

**IMPACT OF INTEREST RATE ON DEPOSIT & LENDING
OPERATIONS OF NEPALESE COMMERCIAL BANKS**

(With Reference To Siddhartha Bank & Lumbini Bank Limited)

A Thesis

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CHAPTER – I

INTRODUCTION

1.1 Background of the Study

Financial institution occupies an important place in a nation's economy. They are indispensable in a modern society. They play a vital role in the economic development of a country and form the core of money market in an advanced country by collecting funds from unproductive sectors with the objective of investments in productive sectors. Nepal Rastra Bank is a central bank of Nepal. It is controlling and monitoring all the financial institutions within the country by formulating various monetary and financial policies.

Interest has a direct relation with economic growth and development. It plays an important role in borrowing and lending. Simply, interest rate is defined as the price a borrower must pay to secure scarce loanable funds from lender for an agreed-upon period. In economic terms, interest is the payment made by borrower to the lender for the use of capital. Interest is usually paid only on the principal, that is, on the sum of money loaned, and it is called simple interest. In some cases, interest is paid not only on the principal but also on the cumulative total of past interest payments, and the amount so paid is called compound interest. Interest rate targets are also a vital tool of monetary policy and are used to control variables like investment, inflation and unemployment. Interest rate is one of the major tools for managing the economy. It plays an important role in borrowing and lending (Hanson, 1997).

An arrangement whereby an individual or organization may place cash for safekeeping in a bank, discount house or financial institution is known as deposit. Deposit is nothing but it is a type of asset. It is understood that the institution may

invest the cash and pay the depositor a specified amount of interest and that the depositor can reclaim the full value of the account according to the agreed upon procedures governing the account. The account holder retains rights to their deposit, although restrictions placed on access depend upon the terms and conditions of the account and the provider. The deposit account would be shown as a liability owed by the bank to its customer. Deposits as the amount deposited in a current, saving or fixed accounts of a bank or financial institution. The deposits are subject to withdrawals by means of cheque on a short notice by customers. There are several restrictions on these deposits, regarding the amount of deposit, numbers of withdrawal etc. they are used more as investments and hence they earn some interest. The rate of interest varies depending on the nature of the deposits. The bank attracts deposits from customers by offering different rates of interest and different kinds of facilities.

Credit is the provision of resources by one party to another party where that second party does not reimburse the first party immediately, there by generating a debt and instead arranges either to repay or return those resources at a lateral date. In credit transactions, the creditor turns over to the debtor to repay an equivalent amount usually money in future plus an added sum called interest. In other words, bank earns profit by lending the amount in terms of loan or credit and in return, it gets interests.

Commercial banks are the main source which motivates people to save their earnings. Bank deals in accepting the saving of people in the form of deposit collection and invest it in the productive area. They give the loan to the people against real and financial assets. They transfer monetary sources from savers to users. In other words, they are intermediate between lender and receiver of fund they mobilize the depositor fund.

The commercial bank has been a vital ingredient for economic development. They are intermediaries, which mobilize funds through the prudential combination of investment portfolios in advanced countries. Whereas in Nepal the role of

commercial banks are still to be realized as an essential machine of mobilizing internal saving through various banking schemes in the economy. Hence, to uplift the backward economic condition of the country, the process of capital accumulation, among other prerequisites should be expedited.

1.2 Statement of the Problem

Interest plays a vital role in the development and the growth of economy. According to economic theory (other things remain constant), low interest rate leads to high investment that results into high production, high employment, more income and ultimately growth in economy. So through this study it is going to explore: Does decline in interest rate increase the lending activities? Or what is the actual condition on this regard in Nepalese financial market place? If the condition is not as per theory then -what are the possible causes for such effects? Focusing on the Nepalese context, the investment is low in productive sectors due to unavailability of sufficient finance, security and other factors. Nepal's main export is basically raw materials. It means that Nepal is exporting raw materials instead of producing goods and services from these. If cheap financing is available, many factories could be established to reap benefits from utilization of resources, which would increase the employment, standard of living and status of country economy.

Theoretically, market interest rate is the sum of real rate plus inflation premium. But this may or may not occur in real practice. So through this study, the researcher will identify: Is there any positive relation of interest rate and inflation as per theory? Similarly, high interest rate is stimulus for high savings (deposits). But in the real world people are seen to deposit more even when there is very low interest rate due to various reasons such as security, convenience and other. Thus through this study, the researcher will try to discover: what is the relation of deposit and interest rate?

More precisely, this study will inquire about the answer of following questions.

- Does substitution effect is practical in the context of Nepal or not? In other words what is the effect of high interest rate on savings (deposits)?
- Are borrowers of Nepalese market sensitive to the interest rate of credit? Alternately, what is the relationship between interest rate and borrowing amount?
- What is the magnitude of correlation between interest rate and lending?

1.3 Objectives of the study

The major objective of this study is to find out the relation of interest rate with other two variables Deposit and Lending (credit). To achieve the major objective, the following are the specific objectives of the study.

- To find out the rate of interest on deposit and lending of sample banks.
- To find the gap between deposit and lending of sample banks.
- To see the relation of interest rate with deposit and lending amounts in sample banks.

1.4 Significance of the Study

Nepalese interest rate varies time to time, region and sector to sector. The function in interest rate is a regular phenomenon in developing countries. Therefore, 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 institutions. This study will try to help analyze the interest rate structure of commercial banks in Nepal and try to develop some ideas to know whether it influences deposits and lending. This being an important aspect for the economic development of the country has not much been emphasized that means very few number of research work has been found in this topic. Hence, it is hoped that the finding of the study to some extent will help the policy makers to make strong policy regarding interest rate charged on deposits and lending in Nepalese context. Similarly, it can be

fruitful resource for teachers, students, researchers, academicians, general individuals and others in abstracting some useful information about interest rate, deposits and lending.

1.5 Limitations of the Study

The main limitation likely to be faced for this study could be as given below.

- The sample are taken only from commercial banks, other financial intermediaries are not included in the study.
- The deposit amount and lending amount of the commercial banks are influenced by several factors. However, this study mainly focuses on the interest rate.
- This study covers only 10 fiscal years data from 2003 to 2012.
- This study is based on secondary data.
- Although there are many other commercial banks, samples cover only two because of the unavailability of sufficient and accurate data along with other constraints.

1.6 Organization of Study

The study has been classified into five chapters. The titles of each of these parts are follows:

Chapter - I; Introduction

The first chapter includes various aspects of present study like Background of the Study, Focus of the Study, Statement of Problem, Objective of the Study, Significance of the Study, Limitation of Study and Organization of the Study.

Chapter - II; Review of Literature

The second chapter deals with the study of related books, and research work which are already published and conducted by different experts and researcher in the field of Interest rate, Deposit and Lending.

Chapter - III; Research Methodology

The third chapter deals research methodology process such as, research design, nature and source of data, population and sampling of the study, methods tools of analysis of data viz. quantitative and qualitative tools.

Chapter - IV; Presentation and Analysis of Data

The fourth chapter introduces the main aspect of the study. It deals with data collection procedure and presentation of data with different statistical and financial tools, and findings of the study.

Chapter - V; Summary, Conclusion and Recommendations

The fifth chapter presents summary, conclusion and recommendations.

Similarly, at the front part of the study table of contents, recommendation sheet, viva voice sheet, acknowledgement, list of table and figure and abbreviation are presented and bibliography and appendices are presented at the end of the study.

CHAPTER - II

REVIEW OF LITERATURE

Review of literature includes the concepts and ideas about the selected topics by reviewing all the relevant materials regarding the study. In fact, it begins with the search for suitable topics and continues throughout the duration of the research work. It deals with a literature survey of existing volume of similar related subjects. Review of literature means reviewing research studies or other relevant propositions in the related area of the study so that all past studies, their conclusions and deficiencies may be known and further research can be conducted. This chapter is divided into mainly two parts.

1. Conceptual / theoretical review
2. Review of related studies

2.1 Theoretical Review

2.1.1 Meaning of Interest

The interest rate is the price of money; the price of renting the use of the resources that money commands for a specified period by the free interplay of supply and demand in a market economy. The price of the money, the interest rate, plays a vital role in the allocation of resources and in the decision making of consumers and business. For example, an increase in the interest rate provides additional incentives for individuals and others to postpone current consumption (save) and thereby free resources for investment. Government policies intended to expand the volume of

saving should aim at increasing the attractiveness of saving by increasing the return to saving – the interest rate.

