% for KBL and 5.61% for HBL. KBL has been able to generate high volume of loan and advances than HBL.

- ) The measurement of efficiency in lending has revealed that Loan Loss Provision to Total Loans and Advances ratio is pretty satisfactory since according to NRB directives. Loan Loss Provision indicates provision against both Performing and Non- Performing Loans. Thus, even the increase in Loan increases the Loan Loss Provision. But generally, increase in this ratio suggests the increase in the Non- Performing Loans.
- ) The Loans and Advances to Total Deposit Ratio of KBL is higher than HBL i.e.(84.42>56.64%). Loan and advances and total deposit of both banks are in increasing trend.
- ) The concerned banks are able to reduce its non-performing ratio. HBL has reduced in NPL by large percentage during the last five years. Non-performing Loan of HBL is in fluctuating trend but Non-performing Loan of KBL is in increasing trend.
- ) Interest income and Total income of concerned banks are in increasing trend but the ratio of both bank are in fluctuating trend.

The ratio of Interest Suspense to Interest income from Loans and Advances among these banks is of varying nature. HBL has the least ratio of 0.28 whereas KBL has the maximum of 0.29. If not alerted now, can bring hazard situation to the banks in future.

## CHAPTER THREE

### RESEARCH METHODOLOGY

#### 3.1. Introduction

In previous chapter, the conceptual framework regarding interest and relevant literature, concerning the study has been reviewed as an input to broaden the base of this study. As a result these study and analysis has become a major tool to comfort me to come to the choice of research methodology. This is useful to reflect the interest rate policy practices of Nepal Rastra Bank. Thus, the basic objective of this study is to analyze the interest rate policy of commercial banks in Nepal and is to find out the factors that affect interest rate policy. It also tries to find out the relationship between interest rate with saving deposits, fixed deposit and total credit. To accomplish, these objectives the study follows the research methodology described in this chapter. "Research methodology refers to the various sequential steps to adopt by a researcher in studying a problem with certain objectives in view" (*Kothari, 1989*). In other words methodology describes the methods and process applied in the entire aspect of the study.

#### 3.2 Research Design

"The formidable problem that follows in the task of defining the research is the preparation of design". Research design is the plan structure and strategy of investigation conceived to obtain answer to research question and to control variance. The plan is the overall scheme of program of the research. Thus research design is a plan to obtain the answer of research questions through analysis for knowledge.

"A research design is the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy procedure" (*Kothari,1992:702*). Research design is the plan, structure and strategy of investigation conceived. So as to obtain answers to research question and to control variances to achieve of the study, description and analytical research design have been used.

### **3.3 Source of Data**

Mainly the study is conducted on the basis of secondary data. The data relating to the investment, deposit, loan and advances, assets and others are directly obtained concerned banks. The supplementary data and information are collected from number of institution and regulating authorities like NRB, Security Exchange Board, Nepal Stock Exchange Ltd, Ministry of Finance and National Planning Commission etc. All the secondary data are complied processed and tabulated in the time series as per the need and objectives. In other to judge the reliability of data provided by the banks and other sources, they were complied with the annual reports' of auditor. Formal and informal talks to the concerned dead of the department of the bank were also helpful to obtain the additional information of the related problem. Similarly, various data and information are collected from the economic journal, periodicals, bulletins, magazines and other published reports and documents from various sources.

### **3.4 Population and sample**

The term "Population" or universe for research means all the members of research study in which the research is based. Here the population or universe of the study comprises of all 26 commercial banks in Nepal. As the study of whole population makes the comparative study of only two banks are selected. Even though, we know there are various sampling methods when taking sample from population, here the simplest method of sampling that is simple random sampling method is used. Here Bank of Kathmandu and Nepal Bangladesh Bank are selected for comparative study.

### **3.5 Data analysis tools**

To achieve the objectives of the study, various financial and statistical tools have been used in this study. The analysis of data will be done according to pattern of data available. Because of limited time and resources, simple analytical statistical tools such as graph, percentage, Karl Pearson's co-efficient of correlation and probable error are adopted in this study. Some strong accounting or financial tools such as ratio analysis have also been used.

### 3.5.1 Financial Tools

#### 3.5.1.1 Percentage:

Percentage is used to measure the changing position of different amounts. The difference shows the actual impacts on this sector: we use the given formula to find out the annual percent change.

$$\text{Annual Percentage Change} \times \frac{\text{Amount of this year Deposit(cr edit)}}{\text{Amount of Last year deposit or credit}} \times 100\%$$

#### 3.5.1.2 Ratio Analysis:

Ratio analysis has been accepted as the most dominant financial tool to analyze and interpret the financial statements. Alexander wall is considered the pioneer of ratio analysis. He presented, after a serious thinking, a detailed system of ratio analysis of 1909. He explained the work of interpretation can be made easier by establishing quantitative relationship between the facts given in the financial statements.” (Gupta, 1974, 50)

“Ratio analysis is such a powerful tool of financial analysis that through it, economic and financial position of a business unit can be fully X-rayed.” (Kothari, 1989:89)

In this topic it is tried to find out various financial ratios that plays assistant role to know whether the Interest-related items i.e. Deposit, loan, advance and investment and other cash and bank balance, liquid fund are unnecessarily blocked or not. These items are interest-carrying item. So unnecessarily used of these items might badly affect on profitability position of banks. Interest rate and its relevant items have two-ply effect.

An arithmetical relationship between two figures is known as ratio. It is computed by dividing one item of relationship with other. Ratio simply means one number expressed in terms of another. Ratio analysis is the main numerical or quantitative statement analysis. It can be expressed as percentage, fraction or stated comparison between two numbers. Ratio analysis is used to compare a firm’s financial performance and status to that of other firm’s overtime. The main objectives of calculating different Ratios are to find interest bearing factors and to find whether those factors unnecessarily increased or not. For example high cash and bank balance

among total yearly deposit even if increase the liquidity position but the Commercial Bank has to pay high interest on it and badly affect on profitability position. Whether the Deposit collection and its mobilization through the means of interest go equally or not, this is checked by Ratios. That means whether the increase or decrease volume of deposit properly used through the means of Loan and Investment is checked by Ratios. Though I have to find the effect of interest rate on deposit and lending, it will be incomplete if we forget that improper use of deposit also effect badly on profitability position due to huge Interest volume. Thus Financial or Ratio analysis are useful for identification of various related terms and their relationship among each other.

In this study, different ratios are calculated and analyzed, which is given below:

**Liquidity Ratio:**

The ability of a firm to meet its obligation in the short-term is known as liquidity. It is measured by the speed with which a bank’s assets can be converted in to cash to meet deposit withdraws and other current obligations. This also known as solvency ratio or working capital ratio, is the relative proportion of current assets to current liabilities. It is most commonly taken as the yardstick of measuring the short-term solvency of a concern. A firm should ensure that it does not suffer from lack of liquidity and that it is not too much highly liquid. The failure to meet the obligations as they became due damaged the company’s reputation resulting in the disability to complete with the other banks. On the other hand, over liquidity results in lower profitability. Both the conditions are unfavorable for the company. There are various ratios under liquidity ratio, which are given as follows:

**NRB Balance to Total Deposit Ratio:**

Nepal Rastra Bank has made the Commercial Banks to deposit certain fund of the Commercial Bank in the central Bank, which is changing time to time as demand of the time. It is calculated by dividing NRB balance by total Deposit.

$$\text{NRB Balance to total deposit} \times \frac{\text{NRB Balance}}{\text{Total deposit}}$$

Total Deposit= Current deposit + saving deposit+ fixed deposit + Call deposit + others

**NRB Balance to Current and Saving Deposit Ratio:**

The Directives of Central Bank has issued to keep minimum 8% of the total saving and current deposit amount of Commercial Banks in NRB balance. It is for the purpose of the liquidity to meet the demand of the customer.

$$\text{NRB Balance to total deposit X} \frac{\text{NRB Balance}}{\text{Current and saving deposit}}$$

**NRB Balance to Fixed Deposit Ratio:**

Fixed deposit is that deposit which a bank can mobilize with for sure. For this deposit NRB has directed to the Commercial Bank to keep 6% of fixed deposit in the NRB balance for the purpose of the liquidity

This ratio is computed by dividing NRB Balance by Fixed deposit

$$\text{NRB balance to Fixed deposit X} \frac{\text{NRB balance}}{\text{Fixed deposit}}$$

**Assets Management Ratio (Activity Ratio):**

Activity ratio reflects the firm's efficiency in utilizing its assets. Activity ratios measure the effectiveness of the employment of the resources in a business concern. If deposit doesn't properly mobilize, it will badly effect on profitability by the means of interest. Over mobilization have an effect on liquidity and a lesser amount of mobilization also have an effect on profitability. Thus in our study of change effect of interest on deposit and lending, we shouldn't also forget the interest effect due to deposit mobilization on profitability of Banks.

This ratio measures how efficiently the bank manages the resources at its command. The following ratios are used under the assets management ratio.

**Credit to Total Deposit Ratio:**

This ratio measures the extent to which the banks are successful to mobilize their total deposit on loan and advances. Loan and advances are outside asset, which yield profit to the bank. Increment of loan and advances is the main target of all Commercial Bank. So, higher the ratio better is the mobilization of the funds.

$$\text{Credit to total deposit ratio X} \frac{\text{Loan and Advance}}{\text{Total deposits}}$$

Total Credit= Loan and Advances provided by the CBs

**Total Investment to Total Deposit Ratio:**

A Commercial Bank mobilizes its deposits by investing its fund in different securities issued by Government and other financial institution. It is useful to know how the CBs are mobilizing their deposit in the investment of the various securities.

$$\text{Total Investment to Total Deposit Ratio} \times \frac{\text{Total Investments}}{\text{Total Deposits}}$$

**Interest Rate Risk Ratio:**

The main function of CBs is accepting deposit and providing loan to public and other institutions in which interest is to be paid on deposit and earned interest through loan. Thus it is the ratio calculated, dividing the interest earned assets by interest paid liabilities. Higher the ratio shows more risk from interest rate structure and more profitable too because higher volume of deposit mobilization in loan, advance and Investment is the matter of risk but the reward of its compensation is also high. There is frequent fluctuation in interest rate structure of CBs in both side i.e. deposit and loan which surely effect on its volume and on financial position too which will study detail on Statistical analysis.

Interest is one of major factor of earning profit of a bank. A bank pays the interest to the depositor and takes it from the payee. It is major source of income and expenditure depending upon the interest that the banks can make investment to maximize their income through interest rate structure. There is higher degree of risk related with interest rate and the possibility of loss due to change in interest rate is known interest rate risk. The asset return and values versus the liabilities loss and values may change at different magnitude because of change in market interest rate.

We have,

Interest rate risk ratio= interest sensitive asset / interest sensitive liabilities.

Interest sensitive asset= Loan amount + Investments in bond and debentures

Interest Sensitive Liabilities= Borrowings + Deposit excluding the current deposit.

**3.5.2. Statistical Tools:**

The main important tool to achieve the objectives of this study is Statistical Tools. These tools are useful to find the relationship of interest rate with Deposit and

Lending. In this study, statistical tools such as Arithmetic Mean, Standard Deviation, Coefficient of Correlation and Probable Error.

**Arithmetic Mean:**

Arithmetic mean of a given set of observations is their sum divided by the number of observations (Gupta, 2002: 238). In such a case all the items are equally important, simple arithmetic mean is used in this study as per the necessity for analysis.

