

**A STUDY ON INTEREST RATE**  
**OF**  
**RASTRIYA BANIJYA BANK, NEPAL BANK LTD**  
**AND AGRICULTURE DEVELOPMENT BANK**  
**LTD.**

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In partial Fulfillment of the requirements for the Degree of  
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Tansen, Palpa

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## DECLARATION

I hereby declare that the work reported in this entitled " **A STUDY ON INTEREST RATE OF RASTRIYA BANIJYA BANK, NEPAL BANK LTD AND AGRICULTURE DEVELOPMENT BANK LTD.**" submitted to Tribhuvan Multiple Campus, Palpa, Faculty of Management, Tribhuvan University, is my original work done in the form of partial fulfillment of the requirement for the Master of Business Studies (M. B. S.) under the supervision of supervisor **Mr. Nirdosh Khanal** of Tribhuvan Multiple Campus, Palpa.

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## **List of Abbreviation**

A.D.	=	Anno Domini
ADB/N	=	Agriculture Development Bank/ Nepal
B.S.	=	Bikram Sambat
CPI	=	Consumer Price Index
d.f.	=	Degree of Freedom
e.g.	=	Example
Fig.	=	Figure
FY	=	Fiscal Year
HMG	=	His Majesty Government
i.e.	=	That is
LIFO	=	Last in First Out
Ltd.	=	Limited
NBL	=	Nepal Bank Limited
NGO	=	Non Government Organization
NRB	=	Nepal Rastra Bank
No.	=	Number
R	=	Correlation coefficient
R <sup>2</sup>	=	Determinants of correlation coefficient
RBB	=	Rastra Banijya Bank
Rs.	=	Rupees
s.d	=	Standard Deviation
T.U	=	Tribhuvan University.
T-Bill	=	Treasury Bills
Viz	=	Namely

# **Chapter One**

## **INTRODUCTION**

### **1.1 General Background**

Nepal is mainly an agriculture based; mountainous and landlocked country surrounded by two large nations China and India. Above 80% of the total population is engaged on agriculture. Due to the variety of geo-political and structural constraints, the economic development of Nepal has been limited.

As such, country's land locked location; limited exportable resources, low economic growth, low savings, higher rate of population growth, low income, limited transportation facilities etc are the major factors so as to have proved barrier in the economic development of the country.

As being developing country, Nepal is tempting to develop and modernize her economy rapidly on rational and socially desired footings. But the structure of the economy has still remained primarily agricultural with very small manufacturing base. Therefore, it is important to modify agro-based economy. Nepal has adopted mixed and liberal economic policy with the objective to help the state and the private sector, on the ground of open and liberal eco-system. Especially after restoration of the democracy, the concept of liberalization policies has been incorporated as directive principal and state policies. The continuing trust to the development to the development of nation has helped in establishing many; company banks, financial institutions and manufacturing industries. thus these establishments helps the country for its development in some level but for actual economic development, capital formation and utilization are the two major things that should be essential for the investment in a country. The formation and utilization of capital are shaped by many factors like prosperity of country, GDP of country, export-import of country, lending-deposit pattern, and interest rate and so on. In modern economy banks and financial institutions plays the major role for capital generation and utilization. In order constant, interest rate also plays the dominant role in borrowing and lending.

Financial institution collects funds mainly from deposits (time and deposits) which are the ultimately source of capital investment in country. Today financial institution plays vital role to wipe out the problem of inadequate of capital formulation by collection more deposits from the savers. More precisely personal savings is the part of disposable income, which is not consumed. Saving equals income minus expenditure. The people having more income save more then the less income person do. Generally, household sector saving is greater than that of business and government. For household sector, saving is equals to current income minus current expenditure. For business, sector savings include current earnings retained inside business firms after payment of taxes, stockholder's dividend and other expenses. Government saving arise when there is a surplus of current revenue over expenditure. To induce more saving, financial institution can play a vital role by providing attractive interest rate and offer a different scheme. The people of least developed countries are interested to invest their savings to non-productive sectors like land, gold, house, vehicles and so on. To reduce such non-productive investment financial institutions can play very important role

by attracting such savers by providing them attractive interest rate and accept the deposits. Banks collect money from savers and lend money to the needy people. Bank charges certain rate of interest to the borrower and borrower pays that interest for using the bank's money. Interest on loan varies according to the nature of loan, whether loan is of short or long term. An appropriate interest rate structure greatly affects the collection of deposits, mobilization of saving (only in productive sector) and profit position of any financial institution, which in turn, affects the economic enlistment of the whole country.

### **1.2 Interest Rate:**

Interest, payment made for the use of another person's money; in economics, it is regarded more specifically as a payment made for capital. Economists also consider interest is as the reward for thrift; that is payment offered to people to encourage them to save and to make their saving available to others.

Interest rate is one of the important tools for shaping economy. It plays the dominant role in borrowing and lending. Simply; interest rate is defined as price a borrower must pay to secure scarce 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 of two quantities: the money cost of borrowing divided by the amount of money actually borrowed, usually expressed in the annual percentage basis. The cost of borrowing money, measured in rupee per year per rupee borrowed, is the interest rate (Samuelson & Nordhus; 1998:469). 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 rent paid for the use of money. Financial institutions pay the interest to the one who deposits money and then charge interest from the borrower as they use the money. As any price is determined, theoretically, by the interplay 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. Interest rate sends price signals to borrowers, lenders, and savers. Due to the higher rate of interest it creates greater volume of savings and stimulates the lending of funds i.e. substitution effect. Similarly, due to the lower rate of interest, it tends to

reduce the volume of borrowing and capital investment, and lower rates stimulate borrowing and investment spending. The income of economy is determined by the quality and flow of investment. Hence, the impact of interest rate is on both the saving and investment in the economy.

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 savings are always influenced by the interest rates. The cost of production, which depends upon the production function process. The saving and investment in the economy, which are influenced by interest rates, since the credit is also one of the components by the interest rates, are the real economic variables. The incomes and expenditures of the variable sectors of the economy result in excess savings or excess investment in each of the sectors (Vaidya;1999:17).

### **1.3 Statement of the problems:**

Most of the natural resources of 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 would 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 groups. Interest charged and offered by the institutions was regulated by central bank until before few years. 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 evaluation of interest rate, many theories has 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 rate themselves. This is the

important to know whether the interest rate is determined by market forces or by managerial discretion.

It seems to not only 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. Being concentrate, we will study in the following topics:

1. What is the relationship between interest rate and borrowing amount?
2. What is the relationship between interest rate and lending?
3. What are various methods financial institutions in use to calculate the interest rate they charged to borrowers?
4. What are the other major qualitative factors that shape the interest in Nepalese financial markets?

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

**The** major objective of the study is to explore the relation of interest rate with other three variables i.e., Deposit, Inflation and Credit (landing) that are currently prevailing in Nepalese market. Similarly this study is also conducted to identify whether the thesis that are taught in university courses are applicable or not in Nepalese context. To fulfill this main objective following sub-objectives have been formulated:

- To scrutinize the relationship of interest rate with Deposit amount i.e. existence of Substitution Effect in Nepalese Market. Substitution affects means whether the deposit amount increases with the increase in the Interest Rate or not.
- To spot out the sensitivity of interest rate with the Investment (Borrowing). I want to see if there is inverse relation of interest rate and Investment.
- To identify the other major qualitative factors determining the interest rate charged and provided by Nepalese financial institutions.

### **1.5 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 consist of providing the means by which payments for transactions are accomplished and saving 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 thousands of goods and services we purchase daily. Paying for goods and services, saving, lending, borrowing and investing all activities are carried out within the framework of financial system. When credit becomes more costly (that is high interest rate) and less available total spending for goods and services falls. As a result unemployment rises and economic growth slows down as business cut back their production. In contrast, when the cost decline (i.e. lower interest rate) and the loan able funds become more readily available, total spending in economy increases, more jobs are created and economic growth accelerates. Hence, economic growth depends upon circulation of money and financial facilities it.

On modern world, the 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 developing countries including Nepal, are sufficient from financial crises. People are less aware about banking system. Financial intermediaries are sufficient to mobilize the saving of the country. Some of 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 goods, ornaments etc. But the question is why the financial institutions of the country could not attract more saving? Are the monetary authorities in this country wrong in determining the rate of interest? Or what the interest rate can do in this situation? Similarly, the financial institutions of this nation are being able to lend more. On the other hand, inflation so troubling developing country like Nepal.

Nepalese interest rate varies time-to-time, region-to-region and sector-to-sector. The inflation 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 regarding rate of interest and its impact on various financial aspects of the financial institutions. This study is also considered useful to various parties such as further researchers, students, teachers, financial institutions, general public etc. Keeping these views into consideration the study of interest rate seems worthwhile in the context of Nepal.

### **1.6 Limitation of Study:**

There are boundaries that weakened the generalization e.g; time taken, finance, reliability of statistical tools used and other variables. This study is simply a partial requirement of master of Business studies with financial management. This study is limited by followings:

1. There are too many factors that affect deposit and lending decision. However only one factors interest rate is taken for the study. Impact of other aspects (factors) besides interest has not been studied.
2. It is quite impossible to cover all factors and aspects that are directly and indirectly responsible for deposits, credit and inflation.
3. The main objective of this study ia to fulfill partial requirement of Master degree. Predetermined time, resources, reliability of statistical tools used and the other variables are also limitation of this study.
4. Among the huge population of lending and depositary institution in Nepal only few organizations are selected in the bracket of studies and the samples have been drawn at random for convenience, so there may exit some sampling error.
5. Reliability of this study depends upon the accuracy of published data and the genuineness of respondent.
6. Mostly secondary data will be analyzed to interest result, so the result has to depend on the reliability of secondary data.
7. Current deposit doesn't create interest, so the study of current deposit is unnecessary. Similarly though the financial institutions today also accept call

and other kind of deposit such deposit are not included in the study. The study is based on only saving and fixed deposit only. His is the limitation of the study.

### **1.7 Plan of the Study:**

This study also follows the general Pattern for research. This study is divided into five chapters as follows:

#### **Chapter 1: Introduction**

In this chapter general introduction and conceptual background of the study will be discussed besides, it includes statement of the study, objective of study, significance of the study, limitation of the study, plan of the study and introduction of the sample banks under study.

#### **Chapter 2: Review of Literature:**

It will include a decision on the conceptual frame work; review of books, previous dissertation papers and articles, publication.

#### **Chapter 3: Research Methodology**

It covers on research design, population and sample, sources of data, data collection procedure, analytical tools, research hypothesis formulated for the study.

#### **Chapter 4: Data presentation & analysis**

This chapter attempts to analyze and evaluate data with help of analytical tools and interpret the results obtained. It includes the analysis of relationship between the deposit amount and interest rate, lending amount and lending rate, inflation and inflation rate (deposit and lending rate) of the sample banks. And also release the findings of the study.

## **1.8 Introduction of Sample Organization Under Study:**

### **Rastriya Banijya Bank:**

Rastriya Banijya Bank (RBB) is fully government owned, and is the largest commercial bank in Nepal. RBB was established in January 23, 1966 (2022 Magh 10 BS) under the RBB act. RBB provides various banking services to a wide range of customers including banks, insurance companies, industrial trading houses, airlines, hotels, and many other sectors. RBB has Nepal's most extensive banking network with over 121 branches. Through its extensive branch network, RBB has been contributing to Nepal's economic development by providing banking services throughout the country.

RBB has many correspondent arrangements with major international banks all over the world that facilitate trade finance, bank-originated personal funds transfers and interbank funds transfer via SWIFT. As well, RBB works with Western Union and International Money Express, two leading person-to-person funds transfer networks. As well, RBB actively delivers various government programs to people living in remote parts of the country; these programs are intended to raise living standards.

### **Nepal Bank Limited:**

Nepal Bank Limited (NBL) was established on November 15, 1937 AD (Kartik 30, 1994 BS). This marked the beginning of an era of formal banking in Nepal.

NBL is the pioneer financial institution of Nepal. At present the bank is operating through 113 branches in the 62 districts of the country with 2992 staffs. Its vision is to remain the leading financial institution of the country. In its effort to restructure the bank, the ICC team has been successful in providing leadership to return the bank to its former position of financial leadership within the country. Numerous systems in every functional area of bank management e.g. Credit, Accounting, Human Resources, Internal Audit, and Treasury have been modernized. Voluntary Retirement schemes were successfully launched reducing the staff size by almost half. Large numbers of employees are provided with training in various disciplines. Online

computerization of 448 bank branches is nearing completion. Sustainable Profitability has been restored with impressive NPA recoveries.

### **Agriculture Development Bank (ADB/N):**

With the main objective of providing institutional credit for enhancing the production and productivity of the agricultural sector in the country, the Agricultural Development Bank, Nepal was established in 1968 under the ADBN Act 1967, as successor to the cooperative Bank. The Land Reform Savings Corporation was merged with ADBN in 1973. Subsequent amendments to the Act empowered the bank to extend credit to small farmers under group liability and expand the scope of financing to promote cottage industries. The amendments also permitted the bank to engage in commercial banking activities for the mobilization of domestic resources.

Agricultural Development Bank Limited (ADBL) is an autonomous organization largely owned by Government of Nepal. The bank has been working as a premier rural credit institution since the last three decades, contributing a more than 67 percent of institutional credit supply in the country. Hence, rural finance is the principal operational area of ADBL. Besides, it has also been executing Small Farmer Development Program (SFDP), the major poverty alleviation program launched in the country. Furthermore, the bank has also been involved in commercial banking operations since 1984.

The enactment of Bank and Financial Institution Ordinance (BAFIO) in February 2004 abolished all Acts related to financial institutions including the ADBN Act, 1967. In line with the BAFIO, ADBL has been incorporated as a public limited company on July 14, 2005. Thus, ADBL operates as a "A" category financial Institution under the legal framework of BAFIO and the Company Act, 2053. The vision of the bank is to be the pre-eminent bank, providing services throughout Nepal.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

For all types of studies, review of literature is essential, which helps to find out what research studies have been conducted in one has chosen field of study and what remains to do. In fact, review of literature begins with a search for a suitable topic and continues throughout the duration of the research work. It is a path to find out what other research in this area has uncovered. It is the process of locating, obtaining, reading and evaluating the research literature in the area of the student's interest. It is also a means to avoid investing problems that are already been positively answered (Wolf and Pant; 2005:39). The main reason for a full review of research in past is to know the outcomes of those investigations in areas where similar concepts and methodologies

had used successfully. This chapter is divided in two part, one is conceptual review and the other is review of relate studies.

Review of literature means reviewing research studies or other relevant propositions in the related area of the study so that all the past studies, their conclusions and deficiencies may be know and further research could be conducted. The most important reason of literature review is to learn not to collect. It helps to know many things to researcher such as, what research has been done in the subject. What theories have been developed? Methods, approaches used by other researchers, and area of agreement or disagreement etc.

## **2.2 Theoretical Review**

### **2.2.1 Meaning of Interest**

In common, parlance interest is a payment made by a borrower to the lender for the money borrowed and is expressed as a rate percent per year. However, in economics widely different views have been put forth from the time to Aristotle of the present day. Aristotle recognized only animal husbandry and stock rising as two legitimate industries whose products could be lent and interest earned on them.

In an 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, he can use it for further production and the additional product he gets through the employment of his capital includes interest. For, if he lent his capital to someone else, he would have received interest in return.

In the sum of interest is simultaneously the reward for the pure yield of capital, of saving, for the forgoing of liquidity and the supply of money. It is

customary to divide interest into gross interest and net interest. The payment made exclusively for the use of capital is called net or pure interest. In the other hand, the whole of the income received by the lender of capital from the borrower is the gross interest. It implies that the net interest consists of the net interest as well. Thus, the gross interest includes the following elements.

**1. Payment for the risk:** "There is a risk that loan may not be repaid. Hence, a part of the interest charged on a loan is a payment for risk. The interest works as an insurance against risk. Due to risk in lending, the moneylenders demand something as security. The security can be turned into cash if the loan repaid in time. Generally, the person who lends without security will charge a higher rate of interest. His risk of default will be greater."(Joshi; 2000:145).

**2. Payment for inconvenience:** The part of the interest payment is charged for the inconvenience. The money of the lender is locked up for a fixed period. He cannot invest in other areas even if the good opportunity himself by charging more than the net interest.

**3. Payment for management:** The lender will have to manage the loans. The lending of money causes the lender a certain amount of work. He has to keep records of transactions. He may have to collect the interest. He may have to remind the borrowers by post or personal visit, or phone and fax. Hence, the lender charges more interest over and above net interest.

**4. Net or pure interest:** The payment made exclusively for the use of capital is called net or pure interest. It is paid to compensate the lender for allowing the borrower the use of his money for a certain fixed period. Therefore, the gross interest minus payment for risk, inconvenience and management is net interest.

### **2.2.2. Functions of the Rate of Interest in the Economy**

The rate of interest performs several important roles of function 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 loan able funds to those investment projects with the highest expected returns.
- It brings into balance the supply of money with the public's demand for money. It is also an important tool of government policy through its
- Influence government maintains control over the volume of saving and investment" (Rose; 1997:193).

.If the economy is growing too slowly and unemployment is rising, the government can use this tool to lower interest rates in order to stimulate borrowing and investment and accelerate the production and development. On the other hand, an economy experiencing rapid inflation has traditionally called for a government policy of higher interest rates to slow both borrowing and spending.

### **2.2.3. Theories of Interest:**

Various interest rates theories have been developed by various economists, which describe how interest rate is determined in various situations. Where Classical theory of interest concluded, that interest is determined by demand for saving to make investment and supply of savings. Another important theory of interest loan able fund theory concluded rate of interest is determined through the equilibrium between demand and supply of loan able funds and Keynesian theory of interest explained that interest rate is determined through the equilibrium between the demand for and supply of money. So we can conclude that interest is earning of capital, which is ultimately goes to the owner of capital. Some if well-known theories of interest rate are explained as follows.

## **Classical Theory of Interest Rates**

"It is the oldest theory of interest rate and which is developed during 18<sup>th</sup> and 19<sup>th</sup> centuries by number of British economists and elaborated by Irving fisher 1930. this theory seeks to explain the determination of the rate of interest through the interaction of demand for saving to make investment and supply of savings"(Rose;1997:193). Since, this theory explains the determination of the rate of interest by real forces such as thrift, time preference and productivity of capital. It is also called the real theory of interest or risk free theory of interest. "The basic assumption that is common to all classical writers. It is that all of them assume full employment of resources. In other words, in their model if more resources are to them assume full employment of resources. In other words, in their model if more resources are to be devoted to investment, that is, production of capital goods, some resources have to be withdrawn from the production of consumer goods" (Ahuja; 2000:879). The various classical economists agreed but they differ but they in detail about the nature of interest. We shall discuss below the views some of them:

### **a. Interest is a price for abstinence or waiting**

Anyone who saves money and is therefore able to lend it to other abstains from consuming a part of his income and in order to induce him to do so, he must be paid interest by the borrowers. Thus, according to the Nasu Senior, interest arises because of the abstinence involved in the act of saving. However this concept was criticized by some economists particularly Carl Marx, who pointed out that rich people who are the main sources of saving are able to save without making any real sacrifice of abstinence.

### **b. Bhom-Bawerk's explanations of interest:**

Bhom-Bawerk gave three reasons for the emergence of rate of interest. First people have relatively greater needs or demands for the goods in the present than in the future. In other words, presents wants are felt more keenly than the future wants. The second reason advanced by Bhom-Bawerk's is that people underestimate future wants and the third reason is technical superiority of present over future goods.

### **c. Interest is paid because of time preference (Fisher's theory):**

"Rate of interest arise because people prefer present satisfactions to future satisfactions. They are therefore impatient to spend their incomes in the present. According to Fisher, interest is a compensation for the preference of the individual. The greater the impatience to spend money in the present, that is, the greater the preference of individuals for the present enjoyment of goods to future enjoyment of them, the higher will have to be the rate of interest to induce them to lend money". The rate of time preference is also influenced by expectation of life. If a man expects to live long, his preference for spending, income in the present will be comparatively low.

### **Determination of the rate of interest in the classical theory**

According to the classical theory of interest, rate of interest is determined by the supply of savings and demand for saving to interest.

#### **1. Supply of money**

We categorized the supply of savings in the following three parts

## 1.1 Savings by Households

Individuals and families carry out individual and family carry out most of the savings in modern industrialized economies. For these households, saving is simply abstinence from consumption spending. Current savings, therefore, are equal to the difference between current income and current consumption expenditures. In making the decision on the timing and amount of saving to be done, households typically, consider several factors: the size of current and long-term income, the desired savings target, and the desired proportion of income to be set aside in the form of savings (i.e., the propensity to save). Generally, the volume of household savings rises with income. Higher income families and individuals tend to save more and consume less relative to their total income than families with lower incomes.

"Although income levels probably dominate saving decisions, interest rate also plays an important role. Interest rates affect an individual's choice between saving and current consumption. The classical theory of interest assumes that individuals have a definite time preference for current over future consumption. A rational individual, it is assumed, will always prefer current enjoyment of goods and services to future enjoyment" (Rose; 1997:194). Therefore, the only way to encourage an individual or family to consume less now and save more is to offer a higher rate of interest on current saving. If more were saving in the current period at a higher rate of return, future consumption and future enjoyment would be increased. For example, if the current rate of interest is 10 percent and a household saves \$100 instead of spending it on current consumption. It will be able to consume \$110 in goods and services a year from now.

The classical theory considers the payment of interest as a reward for waiting the postponement of current consumption in favor of greater future consumption. Higher interest rates increase the attractiveness of saving relative to consumption spending, encouraging more individuals to substitute current saving (and future consumption) for some quantity of current consumption. This so-called substitution effect calls for a positive relationship between interest rates and the volume of savings. Higher interest rates bring

forth a greater current volume of savings. If the rate of interest in the financial markets rises from five to ten percent, the volume of current savings by households is assumed to increase from \$100 to \$200 billion.

## **1.2 Savings by Business Firms**

Not only households, but also businesses save and direct a portion of their savings into the financial markets to purchase securities and make loans. Most businesses hold savings balances in the form of retained earnings (as reflected in their equity or net worth accounts). In fact, the increase in retained earnings reported by business each year is a key measure of the volume of current business savings. And these retained earnings supply most of the money for annual investment spending by business firms. The volume of business saving depends on two key factors: the level of business profits and the dividend policies of corporation. These two factors are summarized in the retention ratio, the ratio of retained earnings to net income after taxes. This ratio indicates the proportion of business profits retained in the business for investment purpose rather than paid out as dividends to the owners. Experience has shown that dividend policies of major corporations do not change very often. Many corporations prefer to keep their dividend payments level or increase them slightly each year, regardless of their current earnings. Any shortfalls in earnings needed for dividend payments are made up through borrowing. The critical element in determining the amount of business savings is then the level of business profits.