In other words, interest is the rewards for the pure yield of capital of saving for forgoing of liquidity and surplus of money. The rate of interest, according to Keynes, is a purely monetary phenomenon and in his theory, he has presented “a proposition that the rate of interest influences the level of economic activity by first influencing the rate of real investment in the economy”. According to him, the real investment is in fixed capital or durable machines. Schulz has also expressed his view that, “An important aspect of interest rate policy is the setting of an appropriate margin between the lending and deposit rate. If the margin is too high, bank will make excessive profits and this leads to waste of save resources. However, the neo-classical economist defined the interest as the price for the use of loanable funds. But the modern economist, in their effort to avoid these divergent and controversial views about the nature of interest, have explained it in terms of productivity, saving, liquidity preference and money. If it is too low, it will discourage intermediation and devitalize financial institutions. At the same time, the demand for credit goes on increasing being affected by the cheap loan rates. Hence, it can be concluded that changes in interest rate structure produce either positive or negative impact upon the growth of a developing economy such as ours” (Rose, 2003: 113).

Interest rate is one of the crucial indicators of financial as well as economic system of the country. Interest rates send price signals to borrowers, lenders, savers and investors. For example, higher interest rate generally brings forth a greater volume of saving and stimulates the lending of funds. Lower rate of interest, on the other hand tends to dampen the flow of saving and reduce lending activity. Higher interest rate tends to reduce the volume of borrowing and capital investment and lower interest rates stimulate borrowing and investment spending.

2.1.2 Theories of Interest Rate

In financial markets there are numerous interest rates exists. These differences are due to the risk premium associated with the issuer. Even securities issued by the same borrowers often carry a variety of interest rates. In this section, we focus upon those basic forces that influence the level of different interest rates. To uncover these basic rate-determination forces, however, we must make a simplifying assumption. We assume in this chapter that there is one fundamental interest rate in the economy known as the pure or real rate of interest which is the component of all interest rates. The closest approximation to this pure rate in the real world is the market yield on the government bonds minus inflation.

The rate of interest on Treasury bond is called risk free rate of interest which consists of real rate of interest plus premium for inflation. It is a rate of return presenting no risk of financial loss to the investor and representing the opportunity cost of holding idle cash, because the investor can always invest in no risk bonds and earn this minimum rate of return. Once pure rate of interest is determined, all other interest rates may be determined from it by examining the expected future inflation and special characteristics of the securities issued by individual borrowers. For example, only the government can borrow at risk-free interest rate; other borrowers pay higher rates that due to the greater risk of loss attached to their securities. Difference in liquidity, marketability and maturities are other important factors causing interest rate to differ from the pure or risk free rates (Rose:1997). In this study mainly four theories of interest are reviewed.

2.1.2.1 The Classical Theories of Interest Rates

This is one of the oldest theories concerning the determinants of pure or risk-free interest rate. It was the propounded during the 18th and 19th century by a number of British economists and elaborated by Irving Fisher in 1930. The classical theory argues that the rate of interest is determined by two forces:

- a. The supply of savings, derived mainly from households.

- b. The demand for investments capital coming mainly from the business sector.

A. Supply of Saving

1. Saving by Households

Generally most of the saving in modern industrialized economies is carried out by individual and families. 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 individual have a definite time preference for current over future consumption. A rational individual, it is assumed, will always prefer current enjoyment of goods and services over future enjoyment. Therefore, the only way to encourage an individual or family to consume less now and save more is to offer a higher rate of interest on current savings. If more were saving in the current period at a higher rate of return, future consumption and future enjoyment would be increased. The classical theory considers the payment of interest as a reward for waiting the postponement of current consumption in favor of greater future consumption. Higher interest rate increase the attractiveness of 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 5 to 10 percent, the volume of current savings by households is assumed to increase from \$ 100 to \$200 billion.

2. Saving by Business Firms

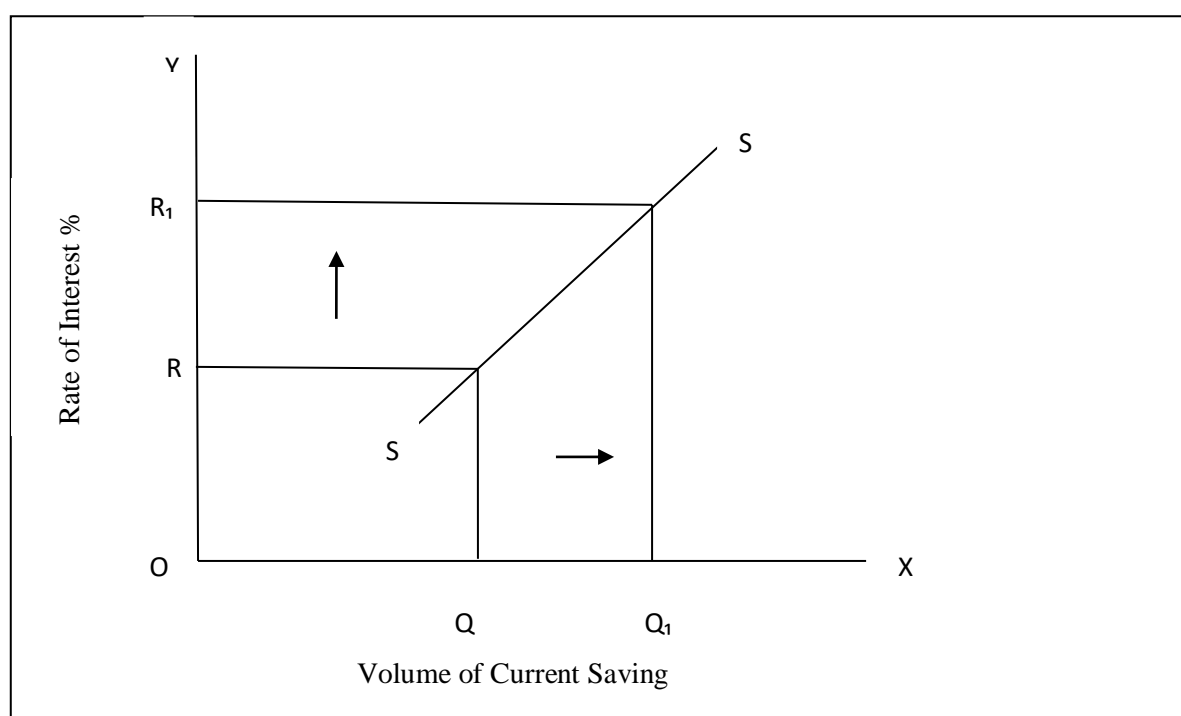
Not only households, but also businesses save and direct a portion of their savings into the financial markets to purchase securities and make loans. Most businesses hold savings balances in the form of retained earnings (as reflected in their equity or net worth accounts). In fact, the increase in retained earnings reported by business each year is a key measure of the volume of current business saving. 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 corporations. These two factors are summarized in the retention ratio, the ratio of retained earnings to net income after taxes. This ratio indicates the proportion of business profits retained in the business for investment purposes rather than paid out as dividends to the owners. 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 rates. 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 rises and interest rates may rise as well. Although the principal determinant of business saving is profits, interest rates also play a role in the decision of what proportion of current operating costs and long-term investment expenditures should be financed internally and what proportion externally. Higher interest rates in the money and capital markets typically encourage firms to use internally generated funds more heavily in financing projects. Conversely, lower interest rates encourage greater use of external funds from the money and capital markets.

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 factors affecting government savings.