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

Where,

X = Sum of all Values of the variable ‘X’

n= number of observations

X= Variables involved

**Standard Deviation:**

The standard deviation usually denoted by the letter sigma (σ). It measures dispersion and is defined as the positive square root of the arithmetic mean of the squares of the deviation of the given observations from their arithmetic mean of a set of value. Standard deviation, in this study, has been used to measure the degree of fluctuation of interest rate and that of other variables as per the necessity of the analysis.

$$Standard\ Deviation\ (\sigma) = \sqrt{\frac{\sum X^2}{n}}$$

The greater the standard deviations the greater will be the magnitude of the deviation of the values from mean and vice versa.

**Coefficient of Correlation (r):**

Correlation is a statistical tool suggested by Karl Pearson, which studies the relationship between two variables, and correlation analysis involves various methods and techniques used for studying and measuring the extent of the relationship between the two variables. Two or more variables are said to be correlated if change in the value of one variable appears to be related or linked with the change in the other variables.

Simple Correlation coefficient (r) 
$$r = \frac{n\sum XY - \sum X \sum Y}{\sqrt{n\sum X^2 - (\sum X)^2} \sqrt{n\sum Y^2 - (\sum Y)^2}}$$

- ) Correlation Co-efficient is defined by r
- ) “It may be positive or negative and ranges from -1 to + 1. When r = +1 there is perfect correlation; where 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 moderate degree of correlation.  
(Pant & Chaudhary, 2055: 306)

Simple correlation coefficient, in this study is used to find the relationship between interest rate on deposit and amount of deposit; interest rate on lending and lending amount.

## CHAPTER FOUR

### DATA PRESENTATION AND ANALYSIS

This part is the heart of research study. Without this part the study remains incomplete to achieve the objectives set in chapter I. It is necessary to know the practicability aspect of interest rate and its effect on deposit and its mobilization (lending). To know what are the real problems and factors affecting those problems, this part is utmost valuable. This chapter consists of relevant data and information necessary for the study presented and analyzed keeping the objectives set in mind. This chapter consists of various calculations made for the analysis of interest rate and its effects on deposit and lending amount of two sample banks. This part also categorized into three parts (viz. presentation, analysis and interpretation) to make the study clear, effective, systematic, result oriented and easily understandable.

Since, the analysis is fully based on secondary data; firstly, the data's are presented in tabular. Then the data are analyzed using various financial tools and statistical tools as mentioned in chapter three, finally the result are interpreted. In this chapter, financial tools are used to know overall deposit and lending position and its utilization overtime of sample banks. But Statistical tools are very specific and more useful to establish relationship of interest rate with deposit and lending. Thus firstly financial analysis is done for finding Deposit Pattern and its mobilization through loan, advance, and Investment and secondly statistical analysis is done for finding Interest rate structure and its relation and effect on deposit and lending. Financial analysis is made through percentage and Ratios and statistical analysis is made through Mean, S.D, Correlation coefficient and Probable error.

#### **4.1. Financial Analysis**

##### **4.1.1. Analysis of Deposit Collection and Mobilization:**

The main objectives of Commercial banks are to collect the deposit through different account and its mobilization. The following table shows the situation of BoK and NBBL with relation to deposit collection and its utilization in recent years.

**Table-no.1****Deposit Collection, Loan and Advance, Investment and theirs Change Rate (in millions)**

Year	Deposit				Loan and Advances				Investments			
	BoK	Ch%	NBBL	Ch%	BoK	Ch%	NBBL	Ch%	BoK	Ch%	NBBL	Ch%
2002	2396.5		4145.2		1811.5		3258.7		119.9		708.7	
2003	3983	66.20	6455.6	55.74	2995.3	65.35	4611.8	41.52	151.6	26.44	60	-91.53
2004	5724.1	43.71	8578.8	32.89	4327.1	44.46	7347.4	59.32	325.4	114.64	277.5	362.50
2005	5735.9	0.21	9514	10.90	4977.6	15.03	8222.1	11.90	630.7	93.82	1029.4	270.95
2006	6169.9	7.57	10548	10.87	4956.2	-0.43	8491.9	3.28	1618.8	156.67	2276.7	121.17
2007	7741.6	25.47	12747.3	20.85	6104.9	23.18	10254	20.75	2394.6	47.92	2617.3	14.96
2008	8942.8	15.52	12125.5	-4.88	6166.9	1.02	8739.8	-14.76	2235.7	-6.64	2275.3	-13.07

(Source: Banking and Financial Statistics No. 45 Published by NRB, 2008)

From the above table, it is found that the total deposit collection of NBBL and BoK has been increasing each year except NBBL in 2005 but increasing rate of expanding is decreasing each year. The volume of deposit collection of NBBL is the higher than BoK in every year. Similarly, Loan and advances of two Banks has been increasing every year. Commercial Banks provides Loan and Advances generally to Govt. Enterprises, Financial and Non financial Enterprises, private sector, for bills P & D and Foreign A.B.C. Comparatively NBBL provides more Loan and Advances than BoK. Similarly Investment includes total investment in Govt. securities, share, and debenture of other Institutions and other investment and NRB Bond. From above table, investment of two banks went up unevenly.

**Table no.2**  
**Classification of Loan & Advances ( in millions)**

<b>Years</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>
<b>BoK</b>	<b>1811.5</b>	<b>2995.3</b>	<b>4327.1</b>	<b>4977.6</b>	<b>4956.2</b>	<b>6104.9</b>	<b>6166.9</b>
a) Govt Entp	0.0	0	0	88.4	0	0	0
i) Financial	0	0	0	88.4	0	0	0
ii) Non financial	0	0	0	0	0	0	0
b) Private Sector	1239.2	2827.9	4275.3	4751.7	4913.3	6049.7	6166.9
c) For Bills P & D	572.3	167.4	51.8	137.5	27.7	25	0
d) Foreign A.B.C	0	0	0	0	15.2	30.2	0
<b>NBBL</b>	<b>3258.7</b>	<b>4611.8</b>	<b>7347.4</b>	<b>8222.1</b>	<b>8491.9</b>	<b>10253.6</b>	<b>8739.</b>
a) Govt Entp	136.8	180.9	318.9	260.7	283	333.5	409.6
i) Financial	127.6	141.2	199.9	228.5	230.1	295.9	286.5
ii) Non financial	9.2	39.7	119	32.2	52.9	37.6	123.1
b) Private Sector	2854.4	4237.5	6703.4	7708.4	8079.9	9662.1	8330.2
c) For Bills P & D	267.5	192	325.1	245.4	129	258	0
d) Foreign A.B.C	0	1.4	0	7.6	0	0	0

*(Source: Banking and Financial statistics No.45 published by NRB, 2008)*

From the above table no 2 shows that Both BoK and NBBL provide more loans to private sectors than Government sectors. BoK has not shown any interest on providing loan and advances to the government bodies. From above two tables Deposit and lending volume of BoK and NBBL had been increasing even there is decreasing pattern of deposit and lending interest rate of commercial banks.

## 4.1.2 Financial Ratio Analysis

### 4.1.2.1 Analysis of Liquidity position in relation to deposit

Table no.3

#### Calculation of Various Liquidity Ratios in relation to deposit

Mid July	NRB deposit/total deposit		NRB deposit/Current & Saving deposit		NRB Bal/Fixed Deposit	
Fisc Yr	BoK (%)	NBBL (%)	BoK (%)	NBBL (%)	BOK (%)	NBBL (%)
2002	5.09	9.03	12.54	35.32	11.95	14.36
2003	6.45	6.21	16.07	25.39	14.18	9.21
2004	6.99	7.39	15.8	27.23	20.52	12.11
2005	5.2	12.31	11.24	39.67	15.22	21.47
2006	5.87	4.84	11.31	13.46	18.2	10.16
2007	5.78	6.28	11.56	14.92	19.47	16.41
2008	4.67	6.17	8.8	11.41	14.52	21.14
<b>Average</b>	<b>5.72</b>	<b>7.46</b>	<b>12.47</b>	<b>23.91</b>	<b>16.29</b>	<b>14.98</b>

Source: Annexure E1

From above table 3, Nepal Bangladesh Bank has kept more NRB balance with total deposit in comparison to Bank of Kathmandu. This means that the liquidity position of NBBL stronger than BOK. NRB Balance with Current and saving deposit of NBBL is greater than BOK by higher rate but NRB balance with fixed deposit of BOK is greater than NBBL by lower rate. However, it seems that both Banks keep more NRB balance with (Current + Saving) and fixed deposit than 8% and 6% i.e. NRB direction rate. It shows the strong liquidity position of two banks but the profitability position might be low because NRB do not provide interest to Commercial banks in balance amount but the CBs should pay interest to Depositor. Thus this shows that BOK and NBBL both have strong capacity to pay short-term obligation but proper attention should be given for utilization of deposit (lending). Thus Liquidity position and interest rate change effect should properly mention equally by CBs.

#### 4.1.2.2 Analysis of Activity position or Asset utilization position of Banks

Table no.4

Calculation of Different Ratios (in %) under Asset Management (Activity Ratio)

Years	BOK			NBBL		
	Interest% on credit	Total credit /Total Deposit	Total Inv/Total Deposit	Interest % on Credit	Total Credit/ Total deposit	Total Invest/ Total Deposit
2002	13.25	75.59	5	13.94	78.61	17.1
2003	12.17	75.2	3.81	13.13	71.44	0.93
2004	11.69	75.59	5.68	12.32	85.65	3.23
2005	11.69	86.78	11	12.24	86.42	10.82
2006	10.5	80.33	26.24	12.17	80.51	21.58
2007	9.93	78.86	30.93	10.36	80.44	20.53
2008	9.83	68.96	25	9.08	72.08	18.76
<b>Average</b>		<b>77.33</b>	<b>15.38</b>		<b>79.307</b>	<b>13.28</b>

Source: Annexure E2

From above table-4, Deposit mobilization on Loan and advance of NBBL seems more efficiently in comparison to BOK in our study period because the average rate of deposit mobilization through credit of NBBL and BOK is 79.30 and 77.33 respectively and Similarly it's mobilization on investment of BOK was higher than NBBL because the average rate of deposit mobilization on investment of BOK and NBBL was 15.38 and 13.28 respectively. Again average interest rate on loan and advance of both BOK and NBBL is in decreasing trend during our study period. In 2002, BOK mobilized its 75.59% deposit in Loan and advance at 13.25% interest rate. Deposit mobilization of BOK on loan and advance had been increasing to 75.59%, 75.2%, 75.59%, and 86.78% in 2002, 2003, 2004, and 2005 respectively and also decreasing lending rate to 13.35, 12.17, 11.69 and 11.69 in 2002, 2003, 2004, and 2005 respectively. This means BOK in these four years, was able to mobilize more deposit on loan and advance taking benefit of decreasing credit rate. But Beyond 2005, deposit mobilization of BOK on loan and advance gradually decreasing even decreasing of lending rate, which is against Real theory of Credit. The percentage of deposit mobilization decreases to 80.33%, 78.86%, and 68.96% in 2006, 2004 and 2008 respectively and Interest rate on credit decreases to 10.5, 9.93, and 9.83 in last three years respectively. Similarly Interest rate on credit of NBBL

decreases continuously from 13.94 in 2002 to 9.08 in 2008. But deposit mobilization of its increases to 78.61%, 71.44%, 85.65% and 86.42% in 2002, 2003, 2004 and 2005 respectively but again decreases to 80.51%, 80.44% and 72.08% in 2006, 2007 and 2008 respectively.