If profits are expected to rise, business will be able to draw more heavily on earnings retained in the firm and less heavily on the money and capital markets for funds. The result is a reduction in the demand for credit and a tendency toward lower interest rate. On the other hand, when profits falls but firms do not cut back on their investment plans, they are forced to make heavier use of the money and capital markets for investment funds. The demand for credit rise and interest rates may rise as well. Although the principal determinant of business saving is profits, interest rates also play a role in the decision of what proportion of current operating costs and long-term investment expenditures should be financed internally and what proportion externally. Higher interest rates in the money and capital markets typically encourage firms to use internally generated funds more heavily in

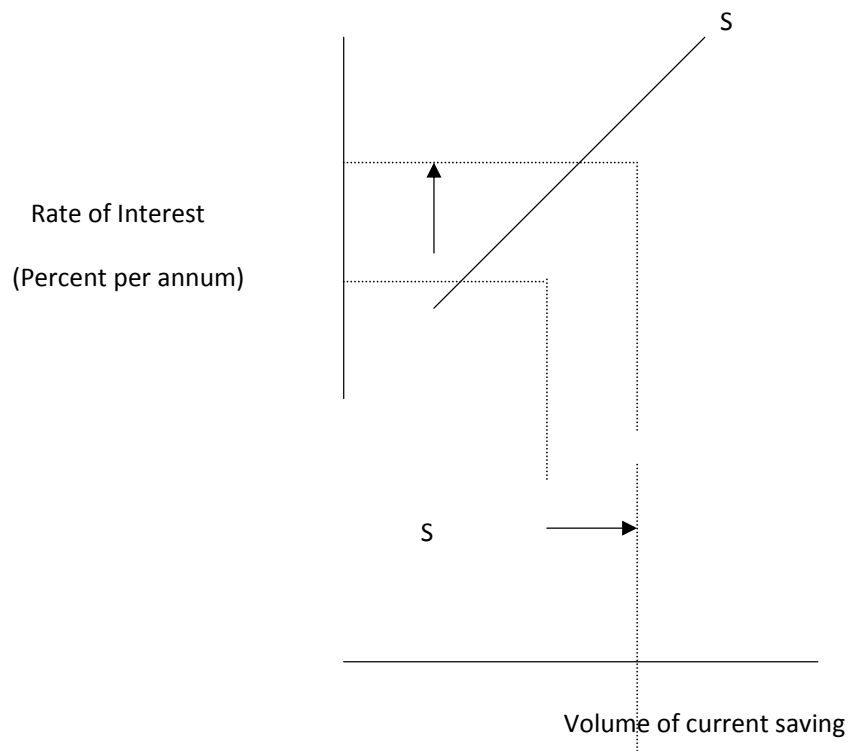
financing projects. Conversely, lower interest rates encourage greater use of external funds by raising it from the money and capital markets.

### 1.3 Saving by Government

Governments also save, 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 expenditures. Income flows in the economy (out of which government tax revenues arise) and the pacing of government spending programs are the dominant affecting government savings.

The total supply of fund is summing of above three elements as SS on

**Figure no 2.1.Total supply of fund**



## 2. The Demand for Investment Funds

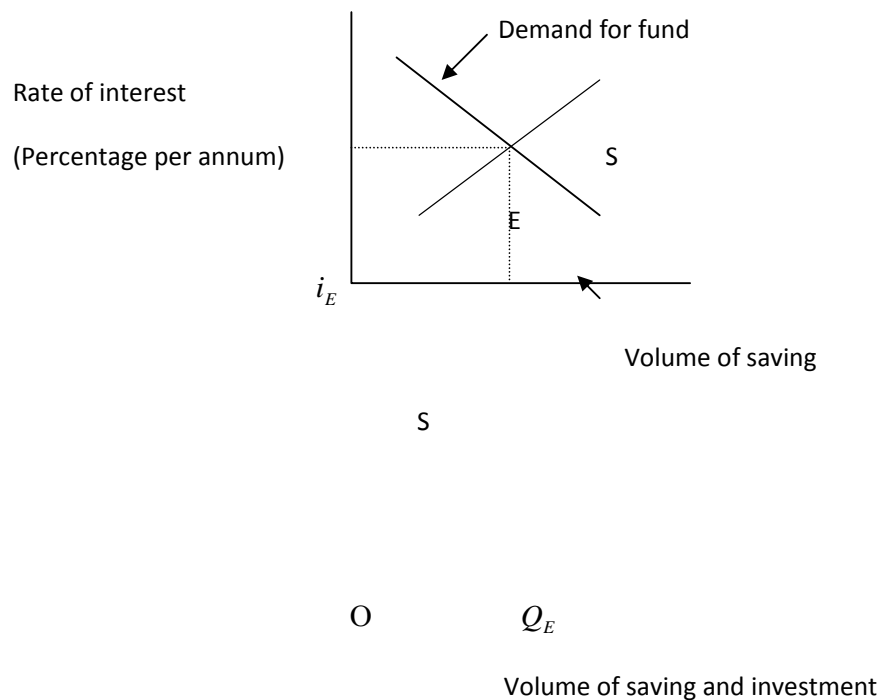
Besides, household, and government savings are important determinants of interest rates according to the classical theory of interest, but not the only ones. The other critical rate-determining factor is investment spending by business firms. Business requires huge amounts of funds each year to purchase equipment and to support the construction of new buildings and other physical facilities. The majority of business expenditure for this purpose 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 more dynamic form of business capital spending is labeled net investment expenditure to acquire additional equipment and 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 interest rates in the financial markets were determined by the interplay of the supply of saving and the demand for investment. Specifically, the equilibrium rate of interest is determined at the point where the quantity of savings supplied to the market is exactly equal to the quantity of funds demanded for investment. To support this in figure no.2.2 this occurs at point E where the equilibrium rate of interest is  $i_E$  and the equilibrium quantity of capital funds traded in the financial markets is  $Q_E$ . The market rate of interest moves towards its equilibrium level. However, supply and forces change so fast that the interest rate rarely has an opportunity to settle in at a specific equilibrium level. At any given time, the rate is probably above or below its true equilibrium level but moving towards that equilibrium. If the market rate is temporarily above equilibrium, the volume of savings exceeds the demand for investment capital creating an excess supply of savings. Savers will offer their fund at lower and lower rates until the market interest rate approaches to equilibrium. Similarly, if the market rate is temporarily below equilibrium, investment demand exceeds the quantity of savings available. Business firm

will bid up interest rate until it approaches the level at which the quantity saved equals to quantity of funds demanded for investment purpose.

**Figure 2.2 Equilibrium rate of interest**



**Critical approach of classical theory of interest:**

Classical theory of interest has been criticized on several grounds. J.M.Keynes made a strong attack on this theory and propounded a new theory of interest is called liquidity preference theory. We shall consider below the various criticism leveled of classical theory of interest

- (i) Full employment assumption:  
Classical theory of interest has been criticized for its assumption of full employment of resources, which is said to be unrealistic.
- (ii) Changes in income level ignored:

The classical theory of interest ignores the changes in income level because it assumes full employment of resources. When the resources are fully employed, income level will be remaining constant, production technique being given but which is not possible in real life.

- (iii) Savings out of current income is not the only source of funds:  
Now a days bank credit has become a very important source of invisible funds which are also not taken into account by the classical theory.

### **2.2.3.2 Loan able funds theory of interest:**

The loan able funds theory is the most popular theory of interest rate among practitioners. According to this theory, rate of interest is determined by the demand for and supply of loan able funds. This supply of loan able funds consists of saving out of disposable income, dishoarding, money created by the banks and disinvestment (i.e. disentangling of fixed and working capital). The demand for loan able funds is composed of the demand for investment, demand for consumption and demand for hoarding money. We shall discuss the below in detail the several sources of supply and demand Of loan able funds."

#### **(A) Supply of loan able funds:**

**(i) Savings:** Saving by individual and households continue the most important sources of the supply of loan able funds. Savings by individuals or households constitute the most important source of loan able funds. In the loan able funds theory, savings are looked at in either of these two ways: firstly, an ex-ante savings, i.e. savings planned by individuals at the beginning of a period in the hope of expected incomes and anticipated expenditure on consumption; or secondly, in the Robertsonian sense i.e. savings or the difference between the income of the preceding period (which becomes disposable in the present period) and the consumption of the present period. In either case, the amount

saved varies at various rates of interest. Savings by individuals and households primarily depend upon the size of their income. However, given the level of income, savings vary at various rates of interest. More savings will be forthcoming at higher rates of interest, and vice versa.

**(ii) Disharding:** Disharding of the past-accumulated savings constitutes another sources of supply of loan able funds. Individual may possess idle cash balances hoarded from the incomes of the previous periods, which they may dishoard in a period. When the rate of interest rises or when the prices of bonds and shares decline they may like to take advantage of these market movements and thus dishoard money for lending it to others or for purchasing bonds and shares.

**(iii) Bank money:** The banking system is another important sources of the supply of loan able funds. The commercial banks by creating credit money advance loans to the businessmen and industries for investment.

**(iv) Disinvestments:** Disinvestments means disentangling of the present fixed and working capital. When there is declining tendency in certain industries due to some structural changes in the economy, the entrepreneurs may not like to remain tied to those industries and therefore they may allow the existing stock of machines and other equipment belonging to those industries wear out replacement. As a result, they may bring the depreciation reserve in the market for loan able funds. Similarly, working capital invested in business may be withdrawn gradually and made avail able as loan able funds. At a higher rate of interest, entrepreneurs will generally contemplate a greater amount of disinvestment.

#### **(B) Demand for loan able funds:**

**(i) Investment demand:** Investment demand includes businessmen's borrowings for purchasing or making of new capital goods including the building up of inventories. The price of obtaining the loan able funds required to purchase or invest in capital goods is obviously the rate of interest. It will

pay the investment to demand and undertake investment of loan able funds up to the point where the expected net rate of return on investment equals to the rate of interest. When the rate of interest falls, businessmen will find it profitable to increase investment in capital goods with the result that their demand for loan able funds will increase. We thus see that demand for loan able funds for investment is interest- elastic, at a low rate of interest; there will be greater investment demand and vice-versa.

**(ii) Consumption demand:** Another important source of demand for loan able funds is the loans desire to be taken by the people for consumption purpose. The loan for consumption purchases are demand by the people when they wish to make purchase in excess of their current incomes and idle cash resources. The loan for consumption purposed are demanded generally for buying durable use goods such as houses, automobiles, refrigerators, television sets, air conditioners etc. Where as low rate of interest will induce people to borrow more for consumption, the higher rate of interest will discourage borrowing for consumption.

**(iii) Demand for hoarding:** Demand for hoarding money arises because of people's preference for liquidity i.e. for cash balance. Hoarding money represents idle cash balance. An important point to be noted here is that the one who supplies the loan able funds is the same person who demands the loan able funds for hoarding. A saver who hoards his savings can be said to be supplying loan able funds and demanding them to satisfying his liquidity preference, i.e. demand for each. The demand for hoarding money is interest-elastic and slopes downwards to the right. At higher rates of interest, people will hoard less money, because much of the money will be lent to take advantages of the higher interest rates. Similarly, at lower rates of interest, people will hoard more money, because the loss incurred by hoarding in this case is not very much.

#### **Equilibrium between demand for and supply of loan able funds:**

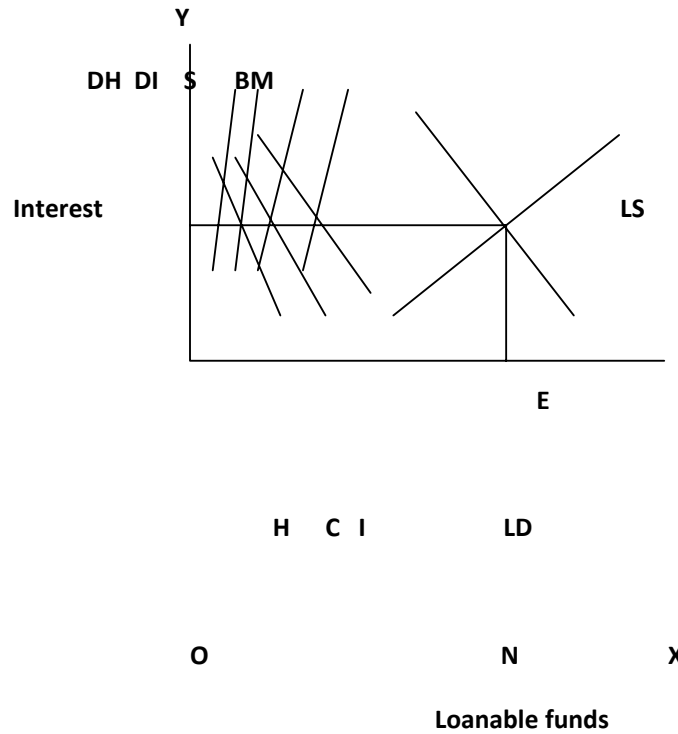
By lateral summation of the curves of saving (S), dishoarding (DH), bank money (BM) and disinvestment (DI); we get the total supply curve of loan able funds (SL) which slopes upward to the right showing that a great amount of loan able funds will be available at higher rates of interest and vice-versa. By adding up horizontally the investment demand curve (I) consumption demand

(DS), and the hoarding demand curve (H), we get DL as the total demand curve for loan able funds.

DL and SL curves intersect at point E and determine the equilibrium rate of interest where supplied and demanded are equal to OM.

**Fig. no.2.3**

**Demand and supply Equilibrium**



**Demand and Supply Equilibrium**

Where, DH = dishoarding

DI = disinvestment

S = savings.

BM = bank and created money.

H = hoarding

C = consumption

I = investment

LD = total demand for loan able fund

LS = total supply of loan able fund

The rate of interest will be determined by the equilibrium between the total demand for loan able funds and the total supply of loan able funds, as has been shown in fig. No. 2.3.

### **Criticisms of loan able funds theory of interest**

#### **Equilibrium rate reflects unstable equilibrium:**

The demand and supply schedules for loan able funds determine the equilibrium rate of interest, which does not equate component of the supply with the corresponding component on the demand side.

#### **Criticisms of loan able funds theory of interest**

Equilibrium rate reflects unstable equilibrium: The demand and supply schedules for loan able funds determine the equilibrium rate of interest which does not equate component of the supply with the corresponding component on the demand side.

#### **Indeterminate theory:**

The supply schedules of loan able funds are composed of saving, dishoarding and bank money. But since saving, vary with income and the new money and activated balance with current income, it follows that the total supply of loan able funds also varies with income. Thus, the loan able funds theory is indeterminate unless the income level is already known.

**Saving interest inelastic:**

The theory over emphasis and the influences of the rate of interest on savings. It regards saving as interest elastic. People save not to earn rate of interest but to satisfy precautionary motive. Therefore, savings are interest inelastic.

**Wrong to combine real and monetary factors:**

The loan able funds theory has been criticized for combining monetary factors with real factors. It is not correct to combine real factors like savings and investment with monetary factors like bank credit and dishoarding without bringing in change in the level of income. This makes the theory inelastic.

**2.2.3.3 Keynes's liquidity preference theory**

In this epoch-making book "The General Theory of Employment Interest and Money", the lord Keynes's gave a new view of interest. According to him, "interest is the reward for parting with liquidity for a specified period (Auja;2000:890).Liquidity preference means the demand for money to hold or the desire of the public to hold cash.

**Demand for money or motives for liquidity preference:**

Liquidity preference of a particular individual depends upon several considerations. The question is: why should the people hold their resources liquid or in the form of ready money, when they get interest by lending such resources? The desire for liquidity arises because of three motives.

**(i) The transactional motives:**

The transactional motives relate to the demand for money or need for cash for the current transaction of individual and business exchanges. The individual holds cash in order to "bring the interest between the receipt of income and its expenditures." That is called income motive.

The businesspersons and entrepreneurs also have to keep a proportion of their resources in ready cash in order to meet current needs of various kinds. They need money all the time in order pay of raw materials, and transport, to pay wages and salaries and to meet all other current expenses incurred by business firm

**(ii) Preclusive motives:**

Precautionary motive for holding money refers to the desire of the people to hold cash balances for unfrozen contingencies. People hold certain amount of money to provide for danger of unemployment, sickness, accidents and the other uncertain perils.

**(iii) Speculative motives:**

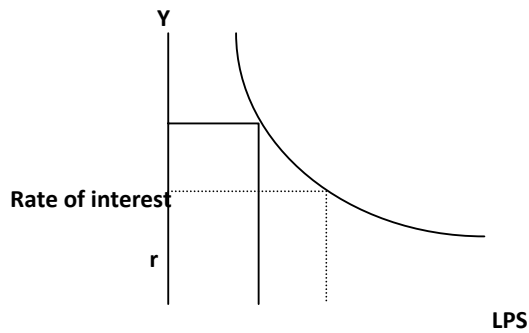
The speculative motive relates to the desire to hold one's resources in liquid form in order to take advantage of market moments regarding the future changes in the rate of interest.

According to Keynes, the demand for money, i.e. the liquidity preference, and supply of money determine the rate of interest. It is in fact the liquidity preference for speculative motive, which along with the quantity of money determines the rate of interest. We have explained above the speculative demand for money. As for the supply of money, it is determined by the policies of the government and the central bank of the country. The total supply of money consists of coins plus notes plus demand deposits with bank.

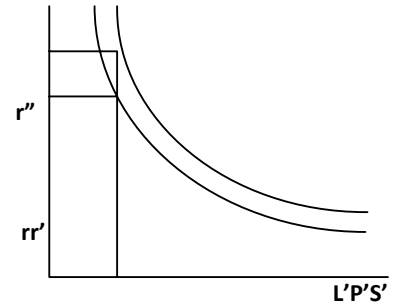
Thus, that according to liquidity preference theory, the rate of interest is purely a monetary phenomenon. Productivity of capital has very little, though indirect, say in determining the rate of interest.

How the rate of interest is determined by the equilibrium between the liquidity preference for speculative motive and the supply of money is shown in fig.2.

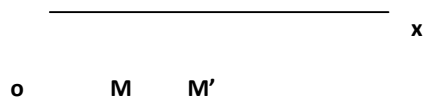
**Liquidity preference curve  
determination**



**interest-rate**



LPS



Amount of money



In part (a) of the figure, LPS is the curve of liquidity preference for speculative motive. In other words, LPS curve shows the demand for money for speculative motive. To begin with, OM is the quantity of money available for satisfying liquidity preference for speculative motive. Rate of interest will be determined where the speculative demand for money is in balance with, or equal to, the (fixed) supply of money OM quantity of money at Or rate of interest. Hence or is the equilibrium rate of interest

Assuming no change in expectations, an increase in the quantity of money for the speculative motive will lower the rate of interest. In part (a) of the figure, when the quantity of money increase from OM to OM', the rate of interest falls from Or to Or', because the new quantity of money OM' is in balance with the speculative demand for money at Or' rate of interest. In this case, we move down the LPS curve.

Thus, given the schedule or curve of liquidity preference for speculative motive, an increase in the quantity of money brings down the rate of interest.

It is worth mentioning that shifts in liquidity preference schedule or curve can be caused by many other factors, which affect expectations and might take place independently of changes in the quantity of money by the Central Bank. Shifts in the liquidity preference curve may be either downward or upward, depending on the way in which the public interprets a change in events.

If some change in events leads the people on balance to expect a higher rate of interest in the future than they had previously anticipated, the liquidity preference for speculative motive will increase, which will bring about an upward shift in the curve of liquidity preference for speculative motive and will raise the rate of interest.

In part (b) of fig, assuming that the quantity of money remains unchanged at OM, with the rise of the liquidity preference curve from LPS to L'P'S', the rate of interest rises from Or to Or'', because at Or'', the new speculative demand for money is in equilibrium with the supply of money OM. It is worth noting that when the liquidity preference for speculative motives rises from LPS to L'P'S', the amount of money hoarded does not rise; it remains as OM as before. Only the rate of interest rises from Or to Or'' to equilibrate the new liquidity preference for speculative motive with the available of money OM.

Thus, Keynes explained interest in terms of purely monetary forces and not in terms of real forces like productivity of capital and thrift, which formed the foundation stones of both classical and loan able fund theories. According to him, demand for money for speculative motive together with the supply of money determines the rate of interest.

#### **Critical approach of Keynes's liquidity preference theory of interest:-**

**1. Keynes's ignored factors in the determined of interest.** It has been pointed out that rate of interest is not purely a monetary phenomenon. Real

forces like productive of capital and saving play an important role in the determination of the rate of interest. Keynes ignores that the demand for capital –investment depends upon the marginal revenue productivity of capital.

**2. Keynes's theory is also indeterminate:** According to Keynes, rate of interest is determined by the speculative demand for money and supply of money available for satisfying speculative demand. Given the total money supply, we cannot know how much money will be available to satisfying speculative demand for money unless we know how much transaction demand for is. In addition, we cannot know the transaction demand for money unless we first know the level of income because money held under transactions motive depends on the level of income.

**3. No liquidity without saving:** According to Keynes, interest is the reward for parting with liquidity and in no way a compensation and inducement for saving or waiting. But without saving how can the fund be available to be kept as liquidity and how can there be question of surrendering liquidity if one has not already saved money. Jacob Viner rightly maintains, "Without saving there can be no liquidity to surrender". Therefore, the interest of interest is vitally connected with saving, which Keynes neglects in the determination of interest.

It follows from above that Keynesian of interest is also not without flaws. However, importance Keynes gave to liquidity preference as a determinant of interest is correct.

#### **2.2.3.4. Rational Expectation Theory of Interest**

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

moment they appear. In absence of new information, next period's interest rate will equal to current period's interest rate. In other words, the knowledge of past interest rate will not be a reliable forecast of future interest rate. In a perfectly efficient market, it is impossible it win excess returns continuously by trading on publicly available information.

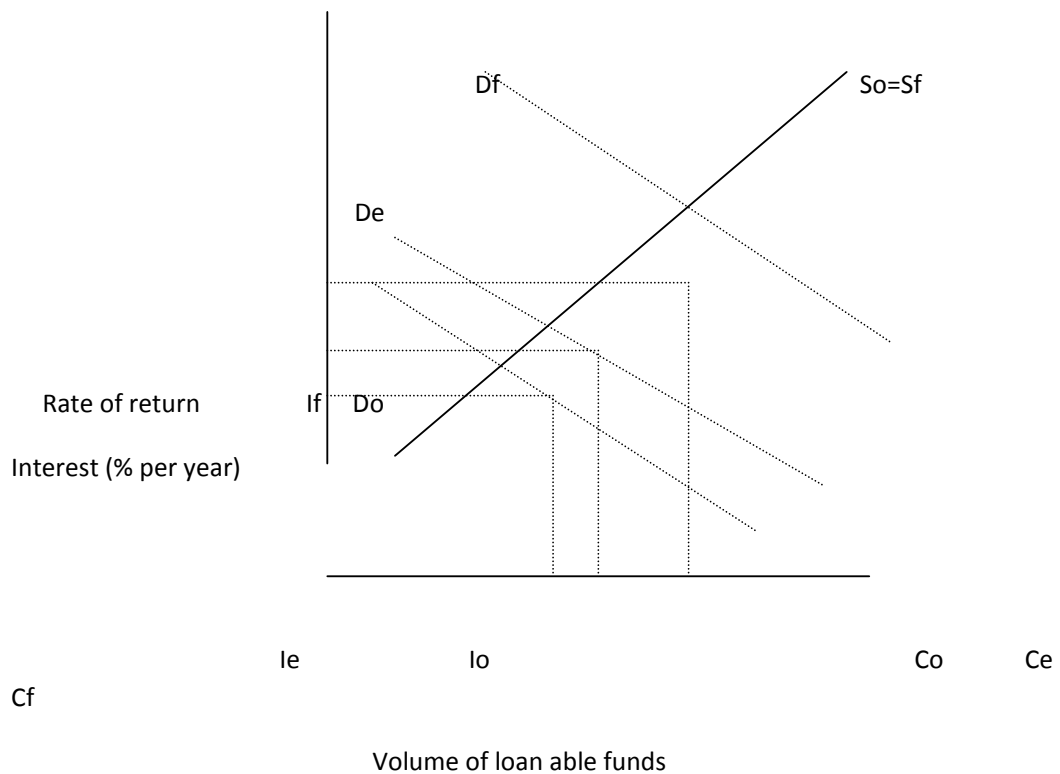
The important assumptions and conclusions of the rational expectation theory are that 1) the price of securities and interest rates should reflect all available information and the market uses all this information to establish a probability distribution of expected future prices and interest rates; 2) changes in rates and security prices are correlated only with unanticipated, (not anticipated), information; 3) the correlation between rates of return in successive time period is zero ; 4) no unexploited opportunities for profit (above a normal return) can be found in the securities' markets ; 5) transaction and storage costs for securities are negligible and information costs are small relative to the value of securities traded; and 6) expectation concerning future security prices and interest rates are formed rationally and efficiently.(Rose;1997:211).

If the money and capital markets are highly efficient in the way we have described, this implies that interest rates will always be at or very near their equilibrium levels. Any deviation from equilibrium rate dictated by demand and supply forces will be almost instantly eliminates security trader who hope to consistently earn windfall profits from correctly guessing whether interest rates are too high are unlikely to be successful in the long run. Interest rates fluctuations around equilibrium are likely to be random and momentary. If market participants were expecting increased demand for credit (with supply unchanged), an unexpected announcement of reduced credit demand implies lower interest rates in the future. Similarly, a market expectation of less credit demand in the future (with supply unchanged), when confronted with an unexpected announcement of higher credit demand; implies that interest rate will rise.

