

# **CHAPTER-I**

## **INTRODUCTION**

### **1.1 Background of the Study**

The term Finance should be understood in two perspective –Finance as a resource and Finance as a Discipline. Finance, as a resource, refers to monetary means of financing asset of equity. Finance as a discipline or a subject of study, describes how individual, Governments, and Corporate Organization manage the flows of Money through an Organization. In other words, It tell us how People make Decision about the collection and allocation of resource in Organizations like Corporate , Bank or Government agency .Therefore, It is important for all Individuals ,Business, Government and non-government Organization-to appreciate the signification of Finance in their day to day business.

Financial institutions are the back bone of the economic development of any country. A small financial institution is a vital contributor to the financial health of the national economic. The financial institutions are often fragile and susceptible to failure because of poor management, particularly financial management. National development of any economic development is supported by financial infrastructure of that country. Financial infrastructure indicates the financial strength, position and environment of the institutions. The various branches of bank in towns and villages offering various types of services. In past, they just used to accept deposits from the saver of money and give loan to the users of money. Savers of the money are those units whose earning exceeds expenditure on real assets and user of money are those units whose expenditure on real assets exceeds their earnings. Financial institutions in Nepal, as an organized sector for capital mobilization, were started after the advent of Nepal Bank Limited in 1994 B.S as a joint venture between government and private sector under Nepal Bank Act 1994. It was the pioneer institution of modern banking system. Before that “Tejarath Adda” was fulfilling the banking need of the people, to some extent, by providing Loan on security, Nepal Rastra Bank was established on 14<sup>th</sup> Baisakh 2013 B.S under Nepal Rastra Bank Act 2012 to monetize the economy and to avoid the dual monetary system. Nepal Rastra Bank is the Central Bank, which formulates monetary and fiscal policies to strengthen and develop the financial

system. A fully government owned bank; Rastriya Banikya Bank was established in 2022 B.S. under commercial Bank Act 2021. Similarly agriculture development bank was established in 2024 B.S. under its respective Act. After the restoration of democracy in 2046 B.S. and liberalization policy adopted by government, some commercial banks, development banks and finance companies emerged to provide banking facilities to the people. . These different institutions collect money from public in different forms and invest in different sectors in different forms. These organizations survive by making profit and profit for these institutions is different between the interest rate they provided and earned minus operating expenses. So, interest rate is crucial in survival and development of financial institutions.

### **1.1.1 Introduction of Interest**

Interest rate is one of the important tools for shaping economy. It plays the dominant role in borrowing and lending. Simply, interest rate is a payment for the use of money. So when savers deposit their saving in the banks that time banks pay certain amount of interest on saving amount because of used this money to lend other customers. It is the price charged a borrower must pay to secure loanable funds from lender for an agreed- upon period. It is the price of credit. But unlike other prices in the economy, the rate of interest is really a ratio or two quantities: the money cost of borrowing divided by the amount of money actually borrowed, usually expressed on an annual percentage basis. The cost of borrowing money, measured in rupee per year rupee borrowed, is the interest rate (Samuelson; 1991:465).

When we examine how money affects economic activity, we will focus on the interest rate, which is often called “The Price of money”. Interest is the payment made for the use of money. The interest rate is the amount of the interest paid per unit of time expressed as a percentage of the amount borrowed. In other words, people must pay for opportunity to borrow money. The cost of borrowing money, measured in rupee per year per rupee borrowed, is the interest rate (Samuelson; 1991: 469).

Financial institutions, as financial intermediaries, collect money from savers in the form of deposit and provide that for business sector in the form of loan. These institutions pay the interest to the depositors for the money-borrowed from them and charge interest from the borrowers for money-lent to them. As defined earlier, the

interest rate is the price of money: the price renting the was of resources that money commands for a specified period of time .As with any price determined by the free market play of demand and supply in a market economy, the price of money-the interest rate plays a vital role in the allocation of resources and in the decision making of consumers and businesses.

For example, an increase in the interest rate provides additional incentives to individuals and others to postpone current consumption and there by free resources for investment. Government polices intended to expand the volume to saving should aim at increasing toe attractiveness of saving by increasing the return to saving- the interest. Interest rates send price signals to borrowers, lenders, and savers, higher interest rate generally brings a greater volume of savings and stimulate the lending of funds. Lower rate of interest, on the other hand, tend to dampen the flow of borrowing and reduce lending activity. Higher interest rates tend to reduce the volume of borrowing and capital investment, and lower rates stimulate borrowing and investment spending (Rose; 1997:101).

Investment is function of interest rate. The quality and flow of investment determines the income in the economy. Therefore, the impact of interest rate is on both the saving and investment in the economy. Further the borrowings and saving are always influenced by the interest rates. The cost of production which depends upon the production function is influenced by the interest rate, since the credit is also one of the components of production process. The saving in investment in the economy which are influenced by the interest rates are the real economic variables. The incomes and expenditures of the variable sectors of the economy result in excess savings of excess investment in each of the sectors. (Vaidya; 2002:17) The sector having excess savings provides them to those with excess investment.

Interest rate in the free market economy is determined by the free interplay of the demand and supply forces. Although interest rate is influenced by various factors, the main factors which determine the interest rate are demand for and supply of loanble fund. If supply increases and demand remains constant, interest rates in the market decrease. Similarly if demand for loanble fund increases and supply remain constant, interest rates in the market increase. But Nepalese economy has not developed up to

that level so that free market can determine the interest rates. Nepal Rastra Bank, as a guardian, fixes the terms and conditions regarding the interest and other activities of financial institutions in Nepal. But recent years, banks are permitted to fix the interest rate they charge and offer on loan and deposit.

### **1.1.2 Brief History of Interest Rate in Nepal**

While observing the historical background of the interest rate structure of Nepal, frequent changes can be noticed. In the beginning, the interest rate charged and offered by banks and financial institutions was mentioned at a lower level with a view to stimulate real income and employment. However, dramatic change had been made time-to-time. A study of annual reports of Nepal Rastra Bank (NRB) avails the changes made, the objectives behind such changes and their justifications.

(NRB.2010)

On April 13, 1965 the interest on deposits was increased by one percentage point which prevailed to August 30, 1966. Similarly other two categories of fixed deposits 3 to 5 years and above five years were created and interest rate on these two types of deposits was 5 percent and 6 percent respectively. On August 31, 1966, the interest rate on all types of deposit was increased approximately by one percentage point. The interest structure was again revised on April 14, 1971. The rate of interest in saving deposit were raised to 5 percent ( increased by 0.5 percentage point) but the rate of interest on 3 months and 6 months fixed deposit were reduced. However, the rate on fixed deposits having the maturities of more than one year was raised varyingly by 1 to 1.75 percentage points another change in interest rate structure was introduced on July 16, 1974. the interest rate on saving deposits was fixed at 6.5 percent; that on fixed deposits of three and six months maturities were kept constant and interest rate on all other categories of fixed deposits were raised by two percentage points The lending rates of commercial banks were also revised respectively. The lending rates were lowered in some cases, however, the loan for unproductive purposes were made costlier by two percentage points. Giving different justifications, NRB issued directives to the banks and financial institutions to apply new interest rates from April 18, 1975 which was a drastic change. The interest rate was increased from 6.5% to 8% on saving deposits and that on fixed deposits of 3 months and 6 months were increased to 4 percent and 10 percent respectively. The interest rate on one – year

deposits rate was increased from 9.75 percent to 16 percent. Prior to the revision there were nine different categories of lending carrying the interest rate between 8 to 15 percent. But the revision categorized the loan only in two categories. 15 percent interest rate was applicable to all the loans to small sectors, agriculture sector, industry, export credit and credit against development bonds whereas 18 percent minimum rate was fixed two percent high than on fixed deposits. On February 12, 1977, NRB revised interest rate again. The rate offered on savings and three month fixed deposits was lowered to 9 percent (by one percentage point). But the interest rate on year affixed deposits was lowered by 2 percentage point to 12 percent and that on two years and above fixed deposit was also declined by two percentage point. Next amendment in interest rate was made on 15 June, 1982, and the interest rates on all types of deposits were increased by 0.5 percentage point. And the lending rates on all types of loans were raised by one percentage point. NRB authorized the commercial banks and other financial institutions to charge an additional 2.5 percentage interest above the specific rate on all over due loans and minimum of 17 percent interest rate on miss utilized loan to agriculture, industry and service sectors. A provision of one percent rebate for timely repayments was also made. NRB further revised the interest rate on August 17, 1982 which was a slight change on lending rate only. Giving right in offering the interest rate on saving and time deposit to the extent of 1.5 percent and 1 percent respectively above prevailing rate, NRB issued direction to the commercial banks. On May 29, 1986 commercial bands and financial institutions were given freedom in fixing the interest rate on deposits and loans. But the higher limit and lower limit was fixed by NRB. The minimum of 8.5 percent interest rate was fixed for saving deposits. The rate on fixed deposits of less one year's maturity needed to be at least not less than the rate on saving deposits. Minimum of 12 percent interest rate was fixed on one year fixed deposits. The interest rate on more than one year's fixed deposits could be fixed by the banks themselves but that ought to be higher than the rate on one year fixed deposit. Banks and financial institutions were given freedom to fix lending rate subject to a minimum of 15 percent for the priority sector. On August 31, 1989 commercial banks and financial institutions were granted complete freedom in determining their own deposit and lending rates. They had also been given complete freedom to make rules and working procedures about the kinds of deposits, time period of deposits, repayment conditions, penal interest rates and interest capitalization over due loans.(Source: Bank and financial intuitions Act 2063) NRB

since then it has not administered and regulated interest rate. Monetary management has been conducted through open market operation. However, on August 22, 1992 NRB issued some directives to banks and financial institutions to clearly spell out the interest on deposits of at least up to one year, not to create the range of percentage in interest rates on credit of same types and purpose and, to stop fixing the interest rate on flat basis. In addition to this, NRB also instructed the bank and financial institutions to limit their interest rate on deposit and credit at 6 percent within the mid-December 1993. Then after, NRB has not regulated interest directly but has given instructions in time to time regarding the interest rate and terms and conditions of lending and keeping accounts. At last instructions to banks and financial institutions were issued in 2002. Currently interest rate spread required to be maintained by bank and financial institutions has also been removed.

As previously stated, the interest rate structure in the beginning was prey central bank's matter of concern. But considering the needs of the country, NRB took a flexible approach in making some adjustments in interest rates by putting control on it. However, the impact of economic liberalization in developing countries as result of financial globalization began to influence Nepal. This ultimately brought deregulation in interest rate by leaving the in interest rate to be determined by market forces.

### **1.1.3 Interest Rate Structure in Nepal**

Before studying the relationship of interest rate and other factors, it is better to know average structure of interest rate that were prevailed in the country during the past four years. Though the detail about analysis about these are analyzed in chapter four but the table no 1.1 below tries to give the glimpse of the lending rate and deposit rate of different financial institutions:

**Table: 1.1**  
**Structure of Interest Rates (Percentage per Annum)**

	Year			
	2008/09	2009/10	2010/11	2011/12
<b>Nepal Rastra Bank</b>				
Bank Rate	5.5	6.25	6.25	6.25
Reference Rates	2.0-3.5	2.0-3.5	2.0-3.5	2.0-3.5
<b>Government Securities</b>				
Treasury Bills(91days)	3.94	3.25	2.77	5.13
National Saving Certificates	6.5-13.0	6.0-8.5	6.0-8.5	6.0-7.75
Development Bonds	3.0-8.0	3.0-6.75	3.0-6.75	5.0-8.0
<b>Inter bank Rate</b>	4.71	2.13	3.03	3.61
<b>Commercial Banks</b>				
Deposit Rates	1.75-5.0	2.0-5.0	2.0-5.0	2.0-6.50
Saving Deposits				
Time Deposits	1.75-3.5	1.5-3.5	1.5-3.5	1.5-3.75
1 Months	1.5-4.0	1.5-4.0	1.50-4.0	1.50-6.75
3 Months	2.5-4.5	1.75-4.5	1.75-4.5	1.75-6.75
6 Months	2.25-5.0	2.25-5.0	2.25-5.0	2.5-6.0
1 Years	2.25-6.05	2.5-6.4	2.5-5.5	2.75-6.75
2 Years and above				
<b>Lending Rates</b>	8.25-13.5	8.0-13.5	8.0-13.5	7.0-13.0
Industry	10.0-13.0	9.5-13.0	9.5-13.0	9.5-12.0
Agriculture	4.0-12.0	5.0-11.5	5.0-11.5	5.0-11.5
Exports Bills	8.0-14.0	8.0-14.0	8.0-14.0	8.0-13.5
Commercial Loans	5.0-14.5	6.5-13.5	6.0-14.5	6.50-13.5
Overdrafts				
<b>Cash Reserve Ratio(CRR)</b> with NRB cash in Vault	5.5	5.5	5.5	5.5

Source: Macroeconomics Indicators of Nepal, NRB, Research Department, Statistics Division, July 2012.

[Note: the average lending rate of any sector is calculated by adding the two rates and divided it by 2 i.e. for example for industrial sector average lending rate it calculated as  $(8.25\%+13.5\%)\div 2 = 10.875\%$ ]

According to the structure of interest rate in presented in presented in Table 1.1, both lending and deposit rates are declining during the period of 2008/09 to 2011/12. This may be due to the decline in the interest rate on government securities, i.e. Treasury Bills. According to table, the interest rate of T-Bills however has been increased from 3.94% per annum to 5.13%. As per principle, interest rates T-bills, are the bases for all kinds of interest rate, so decline in interest rate may leads to decline in interest rate of others. The interest rate of National Saving Certificates remains less volatile than

other during the four year periods. Similarly the interest rate of development bond remains almost same for the four periods.

The inter bank interest was 4.71% on 2008/09 but it decreased to 3.61% when it came during the 2011/12. It seems that Nepalese commercial banks have excess liquidity. The most of the commercial bank classified their deposits into two sections- Saving Deposits and Time Deposits and offered the different interest rates on them. Talking about saving deposits, the interest rate ranges from 1.75% to 5.0% in the year of 2008/09 but this rate declined to the range of 2.0% to 6.5% when it came to the year of 2011/12. If the mean is taken, then the average interest rate on 2008/09 is 3.375%, 3.5% in 2009/10, 3.5% in 2010/11 and 4.25% in 2011/12. This shows that the interest rate on saving deposit has increasing tendency. In the same way, the interest rate on time deposits also shows the increasing trend. In Nepalese economy, time deposits are classified in five categories: 1 month, 3 months, 6 months, 1 years, 2 years and above. In one month time deposits interest rate remains almost same. For 3 months time deposit rate, the maximum interest rate range was 1.5% to 6.75% in 2011/12. Similarly the 6 months, a time deposit rate also shows the increasing tendency. IN case of 1 year's rate, it also shows the increasing tendency, from 2.25% to 5.0% in 2008/09 and 2.5% to 6.0% in 2011/12. From above figure 1.1 it is clear that in 2008/09 the lowest range rate was 2.25% but this rate rises up to 2.5% when it was 2011/12. But there was less fluctuation in maximum range i.e. it raised to 5.0% from highest 6.0%. At last, for 2 years and above interest rate, maximum range rose by 5.5% to 6.75% where as the minimum range rose by 2.25% to 2.75% during 4 years period.

For lending also, the table shows that average interest also fall during the 4 years period. But in case of lending there was wide range in maximum and minimum range. The range or spread of maximum rate and minimum rate was low in case of deposit. The lending rate was categorized in five parts: Industry, Agriculture, Export Bills, Commercial Loans and Overdrafts. Among all, the highest rate was for overdrafts. It was up to 14.5% per annum similarly the lowest rate was up to 4%.

## **1.2 Introduction of Sample Organization Under Study**

Commercial banks are the major financial institutions which occupy the quite an important place in the framework of every economy because they provide capital for the development of industry, trade and business and other resource deficit sectors by investing the saving collected as deposits. Besides these commercial banks renders numerous services to their customer in view of facilitating their economic and social life. Commercial banks, play active roles, have changed the economic structure of the world. Thus the commercial banks become the heart of financial system.

Commercial banks in Nepal have been establishing to maintain economic facilities and welfare; to provide loan to agriculture, industry and for commercial purpose; and to provide banking services and faculties to the public, Commercial banks in Nepal, establish under the company act and commercial bank act. Currently 32 commercials banks with their 617 branches with in the country are operating their functions – adopting deposit, providing loans and more other. Similarly, NAFIL and HFL were established to improve the rural activities in Nepal.

### **Nabil Bank Ltd.**

NABIL Bank Ltd, the first joint venture commercial bank in Nepal was established in 1984 under the company act 1964 as Nepal Arab Bank Ltd. Dubai Bank Ltd. was the initial joint venture partner with fifty percent (50%) equity investment. The shares owned by Dubai Bank Ltd., (DBL) were transferred to Emirates Bank International Limited, Dubai by virtue of its annexation with the letter. Letter on, Emirates Bank International Limited, Dubai sold its entire 50% equity holding to National Bank Ltd., Bangladesh. Being the largest equity holder, National Bank Ltd., Bangladesh is managing the bank in accordance with the technical services agreement signed between it (NABIL) and the bank on June 1995. Nepal Arab Bank Limited changed its name as Nabil Bank Limited (NABIL).

The promoters and their shares holding patterns of Nabil Bank Ltd are as follows:

National Bank Limited, Bangladesh	- 50.00%
Financial Institutions	- 20.00%
Nepalese Public	- 30.00%

### **Everest Bank Ltd. (EBL)**

Everest Bank Limited is a name which depends on for professionalized and efficient banking services. Founded in 1994, the bank has been one of the leading banks of the country and has been catering its services to various segments of the society since then. EBL is the Joint Venture bank of Punjab National Bank (PNB), its joint venture partner (holding 20% equity in the bank) is the largest nationalized bank in India. With its presence virtually in all the important centers at India and over 6000 ATM counters, Punjab National Bank offers a wide variety of banking services which include corporate and personal banking, Everest Bank Limited (EBL) provides customer-friendly services through its Branch Network and all it's the branches are connected through Anywhere Branch Banking System (ABBS), which enables customers for operational transactions from any branches. The bank has 48 Branches, 63 ATM Counters, 3 extension counter & 20 Revenue Collection across the country making it a very efficient and accesible bank for its customers, anytime, anywhere.

### **Narayani Finance Ltd. (NAFIL)**

Narayani Finance Limited (NAFIL) is the first financial institution, established by private sector in Chitwan district. NAFIL commenced its operation on 8th March, 1995 (falgun 24, 2051B.S.) under the Finance Company Act 2042 B.S. with the approval of the central Bank "Nepal Rastra Bank" (NRB). Now it comes under the financial institution umbrella Act, "Bank and Financial Institution Act 2063". On the basis of the license date from the NRB, NAFIL is the 4th oldest company established outside Kathmandu valley and comes in the rank of 15th out of 60 finance companies in Nepal. NAFIL has been classified as an "A" class financial institution by Nepal Stock Exchange for the last seven years on the basis of capital investment, profit earned, dividend declaration, number of shareholders, etc. This financial institution has been contributing as a financial intermediary in the economic development of the country without interfering public interests and ensuring handsome return to the shareholders.