#### 4.1.2.3 Analysis of Interest Rate Risk

**Table 5**  
**Calculation of Interest Rate Risk Ratio**

Years	BOK			NBBL		
	Loan & Advances (millions)	Deposit (million)	Ratio (%)	Loan & Advances (millions)	Deposit (million)	Ratio(%)
2002	1811.5	2154.2	84.09	3258.7	3770	86.44
2003	2995.3	3545.2	84.49	4611.8	5977.4	77.15
2004	4327.1	5042.6	85.81	7347.4	7944.7	92.48
2005	4977.6	4946.3	100.63	8222.1	8649.5	95.06
2006	4956.2	5234.2	94.69	8491.9	9663.8	87.87
2007	6104.9	6743.7	90.53	10253.6	11610.3	88.31
2008	6166.9	7640.2	80.72	8739.8	11047.9	79.11
<b>Average</b>			<b>88.71</b>			<b>86.63</b>

(Source: Banking and Financial statistics No.45 published by NRB, 2008)

From above table-5 shows the fluctuation of interest rate of two Commercial Banks in study period in which the average interest rate risk ratio of BOK and NBBL is 88.71 and 86.63 respectively. This means that BOK carry more risk in mobilizing deposit than NBBL. Thus BOK has great chance of earning more profit. BOK, in 2005 mobilize 100% deposit except current one. The average percentages of two banks show the higher volume utilization of their deposit because they have to balance some extent on NRB fund among their deposit and remaining some extent should keep for liquidity.

From above presentation of Data under Financial analysis gave us lot of ideas about the identification of Deposit and Lending terminology and its mobilization and its effect on profitability of Bank by the means of interest rate structural change. From above study, we come to know that deposit and loan & advance are interest-carrying items so that change of them would effect on Bank's financial position. Both Deposit and Lending have their own interest rate i.e. deposit interest rate and loan interest rate. Till now, we don't study the fluctuation of interest rate and its effect on deposit and lending volume. Thus the above study play background role for our focus

concern. Thus we focus more on statistical analysis for our study in which we use various statistical tools to attain the objectives set.

## 4.2. Statistical Tools:

Statistical tools are major tools used for analysis and interpretation of tabular data. Analysis is made using various statistical tools i.e. mean, coefficient of correlation and probable error. For this, at first the interest rate structure is shown (that of deposit and lending) then after the relationship between interest rate on deposit and deposit amount and relationship between interest rate on lending and lending amount is shown and analyzed. After presenting analyzing and interpreting the relationship between interest rate and deposit amount, interest rate and lending amount, interest rate on deposit and interest rate on lending of two banks, the comparative analysis is made.

### 4.2.1. Analysis of Bank of Kathmandu Limited

#### 4.2.1.1 Analysis of Deposit rate of Bank of Kathmandu Ltd

**Table -6**

<b>Interest Rate Structure on Deposit of Bank of Kathmandu as of Mid July</b>							
<b>Deposit</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>
Savings	7.5	5	5	5	4.25	2.75	2.375
<b>Fixed Deposit:</b>							
7 days	4.5	2.5	2.5	2.5	2.5	2	1.5
14 days	5	3	3	3	3	2.5	2.5
1 month	6	4	4	4	3.5	2.5	2.5
2 months						3	
3 months	8	5	4.75	4.75	4		3
6 months	8.5	5.5	5.25	5.25	4.5	3.5	3.5
1 year	10	6.75	6.5	6.5	5	4	4.25
2 years/above	9.5	7.25	7	7	5.375	4.7545	5.125
Mean= $\bar{X}$ Average of all deposits	7.375	4.875	4.750	4.750	4.016	3.126	3.093
Average of Average (Mean)	4.57						
Standard deviation	1.216						
Coefficient of variation	26.6%						

(Source: Banking and Financial Statistics No.45 published by NRB, 2008)

Note: Calculation of Average rate of Deposit and Its Standard deviation is done as shown in *Annex-E3*

From the Calculation of Table - 6 shows average deposit interest rate of Bank of Kathmandu is in decreasing trend. It has decreased to 3.093% in 2008 from 7.375% in 2002. In 2003, the average deposit rate decreased to 4.875% and again decreased continually to 4.75%, 4.75%, 4.016%, 3.126 and 3.093 respectively in years 2004, 2005, 2006, 2007, 2008. It was not any change in 2001 and 2002. Average of average interest rate i.e. (Mean) value among deposit interest rate of BoK is 4.57 in seven study period. The standard Deviation of 1.216 explains that the dispersion or scatteredness among deposit rate is 1.216%. To check whether the above calculated value of S.D is either low or high, we have to find the most comparative value that we call Coefficient of Variation (CV). The Coefficient of Variation of deposit rate of BoK is 26.6% means that the variation percentage with respect to their average value is 26.6%.

#### 4.2.1.2 Analysis of Lending rate of Bank of Kathmandu Limited

**Table-7**

<b>Interest rate structure on Lending of BoK as of Mid July</b>							
<b>Loan and Adv</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>
Overdraft	15.75	13.25	12.25	12.25	11.75	11.75	11.75
Export Credit	10.25	9.5	9.5	9.5	10	10	7.25
Import L/C	-	-	-	-	10.625	10.25	10.25
Against FDR	11.5	9.25	9	9	9	7.5	9.25
Against NG bond	11.5	9	8.5	8.5	7.25	7.25	7.25
Against BG/CG	15.5	11.5	11	11	9.75	9.25	-
Against other guarantee	-	-	-	-	9	7.5	7.5
Industrial Loan	-	13	12.5	12.5	11.5	11.75	11.75
Commercial Loan	-	13.5	13	13	12.25	12.25	12.25
Priority Sector	15	13.5	13.5	13.5	13.5	-	-
Poorer Sector	12	9	9	9	9	8.75	8.75
Term Loan	15.5	13.5	12.5	12.5	12	11.5	11.75
Working Capital	15.25	13.25	12.75	12.75	11.75	11.75	11.75
Hire purchase	17	15	13.5	13.5	11.25	10.75	9.5
Others	18	15	15	15	8.75	8.75	8.75

Mean (X)= Average of all Loan & Adv.	14.30	12.17	11.69	11.69	10.49	9.93	9.83
Mean(average of average)	11.44						
Standard Deviation	1.278						
Coefficient of variation (CV)	11.17%						

(Source: Various Banking and Financial Statistics 45 published by NRB, 2008)

Note: Calculation of average, standard deviation and coefficient of variation of Lending rate of Bank of Kathmandu as shown in Annex-E4

From the Calculation of Table - 7 shows average Lending interest rate of Bank of Kathmandu is in decreasing trend. It has decreased to 9.83% in 2008 from 14.3% in 2002. In 2003, the average lending rate decreased to 12.17% and again decreased continually to 11.69%, 11.69%, 10.49%, 9.93% and 9.83% respectively in years 2004, 2005, 2006, 2007, 2008. It was not any change in 2003 and 2005. Average of average interest rate i.e. (Mean) value among lending rate of BoK is 11.44% in seven study period. The standard Deviation of 1.278 explains that the dispersion or scattered ness among lending rate is 1.278%. The Coefficient of Variation of lending rate of BoK is 11.17% means that the variation percentage with respect to their average value is 11.17%.

#### 4.2.1.3 Analysis the various Correlation Coefficients and theirs significance

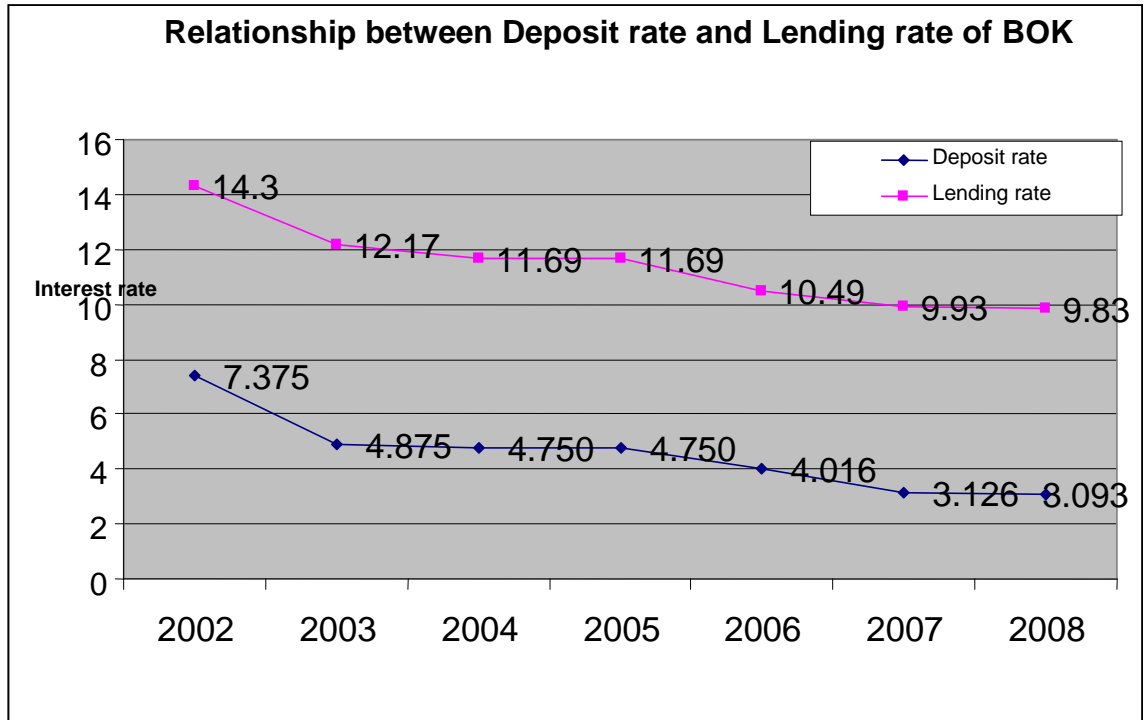
**Table no. 8**

Computation of correlation simple coefficient of BoK				
Year (Mid July)	Deposit Interest rate (1)	Deposit amount(2) in millions	Lending Interest rate (3)	Lending amount(4) in millions
2002	7.38	2,396.50	14.30	1,811.50
2003	4.88	3,983.00	12.17	2,995.30
2004	4.75	5,724.10	11.69	4,327.10
2005	4.75	5,735.90	11.69	4,977.60
2006	4.02	6,169.90	10.49	4,956.20
2007	3.13	7,741.60	9.93	6,104.90
2008	3.09	8,942.80	9.83	6,166.90
$r_{12} = -0.935$	$r_{34} = -0.9528$			
$r_{12}^2 = 0.874$	$r_{34}^2 = 0.9078$			
$6PE(r_{12}) = 0.192$	$6PE(r_{34}) = 0.144$			

Source: Annexure E5

Note: Average Interest rate on deposit and Lending is taken from rate calculated table-6 and table-7 and Deposit amount and lending amount is taken from the banking and financial statistics published by NRB and from Economic bulletin of sample banks.

**Graph 1.**



From the Calculation of table-8, the correlation coefficient (simple correlation) between deposit rate and deposit amount is -0.935 which means that two variables are high degree of negative correlation and we conclude that when the deposit amount increase the interest rate is decreased or vice-versa. But from the analysis of BoK it is seen that the real theory doesn't match practically.

Similarly the correlation coefficient between interest rate on lending and lending amount of BoK are found high degree of negative correlation i.e.  $r_{34} = -0.9528$ . As we calculated by P.E. we found  $r_{12} = 0.06$  (P.E.  $r_{12}$ ), then the value r of interest rate on deposit and deposit amount of BoK is not significant. It means that it will not effect to decision making. Similarly that  $r_{34} = 0.06$  (P.E.  $r_{34}$ ) it also means r is not significant. Hence this conclusion is correct and the interest rate on lending and lending amount is taken truthful.