We can illustrate the foregoing points about the rational expectation theory of interest by modifying the loan able funds theory of interest so that its demand and supply schedules reflect not just actual demand and supply but also the expected demand for and supply of loan able funds(Rose1997:213).

The figure no 2.6 depicts the equilibrium rate of interest under rational expectation theory. 'Do' and 'So' reflect the actual demand and supply of loan able funds for current period, while 'Df' reflects the actual demand for loan able funds for current period, while 'Df' reflects the actual demand for loan able funds that will prevail in the next future time period. The supply of loan able funds is assumed to be the same in both times (So=Sf).

**Figure 2.6;** Equilibrium interest rates under rational expectation theory



Now imagine that during the current period, the government makes an unexpected announcement of its increased need to borrow more money in 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' intersects the actual supply curve 'So'. The equilibrium quantity of loan able funds traded in the current period then will be 'Co' not 'Ce'. This is because, according to the rational expectation theory, borrowers and lenders will act as rational agents, using all the information they possess (including expected events) to price financial assets today. When the future period arrives, the equilibrium interest

rate will rise to rate 'If' then quantity of loan able funds traded will be 'Df'. The equilibrium rate moves upward because the demand for loan able funds in period 'f' is more than the expected future loan able funds in period 'f' is more than the expected further loan able funds demanded in period 'f' increase upward and beyond 'Do' but by a smaller amount than was anticipated by investors in the market in period 'o'. Demand schedule 'Df' would then fall somewhere between 'Do' and 'De'. The equilibrium interest (with supply curve unchanged) would be lower than i.e. laying somewhere between 'Io' and 'Ie'.

#### **2.2.4 Terms Structure of Interest Rates:**

The term structure of interest rates describes the relationships between interest rates and loan maturity. The yield to maturity on a long-term bond is computed in exactly the same way one would solve for the internal rate of return on a security. For example, we cannot draw a yield curve for describes bearing different degree of credit risk or subject tax laws because both risks and tax laws affect relative yields along with maturity. The shorter-term maturities carry lower rates of interest than the longer-term maturities.

Three points should be made in term structure of interest rate.

1. Both long term and short-term rates generally declined over the period.
2. Short-term rates were more volatile than long-term rates.
3. Long-term rates were generally above short-term rates.

#### **Theoretical Explanations for the Term Structure of Interest rate**

Three theories have been advanced to explain the term structure the relationship between short term and long-term interest rates: the expectations theory, the liquidity preference theory and the market segmentation theory.

### **Expectations Theory:**

The unbiased expectations theory asserts that expected future interest rate are equal to forward rates computed from observed bond prices. The n-period forward rate is the yield to maturity that is fixed today on a T-year bond from year T-n to year T. In order to keep things simple; we will stick to one-period forward rates.

According to the expectation theory, the term structure of interest rates is determine solely by expectations of future interest rates to understand how interest rate expectations may influence the yield curve, assuming that the annualized yields of short-term and long –term securities are similar; that6 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 increase. When investors flood the short-term market and avoid the long-term market, they may cause the yield curve to adjust. The large supply of funds in short-term markets will force annualized yields down. Meanwhile, the reduced supply of long-term funds forces long-term yields up.

Even though the annualized short-term yields become lower than annualized long-term yields, investors in short-term 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 at maturity.

## **Liquidity Preference Theory**

The future is inherently uncertain and when uncertainty is considered, the pure expectations theory must be modified. To illustrate, let us consider a situation where future short-term rates are expected to remain unchanged on average, but they may be higher or lower depending on changes in the money supply. In this case, the pure expectations theory predicts that short and long term bonds sell at equal yields. The liquidity preference theory, on the other hand holds that long-term bonds must yield more than short term bonds for two reasons. First in a world of uncertainty, investors will, in general, prefer to hold short-term securities because they are more liquid; they can be converted to cash without losing principal. Investors will, therefore, accept lower yields on short-term securities, second, borrowers react exactly the opposite from investors business borrowers generally prefer long-term debt because short term debt subjects a firm to greater changes of having to refund debt under adverse conditions. Accordingly, firms are willing to pay a higher rate, other things held constant, for long-term funds.

## **Market segmentation theory**

The expectation theory assumes that, in the aggregate, lenders and borrowers are indifferent between long and short-term bonds except for any expected yield differential based on maturity. The liquidity preference theory states that an upward bias exists the yield curve slopes upward to a greater than is justified by expectations about future rates because investors prefer to lend short while borrowers prefers to borrow long.

The market segmentation, institutional, hedging-pressure theory admits the liquidity preference argument as a good description of the behavior of investors with short horizons, such as commercial banks, which regard certainty of principal as more important than certainty of income because of the nature of their deposit liabilities. However, certain other investors with long term liabilities, such as insurance companies, might prefer to buy long term bonds because, given the nature of liabilities, they find certainty of income highly desirable on the other hand, borrowers relate the maturity of

their debt to the maturity of their assets. Thus, the market segmentation theory characterizes market participants as having strong maturity preference, and then argues that interest rates are determined by supply and demand in each segmented market, with each maturity constituting a segment. In the strictest version of this theory, expectations play no role bonds with different maturities are not substitutes for one another because of different demand preferences or the preferred habitant of both lenders and borrowers.

### **2.2.5 Factors Affecting Interest Rates**

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

#### **a) Marketability**

Marketability is positively related to the size and reputation of the institution issuing the securities and to the number of similar securities outstanding. Not surprisingly, stocks and bonds issued in large blocks by the largest corporations and government units tend to find acceptance more readily in the market. With a larger number of similar securities available, buy-sell transactions are more frequent, and a consistent market price can be established.

Marketability is a decided advantage to the security purchaser. In contrast, the issuer of securities is not particularly concerned about any difficulties the purchaser may encounter in the resale market unless lack of marketability significantly influences security sales in the primary market. And where marketability is a problem, it does influence the yield the issuer must pay in the primary market. In fact, there is a negative relationship between marketability and yield. More marketability securities generally carry lower

expected returns than less marketable securities, other things being equal. Purchasers of securities that can be sold in the secondary market only with difficulty must be compensated for this inconvenience by a higher promised rate of return.

## **b) Liquidity**

Marketability is closely related to another feature of financial assets that influences their interest rate or yield: their degree of liquidity. A liquid asset is readily marketable. In addition, its price tends to be stable over time and it is reversible, meaning the holder of the asset can usually recover 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 than illiquid assets. Investors strongly interested in maximum profitability try to minimize their holdings of liquid assets.

## **C) Call Privileges**

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

#### **d) Default Risk**

"Another important factor causing one interest rate to differ from another is the degree of default risk carried by individuals. Investors in 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 items. All securities except government securities are subject to varying degrees of default risk"(Meir:1993:152).

#### **e) Prepayment Risk**

"A newer form of risk affecting the relative interest rates confronting many modern investors arises when they acquire so-called loan-backed securities, such as mortgage pass through, collateralized mortgage obligations (CMOs), auto-loan-backed securities and credit-card-backed securities"(Meir:1993:153)". These instruments are usually created when a lending institution, such as a bank or mortgage company, removes a group of similar loans from its balance sheet and places them with a trustee who, using the loans as collateral, sells securities. As the loans in the pool generate interest and principal payments, these payments flow through to holders of the loan-backed securities. Unlike ordinary bonds, which usually pay nothing but interest until they finally reach maturity, loan-backed securities pay their purchasers a stream of income that includes both repayments of loan principal and interest. In this case, the purchaser may receive higher than expected repayments of principal early in the life of the pooled loans, possibly lowering his or her expected return from loan-backed securities. Investors in those loan-backed securities that carry substantial prepayment risk will demand higher yields to compensate them for the risk associated with early prepayment of the loans backing the securities they hold.

## **f) Taxation**

Taxes imposed by federal, state, and local governments have a profound effect on the returns earned by investors on financial assets. The income from most securities-interest or dividends and capital gains-is subject to taxation at the federal level and by many state and local government as well. Government uses its taxing power to encourage the purchase of certain financial assets and thereby redirect the flow of saving and investment toward the areas of critical social need.

## **g) Convertible**

Another factor that affects relative rates of return on different securities is convertibility. Convertible securities consist of special issues of corporate bonds or preferred stock that entitles the holder to exchange these securities for a specific number of shares of the issuing firm's common stock. Convertibles are frequently called *hybrid securities* because they offer the investor the prospect of stable income in the form of interest or dividends plus capital gains on common stock once conversion occurs. The timing of conversion is usually at the option of the investor. However, an issuing firm often can "force" conversion of its securities by either calling them in or by encouraging a rise in the price of its common stock (such as by announcing a merger offer), because conversion is most likely in a rising market.

Investors generally pay a premium for convertible securities over nonconvertible securities in the form of a higher price. Thus, convertible will carry a lower rate of return than other securities of comparable quality and maturity issued by the same company. This occurs because the investor in convertibles is granted a hedge against future risk. If security prices fall, the investor still earns a fixed rate of return in the form of interest income from a convertible bond or dividend income from convertible preferred stock.

## 2.2.6 Inflation and Interest Rates

one of the most serious problems confronting economics around the globe in recent years is inflation. Inflation is defined as a rise in the average level of prices for the goods and services. Interest rate represented the 'price' of credit. Interest rate is affected by the inflation. If inflation rate is rises than the interest rate also rise and vice versa. So there is positive relationship between the inflation and interest rate. But the exact effect of inflation on interest rate is yet to be identified. On this observe, there are many theories. but there in this case mainly two theories are discussed.

### The nominal and Real Rate of Interest

The nominal interest rate is the rate actually observed in the market. But, real rate is a concept that measures the return after adjusting for inflation. Therefore the difference between the nominal interest rate and the expected inflation rate is the real is the real return to a saver after adjusting for the reduced purchasing power over the time period of concern." In other words, nominal rate of return are money rates of return that are not adjusted for the effect on inflation.

Similarly, the real interest rate is the return tithe lender or investor measured in terms of its actual purchasing power. In a period of inflation, of course, the real rate will be lower than the nominal rate. An Investment's real rate of interest during some period calculated by removing the rate of inflation from the nominal return i.e. by using following equation:

$$(1+r)=(1+r)^*[1+E(i)]$$

where,

r=nominal inter

r\*=real interest rate

E(I)=expected rate of inflation.

### **The Fisher Effect:**

Economy theory tells us that interest rates reflect expectations about likely future inflation rates. In countries where inflation is expected to be high, interest rate also will be high, because investors want compensation for the decline on the value of money. This relationship was first formalized by economist Irvin Fisher and is referred to as the Fisher's Effects. According to the Fisher Effect, nominal interest rate is related to the real rate by the following equation.

$$\text{Nominal interest rate} = \text{Expected real rate} + \text{inflation premium} + (\text{Expected real rate} \times \text{inflation premium})$$

According to the Fisher, the cross-product term in the above equation (i.e. Expected real rate  $\times$  inflation premium) is often eliminate because it is usually small except in countries experiencing severe inflation. So, the fisher's equation can be written as:

$$\text{Nominal interest rate} = \text{Expected real rate} + \text{inflation premium}$$

Clearly, if the expected real interest rate is held fixed, changes in nominal rate will reflect shifting inflation premium. It means that if inflation premium increase then nominal rate also increases. But this does not necessarily means that an increase in expected inflation automatically increase nominal interest rates. There are several different views on this matter but depends on such long term factors as the productivity of capital and the likely to influence only the nominal interest rate, at least in the short run. The nominal rate will rise by the full amount of the expected increase in the inflation.

If this view, known today as the Fisher Effect, is correct, it suggests a method of judging the direction of future interest rate changes. To the extent that a rise in the actual rate of inflation causes investors to expect greater inflation in the future, higher nominal interest rates will soon results. Conversely, a decline in the actual rate of inflation may cause investors to revise downward their expectation of future inflation, leading to lower nominal rates. This will happen because, in the efficient market, investors will be compensated for the risk of expected changes in the purchasing power of money.

### **The Harrod –Keynes Effect on Inflation:**

There is another view about inflation interest rate relationship propounded originally by British economist Sir Roy Harrod. This view conflicts with that of Fisher's effect. It is based up on the Keynesian Liquidity preference theory of interest rate. Harrod argues that the real rate will be affected by inflation but the nominal rate need not be. Following the liquidity performance theory, the nominal interest rate is determined by the demand for and supply of money. Therefore, Unless inflation affects either the demand for and supply of money, the nominal rate must remain unchanged regardless of what happens to inflationary expectations. According to this principle, Harrod argues that a rise in the inflationary expectations will lower the real rate of interest. In liquidity preference theory, the real rate measures the inflation-adjusted return on bonds. However, conventional bonds, like money, are not a hedge against inflation, because their rate of return is fixed by contract. Therefore, a rise in the expected rate of inflation lowers investors' expected real return from holding bonds. If the nominal rate of return on bonds remains unchanged, the expected real rate must be squeezed by expectations of rising prices.

#### **2.2.7 Impact of inflation on interest rates**

One of the most serious problems confronting 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 price 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. However, inflation occurs when an increase in some general index of prices, such as the consumer prices or the broad based implication gross national product deflation takes place.

There is positive correlation between inflation and interest rate in the market. Since the inflation reduces the purchasing power of consumer (investors), they must be compensated for 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 since it incorporated the prices on all subcomponents of the national product: consumption, investment, government, spending and export.

### **2.2.8 Concept of Deposit:**

"Deposit is the sum of money lodged with a bank, discount house or other financial institution"(Shrestha and bhandari:2005:281). Deposit is nothing more than the assets of an individual that is given to the bank for safekeeping with an obligation to get something (interest) from it. To a bank, these deposits are liabilities. Commercial bank Act 2031 defines "deposits" as the amount deposited in a current or savings or fixed accounts of a bank or financial institution. The deposits are subject to withdrawals by means of check on a short notice by customers. There are several restrictions on these deposits, regarding the amount of deposit, number of withdrawals etc. These are considered more as investments and hence they earn interest. The rate of interest varies depending on the nature of the deposits. The banks attract deposits from customers by offering different rate of interest and different kinds of facilities. Though the bank plays an important role in influencing the customer to save and open deposits accounts with it, it is ultimately the customer who decides whether s/he should deposit his/her surplus funds in current deposits a/c, saving deposits or fixed/time deposit a/c. Banks deposits arise in two ways. When the banker receives cash, it credits the customer account, it is known as a primary or a simple deposit. People deposit cash in the banking system thereby convert one form of money, cash, into another form, bank money. They prefer to keep their money in deposit accounts and issue check against them to their creditors, deposit also deposits arise when customers granted accommodation in the form of loans. When a bank grants loan to customer it does not usually pay cash but simply credits the customers' accounts with amount of loan. Of course, there is that prevents the borrower from withdrawing the entire amount of borrowing in the cash but quite often s/he retains the amount with the bank as deposit.

### **Types of Deposit**

There are different types of deposit. But for this study, major three types of deposit are taken. They are:

#### **a) Current deposit:**

A current deposit is a running account with amounts being paid into and drawn out of the continuously. These accounts are also called demand deposit or demand liabilities since the banker is under an obligation to pay money in such deposit in demand. The account never becomes time barred, because the limitation does not run until the customer makes the demand by the bank for the payment of deposit. These accounts are generally opened by business

houses, public institutions, corporate bodies and other organization whose banking transactions are numerous and frequent. As these deposits are payable on demand, banker is obliged to keep larger cash reserve than are needed in the cash of fixed and saving deposits. This type of account is just a facility offered by the bank to its customers. So much deposit does not yield any interest return.

The deposit in which an amount is immediately paid at the time of any account holder's demand is called demand deposit. Its transaction is continual and a very small portion of such deposit can be invested in the productive sector. Though the bank cannot gain significant profit by investing in new sector, this is one of the facilities given to the customer. Therefore, the bank does not give interest on this account. For this study this types of deposit is not suitable.

### **b) Saving deposit**

According to Commercial Bank Act 2031 saving account means “an account of amounts deposited in a bank for saving purposes.” The saving deposit bears the features of both the current and fixed deposit period's deposit. Saving accounts are mainly meant for non-trading customers who have some potential for saving and who don't have numerous transactions entire their account. While opening the account the minimum compensating balance differ according to the banks rule. Similarly there is also divergence as to how much amount of money can be withdrawn. But if the customers want to withdraw more money from the bank that is not allowed by it but if s/he gives pre-information to the banks, s/he can withdraw more money. The bank fixed the minimum and maximum amount of withdraw able through a check from this deposit. If the banks go into liquidity, priority is given to the saving deposit than current and foxed deposits while repaying the liabilities.

### **c) Fixed Deposit**

Fixed deposit constitute vary important resource for banks as bank need not keep greater reserve in respect of such deposit. Under the commercial act 2031, “Fixed account means as account of amount deposited in a bank certain period of time.” "The customers opening such account deposit their money in account of fixed period. Usually, only the person or institution that wants to gain more interest opens such type of account"(Radhaswamy and Devan;1979:72). High interest rate is paid to this deposit as compare to saving deposit. The bank and customer can take benefit from deposit. The bank invests this money on the productive sector and gains profit the customer also can be made his financial

transaction stronger by getting more interest from this deposit. The principal amount with interest must be returned to the customer after expiry if fixed time. Fixed deposit receipt is not transferable by endorsement and certainly not negotiable. However the debt covered by the fixed deposit receipts can be assigned. For this bank charge some interest higher than the interest allowed on the deposit.

### **2.2.9 Concept of lending (credit)**

Another important function of commercial bank is to provide different types of loans or credit." The word 'credit' means 'trusting'. In credit transaction the lender (or banks) must have confidence in the borrower that s/he will be able to repay the money. In credit transaction, the creditor turns over to the debtor to repay an equivalent amount usually money in future plus and added sum called interest. In other words the commercial bank earns profit by lending the amount in terms of loan or credit and in return it gets interest. Bank loans are classified as: A) Loans and advances, B) Overdrafts C) Cash credit D) discounting of bills so on"(Shrestha and Bhandari;2000:225). But besides this, the forms of credit are: Bills of exchange, check, drafts, promissory notes, letter of credit, travels check, treasury bills, book credit.

If credit is made to the government the credit is known as public credit and if the private transacts credit for his own purpose the credit becomes private. There is certain distinction between private and public credit. Bank is the major source of credit to both private and public debtor. Sometimes bank also take credit. There is another type of credit known as investment credit and commercial credit that can be divided according to the credit which is used for investment and the latter for trade purposes. Similarly, another classification is customer's credit and producer's credit. The latter type of credit is the advance made to individuals firm, companies and governments, which are used to facilitate the production of goods and services.

### **Factors affecting the volume of lending**

The volume of credit within a country depends upon different factors. For this study only the effect of interest rate is taken into consideration and other factors are not considered. Some of the factors affecting the volume of credit are as follows:

### **Credit rate**

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

### **Rate of return**

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

### **Investment opportunity**

If investment opportunity within the country is high, the volume of credit becomes high. The basic things for investment stimulation is easy and cheap credit. More investment opportunity will be available when the interest rate is low.

### **Pace of financial development**

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

### **Bank infrastructure**

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

### **Public condition**

Political condition, especially political in-stability, is also one of the major causes of low volume of credit. In such a case none would like to risk his capital in new ventures. The present condition of the country is the glaring example of this.

In addition to abovementioned point, other factors like trade condition, currency condition are also the factors affecting the volume of credit.

### 2.2.10 Interest rates charged by institutional lenders

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

- ❖ The simple interest method
- ❖ Add-on rate of interest
- ❖ Discount method
- ❖ Home mortgage interest rate
- ❖ Annual percentage rate
- ❖ Compound interest

#### **The simple interest rate:**

If the interest rate is paid at the maturity of a loan, the stated rate of interest is the effective rate of interest. Both the amount of interest and principal are paid at the end of maturity period of loan, under this method.

Effective Rate of Interest = Interest amount/Amount borrowed

#### **Add-On Rate of Interest:**

A method for calculating loan interest rates often used by finance companies and banks is the add-on rate approach. In this instance, interest is calculated on the full principal of the loan, and the sum of interest and principal amount is divided by the number of payments to determine the dollar amount of each payments.

Borrowed amount = periodic payment (PVIFA,r%,n periods)

Where,

n = number of payments

r = interest rate

PVIFA = Present Value Interest Factor for an annuity.

**Discount Method:**

Many commercial loans, especially those used to raise working capital, are extended on a discount rate. This so called discount method for calculation loan rates determined 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.

$$\text{Effective interest rate} = \text{Interest paid}/\text{Net loan proceeds}$$

**Home Mortgage Interest Rate:**

One of the most confusing of all rates charged by lenders is the interest rate on a home mortgage loan. Many homebuyers have heard that under the terms of most mortgage loans, their monthly payments early in the life of the loan go almost entirely to pay the interest on the loan. Only later is the substantial part of each monthly payment devoted to reducing the principal amount of a home loan. The monthly interest payment will be fall and the amount left over to help retire the loan’s principal will rise. After several years, as the mortgage loan’s maturity date gets near, each monthly payment will consist mostly of repaying the loan principal itself.

In the basis of the monthly payment

$$\left[ \begin{array}{c} \text{Loan} \\ \text{Interest} \\ \text{Rate} \end{array} \right] \left[ \begin{array}{c} \text{loan} \\ \text{interest} \\ \text{rate} \end{array} \right]_{r \times 12}$$

$$\frac{\quad}{12} \quad 1 + \quad \frac{\quad}{12}$$

Total amount borrowed ×

$$\left[ \begin{array}{c} \text{Loan interest} \\ \text{Rate} \end{array} \right]_{r \times 12} - 1$$

$$1 + \frac{\quad}{12}$$

## **Annual Percentage Rate (APR)**

The wide diversity of rates quoted by lenders is often confusing and discourages shopping around for credit. This law requires institutions regularly extending credit to consumers to tell the borrower what interest rate he or she is actually paying and to use a prescribed method for calculating that rate. Specially, banks, credit unions, and other lending institutions are required to calculate an annual percentage rate and inform the loan customer what this rate is before the loan contract is signed. The actuarial method is used to determine the APR, and loan officers usually have tables at hand to translate a simple interest or add on rate into the APR.

The constant ratio formula, shown below, usually gives a close approximation to the true APR.

$$\text{APR} = \frac{2 \times \text{numbers of payments in a year} \times \text{Annual interest cost}}{(\text{Total number of loan payments} + 1) \times \text{Principal of the loan}}$$

## **Compound Interest:**

Some lenders and loan situations require the borrower to pay compound interest on a loan. In addition, most interest-bearing deposits at banks, credit unions, savings and loans, and money market funds pay compound interest on the balance in the account as of a certain date. The compounding of interest simply means that the lender or the depositor earn interest income on both the principal amount and on any accumulated interest. Thus, the longer the

period over which interest earning are compounded, the more rapidly does interest earned on interest and interests earned on principal grow.

The conventional formula for calculating the future value of a financial assets earning compounded interest is simply,

$$Fv = P (1+r)^t$$

Where,

Fv = future value

P = principal value

r = annual rate of interest

t = time expressed in years.

### **2.2.11 Review of thesis:**

During this thesis preparation, there are very few thesis and research paper submitted to the libraries of Tribhuvan University and its wing college on the same topics. But beside this, there are some other thesis that is related to this study to some extents. The review and the extract from them are presented in this section.

Those students who have prepared the thesis on related to deposit and lending or interest or banking and financial institution, these students have studied of Guru Prasad Neupane's thesis entitled to "Money, Interest rates, and Financial development in Nepal". Which is imposed me to study of Guru's thesis. From his major objectives are given below:

- a) to examine the financial development position of Nepal
- b) To study the trend of money supply change and factors affecting money supply.
- c) To analyze the trend of interest rate of various financial institutions.

In his analysis, most of the information and data have been collected from secondary sources. Various data have been collected from the booklets, reports and other information published from NRB, Commercial banks, Ministry of Finance, Center of economic development and administration and this work is based on descriptive research work.