### **Himalaya Finance Ltd. (HFL)**

Himalaya Finance Ltd was established in 1993A.D. HFL has been playing a crucial role as the financial catalyst of development. HFL is still the clear market leader for industrial term lending in terms of its contributions in the financial sector. It provides

loans to assist industries with long gestation period through out their project development cycle, right from formulation of conceptual stage to the stages of nurturing and project establishment till they are well established and capable of self sustaining in their operation which is in fact, very costly financing but equally important for real industrial development in the country.

### **1.3 Focus of the Study**

Most of the public limited financial institutions in Nepal are profit motivated. These organizations survive who can make profit in the long-run. The profit for these organizations is the interest spread between sources and uses of funds. The main focus of this study is to examine the influencing factors interest rate in Nepalese banking sector taking financial institution as sample (2 Commercial banks and 2 Finance companies). Interest rate is believed as one of the most important factors for the development of financial institutions and financials system as a whole. This study also attempts to analyze the methods used by various financial institutions to calculate the interest. The study is also concentrated on whether the theories on interest rate founded by various economists match in Nepalese context or not. Since interest rate is the main concern of every individual who saves (deposits) and borrows money, it is important to study about interest rate. Therefore this study focuses on the interest rate of different financial institutions and the central bank's role regarding interest rate.

### **1.4 Statement of the Problem**

Most of the natural resources of the Nepal are not being utilized due to the capital inadequacy. Nepal is exporting raw materials instead of producing goods and services from these. If financing is available many factories could be established to take benefit from utilization of resources which could increase the employment, standard of living and status of country's economy. Financial institutions in Nepal are committed to avail the capital. Different institutions have been established targeting different group. Interest charged and offered by the institutions was regulated by central bank until before few years. But now these institutions are free to fix their interest rate.

In various books of economics and financial institutions interest occupies a crucial part. While studying of the evolution of interest rate, many theories have been

introduced as time spent and changes have taken place in market structure and expectations. Assumptions of these theories were different and different factors were considered as crucial in different time. As a developing country, Nepalese market has not been reached its maturity but in recent years institutions are determining their interest themselves. Thus it is important to know whether the interest rate is determined by market forces or by managerial discretion. Some of the previous researchers in their thesis had studied in the limited areas such as interest rate structures, impact of interest rate on portfolio of commercial banks, inflationary aspect of Nepal Rastra bank, interest rate and lending policy etc. These studies are also very old i.e. of 1980s. This type of study has not been found yet in current scenario.

It seems to be only general public but also university graduates in commerce or business administration cannot calculate the true or effective interest rate. Bankers and other financial institutions use various methods of interest calculation.

Correspondingly, true effective rate also differs. Therefore, this researcher has influenced to analyze that what factors affect interest and what are the methods used in interest calculation. More especially this study is an attempt to answer the following questions:

- a) What is the impact of liquidity position of organization in interest rate charged and offered by banking sectors in Nepalese market (Demand and Supply forces)
- b) What are the various methods that banking sectors in Nepal use to calculate the interest rate they charged to borrowers?
- c) What is the magnitude of correlation between interest rate and inflation?
- d) What are the other major qualitative factors that shape the interest rate in Nepalese banking sectors?
- e) Is the market interest rate affected by inflation?

### **1.5 Objectives of the Study**

The major objectives of this research are as follows.

- a) To study and identify the different methods used by selected Banks and Finance Companies to calculate the interest rate.
- b) To analyze whether the interest rate provided to customer by banking and financial sector are satisfactory or not

- c) To evaluate the effect of various factors on the fluctuation of interest rate.
- d) To provide some suggestions for improving the interest rate on these bank and finance company based on the finding of analysis.

### **1.6 Significance of the Study**

Financial system of the nation performs a number of activities that are essential for a modern private-enterprise economy. Two most important functions that financial system performs are as follows:

Consists of providing the means by which payments for transactions are accomplished and savings are accumulated and channeled it to investment users. The financial system determines both the cost of credit and how much credit will be able to pay for the thousand of goods and services we purchase daily. Paying for goods and services, saving, lending, borrowing and investing all activities are carried out within the frame work of financial system. When credit becomes more costly (that is, higher interest rate) and less available total spending for goods and services falls. As a result unemployment rises and rises economic growth slows down as business cut back their production. In contract, when the declines (i.e. lower interest rate) and the loanble funds become more readily available, total spending in economy increases, more jobs are created and economy growth accelerates(Copper & Fraser; 1982: 3). Hence economic growth depends upon circulation of money and financial system facilitates.

In modern world, the expenditure of expenditure of both government and private sectors is increasing. Investment is needed at any stage of economy. But the private sectors, in most of the development countries including Nepal, are suffering from financial crises. People are less aware about banking system. Financial intermediaries are insufficient to mobilize the saving of the country. Some established institutions are also city based. Small amount of saving is also not utilized in productive investment rather than spending in construction of houses, luxuries foods, ornaments etc. But the question is why the financial institutions of the country could not attract more savings? Are the monetary authorities in this country in this country wrong in determining the rate of interest? Or what the rate of interest can do in this situation? Similarly, the financial institutions of this nation are not being able to lend more. On the other hand, inflation, inflation is troubling developing countries like Nepal. Can

interest rate play any role in this connection? It is not only without reason that Keynes and modern economists paid special attention to the role of interest rate in economic field.

Nepalese interest rate varies time to time, region to region and sector to sector. The fluctuation in interest rate is a regular phenomenon in developing countries. So, it is quite necessary to develop some ideas about the impact of interest rate to the economy. Furthermore, it is important to know the policies of financial institutions. This interest and its impact on various financial aspects of financial institutions. This study is also considered to be useful to various parties such as further researchers, students, teachers, financial institutions, general individuals etc. Keeping all these views into consideration the study of interest rate seems worthwhile in the context of Nepal.

### **1.7 Research Hypothesis**

A quantitative statement about population parameter is called a hypothesis. In other words it is an assumption that is made about the population parameter and then its validity is tested. It may or may not be found valid in verification. The act of verification involves testing of such assumptions which when undertaken on the basis of sample evidence, is called statistical hypothesis or testing of hypothesis (Sharma & Chaudhary; 2011:229). The main goal of testing hypothesis is to test the characteristics of hypothesized population parameter based on sample information whether the difference between the population parameter and sample statistics is significant or not.

#### **The hypothesis formulated for this study is as follows:**

1. First hypothesis is related to the significance of the correlation coefficient between liquidity (supply or deposits) and interest rate.

**Null hypothesis,  $H_0$ :** = 0 i.e. population correlation is equal to zero.

In other words, population correlation coefficient between amount deposited and interest rate in Nepalese banking Sector are not correlated.

**Alternative hypothesis,  $H_1$ :**  $\neq 0$  i.e. population correlation is not equal to zero. In other words, the variables in population (amount deposited and market interest rate) on deposit are correlated.

2. Second hypothesis is related to the significance of the correlation coefficient between loan demand (amount loaned) and lending rate.

**Null hypothesis,  $H_0$ :**  $= 0$  i.e. Population correlation coefficient is zero which means that the variables in the population i.e. amount loaned and lending rates in Nepalese Banking sector are not correlated.

**Alternative hypothesis,  $H_1$ :**  $\neq 0$  i.e., population correlation coefficient is not equal to zero. In other words, amount loaned and lending rates are in Nepalese Banking sector correlated.

3. Third hypothesis is related to test of significance of the correlation coefficient between interest rate on deposit and lending.

**Null hypothesis,  $H_0$ :**  $= 0$  i.e. There dose not exist correlation between interest on deposit and lending in Nepalese banking sector.

**Alternative hypothesis,  $H_1$ :**  $\neq 0$  i.e. there exist correlation between interest rate on deposit and lending in Nepalese Banking sector.

4. Fourth hypothesis is related to the test of significance of the correlation coefficient between inflation rate and interest rate on deposit.

**Null hypothesis,  $H_0$ :**  $= 0$  i.e. Population correlation coefficient is zero which means that the variables in population (inflation rate and interest rate on deposit) in Nepalese banking sector are not correlated.

**Alternative hypothesis,  $H_1$ :**  $\neq 0$  i.e. population correlation coefficient between inflation and interest on deposit in Nepalese banking sector are correlated.

5. Fifth hypothesis is related to the test of significance of the correlation coefficient between inflation and lending rate.

**Null hypothesis,  $H_0$ :**  $= 0$  i.e. Population correlation coefficient is zero which means that the variables in population (inflation rate and interest rate on deposit) in Nepalese banking sector are not correlated.

**Alternative hypothesis,  $H_1$ :**  $\neq 0$  i.e. Population correlation coefficient is not equal to zero that means variables in population i.e. population correlation coefficient is not equal to zero that means variables in population i.e. inflation and lending rate in Nepalese banking sector are correlated.

6. Sixth hypothesis is related to the test significance of the correlation coefficient between interest rate and risk-free rate of interest.

**Null hypothesis,  $H_0$ :**  $= 0$  i.e. The interest rate on deposit and risk-free rate of interest in Nepalese banking sector are not correlated.

**Alternative hypothesis,  $H_1$ :**  $\neq 0$  i.e. the interest rate on deposit and risk-free rate of interest in Nepalese banking sector are correlated

## **1.8 Limitations of the Study**

This study is limited by the followings:

- a. Reliability of study depends upon the reliability of published and the genuineness of the respondents.
- b. As the samples have been drawn at random for convenience there may exist some sampling errors and the sample size may not be sufficient to generalize the findings.
- c. This study covers only 5 fiscal years (2006/07-2011/12)
- d. The samples are taken only from commercial banks and finance companies; other financial intermediaries are not included in the study.
- e. Since this study is for the purpose of fulfillment of the 'Master degree' stipulated time and resources are also the limitation for the study.
- f. Interest rate and its determining factors are only considered. Impact of other aspects beside interest has not been studied.

## **1.9 Organization of the Study**

This study is organized into five chapters. Each denoted to some aspect of the study of clearing and settlement system. The title of each of these chapters is as follows:

Chapter I : Introduction

- Chapter II : Review of Literature
- Chapter III : Research Methodology
- Chapter IV : Presentation and Analysis of Data
- Chapter V : Summary, conclusions & Recommendations

The rationale behind this kind of organization is to follow a simple research methodology approach. The contents of each of the five chapters of the study are briefly mentioned below:

Chapter one consists of the introductory part of the study. The chapter consists of background, statement of problem, objective of the study, significance of the study, limitation of study and organization of study.

Chapter two includes the brief review of available literature on related topics. It includes a discussion on the conceptual framework and review of major studies.

Chapter three includes the research methodology employed in the study. This chapter deals with the nature and seriousness of data research design, population and sample, data collection procedure and method of analysis.

Chapter four deals with the presentation and analysis of relevant data with the help of various financial and statistical tools and techniques.

Finally, chapter five incorporates summary, conclusion & recommendations of the study which are the important aspects to solve the problems associated to the present analysis and offers recommendations for improvement in the future.

## **CHAPTER-II**

### **REVIEW OF LITERATURE**

#### **2.1 Introduction**

Review of literature is the study of past research studies and relevant materials. It is an advancement of existing knowledge and in-depth of the subject matter. It starts with a search of a suitable topic and continues throughout the volumes of similar or related subjects. It is very rare to find out completely new problem. In literature review, researcher takes hints from past dissertation but he or she should take heed of replication. Literature review means reviewing research studies and other pertinent propositions in the related area of the study so that all the past studies their conclusions and deficiencies and further research take place. It is a vital and mandatory process in research works. During the review of this research, in depth study and theoretical investigation regarding Investment Policy aspects and their present application and potentialities made. Investment “Range of investment held by an investor, company etc” (Oxford Dictionary: 2012). Hence, in this chapter, the focus has been made on the review of literature relevant to the interest rate behavior of commercial banks and financial companies in Nepal. For this study, different Journals, Article, Books, Annual reports, and some research paper related with this topic has been reviewed.

#### **2.2 Conceptual Review**

##### **2.2.1 Meaning of Interest**

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

In economics interest has been defined in a variety of ways. Commonly interest is regarded as the payment for the use or service of capital. If retained by the owner, it can be used by him/her for the further production and the additional product he/she

gets through the employment of his capital to someone else; if he /she would have received interest in return. As carver said, “interest is the income which goes to the owner capital” (theory of the macroeconomics, Keynes; 123).

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

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

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

- ) Gross and pure interest: The payment which the borrower makes to lender excluding the principal is gross interest. Net interest is the payment for the use or capital or money only. It is normally the same, during a period of time even in different markets.
- ) Reward for risk taking: The Lender exposes himself to risk when he/she lends money. Gross interest includes the reward for risk-taking. The greater the risk element the higher will be the rate of gross interest. Unsecured loans are more risky than secured loans and they carry high premium rate i.e. interest rate.

- ) Reward for inconvenience: when a lender loans money he/she forgoes its use for the duration of the loan. His/her money is locked up and can not be used for money profitable purpose of , if he/she needs this amount for his personal use, he/she will have to undergo the inconvenience of arranging it from some other sources. In fixing the rate of interest the lender includes in it the reward for such inconvenience.
- ) Reward for management: The lender has to incur expenditure in keeping proper accounts of the borrowers. He/she buys account books and even maintains staff. He/She has to remind the borrowers and sometimes has to file a suit for the recovery of loans. The payment that the lender receives from the borrower also includes the expenses for management.
- ) Pure interest is what remains with the lender after deducting the reward for risk taking, management and inconvenience from gross interest.

### **2.2.2 Interest Rate as the Allocation Mechanism**

In market based economics, price is the allocating mechanism. When it is the market for allocating savings, interest rates become the price mechanism. Borrowers with unusually productive investment opportunities as measured in terms of risk and return can pay saver a higher income in the form of an interest rate on the savings they borrow than borrowers with less productive investors. The return may also be in the form of ownership in business through the common stock of a company. (Johnson; 1993:101).

### **2.2.3 Function of the Interest Rate in the Economy**

The interest rate performs several important roles or functions in the economy:

- ) It helps guarantee that current savings will flow into investment to promote economic growth.
- ) It rations the available supply of credit; generally providing loanable funds to those investment projects with the highest expected returns.
- ) It is also an important tool of government policy through its influence government maintains control over the volume of saving and investment. If the economy is growing too slowly and unemployment is rising in the government can use this tool to lower interest rates in order to stimulate borrowing and

investment and accelerate the production and development. on the other hand , an economy experiencing rapid inflation has traditionally called for a government policy of higher interest rate to slow both borrowing and spending (Rose:2003:113)

#### **2.2.4 Theories on Interest Rate**

In the pages of the financial press “the interest rate” is frequently used. In truth, there is no such thing as “interest rate”, for there exist thousands of different interest rates in the financial system. Even securities issued by the same borrowers often carry a variety of interest rates. In this section, we focus upon those basic forces that influence the level of different interest rates.

To uncover these basic rate-determining forces, however we must make a simplifying assumption. We assume, in this section, that there is fundamental interest rate in the economy known as the pure or risk-free rate of interest, which is a component of all interest rates, The closest approximation to this pure rate in the real world is the market yield on government bonds, It is a rate of return presenting little or no risk of financial losses to the investor and representing the opportunity cost of holding idle cash, because the investor can always invest in low-risk bonds and earn this minimum rate of return.

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

## **Classical Theory of Interest Rates**

One of the oldest theories concerning the determinants of the pure or risk-free interest rate is the classical theory of interest rate developed during the 18<sup>th</sup> and 19<sup>th</sup> centuries by number of British economists and elaborated by Irving Fisher (1930) earlier in this century. The classical theory argues that the rate of interest is determined by two forces: the supply of saving derived mainly from household, and the demand for investment capital coming mainly from the business sector (Rose, 1997:7)

### **Supply of Saving**

**Saving by households:** Most of the saving in the modern industrialized economics is carried out by household (individuals and family). For these households, saving is simply abstinence from consumption spending. Current saving, therefore, are equal to the different between current income and current consumption expenditure. Generally, the volume of household saving rises with income, Higher- income families and individuals tend to save more and consume less relative to their total income than families with lower income, Although income level probably dominates saving decision, interest rate also plays an important role. According to classical theory, rational individual, it is assumed; will always prefer current consumption of goods and services to future consumption. The classical theory considers the payment of interest a reward for waiting-the postponement of current consumption in favor of greater future consumption. Therefore saving is the function of interest and there is positive relationship between current saving and the interest rate offered on these savings.

**Saving by business:** Not only households but also business save money in the form of retained earnings which supplies most of the money for annual investment spending by Business firms. The critical element in determining the amount of business saving is the level of business profits, If profits are expected to rise; businesses retain the major part of the profits and borrow less from money and capital market. The result is a reduction in the demand for credit and a tendency toward lower interest rate. On the other hand, when profit fall but firms do not 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 rise and interest rate may rise as well. Hence, higher interest rate in the money and capital markets typically encourage

firms to use internally generated funds more heavily in financing projects. Conversely, lower interest rates encourage greater use of external funds from the money and capital markets.

**Saving by government:** Government also saves though, less frequently than households and businesses. In fact, most government saving i.e. a budget surplus, appears to be unintended saving that arises when government receipts unexpectedly exceed the actual amount of expenditure. Income flows in the economy (out of which government tax revenue arise) and the pacing of government spending programs are the dominant factors affecting government savings. Interest rates are probably not a key factor here.

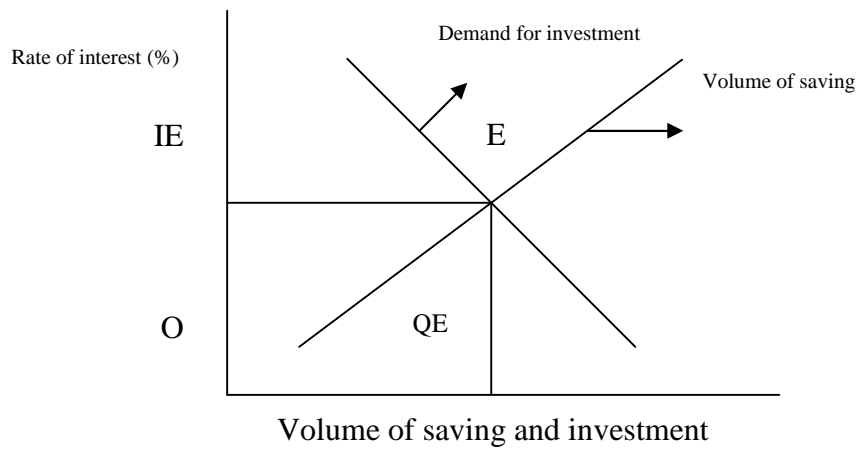
**Demand for Investment Funds:** Besides business, households and government savings, the other rate-determining factor is investment spending by business firms. Businesses require huge amounts of funds each year to purchase equipment, machinery, and inventories and to support the construction of new buildings and other physical facilities. The majority of business expenditure for these purposes consists of what economists call replacement investment, that is, expenditures to replace equipment and facilities that are wearing out or are technologically obsolete. A smaller but dynamic form of business capital spending is labeled net investment expenditure to acquire additional (new) equipment & facilities required to increase output. The sum of replacement investment plus net investment equals gross investment.

### **The Equilibrium Rate of Interest in the Classical Theory of Interest**

The Classical economists believe that interest rate in the financial markets were determined by the interplay of supply of saving and the demand for investment. As shown in present figure, this occurs at point E, where the equilibrium rate of interest is 'IE' and the equilibrium quantity of capital funds traded in the financial market is QE.