## 4.2.2 Analysis of Nepal Bangladesh Bank Limited

### 4.2.2.1 Analysis of Deposit rate of NBBL

**Table-no.9**

Interest rate structure on deposit of NBBL as of Mid July							
Deposit	2002	2003	2004	2005	2006	2007	2008
Savings	6.5	6	6	5.5	5.5	4.5	4.125
<b>Fixed Deposit:</b>							
1 month	4.5	4	4	3.5	3.5	3.5	3.5
3 months	6	5.5	5	4.5	4.5	4	4
6 months	6.5	6	5.5	5.5	5.5	4.5	4.5
1 year	8.5	7.5	7	7	6.5	4.75	4.75
2years/above	9	8	7.375	7.5	7	5	5
Mean(X) =Average of all deposits	6.833	6.167	5.813	5.583	5.417	4.375	4.313
Average of Average (Mean)	5.5						
Standard Deviation( )	0.846						
Coefficient of Variation (CV)	15.38%						

(Source: Various Banking and Financial Statistics No.45 Published by NRB)

Note: Calculation of Average rate of Deposit and Its Standard deviation is done as shown in *Annex-E6*.

Table - 9 shows the interest rate structure of Nepal Bangladesh Bank Limited and mean of all deposit of seven year is computed. Interest rate on deposit i.e. (average of all deposits) within seven years time period is in decreasing trend. The rate was 6.833 in 2002 then it decreased to 6.167, 5.813, 5.583, 5.417, 4.375 and 4.313 in year 2003, 2004, 2005, 2006, 2007 and 2008 respectively. The Standard Deviation of interest rate of 0.846 signifies that dispersion among interest rate is 0.846% .To know the dispersion percentage with respect to theirs mean, Coefficient of Variation is most scientific and realistic which is also calculated here. The CV of NBBL of 15.38% means only 15.38% of scattered ness among their average value exist.

#### 4.2.2.2 Analysis of Lending rate of Nepal Bangladesh Bank Limited

**Table-no.10**

Interest rate structure on Lending of NBBL as on Mid July							
Loan and Adv	2002	2003	2004	2005	2006	2007	2008
Overdraft	15.75	14.75	14.25	14	13.75	12.5	
Export Credit	10.25	10	9.75	10.625	11.5	10.25	9.25
Import L/C	14.5	12.75	12.5			10.25	
Against FDR	11	10	9.375	9.5	9	7	
Against NG bond	12.5	11	9	9	9	8.5	7.5
Against BG/CG	15	15	13	13	13	12	8
Industrial Loan	15.25	14.5	13	12.625	12.625		11
Commercial Loan	16	15	13.5	13.125	12.875		8.75
Priority Sector	13.5	13	13	13	13	11	10
Poorer Sector	12.5	12	12	12	12	10	9.5
Term Loan	14.75	14.5	13.5	13.5	13.25	11.5	
Hire purchase	16.25	14.5	14.25	14.25	14	11	9.5
Others	14	13.75	13	12.25	12	10	8.25
Mean (X)= Average of all Loan and Advance	13.94	13.13	12.32	12.24	12.17	10.36	9.08
Average of Average(Mean)	11.89						
Standard Deviation ( $\Sigma$ )	1.53						
Coefficient of Variation (CV)	12.86 %						

Source: Various Banking and Financial Statistics No.45 Published by NRB

Note: Calculation of Average rate Lending and Its Standard deviation is done as shown in Annex-E7

The Calculation from above table - 10 shows the interest rate structure on lending of Nepal Bangladesh Bank Limited and average on all credit of seven years (2002-2008) is computed even standard deviation on all average lending rate is computed. It is seen that the lending rate of NBBL is in decreasing trend. The highest rate was on year 2002 (13.94%) and lowest on year 2008 i.e. (9.08%). From 13.94 % in year 2002 the rate decreased to 13.13%, 12.32%, 12.24%, 12.17%, 10.36% & 9.08% respectively in years 2002, 2003, 2004, 2005, 2006, 2007, and 2008. The standard deviation of 1.53 shows that the dispersion among the interest rate on lending in seven year time period of NBBL is 1.53%. To know whether this dispersion % is comparatively high or low, Coefficient of variation is computed. The CV of NBBL of 12.86% shows that dispersion from their mean value is 12.86%.

**4.2.2. 3 Analysis the various Correlation Coefficients and their significance of NBBL**

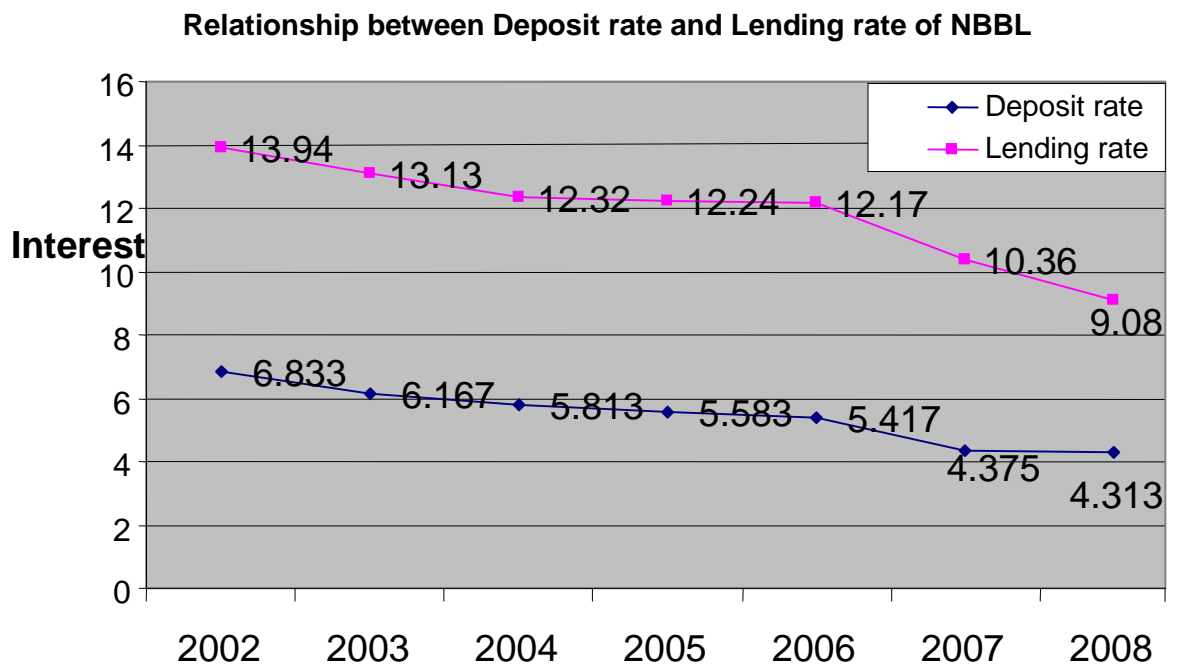
**Table no 11**

Computation of correlation coefficient of Nepal Bangladesh Bank Limited				
Year (Mid July)	Deposit Interest rate (1)	Deposit amount(2) in millions	Lending Interest rate (3)	Lending amt(4) in millions
2002	6.83	4,145.20	13.94	3,258.70
2003	6.17	6,455.60	13.13	4,611.80
2004	5.81	8,578.80	12.32	7,347.40
2005	5.58	9,514.00	12.24	8,222.10
2006	5.42	10,548.00	12.17	8,491.90
2007	4.38	12,747.30	10.36	10,253.60
2008	4.31	12,125.50	9.08	8,739.8
$r_{12} = -0.9695$	$r_{34} = -0.79675$			
$r^2_{12} = 0.94$	$r^2_{34} = 0.6348$			
$\delta PE(r_{12}) = 0.096$	$\delta PE(r_{34}) = 0.558$			

Appendix-E8

Note: Average Interest rate on deposit and Lending is taken from rate calculated table-9 and table-10 and Deposit amount and lending amount is taken from the banking and financial statistics published by NRB and from Economic bulletin of sample banks.

**Graph-2**



The Calculation from table - 11 shows that the deposit rate and deposit amount are high degree of negative correlation i.e. ( $r_{12} = -0.9695$ ). From the analysis it is stated that deposit rate and deposit amount of NBBL moves in opposite direction.

Similarly the lending rate and lending amount of NBBL are high negative correlation.  $r_{34} = -0.79675$  signifies that two variables are negatively correlated. It means that this relation match with the real theory that with the increase in lending rate, lending amount decrease and vice-versa. The coefficient of simple determination of  $r_{34}^2 = 0.6348$  signifies that 63.48 % of total variation in lending amount is explained by lending rate and remaining 36.52 % of variation explained by other factors.

As we calculated by 6P.E. we found  $r_{12} = 0.6232$  (6PE ( $r_{12}$ )), then the value r of interest rate on deposit and deposit amount of NBBL is not significant. Similarly that  $r_{34} = 0.79675$  (6PE ( $r_{34}$ )) that means ti means the calculation is not significant. And it will not effect to decision making.

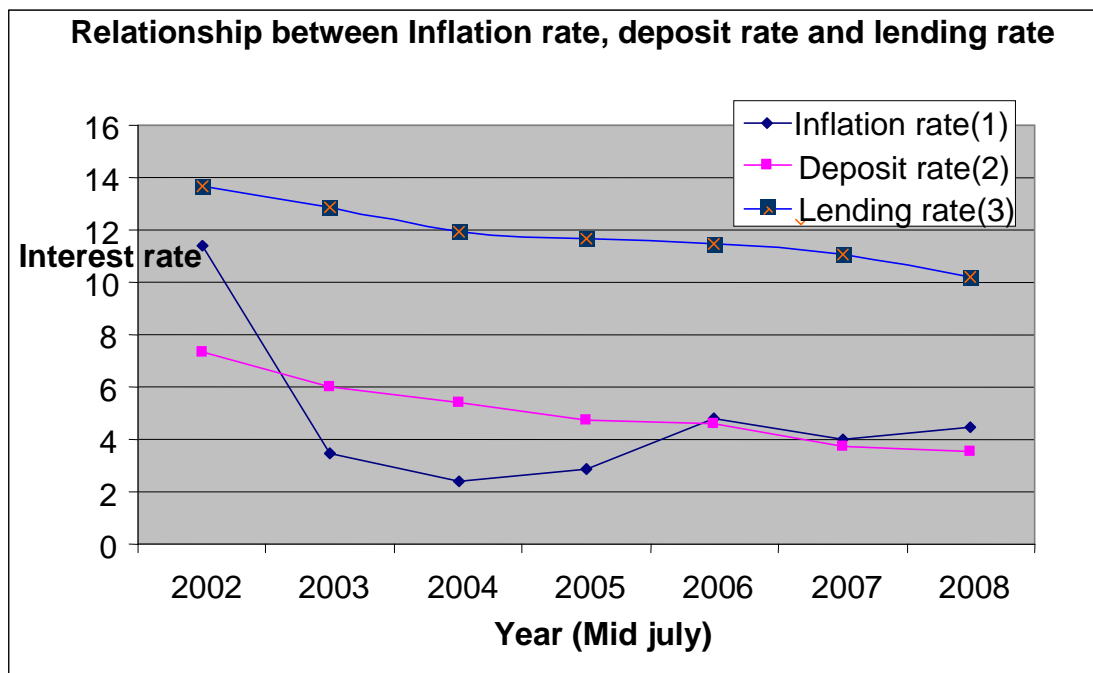
### 4.3. Analysis of Correlation Coefficients between Inflation and Deposit rate, Inflation and Lending rate of Commercial Banks

**Table-12**

<b>Calculation of Correlation coefficient and probable error of Commercial Banks</b>			
Year (Mid July)	Inflation rate (1)	Deposit rate (2)	Lending rate (3)
2002	11.4	7.35	13.7
2003	3.5	6.025	12.85
2004	2.4	5.375	11.95
2005	2.9	4.765	11.7
2006	4.8	4.625	11.45
2007	4	3.725	11.05
2008	4.5	3.505	10.225
	$r_{12} = 0.6232$	$r_{13} = 0.58144$	
	$r_{12}^2 = 0.38837$	$r_{13}^2 = 0.338$	
	6PE( $r_{12}$ ) = 0.9361	6PE( $r_{13}$ ) = 1.0128	

Calculation of correlation coefficients between Inflation and deposit rate: Inflation rate and lending rate of commercial banks and probable error is made as shown in *appendix-E9*

Graph: 3



In above table - 12 the correlation coefficient between Inflation rate and deposit rate and between Inflation rate and lending rate is shown. From this analysis, we come to know the relationship of Inflation with deposit rate and lending rate of those two Commercial banks is positive. The correlations of  $(r_{12} \times 0.6232)$  and  $(r_{13} \times 0.5814)$  shows positive but moderate relationship of Inflation rate with deposit rate and lending rate respectively. This indicates that with the decrease in inflation rate both deposit rate and lending rate of commercial banks increases. The probable error is used to test whether the calculated value of sample correlation coefficient is significant or not. As we calculated by P.E. we found  $r_{12} > P.E. (r_{12})$ , then the value  $r$  of inflation rate and deposit amount of commercial banks is not significant. Similarly that  $r_{13} > P.E. (r_{13})$ , then  $r$  is significant.