Figure: 2.1

Substitution Effect Relating Saving and Interest Rate



Source: Rose, 1797: 193

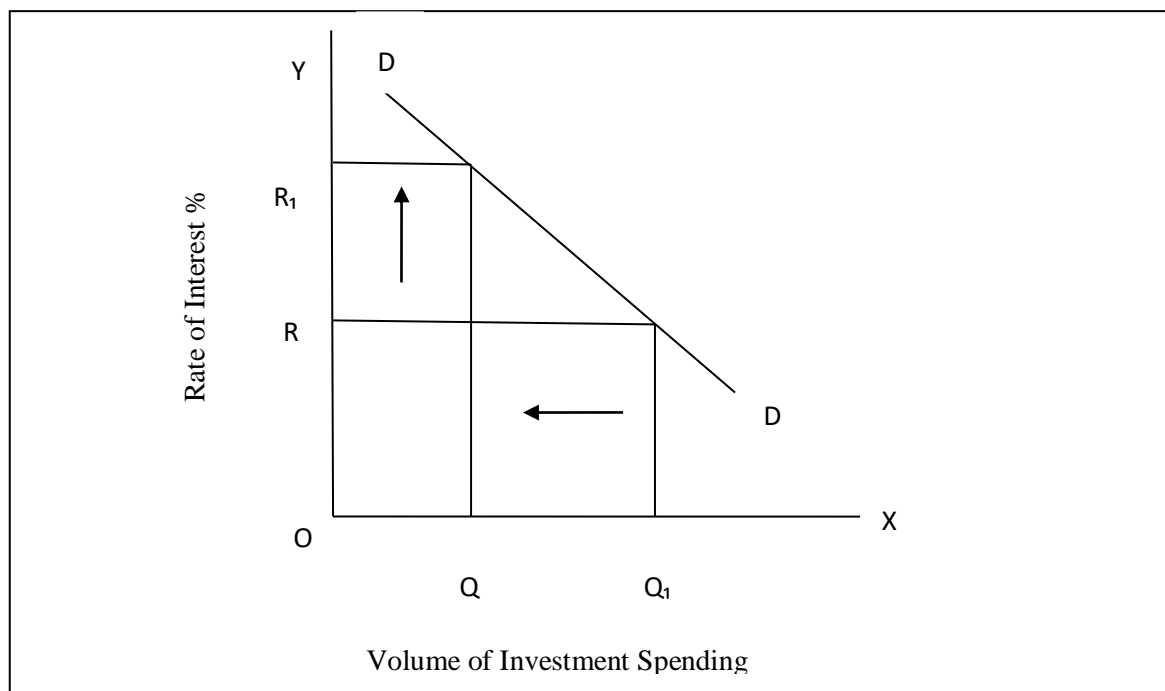
Above figure 2.1 shows the substitution effect between saving and interest rate, OX axis represents the volume of saving and OY axis represents the rate of interest. If interest rate increase volume of saving also increase, interest rate is increase from R to R_1 in this situation volume of saving is also increase from Q to Q_1 . This figure prove that the substitution effect of saving and interest rate. SS line represents the total supply of fund.

B. The Demand for Investment Funds

The savings made by business, government and households are important determinants of interest rate but they are only one side of determinants. The factor is investment spending, made by business firms, government and in some case households. Business requires huge amounts of funds each year to purchase equipment, machinery and inventories and to support the construction of new buildings and other physical facilities. The majority of business expenditures for these purposes consist of what economists call replacement investment. But according to the classical economist, interest rate and invest able fund have inverse relationship. At low rates of interest, more investment projects become economically viable (Rose, 1997: 195).

Figure: 2.2

The Investment Demand Schedule



Source: Rose, 1797: 195

Above figure 2.2 shows the relationship between investment and interest rate, OX axis represents the volume of investment and OY axis represents the rate of interest. If interest rate increases volume of investment decrease, interest rate is increase from R to R₁ in this situation volume of investment decrease from Q₁ to

Q. This figure prove that the relationship between investment and interest rate. DD line represents the total demand of invested fund.

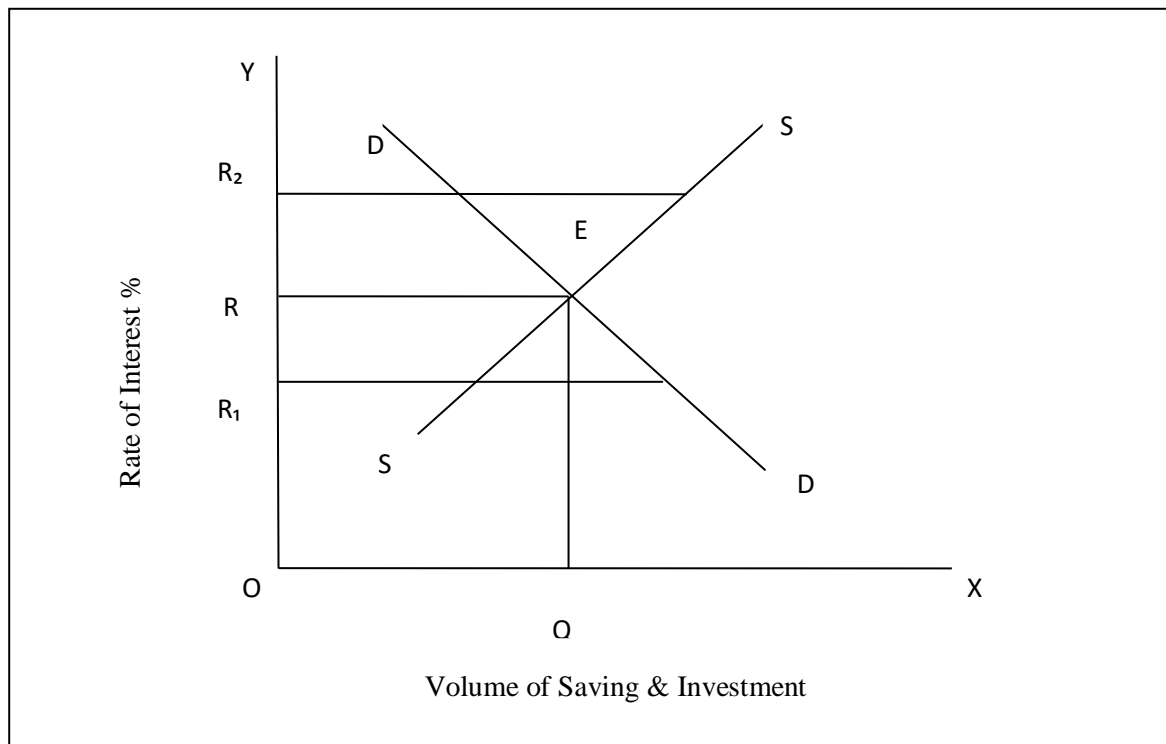
C. The Equilibrium Rate of Interest in the Classical Theory of Interest Rate

This theory believes that interest rate in the market formed by the interplay of the supply of saving and demands for capital investment in the economy. The equilibrium rate of interest will obtain at the point where the savings supplied to the market is exactly equals to the funds demanded for the funds demanded for the investment. If the market rate is above the equilibrium and state the volume of saving exceed the demand for investment, then savers will offer their funds lower and lower rate until this market rate approaches to the equilibrium. If the market rate lies below the equilibrium, volume of demand for investment exceeds the saving, then business firm will bid-up (increase) the interest rate until it approaches the level of at which saving become equal to the demand for investment. (Thapa, 2008: 341)

The market rate of interest moves towards its equilibrium level. However, supply and demand forces change so fast that the interest rate rarely has an opportunity to settle in at a specific equilibrium level. At any given time, the rate is probably above or below its true equilibrium level but moving 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 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: 2.3

The Equilibrium Interest Rate in Classical Theory of Interest Rate



Source: Rose, 1797: 197

Figure 2.3 shows the equilibrium interest rate in classical theory. OX axis represents the volume of saving & investment and OY axis represents the rate of interest. 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 the investment. To support this in figure 2.3 the demand and supply curve intersects at point E so, R is the equilibrium interest

rate. If interest rate increases from R to R_2 , the supply of savings will exceed the demand for investment. As a result interest rate will be required to be decreased to R again. In contrary to this, if interest rate decreases from R to R_1 , then demand for investment will exceed the supply of savings. As a result, interest rate will be required to be increased back to R . Therefore 'E' is the equilibrium condition.

2.1.2.2 The Loan able Funds Theory of Interest

A view that overcomes many of the limitations of the earlier theories is the loanable funds theory of interest rates. This view argues that the risk-free rate of interest is determined by the interplay of two forces the demand and supply of credit (loanable funds).

The credit view of what determines the levels and changes in interest rates focuses on the interaction of the demand for and the supply of loanable funds. The demand for loanable funds consists of credit demands from domestic businesses, consumers, and government, and also borrowing in the domestic market by foreigners. The supply of loanable funds stems from two sources domestic saving and new money.

A. The Demand for Loanable Funds

The demand for loanable fund is composed of the demand by household, business and governments.

1. Consumer (Household) Demand

Domestic consumers demand loanable funds to purchase a wide variety of goods and services on credit. This demand is inelastic with respect to change in interest rate. Slightly the rise in interest rate leads to reduce in demand for loanable fund and vice versa. Whereas the decline in interest rate stimulate the borrowing. Recent research indicates that consumers are not particularly responsive to the rate of interest when they seek credit but focus instead principally on the non-price

terms of loan, such as the down payment, maturity, and size of installment payments.