From his thesis, It has been found that interest rate is one of the most important devices for resource mobilization and interest rate play a major role in the financial development in Nepal. He added, the cause of interest rate lowered in our country is weak plan between credit demand and supply. Finally, he concluded that mobilize the resources and to divert in to productive work: Institutional interest rates should be made higher.

**Narendra Bahadur Rajbhandari (1978)** was conducted a study on “The Interest rate structure of Commercial Bank in Nepal”. The objective of this study was to show the relation of interest rate with saving and fixed deposit; with loans and advances; and 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 correlated 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 relationship 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 positive if absolute cumulative figures are taken. But the growth rate of total loans and advances except investment in HMG securities is negatively correlated more with the weighted average rate of interest since 1971. 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 Banizya Bank, The

sample organization of the study. He is in view that NRB can well monitor the credit flow and profits of the commercial banks in Nepal by manipulating the rates of interest. It can also manipulate the demand for and supply of money.

**Rameshewori Pandey (1979)** conducted a study on “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 the interest rate and 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 that time, was fully controlled by NRB.

**Kishor Khatri Chettri's(1980)** was conducted a study on “Interest rate structure and its relation with deposits, inflation and credits in Nepal” tried to identify the relationship of interest rate with three other factor deposit, credit and inflation. However, this study has similar topic as of Mr. Panday but some of his objectives were different from this study. His reaches objectives are:

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

His analysis is based on secondary data which is taken from published and unpublished bulletins and mimeograph of Nepal Rastra Bank. Interest rate of specially commercial banks have been discussed and few about NIDC and ADB/N has been taken.

His study found that rate of interest is directly affected by the rate of inflation . He found that the price level of Nepal is linked with Indian prices and also found very high inflation during his study period. He also found out the negative relationship between credit flow and loan 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.

**Yam Lal Bhoosal(1995)** carried out a study entitled “An Analysis of Causes 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.

**Neeta Dongol (2003)** carried out study on the topic of “Impact of Interest Rate on Financial Performance of Commercial Banks” where she concluded:

- a) Most of the commercial banks contradict the general financial theories.
- b) 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.
- c) 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.
- d) Correlation between interest rate and inflation is not significant.
- e) Not only interest rate is responsible to shape the profitability of banks but also the operating efficiency also has major influence on it.

**Depak Raj Bhandari (1978)**, Conducted his master's thesis on “The Impact of Interest Rate Structure on investment Portfolio of Commercial Banks in Nepal”. The objectives of this study are given below:

- a) To cast a glance at the historical background of interest rate structure of commercial banks, policies, decisions and strategies regarding it and their impact.
- b) To present and analysis interest rate structure of commercial banks in different time period.

- c) To assess the impact of interest rate structure of commercial banks on their investment portfolio by analyzing their deposits, loans, advances, interest spread, investment and bills purchased and discounted.

In his analysis two commercial banks and three joint venture banks are taken for the purpose of the study. Most of data and information and data have been collected from discussion and interview, both the financial and technical tools are used for the analysis of data. Finally he has concluded follows:

a) Rates of commercial banks have been fluctuating. Deposits and lending rates were increased immediately after liberalization of the interest rate on August 31, 1989 but, however, started to decline which have helped in increasing the credit flow.

b) Interest rate structure has direct influence on profitability of commercial banks. Decreasing lending rate helps to increase the profitability through increasing the credit.

c) Deposits are more interest rate conscious and positively co-related.

d) Loans and advances of commercial banks have been found to be continuously increasing with the decline in interest rates.

e) Effective interest rate structure helps in proper utilization of resources as measured by loan to deposit ratio.

f) Most of the banks are having similar interest rate structure, which lessens the importance of liberalization of interest rate.

A study made on the topic, “Determinations of Interest Rates in Nepalese Financial Market” by **Jhabindre Pokharel** in 2004 also gives some ideas about the interest rates in Nepalese financial markets. Though, This thesis tried to identify the factors that shape the interest rates in Nepalese markets, credit rates and inflation. Some objectives of this study are as follows.

- ❖ To show the relationship between the liquidity position and interest rate on deposit and lending.
- ❖ To identify the effect of inflation on interest rate charged and offered by various Nepalese financial institution.
- ❖ To identify the different methods used by Nepalese financial institution to calculate interest on lending.
- ❖ How the interest rate offered on deposit affected by maturity period and other economic factors.

Another study was made by **Sashi Bhatta** on 2004 in the topic “Interest Rate and its Effect on Deposit and Lending”. In this study, the disseminator tries to portrait the relation of interest rate with deposit and lending amount. Her findings and the relation made by Mr. Chettri are seems to be different. According to him, all the relation matches with the theory but Mrs. Bhatta’s finding on deposit was not as per theory. But other matters are same as Mr. Chettri’s. The conclusions drawn by Mrs. Bhatta are:

- a) Deposit rates of all sample banks under study are in decreasing trend; meaning that every year deposit rates of sample banks under study have decreased.
- b) Lending rates of all sample banks under study are also in decreasing trend; means that every year lending rates of sample banks under study have decreased.
- c) Analysis shows that interest rates on lending are far higher than deposit rates of sample banks. The correlation coefficient between these two variables samples banks comes highly positive.
- d) The simple correlation coefficient between deposit rate and deposit amount of sample banks were highly negative. But out of them, correlation coefficient analysis of one sample bank is found to be negative. It means

that in that case the theory does not match the analysis. So writer conclude that the result appears in that study was different than the theory.

- e) The correlation analysis between lending rate and lending amount of all sample banks under study comes highly negative. This relation between two variables (lending rate and lending amount) of sample banks matches with the theory, which says with the increase in lending rate, lending amount decreases, and vice-versa. So she concluded that lending rate is the most important determinant of loan and advances of all commercial banks. This makes clear that borrower's seem more interest conscious.

Finally she made a conclusion that, there is significant relationship between deposit rate and deposit amount and lending rate and lending amount of almost all commercial banks. Test of significance for correlation coefficient between inflation rate and deposit and lending rate shows that these variables are not correlated.

### **Research Gap**

Since, the above-mentioned these on interest rate are vary god. However, these thesis does not show the relevant impact of interest rate on volume of lending and deposit. Most of the theses are particularly based on secondary data, but this study uses both primary and secondary data. Similarly, the earlier studies were conducted with earlier data, where financial institutions had had at the initial stage. The present study is based on recent data with necessary information and analysis. Therefore, this study finds out how the deposit and lending amount relate on interest rate with the both primary and secondary data.

## **Chapter Three**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction:**

Research Methodology is a systematic way to solve the research problem. In other words, research methodology describes the methods and process applied in the entire aspect of the study. Research methodology refers to the various sequential steps to be adopted by a researcher in studying a problem with certain objectives in view. Thus, the overall approach to the research is presented in this chapter. This chapter will consist of research design, sample size and selection process, data collection procedure and data processing techniques and tools.

### **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 or framework for the project that stipulates what information is to be collected, from which sources and by what procedures.

Thus in research there exist different types of research design like; Historical research, Descriptive research, Case study research, Field study research, analytical research, True experimental research and so on. This study is mainly concerned with historical research. If applicable, sometime descriptive and analytical approach may also be used. But generally, to show the relationship of interest rate with deposit amount, lending (Credit) amount and inflation rate, past historical data are used. The relevant and needed data has been collected from various publications of different commercial banks and Nepal Rastra Bank.

### **3.3 Population and Samples:**

The term "Population" or universe for research means the universe of research study in which the research is based. Since the research topic is about interest rate, all the lending and depository institutions of Nepal are the members of population study. The population for the study comprises 17 commercial banks, 17 Development Banks, 57 Finance Companies, 34 Saving and Credit Cooperatives, one Employee Provident Fund and other 40 Non-Government Financial organizations. Among the total population, only some selected institutions are taken as samples on a random basis. Similarly, due to unavailability of data from all sectors, only commercial banks are chosen for this study. So precisely saying, all 17 commercial banks are the population of this study and among them, only 5 commercial banks are chosen as samples from the total population. For selecting the samples, simple random sampling method is used here among different methods.

Organization under study are as follows, whose general introduction and major objectives are presented in chapter one.

- 1. NEPAL BANK LIMITED ( NB Ltd)**
- 2. RASTRIYA BANIJYA BANK**
- 3. AGRICULTURE DEVELOPMENT BANK/NEPAL**

### **3.4 Sources of Data and Collection Procedure:**

For this study, mainly Secondary Data are used. These secondary data are collected mainly from published sources like Annual Report, Prospectus, Balance Sheet, Newspapers, Journal, Internet and other sources. Besides this in some case, if needed, primary data may be used.

Secondary Data published on annual reports of concerning organizations, like interest rate as well as amount and their organizational profiles are collected through personal visit of respective organization as well as from their websites. Some secondary data like source and use of funds of respective bank, comparative study, and inflation rates are collected form Nepal Rastra Bank.

### **3.5 Data Processing and Presentation:**

The information or data obtained from the different sources will be in raw form. From that information, direct presentation will not be possible. So it will be necessary to process data and convert it into required form. After then only, the data will be presented for this study. This process is called data processing. For this study, only required data will be taken from the secondary source (Bank's publication). For presentation, different tables will be used. Similarly, in some case graphical presentation will also be made. For

reference, the photocopies of raw data will be attached. So far as the computation is concerned, it will be done with the help of scientific calculator and computer simple software program.

### **3.6 Data analysis tools**

In order to get the concrete results from this research, data will be analyzed by using different types of tools. As per topic requirements, emphasis will be given on statistical tools rather than financial tools. So for this study following statistical tools will be used.

#### **1. Arithmetic mean:**

It is the sum of all the observations divided by the number of observations. In such a case all the items will be equally important. Simple arithmetic mean is used in this study as per the necessity in analysis.

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

Where,

$\Sigma X$  = Sum of all values of the variable 'X'

n = Number of observations

X = Variables involved

## 1 Coefficient of Correlation ( $\rho$ ) :

By this statistical tool, the degree of relationship between two variables is identified. In other words, this tool is used 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 linked with the change in the other variables. The correlation analysis refers to the closeness of the relationship between the variables. Correlation may be positive or negative and ranges from -1 to +1. Simple correlation between rate and deposit amount, interest rate and credit or lending amount and interest rate (both deposit rate and lending rate) and inflation is computed in this thesis<sup>4</sup>. For example, let's talk about the correlation between interest rate and inflation is positive. It indicates that when inflation increases, interest rate also increases in the same direction and vice versa. For our study following reference will be used;

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

The simple correlation coefficient,  $r$ , will be calculated by using the following formula:

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

Alternatively,

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

Where,

$$\text{Covariance } (X_1, X_2) = \frac{1}{n} (X_1 - \bar{X}_1) (X_2 - \bar{X}_2)$$

n = Total number of observations.

$X_1$  and  $X_2$  = two variables, correlation between them are calculated

$$\text{3. Multiple Correlation Coefficient } (R_{1.23}) = \sqrt{\frac{r_{12} + r_{13} - 2r_{12}r_{13}r_{23}}{1 - r_{23}^2}}$$

Where,

$R_{12}$  = correlation coefficient between variables one and two.

$R_{23}$  = correlation coefficient between variables two and three.

$R_{13}$  = correlation coefficient between variables one and three.

Multiple Correlations is used for the measure of degree of association between one variable and a group of other variables as the independent variable. It lies between 0 and 1. The close it will to 1, the better the linear relationship between the variables. The closer it is to 0, the worse is the linear relationship.

#### 4. Coefficient of Multiple Determinations:

The square of the multiple correlation coefficients is called coefficient of multiple determination. It is very useful tool to interpret the value of multiple correlation coefficients. The main significance of the coefficient of multiple determinations is to represent the portion of total variation in the dependent variable which is explained by the variations in the two independent variables.

$$\text{Coefficient of Multiple Determination} = R_{1,23}^2$$

t-test for significance of sample correlation coefficient:

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

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

I.e. t follows t-distribution with n-2 degree of freedom (d.f.), 'n' being the sample.

The (1- $\alpha$ ) % confidence limits for estimating population correlation coefficient ( $\rho$ ) are given by

$$r \pm t_{\alpha} (n-2) \times \text{S.E.} (r)$$

$$= r \pm t_{\alpha} (n-2) \times \frac{1-r^2}{\sqrt{n}}$$

## **5. Variables**

Variables are the characteristics of persons, things, groups' programmed etc. thus a variable is symbols to which numerals or values are assigned. Deposit rate, lending rate, deposit amount, lending amount, inflation etc are variables of this study.

### **5.1. Dependent variable**

The variables that values dependent upon the other variables are called dependent variables. The researcher's purpose is to study, analyze and predict the variability in the dependent variable.

### **5.2. Independent variable**

The variable that is not influenced by any other variables is called independent variable. Any change in the independent variable, either positive or negative leads to change in the dependent variable.

## **6. Research Hypothesis:**

Testing of hypothesis is one of the most important aspects of the research study. It is the quantitative statement about the population parameter. It is an assumption that is made about the population parameter and then its validity is tested. By testing the hypothesis we can find out whether it deserves the acceptance or rejection of the hypothesis. The acceptance of hypothesis means there is no any sufficient evidence provided by the sample to reject it and does not necessarily imply that it is true. The main goal of testing of hypothesis is to test the characteristics of hypothesized population parameter

based on sample information whether the difference between the population parameter and sample statistic is significant or not. <sup>4</sup>

The hypotheses formulated for this study are as follows:

**First Hypothesis:**

*NULL HYPOTHESIS  $H_0$ :  $\rho = 0$*

That is, population correlation coefficient is zero. In other words, the variables (deposit interest rate and deposit amounts) are uncorrelated in Nepalese financial market.

*ALTERNATIVE HYPOTHESIS  $H_1$ :  $\rho \neq 0$*

That is, population correlation coefficient is not equal to zero. In other words, the variables (deposit interest rate and deposit amounts) are correlated.

**Second Hypothesis:**

*NULL HYPOTHESIS  $H_0$ :  $\rho = 0$*

That is, population correlation coefficient is zero. In other words, the variables (Credit interest rate and credit or loan amounts) are uncorrelated in Nepalese financial market.

*ALTERNATIVE HYPOTHESIS  $H_1$ :  $\rho \neq 0$*

That is, population correlation coefficient is not equal to zero. In other words, Credit interest rate and credit or loan amounts are uncorrelated.

### **Third Hypothesis:**

*NULL HYPOTHESIS  $H_0$ :  $\rho = 0$*

That is, population correlation coefficient is zero. In other words, there does not exist any correlation between interest rate on deposit and interest rate on lending.

*ALTERNATIVE HYPOTHESIS  $H_1$ :  $\rho \neq 0$*

That is, population correlation coefficient is not equal to zero. In other words, there exist any correlation between interest rate on deposit and interest rate on lending.

### **Forth Hypothesis:**

*NULL HYPOTHESIS  $H_0$ :  $\rho = 0$*

That is, population correlation coefficient is zero. In other words, the variables in population (Inflation and interest rate on deposit) in Nepalese financial market are not correlated.

*ALTERNATIVE HYPOTHESIS  $H_1$ :  $\rho \neq 0$*

That is, population correlation coefficient is not equal to zero. In other words, the variables in population (Inflation and interest rate on deposit) in Nepalese financial market are correlated.

**Fifth Hypothesis:**

*NULL HYPOTHESIS  $H_0$ :  $\rho = 0$*

The variables in population (Inflation rate and interest rate on lending) in Nepalese financial market are not correlated.

*ALTERNATIVE HYPOTHESIS  $H_1$ :  $\rho \neq 0$*

The variables in population (Inflation rate and interest rate on lending) in Nepalese financial market are correlated.

## **Chapter Four**

### **4. PRESENTATION AND ANALYSIS OF DATA**

#### **4.1 Introduction**

This is the section where, the collected data are presented and analyzed. This is the one of the major chapter of this study because it includes detail analysis and interpretation of data from which concrete result of Nepalese market can be obtained. In this chapter, the relevant data and information necessary for the study are presented and analyzed keeping the set in mind. this chapter consists of various calculation made for analysis of interest rate and its effects on deposit amount lending amount, and inflation rate for the sample banks. To make our study effective and precise as well as easily understandable, this chapter is categorized in three parts: data presentation, analysis, and findings. The analysis is fully based on secondary data available. In presentation section data are presented in terms of table, graph chart of figures, according to need. The presented data are then analyzed using different statistical tools mentioned in chapter three. At the last the result of analysis are interpreted. Though there

is no distinct line of demarcation for each section (like presentation section, analysis section, and interpretation) but the arrangement of writing is made by aforementioned way, similarly, it is also noted that almost all data used for analysis are of secondary type.

For our simplicity, in this thesis, presentation analysis and findings of data are made according to the nature. In the words, at first relationship between deposit and interest rate of all 3 sample banks are analyzed. After then, the relationship between interest rate and inflation rate is presented. While analyzing, different statistical tools like correlation coefficient, coefficient of determination, t-statistics for significance are employed.

## **4.2 Analysis of Deposit and Interest Rate:**

In this section, detail study is made about deposit amount and interest rate of various banks. For this study only saving and fixed are considered because current deposit doesn't earn any interest. Similarly, call and other deposit prevailed this in the market are also ignored.

### **4.2.1 Rastriya Baniya Bank:**

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

**Table no- 4.1**

**Interest rate structure on deposit of RBB as on end of 2009**

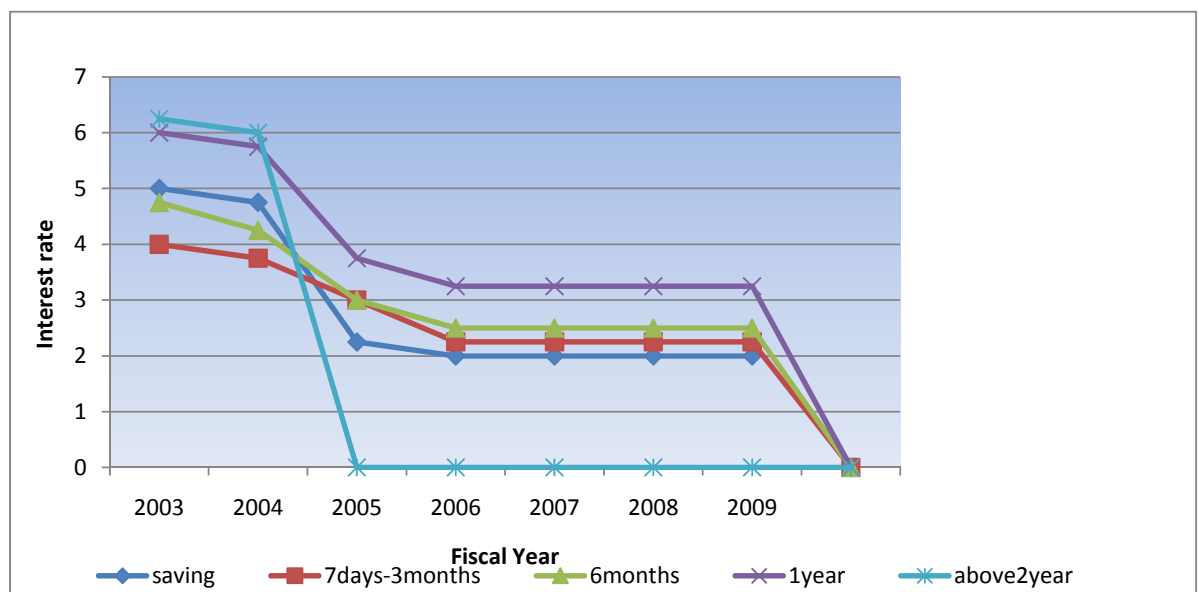
Deposit	2003	2004	2005	2006	2007	2008	2009
savings	5.00	4.75	2.25	2.00	2.00	2.00	2.00
Fixed	-	-	-	-	-	-	-
7days	-	-	-	-	-	-	-
14days	-	-	-	-	-	-	-
1month	-	-	-	-	-	-	-
3months	4.00	3.75	3.00	2.25	2.25	2.25	2.25
6months	4.75	4.25	3.00	2.5	2.5	2.5	2.5
1year	6.00	5.75	3.75	3.25	3.25	3.25	3.25
above 2 years	6.25	6.00	-	-	-	-	-
Whole mean	5.2	4.94	3.00	2.50	2.50	2.50	2.50
fixed deposit mean	5.25	4.94	3.25	2.67	2.67	2.67	2.67
Std.Deviation	Whole Mean= 0.274			Fixed deposit mean=0.0114			

Source: Banking and Financial statistics, No: 38-40, NRB

Table 4.1 shows the deposit interest rate of RBB in 7 different FY. For this study 2003 is taken as initial year & 2009 as a final year. The table portrays the interest rate that were prevailed in the Nepalese financial market during last 7 years. The data shows the decreasing tendency of interest rate. The interest on saving deposits in the beginning year was 4.75% and decreased to 2.00% in 2009. This is 58% reduction during 7 years period. The bank did not make the interest rate of fixed deposit on different short term like 3 months, 14 days, 1

month and 2 months from 2003 to 2009 on short term period. The bank quotes the interest rate of fixed deposit indifferent period like 3 months 6 months, 1 year and above 2 years. For the graph purpose, in this study the of 3 months 1 year is taken to make figure clear. For the periods also the fixed deposit rate was in decreasing trend. The decreasing tendency is high for long period interest rate. During the 3 years period the decline percentage 43.75%, 40.00% 25.00% respectively for the month 3. Similarly, if average of fixed deposits of different period is taken, then the is almost similar with whole average. It means the average rate of fixed deposit only was 5.25, 4.94, 3.25, 2.67, 2.67, 2.67, and 2.67 respectively for the year 2003, 2004, 2005, 2006, 2007, 2008 and 2009 respectively. Interest rate was slightly higher than year 2003 but ultimately felled to the 2.67 in 2006. If the mean is taken of all (both fixed & saving) then average interest rate on deposit was 5.2, 4.9, 3, 2.5, 2.5, 2.5 2.5 respectively for the year 2003, 2004, 4005, 2006, 2007, 2008, 2009. Interest rate on deposits of saving and fixed was remaining constant for the fiscal year of 2006, 2007, 2008 and 2009. All the above described matters can be shown on figure 4-1 as follows.

**Figure No 4.1: Interest Rate of RBB Deposits during Different FY**



The graph 4.1 reveals that, all the period interest rates are on declining trend saving interest rate and for deposit 2003 to 2006. After 2006, interest rate on saving and fixed deposit remains constant. In this case, whole average interest rates is fluctuation previous 3 years then after remain constant.

**Correlation Coefficient, Coefficient of Determination and t-statistics of RBB**

*Table no 4.2*

*Relationship between Interest Rate and Deposit amount of RBB*

Year (1)	Saving Deposit Interest rate (2)	Saving Deposits Amount (3)	Fixed Deposit Interest rate (4)	fixed Deposit Amount (5)
2003	4.75	20861.2	4.94	13579.5
2004	2.25	23288.9	3.25	11572.8
2005	2.00	26848.2	2.67	9001.5
2006	2...	29494.9	2.67	8103.8
2007	2.00	31920.3	2.67	7325.6
2008	2.	33756.1	2.67	6912.3
2009	2.	33756.1	2.67	6912.3
Correlation	$r_{23} = -0.82604$		$r_{45} = 0.9438$	
Correlation Coefficient	$r^2_{23} = 0.68$		$r^2_{45} = 0.89$	
t-statistics	t-cal= 3.0785	t-tab= 2.571	t-cal= 6.3623	t-tab= 2.571

Source: Banking and Financial statistics, No: 38-40, NRB

The table 4.2 shows the total amount of fixed deposit and saving deposits and the interest rates offered on such deposits by RBB on 7 fiscal years starting from FY 2003 to FY 2009. The table portrays that the both interest rate has been decreased by greater magnitude. Fixed deposit was never increased in whole 7 FYs. It means that in saving they move in opposite direction i.e. decrease in interest rate increase the amount of deposit and vice versa i. e. the substitution effect doesn't holds true in the saving deposit. But the opposite relation doesn't prevail in fixed deposit case. Though the deposit amount decreased from FY 2003 to FY 2009 the the respective interest rate does not increase. In is decreasing up to 2009 and thereafter remain constant. Calculating the correlation coefficient between them. This relationship can be shown in graph as shown figures 4.2, 4.3.