**Figure - 2.1**

**Equilibrium Rate of Interest in the Classical Theory**



Source: Theory of interest, Rose; 1997:213

**The liquidity Preference Theory of Interest**

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

**The Demand for Liquidity**

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

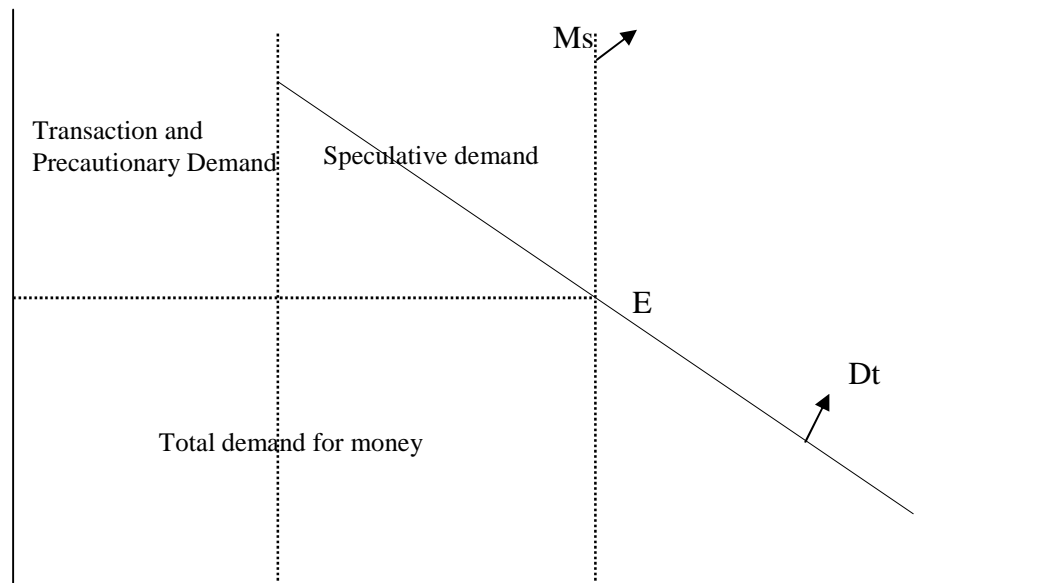
In the theory of liquidity preference, only two outlets for investor funds are considered: bonds and money (including bank deposits). Money provides perfect liquidity (instant spending power); bonds pay interest but cannot be spent until converted into cash. If interest rate rises, the market value of bonds paying a fixed rate of interest falls; the investor could suffer a capital loss if those bonds were converted into cash. On the other hand, a fall in interest rates results in higher bond prices; the bond holder will experience a capital gain if his or her bonds are sold for cash. According to classical theorists, it is irrational to hold money because it provides 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.

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

### **The Supply of money**

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

**Figure -2.2**  
**The Equilibrium Rate of Interest in Liquidity Preference Theory**



Source: Theory of interest, Rose: 1997:218

Because the principal determinant of transactions and precautionary demand is income, not interest rates, these money demands are fixed at certain level of national income, i.e.  $o_k$  in figure. Then any amount of money demanded in excess of  $o_k$  represents the speculative motive and is rate sensitive. The total demand for money is represented along curve.  $D_t$  and total supply of money is represented along  $JMs$  curve. Where demand of money equals to supply money, the equilibrium rate is determined. Point  $E$  in the figure is the equilibrium point and i.e. the equilibrium rate. Demand and supply of money are equal to  $OJ$ .

### **The Loanable Funds Theory**

A view that overcomes many of the limitations of earlier theories is loanable fund theory of interest rates. This view argues that risk-free rate is determined by the interplay of two forces: the demand for and supply of credit (i.e. Loanable funds). (Rose; 1997:205)

### **The Demand for Loanable fund Consists**

**Consumer demand for loanable funds:** - Domestic consumers demand loanable funds to purchase a wide variety of goods and services on credit. The consumer

demand for credit is relatively inelastic with respect to the rate interest. Certainly a rise in interest rate leads to some reduction in the quality of consumer demand for loanable funds whereas a decline in interest rates stimulates some additional consumer borrowing. However, along the consumer's reality inelastic demand schedule, a substantial change in the rate of interest must occur before the quality of consumer demand for funds changes significantly.

**Domestic business demand for loanable funds:-**The credit demands of domestic business generally are responsive to change in the rate of interest than in consumer borrowing. Most business credit is for such investment purpose as the purchase of inventories and new plant and equipment. High interest rates eliminate some profitable investment projectors where as a lower interest rates stimulate investments. Therefore, the quality of loanable funds demanded by the business sector increases as the rate of interest falls.

**Government demand for loanable funds:-**Government demand for loanable fund is a growing factor in the financial markets but doesn't depend significantly of the level of interest rates. Government decision on spending and borrowing are mad in response to social needs and public welfare, not the rat e of interest.

**Foreign demand for loanable funds:-**Since the world has become a global village, money can be borrowed and lend across the borders. If interest rate in domestic market is lower than foreign market, foreign demand for loanable funds increases. On the other hand, if interest rate in domestic market is high, foreign demand for loanble funds decreases. Total demand for loanable funds is the sum of domestic consumer's demand, business demand, and government demand plus foreign credit demand. This demand curve slopes downward and to the right with respect to increase in the interest rate.

### **The supply of Loanable Funds**

**Domestic saving: -** The supply of domestic savings is the principal source of loanable funds. As noted earlier, most saving is done by households and is simply the difference between current income and current consumption. Businesses, however, also save, by retaining a portion of current earnings and by assign to their depreciation

resources. Government saving, while relatively rate, occurs when current revenues exceed current expenditures. The net effect of income, substitution and wealth effects leads to a relatively interest-inelastic supply saving curve. Substantial changes in interest rate usually are required to bring about significant change in the volume of aggregate saving in the economy.

**Dishoarding of money balances:** - the public's demand for money (cash balance) varies with interest rates and income levels. The supply of money, on the other hand, is closely controlled by the government. Clearly the two –money demand and money supply– need not be the same. The difference between demand and supply is known as hoarding. While public's demand for cash balances exceeds the supply, positive hoarding of money takes place as come individuals and business attempt to increase their cash balance at the expense of others. On the other hand, when the public's demand for money is less than the supply available, negative hoarding (dishoarding) occurs. Hoarding reduces the volume of loanable funds available in the financial market where as dishoarding increases such funds.

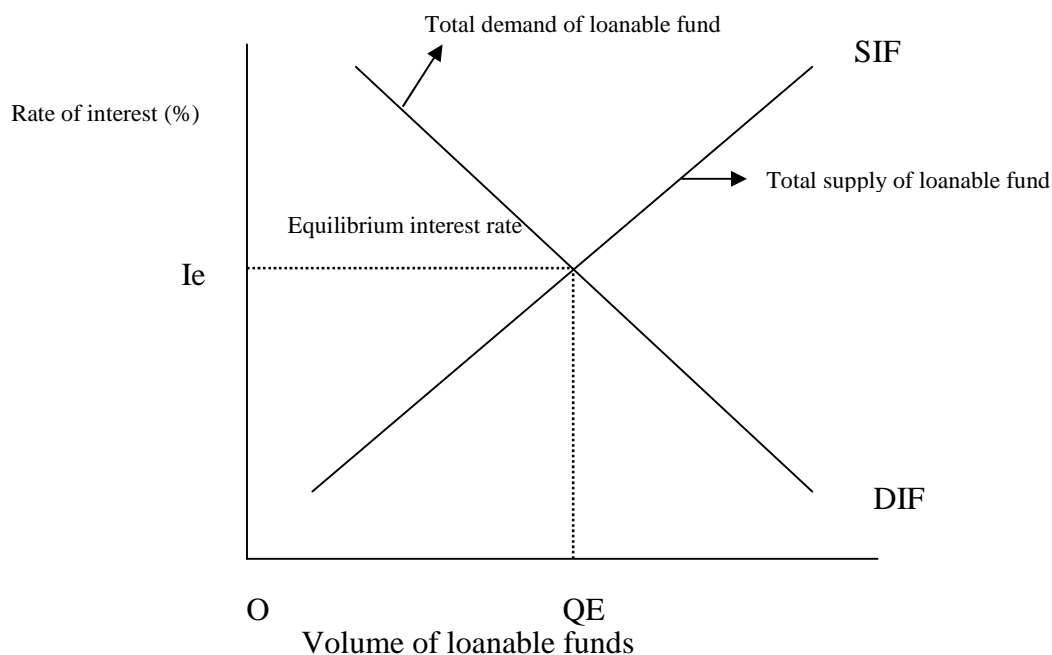
**Creation of money by domestic banking system:** commercial banks and non banking thrifts institutions offering payments accounts have the unique ability to create credit by lending and investing their excess resources. Credit created by domestic banking system represents an additional source of loanable funds.

**Foreign lending to domestic funds market:** foreign lender provides large amounts of credit to domestic borrowers. These inflowing loanable funds are particularly sensitive to the difference between domestic interest rate and interest rate in foreign financial market.

The total supply loanable fund is the sum of domestic saving, dishoarding of cash balance, foreign lending, and new credit created by domestic banking system. The supply curve rise with higher rate of interest, indicating a greater supply of loanable fund will flow into the money and capital markets when the returns from lending increase.

**Figure 2.3**

**Equilibrium Rate of Interest in the Loan able Fund Theory**



Source: Rose; 1998:203

In above figure, ‘Dif’ is the total demand curve for the loanable funds and ‘Sif’ is supply curve of loanable fund. ‘E’ is the equilibrium rate of interest and ‘QE’ is the equilibrium volume of the loanable fund borrowed and demand.

**Rational expectation theory of interest**

The rational expectation theory assumes that equilibrium interest rate depends upon the changes in investor’s expectations regarding future security prices and return. Investor’ decision towards the lending and burrowing funds come from ability of information. When new information appears about investment, saving or the money supply, investors begin immediately to translate that new information into decision to borrow and lend funds. So rapid is the process of the market digesting new information that security prices and interest rates presumably impound the new data from virtually the moment they appear. In absence of new information, new period’s interest rate will equal to current period’s interest rate. In another words, the knowledge of past interest rate will not be reliable forecast of future interest rate. In a perfectly efficient market, it is impossible to win excess returns continuously by trading on publicly available information (Rose; 1997:109).

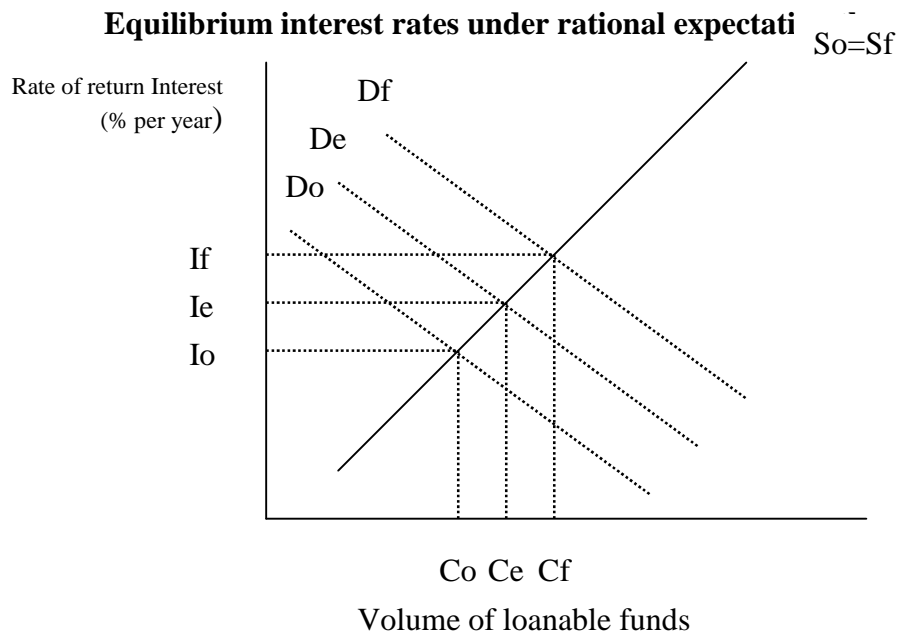
The important assumptions and conclusions of the rational expectation theory are that:

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

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

prevail in the next (future) time period. The supply of loanable funds is assumed to be the same in both time periods. ( $S_o=S_f$ ).

**Figure- 2.4**



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

Suppose, on the other hand, that actual loanable-funds demanded in period 'F' increases upward and beyond 'Do' but by a smaller amount than was anticipated by investors in the market in the market in period 'O'. Demand schedule 'Df' would then

fall somewhere between 'Do' and 'De'. The equilibrium interest rate (with supply curve unchanged) would be lower than i.e. laying somewhere between 'Io' and 'Ie'.

### **2.2.5 Interest Rate Movement and Its Relevance**

Interest rate movements affect the values of securities, and therefore affect the performance of all types of financial institutions. It is critical for managers of financial institutions (including portfolio managers) to understand why interest rates change, how their movements affect performance, and how to manage according to anticipated movements.

Interest rate movements can affect the values of debt securities such as money market securities, bond and mortgages. This is confirmed in the chapters on financial markets, when the main determinants of the market value of each security are identified. Interest rates have an indirect effect on the values of stocks and exchange rates. Since the price movements of derivatives are partially influenced by the price of underlying instruments, the prices of derivatives representing debt securities or stock or currencies are affected by interest rate movements. Thus, all participants in financial markets closely monitor interest rate movements. So, they can restructure their position in securities to benefit from any expected movements in interest rate. (Madhura; 2001:19)

Interest rate movements also affect the value of most financial institutions. Both the cost of funds to depository institution and the interest received on same loans are affected by interest rate movements. In addition, the market value of securities (such as bonds) held by the financial institutions closely monitor interest rate movements so they can capitalize on favorable or reduce their institution exposure to unfavorable movements.

### **2.2.6 Economic Factors that Affect Interest Rates**

Although it is useful to identify those who supply or demand loanable funds, it is also necessary to recognize the underlying economic forces that cause a change in the supply or demand for loanable funds. The following economic factors influence the demand for or supply of loanable funds and therefore influence interest rates.

### **2.2.6.1 Impact of Economic Growth on Interest Rates**

Assume that as a result of more optimistic economic projections, most business increase their planned expenditure for expansions, which translates into additional borrowing. The aggregate demand schedule would shift outward (to the right). The supply of loanable funds schedule may also shift, but is more difficult to know how it should shift. It is possible that the increased expansion by business could lead to more income for construction crew and others, who service the expansions. Thus the quality of savings, and therefore of loanable funds supplied at any possible interest rate could increase causing an outward shift in the supply schedule. Yet, there is no assurance that the volume of savings will truly increase. Even if a shift were to occur, it would likely be of a smaller magnitude than the shift in demand schedule.

As an example, we can consider how a slowdown in economy would affect the demand and supply schedules of loanable funds and equilibrium interest rate. The demand and supply schedule would shift inward (to the left) reflecting less demand for loanable funds at any possible interest rate. The supply schedule could possibly shift, but it is questionable which way it would shift. One could argue that a slowdown should cause increased rate. Increased saving at any possible interest rate as households prepared for the possibility of being laid off. Yet, the gradual reduction in labor incomes that occurs during an economic slowdown could reduce household's ability to save. Historical data support this latter expectation. Any shift that did occur would likely be minor relative to shift in the demand schedule. Therefore, the equilibrium interest rate is expected to decrease.

### **2.2.6.2 Impact of Inflation on Interest Rates**

One of the most serious problems confronting economies around the globe in recent years is inflation. Inflation is defined as a rise in the average level of prices for all goods and services. Some prices of individual goods and services are always rising while others are declining. However, inflation occurs when the average level of all prices in the economy rise (Rose; 1997:203).

However, inflation occurs when an increase in some general index of price, such as the Consumer Price Index or board-based Implicit Gross National Product Deflator, takes place.

There is positive correlation between inflation and interest rate in the market. Since the inflation reduces the purchasing power of consumer (investor), they must be compensated or the decreased purchasing power. Therefore, an increase in inflation leads to increase in quoted market interest rate to maintain purchasing power. This increment in interest rate is known as inflation premium. The implicit Gross national Product Deflator is sometimes referred to as the overall price index it incorporated the prices on all subcomponents of the gross national product: consumption, investment, government spending and export.

### **The Fisher Effect**

A well known economist Irving Fisher in 1996 has developed a relationship between nominal and real rate of interest. According to Fisher, if expected real interest rate is held fixed, changes in nominal rate will reflect shifting inflation premium (i.e., changes in the public's view on expected inflation). He argued that the expected real rate of return tends to stable overtime because it depends upon the long terms factors like productivity of capital, volume of savings in economy etc, in short term, the nominal interest is only influenced by the change in the inflation premium. So, rise in the expected inflation rate causes the same rise in the nominal interest rate.

### **The Harrods-Keynes Effect of Inflation**

Fisher effect of inflation contradicts with the views developed by the British economist Sir Roy Harrod. Harrod's view is based on Keynesian liquidity preference theory of interest. According to him, real rate is affected by the inflation but nominal rate need not to be affected. Under liquidity preference theory, the nominal rate is determined by the demand for and supply of money, the nominal rate must remain unchanged whatever may be the expectation of inflation. Harrod argued that a rise in inflationary expectation will lower the real rate of interest.

There is less than one-to-one relationship between changes in expected inflation and nominal interest rates with the inflation cause wealth, income and depreciation effect. That is, a rise in expected inflation reduces the real rate of return to lender and derives the nominal interest rates higher but rise in nominal rate is less than the increase in expected inflation. But according to the inflation-caused income tax effect , if an investor desire to protect (i.e. hold constant) his of her expected real after-tax of

return, then the nominal rate has to increase by a greater amount than any rise in the expected inflation rate because otherwise real after tax returns will decline when inflation increases. (Rose; 1997:245)

### **Impact of Price Deflation**

Deflation tends to force real interest rates higher even as nominal interest rates drop downward zero. These elevated real interest rates tend to slow investment spending and decrease the development of new jobs. Real economic output will decline as factors come to produce less and business profit fall. At the same time lenders gain at an expense of borrowers because the former's purchasing power rises, and business trying to borrow money has to struggle to raise the capital they require to grow and put people back to work. The price deflating can result in lower output (production) of goods and services, but forces real interest rates upward. However, businesses and the financial system are much better positioned to deal with moderate deflation, in part because of development of so many risk management tools (such as financial future contracts, swaps and options).

### **2.2.6.3 Impact of Money Supply on Interest Rates**

The central bank can affect the supply of loanable funds by increasing or reducing the total amount of deposit held by commercial bank or their depository institutions. When the central bank increases the money supply, (loanable fund), which places downward pressure in interest rate, However, if the central bank's action affect inflationary expectations, this would also increase the demand for loanable fund, which could offset the effect of the increase in the supply of funds, If the central bank (as a monetary authority) reduces the money supply, it reduces the supply of loanable funds. Assuming no change in demands, this action places upward pressure on interest rates. (Madura; 2001:31)

### **2.2.6.4 Impact of Budget Deficit on Interest Rates**

When the government enacts fiscal policies that result in more expenditures than tax revenue, the budget deficit is increased, How an increase in the government deficit would affect the interest rates, assuming no other changes in habits by consumers and firms occur higher government deficit increases the quantity of loanable funds demanded at any prevailing interest rate, causing an outward shift in the demand

schedule. Assuming no offsetting increase in supply schedule, interest rate will rise. Given a certain amount of loanable funds supplied to market (though savings), excessive government demand for these funds tend to “crowd out” the private demand (by consumers and corporations) for funds.