2. Domestic Business Demand

Business firm requires credit for investment purpose like purchasing inventories, plant and in machinery etc. Demand in fund by business sector increase when falls in interest rate and vice versa. The credit demands of domestic businesses generally are more responsive to changes in the rate of interest than in consumer borrowing.

3. Government Demand

Government needs fund for social needs and public welfare. But the demand for loanable funds by government doesn't depend upon the level of interest rate. It is inelastic with interest rate. Moreover, in case of central government, it has the power both to tax and to create money to pay its debts. State and local government demand on the other hand, is slightly inelastic because many local governments are limited in their borrowing activities by legal interest rate ceilings. When open market rate rises above the ceiling, some state and local governments are prevented from offering their securities to the public.

4. Foreign Demand

Foreign demand is influenced by domestic lending rate and interest rate in the foreign market. If the interest rate in the domestic country declines related to foreign rates, foreign borrowers will be attracted in the country (our) and vice versa.

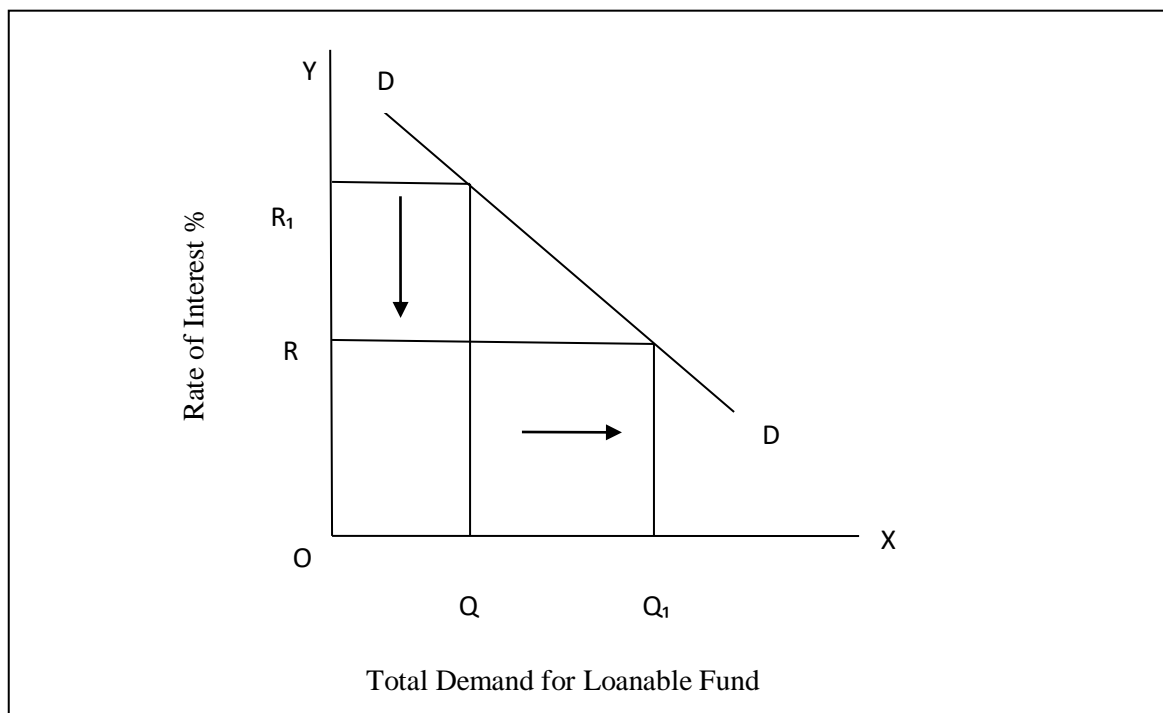
5. Total Demand for Loanable Funds

Total demand for the loanable fund is the sum of domestic consumer, business Government, and the foreign credit demands. The demand curves slope down from the left to the right with respect to the interest rate. Higher rate of interest

lead some businesses, consumers and governments to curtail their borrowing plans; lower rates brings for more credit demand. The total demand for loanable fund is shown in the following figure.

Figure: 2.4

The Demand for Loanable Fund



Source: Source: Rose, 2003: 232

Above figure 2.4 shows the relationship between interest rate and demand for loanable fund, OX axis represents the total demand for loanable fund and OY axis represents the rate of interest. If interest rate decreases total demand for loanable fund increase, interest rate is decrease from R_1 to R in this situation total demand for loanable fund increase from Q to Q_1 . DD line represents the total demand of

loanable fund. The total demand, DD in the shows that the demand of loanable fund increases with the decrease in interest rate R.

B. The Supply of Loanable Funds

Loanable funds flow into the money and capital markets from at least four different sources.

1. Domestic Saving

Saving refers to the postponement of current consumption. The decision to save is the decision to forego current consumption in order to have a larger quantity of consumption in the future. Domestic saving by businesses, consumers and governments. The principal source of loanable funds. (Thapa, 2067: p,345).

2. Income Effect

The relationship between interest rate levels and the volume of saving in the economy that argues that the advent of higher interest rates may induce savers to save less because each rupee saved now earns a higher rate of return. The income effect would suggest a negative relationship between interest rates and saving.

3. Substitution Effect

Higher interest rates increase the attractiveness of saving relative to consumption saving, encouraging more individuals to substitute current saving for some quantity of current consumption. The income effect would have opposite effect results for the volume of saving than the substitution effect. The substitution effect argues a positive relationship between interest rates and saving volume. The income effect argues a negative relationship between interest rates and saving volume (Paul & William, 1998: 469).

4. Wealth Effect

Individuals accumulate wealth in many forms: real assets and financial assets. What happens to the volume of financial assets and interest rates change? If the interest rates rise, for example, the market value of many financial assets will fall until their yield approaches market-determined levels. Therefore, a rise in interest rates will result in a decrease in the value of wealth held in some financial assets, forcing the individual to save more to protect his/her wealth position.

The net effect of income, substitution and wealth effects leads to a relatively interest-inelastic supply of savings curve. Substantial changes in interest rates usually are required to bring about significant changes in the volume of aggregate savings in the economy.

5. Disharding

When the public has less demand for the money then hoarding occur. So the decision maker will dispose their excess cash holding, which result the availability of loanable funds in market. Disharding appears when interest rate in the economy (market) increases or decreases in the prices of the security. Disharding will reduce when the market interest rate lowers and prices of the security increase. Therefore, the different between public demand for money and supply of money is disharding.

6. Creation of Credit

One of the important functions of commercial bank is the creation of credit. Credit creation is the multiple expansions of banks demand deposits. It is an open secret now that banks advance a major portion of their deposits to the borrowers and keep smaller parts of deposits to the customers on demand. Even then the customers of the banks have full confidence that the depositor's lying in the bank is quite safe and can be withdrawn on demand. The banks exploit this trust of their clients and expand loans by much more time than the amount of demand deposits possessed by them. This tendency on the part of the commercial banks to expand their

demand deposits as a multiple of their excess cash reserve is called creation of credit.

The single bank cannot create credit. It is the banking system as a whole which can expand loans by many times of its excess cash reserves. Further, when a loan is advanced to an individuals or a business concern, it is not given in cash. The bank opens a deposit account in the name of the borrower and allows him to draw upon the bank as and when required. The loan advanced becomes the gain of deposit by some other bank. Loans thus make deposits and deposits make loans (Vaidya & Shakespeare, 2003: 17).