From this analysis, we come to know that Deposit rate and lending rate of BoK and NBBL has not any significant relationship with Inflation rate.

#### 4.4 Comparative analysis between BoK and NBBL

Table no.13

Bank of Kathmandu					Nepal Bangladesh Bank			
Year (Mid July)	Deposit Interest Rate (1)	Deposit Amount (2) in millions	Lending interest rate (3)	Lending amount (4) in millions	Deposit Interest rate (1)	Deposit amount (2) in millions	Lending Interest rate (3)	Lending amount (4) in millions
2002	7.38	2,396.50	14.30	1,811.50	6.83	4,145.20	13.94	3,258.70
2003	4.88	3,983.00	12.17	2,995.30	6.17	6,455.60	13.13	4,611.80
2004	4.75	5,724.10	11.69	4,327.10	5.81	8,578.80	12.32	7,347.40
2005	4.75	5,735.90	11.69	4,977.60	5.58	9,514.00	12.24	8,222.10
2006	4.02	6,169.90	10.49	4,956.20	5.42	10,548.00	12.17	8,491.90
2007	3.13	7,741.60	9.93	6,104.90	4.38	12,747.30	10.36	10,253.60
2008	3.09	8,942.80	9.83	6,166.90	4.31	12,125.50	9.08	8,739.80
	CV= 26.60		CV= 11.17		CV= 15.38		CV= 12.86	
$r_{12} = -0.935$					$r_{12} = -0.9695$			
$r^2_{12} = 0.874$					$r^2_{12} = 0.94$			
$6PE(r_{12}) = 0.192$					$6PE(r_{12}) = 0.096$			
$r_{34} = -0.9528$					$r_{34} = -0.797$			
$r^2_{34} = 0.9078$					$r^2_{34} = 0.634$			
$6PE(r_{34}) = 0.144$					$6PE(r_{34}) = 0.558$			

Note: Computation of simple correlation coefficient and coefficient of simple determinations of two banks are taken from table-8 and table-11

From above table - 13, it is cleared that comparatively the NBBL has been able to collect more deposit as well as provide more loan to public each year than of BoK. The deposit mobilization rate of NBBL is also higher than of BoK. The above table also shows the structure of average interest rate on Deposit and Lending of two Commercial banks. The average deposit rate of NBBL i.e. 5.5 is comparatively higher than of BoK i.e. 4.57. As same average lending rate of NBBL is 11.89% which is also higher than 11.44 % of BoK i.e. (11.89%>11.44%). But the data distribution of deposit rate of BoK is less consistency than of NBBL because the standard deviation of Deposit rate of BOK and NBBL are 1.216 and 0.846 respectively. Again Coefficient of Variation on deposit rate of BoK is 26.6% and of NBBL is 15.38% . Since CV of BoK is higher than NBBL, the variation among deposit rate of BoK is higher than NBBL.

Even the average rate of lending of NBBL is higher than BoK, it's lending rate is less consistency than of BoK because the standard deviation of NBBL i.e.(1.53) is greater than of BoK i.e. (1.278). This also clears from CV, the higher the CV; there is less consistency or more variability in the data. The CV of lending rate of BoK is lower than NBBL i.e. 11.17 %< 12.86%.

As taking about correlation, from above table it is cleared that both bank have highly negative correlation between deposit rate and deposit amount (i.e.  $r_{12}$ ). The have correlation of  $r_{12}$  XZ0.935 &  $r_{12}$  XZ0.9695 of BoK and NBBL respectively explains that the small rate increase/decrease in deposit rate decrease /increase in deposit amount more proportionately. The probable error i.e.  $r_{12}^2$  X0.874 &  $r_{12}^2$  X0.94 Of BoK & NBBL respectively shows 87.4% and 94% of total variation on deposit amount of each bank is explained by theirs deposit rate. Thus Deposit amount of NBBL is highly affected by its deposit rate than of BoK. The simple correlation coefficient of both banks don't support of practical theory of deposit amount and deposit rate because practically high deposit rate attract more deposit collection and low despite rate don't attract more deposit amount.

But Correlation between lending rate and lending volume ( $r_{34}$ ) of both banks seem negative. This analysis of both banks supports the real theory of lending rate and lending amount. The correlation of BoKi.e.  $r_{34}$  XZ0.9528 is said to be highly

negative but  $r_{34} = 0.79675$  of NBBL is moderately negative. From coefficient of probable error of  $r_{34}^2 = 0.9078$  shows that 90.78% of variation in lending amount of BoK is caused by its lending rate. But  $r_{34}^2 = 0.6348$  of NBBL shows only 63.48% of variation in lending amount is explained by its lending rate.

#### **4.5. Major Findings**

From the analysis of relevant data of two banks (BoK and NBBL) under study; using financial tools: percentage, asset utilization ratio and liquidity ratios as well as statistical tools: mean, standard deviation, correlation coefficient and coefficient of simple determination and probable error, the following findings have been drawn.

- ) Deposit rates, interest on loans and advance (lending rate) of two commercial banks under study period are in decreasing trend means that every year interest rate either in deposit or in lending has been decreasing.
- ) Loan and advance (total credit) to total deposit ratio of two commercial banks have higher than 75 % each year shows that they mobilize their deposit with maximum extent.
- ) The average Interest Rate risk ratio of two Commercial Banks show that over 85% of total deposits except current deposit mobilize by two banks in loan and investment. Comparatively being NBBL the higher interest rate risk, both Commercial banks carry high risk in mobilizing deposit.
- ) Statistical analysis shows that interest rates on lending are far higher than deposit rate of two sample banks. The correlation coefficient between these two variables (deposit rate and lending rate) of sample banks comes highly positive.
- ) The simple correlation coefficient between deposit rate and deposit amount of two commercial banks comes highly negative but comparatively the higher correlation of these variables of NBBL is computed. Hence the real theory which says with the increase/decrease in deposit rate; deposit amount

increase/decrease does not match the analysis (increase in deposit rate decrease deposit amount and vice-versa).

- ) The simple correlation between lending rate and lending amount (loan and advance) of sample banks are negatively correlated. This correlation of BoK is highly negative but NBBL has moderately negative. This analysis match to the real theory i.e. increase in interest rate decrease the loan amount and vice-versa. Hence it can be concluded that the customers Banks are interest conscious.
- ) The coefficient of simple determination  $r_{12}^2$  of two sample banks clear that the variation in dependent variable (deposit amount) has been explained by one independent variable (deposit rate) is to large extent and less percentage variation is due to the effect of other factors in the economy.
- ) The simple coefficient of simple determination  $r_{34}^2$  of two commerce banks (BoK and NBBL) under study that explains total variation in dependent variables (loan and advance) has been explained by one independent variable (lending rate) is to high in the case of BoK but moderate in case of NBBL. Thus loan and advance of BoK is affected by to large extent by its interest rate but moderate extent effect made by lending rate on its volume of NBBL. Whatever it has been affected, lending interest rate is major determinant of lending volume.
- ) From the analysis, it is cleared that even though correlation between Inflation rate and deposit rate, inflation rate and lending rate is positive but test of significance for correlation between these variables of all Commercial banks comes insignificant. So it can be concluded that there is no correlation between inflation rate and deposit rate, inflation rate and lending rate of commercial banks.

## **CHAPTER- FIVE**

### **SUMMARY, CONCLUSION AND RECOMMENDATION**

Finally, the research study comes to the very end. This is the last chapter which includes the briefing about the entire chapter ahead known as summary. To know the actual theme of the study; following four chapters viz: Introduction, Literature Review, Research Methodology and Analysis the study is summarized. Then conclusion is drawn from following analysis part and comparing the theoretical aspect and analysis. Based on conclusion, recommendations are suggested with a hope of improving present situation of interest rate structure so that could mobilize deposit more enough in the upcoming year by Nepalese Commercial banks.

#### **5.1 Summary**

There are various factors which contribute in the acceleration of economic development of a country. Such various factors are varied from each nation. Today, all the developing countries are making their endeavor for the economic growth through building the domestic resources. For the development of the country's economy sound and coordinated, fiscal and secondary policy plays an important role. Regarding this fact, in Nepal after liberalization policy, various banks and financial institutions came into existence with a hope to play an important role in the development of financial system of the country. Accepting deposit from savers (household, businesses or government) and transferring the collected deposit to the investment sector (i.e. by lending collected amount from depositors to borrowers) is one of the major functions of banking business. Banks are the real intermediaries who transfer savings (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 lure savers by providing certain percentage of interest and collected amount is loaned to borrowers in which banks charge certain percentage of interest to them. The proper decision making in charging and providing interest rate affects profit position of bank. Even though there are various factors in the economy that affect deposit and lending amount; interest rate is one of the major economic indicator that affect deposit and lending amount of banks.

With the help of interest rate theories we come to know that interest rate fluctuates time to time. Such a fluctuation has been analyzed with the help of financial tools and statistical tools in systematic manner. From financial analysis, various financial tools are used to know real financial position; whether interest rate on deposit and loan is either increasing or decreasing in above study period, whether the percentage change in deposit and loan and advance increasing or decreasing; whether the deposit mobilization is properly done or not. From above financial analysis it is cleared that even though interest rate on deposit and lending of BoK and NBBL is in decreasing trend, the volume of deposit and loan and advance is in increasing trends. In the side of deposit mobilization, NBBL has kept more money in NRB deposit than BOK. Deposit mobilization in side of lending of NBBL seems more satisfactory than BOK. In summary both Commercial banks mobilize its deposit to the maximum extent i.e. more than 75% of deposit in loan and advance in each year.

From statistical analysis, the effect of interest on deposit and lending amount is analyzed using statistical tools mentioned in chapter three. Secondary data are collected from NRB's economic reports and annual report of related banks. From this analysis of BoK and NBBL, there is high negative correlation between deposit interest rate and deposit amount and lending interest rate and lending amount. Even though, the analysis between deposit rate and deposit amount do not match with practical theory, test of hypothesis shows that there is significant relationship between deposit rate and deposit amount. Similarly analysis also shows the significant relationship between lending rate and lending amount of both commercial banks. These studies also try to find the relationship between inflation rate, deposit rate and lending rate but test of significance for correlation coefficient shows that these variables are not correlated. The coefficient of simple determination shows that the structural change in interest rate highly effect on deposit volume and lending volume of two sample banks ( BoK and NBBL) .