The government may be willing to pay whatever is necessary to borrow these funds, while the private sector may not. This impact is known as the “crowding-out effect”.

There is a counterargument that the supply schedule might outward, if the government creates more jobs by spending more funds than it collects from the public (this is what causes the deficit in the first place). If this were to occur, the deficit might not necessarily place upward pressure on interest rates. Much research has investigated this issue in (U.S.A.) and, general, has shown that higher deficits place upward pressure on interest rates.

The increase in public debt refers an increase in government’s demand for loanable funds. However, because other factors can offset this increased demand, the increased demand for loanable funds by the government does not always result in higher interest rates.

### **2.2.7 Term Structure of Interest Rates**

The relationship between the rates of return (yields) on financial instruments and their maturity is called the structure of interest. (Rose: 1997:250). This term structure may be presented visually by drawing a yield curve for all securities having the same credit quality. The yield curve considers only the relation between the maturity and term of a loan or security and its yield at one movement in time (all other influencing factors held constant). For example, we cannot draw a yield curve for securities bearing different degree of credit risk or subject to different tax laws because both risks and tax laws affect relative yields along with maturity.

#### **2.2.7.1 Pure Expectation Theory**

According to the pure expectation theory, the term structure of interest rates ( as reflected in the shape of the yield curve) is determined solely by expectations of future interest rates to understand how interest rate may influence the yield curve, assuming that the annualized yields of short-term and long-term securities are similar;

that is, the yield curve is flat. Then investors begin to believe that interest rates will rise. They will respond by investing their funds mostly in the short-term so that they can soon reinvest their funds at higher yields after interest rates increases. When investors flood the short-term market and avoid the long-term market, they may cause the yield curve to adjust. The larger supply of funds in short-term markets will force annualized yield down. Meanwhile, the reduced supply of long-term funds forces long-term yields up. (Madura: 2001:51)

Even though the annualized short-term become lower than annualized long-term yields, investors in short-terms funds are satisfied, because they expect interest rates to rise. They will make up for the lower short-term yield when the short-term securities mature, and they invest at a higher rate (if interest rate rises) at maturity. Assuming that the borrowers who plan to issue securities also expect interest rates to increase, they would prefer to look in the present interest rate to a long period of time. Thus, borrowers would generally prefer to issue long-term securities rather than short-term securities. This results in a relatively small demand for short-term funds. Consequently, there is downward pressure on the yield of short-term funds; there is also an increase in the demand for long-term funds. Overall the expectations of higher interest rates change the demand for funds and supply of funds in different maturity markets, which forces the original flat yield to pivot upward and become upward slopping.

#### **2.2.7.2 The Liquidity Premium View of the Yield Curve**

Securities dealers who trade actively in the financial markets frequently argue that other factors besides interest rate expectation also exert a significant impact on the characters and shape of the yield curve. Liquidity premium is one of them. (Rose, 1997:255)

Long term securities tend to have more volatile market prices than short-term securities. Therefore, the investors face greater a risk of capital loss when buying long-term financial instruments. This greater risk of loss will be important to an investor who is risk average (not risk neutral as in the expectation). To overcome the risk of capital loss, investors must be paid an extra return in the form of an interest rate (term) premium to encourage them to purchase long term financial instruments.

This additional rate or yield premium for giving up liquidity (known as the liquidity premium) would tend to give yield curves a bias toward a positive slope. The liquidity premium view does not preclude the important role of interest rate expectations in influencing the shape of yield curve. Rather, it argues that the factors, such as liquidity, such as liquidity, play an important role as well.

Liquidity argument may help explain why yields curves tend to flatten out at the longest maturities. There are obvious difference in liquidity between a 1-year and 10-year bond, but it is not clear that major differences in liquidity exists a 19-year bond and a 20-year bond, for example. Therefore, the size of the required liquidity (or term) premium may decrease for securities bearing longer maturities.

### **2.2.7.3 The Segmented-Markets or Hedging-Pressure Argument**

A strong challenge to the expectations theory appeared in the 1950s and 1960s in the form of the market segmentation argument or hedging-pressure theory of the term structure of interest rates. The underling assumptions are that all securities are not perfect substitutes in the mine of investors. Maturity preference exist among some investor groups, and these investors will not stay from their desired maturity range unless induced to do so by higher yields or their favorable terms on longer-or shorter-term securities.

Why would some investor prefer one maturity of security to other? Market segmentation theorists fine the answer in a fundamental assumptions concerning invertors behavior, especially the investment behavior of financial intermediaries, such as investment companies, pension funds, and banks. These investor groups, it is argued, often act as risk minimizes rather than profit maximizes as assume under the expectations hypotheses .They prefer to hedge against the risk fluctuations in the prices and yields of securities bye balancing the maturity structure of their assets with the maturity structure of their liabilities. The portfolio strategy reduces the risks of fluctuating income and less of principal.

The existence of maturity preferences among investors groups implies that the financial markets are not one larger pool of loanable funds but rather are segmented into a series of submarkets. Thus, the market for securities of medium maturity

(5to10) year securities) attracts different investors groups than the market for long-term (over10-year) securities.

The segmented-markets or hedging pressure theory does not rule out the possible influence of expectations in shaping the term structure of interest rates, but it argues that other factors related to maturity-specific demand and supply forces are also important.

#### **2.2.7.4 Preferred Habitat Theory**

The preferred habitat theory of term structure accepts the expectation is risky for borrowers and savers. However, this theory is not rigid as either of them. Simply but preferred habit accepts the motion of maturity substitution, but only if borrowers and the savers are compensated with a more favorable interest rate. The additional return to the investors' theory is known as liquidity premium. The preferred habitat theory accepts the expectation theory but claims that the yield curve is not an accurate representation of market expectations. This is because the preferred habitat theory recognizes the existence of a liquidity premium built into the yields for bonds of certain maturities (Thygerson; 1992:36)

This theory argues that investors seek at their preferred habitat along the scale of varying maturities of securities that matches their risk preferences, tax exposure, liquidity need, regulatory requirements, and planned holding period. Thus, according to the preferred habitat theory, factors other than expectations along play a role in shaping the character of the yield curve.

Proponents of preferred habitat argue that investors derive their expectations about future interest rates on the basis of historical experience- the recent trend of interest rates and what history suggests is a "normal" range for rates. In the short-term, the majority of investors expect current rate tends to persist into the future; thus rising interest rates in recent weeks often lead to the expectation that rates will continue to rise in the near term. However, investors generally expect that, given sufficient time (months or years), interest rate will return their historical average (Rose; 1997:256)

### **2.2.8 Specific Risk and Cost Factors Affecting Interest Rate**

In the preceding section we examined the factors that cause the interest rate or yield on one security to be different from the interest rate or yield on another. These factors included the majority period or term of a loan and expected inflation. In this section, our focus is upon to learn why not but in fact, thousands of different interest rates exist in the economy. To analyze yield differentials between securities, therefore, we must understand thoroughly, all the factors that shape interest rates in the money and capital markets (Rose; 1997:247).

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

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

**Liquidity:** Marketability is closely related to another feature of financial assets that influences their interest ate or yield: their degree of liquidity. A liquid financial asset is readily marketable. In additional, its price tends to be stable over time and it is reversible, meaning the holder of the asset can usually recover his/her funds upon resale with little risk of loss. Because the liquidity feature of financial assets lowers their risk, liquid assets carry lower interest rates. Inventory strongly interests in maximum profitability try to minimize their holding of liquid assets.

**Default Risk:** Another important factor causing interest rate to differ one from another is the degree of default risk carried by individual securities. Investor's securities face many different kinds of risk, but one of the most important is default risk-the risk that a borrower will not make all promised payments at the agreed-upon times. All securities except government securities are subject to varying degree of default risk. The yield on a risky security is positively related to the risk of borrower default as perceived by investor's yield on risky security.

Yield on risky security = Risk-free rate of interest + Default risk premium

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

**Inflation and Default Risk Premium:** We show that inflation can cause interest rates to rise as investors in the financial markets demand to be compensated with higher nominal returns when the level of expected inflation or uncertainty about future inflation goes up. However inflation also appears to affect the size of default-risk premiums on risky securities. Default risk premiums (often called 'quality spreads') tend to be higher and more volatile when inflation is high and volatile. Greater uncertainty about inflation, as Wheelock (1997) notes, tends to produce a "Flight to quality" in the financial instruments. This is one of the many ways in which high and volatile price inflation can disrupt the efficient functioning of a market-oriented economy. (Rose: 2003:99)

**Call or Prepayment Risk:** many corporate bonds and mortgages, most municipal bonds, and some government bonds issued in today's financial markets carry a call privilege. This provision of bonds contract (indenture) grants the borrowers the option to retire all or a portion of a bond issue by buying back the securities in advance of maturity. The call privilege is an advantage to the security issuer because it grants greater financial flexibility and the potential for reducing future interest costs. On the

other hand, the call privilege is a distinct disadvantage to the security buyer, who may suffer a decline in expected holding-period yield of the security is called. Therefore, securities that carry a call privilege generally set at lower process and higher interest rates than non callable securities moreover; there is an inverse relationship between the length of the call deferment period and the required rate of interest on callable securities. The longer the period of deferment and, therefore, the longer the investor is protected against early redemption, the lower the interest rate the borrower must pay. (Rose; 2003:287)

**Taxability:** Taxes imposed by the government have profound effect on the returns earned by investors on financial assets. The income from most securities-interest of dividends and capital gains-is subject to taxation at the stipulated rate. This tax treatment reduces the investor's real income .thus the security, the income from which is subject to higher taxation, carries higher rate than the securities, the income from which is subject to lower tax of tax exemption. Therefore, a corporate bond issuer must pay high yield (interest) than a municipal bond.

**Servicing Cost:** Some financial claims are difficult to service. This means that the process of collecting interest and principal payments, providing accurate records, or monitoring the ongoing credit position of the borrower involves considerable operation cost, certainly it makes sense that the cost of servicing Rs.10 million of small auto loans is higher than the cost of servicing the same rupees amount of treasury bonds. The auto loans would involve collection payments and accounting for 800-1200 different loans. The treasury bonds involve two interest payments per year. Lender must be compensated for the servicing cost. This cost is included in the interest rate charged, and is referred to as the servicing cost (SC).

**Exchange Rate Risk:** As today's financial markets have become more global, there has been a significant growth in the borrowing and investing in foreign denominated financial claims. A U.S. company establishing a manufacturing facility in Nepal might be inclined to issue shares and /or bonds denominated in Nepalese rupees rather than U.S.dollars. Investors also have available to them many investments involve exchange rate risk. His risk relates to the potentiality that the rate of exchange between the domestic currency and foreign denominated currency will change as a

result of any numbers of factors. The primary risk for the borrower is that the value of the currency borrowed rises in relating to the domestic currency. This results in an unexpected cost on the international loan, since the loan would have to be repaid in the foreign currency that has risen in value relative to the domestic. This potential change in currency values must be reflected in computing the cost of borrowing. Although it is not possible to accurately forecast future exchange rates, actual forward exchange rates in different countries do reflect differences in interest rates between countries. These forward exchanges are not good forecasts of the future because they create exchange rate risk for borrowers and investors.

**Investment Risk:** The reinvestment risk appears generally to all investors that generate cash flows for the investors prior to the maturity of the investment. When the yield to maturity is computed on investments; it is assumed in the calculation process that all cash flows are invested at the yield computed. The internal rate of return(IRR) calculation found in any text book on business finance shows that one of the limitations of the internal rate of return calculation for investments is the assumption that all the cash flows received before the end of the maturity( investment period) are invested at the IRR.

The reinvestment problem creates reinvestment risk for investors. This is the risk that the cash flows received before the maturity of the investment cannot be reinvested at the yield to maturity of the investment.

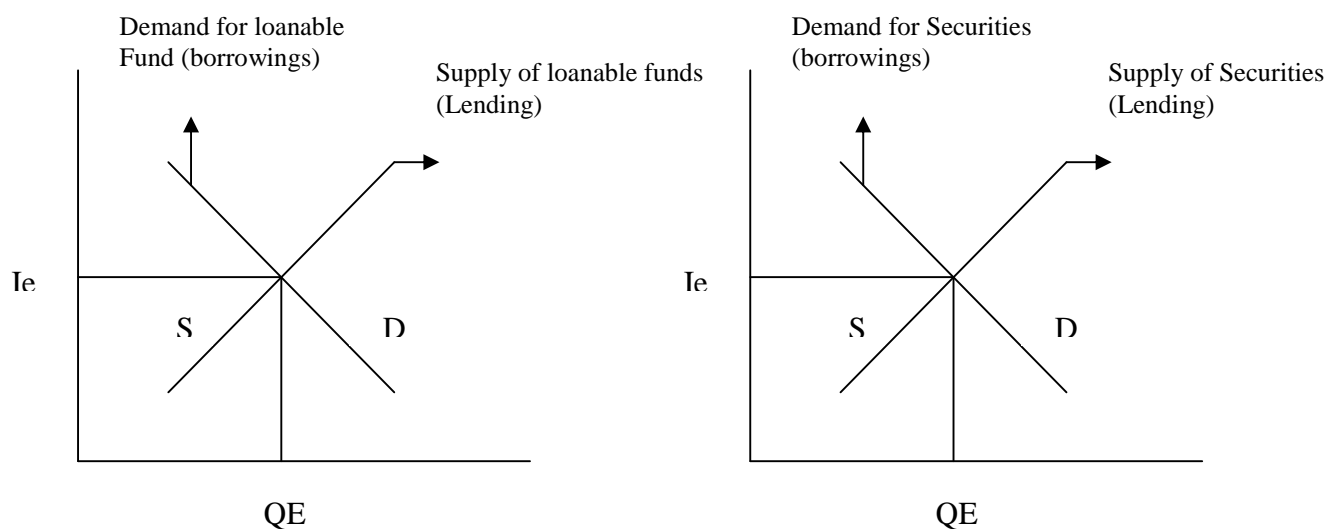
### **2.2.9. Relationship between Interest Rates and Security Prices:**

The price of a security and its yield or rate of return is inversely related. A rise in yield implies a decline in price; conversely, a fall in yield is associated with a rise in the security's prices. (Rose: 1997:277)

Investing funds in financial assets can be viewed from two different perspectives, the borrowing and lending of money or the buying and selling of securities. As noted earlier, the equilibrium rate of interest from the lending of funds (borrowers) supply securities to the financial market place, and suppliers of loanable funds (lenders) demand securities as an investment. Therefore, the equilibrium rate of interest or yield on a security and equilibrium price of that security are determined at one and the same

instant and are simply different aspects of the same phenomenon, the borrowing and the lending of loanable funds.

**Figure: 2.5**  
**Equilibrium security Prices and Interest Rates**



Source: Rose; 1997:673

Presented figure shows demand and supply curves for both the rate of interest (yield) and the price of securities. The supply of loanable funds curve representing lending in the interest rate diagram in 2.5A is analogous to the demand for securities curve also representing lending in the price of securities diagram in 2.5B. Similarly, the demand for loanable funds curve representing borrowing in the interest rate diagram is analogous to the supply of securities curve also representing borrowing in the price of securities diagram.

We note in diagram 2.5B that borrowers are assumed to issue a larger volume of securities at a higher price and that lenders will demand more securities at a lower price. In diagram 2.5A on the other hand, borrowers demand a smaller quantity of loanable interest rate. The equilibrium interest rate in figure 2.5A is determined at point 'Le', where the demand for and supply of loanable are equal. Similarly, in figure 2.5B the equilibrium price for securities lies at point 'Pe', where the demand for and supply of securities are equal. Only at the equilibrium interest rate and an equilibrium security price will both borrowers and lenders be content with the volume of lending and borrowing taking place within the financial system.

### **2.2.10. How Open Market Operations Affect Interest Rates?**

Even though most interest rates are market determined and the central bank has considerable authority and powerful mechanisms to affect the level of interest rates by controlling the supply of loanable funds. The primary tool is open market operation. Through open market operation, the central bank purchases or sells securities. These are primarily treasury securities. When central bank purchased the securities it adds to the supply of loanable funds. The sellers of the securities the central bank purchased can reinvest in other loans and investments. When the central bank sells securities, the opposite occurs. (Thygeson; 1992:81)

When the central bank uses open market operation increases bank funds, banks have more funds that can be loaned out. This can influence various market determined interest rates. First, the interest rate on loans between banks may decline as some banks have a larger supply of excess funds to lend out. Second banks with excess funds may offer new loans at lower interest rates in order to make use of these funds. Third, these banks may also lower interest rates offered on deposits because they have more than adequate funds to conduct existing operations. (Madura; 2001:81)

As bank deposit rates decline household with available funds may search for alternative investments such as treasury securities or other debt securities, the yield will decline. Thus open market operation used to increase bank funds influence not bank deposits and loan rates but the yield on other securities as well. The reduction in yields on debt securities lowers the cost of borrowing for the issuers of new debt securities. This can encourage potential borrowers (including corporations and individuals) to borrow and make expenditure that might not have made if interest rates were higher.

If open market operation is used to reduce banks funds by selling the treasury securities; by increasing the level of discount rate; and by increasing the reserve requirements; the opposite effect occurs. More banks have different funds and fewer banks have any excess funds. Thus there is upward pressure on the interest rate offered to bank deposits. As bank deposit rates rise, some investors may be encouraged to create bank depositors rather than invest in other debt securities thereby increasing the yields offered on the instruments.

The actions of the central bank also affect the level of aggregate employment and inflation. The central bank tends to foster stimulative open-market policies when the economy has slack resources and high unemployment, and restrictive policies during period low unemployment and rising inflation.

### **2.2.11 Interest Rates Charged by Institutional Lenders**

Institutional lender of fund- bank credit unions, insurance companies- finance companies- often employ different methods to calculate the rate of the interest charged on their loans. Four commonly use method used for calculation institutional loan rate is presented here.

#### **A. The simple interest method/Collect method**

If the interest rate is paid at the maturity of a loan, the stated rate of interest is the effective rate of interest (Weston & Copeland; 1992:847). Both the amounts of interest and principal are paid at the end or maturity period of loans, under this method.

Effective interest rate = Interest amount / amount borrowed

#### **B. Discount Method**

Many commercial loans, especially those used to raise working capital are extended on a discount basis. This so-called discount method for calculation loan rates determines the total interest charge to the customer on the basis of the amount to be repaid. However, the borrower receives as proceeds of the loan only the difference between the total amount owed and the interest bill (Rose; 1997:231)

Effective interest rate = interest paid/Net loan proceeds

#### **C. Add on Installment Rate of Interest**

A method for calculating loan interest rates often used by finance companies and banks is the add-on the full principal of the loan, and the sum of interest and principal is divided by the number of payment to determine the rupee amount of each payment (Rose; 1997:273)

The effective interest rate can be found from following equation by solving for

Borrowed amount = Periodic Payments \*PVIFA r%, n periods.

n = Number of payments,

r = stated interest rate/ number of payments

PVIFA = Present Value Interest Factor for an Annuity.