7. Lending by the Foreigners

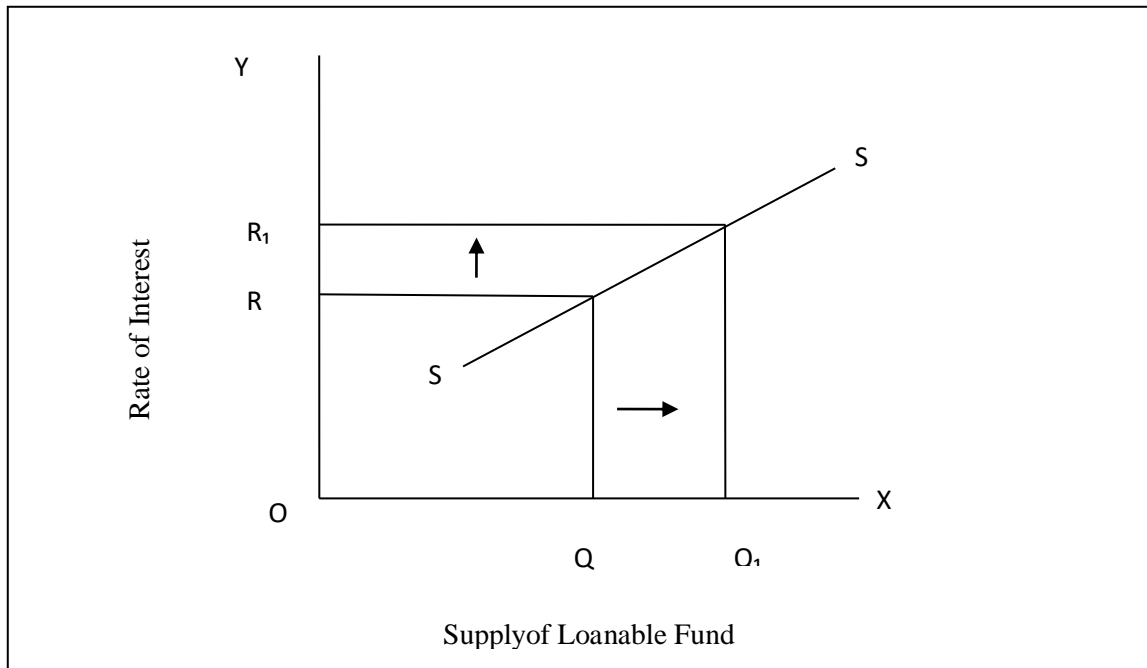
An inflow of loanable funds in the domestic country from outsiders dependent upon the interest rate in the domestic country and interest rate in the foreign country. If domestic interest rate rises relative to the foreign interest rate, the supply of foreign fund increases in the domestic country and vice vers.

8. Total Supply of Loanable Funds

The total supply of loanable funds, including domestic saving, foreign saving, dishoarding of money, and new credit created by the domestic banking system, is depicted below. The curve rises with higher interest rates, indicating that a greater supply of loanable funds will flow into the money and capital markets when the returns from lending increase. (Thapa, 2007:346).

Figure: 2.5

The Interest Rate and Supply of Loanable Funds



Source: Source: Rose, 2003: 227

Figure 2.4 shows the relation between interest rate and supply of loanable fund. In the figure OX axis represents the supply of loanable fund and OY axis represents the rate of interest. The supply of loanable fund of each unit is influenced by a variety of factors of which the interest rate is one. As a result, we might expect that the relationship between the interest rate and the supply of loanable fund. At an interest rate of R, the supply of loanable fund would be Q, where as higher interest rate of R_1 , the supply of loanable fund would be only a slightly higher Q_1 . The responsiveness of supply of loanable fund to change in interest rates is quite small.

C. The Equilibrium Rate of Interest in the Loanable Funds Theory of Interest Rate

The interest rate tends toward the equilibrium point at which the supply of loanable funds equals the demand for loanable funds. Only when the economy, the money market, the loanable funds market, and the foreign currency markets are simultaneously in equilibrium will interest rates remain stable. A stable equilibrium is characterized by the following.

- Planned saving = planned investment across the whole economic system.

- Money supply = Money demand
- Supply of loanable funds = Demand for loanable funds
- Net foreign demand for loanable funds = Net exports

The simple demand-supply framework is useful for analyzing broad movements in interest rates. It is shown in the following figure.

Figure: 2.6
The Equilibrium Rate of Interest in Loanable Funds Theory

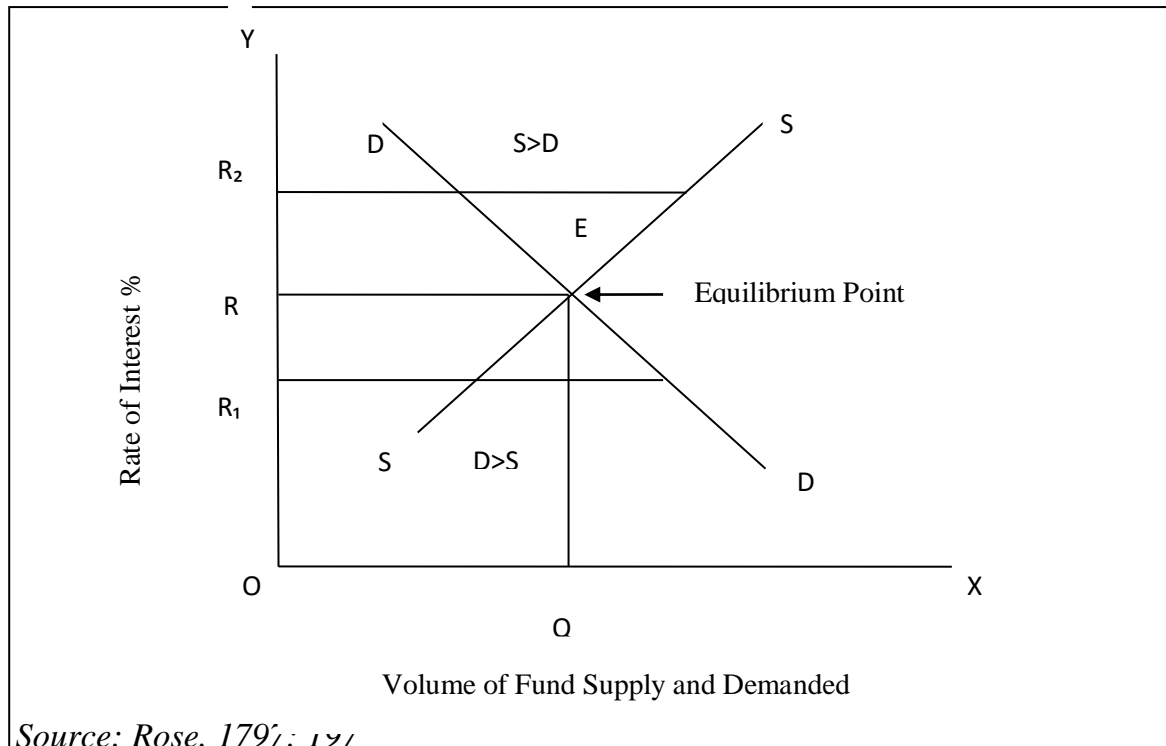


Figure 2.6 shows the equilibrium interest rate in loanable funds theory. OX axis represents the volume of fund supply and demanded and OY axis represents the rate of interest. Specifically, the equilibrium rate of interest is determined at the point where the quantity of fund supplied to the market is exactly equal to the quantity of funds demanded for the investment. In the above figure equilibrium rate of interest R will form at the point where there is equal in the demand and supply of fund. If the market interest rate is higher than R, then the total supply of the fund exceed over the total demand. In such case the investor (lender) will bid down the interest until it approaches to the equilibrium R_1 . When the market interest rate become lower than R, then demand exceeds over the supply, in such case the borrower bid up the interest and again becomes in equilibrium rate in R.

2.1.2.3 The Liquidity Preference Theory of Interest Rates

The liquidity preference (or cash balances) Theory of Interest Rate focuses on the interaction of the demand and supply of money. John Maynard Keynes (1936) developed a short-term theory of interest rate that was more relevant for policymakers and for explaining near-term changes in interest rates.

A. The Demand for Liquidity

Keynes argued that the rate of interest is really a payment for the use of a scarce resource, money or cash balances. Interest rates are the price that must be paid to induce money holders to surrender a perfectly liquid asset (cash balances) and hold other assets that carry more risk. Interest rates are the 'price' of liquidity. An investor demands for money for the following purposes: (i) to hold money (ii) to purchase the bond

1. Motives for Holding Money (Perfect Liquidity)

If you hold the money, it provides a perfect liquidity, if you purchase the bond; it provides the regular interest payment. Liquidity preference plays vital role in the interest rate determination; if the liquidity preference is high interest rate will also be high and vice versa.