**Figure no: 4.2**

***Saving and fixed Deposit amount of RBB during Nine FY***

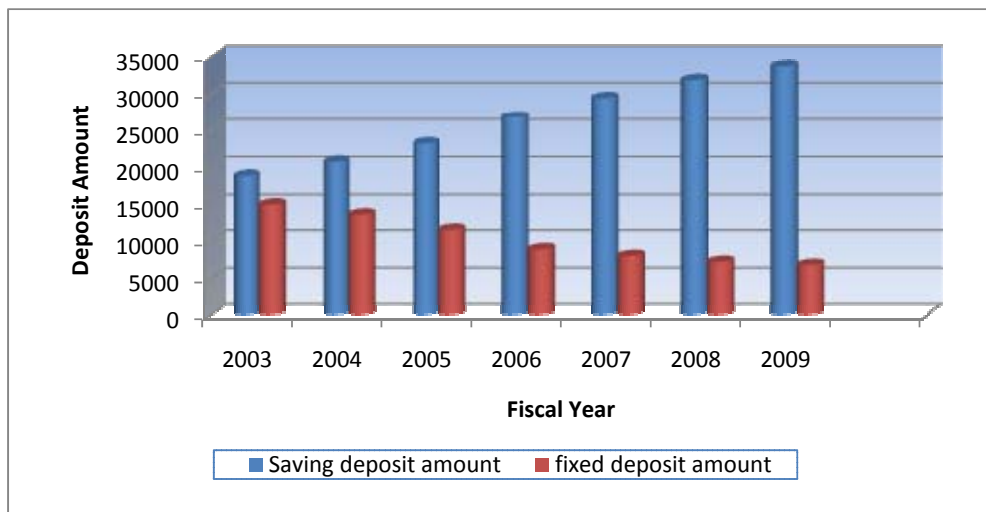
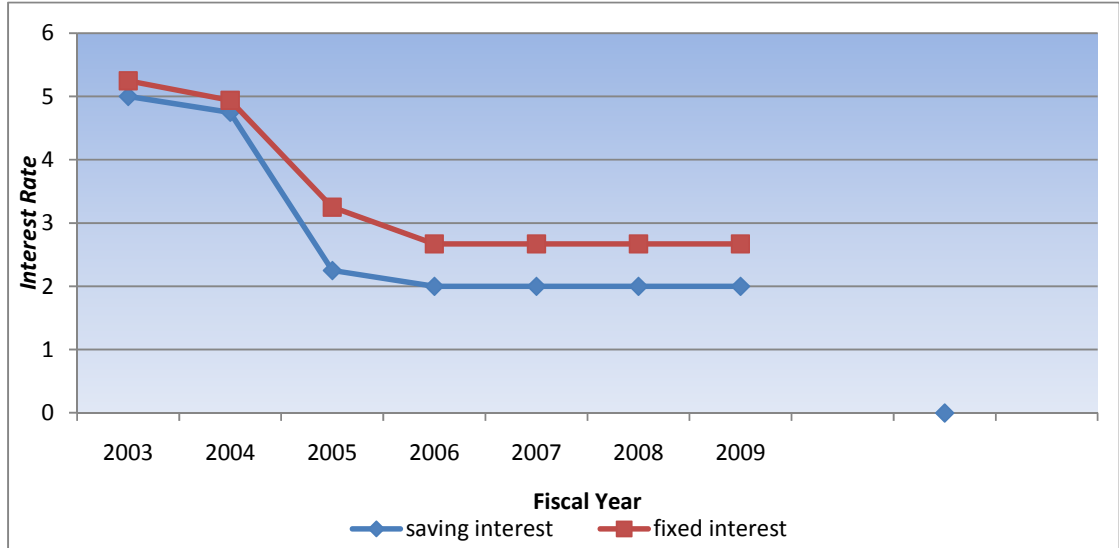


Figure 4.2, shows that fixed deposit amount begins to decline throughout the fiscal Year 2003 to 2009. Saving deposit on the other case seems to be increased during the whole fiscal year. However the magnitude of increment of saving deposits.

**Figure no 4.3:**  
**Interest rates of RBB on saving and fixed deposit**



According to table no. 4.2 saving deposit on the other case seems to be increased during the 7 FYs. Interest's rate on saving deposit has been decreased from 5 to 2% during the 7 FYs. The declining tendency is small. In the same period amount of deposit was Rs 18997.2 millions but this amount increases to 33756.1 millions. It means increase interest rate felled by 60%, where as the deposit amount rises by 77.69% within the period of seven years.

Similarly, for fixed deposit table 4-2 shows that total amount of fixed and interest rate on fixed deposit offered by RBB on seven consequent FY started from 2003 to FY 2009. The table reveals that the average fixed interest rate has been decreased drastically during the seven years FYs. At the FY 2003 the average interest rate was 5.25% on fixed deposit but later on every year interest rate started to decrease on FY 2004, 2005 and 2006. After 2006 FY, average interest rate is remaining constant at 2.67%. On effect of this decline, the

amount fixed deposit also declined, the amount of fixed deposit also started to decrease in some respect. Although, after

2007 fiscal year, interest rate was remaining constant; amount of fixed deposit doesn't remain constant. The table shows that up to the FY 2007 there is no effect on fixed deposit amount by the by the declination of interest rate but after the FY 2006, decrease in interest rate also decrease the fixed deposit amount. In this regards, substitution effect holds true in the case of fixed deposit.

To verify the above trend, it is necessary to calculate the correlation coefficient and t-statistics. If correlation coefficient is calculated for saving deposit interest rate and deposit amount, then it is  $(r_{23}) = -0.82604$ . This is high negative correlation coefficient indicates that they have inverse relationship among and vice-versa. This shows that the substitution effect in the case of RBB for saving account is not applicable. The coefficient of determination between these two variables is  $r^2_{23} = 0.68$ , which means that total variation in the dependent variable (interest rate) to the extent of 68.23% and remaining is the effect other factors. The t-value for testing the significant of the correlation coefficient between variables is  $-3.0785$  ( $t\text{-cal} = 3.0785$ ). Since the tabulated t-value at 5% level of significant for 7 degree of freedom  $t\text{-tab} = 2.571$  is less than calculated value ( $t\text{-cal} = 3.0785$ ), the correlation coefficient is significant. This means the variable mentioned (interest rate on saving deposit and amount of saving deposit) for RBB are significantly correlated. i.e. an increase (decrease) in the amount of deposit brings a decrement (increment) in interest rate on saving deposit.

In the same manner, the correlation coefficient between interest rate on fixed deposit and fixed deposit amount ( $r_{45}$ ) is 0.944. This means that these two variables are high positively correlated when interest rate of fixed deposit decreases (increases) the deposit amount also decreases (increases). This is exactly the matter what the theory (substitution effects) says. The coefficient of determination between these two variables is  $r^2_{45} = 0.8907$ , which means 89.07% of total variables in dependent variables (deposit unit) is explained by the independent variable (deposit rate) & remaining is due to the effect of other factors. Similarly, test of significant of correlation coefficient between deposit rate and deposit amount gives the value of  $t = 6.3623$ . The tabulated value at 5% level of significant with degree of freedom 7 is 2.571. Here,  $t\text{-cal} > t\text{-tab}$  so  $H_1$  is accepted i.e. there is significant relation between two variables. Though the correlation coefficient indicates that the both variables highly positive relation.

That means the supply of funds (fixed deposit) brings the increase in interest rate on deposit. This is favour of the theory as suggested by substitution effect.

#### 4.2.2 Nepal bank limited

The general structure of deposit Interest rate of Nepal Bank Limited (NBL) is shown below on table 4-3.

*Table 4-3: Interest rate structure on deposit of NBL*

Deposits	2003	2004	2005	2006	2007	2008	2009
Savings	5.00	4.75	2.50	2.50	2.50	2.00	2.00
Fixed							
7days	2.00	2.00	-	-	-	-	-
14 days	-	-	-	-	-	-	-
1 month	3.50	3.25	2.5	2.75	2.75	2.00	2.00
2 months	-	3.50	2.75	-	-	-	-
3 months	4.00	3.75	3.00	3.00	3.00	2.25	2.25
6months	4.50	4.25	3.50	3.25	3.25	3.25	3.00
1 Year	6.00	5.75	4.00	3.75	3.75	3.50	3.00
above 2 years	6.25	6.00	-	-	-	-	
Whole mean	4.46	4.16	3.04	3.05	3.05	2.95	2.85
Fixed deposit mean	4.375	4.071	3.15	3.19	3.19	2.75	2.56

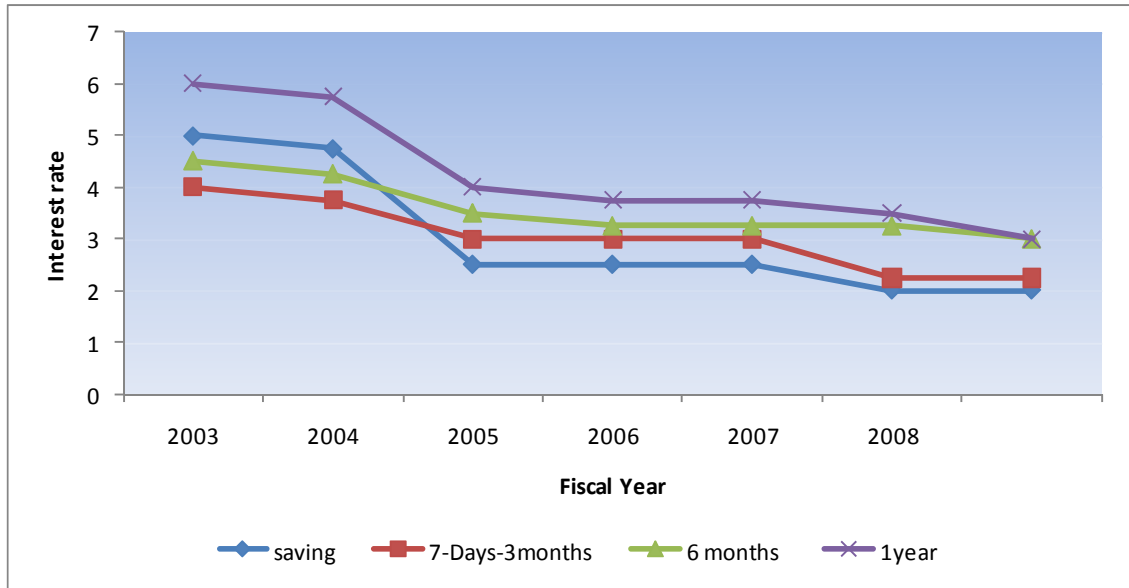
STD. deviation	whole Mean=0.6062	Fixed deposit Mean=0 .6141
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Source: Banking and Financial statistics, No: 38-40, NRB

The table shows the interest rate of NBL during the last seven FYs. The trend of interest rate shows that is in decreasing trend. It is similar with that of RBB. The interest rate on saving deposit shows that it was 5% during the period of 2003. There was some stagnancy in interest rate because it was fell by only 0.25% i.e. interest rate decreased to 2.25 from to 4.75% but at 2005 there was sharp fell on After 2004 the saving interest rate stops decreasing in with in 2006. After 2006 FY interest rate was remain constant in FY 2007 & 2008. Similarly, the interest rate on fixed deposit also fell during the seven fiscal years by more than 0.25%. The interest rate fell by large spread in first two years to later years the falling spread was little as compared to the previous years.

It is also clear that the falling gap for long term fixed deposit is large where as for short term deposit falling gap is little. In the others words, both long term and short term interest rates falling rate is similar. These tendencies can also show in graph 4-4 as follows:

***Figure No 4.4 Interest Rate of NBL on Deposits during different FY***



By figure 4.4 also it is clear that declining tendency high in former period than in later periods. Similarly, lower periodic rate remains almost constant in last year.

### **Correlation Coefficient, Coefficient of Determination and t-statistics of NBL**

***Table no 4.4: Relationship between Interest Rate and Deposit amount of NBL***

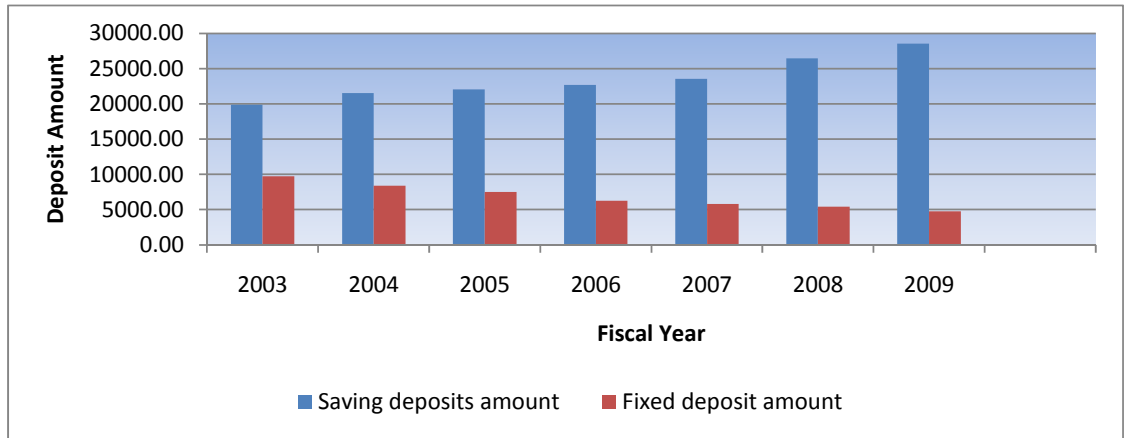
Year(1)	Saving Deposit Interest rate (2)	Saving Deposits Amounts (3)	Fixed Deposits Interest Rate(4)	Fixed Deposits Amounts (5)
2003	5.00	19851.50	4.38	9732
2004	4.75	21534.50	4.07	8397
2005	2.50	22063.00	3.15	7481
2006	2.50	22671.80	3.19	6269

2007	2.50	23547.90	3.19	5791		
2008	2.00	26425.40	2.75	5393		
2009	2.00	28545.10	2.56	4758		
Correlation	$r_{23} = -0.7655$		$r_{45} = 0.948985$			
Correlation of Determination	$r^2_{23} = 0.587$		$r^2_{45} = 0.9006$			
t-statistic	t-cal = -5.95	t-tab = 2.571	significant	t-cal = 6.73	t-tab = 2.571	significant

Source: Banking and Financial statistics, No: 38-40, NRB

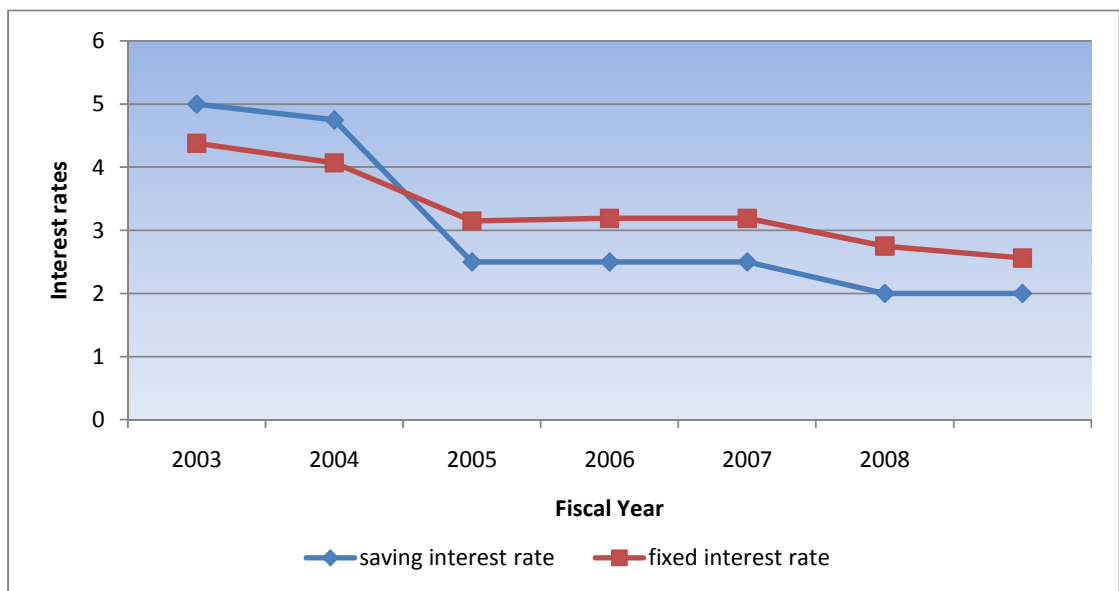
In the table 4.4 saving amount and deposit rates are arranged in systematic order. The outlook of the table shows that the interest has been falling since 2003 on both saving & fixed deposits. But the amount of saving deposit has been in decreasing trend. It is increasing every year. This indicates that the condition of NRB is opposite to the substitution theory. Amount of fixed deposit has been in decreasing trend since 2003 to 2009 fiscal year. But the declining speed of interest rate is quite higher than that of declining speed of fixed amount. This suggest that they may have positive relationship but to determine to magnitude of relation , correlation coefficient should be calculated and to identify the stronger or weakness of relationship it is necessary to calculate the t-test but prior to all it is clear if we show these relations on graph 4-5 and 4-6.

***Figure No 4-5: Fixed and saving deposit amount of NBL during seven FY***



Through the figure it is clearly that saving deposit starts increasing tendency but quit slow from FY 2003 to 2008. From FY 2008 on saving amount quite fast than before. However looking at the fixed deposit, it seems to be decreasing continuously from FY 2003 to 2009.

**Figure no 4.6: Interest Rates of NBL on saving and fixed deposit**



Through figure 4.6 also, it is clear that decreasing tendency up to the year 2005 is very high. Degree of decrement of saving interest looks high on the period between 2003 to 2004. After fiscal year 2007 the saving interest became unchanged. From starting period of 2004, the average fixed deposit rate is decreasing slowly.

The correlation coefficient for saving interest rate and deposit amount  $r_{23}$  is found to be negative of  $-0.7655$ . This value indicates that they two have higher negative or inverse relationship. Increase in one variable lead to decrease in other variable. This is extremely against the theory suggested by the substitution effect. Similarly, the coefficient of determination between two variables  $r_{23}^2$  is  $0.586$  which means that total variation in invest rate on deposit has been explained by supply of deposits to the extent of  $58.60\%$  and remaining is the effect of other factors. The T-value for the testing the significant of the correlation coefficient between variable is  $-5.95$  ( $t\text{-cal}=5.95$ ) which is significantly greater than tabulated  $t$  -value ( $t\text{-value}=2.571$ ) at  $5\%$  level of significant with  $7$  degree of freedom. Since, calculated value is significantly greater than tabulated value, the correlation coefficient between variables is significant. This means that interest rate on saving deposit and deposit amount of NBL are significantly correlated and increase in the supply of fund (deposit) brings the decreases in interest rate on deposit. This is the substitution theory is not applicable for the saving deposit of NBL.

According to fixed deposit, correlation coefficient for fixed deposit interest rate and fixed deposit amount  $r_{45}$  is found to be  $0.9489$ . This shows that they have highly positive correlation. It means increase in deposit interest rate stimulated saving on fixed deposits. This relationship can be clearly explained by supply of deposits to the extent of  $90.06\%$  and remaining  $9.94$  is the effect of other variables. The  $t$ -value for testing the significant of the correlation coefficient between variables is  $6.73$  ( $t\text{-cal}=6.73$ ) which is greater than tabulated value  $t$ -value ( $t\text{-tab}=2.571$ ) at  $5\%$  level of significance with  $7$  degree of freedom. Since the calculated value is higher than tabulated value, the conclusion drawn that

correlation coefficient between variables is significant. This means deposit and correlation between interest rate on fixed deposit and fixed amount of NBL is highly positive. That means this supply of funds (fixed deposit) brings the increase in interest rate on deposit. This is in favor of the theory as suggested by substitution effect.

### 4.2.3 Agriculture Development Bank/Nepal

The general interest rate structure of ADB/N for last fiscal years is given on the table 4.5. Though the ADB/N has transaction on both agriculture on both agriculture sector and non-agriculture (Commercial) sectors, here for this study only the interest rate of banking sector is taken in consideration.

Table no 4.5: Interest rate structure on deposit of ADB/N as on end 2009

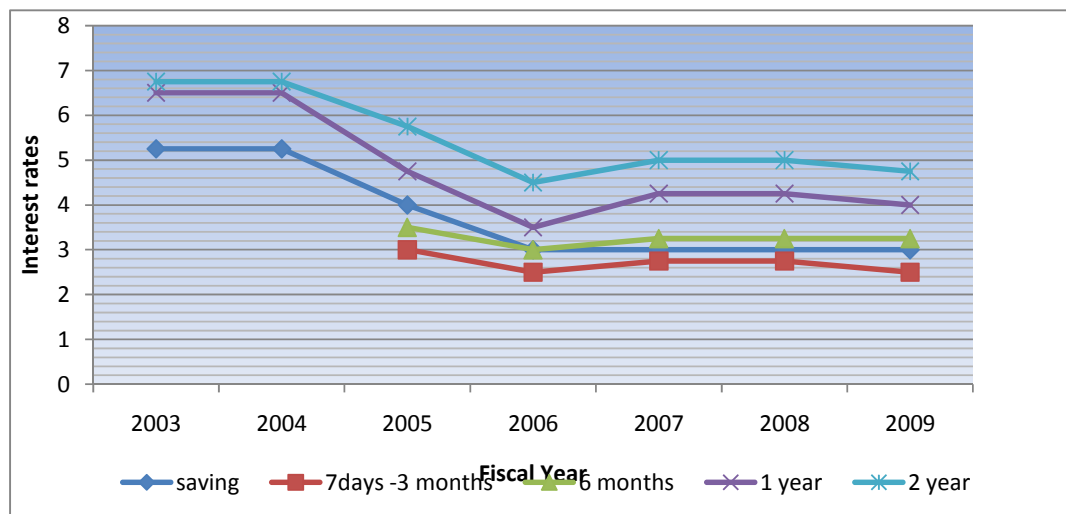
Deposits	2003	2004	2005	2006	2007	2008	2009
Savings	5.25	5.25	4	3	3	3	3
Fixed							
7days	-	-	-	-	-	-	-
14 days	-	-	-	-	-	-	-
1 month	-	-	2.5	2	2.25	2.25	2.25
3 months	-	-	3	2.5	2.75	2.75	2.5
6months	-	-	3.5	3	3.25	3.25	3.25
1 Year	6.5	6.5	4.75	3.5	4.25	4.25	4
above 2 years	6.75	6.75	5.75	4.5	5	5	4.75

Whole mean	6.167	6.167	3.917	3.083	3.417	3.4167	3.292
Fixed deposit mean	6.63	6.63	3.9	3.1	3.5	3.5	3.35
Standard Deviation	Whole mean=1.36				Fixed Deposit mean=1.56		

Source: Banking and Financial statistics, No: 38-40, NRB

The table 4.5 shows the interest rate structure of ADB/N on saving deposits and fixed trends. The deposit rates are also in decreasing trends. For saving deposits, it is found that interest rate has been declined by 47.62% during the seven fiscal years. On average fixed deposit case, also the declining rate is 49.47% throughout the period. While taking both saving and fixed deposit the average declining rate become 47.28%. This can be illustrated on graph as figure no. 4.7.

**Figure No. 4.7: Interest rate of ADB/N on deposits during seven FY**



The figure no. 4.7 shows that all interest rates are sharply decreasing condition in FY 2006 after that slightly increases than remain constant.