#### **D. Regular Installment**

In this method of interest calculation, equal periodic installments are determined by dividing the total amount of loan by present value of interest factors for an annuity at the stated rate, these periodic amounts of payments include both the interest and some part of principal. In this method interest is calculated only on remaining balance of principal. Effective interest rate can be found by solving for in the following equation.

Loan amount = periodic payment (PVIFA r, n)

r = stated rate/number of payments

n= Total number of payment

### **2.3 Review of Previous Studies**

In this section some previous thesis relevant to this study are reviewed. Some relevant thesis regarding to this study are as follows:

A study done by **Neupane (2003)** entitled *Money Interest rates and Financial Development in Nepal* found that interest rate is one of the most important devices for resource mobilization and interest rate plays a major role in the financial development of Nepal. He viewed that institutional interest rates are lower in our country, this caused a gap between credit demanded and supplied. This fact deprived people from getting enough credit facilities. On the other hand, commercial banks are providing credit facilities only for trade and commercial purposes. Finally he makes the conclusion that to mobilize the resources and to divert time into productive work; institutional interest rate should be made higher.

A study done by **Bhusal (2004)** entitled *An Analysis of Cause of Inflation in Nepal*. He has shown the relationship of inflation with various factors such as growth rate, income level, cost of holding money, Indian inflation and price level, deficit financing, but he failed to show the relationship between interest rate and inflation

A study done by **Rajbhandary (2005)** entitled *The interest rate Structure of Commercial Banks in Nepal* the objective of his study was to show the relation of interest rate with saving and fixed deposits; with loans and advances; and with interest earning (i.e., interest received on loan minus interest paid on deposits).

His analysis concludes that the time deposits are positively and significantly correlated with the interest rates. There is significant correlation between the saving deposits and the rate of interest. Fixed deposit is more sensitive to the interest rate revision done by NRB. The correlation between the growth of fixed deposits and the interest rate particularly from 1974 to 1977 is most significant. But the relation between the interest rates and the loan and advances is less significant. Among all the sectors; the private sector seems most sensitive to interest rate change. Most of the loans too correlated positively if absolute cumulative figures are taken. But the growth rate of total loans and advances except investment on GMG securities is negatively correlated more with the weighted average rate of interest since 1973.

The growth of loans to private sector is also negatively correlated with interest rate since 1971. Negative correlation between loans and interest rate meant that loans decrease at higher interest rate and vice versa.

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

A study done by **Pandey (2008)** entitled *Money supply, Level of Prices and Interest Rate Structure* taking objective to show the relationship among money supply, price level and interest rate structure. She has analyzed the factor affecting money supply and price level. But she has explained the interest rate history showing what NRB had done to interest rate rather than showing the relationship of interest with price level and money supply. It might be relevant because interest rate, at the time was fully controlled by NRB.

A study done by **Shrestha (2009)** entitled *Interest rate and its impact upon Resource Mobilization and Utilization* also seems relevant to review here, since his study is too old, interest rate at the time was purely the central bank's phenomenon. He, in his study, has concluded that the frequent change in interest rates was disliked by customers except changing the interest rates as directed by NRB. Shrestha has suggested that the commercial banks to quote stable rate as far as possible. He also recommended that the method of calculating interest should be used in such a way that the previous customers and depositors who are already involved in banking transaction should not be affected adversely. He also suggested charging high interest rate on loan to luxury goods as in unproductive sectors and a lower rate on productive and small scale industries.

A study done by **Koirala (2010)** entitles *Interest rate Behavior of Commercial Banks and finance company in Nepal*. Has concluded followings:

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

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

A study done by **Kshetry (2011)** entitled *Interest Rate structure and its Relation with deposits Inflation and credit in Nepal* shows the relationship between interest rate and other economic variables like deposit, inflation and credit flow. His study concludes the following:

Keeping other variables constant, the institutional interest rate is the important explanatory variable to influence the volume of deposits in Nepal. This means that the

upward movement in the interest rate on deposits in Nepal. This means that the upward movement in the interest rate on deposit increases the volume of deposits. The relationship between income and interest rate and between inflation and interest rate could not come significant. He found that the price level of Nepal is linked with Indian prices and also found very high inflation (10-17%) during his study period and also found out the negative relationship between credit flow and rate.

His suggestion to commercial banks is to fix the confessional interest rate in order to promote the cottage and small scale industries; and to monetarists to consider the rate of inflation while determining the interest rate on deposits.

A study done by **Dangol (2012)**, entitled *Impact of Interest Rate on Financial performance of Commercial Banks* concludes that most of the commercial bands contradict the general financing theories. The relation between amount of deposit and interest rate on deposit, in general concept must be positive. But deposits are increasing despite the decrease in the general level of interest. The result of such phenomenon is that there are fewer investment opportunities for the banking sector as well as general investors. The relation between total amount of loan and the lending rate is negative and significant. However, the change in the total amount of loan flow is not proportionate with the change in the lending rate.

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

## **2.4 Research Gap**

This study includes the variables like deposit amount, interest rate on deposit, amount of loan, lending rate, inflation and risk-free rate and their relationship of two commercial Banks(EBL and NABIL) and two Finance Companies (NAFIL and HFL).

I want to prove that this research is an original one should be the foundation for the future researchers to know about the A comparative study on interest rate behavior of two commercial banks and finance companies in Nepal. For the researchers are

requested to research about the different factors influencing interest rate like maturity period, open border with India, political instability etc.

Our study is different than other's study due to the following reasons.

I have reached on the comparative study of interest rate of Commercial Banks and Finance Companies in Nepal.

1. Nobody has research on the comparative study of interest rate of commercial banks and Finance Companies as on date August 13, 2012.
2. I have included the very recent information of Sample organizations.
3. This study shows current interest rate and deposit policy applied by sampled financial institution.
4. The study particularly shows how these companies are growing despite of critical market situation.
5. The study incorporates the latest technology (fully computerized adopted by these financial institutions).

## **CHAPTER-III**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

Research methodology is the process of arriving at the solution of the problem through planned and systematic dealing with the collection, analysis and interpretation of facts and figures. Research is a systematic method of finding right solution for the problem whereas research methodology refers to the various sequential steps to adopt by a researcher in studying a problem with certain objectives in view. In other words research methodology refers to the various methods of practices applied by the researcher in the entire aspect of the study. It is the plan, structure and strategy of investigations conceived to answer the research question or test the research hypothesis. Research design is used to control variance (Wolff & Pant, 2008:51). It includes different dependent & independent variables, types of research design, research questions and hypothesis sample, data collection activities, technique of analysis etc.

#### **3.2 Research Design**

A research design is the specification of methods and procedures for acquiring the information needed. It is the overall operational pattern of framework for the project that stipulates what information is to be collected from which sources and by what procedures (Donald; 1997:45). The research design followed for this study is historical, analytical and descriptive. To determine the effect of inflation and liquidity on interest rate, historical data are analyzed and the research design followed is also analytical. For some qualitative interest rate influencing factors, the research design is descriptive as per the objectives of the study.

#### **3.3 Population and Sample**

The entire lending and depository institutions of Nepal are the members of population of the study because the research topic is about interest rate. The population for the study comprises 32 commercial banks (Nepal Rastra Bank, Khabarpatra). Out of them two commercial banks are taken as sample on the base of partial foreign investment,

to draw the conclusion about population. The main objective of selecting joint-venture banks is to identify the foreign policy in interest rate.

Similarly, the population for the study comprises 79 Finance Companies (Nepal Rastra Bank, Khabarpatra). Out of them two Finance Companies are taken as sample to draw the conclusion about population. The main objective of selecting two Finance Companies is to identify the regional policy in interest rate. For quantitative analyses, the concerned person of 10 organizations has filled a questionnaire. Organizations under study are as follows whose brief introduction is presented in chapter one. Currently, there are 32 Commercial Banks and 79 Finance Companies in Nepal. They can be listed in Appendix.

Out of them 2 Commercial Banks and 2 Finance companies are taken as sample on the basis of financial performances.

#### **Commercial Banks**

1. Nabil Bank Limited.
2. Everest Bank Limited.

#### **Finance Companies**

1. Narayani finance Ltd.
2. Himalaya finance Ltd.

### **3.4 Nature and Source of Data**

To show the relation between variables involved secondary data are used. The sources of data have been collected from published annual reports, published bulletins and prospectus of concerned organizations, various publication of Nepal Rastra Bank, various thesis and various papers, journals, magazines and websites.

### **3.5 Data Collection Procedure /Technique**

Data on annual reports of concerning organization, interest rate structure of such organizations and introductory profiles if the institutions are collected by visiting the respective organizations and from their web sites. Some data of sample organizations and Nepal 'Rastra Bank's regulation upon them is collected from the central office of NRB, Baluwatar.

### **3.6 Data Processing and Presentation**

Data collected for the study are presented in various forms. Most of the data are presented in tabular form and some graphical presentation is used.

### 3.7 Data Analysis Tools

#### A) Correlation

Correlation analysis is the statistical tool that we can use to describe the degree to which one variable is linearly related to other 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 change in the other variables. Correlation is an analysis of the covariance between two or more variable. The measure of correlation, called correlation coefficient summarizes, in one figure, the degree and direction of correlation. The correlation analysis refers the closeness of the relationship between the variables (Sharma and Chaudhary; 2004:420). Correlation may be positive or negative and negative and ranges from -1 to +1. Simple correlation between inflation and interest rate and between liquidity and interest rate is determined in study. Similarly multiple correlations co-efficient between above mentioned variables also has been determined assuming interest rate is dependent and other two are independent.

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

or

$$(r) = \frac{\text{Cov}(X_1, X_2)}{\sqrt{\text{Var } X_1} \sqrt{\text{Var } X_2}}$$

Where,

$$n = \text{total nu} \quad \text{Co Variance}(X_1, X_2) = \frac{1}{n} \sum (X_1 - \bar{X}_1)(X_2 - \bar{X}_2)$$

$X_1$  and  $X_2$  = two variables, correlation between which is calculated

$$\text{Multiple Correlation Coefficient (R}_{1,23}) = \sqrt{\frac{r_{12}^2 + r_{13}^2 - 2 r_{12} \cdot r_{13} \cdot r_{23}}{1 - r_{23}^2}}$$

Where,  $r_{12}$  = correlation coefficient between variable one and two

$r_{13}$  = correlation coefficient between variable one and three

$r_{23}$  = correlation coefficient between variable two and three

#### B) co-efficient of multiple determinations

The square of multiple correlation coefficients is called coefficient of multiple determination and it is very useful in interpreting the value of multiple correlation coefficient. The main significance of the multiple determinations is to represent the

proportion of total variations in the dependent variable which is explained by the Co-efficient of multiple determinations  $R_{1,23}^2$

**C) T-test for Significance of Correlation coefficient (when number of a sample 30)**

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

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

The 't' follows t-distribution with n-2 degree of freedom (d.f.)

Confidence limit for estimating population correlation coefficient ( )

1- % confidence limits for estimating population correlation coefficient ( ) are given by:

$$r + t (n-2) \times \text{S.E.} (r)$$

t = Level of significance

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

**D) Graphical approach:** All the necessary information and data can be shown in figures. We can use Trend Line and necessary Bar Diagrams where necessary.

## **CHAPTER-IV**

### **DATA PRESENTATION AND ANALYSIS**

#### **4.1 Introduction**

This chapter is the main body of the study, which includes details analysis, and interpretation of data relating to interest rate on deposit and lending, deposit collection, and loan advances of each selected organizations from Nepalese financial system. Relations between variables i.e. between interest on deposit and interest rate on loan observed, analyzed and interpreted. To show the response between these variables has been analyzed. The data and information gathering from the different sources have been analyzed. The data and information gathered from the different sources, as described in precious chapter, have been broadly grouped into the following two groups.

- ) For the quantitative analysis, various published data from NRB and concerned organizations publication have been analyzed for showing their relationship.
- ) For quantitative analysis primary data collected by means of questionnaire and direct interviews with respondent (various personnel from various institution, most of them are credit managers of the concerned organization) have been presented and analyzed.
- ) Different tables and diagrams have been used to make the result clearly understandable.

#### **4.2 Presentation and Analysis of Data**

If two or more quantities vary in sympathy so that movements in one trend to be accompanied by corresponding movements in the other(s), then they are said to be correlated. Thus the corresponding analysis is generally used to describe the degree to which one variable is related to another. It helps to identify whether a positive or a negative relationship exists, the relationship is significant or not; and to establish cause and effect relationship.

The correlation analysis, a statistical tool has been used to show the relationship between various variables assumed to be influencing factors of interest rate charged

and not offered by sample institutions. Multiple correlations have also been computed to show the simultaneous effect of two factors on interest rate. The coefficient of correlation is also tested using t-statistics of hypothesis to show whether it is statistically significant or not. Detail analysis of individual institution is presented in coming sections.

**Table 4.1**  
**Interest Rate on Deposit and Lending of EBL**

Fiscal Year	Deposit Amount (Rs. in million) "a"	Interest Rate on Deposit "b"	Loan amount (Rs.in Million) "c"	Interest Rate on Lending "d"	Inflation Rate "e"	Risk Free Rate "f"
2007/08	24831.1	4.19	13245.0	10.83	2.9	4.71
2008/09	26456.2	4.01	15515.7	10.69	4.8	3.48
2009/10	29905.8	4.01	17672.0	10.69	4.0	2.93
2010/11	31805.3	2.87	19985.2	9.12	4.5	2.5
2011/12	32396.0	2.68	20775.7	9.12	4.6	2.84

Source: Annual Reports of EBL (2012) and Various Bank Financial Statistics Published by NRB (mid-Jan 2012)

*Note:* Interest rate on deposits is taken as the average of the rates on various types of deposits and interest rate on lending is taken as the average of quoted rates for various sectors. Calculation of correlations is shown in appendix 2.

Table 4.1 depicts the total amount deposited; average interest offered on such deposits; total amount loaned; interest rate charged on such-lending of EBL for five years covering from F.Y. 2007/08 to 2011/12. Table 4.1 also contains the inflation rate and risk free rate (91 days Treasury bill; rate) for the same fiscal years. The correlation coefficient between interest rate and other variables are presented in table 4.2. Lower part of table 4.2 contains the multiple correlation and coefficient of multiples determination. The correlation coefficient between interest rate on deposits and amount deposit ( $R_{ab}$ ) is -0.9123. This means that these two variables are highly negatively correlated. When supply of loanable fund (supply of deposit) increase, the interest rate on such deposit decreases and vice versa. We have assumed that interest rate is depending factor, which is determined by supply of loanable fund. Hence, the negative correlative correlation between these two variables exists. The coefficient of determination between these two variables,  $R^2_{ab}$  is 0.8322 which means that 83.22 percent of total variation in interest rate on deposit has been explained by independent

variable i.e. amount of deposit collected and remaining is due to the effect of other factors in the economy. T-statistics for the testing the significance of the correlation is 3.86. Since the tabulated t-value at 5 percent level of significance for 3 degree of freedom (3.18) is less than the calculated value, correlation coefficient is significant. This means that the variables mentioned (interest rate on deposit and amount deposited) of EBL are significantly correlated and an increase (decrease) in the amount of deposit brings a decrement (increment) in interest rate on deposit.

**Table 4.2**  
**Correlation Analysis of EBL**

Variables	Coefficient of Correlation	coefficient of determination	T-statistics	Table Value	Remarks
$r_{ab}$	-0.9123	0.8322	3.86	3.18	Significant
$r_{bd}$	0.9950	0.9900	17.23	3.18	Significant
$r_{cd}$	-0.7868	0.6190	2.20	3.18	Insignificant
$r_{be}$	-0.5483	0.3006	1.13	3.18	Insignificant
$r_{bf}$	0.7080	0.5012	1.73	3.18	Insignificant
$r_{de}$	-0.5169	0.2671	1.04	3.18	Insignificant
$r_{df}$	0.6989	0.4884	1.69	3.18	Insignificant

Source: Various Bank and Financial Statistics Published by NRB (mid -Jan 2012)

**Multiple Correlations**

$$R_{b.ad} = 0.9971$$

$$R_{d.bc} = 0.9975$$

$$R_{b.ef} = 0.7079$$

$$R_{d.ef} = 0.7004$$

**Coefficient of multiple determinations**

$$R^2_{b.ad} = 0.9944$$

$$R^2_{d.bc} = 0.9951$$

$$R^2_{b.ef} = 0.5012$$

$$R^2_{d.ef} = 0.4906$$

The correlation coefficient between interest rate on lending and amount of loan advanced,  $R_{cd}$  has been found negative (-0.768) which means that variables are highly negatively correlated. According to the assumption of the study interest rate is dependent and there should be a positive correlation between these two variables, which means that increased demand of loanable fund also caused increment in the interest rate. But this negative correlation of coefficient between these variables tells that more loans is demanded at lower rate i.e. demand is dependent on interest rate. The coefficient of determination  $R^2_{cd}$  is 0.6190 means that 61.90 percent of total variation in amount loaned has been explained by the variation in interest rate on lending and remaining is the effect of other factors. T-value for testing the

significance of the correlation coefficient is 2.20 which is less than table value of 3.18. Since, the calculated t-value 2.20 is less than the tabulated value at 5 percent level of significance for 3 degree of freedom, the correlation coefficient is insignificant. Therefore, it can be concluded that the amount loaned and interest on lending on EBL are not significantly correlated and the movement in interest rate on lending of EBL does not affect the loan amount significantly.

Similarly, the correlation coefficient between interest rate on lending and interest rate on deposit,  $R_{bd}$  is 0.9950 which means that these two variables are highly positively correlated. The direction and proportion of movement of both rate is same if interest rate on deposit increases, the interest rate on lending also increases in almost same proportion and vice versa. The coefficient of determination between these variables,  $R^2_{bd}$  is 0.9900 which means that 99% of total variation in dependent variable (interest rate on lending) has been explained by the variation in independent variable (interest rate on deposit) and remaining variance is the response of the other factors in the economy. Test statistics for testing the significance of the correlation coefficient is 17.23 which is highly greater than tabulated value. Since the calculated t-value is highly greater than tabulated value at 5 percent level of significance for 3 degree of freedom (3,18) the correlation coefficient is highly significant which means that interest rate on deposit and that on lending on EBL are highly correlated and movement in interest rate on deposit brings the movement in interest rate on lending.

Another variable in economy that affects interest rate is the inflation. The correlation coefficient between interest rate on deposit and inflation rate,  $R_{be}$  is -0.5483 which means that these two variables are negatively correlated. An increment in inflation brings decrement in interest rate on deposit and vice versa. In general concept there is positive correlation between these variables. The coefficient of determination  $R^2_{be}$  is 0.3006 means that, of the total variation in dependent variable (interest rate on deposit): only 30.06% has been explained by the variation in independent variable (inflation rate). T-value for testing the significance of the correlation coefficient is 1.13 which is less than the tabulated t-value for the 3 degree of freedom at 5 percent level of significance, 3.18. Since, the calculated value is less than tabulated value, the correlation coefficient is not significant which means that interest rate on deposit of

EBL is not correlated with the inflation rate and movement in inflation rate does not affect the interest rate on deposit significantly.