In the other hand, if interest rate in the market is high, this encourages the investor to reduce their cash balance and the bond. In contrast when the market interest is low, people's liquidity preference will increase then bonds. According to Keynes, the public demand for money for the following different purposes:

a. Transaction Motive

Individual and business firms keep some amounts in liquid form for daily expenditure and transaction.

b. Precautionary Motive

People desire to keep some ready money with them to solve the unforeseen incidents that may occur in the future.

c. Speculative Motive

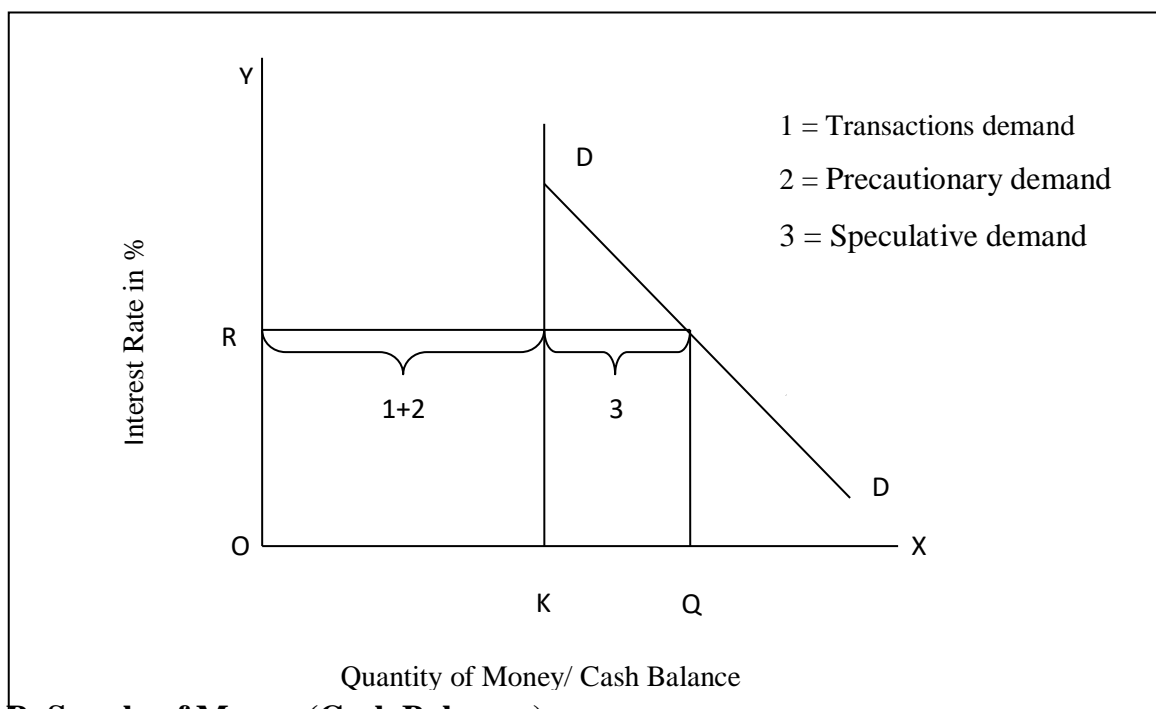
People desire to hold their resources in liquid form in order to take advantage of market movements regarding the future changes in interest rate. Therefore, public demand for money for transaction motive to purchase goods and services or to meet daily requirements. Public demand to hold the money expenses that rises from the future uncertainty of the money for speculative motive. Keynes assumed that precautionary purpose and transaction purpose is dependent upon the national income, business sales and prices (but not interest rates). So, demand due to transaction motive and precautionary motive is fixed in short term.

2. The Total Demand for Money

Total demand for money is made up of transactions, precautionary and speculative demands for money. Transactions and precautionary demands are tied to the level of income in the economy and interest rates, while the speculative demands for money are related to expectations of changes in interest rates. Therefore, the total demand for the money in the economy is simply the sum of transaction on precautionary and speculative motive.

Figure: 2.7

The Total Demand for Money or Cash Balances in the Economy

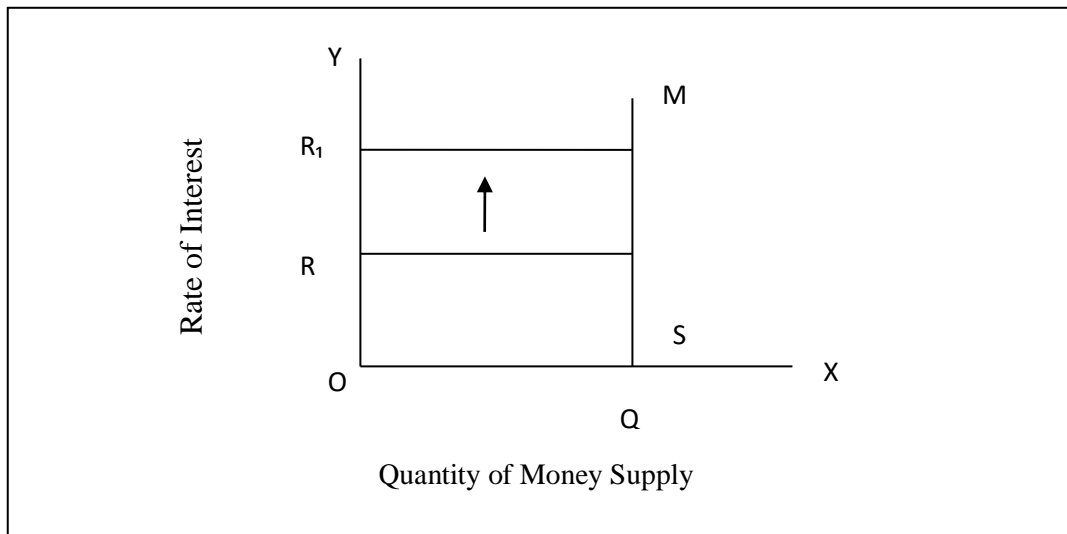


B. Supply of Money (Cash Balances)

The supply of money is controlled by the central bank. Because the central bank's decisions concerning the size of money are guided by public welfare, not by the level of interest rates, we assume that the supply of cash balances is inelastic with respect to the interest rate.

Figure: 2.8

The Supply of Money in Liquidity Preference Theory



Source: Rose, 2003: 236

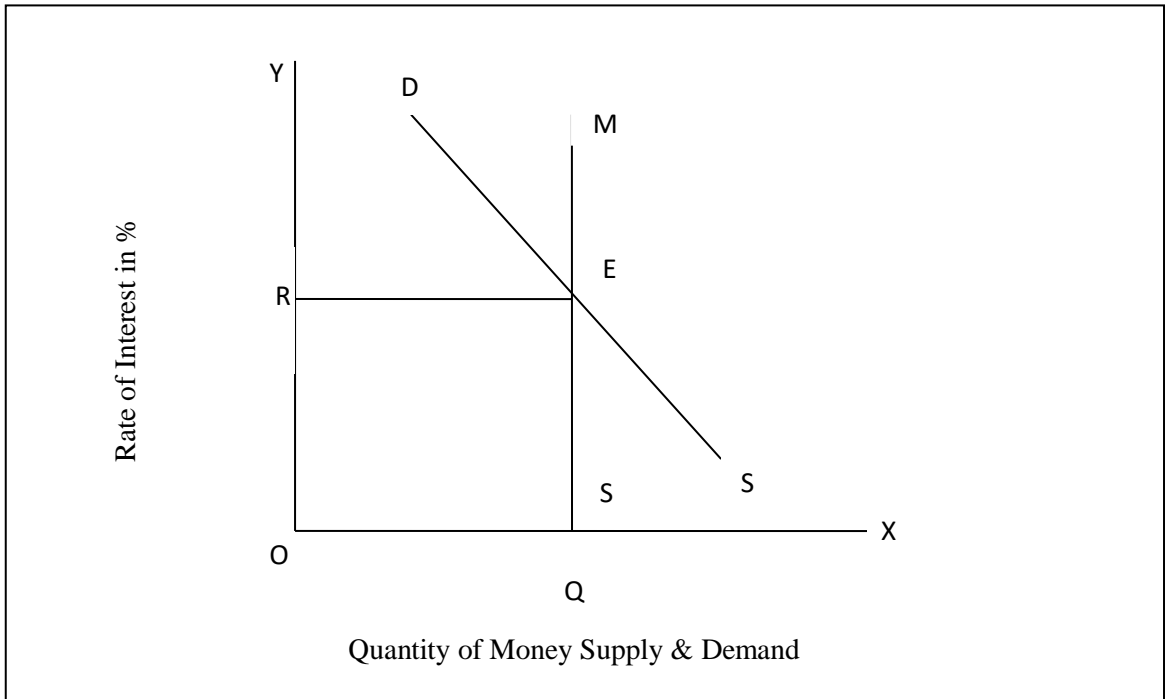
Figure 2.8 shows the relationship between interest rate and quantity of money supply under the liquidity preference theory. In the figure OX axis represents quantity of money supply and OY axis represents the rate of interest. The quantity of money supply is Q and the interest rate is R but the interest rate is increase from R to R_1 the quantity of money supply is the same Q. it's clear that the change in the interest rate not affect the supply of money.