**Correlation Coefficient, Coefficient of Determination and t-statistics of ADB/N**

*Table e no 4-6:*

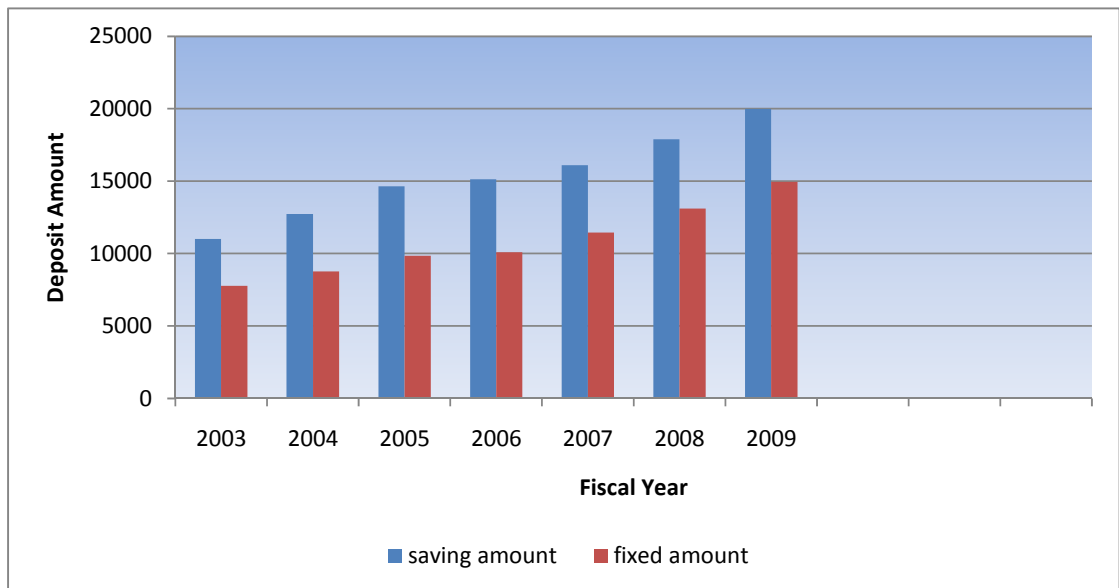
*Relationship between Interest Rate and Deposit amount of ADB/N*

Year 1	Saving Deposit Interest Rate (2)	Saving Deposits Amounts (3)	Fixed deposit Interest Rate(4)	Fixed Deposit Amount (5)		
2003	5.25	11002.90	6.63	7754.30		
2004	5.25	12732.20	6.63	8756.20		
2005	4.00	14632.60	3.90	9846.80		
2006	3.00	15121.70	3.10	10087.00		
2007	3.00	16087.90	3.50	11443.40		
2008	2.75	17885.60	3.50	13102.20		
2009	2.75	19988.30	3.35	14945.80		
Correlation	$r_{23} = -0.886$		$r_{45} = -0.721$			
Correlation Coefficient	$r^2_{23} = 0.786$		$r^2_{45} = .521$			
t-statistic	t-cal=-4.282	t-cal=2.571	significant	t-cal=-2.330	t-cal=2.571	Ins ign ific ant

Source: Banking and Financial statistics, No: 38-40, NRB

Table No 4.6 shows that interest rate and deposit amount are moving in direction. To get the exact relation it necessary to calculate the correlation coefficient and t-test. Here the data shows the both saving and fixed deposits are out of substitution effect. To verify it, the value or correlation and t statistics is necessary. But prior to this it is effective if tabular value can be shown on graph as figure 4.8.

**Figure no. 4.8: fixed and saving Deposit amount of ADB/N during seven FY.**



The figure no 4.8 shows that the deposit amount of ADB/N is in increasing trend. The increasing tendency is high for saving deposit but for fixed deposit, the trend is increasing slowly. Similarly the relationship between interest rate of saving and fixed deposit can be shown in figure no 4.9 as:

**Figure No 4.9: Interest Rates of ADB/N on Saving and fixed deposits**

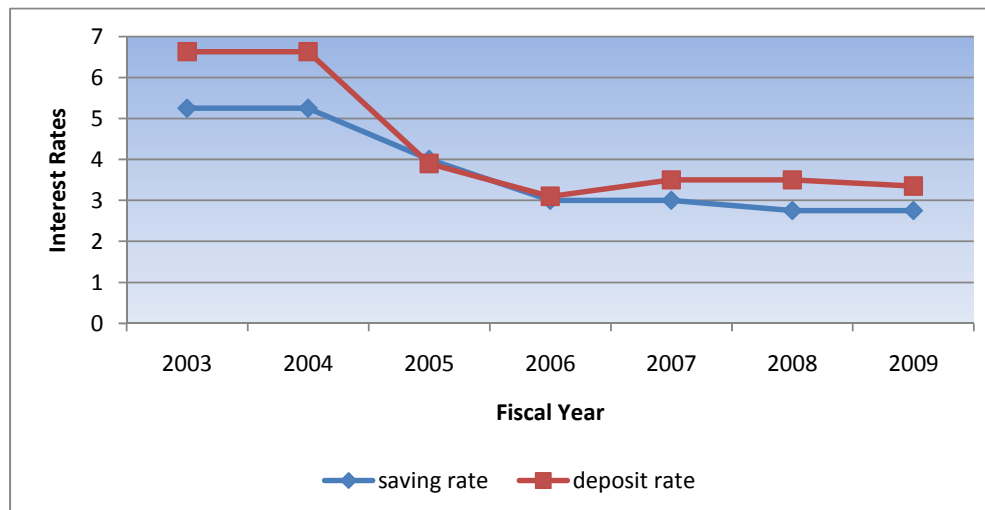


Figure 4.9 shows that both the interest rate of fixed and saving deposits are in decreasing tendency. After 2006 saving interest rate decreasing slowly and fixed interest rate started to increase. But before that period their fluctuating pattern is almost similar which can be seen clearly on the graph no 4.9.

The correlation coefficient for saving deposit and its interest rate is found to be  $r_{23} = -0.8864$  which means that deposit amount and its interest rate have higher degree of negative Correlation. It means increase in one variable result the decrease in other variables. Similarly the coefficient of determination,  $r^2_{23} = 0.7857$  which means that the value of dependent variables is dependent on independent variables to the extent of 78.57% . Similarly the t-test for same shows that the calculated value of t is -4.2815 ( $t\text{-cal} = 4.2815$ ). This value is greater than the t-tabulated value ( $t\text{-tab} = 2.571$ ) at 7 degree of freedom and 5% level of significance. Therefore when  $t\text{-cal} > t\text{-tab}$ , then H1 or alternative hypothesis is accepted i.e. the variables are significantly correlated or their relationship is significant. Its calculated negative correlation coefficient is correct resulting the theory of substitution effect holds wrong.

Similarly for fixed deposit, the coefficient of correlation ( $r_{45}$ ) is -0.7214, which is negative with degree of inverse relationship. This is the extremely opposite case as compare to the correlation coefficient of RBB and NBL. The t-statistics for fixed deposit shows that its calculated value for t is 2.330, which is less than the tabulated value of t i.e.  $t_{cal} < t_{tab}$ . In such case null hypothesis is accepted and alternative hypothesis is rejected. This indicates that the two variables are correlated or their relationship is insignificantly correlated. The analysis of ADB/N also shows that substitution effect is not applicable for bank. We find the substitution effect holds true only on the case of fixed deposit of RBB and NBL. Above all, the case is similar for all three government owned banks, meaning that there is no substitution effect for all banks-RBB, NBL and ADB/N.

### **4.3 Analysis of Relationship between Lending and Interest rate:**

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

#### **4.3.1 Rastriya Banijya Bank**

The sector where RBB grant its credit during last seven FYs and their corresponding interest rate, average interest rate and lending amount are presented in the table 4.7 below.

**Table 4.7: Lending Rate RBB on Different Sectors during seven FYS**

Sector	2003	2004	2005	2006	2007	2008	2009
Overdraft	11.75	11.25	12.20	11.00	11.00	11.00	11.00
Export Credit	11.50	10.00	9.50	8.00	8.00	8.00	8.00
Import LC	12.00	10.00	10.00	9.00	9.00	7.50	7.50
HMG Bond	10.50	10.00	7.00	7.00	7.00	7.00	7.00
BG/CG	10.00	9.25	9.25	8.50	8.50	7.00	7.00
Industrial Loan	–	–	–	–	–	–	–
Commercial Loan	14.50	11.75	12.00	–	–	–	–
Priority Sector Loan	15.00	–	–	–	–	11.50	11.50
poorer Sector Loan	13.00	12.00	12.00	13.00	11.50	11.00	11.00
Working capital	13.75	12.50	11.00	–	–	–	–
Hire purchase	13.50	12.00	12.00	11.00	11.00	9.00	9.00
others	15.00	12.00	12.00	11.00	11.00	11.00	11.00
Average Int. Rate	12.77	11.08	10.70	9.81	9.63	9.22	9.22
Lending Amount	28576.0	28258.9	26781.0	28919.8	27164.3	29630.3	30896.3
Correlation ( $r_{12}$ )	-0.503						
correlation Determination	0.2531						
t-statistics	t-cal=1.30		t-tab=2.571		Insignificant		
Std. deviation	1.2829						

Source: Banking and Financial Statistics, No: 38-48, NRB

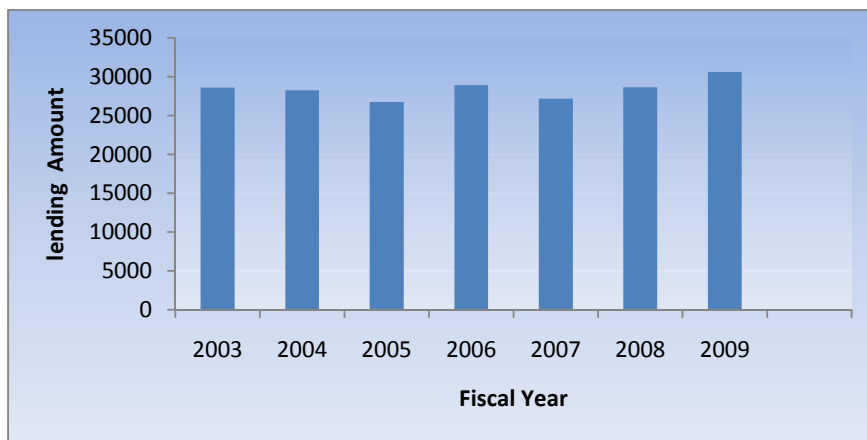
[Note: For all case, the higher ceiling of interest rate is taken from the table, as per suggestion of NRB research Department.]

Lending activity of commercial banks can be diversified into different sectors. But according to the publication of Nepal Rastra Bank- Banking & Financial statistics- the loan of commercial banks are classified in different sub-sectors like overdraft, export credit, Import, commercial loan and so on. Besides this there is other section (area) when bank provides loan to other sector other than the above mention sub sectors and these areas are placed in the topic of “others”. For this study, lending area are categorized as classified by NRB.

According to table 4.7, it shows that interest rate on lending on different area in declining stage. The table shows that the maximum interest rate is 15% in FY 2003 and, minimum rate is 6% on FY 2009. This shows that the interest rate was decline drastically during the seven FYs periods. Generally, Non productive sector loan rate and productive sector loan is declining tendency in every year. After FY 2004 RBB did not quote interest rate in commercial loan & industrial loan. Investors didn't want to invest in the productive sectors. It means, they could not feel secured in this field. Therefore, political stability is not constant; investors could not invest in the commercial and industrial sector. In last two fiscal year, RBB invest to education sector with 8.5% loan rate in 2008 FY and 9.5% in 2009 FY. The declining percentages of productive sectors were 2.5%, 1.5% in industrial loan and priority sector loan respectively. In the same manner, declining percentage of non productive sectors were 4%, 0.75%, 4.5%, 2% in hire purchase loan, overdraft, Government bond and B/G loan rate respectively. According to theory, on order to induce the investment in the country, the non-productive sector loan should be available at cheaper rate in the last FYs.

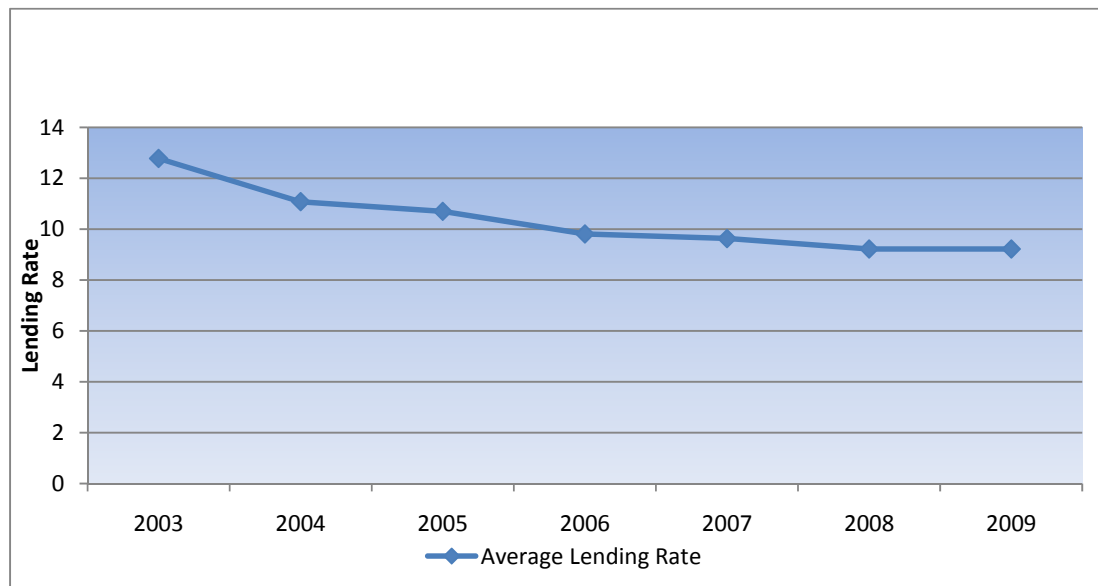
If the average of each fiscal year is taken, then it shows average lending interest rate was 12.77(2003), 11.075(2004), 10.696(2005), 9.81(2006), 9.625(2007), 9.222(2008) and 8.94(2009). The standard deviation for average deviation for average interest rate was 1.32 which shows the deviation from mean return. The average rate is also in decreasing trend. The decreasing tendency was not smooth. It means the rate declined each year with different rate. In preceding year the declination was quite fast where as the declining tendency was little in last year. This concludes that interest rate on lending is also in decreasing tendency for past few years. With harmony to interest rate, the lending amount of RBB is seen to be increasing and decreasing tendency but with same fluctuation. These can be also be present in figure no 4.10 and 4.11.

**Figure no 4.10: Lending Amount of RBB during different FYs.**



From the figure 4.10, it is seen that for the first one year lending amount is more than second & third FY. After FY 2003, the lending amount is increasing and decreasing tendency no uniformly. However screening the whole period after 2003, the lending amount is found to be decreased to 27164.3 on FY 2007 from 28919.8 on FY 2006. After FY 2007, lending amount starts to increase to 2009.

**Figure no 4.11: Average Lending Rate of RBB during Different FYs**



The figure 4.11. shows that the lending rate is in a tendency of decreasing up to 2009 very clearly, but decreasing trend after 2006 is narrow down.

### **Correlation Coefficient, coefficient of determination and t-statistics of RBB**

From table 4.7 the correlation Coefficient (sample correlation) between lending rate and lending amount ( $r_{12}$ ) is -0.503. According to our classification, this negative correlation is moderate degree. In this case it is clear that interest rate on lending and lending amount has inverse relationship. It means they move opposite direction i.e. decreasing in lending rate and result increasing in total lending amount. This situation matches with the actual theory. According to theoretical concept of lending rate and lending amount people prefer or use more money when the market interest rate is low in the market. So the case it true for RBB also. The simple determination of correlation coefficient ( $r_{12}^2$ ) is 0.2531. When total lending amount is taken as dependent variable and lending rate as independent variable, then 25.31 of total variation in dependent variable

is explained by lending rate and remaining percentage is due to the effect of other variable in the economy. Test of significant of correlation coefficient between lending rate and lending amount also verify the fact. The calculated veue t-test is 1.30 (t-cal=1.30). This is less than tabulated value, t-tab=2.571 with level of significance 5% and d.f.7. In this condition, Ho is accepted. It means that there is no significant correlation between the two variables. In other words their relation is insignificant. Though the correlation coefficient shows that these two variables have moderate level of correlation, but t-statistics verify that their relation is insignificant. In conclusion, the inverse relationship between lending rate and lending amount is not exactly applicable for RBB.

#### **4.3.2 Nepal Bank Limited:**

The sector where NBL grant its credit during last nine FYs and their corresponding interest rate, average interest rate and lending amount are presented in the table 4-8 below.

***Table 4.8:***

***Lending Rate NBL on Different Sectors during seven FYs.***

Sector	2003	2004	2005	2006	2007	2008	2009
Overdraft	14	10	10	10	10	10	10
Export Credit	11	8.5	8.5	8	8	8	8
Import LC	11	8.5	–	–	–	–	–
HMG Bond	7	7	7	6.5	6.5	6.5	6.5
BG/CG	10	8.75	8.75	7	7	7	7
Industrial Loan	13	13	–	–	–	–	–

Commercial Loan	13.5	13.5	–	–	–	–	–
Priority Sector Loan	13.5	10.5	10.5	10	10	10	10
poorer Sector Loan	10	8	8	7.5	7.5	7.5	7.5
Working capital	13	10	10	10	10	10	10
Hire purchase	14	11	11	10.5	10.5	10.5	10.5
others	14	11	12	11	11	11	11
Average Int. Rate	12	9.98	9.53	8.94	8.94	8.94	8.94
Lending Amount	20997.5	19266.1	19141.7	18530.6	12791.1	11058.48	13252
correlation( $r_{12}$ )	0.6943						
Correlation Coefficient( $r^2_{12}$ )	0.4821						
t-statistics	t-cal=2.156			t-tab=2.571		Insignificant	
Std. Deviation	1.1292						

Table 4.8 shows the lending interest rate structure of NBL on different sectors. This interest rate is somewhat lower in value as compare to interest rate of RBB (table 4-8). It means that there was some difference in interest rate

between the two government run banks. For example in overdraft the RBB quoted the interest rate 11.75% per annum on FY 2003 where as in same period the NBL quoted the interest rate of 14.00% per annum for overdraft. But NBL quoted less interest rate per annum on other sector than RBB. Comparing the figure 4-11 and figure 4-13, it can be noticed that the lending interest rate of NBL was lesser then lending interest rate of RBB. The average interest rate with standard deviation 1.129% also verifies the above statement about two banks' lending interest rate.

According to the table 4.8, it is clear that all the lending interest rate fell by 2.02% to 3.06% within the seven FYs. During first phase of seven FYs, the average interest rate declined quite fast with greater magnitude after FY 2004, it remained stagnant. After FY 2004, momentum of speed rises up. During the period especially hire purchase rate, against government bond rate, BG/CG rate, import L/C rate, and overdraft lending rate fell drastically. They fell by 3% to 5% on average. Whereas other sector lending rate of NBL also fell but their magnitude was less. It means that commercial sector loan rate, industrial loan rate were not decreased by large percentage. So it can be said that only non-productive sector loan rates were reduce drastically during the seven FYs as compare to productive sector loan. The case is similar with the RBB. With rhythm to lending interest rate, the study of lending amount shows that, it is also in decreasing trend. The trend shows that it is fluctuating. From beginning year 2003, the amount seems to be decreasing. This may happen because after FY 2003, the interest rate declines by faster speed. The average lending rate of each FY and their corresponding lending rate can be exhibited in the figures 4.12 and figure 4.13 as follows:

**Figure no 4.12**

**Lending amount of NBL during different FYs**

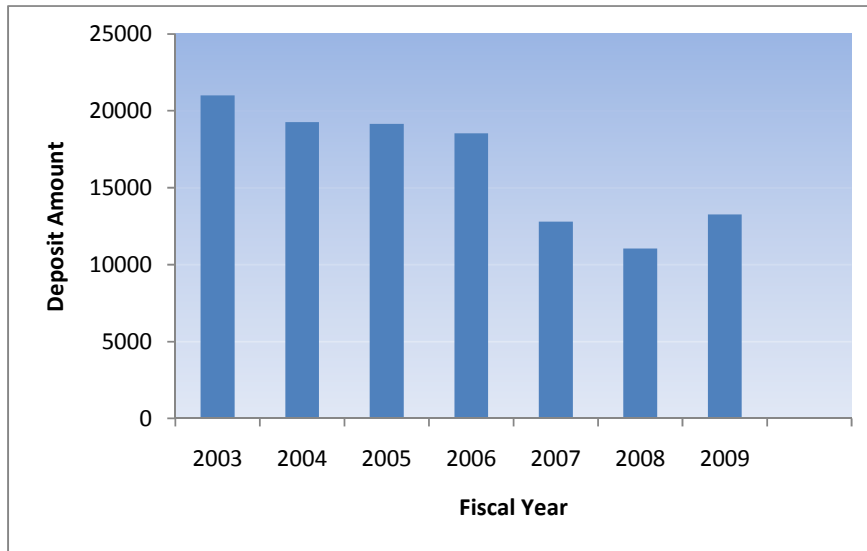


Figure 4.12 shows that lending amount decline from FY 2003 to 2009. Declining rate from the period 2006 to 2007 is very high. Similarly, the graph of average interest rate last seven FYs is 8.94.

**Figure no 4.13: average Lending Rate of NBL during Different FY**

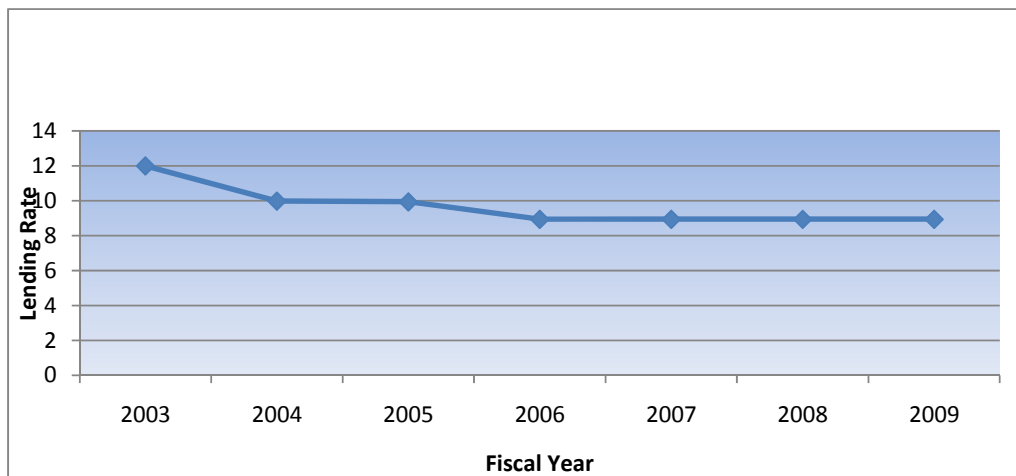


Figure 4.13 shows that the interest rate of lending is declining throughout the period. However during the period 2006 to 2009, the rate seems to be unchanged.

### *Correlation coefficient, Coefficient of Determination and t-statistics of NBL*

To find the exact relationship between the lending interest rate and lending amount it is necessary to use some of the statistical tools like correlation coefficient, coefficient of determination. Similarly, to verify the correlation coefficient t-statistical is applied. For this case, the correlation coefficient between NBL's average interest rate and lending amount is 0.6943 ( $r_{12}=0.6943$ ). It means that, according to our classification, this is moderate degree of positive correlation. Increase in one variable result the increase in other variables in moderate magnitude. In other words, if one variable increases by one percentage, then other variable increases by 69.43%. The result of correlation is against the theory. Because according to theory there should negative correlation. In others words decrease in interest rate should be followed by increase in lending amount. But this case doesn't happen for NBL. The coefficient of determination  $r_{12}^2 = 0.4821$ , which means that the relationship between two variable (lending amount and rate) is defined up to 48.21% only. Similarly, the calculation of t statistics gives the value to t as 2.1572 i.e.  $t\text{-cal} = 2.1572$ . The tabulated value for t at 7 d.f. and 5% level of significance is 2.571. Therefore, in this case t-calculated is less than t-tabulated. Hence, null hypothesis is accepted. It indicates that the positive relationship shown by correlation coefficient is not significant. In conclusion, it can be said that the lending interest rate and lending amount have positive relationship is not significant.