Another variable in the economy that is considered to be affecting factor of interest rate in financial market is the risk-free rate. The correlation coefficient between interest rate on deposit of EBL and the risk-free rate (rate on 91 days Treasury bill),  $r_{bf}$  is 0.7080 which shows that the variables are positively correlated. The change in risk-free leads the change in the interest rate in same direction. The coefficient of determination  $R^2_{bf}$  is 0.5012 which means that 50.12 percent of total variable (risk-free-rate) and remaining is the effect of other factors. The t-test value for testing the significance of the correlation coefficient is 1.3 which is less than the table value for 3 degree of freedom at 5 percent level of significance, 3.18. From this, it is revealed that interest rate on deposit of EBL is not significantly correlated with the risk-free rate and risk-free rate does not affect interest rate on deposit of EBL significantly.

Similarly the relationship of interest on lending of EBL with inflation has also been examined. The coefficient of correlation between inflation and interest rate on lending  $R_{de}$ , is -0.5169 which shows that the variables are negatively correlated. Movement in inflation rate leads movements in interest rate on lending in opposite direction. The coefficient of determination between these variables,  $R^2_{de}$  is 0.2671 which means that 26.71% of total variation in dependent variable (interest rate on lending) has been explained by the variation in dependent variable (inflation rate) and remaining is due to the effect of others. The t-value for testing the significance of correlation coefficient is 1.04. Since, the calculated t-value is smaller than the tabulated t-value for 3 degree of freedom at 5 percent level of significance. 3.18; the variables are not correlated significantly. This means that the lending rate of EBL is not significantly correlated with the inflation rate.

The effect of risk-free rate of interest on interest rate on lending of EBL has been also been examined through the analysis of correlation between these variables. The coefficient of correlation between these variables  $r_{df}$  is 0.0989. This means that there is positive relationship between these variables. Since, interest rate is dependent on risk-free rate; the variation in risk-free rate brings the variation in interest rate lending the same direction. The coefficient of determination between variables is 0.4884

which indicates that 48.84% of total variation in interest rate on lending is explained by the variation in risk-free rate and remaining is the effect of other factors. The t-value for testing the significance of the correlation coefficient is 1.69. Since, the calculated t-value is smaller than table value at 5 percent level of significance for 3 degree of freedom (3.18), the correlation coefficient is not significant. This means that the interest rate on lending of EBL is not significantly affected by risk-free.

To examine the combined effect of two factors on interest at once, multiple correlation coefficients has also been computed. The multiple correlation coefficient taking interest rate on deposit as dependent and amount deposited and interest rate on lending as independent,  $R_{b,ad}$  is 0.9971. The coefficient of multiple determination,  $R^2_{b,ad}$  is 0.9944 which means that 99.44% of total variation in interest rate on deposits has been explained by two independent variables a and d. Similarly the multiple correlation coefficient assuming interest rate on deposit as dependent and inflation and risk-free rate as independent,  $R_{b,ef}$  is 0.7079. The coefficient of multiple determinations ( $R^2_{b,ef}$ ) is 0.5012 which means that 50.12% of total variation in dependent variable (interest rate on deposit) has been explained by two independent variables (inflation and risk free rate) and remaining variations has been explained by other variables.

Similarly the multiple correlation coefficient taking interest rate on lending as dependent and amount loaned and interest rate on deposit as independent,  $R_{d,bc}$ , is 0.9975. The coefficient of multiple determinations,  $R^2_{d,bc}$  is 0.9951 which means that total variation in dependent variables has been explained by two independent variables to the extent of 99.51% and remaining is the effect of other factors. The multiple correlation coefficient assuming interest rate on lending as dependent and inflation and risk-free rate as independent,  $R_{d,ef}$ , is 0.7004. The coefficient of multiple determination,  $R^2_{d,ef}$ , is 0.4906 has meaning that 49.06% of total variation in dependent variable (interest rate on lending) is the effect of inflation and risk-free rate and remaining is due to the effect of other factors.

**Table 4.3**  
**Interest Rate on Deposit and Lending of NAFIL**

Fiscal Year	Deposit Amount (Rs. in million) "a"	Interest Rate on Deposit "b"	Loan amount (Rs.inMillion) "c"	Interest Rate on Lending "d"	Inflation Rate "e"	Risk Fee Rate "f"
2007/08	66.41	2.0	84.9185	7.60	4.0	2.93
2008/09	174.937	3.20	191.25	6.35	4.5	2.50
2009/10	330.42	3.20	337.36	9.54	4.6	2.84
2010/11	514.86	3.0	540.35	8.53	4.6	2.31
2011/12	522.5	3.20	913.4	9.54	4.6	2.84

Source: Annual Reports of NAFIL and Various Bank Financial Statistics Published by NRB (mid-Jan 2012)

*Note:* Interest rate on deposits is taken as the average of the rates on various types of deposits and interest rate on lending is taken as the average of quoted rates for various sectors.

Table 4.3 shows the amount of deposit, interest rate on deposit, amount of loan advance and interest rate on lending of NAFIL for five fiscal years from 2007/08 to 2011/12. Similarly, it also contains the inflation rate and risk-free rate on interest of the same period. The correlation coefficients between variables have been presented in table 4.4 and it also contains the coefficients of multiple correlations. To test the significance correlation coefficient, t-values have also been presented. The correlation coefficient between amount deposited and interest rate on deposit,  $r_{ab}$ , is 0.1037. This means that these two variables are less correlated and the relationship is positive. The positive relationship shows that when deposit increases (i.e. supply of fund) the interest rate i.e. return on deposit also increases. The coefficient of determination between these two variables  $r^2_{ab}$ , is 0.0107 which means that total variation in interest rate on deposit has been explained by supply of deposits to only 1.07 percent and remaining is the effect of other factors. The t-value for testing the significance of the correlation coefficient between variables, 0.18 is significance of the correlation percent level of significance for 3 degree of freedom, 3.18. Since, the calculated value is significantly smaller than table value, the conclusion is drawn that correlation coefficient between variables is significant. This means that the interest rate on

deposit and deposit amount of NAFIL are not significantly correlated and increase in the supply of fund i.e. deposit brings the increment in interest rate on deposit.

**Table 4.4**  
**Correlation Analysis of NAFIL**

Variables	Coefficient of Correlation	coefficient of determination	T-statistics	Table Value	Remarks
$r_{ab}$	0.8976	0.2345	3.10	3.18	Insignificant
$r_{bd}$	0.3456	0.0879	0.50	3.18	Insignificant
$r_{cd}$	-0.3456	0.2321	0.89	3.18	Insignificant
$r_{be}$	0.5346	0.1452	0.23	3.18	Insignificant
$r_{bf}$	0.8543	0.2345	2.91	3.18	Insignificant
$r_{de}$	-0.3024	0.0789	3.76	3.18	Significant
$r_{df}$	0.1222	0.0333	0.76	3.18	Insignificant

Source: Various Bank and Financial Statistics Published by NRB (Mid-Jan 2012)

**Multiple Correlations**

**Coefficient of multiple determinations**

$$R_{b.ad} = 0.9728$$

$$R^2_{b.ad} = 0.9464$$

$$R_{d.bc} = 0.5592$$

$$R^2_{d.bc} = 0.3128$$

$$R_{b.ef} = 0.9549$$

$$R^2_{b.ef} = 0.9120$$

$$R_{d.ef} = 0.3408$$

$$R^2_{d.ef} = 0.1160$$

The correlation coefficients between interest rate on deposit and amount deposited,  $R_{ab}$  is 0.8976 and between interest rate on lending and amount loaned,  $R_{cd}$  is -0.3456 which means that increased supply of deposit brings increment in interest rate on deposit and increased interest rate on lending brings decrement in amount loaned. The coefficient of determination,  $R^2_{ab}$  of 0.2345 shows that 23.45% of total variation in interest rate on deposit is the effect of amount supplied (deposit). Similarly, the coefficient of determination between c and d,  $R^2_{cd}$  shows that 23.21% of total variation in amount loaned is the effect of interest rate on lending.

**Table 4.5**  
**Interest Rate on Deposit and Lending of NABIL Bank**

Fiscal Year	Deposit Amount (Rs. in million) "a"	Interest Rate on Deposit "b"	Loan amount (Rs.in Million) "c"	Interest Rate on Lending "d"	Inflation Rate "e"	Risk Free Rate "f"
2007/08	14586.8	2.80	11078.0	9.60	4.0	2.93
2008/09	19348.4	3.20	13021.3	9.35	4.5	2.50
2009/10	23342.4	3.20	15657.1	9.54	4.6	2.84
2010/11	31915	3.20	21514.6	9.35	5.0	3.0
2011/12	33848.5	3.25	25298.2	9.40	5.25	3.25

Source: Annual Reports of NABIL Bank Ltd. and Various Bank and Financial Statistics Published by NRB (mid-Jan2012)

*Note:* Interest rate on deposits is taken as the average of the rates on various types of deposits and interest rate on lending is taken as the average of quoted rates for various sectors.

Table 4.5 shows the amount of deposit, interest rate on deposit, amount of loan advance and interest rate on lending of NABIL Bank for five fiscal years from 2007/08 to 2011/12. Similarly, it also contains the inflation rate and risk-free rate on interest of the same period. The correlation coefficients between variables have been presented in table 4.6 and it also contains the coefficients of multiple correlations. To test the significance correlation coefficient, t-values have also been presented. The correlation coefficient between amount deposited and interest rate on deposit,  $r_{ab}$ , is 0.1037. This means that these two variables are less correlated and the relationship is positive. The positive relationship shows that when deposit increases (i.e. supply of fund) the interest rate i.e. return on deposit also increases. The coefficient of determination between these two variables  $r^2_{ab}$ , is 0.0107 which means that total variation in interest rate on deposit has been explained by supply of deposits to only 1.07 percent and remaining is the effect of other factors. The t-value for testing the significance of the correlation coefficient between variables, 0.18 is significance of the correlation percent level of significance for 3 degree of freedom, 3.18. Since, the calculated value is significantly smaller than table value, the conclusion is drawn that correlation coefficient between variables is significant. This means that the interest rate on deposit and deposit amount of NABIL are not significantly correlated and increase in the supply of fund i.e. deposit brings the increment in interest rate on deposit.

**Table 4.6**  
**Correlation Analysis of NABIL Bank Ltd.**

Variables	Coefficient of Correlation	coefficient of determination	T-statistics	Table Value	Remarks
$r_{ab}$	0.1037	0.0107	0.18	3.18	Insignificant
$r_{bd}$	0.2410	0.0580	0.43	3.18	Insignificant
$r_{cd}$	-0.4157	0.1728	0.79	3.18	Insignificant
$r_{be}$	-0.2148	0.0461	0.38	3.18	Insignificant
$r_{bf}$	0.6159	0.3793	0.56	3.18	Insignificant
$r_{de}$	-0.9606	0.9007	5.98	3.18	Significant
$r_{df}$	0.7718	0.5956	2.10	3.18	Insignificant

Source: Various bank and financial statistics published by NRB (Mid-Jan 2012)

### Multiple Correlations

$$R_{b.ad} = 0.2473$$

$$R_{d.bc} = 0.5264$$

$$R_{b.ef} = 0.7522$$

$$R_{d.ef} = 0.9609$$

### Coefficient of multiple determinations

$$R^2_{b.ad} = 0.0612$$

$$R^2_{d.bc} = 0.2772$$

$$R^2_{b.ef} = 0.5659$$

$$R^2_{d.ef} = 0.9234$$

The correlation coefficient between amounts of loan –advanced and interest rate on lending,  $R_{cd}$ , is -0.4157. This means that the variables are negatively correlated. This negative correlation coefficient reveals that when interest on lending decreases, the amount of loan advanced increases. Here the amount of loan is dependent variable which is affected by interest rate on lending. The coefficient of determination  $R^2_{cd}$ , is 0.1728 which means that 17.28 percent of total variation in dependent variable (amount loaned) has been explained by the variation in independent variable (interest rate on lending) and remaining is due to the effect of other factors .T-value for testing the significance of the correlation coefficient between variables c and d is 0.79. Since the calculated t-value 0.79 is significantly less than the tabulated t-value at 5 percent level of significance for 3 degree of freedom (3.18), correlation coefficient is not significant which means that the variables (interest rate on lending and amount loaned) are not significantly correlated. An increase (decrease) in interest rate on lending brings the decrement (increment) in amount loaned by NABIL.

Similarly, the correlation coefficient between interest rate on lending and interest rate on deposit,  $R_{bd}$  is 0.2410. This shows that there is a positive correlation between these two variables. The positive correlation shows that an increment in interest rate on deposit brings almost same proportion increment in interest on lending because the correlation coefficient is positive. The coefficient of determination between these two variables,  $R^2_{bd}$  is 0.0580 which has a meaning that 5.80 percent of total variation in the interest rate on lending has been explained by the variation in interest rate on deposit and remaining is due to the effect of other factors. T-value for testing the significance of the correlation coefficient is 0.43 which is smaller than the table value at 5 percent level of significance for 3 degree of freedom is 3.18. Since the calculated value is less than the table value, the correlation coefficient is most significant which means that change in interest rate on lending has not any significant i.e. the change in interest rate on deposit brings no change in interest rate on lending significantly.

Inflation is also considered as an affecting as an affecting factor of interest rate. Hence the effect of inflation has also been analyzed. The correlation coefficient between interest rate on deposit and inflation rate,  $R_{be}$  is -0.2148 which shows that there is negative correlation between these two variables. When inflation increases, the interest rate on deposit offered by NABIL decreases. The coefficient of determination,  $R^2_{be}$ , is 0.0461 means that, of the total variation in dependent variable (interest rate on deposit) is explained by the variation in independent variable (inflation rate) to 4.61% and other variables are responsible for remaining variation. T-value for testing the significance of the correlation coefficient is 0.38 which is smaller than the table value. Since the calculated value is smaller than the tabulated for 3 degree of freedom at 5 percent level of significance, 3.18, the variables are not significantly correlated. Even there exists positive correlation, but it is statistically not significant. So we can say that change in inflation has not any significant impact on interest rate on deposit of NABIL.

Similarly the impact of risk-free rate on interest on deposit has been examined through the correlation analysis. The correlation coefficient between these variables,  $R_{bf}$  is 0.6159 which shows the positive correlation between variables and tells that increase (decrease) in interest rate offered on deposit is caused by increase (decrease) in risk-free rate. The coefficient of determination of 0.3793 between variables,  $R^2_{bf}$ , shows that 37.93% of total variation in interest rate on deposits has been explained by the variation in risk-free rate and remaining is due to the effect of other factor.

The t-value for testing the significance of the correlation coefficient is 0.56 which is smaller than the table value at 5 percent level of significance for 3 degree of freedom, 3.18 since, the calculated value is smaller than table value; the coefficient of correlation is statistically insignificant. Hence we conclude that the variables, interest rate on deposit and risk-free rate are not correlated even if analysis shows the positive correlation coefficient of 0.6159.

The correlation coefficient of -0.9606 between inflation and interest rate on lending,  $r_{de}$ , shows that the variables are correlated and relationship is negative. Increase in inflation causes decrease in interest rate on lending. The coefficient of determination between variables,  $r^2_{de}$ , is 0.9227 which shows that 92.27% of total variation in

interest rate on lending of NABIL has been explained by inflation rate and remaining is due to the effect of other factors. The t-value for testing the significance of correlation coefficient is 5.98 which are greater than table value at 5 percent level of significance for 3 degree of freedom, 3.18, as the calculated value is greater than table value, the correlation coefficient is significant which means that increase (Decrease) on inflation  $R_{de}$  causes also increase (decrease) in the interest rate on lending.

Another affecting factor of interest rate is risk-free rate of interest on 91 days Treasury bill rate. Whether the impact of risk-free rate in interest on lending is significant or not has been analyzed. The correlation between variables,  $r_{df}$ , shows a positive coefficient of 0.7718 which shows that there exist the positive correlation between these variables. The coefficient of determination between these variables is 0.5956 which tells us that 59.56% of total variation in interest on lending is the effect of risk-free rate and remaining is the effect of other factors. The test statistics (t-value) for testing the significance of correlation coefficient is 2.10 which is smaller than tabulated value at 5 percent level of significance for 3 degree of freedom, 3.18. Since, the calculated value is smaller than tabulated value; the correlation coefficient is not significant. Even if analysis shows a positive correlation, we can say that variables are not significantly correlated and risk-free rate of interest has not any significant impact on interest rate on lending charged by NABIL because the coefficient of correlation is statistically insignificant.

To know the effect of two factors at once on interest rate, multiple correlations has been compute and presented at the lower part of table 4.4, the multiple correlation coefficient between interest rate on deposit and amount deposited and interest rate on lending taking interest rate on deposit as independent and other two as independent  $R_{b,ad}$  is 0.2473. The coefficient of multiple determinations,  $R^2_{b,ad}$  is 0.0612 which shows that variation to the extent of 6.12% in dependent variable has been explained by two independent variables and remaining is by other factors. Similarly, the multiple correlation coefficient between interest rate on deposit and inflation rate and risk-free rate of interest taking interest rate on deposit and other two as independent,  $R_{b,ef}$  is 0.7522. The coefficient of multiple determinations,  $R^2_{b,ef}$  is 0.5659 which shows that 56.59% of total variation in dependent variables is the effect of independent variables and remaining is the effect of other factors.

On the other hand, the multiple correlation coefficients between interest rate on lending and amount loaned and interest rate on deposit assuming interest rate on lending as dependent variable and other two as independent variables,  $R_{d.bc}$  is 0.5264. The coefficient of multiple determinations.  $R^2_{d.bc}$  is 0.2772 means that 27.72% of total variation in interest rate on lending has been explained by tow independent variables and remaining is due to the effect of other variables. Similarly, the multiple correlation coefficient between interest rate on lending and inflation rate and risk-free rate; assuming interest rate on lending  $R_{d.ef}$  is 0.9609. The coefficient of multiple determinations is  $R^2_{d.ef}$  is 0.9234, which means that 92.34% of total variation in dependent variable is the effect of other two independent variables and remaining is the effect of other factors.

**Table 4.7**  
**Interest Rate on Deposit and Lending of HFL**

Fiscal Year	Deposit Amount (Rs. in million) "a"	Interest Rate on Deposit "b"	Loan amount (Rs.in Million) "c"	Interest Rate on Lending "d"	Inflation Rate "e"	Risk Free Rate "f"
2007/08	120.41	2	84.9185	7.60	4.0	2.93
2008/09	274.93	3.20	191.25	8.35	4.5	2.50
2009/10	330.42	3.20	337.36	9.54	4.6	2.84
2010/11	389.78	3	540.35	8.53	4.6	2.31
2011/12	407.1	3	1047.7	9.25	4.8	2.75

Source: Annual Reports of HFL and various bank financial statistics published by NRB (mid-Jan 2012)

*Note:* Interest rate on deposits is taken as the average of the rates on various types of deposits and interest rate on lending is taken as the average of quoted rates for various sectors.

Deposit amount, interest rate on deposit, amount of loan advance and interest rate on lending of HFL for five fiscal years from 2007/08 to 2011/12 are presented in table 4.7 similarly; it also contains the inflation rate and risk-free rate on interest of the same period. The correlation coefficients between variables have been presented in table 4.8 and it also contains the coefficients of multiple correlations. To test the significance correlation coefficient, t-values have also been presented.