C. The Equilibrium Interest Rate in the Liquidity Preference Theory

The interplay of the total demand for and the supply of money or cash balances determine the equilibrium rate of interest in the short run. The equilibrium rate is found at point rE , where the total quantity of money demanded by the public equals the quantity of money supplied. Above this equilibrium rate, the supply of money exceeds the quantity demanded, and some businesses, households, and units of government will try to dispose of their unwanted cash balances by purchasing bonds. The prices of bonds will rise, driving interest rates down toward equilibrium at rE . On the other hand, at rates. Below equilibrium, the quantity of money demanded exceeds the supply. Some decision makers in the economy will sell their bonds to raise additional cash, driving bond prices down and interest rates up toward equilibrium.

Figure: 2.9

The Equilibrium Rate of Interest under Liquidity Preference Theory



Source: Thapa, 2007: 89

Figure 2.9 shows the equilibrium interest rate under liquidity preference theory. OX axis represents the volume of money supply & demand and OY axis represents the rate of interest. Specifically, the equilibrium rate of interest is determined at the point where the quantity of money supplied to the market is exactly equal to the quantity of money demanded for the investment. To support this in figure 2-9 this occurs at point E where the equilibrium rate of the interest is OR and the equilibrium quantity of money supply and demand is the financial market is OQ.

2.1.2.4 The Rational Expectations Theory

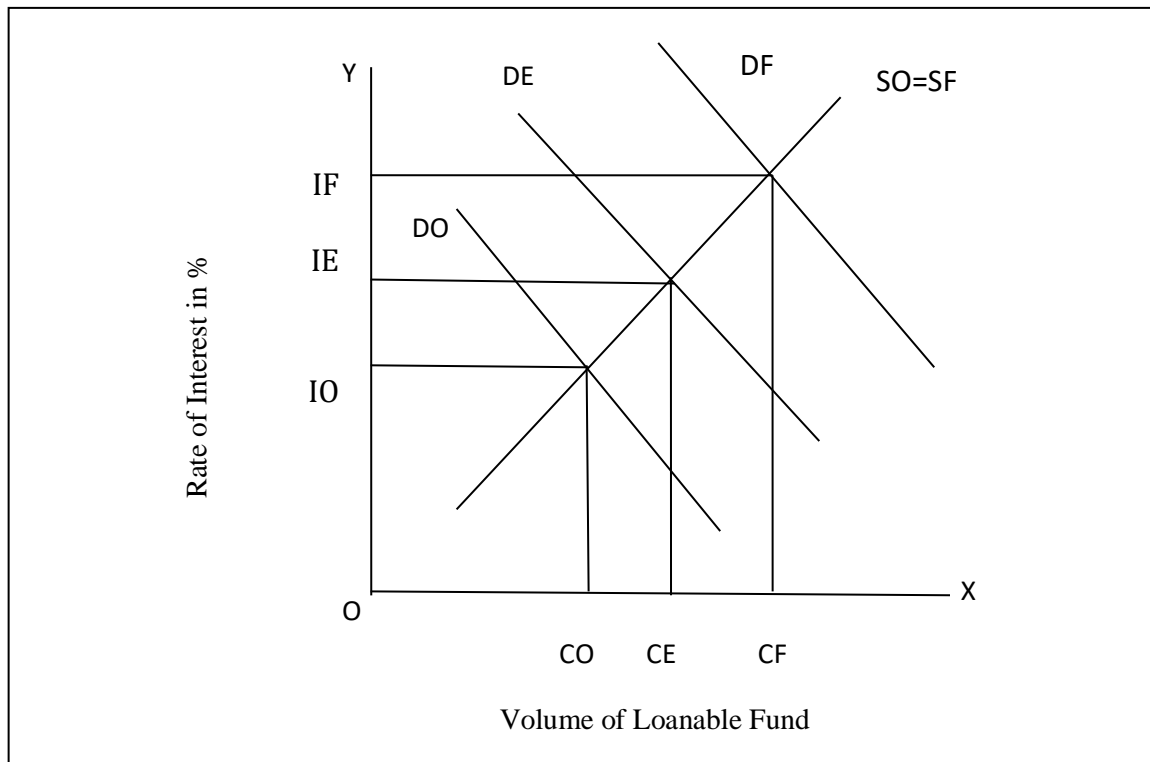
The Rational Expectations Theory is new for the financial markets and institutions. This theory builds on a growing body of research evidence that the money and capital markets are highly efficient institutions in digesting new information affecting interest rates and security prices.

This expectations theory assumes that businesses and individuals are rational agents who form expectations about the distributions of future asset prices and interest rates that do not differ significantly from optimal forecasts made from using all the available information that the marketplace provides (Rose, 2003: 136). Rational agents attempt to make optimal use of the resources at their disposal to maximize their return. Moreover, a rational agent will tend to make unbiased forecasts of future asset prices, interest rates, and other variables. The important assumption and conclusion of the rational expectation theory are as follows.

- 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.
- Change in rates and security prices are correlated only with unanticipated information.
- The correlation between rates of return in successive time periods is zero.
- Expectation concerning future security prices and interest rates are formed rationally and efficiently

Figure: 2.10

Equilibrium Interest Rates under Rational Expectation Theory



Source: Paul & William: 469

In the above figure, S_0 and S_F represent the actual supply and demand for loanable funds in the current period, while D_F reflects the actual demand for loanable fund that will prevail in the next time. The supply of loanable funds is assumed to be the same in both time periods ($S_0 = S_F$).

Now imagine that during the current periods, the government makes an unexpected announcement of its increased need to borrow more money in future period F due to an unusually large budget deficit. The result is now expected demand for loanable fund curve D_E , projected to prevail in the next periods F but as viewed by borrowers and lenders today in time periods 0. In this case, the equilibrium interest rate in the current period will not be IO , but rather IE , where the expected demand curve (D_E) intersects the actual supply curve S_0 . The equilibrium quantity of loanable funds traded in the current period then will be CE not CO . This is because, according to the rational expectations theory, borrowers and lenders will act as rational agents, using all the information they possess to assess today. When the future period arrives, the equilibrium interest rate will rise to rate IF and the

quantity of loanable funds traded will be CF. The equilibrium rate moves upward because the demand for loanable funds in periods F is more than the expected future loanable funds demand as seen by market participants, in period 0 (Paul & William, 1998: 469).

2.1.3 Interest Rate Movements and Its Relevance

Interest rate movements affect the values of securities, and therefore affect the performance of all types of financial institutions. It is critical for managers of financial institutions (including portfolio managers) to understand why interest rates change, how their movements affect performance, and how to manage according to anticipated movements (Panday, 1990: 234).

Interest rate movements can affect the values of virtually all securities. They have a direct influence on the market values of debt securities such as money market securities, bond and mortgages. Interest rate has an indirect effect on values of stocks and exchange rates. Since the price movements in derivatives are partially influenced by the price of the underlying instruments, interest rate movements affect the prices of derivatives representing debt securities or stock or currencies. Thus, all participants in financial markets closely monitor interest rate movements. So they can restructure their positions in securities to benefit from any expected movements in interest rate .interest rate movement also effect the value of most financial institutions. Interest rate movements affect both the cost of funds to depository institutions and the interest received on same loans. In addition, the market value of securities (such as bonds) held by depository institutions or not-depository institutions are affected as well. Thus, managers of financial institutions closely monitor interest rate movements so they can capitalize on favorable movements or reduce their institutions exposure to unfavorable movements (Shrestha, 1889: 230).

2.1.4 Factors Affecting Interest Rates

Although it is assumed that deposit increase as interest increases but interest rate is affected by numerous factors. In real world, different financial institutions quote different interest rate. It means that the same type of instrument carries different interest rate at the same time, so there is presence of interest spread (Kohn, 1993: 169). For this, there are various factors affecting the difference in interest rate.