## **5.2 Conclusions**

In conclusion we can say that interest rate has greater influence over the resources mobilization and utilization in the productive sector. It is the main determinant factor

of firm's profit. The interest rates that have greater effects on deposit, flow of credit are fully liberalized in August 1991. Before liberalization it was fixed and monitored by NRB. After liberalization period NRB has allowed commercial banks to fix the interest rates on their own under some certain directives. From this study, we come to know that different structural changes has been occurred on interest rate under which Commercial Banks operated an ERA of reducing lending rate to mobilize the resources into productive sector. In spite of decreasing the deposit rate under study period deposit collection has been increasing significantly. It is because of increasing of people awareness and education about bank and banking system and as well as efficiency of Commercial Banks. From above study, we conclude that both Commercial Banks (i.e. BoK and NBBL) mobilize their collected deposit through loan and advance in maximum extent (over 75%) due to decrement of lending rate during study period. It is because of negative relationship between Lending interest rate and Lending volume.

Finally, it can be concluded that whatever extent of negative correlation between deposit interest rate and deposit amount, lending interest rate and lending amount of sample banks; interest rate is considered as the major variable which affect deposit amount and lending amount of commercial banks to large extent. From simple and multiple correlation coefficients, it can be concluded that beside interest rate there are few other factors also in the economy which has less effect of deposit amount and lending amount of sample two banks as well as other commercial banks also. But those other factors are not covered by this study.

### **5.3. Recommendations**

After analyzing and finding out the structural change effect of interest rate on deposit collection and its mobilization of commercial banks it is thought that there are some recommendation (suggestions) which would be helpful in near future for the banker, researchers and academicians, which are as follows;

- ) NRB as a Central bank should provide clear-cut policies, guideline or directive to discipline commercial banks in order to maintain effective interest rate with minimum spread.

- ) There is inconsistency in payment and charging of interest rates. This may create misconception about the organizations regarding its financial position and profit. So banks are suggested to fix concessional rates on lending so that it can increase investment opportunities and promote industrial sector.
- ) There is inconsistency in average deposit rate, also very low especially for Bank of Katmandu. Deposit collection is also comparatively low so that it is suggested to make attractive rate.
- ) As NRB's publications are the major source of data and information regarding this topic, untimely and late publication makes the researcher wait long and even individual banks do not put available information regarding interest rate structure on their annual report. So, NRB and even individual commercial banks are suggested to publish all necessary publication in time and in their own publication respectively for the convenience of researcher and other interested people.
- ) Commercial banks should convince borrower to repay loan by offering services, facilities, fine waivers discount etc. collection of more saving from the private sectors and its effective mobilization is possible only through good repayment of loans. Good repayment of loans ensures the strength of the commercial banks.
- ) As the key to success for any organization and for good financial system in the country capital and investment is essential, this is possible only by proper decision making of interest. So, all commercial banks are suggested to set proper and practical interest rate policy.
- ) Future researchers are suggested to make more explanatory research in this topic.

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**Annexure E1**  
Rs in Millions

Year Mid July	Current & Saving deposit		Fixed Deposit		Total Deposit		NRB balance	
	BOKL	NBBL	BOKL	NBBL	BOKL	NBBL	BOKL	NBBL
2002	972.6	1060	1020.6	2608.1	2396.5	4145.2	122	374.4
2003	1599	1580	1812	4356.8	3983	6455.6	256.9	401.2
2004	2530.4	2329	1948.5	5236.8	5724.1	8578.8	399.9	634.1
2005	2652.2	2951.4	1958.8	5453.6	5735.9	9514	298.2	1170.7
2006	3203	3797.8	1991.1	5031.6	6169.9	10548	362.4	511
2007	3871.7	5363	2297.7	4875.7	7741.6	12747.3	447.4	800.3
2008	4750.1	6552.8	2878.9	3536.6	8942.8	12125.5	417.9	747.7

*Source: Banking & Financial Statistics No.45, Published by NRB (Mid July 2008)*

**Annexure E2**  
(Rs. in Millions)

Years Mid-July	BOKL			NBBL		
	Total Credit	Investment	Deposit	Total Credit	Investment	Deposit
2002	1811.5	119.9	2396.5	3258.7	708.7	4145.2
2003	2995.3	151.6	3983	4611.8	60	6455.6
2004	4327.1	325.4	5724.1	7347.4	277.5	8578.8
2005	4977.6	630.7	5735.9	8222.1	1029.4	9514
2006	4956.2	1618.8	6169.9	8491.9	2276.7	10548
2007	6104.9	2394.6	7741.6	10253.6	2617.3	12747.3
2008	6166.9	2235.7	8942.8	8739.8	2275.3	12125.5

*Source: Banking & Financial Statistics No.45 Published by NRB (Mid July 2008)*

## Analysis of Bank of Kathmandu Limited

### Annexure E3

#### Calculation of Average Rate of Interest on Deposit of BOKL

Deposit	2002	2003	2004	2005	2006	2007	2008
<u>Savings</u>	7.5	5	5	5	4.25	2.75	2.375
<u>Fixed</u>							
7 days	4.5	2.5	2.5	2.5	2.5	2	1.5
14 days	5	3	3	3	3	2.5	2.5
1 month	6	4	4	4	3.5	2.5	2.5
2 months						3	
3 months	8	5	4.75	4.75	4		3
6 months	8.5	5.5	5.25	5.25	4.5	3.5	3.5
1 year	10	6.75	6.5	6.5	5	4	4.25
2years/above	9.5	7.25	7	7	5.375	4.7545	5.125
Total (X)=	59	39	38	38	32.125	25.0045	24.75
Mean=X Average of all deposits	7.375	4.875	4.750	4.750	4.016	3.126	3.093

*Source: Various Banking and Financial Statistics No.45 published by NRB (Mid July 08)*

Where,

$\sum X$  = SUM OF ALL VALUES OF VARIABLES

N = NO OF OBSERVATION

X = VARIABLES OR DEPOSIT RATE

$$MEAN (\bar{X}_{2002}) = \frac{\sum X_{2002}}{N} = \frac{59}{8} = 7.375$$

$$MEAN (\bar{X}_{2003}) = \frac{\sum X_{2003}}{N} = \frac{39}{8} = 4.875$$

$$MEAN \{X_{2004}\} = \frac{\sum X_{2004}}{N} = \frac{38}{8} = 4.75$$

$$MEAN \{X_{2005}\} = \frac{\sum X_{2005}}{N} = \frac{38}{8} = 4.75$$

$$MEAN \{X_{2006}\} = \frac{\sum X_{2006}}{N} = \frac{32.125}{8} = 4.016$$

$$MEAN \{X_{2007}\} = \frac{\sum X_{2007}}{N} = \frac{25.0045}{8} = 3.126$$

$$MEAN \{X_{2008}\} = \frac{\sum X_{2008}}{N} = \frac{24.75}{8} = 3.093$$

$$\bar{X} = \text{Average of Average Deposit interest rate} = \frac{\sum X}{N} = \frac{31.985}{7} = 4.57$$

$$d = X - \bar{X} = X - 4.57$$

$$\text{Standard Deviation}(\dagger) = \sqrt{\frac{\sum (X - \bar{X})^2}{n}} = \sqrt{\frac{126}{7}} = \sqrt{1.799} = 1.216$$

$$\text{Coefficient of Variation} = \frac{S.D}{\text{Mean}} \times 100\% = \frac{1.216}{4.57} \times 100\% = 26.60\%$$

### Annexure-E4

#### Interest rate structure on Lending of BOKL as on Mid July

Loan and Adv	2002	2003	2004	2005	2006	2007	2008
Overdraft	15.75	13.25	12.25	12.25	11.75	11.75	11.75
Export Credit	10.25	9.5	9.5	9.5	10	10	7.25
Import L/C					10.625	10.25	10.25
Against FDR	11.5	9.25	9	9	9	7.5	9.25
Against HMG bond	11.5	9	8.5	8.5	7.25	7.25	7.25
Against BG/CG	15.5	11.5	11	11	9.75	9.25	
Against other gurantee					9	7.5	7.5
Industrial Loan		13	12.5	12.5	11.5	11.75	11.75
Commercial Loan		13.5	13	13	12.25	12.25	12.25
Priority Sector	15	13.5	13.5	13.5	13.5		
Poorer Sector	12	9	9	9	9	8.75	8.75
Term Loan	15.5	13.5	12.5	12.5	12	11.5	11.75
Working Capital	15.25	13.25	12.75	12.75	11.75	11.75	11.75
Hire purchase	17	15	13.5	13.5	11.25	10.75	9.5
Others	18	15	15	15	8.75	8.75	8.75
Total ( X )	157.25	158.25	152	152	157.375	139	127.75
Mean (X)= Average of all Loan and Advance	13.25	12.17	11.69	11.69	10.49	9.93	9.83

Source: Various Banking and Financial Statistics No.45 published by NRB

Where,

X= lending rate

N= No of observations

$$\text{MEAN} (\bar{X}_{2002}) = \frac{\sum X_{2002}}{N} = \frac{157.25}{11} = 14.30$$

$$\text{MEAN}(\bar{X}_{2003}) = \frac{\sum X_{2003}}{N} = \frac{158.25}{13} = 12.17$$

$$\text{MEAN}(\bar{X}_{2004}) = \frac{\sum X_{2004}}{N} = \frac{152}{13} = 11.69$$

$$\text{MEAN}(\bar{X}_{2005}) = \frac{\sum X_{2005}}{N} = \frac{152}{13} = 11.69$$

$$\text{MEAN}(\bar{X}_{2006}) = \frac{\sum X_{2006}}{N} = \frac{157.375}{15} = 10.49$$

$$\text{MEAN}(\bar{X}_{2007}) = \frac{\sum X_{2007}}{N} = \frac{139}{14} = 9.93$$

$$\text{MEAN}(\bar{X}_{2008}) = \frac{\sum X_{2008}}{N} = \frac{127.75}{13} = 9.83$$

Calculation of S.D of Interest rate on Lending of BOKL			
Year	Average Interest on lending (X)	d	d <sup>2</sup>
2002	14.3	2.86	8.1796
2003	12.17	0.73	0.5329
2004	11.69	0.25	0.0625
2005	11.69	0.25	0.0625
2006	10.49	(0.95)	0.9025
2007	9.93	(1.51)	2.2801
2008	9.83	(1.61)	2.5921
	X = 80.1		d <sup>2</sup> =14.6122

Where,

$$\bar{X} = \text{Average of Average Deposit interest rate} = \frac{\sum X}{N} = \frac{80.1}{7} = 11.44$$

$$d = X - \bar{X} = X - 11.44$$

$$\text{Standard Deviation (s)} = \sqrt{\frac{\sum (X - \bar{X})^2}{n}} = \sqrt{\frac{14.6122}{7}} = \sqrt{2.0875} = 1.278$$

$$\text{Coefficient of Variation (CV)} = \frac{\text{S.D}}{\text{Mean}} \times 100\% = \frac{1.278}{11.44} \times 100\% = 11.17\%$$

(Note: Interest rate on deposit and lending is taken from Annex-E3 and Annex-E4 and Deposit amount and lending amount from Annex-E2)

Correlation Coefficient between Deposit rate (1) and Deposit amount (2) =  $r_{12}$

$$r_{12} = \frac{n \sum 12 - \sum 1X \sum 2}{\sqrt{n \sum 1^2 - (\sum 1)^2} \sqrt{n \sum 2^2 - (\sum 2)^2}}$$

Where,

$n =$  no of fiscal year = 7

$\sum 12 =$  Sum of Variable "1" multiply v ariable "2" = 168,164.95

$\sum 1 =$  Sum of Variable "1" = 31.985

$\sum 2 =$  Sum of Variable "2" = 40,693.8

$\sum 1^2 =$  Sum of Square of Variable "1" = 158.75

$\sum 2^2 =$  Sum of Square of Variable "2" = 26,52,47,079.3

$(\sum 1)^2 =$  Whole Square of sumation of Variable "1" =  $(31.985)^2 = 1023.04$

$(\sum 2)^2 =$  Whole Square of sumation of Variable "2" =  $(40693.8)^2 = 1,65,59,85$