### 4.3.3 Agriculture Development Bank/Nepal (ADB/N):

As previously mentioned, ADB/N grants the loan broadly in two sectors; agricultural and Non-agricultural (commercial) sectors. But for this study only the lending of commercial Sector is focused. The general lending interest rate, lending area, average lending rate and Lending amount during the seven fiscal years is presented in the table 4.9.

*Table 4.9*

*Lending Rate ADB/N on Different Sectors during seven FYs.*

Sector	2003	2004	2005	2006	2007	2008	2009
Overdraft	17.00	17.00	16.00	15.50	12.50	12.00	11.50
Export Credit	-	-	-	-	-	11.00	11.00
Import LC	-	-	-	-	-		11.00
HMG Bond	-	-	-	-	6.50	6.50	6.00
BG/CG	-	-	-	-		-	-
Industrial Loan	14.00	14.00	13.00	13.00	10.00	-	-
Commercial Loan	15.50	15.50	14.00	14.00	11.00	11.00	10.50
Priority Sector Loan	-	-	-	-	-	-	

poorer Sector Loan	-	-	-	-	-	-	7.00
Working capital	-	-	-	-	-	-	-
Hire purchase	15.00	15.00	13.00	13.00	10.00	10.00	10.00
others	15.00	15.00	13.50	15.50	12.50	12.00	10.50
Average Int. Rate	15.30	15.30	13.90	14.20	10.42	10.42	9.69
Lending Amount	6847.80	8794.70	9221.20	10746.4 0	11040.6 0	11920.0 0	12563.2 0
Correlation( $r_{12}$ )	-0.87						
Coefficient of determination	0.76						
t-statistics	t-cal=-3.96			t-tab= 2.571		Significant	
Std. deviation	2.4726						

The table 4.9 shows the lending interest rate of ADB/N on different sectors in different FY. It is also notable matter that for commercial purpose, ADB/N had granted credit only on certain sectors in past FY. They are shown on the table 4.9. Comparing the lending rate of three banks, RBB, NBL and ADB/N it is found that ADB/N had the highest lending interest rate among all. After this RBB had second highest interest rate and NBL had the least interest rate. Even though the interest rate on lending of ADB/N is high in first and second period of seven FYs, on later years interest rate gradually starts to decrease. Every year interest rate is decline by for the case of ADB/N in all sectors declining rate is similar. There was equal fall in interest rate on each loan sector but this

is not the case for RBB and NBL because in those banks, there was rapid fall on productive sector and less fall on non productive sector. In past seven FYs the highest interest rate was 17% on overdraft. This is maximum rate among all. Later within seven FYs this rate fell to 11.5% when it approached to FY 2009. In same manner most of the rate fell by on average 6% from previous lending rate. To see the position, it is better to give glance on average lending rate during seven FYs. The average interest rate was 15.3%, 15.3%, 13.95, 14.2%, 10.425, 10.41%, and 9.69% in FY 2003, 2004, 2005, 2006, 2007, 2008 and 2009 respectively. In effect of decline in interest rate, the lending amount of ADB/N is also found to be increasing drastically during the seven fiscal years. During the period of seven years, the lending amount was more than tripled. This is what theory says but to know the exact relationship it is necessary to compute the correlation coefficient. Prior to all it is rational if the data on the table 4.9 are present on graph no 4.14.

**Figure no 4.14**

***Lending Amount of ADB/N during Different FYs***

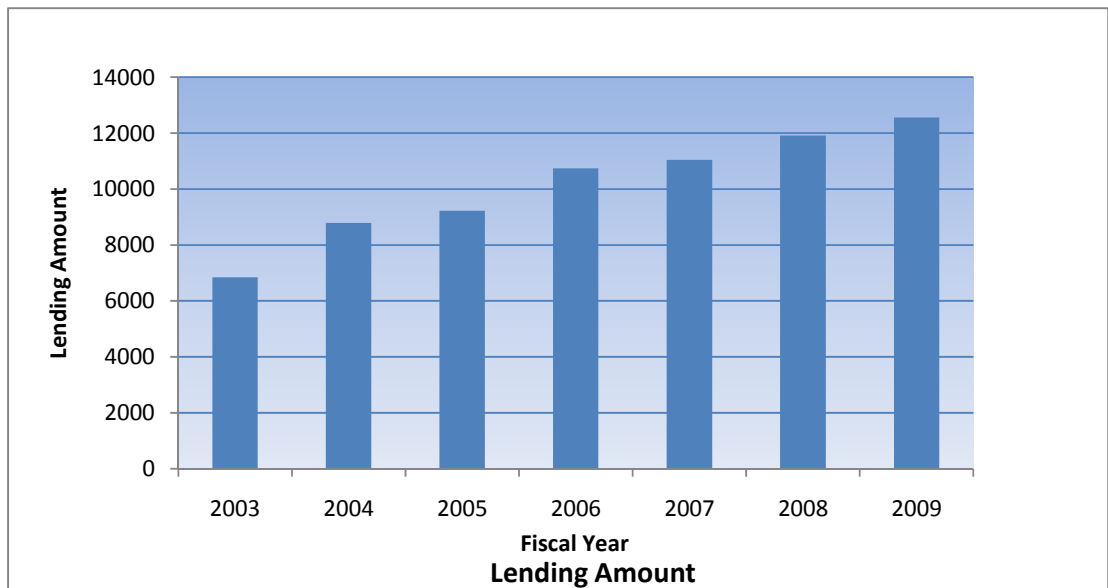


Figure 4.14 clearly shows that the lending amount of ADB/N of increasing throughout the period. From the figure it is also seen that increasing rate between 2003 to 2004, 2005 to 2006 and 2007 to 2008 is lower.

*Figure no 4.15*

*Average lending rate of ADB/N during Different FY*

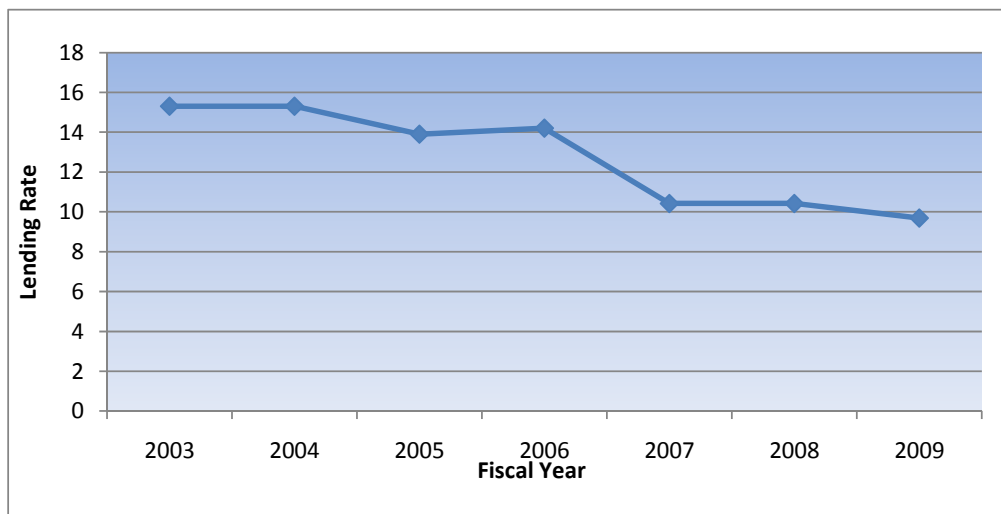


Figure 4.15 clear shows the decreasing tendency of average interest rate of lending. However the magnitude of decrement of rate after 2006 is very high.

### **Correlation Coefficient, Coefficient of Determination and t-statistics of ADB/N**

By using excel spread sheet, correlation coefficient, average, deviation and other necessary statistics can be calculated. The correlation coefficient between lending rate and landing amount for ADB/N is -0.8754. This is negative degree of correlation. The negative sign indicates that, the two variables have opposite

or inverse relationship, meaning decrease in one variable leads to increase in other variables. For this case, decrease in interest rate stimulates the lending amount vice versa. The coefficient of determination for correlation coefficient is 0.7638. It indicates that lending amount depends upon lending rate by 76.38%. In other words, the relationship between one variable is defined by another is up to the level of 76.38%.

To verify the correlation coefficient statistically, it is better if t-statistical is used. The calculated value for t is 3.95 i.e.  $t_{cal}=3.952$ . Similarly, the tabulated value for t at 7 degree of freedom with 5% level of significant is 2.571 i.e.  $t_{tab}=2.571$ . Tabulated value is less than calculated value so alternative hypothesis is accepted. Two variables are significantly correlated or the increase in lending amount is due to the decreases in lending rate. Lending rate is significant factor for that. From this analysis, it is verified that theory matches with the lending case of ADB/N.

#### **4.4 Analysis of Relationship between Inflation and Interest Rate (Deposit & Lending Rate)**

Another variable that affects the interest rate in the economy is the inflation. In general condition, inflation and interest rate have positive effect. It means that, when inflation increases in the economy, the interest rate also increases. On this ground, different theory has been propounded like Fisher effect, Harrod-Keynes effect and so on. This all phenomenon have been already explained in the chapter two. To measure the actual relationship, the prevailing situation of each bank is going to observe.

#### 4.4.1 Rastriya Banijya Bank (RBB):

The interest rate on deposit, interest rate on lending of RBB and inflation of the country during the nine FYs were tabulated on table 4-10

*Table no 4.10*

*Inflation Rate and Interest Rates (deposit and lending rate) of RBB*

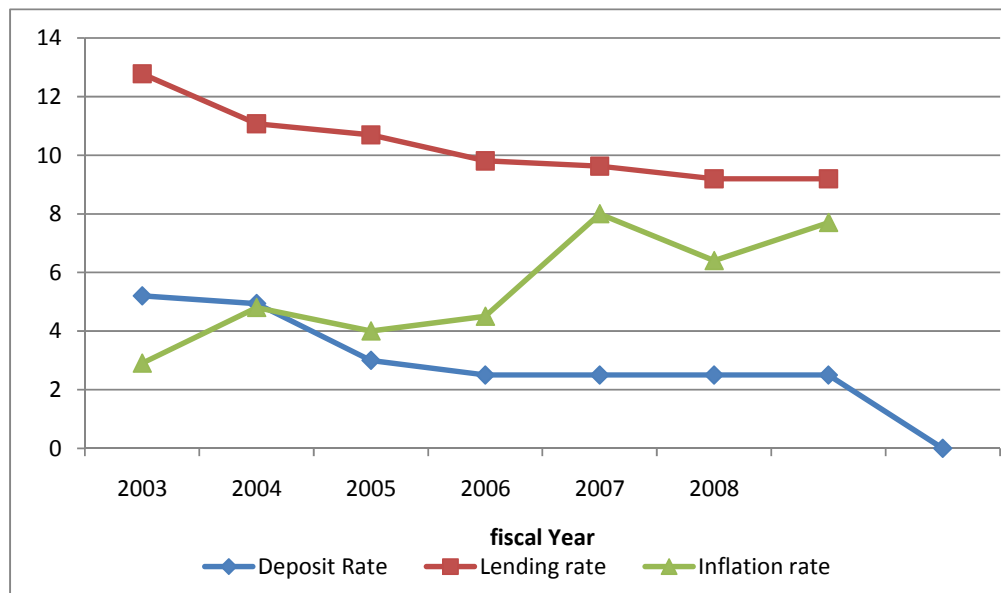
<b>Fiscal Year</b>	<b>CPI (1)</b>	<b>Inflation(2)</b>	<b>Deposit Rate(3)</b>	<b>Lending Rate(4)</b>
2003	142.1	2.90	5.20	12.78
2004	148.9	4.80	4.94	11.08
2005	154.8	4.00	3.00	10.70
2006	161.8	4.5	2.50	9.81
2007	174.7	8.000	2.50	9.63
2008	185.9	6.40	2.50	9.22
2009	196.6	7.70	2.50	9.22
correlation coefficient		$r_{23} = -0.6581$	$r_{24} = -0.8128$	
Coefficient of Determination		$r^2_{23} = 0.4331$	$r^2_{24} = 0.6607$	
t-statistics		t-cal (Deposit)=1.9544	t- tab=2.571	Insignificant
		t-cal (Lending)=3.120	t- tab=2.571	significant

Source: National Urban Consumer Price Index, Yearly economic bulletin, 2009, NRB

1. The average interest rate of deposit and lending is taken from “Whole Mean” and “average lending rate” respectively. (For this case, values are taken from table4-1 and table 4-7

From table 4.10 it is clear that the inflation rate during the last seven FYs was in fluctuating trend. Though it seems to decreasing in previous period but it has some variation. With similar to declining inflation, the interest rate of both lending and deposit are seems to be declining. The relationship among these three elements can be portrayed in the figure no 4.14 as follows.

**Figure No 4.16: Inflation Rate, Deposit Rate and Lending Rate of RBB**



In the figure no 4.16, it is clear that during the FY 2003 the inflation rate, 2.9%, was lower than deposit interest rate, 5.2%. This inflation rate increases to 4.8% during 2004 and after that started to decline to 2005 FY. In same manner, during the FY 2004 inflation rate and deposit rate was almost similar. But after 2004 the inflation started to raise, at FY 2005 inflation remains slightly above the deposit rate and at from FY 2006 to 2009 inflation remains unbelievably more than deposit rate. These all indicates that the actual earning or real rate or return for the deposit holder was negative. In those periods, when inflation rate

exceed the deposit rate, the deposit holder loses their income rather than earn. But for the case of lending rate, it was very much higher than the inflation rate. So bankers don't lose their income as compared to deposit holder. However, screening the table, the deviation between inflation rate and lending rate may have a susceptibility to be farther in the coming year. This may be destructive to the coming lender in the future. However, during the study period the interest spread between the deposit and lending was very high during the first part of the seven FYs.

If correlation coefficient of between deposit and inflation is taken, the value of  $r$  is  $-0.6581$ . i.e.  $r_{23} = -0.6581$ . This indicates that the two variables have moderate negative relationship. In other words, when increment occurs in inflation rate then there is decrement on deposit rate.

In order to verify the strength or weakness of relationship, calculation of  $t$ -statistics is necessary. The calculated value of  $t$  for given correlation coefficient is  $1.9544$ . The tabulated value for it with 5% level of significance with 7 d.f. is  $2.571$ . Here in this case tabulated value of  $t$  is greater than calculated value of  $t$ . In such case, null hypothesis is accepted which means that the correlation coefficient between deposit rate and Inflation is not significant. In other words, the deposit rate of RBB is not correlated with the inflation rate and movement in inflation rate affects the interest rate on deposit significantly.

In same manner, the correlation between lending rate and inflation is found to be  $-0.8128$  ( $r_{24} = -0.8128$ ) this is also higher negative correlation indicated that they have inverse relationship among and vice versa. The variables move in opposite direction. In order to verify the significance of correlation coefficient  $t$ -statistics is calculated. The calculated value of  $t$  is  $3.120$  is greater than tabulated value is  $2.571$ . Here, alternative hypothesis is accepted which means that the correlation coefficient between lending rate and inflation is significant. The positive relation of inflation and lending rate as per theory is not true for RBB this concludes that *Fisher* effect isn't practically applicable.

#### 4.4.3 Agriculture Development Bank/Nepal (ADB/N):

The inflation rate during the last seven Fiscal years deposit rate of ADB/N, lending rate of ADB/n are tabulated in table no 4.12.

**Table no 4.12: Inflation Rate and Interest Rate of ADB/N**

<b>Fiscal Year</b>	<b>CPI (1)</b>	<b>Inflation(2)</b>	<b>Deposit Rate(3)</b>	<b>Lending Rate(4)</b>
2003	142.1	2.90	6.17	15.3
2004	148.9	4.80	6.17	15.3
2005	154.8	4.00	3.92	13.9
2006	161.8	4.5	3.08	14.2
2007	174.7	8.000	3.42	10.42
2008	185.9	6.40	3.42	10.42
2009	196.6	7.70	3.29	9.69
correlation coefficient		$r_{23} = -0.6087$	$r_{24} = -0.7208$	
Coefficient of Determination		$r^2_{23} = 0.3705$	$r^2_{24} = 0.7208$	
t-statistics		t-cal (Deposit)=1.7154	t- tab=2.571	Insignificant
		t-cal (Lending)=5.1082	t- tab=2.571	significant

Source: National Urban Consumer Price Index, Yearly economic bulletin, 2009, NRB

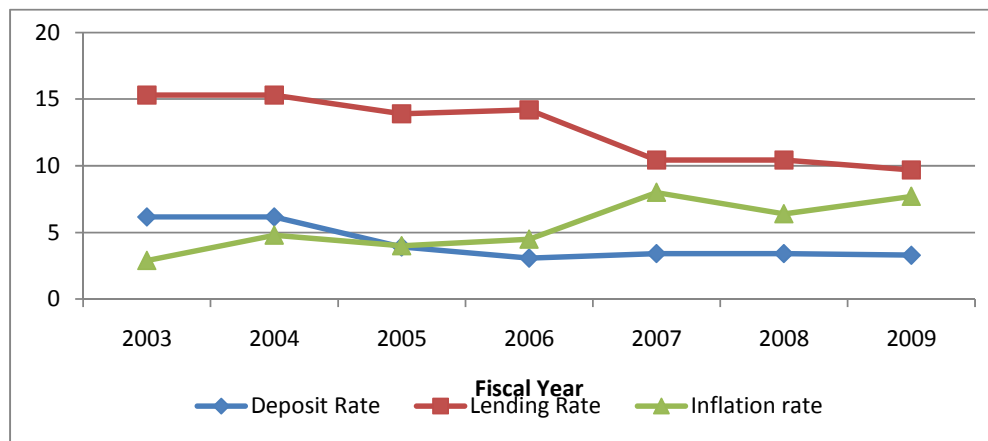
Note:

1. CPI =100 for base year 2003 and 138.1 for year 2004
2. The average interest rate of deposit and lending is taken from “Whole Mean” and “average lending rate” respectively. (For this case, values are taken from table 4.1 and table 4.9)

According to the table 4.12 the average rate (average both fixed and saving deposit) was 4.46% in 2003 and 4.16% in 2004. The inflation rate is less than deposit rate in the fiscal year 2003. After 2003 FY Inflation rate rose but deposit rate was decline. Similarly, the lending rate declined from FY 2003 but the declination occurred with some stagnancy in each year. As similar with other banks, the lending rate of the seven FYs was higher than inflation rate. To make more precise, it is benefit if the above table are plot of the graph as figure no. 4-18.

**Figure no 4.18**

***Inflation Rate, Deposit Rate, and Lending Rate of NBL***



The figure no 4.18 holds somewhat same nature as other sample banks discussed earlier. The lending rate is decreasing trend up to 2009 with fluctuation. After 2007 FY lending rate is remain constant for two years. Similarly, Inflation rate and deposit rate seems to cross in middle of 2005 to

2006. Therefore, inflation rate is increasing with fluctuation. However, the lending rate seems to be higher than inflation rate is becoming far way from deposit rate but near to the landing rate is higher than inflation rate. It means, bank is secured. Deposit interest rate seems to decrease every fiscal year slowly.

The correlation coefficient between deposit interest rate and inflation for the case of ADB/N is found to be negative number i.e.  $r_{23} = -0.6087$ . It is moderate negative correlated. This indicates that whenever inflation rise in the country ADB/N negative real return during the seven Fiscal years. Even though, the correlation is negative real return and inverse relationship between deposit rate and inflation rate. When increment occurs on one variable then there occurs decrement on other variables. To identify the significant or insignificant of this correlation it is necessary to calculate the value of t-statistics. The calculate value 1.7154 is less than tabulated value for it with 5% level of significance with 7 d. f. is 2.571. It is insignificant correlation. Null hypothesis is accepted which means that correlation between deposit rate and inflation is significant.

In the same manner, the correlation between lending and inflation rate is found ( $r_{24} = -0.91606$ ). This is also higher negative correlation coefficient. It means the two variables move in different direction. This is inverse relationship with lending rate and inflation rate. To identify the significant of correlation, t-statistic is calculated. The calculated value of is 5.1082 and tabulated value is 2.571. Here the case is apposite with deposit. It means that, whatever correlation coefficient reveals for the negative relationship of two variables, but the two variables are significantly correlated i.e. increase (decrease) n the inflation rate brings decrease (increase) in the lending rate. Both lending rate and inflation rate are inverse relation. This is alternative hypothesis accepted.

#### 4.5 Findings of this Study:

This study is carried out to identify the practical applicability of some of the theories that are taught on the University and colleges in the context of Nepal. With this motive, this study is mainly focused on three objectives. First one is to determine the actual situation of substitution effect in the context of Nepalese financial markets or to find the relation between the deposit rate and deposit amount. Similarly, next objective is to determine the relationship between lending rate and corresponding lending amount. And lastly, the next objective is to explore the actual relationship of inflation rate and interest rate. From the study, the three major findings are obtained. They are: According to the substitution theory, there should be strong positive relationship between deposit amount and deposit interest rate. The analysis of substitution effect for both fixed and saving deposit shows that substitution effect does not work for all sample banks.

- In **RBB** case, the calculated correlation coefficient between saving deposit interest rate and deposit amount is highly negative i.e  $r = -0.8206$  as opposite to the substitution theory. The related t test also concludes that the relation is significant or there is no substitution effect for the case of saving deposit. Though the correlation coefficient between interest rate on fixed deposit and fixed deposit amount is positive i.e.  $r = 0.9438$ . The t-test can't prove that the relation is significant.
- In **NBL** case, while analyzing relationship between saving interest rate and saving deposit , the theory of substitution effect doesn't holds true .Because the correlation coefficient between these two variables is highly negative that is  $r = -0.7855$ , and the calculated t value that is  $t_{cal} = 5.95$  also prove that the above mentioned coefficient is significant. However the calculated correlation coefficient between fixed deposit interest rate and fixed deposit amount is highly positive i.e.  $r = 0.9489$

and calculated t value also prove that the relation is significant .So this is in support of the theory as suggested by substitution effect.

- In *ADB/N* case, for saving deposit  $r = -0.8867$  (highly negative). And the respective calculated t-value is more than tabulated value i.e.  $4.282 > 2.571$  shows that the variable are significantly correlated resulting the theory of substitution effect holds wrong. Similarly for fixed deposit,  $r = -0.721$  (highly negative). And  $t\text{-cal} < -t\text{-tab}$ . or  $2.330 < 2.571$  .Thus the relationship is incorrect or the variable are negatively correlated. So the substitution effect is not applicable for the bank also.
- Above all we can conclude that the substitution effect does not work for all sample banks or the theory holds wrong for most of the sample banks except RBB and NBL on fixed deposit and NBL. This means that, people are oriented to deposit more amounts even if the interest rates on deposit are falling every year. The increasing deposit amount clarifies this fact.

According to theory, lending interest rate and lending amount should have inverse relationship.

- In **RBB** case , the correlation coefficient between the variables  $r = -0.50346$  (moderate negative degree correlation) It means they move in the opposite direction as per the theory .i.e increase in lending rate result decrease in total lending amount. To check whether the relation is actually correct t value is calculated and the calculated value is 3.0785 i.e. greater than tabulated value. Thus t-statistics verify that their relation is significant. In conclusion the inverse relationship between lending rate and lending amount is not exactly applicable for RBB.
- In **NBL** case  $r = 0.694235$  (positively correlated) But the calculated t is less than tabulated value. i.e.  $t\text{-cal} = 2.1569 < 2.571$ . It indicated that the oposite relation as shown by correlation Coefficient is wrong or not

significant. Thus lending interest rate and lending amount have inverse relationship as per the theory.

- In **ADB/N** case,  $r = -0.87506$  and its respective calculated t value i.e. 3.961 reveals that the variables have inverse relationship as suggested by theory.

From this study, it is found that all sample banks have inverse relationship. But among them, three banks have weakness relationship as required by theory. The increment in demand of loan able funds the decline in lending rate because they have very high value of t-statistics. T-value of RBB and NBL is insignificant and ADB/N is significant.

For fixed and saving deposits, it is found that all sample banks have negative correlation with inflation rate.