**Table 4.8**  
**Correlation Analysis of HFL**

Variables	Coefficient of Correlation	coefficient of determination	T-statistics	Table Value	Remarks
$r_{ab}$	0.8976	0.2345	3.10	3.18	Insignificant
$r_{bd}$	0.3456	0.0879	0.50	3.18	Insignificant
$r_{cd}$	-0.3456	0.2321	0.89	3.18	Insignificant
$r_{be}$	0.5346	0.1452	0.23	3.18	Insignificant
$r_{bf}$	0.8543	0.2345	2.91	3.18	Insignificant
$r_{de}$	-0.3024	0.0789	3.76	3.18	Significant
$r_{df}$	0.1222	0.0333	0.76	3.18	Insignificant

Source: Various bank and financial statistics published by NRB (Mid-Jan 2012)

**Multiple Correlations**

$$R_{b.ad} = 0.9728$$

$$R_{d.bc} = 0.5592$$

$$R_{b.ef} = 0.9549$$

$$R_{d.ef} = 0.3408$$

**Coefficient of multiple determinations**

$$R^2_{b.ad} = 0.9464$$

$$R^2_{d.bc} = 0.3128$$

$$R^2_{b.ef} = 0.9120$$

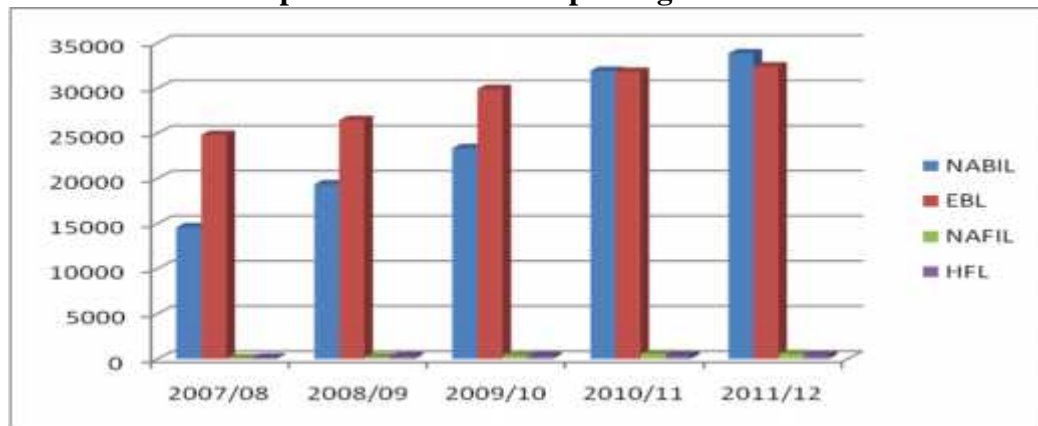
$$R^2_{d.ef} = 0.1160$$

The correlation coefficients between interest rate on deposit and amount deposited,  $R_{ab}$  is 0.8976 and between interest rate on lending and amount loaned,  $R_{cd}$  is -0.3456 which means that increased supply of deposit brings increment in interest rate on deposit and increased interest rate on lending brings decrement in amount loaned. The coefficient of determination,  $R^2_{ab}$  of 0.2345 shows that 23.45% of total variation in interest rate on deposit is the effect of amount supplied (deposit). Similarly, the coefficient of determination between c and d,  $R^2_{cd}$  shows that 23.21% of total variation in amount loaned is the effect of interest rate on lending.

**Table 4.9**  
**Deposit Amount of Sample Organizations (Rs. in million)**

Fiscal Year Companies	2007/08	2008/09	2009/10	2010/11	2011/12
<b>NABIL</b>	14586.8	19348.4	23342.4	31915.0	33848.5
<b>EBL</b>	24831.1	26456.2	29905.8	31805.3	32396.0
<b>NAFIL</b>	66.410	174.937	330.420	514.860	522.5
<b>HFL</b>	120.41	274.93	330.42	389.78	407.1

**Figure 4.1**  
**Deposit Amount of Sample Organizations**



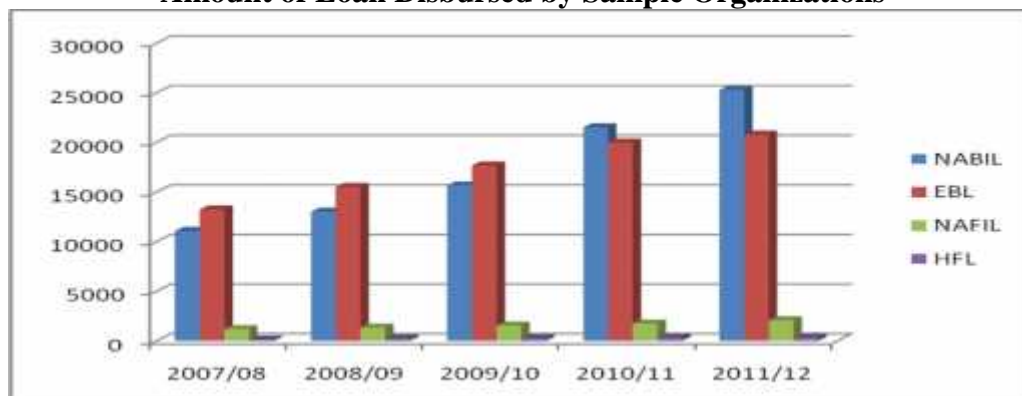
The deposit amount of NABIL Bank has been increased by 132.05% from Fiscal Year 2007/08 to 2011/12. In the same year, deposit of EBL has been increased by 30.47%. Similarly, deposit of NAFIL and HFL is increased by 1279.46% and 147.12% respectively as compared to Fiscal Year 2007/08. All the deposit of Commercial Banks and Finance companies from fiscal Year 2007/08 to 2011/12 is in increasing trend.

Finance companies has low amount of deposits although they have higher percentage of deposits.

**Table 4.10**  
**Amount of Loan Disbursed by Sample Organizations (Rs. in million)**

Fiscal Year \ Companies	2007/08	2008/09	2009/10	2010/11	2011/12
<b>NABIL</b>	11078.0	13021.3	15657.1	21514.6	25298.2
<b>EBL</b>	13245.1	15515.7	17672.0	19985.2	20775.7
<b>NAFIL</b>	1191.25	1337.36	1540.35	1742.24	2065.5
<b>HFL</b>	131.39	220.57	259.26	369.5	374.7

**Figure 4.2**  
**Amount of Loan Disbursed by Sample Organizations**

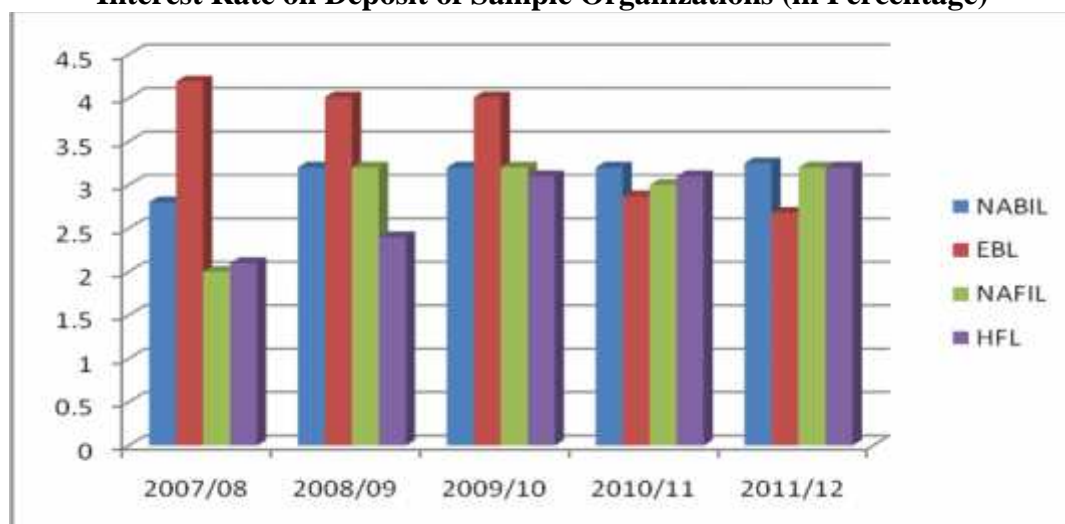


In the figure no.4.2, we can see that the loan amount of NABIL, EBL, NAFIL, HFL are in increasing order. This indicates that investment is increasing in the same ratio.

**Table 4.11**  
**Interest Rate on Deposit of Sample Organizations (in Percentage)**

Fiscal Year \ Companies	2007/08	2008/09	2009/10	2010/11	2011/12
<b>NABIL</b>	2.8	3.2	3.2	3.2	3.25
<b>EBL</b>	4.19	4.01	4.01	2.87	2.68
<b>NAFIL</b>	2	3.20	3.20	3	3.2
<b>HFL</b>	2.1	2.40	3.1	3.1	3.2

**Figure 4.3**  
**Interest Rate on Deposit of Sample Organizations (in Percentage)**

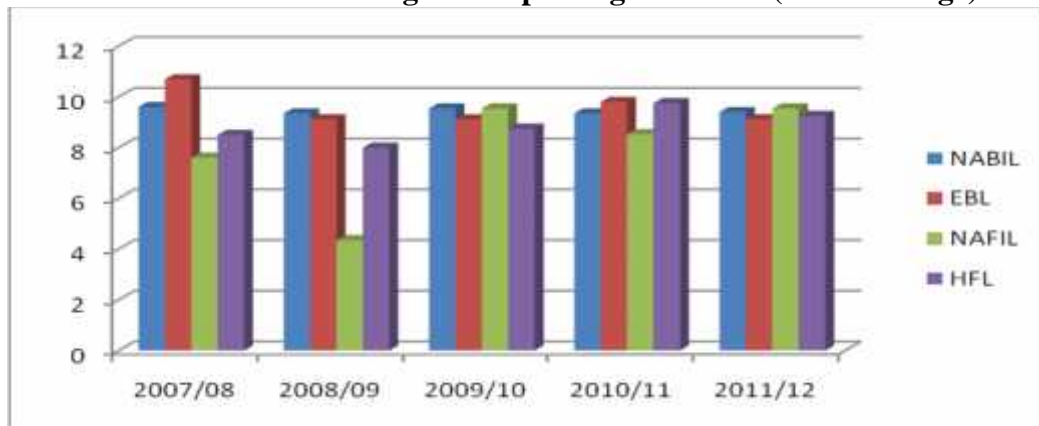


Interest rates on deposits are comparatively high in Finance Companies compared to commercial banks.

**Table 4.12**  
**Interest Rate on Lending of Sample Organizations (in Percentage)**

Fiscal Year \ Companies	2007/08	2008/09	2009/10	2010/11	2011/12
<b>NABIL</b>	9.60	9.35	9.54	9.35	9.4
<b>EBL</b>	10.69	9.12	9.12	9.8	9.12
<b>NAFIL</b>	7.60	4.35	9.54	8.53	9.54
<b>HFL</b>	8.5	8	8.75	9.75	9.25

**Figure 4.4**  
**Interest Rate on Lending of Sample Organizations (in Percentage)**



Interest rates on lending are comparatively high in commercial banks compared to Finance Companies. Interest rate on lending of EBL is higher than NABIL and comparatively very high than Finance Companies.

### 4.3 Major Findings of the Study

The study aim was to show the relationship between the interest rates and their determining factors. From the study of sample organizations following major findings have been drawn. Financial performances of 2 commercial banks and 2 Finance company are as follows.

*NABIL Bank Ltd:* Amount of loan disbursed and interest rate on lending as well interest rate on deposit and inflation rate are negatively correlated and Interest rate on lending and inflation rate is highly negative correlated and its coefficient is statistically significant. Remaining all the coefficients is statistically insignificant.

*Everest Bank Ltd:* Interest rate on deposit and lending with risk-free rate are positively correlated and both the coefficient is also statistically insignificant. Interest rate on deposit and lending with inflation are negative correlated and their coefficients are statistically insignificant. Interest rate on deposit and lending are highly positively correlated and Amount of deposit and interest rate on deposit is highly negatively correlated and both the coefficient is statistically significant.

*Narayani Finance Ltd:* we have found that Narayani Finance Ltd is providing higher loan than its deposit. Interest rates on deposit and lending, interest rate deposit and risk-free rate are highly positively correlated and all the three coefficients are statistically significant. Except interest rate on lending and amount of loan disbursed, the other entire correlation coefficients are negatively correlated and are statistically insignificant.

*Himalaya Finance Ltd:* we have found that Amount of deposit and interest rate on deposit is highly negatively correlated and both the coefficient is statistically significant. Interest rate on lending and inflation rate is highly negative correlated and its coefficient is statistically significant. Remaining all the coefficients is statistically insignificant.

#### **Summary Findings**

<b>Orgn's</b>	<b>R<sub>cd</sub></b>	<b>R<sub>bd</sub></b>	<b>R<sub>be</sub></b>	<b>R<sub>bf</sub></b>	<b>R<sub>de</sub></b>	<b>R<sub>df</sub></b>	<b>R<sub>ab</sub></b>
<b>NABIL</b>	0.2410	-0.4157	-0.2148	0.6159	-0.9606	0.7718	0.1037
<b>EBL</b>	0.9950	-0.7868	-0.5483	0.7080	-0.5169	0.6989	-0.9123
<b>NAFIL</b>	0.3456	-0.3456	0.5346	0.8543	-0.3024	0.1222	0.8976
<b>HFL</b>	0.3456	-0.3456	0.5346	0.8543	-0.3024	0.1222	0.8976

a = Amount of Deposit

d= Interest Rate of Lending

b= Interest Rate on Deposit

e= Inflation Rate

c= Amount of Loan-Advanced

f= Risk-Free Rate on Interest

## **CHAPTER-V**

### **SUMMARY, CONCLUSION AND RECOMMENDATIONS**

This chapter includes summary, a brief account of the whole study findings and conclusion drawn from the analysis of interest rate behaviors in Nepalese Banking sector and finance companies and suggestion or recommendations to the authorities to solve the problems on the basis of findings.

#### **5.1 Summary**

Natural resources are being remained unused due to the lack of financial and technical know-how. Circulation of money from savers to be must for the economic development. Financial system, as intermediary, facilitates the circulation of fund by collecting scattered fund from savers via; household (individuals and families, business and government sector of the economy) and provides the collected fund to users, business and government sectors of the economy and provide the collected fund family) system as an organized sector in Nepal, to develop the economy and to help to rise the living standard of people through mobilizing capital, was started after the advent of Nepal Bank Limited in 1994 B.S. as a joint venture between government and private sector.

Currently there are 32 commercial Banks and 79 Finance Companies in Nepal. Financial institutions survive by making profit which is interest spread i.e. difference between interest received and interest charged. Interest is the payment made for the money and interest rate is the amount of interest paid per unit of time expressed as a percentage of the amount borrowed. What are the responsible factors for determining the interest rate in Nepalese Financial System/ Market was the main purpose of this study. Nepal Rastra Bank, as central bank is the authority to fix the interest rate on deposits and loans of commercial banks and other financial institutions in Nepal since its establishment in 2013. After the restoration of democracy and liberal policy adopted by the government, many financial institutions have been established. NRB also gave freedom to fix interest rate that they charged and offer. But NRB use to issue directive regarding overall performance of financial institutions. Here an attempt is made to analyze the factors affecting the rate of interest. Brief introduction of

sample organization, statement of problem, significance of the study, research hypothesis, limitations of the study, chapter Plan are also the components of first chapter.

In second chapter, theoretical review has been made. Different views about interest, functions of interest and theories determining interest rates have reviewed in this chapter which offers insight into the functioning of the financial system. The classical theory of interest emphasizes saving and investment demand as interest rate determining forces. While the liquidity preference theory points to the demand and supply of cash balances. Loan able fund theory views interest rate as determined by the total demand for and supply of credit, while the rational expectations theory emphasizes the roles played by public expectations regarding interest rate, economy and the impact of new information on the movement of interest rates determination examined in this chapter. In this chapter, we consider various factors that cause the interest rate on one security or loan. The factor includes expectation of inflation, the maturity or length of a security or of loan, the risk of borrower default, taxes etc. If adjust upward the nominal interest rate on a loan to achieve their real rate of return. According to fisher effect, if expected inflation rates rises, the nominal interest rate on financial assets must also rise by exactly the same amount, point for point. The yield curve or term structure of interest rate expresses the relationship between the annual rate of return (interest rate) on a financial instrument and its term to maturity when all other factors are held constant. One curves traced in this chapter-the unbiased expectation hypothesis argues that yield reflect the interest rate expectations of the market place and hint at the direction, if not the magnitude, of future rate movements. Contending theories such as the liquidity premium view, the preferred habitat theories and the segment markets arguments, contend that other factors in addition to expectations influenced the yield curved or term structure of interest rate. Regardless of which theory borrow a substantial portion of their funds at the short end of the maturity spectrum and lend heavily at longer maturities.

The price of security and its yield (interest/ rate of return) are inversely related. A rise yield implies a decline in price and vice-versa. The intelligent investor must learn to distinguish one method from another because effective interest rate according to method applied for calculating interest .We have examined four different methods in

chapter two. Interest rate also affected by economic growth, budget deficit, money supply etc. Specific risk and cost factors affecting interest rate on debt security are marketability, liquidity, default risk, repayment risk, reinvestment risk, taxability, servicing cost, exchange rate risk etc. The study on this topic is rarely available, some thesis and independent studies relating to some aspect of this study have reviewed in this chapter.

Research design used is analytical and descriptive. Out of the financial system, four banking organizations regarding of all groups has been taken as sample. Primary data are collected using questionnaire; interview and secondary data are collected from various publications. Collected data are presented in tabular and graphic form and analyzed using various statistical tools like mean, correlation coefficient, t-statistics, and coefficient of determination in chapter four. Mainly the relationship between factors assumed to be influencing the interest rate on deposit and lending has been analyzed using correlation. Some primary data are analyzed in descriptive form and conclusion has been drawn which are presented in following sections.

## **5.2 Conclusion**

From the analysis of data following conclusions has been drawn.

1. The correlation coefficient between interest rate on deposit and amount of deposit ( $r_{ab}$ ) of EBL is highly negative whereas of NABIL and NAFIL is positive. It ranges from -0.9065 among the sample organizations. All the correlation coefficients are statistically significant except NABIL. Here, we could see that NABIL have proved the theoretical concept that there must be positive correlation meaning that higher interest rate on deposit attracts more deposit. HFL and EBL show that interest rate (price of deposit) as dependent, which is determined by supply of fund (deposit). Thus, negative correlation shows that when supply increases, price (interest rate) decreases.
2. One variable assumed to be affecting interest rate on lending is amount loaned i.e. demand of fund. The correlation coefficient between amount loaned and interest rate on lending ( $r_{cd}$ ) is generally negative except. It ranges from -0.7868 to 0.7157. The correlation coefficient ( $r_{cd}$ ) of EBL and HFL is positive means that less amount is demanded at lower rate. But the correlation is not significant. This positive relation is due to other factors. NBL is suffering from financial

sickness due to the slackness is recovery of loan and lack of fund to lend. But the negative correlation of other organizations means that more amounts is demanded at lower interest. In general, there should be positive relationship between interest rate on lending and amount loaned. But the 75% of the sample organizations show that amount of loan is affected by the interest rate rather than affecting the interest rate by amount demanded.