$\sum 34 =$  Sum of Variable "3" multiply v ariable "4" = 344362

$\sum 3 =$  Sum of Variable "3" = 80.1

$\sum 4 =$  Sum of Variable "4" = 31339.5

$\sum 3^2 =$  Sum of Square of Variable "3" = 931.185

$\sum 4^2 =$  Sum of Square of Variable "4" = 155618028.6

$(\sum 3)^2 =$  Whole Square of sumation of Variable "3" =  $(80.1)^2$

$(\sum 4)^2 =$  Whole Square of sumation of Variable "4" =  $(31339.5)^2$

Correlation Coefficient between Deposit rate (1) and Deposit amount (2) =  $r_{12}$

$$\begin{aligned} r_{12} &= \frac{n \sum 12 - \sum 1X \sum 2}{\sqrt{n \sum 1^2 - (\sum 1)^2} \sqrt{n \sum 2^2 - (\sum 2)^2}} \\ &= \frac{7 \times 168164.95 - 31.985 \times 40693.8}{\sqrt{7 \times 158.75 - 1023.04} \sqrt{7 \times 265247079.3 - 1655985358}} \\ &= \frac{-124436.543}{9.392 \times 14168.42253} \\ &= \frac{-124436.543}{133069.8244} \\ &= -0.935 \end{aligned}$$

Coefficient of Determination between Deposit rate (1) Deposit amount(2)

$$(r_{12})^2 = (-0.935)^2 = 0.8742$$

Similarly,

Correlation Coefficient between Lending rate "3" and lending amount "4"

$$r_{34} = \frac{n \sum 34 - \sum 3 \sum 4}{\sqrt{n \sum 3^2 - (\sum 3)^2} \times \sqrt{n \sum 4^2 - (\sum 4)^2}}$$

$$= \frac{7 \times 344362 - 80.1 \times 31339.5}{\sqrt{7 \times 931.185 - (80.1)^2} \sqrt{7 \times 155618028.6 - (31339.5)^2}}$$

$$= \frac{-99759.95}{10.1136 \times 10351.90513}$$

$$= -0.9528$$

Coefficient of Determination between Lending rate (3) Lending amount(4)

$$(r_{34})^2 = (-0.9528)^2 = 0.9079$$

Now we have,

$$r_{12} = -0.935$$

$$r_{34} = -0.9528$$

$$r_{12}^2 = 0.874$$

$$r_{34}^2 = 0.9078$$

Calculation of Probable Error

$$\begin{aligned} \text{P.E.}(r) &= 0.6745 \times \text{S.E.}(r) \\ &= 0.6745 \times \frac{1-r^2}{\sqrt{n}} \\ &= 6 \times \text{P.E.} \end{aligned}$$

Probable Error of Deposit rate (1) and Deposit amount (2) =  $r_{12}$

$$\begin{aligned} \text{PE}(r_{12}) &= 0.6745 \times \frac{1-0.874}{\sqrt{7}} \\ &= 0.6745 \times \frac{0.126}{2.646} \\ &= 0.6745 \times 0.048 \\ &= 0.032 \end{aligned}$$

$$\begin{aligned}6 \times \text{PE} &= 6 \times 0.032 \\ &= 1.92\end{aligned}$$

Probable Error of Lending rate "3" and lending amount "4" =  $r_{34}$

$$\begin{aligned}\text{PE}(r_{34}) &= \frac{0.6745 \times \sqrt{1 - 0.9078}}{\sqrt{7}} \\ &= \frac{0.6745 \times 0.092}{2.646} \\ &= 0.6745 \times 0.035 \\ &= 0.024 \\ 6 \times \text{PE} &= 6 \times 0.024 \\ &= 0.144\end{aligned}$$

## Analysis of Nepal Bangladesh Bank Limited

### Annexture-E6

Interest rate structure on deposit of NBBL as on Mid July							
Deposit	2002	2003	2004	2005	2006	2007	2008
Savings	6.5	6	6	5.5	5.5	4.5	4.125
Fixed							
1 month	4.5	4	4	3.5	3.5	3.5	3.5
2 months							
3 months	6	5.5	5	4.5	4.5	4	4
6 months	6.5	6	5.5	5.5	5.5	4.5	4.5
1 year	8.5	7.5	7	7	6.5	4.75	4.75
2years/above	9	8	7.375	7.5	7	5	5
Total ( X)	41	37	34.875	33.5	32.5	26.25	25.875
Mean(X) =Average of all deposits	6.833	6.167	5.813	5.583	5.417	4.375	4.313

*Source: Various Banking and Financial Statistics No.45 Published by NRB*

Where,

$\sum X$  = Sum of all Values of Variables

N = No of Observations

X = Variables or Deposit Rate

$$MEAN (\bar{X}_{2002}) = \frac{\sum X_{2002}}{N} = \frac{41}{6} = 6.833$$

$$MEAN (\bar{X}_{2003}) = \frac{\sum X_{2003}}{N} = \frac{37}{6} = 6.167$$

$$MEAN \{X_{2004}\} = \frac{\sum X_{2004}}{N} = \frac{34.875}{6} = 5.813$$

$$MEAN \{X_{2005}\} = \frac{\sum X_{2005}}{N} = \frac{33.5}{6} = 5.583$$

$$MEAN \{X_{2006}\} = \frac{\sum X_{2006}}{N} = \frac{32.5}{6} = 5.417$$

$$MEAN \{X_{2007}\} = \frac{\sum X_{2007}}{N} = \frac{26.25}{6} = 4.375$$

$$MEAN \{X_{2008}\} = \frac{\sum X_{2008}}{N} = \frac{25.875}{6} = 4.313$$

Calculation of Standard Deviation of Average Interest Rate on Deposit of NBBL			
Year	Average Interest (X)	d	d <sup>2</sup>
2002	6.833	1.333	1.777
2003	6.167	0.667	0.445
2004	5.813	0.313	0.098
2005	5.583	0.083	0.007
2006	5.417	(0.083)	0.007
2007	4.375	(1.125)	1.266
2008	4.313	(1.187)	1.409
	X = 38.501		d2 = 5.008

Where,

$$\bar{X} = \text{Average of Average Deposit interest rate} = \frac{\sum X}{N} = \frac{38.501}{7} = 5.5$$

$$d = X - \bar{X} = X - 5.5$$

$$\text{Standard Deviation}(\dagger) = \sqrt{\frac{\sum (X - \bar{X})^2}{n}} = \sqrt{\frac{5.008}{7}} = \sqrt{0.7154} = 0.846$$

$$\text{Coefficient of Variation(CV)} = \frac{S.D}{\text{Mean}} \times 100\% = \frac{0.846}{5.5} \times 100\% = 15.38\%$$

## Annexure-E7

### Interest rate structure on Lending of NBBL as on Mid July

Loan and Adv	2002	2003	2004	2005	2006	2007	2008
Overdraft	15.75	14.75	14.25	14	13.75	12.5	
Export Credit	10.25	10	9.75	10.625	11.5	10.25	9.25
Import L/C	14.5	12.75	12.5			10.25	
Against FDR	11	10	9.375	9.5	9	7	
Against HMG bond	12.5	11	9	9	9	8.5	7.5
Against BG/CG	15	15	13	13	13	12	8
Industrial Loan	15.25	14.5	13	12.625	12.625		11
Commercial Loan	16	15	13.5	13.125	12.875		8.75
Priority Sector	13.5	13	13	13	13	11	10
Poorer Sector	12.5	12	12	12	12	10	9.5
Term Loan	14.75	14.5	13.5	13.5	13.25	11.5	
Hire purchase	16.25	14.5	14.25	14.25	14	11	9.5
Others	14	13.75	13	12.25	12	10	8.25
Total ( X)	181.25	170.75	160.125	146.875	146	114	81.75
Mean (X)= Average of all Loan and Advance	13.94	13.13	12.32	12.24	12.17	10.36	9.08

*Source: Various Banking and Financial Statistics No.45 published by NRB*

Where,

$\sum X$  = Sum of all Values of Variables

N = No of Observations

X = Variables or Lending Rate

$\bar{X}$  = Average of All Variables

$$MEAN (\bar{X}_{2002}) = \frac{\sum X_{2002}}{N} = \frac{181.25}{13} = 13.94$$

$$MEAN (\bar{X}_{2003}) = \frac{\sum X_{2003}}{N} = \frac{170.75}{13} = 13.13$$

$$MEAN \{X_{2004}\} = \frac{\sum X_{2004}}{N} = \frac{160.125}{13} = 12.32$$

$$MEAN \{X_{2005}\} = \frac{\sum X_{2005}}{N} = \frac{146.875}{12} = 12.24$$

$$MEAN \{X_{2006}\} = \frac{\sum X_{2006}}{N} = \frac{146}{12} = 12.17$$

$$MEAN \{X_{2007}\} = \frac{\sum X_{2007}}{N} = \frac{114}{11} = 10.36$$

$$MEAN \{X_{2008}\} = \frac{\sum X_{2008}}{N} = \frac{81.75}{9} = 9.08$$

<b>Calculation of Standard Deviation of Average Interest Rate on Lending of NBBL</b>			
Year	Average Interest (X)	d	d <sup>2</sup>
2002	13.940	2.050	4.203
2003	13.130	1.240	1.538
2004	12.320	0.430	0.185
2005	12.240	0.350	0.123
2006	12.170	0.280	0.078
2007	10.360	(1.530)	2.341
2008	9.080	(2.810)	7.896
	X = 83.24		d2 = 16.363

Where,

$$\bar{X} = \text{Average of Average Lending interest rate} = \frac{\sum X}{N} = \frac{83.24}{7} = 11.89$$

$$d = X - \bar{X} = X - 11.89$$

$$\text{Standard Deviation}(\dagger) = \sqrt{\frac{\sum (X - \bar{X})^2}{n}} = \sqrt{\frac{16.363}{7}} = \sqrt{2.33757} = 1.53$$

$$\text{Coefficient of Variation (CV)} = \frac{S.D}{\text{Mean}} \times 100\% = \frac{1.53}{11.89} \times 100\% = 12.86\%$$

(Note: Interest rate on deposit and lending is taken from Annex-E6 and Annex-E7 and deposit amount and Lending amount is taken from E2)

Correlation Coefficient between two Variables i.e (variable (x) and variable (y) =  $r_{xy}$

$$r_{xy} = \frac{n \sum xy - \sum x \sum y}{\sqrt{n \sum x^2 - (\sum x)^2} \sqrt{n \sum y^2 - (\sum y)^2}}$$

Where,

$n$  = no of fiscal year

But we have

Variable "1" = Deposit Rate

Variable "2" = Deposit amount (in millions)

Variable "3" = Lending rate

Variable "4" = Lending amount (in millions)

$n$  = no of fiscal years = 7

$\sum 12$  = Sum of Variable "1" multiply variable "2" = 336326.3

$\sum 34$  = Sum of Variable "3" multiply variable "4" = 586068.78

$\sum 1$  = Sum of Variable "1" = 38.501

$\sum 2$  = Sum of Variable "2" = 64114.4

$\sum 3$  = Sum of Variable "3" = 83.24

$\sum 4$  = Sum of Variable "4" = 50925.3

$\sum 1^2$  = Sum of Square of Variable "1" = 216.77

$\sum 2^2$  = Sum of Square of Variable "2" = 643751171.38

$\sum 3^2$  = Sum of Square of Variable "3" = 1006.21

$\sum 4^2$  = Sum of Square of Variable "4" = 407107822.7

$(\sum 1)^2$  = Whole Square of summation of Variable "1" =  $(38.501)^2 = 1482.327$

$(\sum 2)^2$  = Whole Square of summation of Variable "2" =  $(64114.4)^2 = 4110656287$