- In **RBB** case, if correlation coefficient of between deposit and inflation is taken, the value of  $r = -0.6581$ . This means increase in inflation increases the deposit interest rate decreases highly. In order to verify the strong ness or weakness of relationship, calculation of t statistics is necessary. The calculated value of t for given correlation coefficient is 1.9544 which is less than tabulate value of t i.e. 2.571. It reveals that inverse relation as shown by correlation coefficient is insignificant. Similarly if correlation coefficient of between lending rate and inflation is taken, the value of r be  $r = -0.8127$ . This is also negative level correlation. Here also when t is calculate to verify the weakness. It is found that the lower level correlation between the variables is significant. It concludes that fisher's effect is not practically applicable for RBB.

- In **NBL** case, correlation coefficient between inflation and deposit rate is -0.63394 and between inflation and lending rate is -0.7208. This is negative moderately correlated. To verify the strength of the relation t value are calculated and are 1.8504 and 2.3254 for deposit and lending rate respectively. Thus both value are less than tabulated value and justify that the relationship is not significant. Thus the fisher's effect holds wrong.
- In **ADB/N** case also, though the correlation coefficient between inflation and deposit rate is -0.6087 and between inflation and lending rate is -0.91604. This is negative correlated. To verify the strength of the relation t value is calculated is less than tabulated (2.571). So there's relationship is insignificant. And relation of lending rate and inflation, calculated value is greater than calculated value than relationship is significant.

## **Chapter Five**

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

This chapter is the important chapter for the research because this chapter is the extracts of all the previously discussed chapters. This chapter consists of mainly three parts: Summary, conclusion and recommendation. In summary part, revision or summary of all four chapters is made. In conclusion part, the result from the research is summed up and in recommendation part, suggestion and recommendation is made based on the result and experience of thesis. Recommendation is made for improving the present situation to the concerned parties as well as for further research.

#### **5.1 Summary**

Nepal is orienting towards the development. Natural resources of the country remain unused and unutilized due to the lack of financing and technical know-how. In order to mobilize the limited capital, the government of Nepal adopted the liberalization policy. As result up to now(April 2009) 26 commercial banks, 63 development banks, 15 micro credit development banks, 77 finance companies,... saving and co-operatives and... financial NGOs are established within the financial system of Nepal.(Banking and financial statistics : 2009, iii) Financial system is hoped to develop the economy and help to raise the living standard of the people. Financial intermediaries mobilize the fund by collecting the scattered resources from the savers and provide the collected funds to the users. The intermediaries of financial systems sustain by lending

the fund on higher interest rate and paying the deposit holder a little interest. It means that such organization survive by making profit through a large interest spread on deposit and lending. The decision made to charge and provide interest on lending and deposit affects the profit position of the organization. Depositors are generally attracted by offering the higher interest rates. Similarly high credit rates de-motivate the investors as a result investment in the country shrinks down. Though there are various factors in the economy that affects the deposit amount and lending amount; interest rate is one of the major factor that affect deposit and lending amount. With the major objective of showing relationship between deposit rate and deposit amount i.e. substitution effect, lending rate and lending amount, inflation and interest rate, this study is undertaken.

After the liberal policy adopted by the government, NRB slowly loosen the rigid ness to fixed the interest rate that financial intermediaries charge and offer. But time to time, NRB use to issue directives regarding overall performance of the financial institutions. Therefore, in past few years back, banks and other financial institutions get freedom to quote the interest rate on lending and deposit. This creates the competition in the Nepalese economy. In this sense, this study is conducted to identify whether some of the theories of finance and economics are applicable or not in the Nepalese financial markets. These major theories are like substitution effect, fisher effect and inverse relationship between interest rate and lending amount. For this purpose brief introduction about Nepalese economy, interest rate, sample organizations, statement of problem, significance of the study, research hypothesis, and so on are made in the first chapter of this dissertation. In second chapter, theoretical review as well as review of previous research has been made. Different views about interest, function of interest, theories of interest, factors affecting interest rate and so on are reviewed on that chapter. On the theories of interest, mainly four theories- The Classical Theory, Liquidity Preference Theory, Loanable Fund Theory and Rational Expectancies Theory - are reviewed. Similarly the factor affecting interest rate like default risk, marketability risk, exchange rate risk and so on are explained. Similarly, the in order to identity the relationship of interest rate and inflation, Fisher effect, Harrod-Keynes effect are also studied on the second chapter. Research design used is mainly analytical. Out of the total financial system, three commercial banks are chosen for sample purpose; mainly secondary data are used for the analysis. These all are made on third chapter. Lastly on fourth chapter, collected data are presented in tabular

and graphic form and analyzed using various statistical tools like mean, standard deviation, correlation coefficient and t-statistics.

## 5.2 Conclusion

From the presentation and analysis of data; using different financial tools the major findings

**Table no 5.1 Unified (Integrated results of all data analysis**

Particular		RBB	NBL	ADB/N
Substitution Effect (Deposit and Interest Rate)	r (Saving rate & Deposit	-0.82804	-0.7655	-0.88621
	r (Fixed rate and Deposit)	0.9438	0.948985	-0.786
	t-cal (Saving & Deposit)	3.0785	5.952	4.282
	t-cal (Fixed & Deposit)	6.3623	6.7325	2.330
Lending amount and Interest	r (lending)	-0.503	0.6943	-0.8721
	t-cal (lending)	1.30	2.157	3.962
Inflation and Interest Rate. (Fisher Effects.)	r (inflation & deposit)	-0.65811	- 0.639356	- 0.608654
	r (inflation & lending)	-0.81281	- 0.720799	- 0.916064
	t-cal (inflation & deposit)	1.9544	1.8594	1.7154
	t-cal (inflation & lending)	3.120	2.3254	5.1082

- The interest rates on both deposit and lending of all sample banks are found to be in decreasing trend. But contrary to this, deposit amount and lending amount is increasing every year except on fixed deposit of RBB and NBL. The government run bank's fixed deposit is found to be decreasing every year.

- The saving deposit amount and saving interest rate have negative relationship ranging from -0.7655 to -0.8862. It means that they have highly inverse relationship, if one variable increases, other variable decreases and vice-versa. This case is against the theory of substitution effect. This may be due to the fact that, in last even FYs, people accumulated most of their funds on saving accounts though they don't get appropriate interest on it. It may be just because of unavailability of other acceptable investment opportunity, in which a separate study can be made. Similarly, the convenience of using saving accounts provokes the investor to deposit more on saving account. Similarly the excess supply of loanable fund (saving deposit) reduces the cost of fund (interest rate of saving account.)

- To clarify the aforementioned conclusion, the t-statistic of negative correlation between saving deposit amount and saving interest rate is significant. It means that they have strong negative relationship. Therefore it is concluded that for saving deposit, there is no substitution effect.

- Analysis of fixed deposit amount and fixed interest rate shows negative relationship except RBB and NBL. The correlation coefficient for RBB and NBL is 0.9489 and 0.9438. The RBB has positive level of correlation where as RBB and NBL has high degree of correlation. According to correlation coefficient, the substitution effects occur for both RBB and NBL in case of fixed deposit. But for other three banks - ADB/N, HBL and NBB – the correlation coefficient is negative meaning people deposit more money even if the bank offer the lower yield rate on fixed deposit.

- Even though, the correlation coefficient of RBB and NBL for fixed deposit amount and fixed deposit interest rate is positive, the t-statistics clarify that RBB NBL has strong relationship. The calculated value of t is found to be

greater than the tabulated value of  $t$ , so  $t$ -test indicates that there is significant relationship between those two variables for the case of RBB and NBL. Thus the decrease in deposit is not due to the decrease in interest rate.

- One of the variables that affect the demand of fund (lending activity) is lending interest rate. Theoretically, there is negative relationship between lending interest rate and lending amount. In this study for the 3 sample bank, it is found that all sample banks except NBL have negative correlation between these two variables. By using correlation tools, it can be inferred that all the sample banks except NBL have inverse relationship as suggest by theory.

- The  $t$ -test for correlation coefficient of each sample banks for negative relationship between lending interest rate and lending amount shows that the  $t$  value for RBB and and NBL are insignificant which means that though the correlation coefficient shows the moderate relationship but their relationship is not strong i.e. not significant relationship. ADB/N is negative correlation and significant relationship.

- The relationship between interest rate on deposit and inflation rate is negative. It ranges from 0.6581 to -0.6087. But after testing  $t$ -value correlation coefficient of all sample bank is statistically insignificant. In conclusion, it can be said that the Fisher effect is not applicable in Nepalese Financial market.

- The interest rate on lending and inflation rate has high degree of negative correlation coefficient. The correlation coefficient among sample banks lies between -0.8128 to -0.6581 . For among samples, the correlation coefficients are insignificant because their value lies below the tabulated value of  $t$ . So it can be said that lending interest rate in Nepalese financial market is affected by inflation only to some extent even though the theory says to exit a negative relationship.

### **5.3 Recommendation**

Based on the analysis, interpretation & conclusions, certain recommendation can be made here so that the concerned authorities, future researchers, academicians, bankers can get some insights on the present conditions on above topics. It is considered that this research will be fruitful for them to improve the present condition as well as for further research. The major recommendations after this study are:

In order to generate more capital for the development of the economy, more deposit need to be collected by the financial institutions. Though the study concludes that the theory of substitution effect doesn't work in all sample banks in the context of Nepal, to the banks like NBL and to some extent RBB, in the case of fixed deposit, the theory of substitution does work. Thus these financial institutions are suggested to quote higher fixed deposit interest rate as far as possible in the coming year so as to raise the fixed deposit amount. This situation induces their profit opportunities. However ADB/N should not have to increase their fixed interest rate. Similarly- all the sample banks don't need to increase their saving interest rate in order to stimulate saving deposit amount. The high spread between deposit interest rate and lending interest rate is another factor to be considered. Higher spread merely increases the profit figures of the banks but at the same time it reduces the deposit collection which ultimately manipulates the investment in the country. Because it's the banking behavior that the deposit are collected and invest the same in the productive sector to make profit. So the financial institutions are suggested to reduce the interest spread as minimum as possible. While reducing the lending rate, it is suggested to reduce more on productive sectors than non-productive sectors. If not possible then bankers can reduce the rate of all sectors proportionately.

The lending rates of some bank on some sector are found to be different i.e. quoted on range. These types of inconsistency may bring misconception about that organization. So banks are suggested to quote one consistent rate than on range. Profitability and liquidity are two harmonizing as well as rivalry term. More liquidity or reserved disturb the financial activities which influence the profit earning behavior of the institution. Similarly if it keeps less liquid funds by investing most of the funds with a motive to earn more, it may sometimes be fruitful but also can be destructive in some time extent. It may invite some accidents that can ultimately reduce the liquidity too which will harm both the

depositors and financial institution, itself. So the financial institutions consider the trade-off or equilibrium between liquidity and profitability.

Lending institutions are suggested to invest on new areas as well as to introduce competitive customer oriented schemes on lending and borrowing so that more lending and borrowing can be promoted and over liquidity problem may be solved. Sample institutions are also suggested to include their interest rate structure in their annual report as well as kindly requested for the co-operation and sincere support to the research students.

As the central bank of the country, NRB has power to specify the range or spread between lending rate and deposit rate. So NRB is suggested to specify the spread whenever there is higher gap between two interest rates in the country. From the experience of collecting the secondary data, it is suggested that NRB should pay special attention to publish detail information on timely manner. The untimely publication of the bulletins handicaps the research workers and students. Though the interest rate in free market is determined by the interplay of demand and supply, the concerned parties who fixed the interest rates are suggested to include the inflation premium as far as possible while fixing the interest rates. If the rate of inflation is not considered & real rate comes out to be negative then depositors may withdraw their money and utilize it on non-productive sectors. Clients should invest their saving in the organization with high and consistent interest rate. Similarly, lower but consistent interest rate is fruitful to the borrower. Not only focusing on interest rate they must consider the inflation of the country. When the inflation rate is higher than the deposit rate than the deposit holder may lose their income rather than to earn while in the case of borrowing with higher inflation borrower can make profit rather than to lose earning.

Research is an ongoing process. Study of interest rate and its relation with different factors is a vast field of study. Through this research, the researcher has tried to explore the factors affecting interest rate structure of some commercial banks, which the researcher believed more specific, the further researcher can also focus their study towards more specific factors. Similarly, they can even carry out research based on primary source. As this research is made by highlighting only one variable- interest rate, it is suggested for further research. The other relevant factors that can affect the interest rate can also be studied. At last, banks are facing lack of liquidity in our country because there is no political stability and not enough industries in our country.

## APPENDICES

### Appendix :1

#### *Interest rate structure on deposit of RBB as on end of 2008*

Deposit	2003	2004	2005	2006	2007	2008	2009	
savings	5.00	4.75	2.25	2.00	2.00	2.00	2.00	
Fixed	-	-	-	-	-	-	-	
7days	-	-	-	-	-	-	-	
14days	-	-	-	-	-	-	-	
1month	-	-	-	-	-	-	-	
3months	4.00	3.75	3.00	2.25	2.25	2.25	2.25	
6months	4.75	4.25	3.00	2.5	2.5	2.5	2.5	
1year	6.00	5.75	3.75	3.25	3.25	3.25	3.25	
above 2 years	6.25	6.00	-	-	-	-	-	
Whole mean	5.2	4.94	3.00	2.50	2.50	2.50	2.50	
fixed deposit mean	5.25	4.94	3.25	2.67	2.67	2.67	2.67	
Std. Deviation	Whole Mean= 0.274				Fixed deposit mean=0.0114			

Source: Banking and Financial statistics, No: 38-40, NRB

Appendix :2

***Relationship between Interest Rate and Deposit amount of RBB***

Year (1)	Saving Deposit Interest rate (2)	Saving Deposits Amount (3)	Fixed Deposit Interest rate (4)	fixed Deposit Amount (5)
2003	5.00	18997.2	5.25	15166.6
2004	4.75	20861.2	4.94	13579.5
2005	2.25	23288.9	3.25	11572.8
2006	2.00	26848.2	2.67	9001.5
2007	2...	29494.9	2.67	8103.8
2008	2.00	31920.3	2.67	7325.6
2009	2.	33756.1	2.67	6912.3
Correlation	$r_{23} = -0.82604$		$r_{45} = 0.9438$	
Correlation Coefficient	$r^2_{23} = 0.68$		$r^2_{45} = 0.89$	
t-statistics	t-cal= 3.0785	t-tab= 2.571	t-cal= 6.3623	t-tad= 2.571

Source: Banking and Financial statistics, No: 38-40, NRB

Appendix :3

***Interest rate structure on deposit of NBL***

Deposits	2003	2004	2005	2006	2007	2008	2009
Savings	5.00	4.75	2.50	2.50	2.50	2.00	2.00
Fixed							
7days	2.00	2.00	-	-	-	-	-
14 days	-	-	-	-	-	-	-
1 month	3.50	3.25	2.5	2.75	2.75	2.00	2.00
2 months	-	3.50	2.75	-	-	-	-
3 months	4.00	3.75	3.00	3.00	3.00	2.25	2.25
6months	4.50	4.25	3.50	3.25	3.25	3.25	3.00
1 Year	6.00	5.75	4.00	3.75	3.75	3.50	3.00
above 2 years	6.25	6.00	-	-	-	-	
Whole mean	4.46	4.16	3.04	3.05	3.05	2.95	2.85
Fixed deposit mean	4.375	4.071	3.15	3.19	3.19	2.75	2.56
STD. deviation	whole Mean=0.6062		Fixed deposit Mean=0 .6141				

Source: Banking and Financial statistics, No: 38-40, NRB.

Appendix :4

***Relationship between Interest Rate and Deposit amount of NBL***

Year(1)	Saving Deposit Interest rate (2)	Saving Deposits Amounts (3)	Fixed Deposits Interest Rate(4)	Fixed Deposits Amounts (5)		
2003	5.00	19851.50	4.38	9732		
2004	4.75	21534.50	4.07	8397		
2005	2.50	22063.00	3.15	7481		
2006	2.50	22671.80	3.19	6269		
2007	2.50	23547.90	3.19	5791		
2008	2.00	26425.40	2.75	5393		
2009	2.00	28545.10	2.56	4758		
Correlation	$r_{23} = -0.7655$		$r_{45} = 0.948985$			
Correlation of Determination	$r^2_{23} = 0.587$		$r^2_{45} = 0.9006$			
t-statistic	t-cal = -5.95	t-tap = 2.571	significant	t-cal = 6.73	t-tap = 2.571	significant

Source: Banking and Financial statistics, No: 38-40, NRB

Appendix :5

Interest rate structure on deposit of ADB/N as on end 2008

Deposits	2003	2004	2005	2006	2007	2008	2009
Savings	5.25	5.25	4	3	3	3	3
Fixed							
7days	-	-	-	-	-	-	-
14 days	-	-	-	-	-	-	-
1 month	-	-	2.5	2	2.25	2.25	2.25
3 months	-	-	3	2.5	2.75	2.75	2.5
6months	-	-	3.5	3	3.25	3.25	3.25
1 Year	6.5	6.5	4.75	3.5	4.25	4.25	4
above 2 years	6.75	6.75	5.75	4.5	5	5	4.75
Whole mean	6.167	6.167	3.917	3.083	3.417	3.4167	3.292
Fixed deposit mean	6.63	6.63	3.9	3.1	3.5	3.5	3.35
Standard Deviation	Whole mean=1.36			Fixed Deposit mean=1.56			

Source: Banking and Financial statistics, No: 38-40, NRB

Appendix :6

***Relationship between Interest Rate and Deposit amount of ADB/N***

Year 1	Saving Deposit Interest Rate (2)	Saving Deposits Amounts (3)	Fixed deposit Interest Rate(4)	Fixed Deposit Amount (5)		
2003	5.25	11002.90	6.63	7754.30		
2004	5.25	12732.20	6.63	8756.20		
2005	4.00	14632.60	3.90	9846.80		
2006	3.00	15121.70	3.10	10087.00		
2007	3.00	16087.90	3.50	11443.40		
2008	2.75	17885.60	3.50	13102.20		
2009	2.75	19988.30	3.35	14945.80		
Correlation	$r_{23} = -0.886$		$r_{45} = -0.721$			
Correlation Coefficient	$r^2_{23} = 0.786$		$r^2_{45} = .521$			
t-statistic	t-cal=-4.282	t-cal =2.571	significant	t-cal=-2.330	t-cal=2.571	Insignificant

Source: Banking and Financial statistics, No: 38-40, NRB

Appendix :7

***Lending Rate RBB on Different Sectors during seven FYS***

Sector	2003	2004	2005	2006	2007	2008	2009
Overdraft	11.75	11.25	12.20	11.00	11.00	11.00	11.00
Export Credit	11.50	10.00	9.50	8.00	8.00	8.00	8.00
Import LC	12.00	10.00	10.00	9.00	9.00	7.50	7.50
HMG Bond	10.50	10.00	7.00	7.00	7.00	7.00	7.00
BG/CG	10.00	9.25	9.25	8.50	8.50	7.00	7.00
Industrial Loan	–	–	–	–	–	–	–
Commercial Loan	14.50	11.75	12.00	–	–	–	–
Priority Sector Loan	15.00	–	–	–	–	11.50	11.50
poorer Sector Loan	13.00	12.00	12.00	13.00	11.50	11.00	11.00
Working capital	13.75	12.50	11.00	–	–	–	–
Hire purchase	13.50	12.00	12.00	11.00	11.00	9.00	9.00
others	15.00	12.00	12.00	11.00	11.00	11.00	11.00
Average Int. Rate	12.77	11.08	10.70	9.81	9.63	9.22	9.22
Lending Amount	2857 6.0	28258. 9	2678 1.0	28919. 8	27164. 3	29630. 3	30896. 3
Correlation ( $r_{12}$ )	-0.503						
correlation Determination	0.2531						
t-statistics	t-cal=1.30		t-tab=2.571		Insignificant		
Std. deviation	1.2829						

Source: Banking and Financial Statistics, No: 38-48, NRB

Appendix :8

*Lending Rate NBL on Different Sectors during seven FYs.*

Sector	2003	2004	2005	2006	2007	2008	2009
Overdraft	14	10	10	10	10	10	10
Export Credit	11	8.5	8.5	8	8	8	8
Import LC	11	8.5	–	–	–	–	–
HMG Bond	7	7	7	6.5	6.5	6.5	6.5
BG/CG	10	8.75	8.75	7	7	7	7
Industrial Loan	13	13	–	–	–	–	–
Commercial Loan	13.5	13.5	–	–	–	–	–
Priority Sector Loan	13.5	10.5	10.5	10	10	10	10
poorer Sector Loan	10	8	8	7.5	7.5	7.5	7.5
Working capital	13	10	10	10	10	10	10
Hire purchase	14	11	11	10.5	10.5	10.5	10.5
others	14	11	12	11	11	11	11
Average Int. Rate	12	9.98	9.53	8.94	8.94	8.94	8.94
Lending Amount	20997.5	19266.1	19141.7	18530.6	12791.1	11058.48	13252
correlation( $r_{12}$ )	0.6943						
Correlation Coefficient( $r^2_{12}$ )	0.4821						
t-statistics	t-cal=2.156		t-tab=2.571			Insignificant	
Std. Deviation	1.1292						

Appendix :9

***Inflation Rate and Interest Rates (deposit and lending rate) of RBB***

<b>Fiscal Year</b>	<b>CPI (1)</b>	<b>Inflation(2)</b>	<b>Deposit Rate(3)</b>	<b>Lending Rate(4)</b>
2003	142.1	2.90	5.20	12.78
2004	148.9	4.80	4.94	11.08
2005	154.8	4.00	3.00	10.70
2006	161.8	4.5	2.50	9.81
2007	174.7	8.000	2.50	9.63
2008	185.9	6.40	2.50	9.22
2009	196.6	7.70	2.50	9.22
correlation coefficient		$r_{23} = -0.6581$	$r_{24} = -0.8128$	
Coefficient of Determination		$r^2_{23} = 0.4331$	$r^2_{24} = 0.6607$	
t-statistics		t-cal (Deposit)=1.9544	t-tab=2.571	Insignificant
		t-cal (Lending)=3.120	t-tab=2.571	significant

Source: National Urban Consumer Price Index, Yearly economic bulletin, 2009, NRB

Appendix :10

***Inflation Rate and Interest Rate of NBL***

<b>Fiscal Year</b>	<b>CPI (1)</b>	<b>Inflation(2)</b>	<b>Deposit Rate(3)</b>	<b>Lending Rate(4)</b>
2003	142.1	2.90	4.46	12
2004	148.9	4.80	4.16	9.98
2005	154.8	4.00	3.02	9.53
2006	161.8	4.5	3.05	8.94
2007	174.7	8.000	3.05	8.94
2008	185.9	6.40	2.95	8.94
2009	196.6	7.70	2.85	8.94
correlation coefficient		$r_{23} = -0.63394$	$r_{24} = -0.7208$	
Coefficient of Determination		$r^2_{23} = 0.4088$	$r^2_{24} = 0.519$	
t-statistics		t-cal (Deposit)=1.8594	t-tab=2.571	Insignificant
		t-cal (Lending)=2.3254	t-tab=2.571	Insignificant

Source: National Urban Consumer Price Index, Yearly economic bulletin, 2009, NRB

Appendix :11

***Inflation Rate and Interest Rate of ADB/N***

<b>Fiscal Year</b>	<b>CPI (1)</b>	<b>Inflation(2)</b>	<b>Deposit Rate(3)</b>	<b>Lending Rate(4)</b>
2003	142.1	2.90	6.17	15.3
2004	148.9	4.80	6.17	15.3
2005	154.8	4.00	3.92	13.9
2006	161.8	4.5	3.08	14.2
2007	174.7	8.000	3.42	10.42
2008	185.9	6.40	3.42	10.42
2009	196.6	7.70	3.29	9.69
correlation coefficient		$r_{23} = -0.6087$	$r_{24} = -0.7208$	
Coefficient of Determination		$r^2_{23} = 0.3705$	$r^2_{24} = 0.7208$	
t-statistics		t-cal (Deposit)=1.7154	t-tab=2.571	Insignificant
		t-cal (Lending)=5.1082	t-tab=2.571	significant

*Source: National Urban Consumer Price Index, Yearly economic bulletin, 2009, NRB*