3. The relationship between interest rate on deposit and on lending ( $r_{bd}$ ) for all sample organizations is positive including highly positive correlation of EBL (i.e. 0.009950). The correlation coefficient ranges from 0.2410 to 0.9950 among sample organizations. Both EBL and HFL have statistically significant correlation coefficients whereas NABIL and NAFIL have no statistically significant correlation coefficients. In one hand, positive correlation shows that rates are dependent to each other i.e. variation in one rate also brings variation in other rate in the same direction. Therefore, both interest rates are determining factor of each other whereas in other hand negative correlation indicates that variation in one rate brings the variation theoretically.
4. The relationship between interest rate on deposit and inflation rate ( $r_{be}$ ) among the sample organizations is negative. Here it ranges from -0.5483 to -0.2148. All the correlation coefficients of samples statistically insignificant. Theoretically, there should be positive correlation between these two variables, according to Fisher effect. But the interest rate in Nepalese Banking sector is highly affected by inflation. Therefore, these sample organizations give correlation coefficients instead of positive correlation.
5. The correlation between interest rate on lending and inflation ( $r_{de}$ ) is negative. The coefficient of correlation among sample organizations between -0.9606 to -0.3079. Most of the coefficient are insignificant expect NABIL whose correlation coefficient is significant. Even though, theoretically there should be a positive rate on lending in Nepalese Banking sectors is affected by inflation to some extend. Due to this reason, correlation coefficient of all the sample organizations has become to this reason, correlation coefficient of all the sample organizations has become negative.
6. The correlation coefficient between interest rate on deposit and amount of deposit ( $r_{ab}$ ) of EBL and NAFIL is highly negative whereas of NABIL and HFL is positive. It ranges from -0.234 to 0.6065 among the sample organizations.

Risk-free rate of interest. Theoretically, there should be positive correlation between these two variables which has proved by our sample organizations to some extent.

7. The relationship between interest rate on lending and risk-free rate ( $r_{df}$ ) is positive. The coefficient of correlation ranges from 0.1507 to 0.9875 among sample organizations. All the coefficients are statistically insignificant. This means that nominal interest rate on lending in Nepalese banking sector is least affected by risk-free rate of interest.
8. Other specific factors influencing interest rate on lending are performance of the borrowing company, collateral base, goodwill and reputation of borrower, loyalty, size of business, volume of loan, bargaining power etc.
9. Nepalese Banking sector is also affected by long-term economic factors like; economic and business growth rate, reduction in lending opportunity due to terrorism, conflict, insecurity etc. according to the respondents. Because of unavailability of investment opportunities, Nepalese Banking sectors are suffering from over liquidity in recent years as shown by increasing trend of deposit and decrease rate on such deposits.
10. In some years, there is negative interest rate on deposit i.e. interest rate on deposit is less than risk-free rate on interest. Similarly, there is negative relationship between interest rate and inflation which means that while inflation is increasing interest rate is decreasing.
11. Generally, Bank charges high interest rate on lending than the Finance Companies. Here, we find to prove it. Finance Companies collect less deposit than savings.

### **5.3 Recommendations**

As in other developing countries, banking and financial sectors in Nepal are also growing in recent stage. Nepal has committed itself to economic liberalization after correctly recognizing that financial sector reform is an integral part of this process. The role of Banking sector should be effective towards the mobilizing the funds from savers to users.

In view of above facts and figure, the financial performance of 2 Commercial banks and 2 financial companies can be listed below:

- a) As the NRB has authority to control and stimulate the financial system, especially money market, it is also information source for the public and other concerned parties. So, NRB should publish information in time and also should increase its information dissemination activities to provide knowledge to the depositors, lenders, and other concerned parties so that they can make their decisions correctly.
- b) The role of government in market- oriented economy is to provide security and to develop infrastructure. Our analysis shows that economic activities are slacking down due to the political activities prevailed in country. So, the investment opportunities (lending opportunities) to the financial intermediaries have been curtailed and they are facing over liquidity problem as shown by decreasing interest rate on deposit and reduced deposit requirements. Therefore, the government should try to maintain the political stability peace for the development of the banking sectors.
- c) Government and NRB should formulate suitable policies to foster the development of money market and to motivate financial intermediaries.
- d) Although, there is almost positive correlation between interest rate on deposit and lending (decrement in one rate is almost proportionate rate on lending and deposit) since to be higher. Hence, institutions are suggested to maintain reasonable spread between interest rates so that more lending and deposits can be stimulated.
- e) Lending institutions should introduce new customer-oriented schemes of lending and borrowings so that more lending can be promoted and over liquidity problem may be solved.
- f) Political stability is one of a key factor for the growth of financial activities. Financial institution might play a vital role once the political situation improves.
- g) Since, Nepal is considered as rich in water resources, the sampled companies would get benefit to explore their lending in hydro sectors also.
- h) Considering the financial performances of the said financial institutions, they are capable enough to invest and retain deposit as seen in their financial indicators. Effective interest rate differs with coded interest rate according to the different methods used in calculating used in calculating and compounding interest borrowers and depositor are suggested to be awarded.

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## APPENDIX-I

**For Calculation of Interest Rate on Deposit and Interest Rate on Lending of Sample Organizations:**

**Calculation of Average Interest Rate on Deposit of HBL: (rate in percentage)**

Year	Saving	Average	Fixed						
			14 days	1 month	2 months	3 months	6 months	1 year	2 Years/above
<b>2007/08</b>	4.0	4.19	2.30	3.30	-	4.00	4.25	5.50	6.00
<b>2008/09</b>	3.75	4.01	2.30	3.30	-	3.75	4.00	5.25	5.75
<b>2009/10</b>	3.75	4.01	2.30	3.30	-	3.75	4.00	5.25	5.75
<b>2010/11</b>	3.34	2.87	1.75	2.00	-	2.50	3.00	3.75	3.75
<b>2011/12</b>	2.01	2.68	1.75	2.00	-	2.50	3.00	3.75	3.75

$$\begin{aligned} \text{Average Interest rate} &= (2.01+1.75+2.0+2.50+3.0+3.75+3.75)\div 7 \\ &= 18.76\div 7, =2.68 \end{aligned}$$

**Calculation of Average Interest Rate on Lending of HBL (Credit of HBL)**

Sector	2007/08	2008/09	2009/10	2010/11	2011/12
Overdraft	11.25-13.75	10.5-13.25	10.5-13.25	9.0-12.0	9.0-12.0
Export Credit	9-9.5	9-9.5	9-9.5	8.25-8.75	8.25-8.75
Import L/C	9.75-12.75	9.25-12.25	9.25-12.25	7.4-11.75	7.4-11.75
Against FDR	5.5-7.5	5.25-8.25	5.25-8.25	3.75-6	3.75-6
Against HMG Bond	8.00	8.00	8.00	5.0-6	5.0-6
Against BG/CG	9.5-10.5	9.5-10.5	9.5-10.5	8.25-9.25	8.25-9.25
Against other Guarantee	10.50	10.50	10.50	-	-
Industrial Loan	9-13.5	9.0-13	9.0-13	-	-
Commercial Loan	9-13.75	9-13.25	8.25-12.5	8.25-12.5	8.25-12.5
Priority Sector	12-13.0	12-13.0	12-13.0	11-12.25	11-12.25
Term Loan	12.5-13.5	12-13.0	12-13.0	9.5-11.75	9.5-11.75
Working Capital	10.75-13.25	10.5-13	10.5-13	-	-
Hire Purchase	12-13.0	11.5-13	11.5-13	9-11.5	9-11.5
Others	8.5-16.25	8.5-15.75	8.5-15.75	6-13.5	6-13.5
<b>Average</b>	<b>10.83</b>	<b>10.69</b>	<b>10.69</b>	<b>9.12</b>	<b>9.12</b>

**Calculation of Correlation Coefficient between deposit amount and Average Interest Rate on Deposit of HBL**

Year	Deposit Amount (a)	Interest Rate on Deposit (b)	ab	a <sup>2</sup>	b <sup>2</sup>
2007/08	24831.1	4.19	104042.309	616583527.2	17.5561
2008/09	26456.2	4.01	106089.362	699930518.4	16.0801
2009/10	29905.8	4.01	119922.258	894356873.6	16.0801
2010/11	31805.3	2.87	88418.734	1011577108	8.2369
2011/12	32396	2.68	86821.28	1049500816	7.1824
<b>Total</b>	a=145394.4	b=17.76	ab= 505293.943	a <sup>2</sup> = 4271948843	b <sup>2</sup> =65.1356

Correlation coefficient between deposit amount (a) and Interest Rate on Deposit (b)

$$(r_{ab}) = \frac{n \sum ab - \sum a \cdot \sum b}{\sqrt{n \sum a^2 - (\sum a)^2} \sqrt{n \sum b^2 - (\sum b)^2}}$$

Where n = no. of fiscal years=5

a= Sum of Variable "a"= 145394.4

b= Sum of Variable "b"= 17.76

ab= Summarization of various "a" multiply "b" = 505293.943

a<sup>2</sup>= Sum of squares of Variables "a"= 4271948843

( $\sum a$ )<sup>2</sup> = Whole square of Summarization "a" Variables=21139531551

( $\sum b$ )<sup>2</sup> = Whole square of Summarization "b" Variables=315.4176

**Calculation of Correlation Coefficient between Deposit Rate and Lending Rate**

Year	Deposit Rate (b)	Lending Rate (d)	bd	b <sup>2</sup>	d <sup>2</sup>
2007/08	4.19	10.83	45.3777	17.5561	117.2889
2008/09	4.01	10.69	42.8669	16.0801	114.2761
2009/10	4.01	10.69	42.8669	16.0801	114.2761
2010/11	2.87	9.12	26.3568	8.3521	83.1744
2011/12	2.68	9.12	24.4416	7.1824	83.1744
<b>Total</b>	b=17.76	d=50.45	bd=181.9099	b <sup>2</sup> =65.2508	d <sup>2</sup> =512.1899

Test of significance of correlation coefficient between deposit rate and lending rate

t = Statistics under null hypothesis;

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

**Calculation of Correlation Coefficient between Lending Amount and Average Interest Rate on Lending of HBL**

Year	Lending Amount (c)	Lending Rate (d)	cd	c <sup>2</sup>	d <sup>2</sup>
2007/08	13245	10.83	143443.35	175430025	117.2889
2008/09	15515.7	10.69	165862.833	240736946.5	114.2761
2009/10	17672	10.69	188913.68	312299584	114.2761
2010/11	19985.2	9.12	182265.024	399408219	83.1744
2011/12	20775.7	9.12	189474.384	431629710.5	83.1744
<b>Total</b>	c=87193.6	d=50.45	cd=869959.271	c <sup>2</sup> =1559504485	d <sup>2</sup> =512.1899

Test of significance of correlation coefficient between deposit rate and lending amount and Interest rate Lending of HBL.

t = Statistics under null hypothesis;

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

**Calculation of Correlation Coefficient between Average Interest Rate on deposit and Inflation Rate of HBL**

Year	Deposit Rate (b)	Inflation Rate (e)	be	b <sup>2</sup>	e <sup>2</sup>
2007/08	4.19	2.9	12.151	17.5561	8.41
2008/09	4.01	4.8	19.248	16.0801	23.04
2009/10	4.01	4	16.04	16.0801	16
2010/11	2.87	4.5	12.915	8.2369	20.25
2011/12	2.68	4.6	12.328	7.1824	21.16
<b>Total</b>	b=17.76	d=20.8	be=72.682	b <sup>2</sup> =65.1356	e <sup>2</sup> =88.86

Test of significance of correlation coefficient between deposit rate and lending amount and Interest rate Lending of HBL.

t = Statistics under null hypothesis;

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

**Calculation of Correlation Coefficient between Average Interest Rate on deposit and Risk free Rate of HBL**

Year	Deposit Rate (b)	Risk Free Rate (f)	bf	b <sup>2</sup>	f <sup>2</sup>
2007/08	4.19	4.71	19.7349	17.5561	22.1841
2008/09	4.01	3.48	13.9548	16.0801	12.1104
2009/10	4.01	2.93	11.7493	16.0801	8.5849
2010/11	2.87	2.5	7.175	8.2369	6.25
2011/12	2.68	2.84	7.6112	7.1824	8.0656
<b>Total</b>	b=17.76	f=16.46	bf=60.2252	b <sup>2</sup> =65.1356	f <sup>2</sup> =57.195

Test of significance of correlation coefficient between deposit rate and lending amount and Interest rate Lending of HBL.

t = Statistics under null hypothesis;

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

**Calculation of Correlation Coefficient between Lending Rate and Inflation Rate of HBL**

Year	Lending Rate (d)	Inflation Rate (e)	de	d <sup>2</sup>	e <sup>2</sup>
2007/08	10.83	2.9	31.407	117.2889	8.41
2008/09	10.69	4.8	51.312	114.2761	23.04
2009/10	10.69	4	42.76	114.2761	16
2010/11	9.12	4.5	41.04	83.1744	20.25
2011/12	9.12	4.6	41.952	83.1744	21.16
<b>Total</b>	d=50.45	e=20.8	de=208.471	d <sup>2</sup> =512.1899	e <sup>2</sup> =88.86

Test of significance of correlation coefficient between Interest Rate on Lending and Inflation Rate of HBL.

t = Statistics under null hypothesis;

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

**Calculation of Correlation Coefficient between Lending Rate and Risk free Rate of HBL**

Year	Lending Rate (d)	Risk free Rate (f)	df	d <sup>2</sup>	f <sup>2</sup>
2007/08	10.83	4.71	51.0093	117.2889	22.1841
2008/09	10.69	3.48	37.2012	114.2761	12.1104
2009/10	10.69	2.93	31.3217	114.2761	8.5849
2010/11	9.12	2.5	22.8	83.1744	6.25
2011/12	9.12	2.84	25.9008	83.1744	8.0656
<b>Total</b>	d=50.45	f=16.46	df=168.233	d <sup>2</sup> =512.1899	f <sup>2</sup> =57.195

Test of significance of correlation coefficient between Interest Rate on Lending and Risk free Rate of HBL.

**t = Statistics under null hypothesis;**

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

**Calculation of Correlation Coefficient between Deposit Amount and Lending Rate of HBL**

Year	Amount of Deposit (a)	Lending Rate (d)	ad	a <sup>2</sup>	d <sup>2</sup>
2007/08	24831.1	10.83	268920.813	616583527.2	117.2889
2008/09	26456.2	10.69	282816.778	699930518.4	114.2761
2009/10	29905.8	10.69	319693.002	894356873.6	114.2761
2010/11	31805.3	9.12	290064.336	1011577108	83.1744
2011/12	32396	9.12	295451.52	1049500816	83.1744
<b>Total</b>	a=145394.4	d=50.45	ad=1456946.45	a <sup>2</sup> =4271948843	d <sup>2</sup> =512.1899

Test of significance of correlation coefficient between Deposit Amount and Lending Rate of HBL.

**t = Statistics under null hypothesis;**

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

**Calculation of Correlation Coefficient between Deposit Rate and Lending Amount of HBL**

Year	Deposit Rate (b)	Lending Amount (c)	bc	b <sup>2</sup>	c <sup>2</sup>
2007/08	4.19	13245	55496.55	17.5561	175430025
2008/09	4.01	15515.7	62217.957	16.0801	240736946.5
2009/10	4.01	17672	70864.72	16.0801	312299584
2010/11	2.87	19985.2	57357.524	8.2369	399408219
2011/12	2.68	20775.7	55678.876	7.1824	431629710.5
<b>Total</b>	b=17.76	c =87193.6	bc=301615.627	b <sup>2</sup> =65.1356	c <sup>2</sup> =1559504485

Test of significance of correlation coefficient between Deposit Rate and Lending Amount of HBL

**t = Statistics under null hypothesis;**

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

**Calculation of Correlation Coefficient between Inflation Rate and Risk Free Rate of HBL**

Year	Inflation Rate (e)	Risk Free Rate (f)	ef	e <sup>2</sup>	f <sup>2</sup>
2007/08	2.9	4.71	13.659	8.41	22.1841
2008/09	4.8	3.48	16.704	23.04	12.1104
2009/10	4	2.93	11.72	16	8.5849
2010/11	4.5	2.5	11.25	20.25	6.25
2011/12	4.6	2.84	13.064	21.16	8.0656
<b>Total</b>	e=20.8	f=16.46	ef=66.397	e <sup>2</sup> =88.86	f <sup>2</sup> =57.195

Test of significance of correlation coefficient between Inflation Rate and Risk Free Rate of HBL

**t = Statistics under null hypothesis;**

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

### Calculation of Multiple Correlation Coefficients of Different Variables of HBL

Variables	Coefficient of Correlation	Coefficient of Determination
R <sub>ab</sub>	-0.9123	0.8323
R <sub>bd</sub>	0.9950	0.9900
R <sub>cd</sub>	-0.7868	0.6191
R <sub>be</sub>	-0.5483	0.3006
R <sub>bf</sub>	0.7080	0.5013
R <sub>de</sub>	-0.5169	0.2672
R <sub>df</sub>	0.6989	0.4885
R <sub>ad</sub>	-0.8850	0.7832
R <sub>be</sub>	-0.8314	0.6912
R <sub>ef</sub>	-0.7840	0.6147

$$\text{Multiple Correlation Coefficient}(R_{b.ad}) = \sqrt{\frac{r_{ab}^2 + r_{bd}^2 - 2 r_{ab} \cdot r_{bd}}{1 - r_{ad}^2}}$$

Where,

R<sub>b.ad</sub> = Multiple Correlation Coefficient Assuming Variable “b” (Deposit Rate) as Dependent variable and other two variables “a” and Variable “d”)i.e. deposit amount & Lending Rate) as independent Variables.

R<sub>ab</sub>= Correlation Coefficient between variables “a” and “b” = -0.9123

R<sub>bd</sub>= Correlation Coefficient between variables “b” and “d” = 0.9950

R<sub>ad</sub>= Correlation Coefficient between variables “a” and “d” = -0.8850

$$(R_{ab})^2 = (-0.9123)^2 = 0.8323$$

$$(R_{bd})^2 = (0.9950)^2 = 0.9900$$

$$(R_{ad})^2 = (-0.8850)^2 = 0.7832$$

$$\text{Multiple Correlation Coefficient } (R_{d.bc}) = \sqrt{\frac{r_{bd}^2 + r_{cd}^2 - 2 r_{bd} \cdot r_{cd} \cdot r_{bc}}{1 - r_{bc}^2}}$$

$$\text{Multiple Correlation Coefficient } (R_{b.ef}) = \sqrt{\frac{r_{be}^2 + r_{bf}^2 - 2 r_{be} \cdot r_{bf} \cdot r_{ef}}{1 - r_{ef}^2}}$$

$$\text{Multiple Correlation Coefficient } (R_{d.ef}) = \sqrt{\frac{r_{de}^2 + r_{df}^2 - 2 r_{de} \cdot r_{df} \cdot r_{ef}}{1 - r_{ef}^2}}$$