$(\sum 3)^2$  = Whole Square of summation of Variable "3" =  $(83.24)^2$

$(\sum 4)^2$  = Whole Square of summation of Variable "4" =  $(50925.3)^2$

Correlation Coefficient between Deposit rate (1) and Deposit amount (2) =  $r_{12}$

$$\begin{aligned}
 r_{12} &= \frac{n \sum 12 - \sum 1X \sum 2}{\sqrt{n \sum 1^2 - (\sum 1)^2} \sqrt{n \sum 2^2 - (\sum 2)^2}} \\
 &= \frac{7 \times 3363263 - 38.501 \times 641144}{\sqrt{7 \times 21677 - 1482327} \sqrt{7 \times 64375117.88 - 4110656287}} \\
 &= \frac{-11418441}{5.9214 \times 1988974} \\
 &= -0.9695
 \end{aligned}$$

Coefficient of Determination between Deposit rate (1) Deposit amount (2)

$$(r_{12})^2 = (-0.9695)^2 = 0.94$$

Correlation Coefficient between Lending rate "3" and lending amount "4"

$$\begin{aligned}
 r_{34} &= \frac{n \sum 34 - \sum 3X \sum 4}{\sqrt{n \sum 3^2 - (\sum 3)^2} \sqrt{n \sum 4^2 - (\sum 4)^2}} \\
 &= \frac{7 \times 586068.78 - 83.24 \times 50925.3}{\sqrt{7 \times 1006.21 - (83.24)^2} \sqrt{7 \times 407107822.7 - (50925.3)^2}} \\
 &= \frac{-136540.512}{10.703 \times 16011.51} \\
 &= -0.79675
 \end{aligned}$$

Coefficient of Determination between Lending rate "3" Lending amount "4"

$$(r_{34})^2 = (-0.79675)^2 = 0.6348$$

Now we have,

$$\begin{aligned}
 r_{12} &= -0.9695 \\
 r_{34} &= -0.79675 \\
 r_{12}^2 &= 0.94 \\
 r_{34}^2 &= 0.6348
 \end{aligned}$$

Calculation of Probable Error

$$\begin{aligned}
 P.E.(r) &= 0.6745 \times S.E.(r) \\
 &= 0.6745 \times \frac{1 - r^2}{\sqrt{n}} \\
 &= 6 \times P.E.
 \end{aligned}$$

Probable Error of Deposit rate (1) and Deposit amount (2) =  $r_{12}$

$$\begin{aligned} PE(r_{12}) &= \frac{0.6745 \times \frac{1-0.94}{\sqrt{7}}}{2.646} \\ &= \frac{0.6745 \times 0.06}{2.646} \\ &= 0.6745 \times 0.023 \\ &= 0.016 \\ 6 \times PE &= 6 \times 0.016 \\ &= 0.096 \end{aligned}$$

Probable Error of Lending rate "3" and lending amount "4" =  $r_{34}$

$$\begin{aligned} PE(r_{34}) &= \frac{0.6745 \times \frac{1-0.6348}{\sqrt{7}}}{2.646} \\ &= \frac{0.6745 \times 0.3652}{2.646} \\ &= 0.6745 \times 0.138 \\ &= 0.093 \\ 6 \times PE &= 6 \times 0.093 \\ &= 0.558 \end{aligned}$$

## Annexture-E9

**Calculation the relationship of Inflation rate with lending rate and deposit rate of Commercial Banks**

Year	Inflation rate (1)	Deposit rate (2)	Lending rate (3)	1×2	1×3	(1) <sup>2</sup>	(2) <sup>2</sup>	(3) <sup>2</sup>
2002	11.4	7.35	13.7	83.79	156.18	129.96	54.02	187.69
2003	3.5	6.025	12.85	21.09	44.98	12.25	36.30	165.12
2004	2.4	5.375	11.95	12.90	28.68	5.76	28.89	142.80
2005	2.9	4.765	11.7	13.82	33.93	8.41	22.71	136.89
2006	4.8	4.625	11.45	22.20	54.96	23.04	21.39	131.10
2007	4	3.725	11.05	14.90	44.20	16	13.88	122.10
2008	4.5	3.505	10.225	15.77	46.01	20.25	12.29	104.55
	1=33.5	2=35.37	3=82.93	12=184.47	13=408.94	(1)2=215.67	(2)2=189.47	(3)2=990.26

*Source: Nepal Rastra Bank Economic Bulletin in Mid July 2005*

Correlation Coefficient between two Variables i.e (variable (x) and variable (y) =  $r_{xy}$

$$r_{xy} = \frac{n \sum xy - \sum x \sum y}{\sqrt{n \sum x^2 - (\sum x)^2} \sqrt{n \sum y^2 - (\sum y)^2}}$$

Where,

$n$  = no of fiscal year

Now

we have,

Variable "1" = Inflation Rate

Variable "2" = Deposit interest rate of Commercial Banks

Variable "3" = Lending rate of Commercial Banks

$n$  = no of fiscal years = 7

$\sum 12$  = Sum of Variable "1" multiply variable "2" = 184.47

$\sum 13$  = Sum of Variable "1" multiply variable "3" = 408.94

$\sum 1$  = Whole Sumation of Variable "1" = 33.5

$\sum 2$  = Whole Sumation of Variable "2" = 35.37

$\sum 3$  = Whole Sumation of Variable "3" = 82.93

$\sum 1^2$  = Sum of Square of Variable "1" = 215.67

$\sum 2^2$  = Sum of Square of Variable "2" = 189.47

$\sum 3^2$  = Sum of Square of Variable "3" = 990.26

Correlation Coefficient between Inflation rate and Deposit rate =  $r_{12}$

$$\begin{aligned} r_{12} &= \frac{n \sum 12 - \sum 1 \sum 2}{\sqrt{n \sum 1^2 - (\sum 1)^2} \sqrt{n \sum 2^2 - (\sum 2)^2}} \\ &= \frac{7 \times 184.47 - 33.5 \times 35.37}{\sqrt{7 \times 215.67 - 1122.25} \sqrt{7 \times 189.47 - 1251.0369}} \\ &= \frac{106.395}{19.68 \times 8.675} \\ &= 0.6232 \end{aligned}$$

Coefficient of Determination between Inflation rate (1) Deposit rate (2)

$$(r_{12})^2 = (0.6232)^2 = 0.3883$$

Correlation Coefficient between Inflation rate and Deposit rate =  $r_{13}$

$$\begin{aligned}
 r_{13} &= \frac{n \sum 13 - 1 \times 3}{\sqrt{n \sum 1^2 - (\sum 1)^2} \sqrt{n \sum 3^2 - (\sum 3)^2}} \\
 &= \frac{7 \times 408.94 - 33.5 \times 82.93}{\sqrt{7 \times 215.67 - (33.5)^2} \sqrt{7 \times 990.26 - (82.93)^2}} \\
 &= \frac{84.43}{19.68 \times 7.38} \\
 &= 0.5813
 \end{aligned}$$

*Coefficient* of Determination between Inflation rate (1) Deposit rate (3)

$$(r_{13})^2 = (0.5813)^2 = 0.3379$$

Calculation of Probable Error

$$\begin{aligned}
 \text{P.E.}(r) &= 0.6745 \times \text{S.E.}(r) \\
 &= 0.6745 \times \frac{1 - r^2}{\sqrt{n}} \\
 &= 6 \times \text{P.E.}
 \end{aligned}$$

Probable Error of Inflation rate (1) and Deposit rate (2) =  $r_{12}$

$$\begin{aligned}
 \text{PE}(r_{12}) &= 0.6745 \times \frac{1 - (r_{12})^2}{\sqrt{n}} \\
 &= 0.6745 \times \frac{1 - 0.3883}{\sqrt{7}} \\
 &= 0.6745 \times \frac{0.6117}{2.646} \\
 &= 0.6745 \times 0.2312 \\
 &= 0.16
 \end{aligned}$$

$$\begin{aligned}
 6 \times \text{PE} &= 6 \times 0.1560 \\
 &= 0.9361
 \end{aligned}$$

Probable Error of Lending rate "1" and lending amount "3" =  $r_{13}$

$$PE(r_{13}) = 0.6745 \times \frac{1 - (r_{13})^2}{\sqrt{n}}$$

$$= 0.6745 \times \frac{1 - 0.3379}{\sqrt{7}}$$

$$= 0.6745 \times \frac{0.6621}{2.646}$$

$$= 0.6745 \times 0.2502$$

$$= 0.1688$$

$$6 \times PE = 6 \times 0.1688$$

$$= 1.0128$$

### Annex-E5

#### Calculation of Correlation Coefficient of BOK

Year (Mid July)	Deposit Interest Rate (1)	Deposit Amount in millions (2)	Lending Interest Rate (3)	Lending Amount in millions (4)	$1 \times 2$	$3 \times 4$	$1^2$	$2^2$	$3^2$	$4^2$
2002	7.38	2,396.50	14.30	1,811.50	17,686.17	25,904.45	54.46	5,743,212.25	204.49	3,281,532.25
2003	4.88	3,983.00	12.17	2,995.30	19,437.04	36,452.80	23.81	15,864,289.00	148.11	8,971,822.09
2004	4.75	5,724.10	11.69	4,327.10	27,189.48	50,583.80	22.56	32,765,320.81	136.66	18,723,794.41
2005	4.75	5,735.90	11.69	4,977.60	27,245.53	58,188.14	22.56	32,900,548.81	136.66	24,776,501.76
2006	4.02	6,169.90	10.49	4,956.20	24,803.00	51,990.54	16.16	38,067,666.01	110.04	24,563,918.44
2007	3.13	7,741.60	9.93	6,104.90	24,231.21	60,621.66	9.80	59,932,370.56	98.60	37,269,804.01
2008	3.09	8,942.80	9.83	6,166.90	27,633.25	60,620.63	9.55	79,973,671.84	96.63	38,030,655.61
	1=32	2=40693.8	3=80.1	4=31339.5	12=168225.668	34=44362.016	$1^2$ =158.9092	$2^2$ =265247079.28	$3^2$ =931.185	$4^2$ =155618028.57

**Annex-E8**

Calculation of Correlation Coefficient of NBBL

Year (Mid July)	Deposit Interest Rate (1)	Deposit Amount in millions (2)	Lending Interest Rate (3)	Lending Amount in millions (4)	1 <sup>2</sup>	3 <sup>2</sup>	1 <sup>2</sup>	2 <sup>2</sup>	3 <sup>2</sup>	4 <sup>2</sup>
2002	6.83	4,145.20	13.94	3,258.70	28,311.72	45,426.28	46.65	17,182,683.04	194.32	10,619,125.69
2003	6.17	6,455.60	13.13	4,611.80	39,831.05	60,552.93	38.07	41,674,771.36	172.40	21,268,699.24
2004	5.81	8,578.80	12.32	7,347.40	49,842.83	90,519.97	33.76	73,595,809.44	151.78	53,984,286.76
2005	5.58	9,514.00	12.24	8,222.10	53,088.12	100,638.50	31.14	90,516,196.00	149.82	67,602,928.41
2006	5.42	10,548.00	12.17	8,491.90	57,170.16	103,346.42	29.38	111,260,304.00	148.11	72,112,365.61
2007	4.38	12,747.30	10.36	10,253.60	55,833.17	106,227.30	19.18	162,493,657.29	107.33	105,136,312.96
2008	4.31	12,125.50	9.08	8,739.80	52,260.91	79,357.38	18.58	147,027,750.25	82.45	76,384,104.04
	1=38.5	2=64114.4	3=83.24	4=50925.3	12=336337.955	34=586068.787	1 <sup>2</sup> =216.7472	2 <sup>2</sup> =643751171.38	3 <sup>2</sup> =1006.2054	4 <sup>2</sup> =407107822.71