1. Credit or Default Risk

The credit risk is the most commonly associated risk. It determines the different amount individuals or firms pay based on their credit worthiness. Different parties will be offered different rates on debt obligations (such as loans). The measure of credit worthiness of an individual is called a credit rating or credit score. Other entities (such as governments and companies) will acquire a bond rating if they are active in bond markets. Credit risk requires making estimates of the possibility of loss due to this reason. This probability is then converted into an interest rate premium, the credit or default risk premium and added to the saver's required nominal yield. The credit spread between an instrument and its risk free equivalent is called the risk premium.

2. Liquidity Risk

A desirable quality of assets that are to be part of a precautionary reserve is liquidity. An asset is liquid if it can be turned into cash quickly without loss. But the risk that the lender might not be able to get cash on short notice is called the liquidity risk. The difference in interest rate due to liquidity risk is called liquidity spread. Instruments such as bonds have an active secondary market. The saving bond will obviously offer a higher return. Other instruments such as savings deposits are easily transferable to cash. Another interesting phenomenon observed from liquidity spread is that on-the-run securities (primary market) have lower interest rates compare to the off-the-run securities (secondary market). This implies that there is a higher demand for on-the-run securities.

3. Marketability risk

Marketability is the capacity of being sold quickly at low transaction cost. Marketability risk deals with the degree of difficulty in being able to convert a financial into cash at its most recent transaction price or very close to it. Savers who purchase poorly marketable investments expect to be compensated for the lack of marketability. This represents an additional interest spread and is referred to as the marketability risk premium.

4. Call or Prepayment risk

Some financial claims offer the borrower the right to repay the principal debt prior to maturity. On financial claims like bond, these provisions are referred to as call provision and on some financial claims such as home mortgage and installment auto loan, they are called prepayment provisions. These provisions are options. The borrower has the option to call or repay the debt before the maturity date. The investor in such callable financial claim must accept repayment risk. The repayment risk is that if interest rates fall, the borrower will call the bond or prepay the mortgage. The investor receiving cash cannot reinvest it at an interest rate as high as risk. The compensation that investors demand to accept this risk is an additional interest spread offered as the call premium.

5. Servicing Cost

Some financial claims are difficult to service. This means that the process of collecting interest and principal payment providing accurate records or monitoring the ongoing credit position of the borrowing involves considerable operating costs. This cost is included in the interest rate charged and is referred to as the servicing cost.

6. Exchange Rate Risk

As our financial market has become more global, there has been a significant growth in the borrowing and investment in foreign currency denominated financial claims. A U.S. company establishing manufacturing facility in Nepal might be

inclined to issue shares and or bonds denominated in Nepalese rupees rather than U.S. dollars. Investors also have available to them many investments involving exchange rate risk. This risk refers to the potentiality that the rate of exchange between the domestic currency and foreign denominated currency will change as a result of any factors. The primary risk for the borrower is the devaluation of the domestic currency. This results in an unexpected cost on the international loans, since the loan would have to be repaid in the foreign currency that has risen in value relative to the domestic currency. This potential change in currency values must be reflected in computing the cost of borrowing.

7. Taxability

The final factor influencing the change in interest rate is taxability. Financial claim income is typically subject to taxation. Since the value of the financial claim is based on its anticipated cash flow, taxation acts to reduce those cash flows. Not all incomes are taxable equally. Thus, higher the tax, lower will be the cash flow and higher the interest rate and vice versa.

2.1.5 Concept of Deposit

An arrangement whereby an individual or organization may place cash for the safekeeping in a bank, discount house or financial institution is known as deposit. Deposit is nothing but it is a type of asset. It is understood that the institution may invest the cash and pay the depositor a specified amount of interest and that the depositor can reclaim the full value of the account according to the agreed upon procedures governing the account. The account holder retains rights to their deposit, although restrictions placed on access depend upon the terms and conditions of the account and the provider. The deposit account would be shown as a liability owed by the bank to its customer. Commercial Bank Act 2031 defines “deposits” as the amount deposited in a current, saving or fixed accounts of a bank or financial institution. The deposits are subject to withdrawals by means of cheque on a short notice by customers. There are several restrictions on these

deposits, regarding the amount of deposit, numbers of withdrawal etc. they are used more as investments and hence they earn some interest. The rate of interest varies depending on the nature of the deposits. The bank attracts deposits from customers by offering different rates of interest and different kinds of facilities.

Though the banks play an important role in influencing the customer to save and open deposit account with it, it is ultimately the customer who decides where s/he should deposit his surplus funds in current deposit account, saving deposit or fixed/time deposit account. Bank deposits arise in two ways. When the banker receives cash, it credits the customer's account, it is known as a primary or a simple deposit. People deposit cash in the banking system and thereby convert one form of money, cash into another form, bank money. They prefer to keep their money in deposit account and issue cheques against them to their creditors. Deposits also arise when customers are granted accommodation in the form of loans. Of course, there is nothing that prevents the borrower from withdrawing the entire amount of borrowing in cash but quite often s/he retains the amount with the bank as deposit (Bhandari, 2003: 73).

2.1.5.1 Types of Deposit

Banks and financial institutions offer various types of deposit a/c to attract the saving from the customers. Under this study only three types of deposit are taken which are mentions below.

1. Current Deposit

A current deposit is a running account with amounts being paid into the drawn out of the account continuously. These accounts are also called demand deposits or demand liabilities since the bank is under an obligation to pay money in such deposits on demand. The account never becomes time barred because the limitation does not run until a demand is made by the customer on 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. This type of account is just a facility offered by bank to its customer. So then bank doesn't give interest on this account. Under this study this type of deposit is not considered.

2. Saving Deposit

According to Banking & Financial Institution Act (2063) saving account means "An account of amounts deposited in a bank for saving purpose." The saving deposit bears the features of both of the current and fixed period's deposits. Saving accounts are mainly meant for non-trading customer who have some potential for saving and who don't have numerous transactions entering their account. While operating the account the minimum compensating balance differ according to the bank rule. The bank fixes the minimum and maximum amount of withdraw able from this deposit. If the bank goes into liquidity priority is given to the saving deposit than current and fixed deposits while repaying the liabilities.

3. Fixed Deposit

Fixed deposits constitute a very important resource for banks and financial institutions as they need not to keep greater reserve in respect of such deposits. According to Banking & Financial Institution Act (2063), "Fixed account means as account of amounts deposited in a bank for certain period of time." The customers opening such account deposit their money in the account for a fixed period. Usually, only the person or institution who wants to gain more interest opens such type of account. Bank paid higher interest rate on this account compared with saving deposit. The bank invests this money on the productive sector and gains profit and the customer too can be made his financial transaction stronger by getting more interest from this deposit. The principal amount with interest must be returned to the customer after expiry of fixed time. Bank generally gives loans up to 90% of the amount deposited under fixed deposit account against the security of the deposit. For this bank charges higher interest rate than the interest given on the fixed deposit.

2.1.6 Concept of Lending (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 transactions, the creditor turns over to the debtor to repay an equivalent amount usually money in future plus an added sum called interest. In other words, the commercial bank earns profit by lending the amount in terms of loan or credit and in return it gets interests.

Banks loan are classified as (a) Loan advances (b) Overdraft (c) Cash credit (d) Discounting of bills and so on. But besides this, the other forms of credit are: Bills Exchange, Cheques, Drafts, Promissory Note, Traveler's Cheque, Treasury Bills (TBills), Letter of Credit (LC), Book Credit etc. (Shrestha & Bhandari, 2004: 255). If credit is made to the government the credit is known as public credit and transacted by the private for his own purposes the credit becomes private. There are certain distinctions between public and private credit. Bank is the major sources of credit to both private and public debtors. Sometimes banks also take credit. There is another type of credit known as investment credit and commercial credit which can be divided according to the purposes of using credit. The former refers to the credit which is used for investment and the latter for trade purposes. Similarly, another classification is consumer's credit and producer's credit. The latter type of credit is the advances made to individuals firms, companies and governments, which are used to facilitate the production of goods and services.

2.1.6.1 Factors Affecting the Volume of Lending

The value of credit within a country depends upon different factors. For this study only the effect of interest rate is taken into consideration. Some other factors affecting the volume of credit are mention below:

1. Credit (lending) Rate

If the bank credit rate is very high then, the volume of credit expansion is less and vice versa. It means that there is inverse relation between credit and interest rate of credit.

2. Rate of Return

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

3. Investment Opportunity

If the investment opportunity within the country is high, the volume of credit becomes high. More investment opportunity will be available when the interest rate is low and vice versa.

4. Pace of Financial Development

If there is enough banking facilities to provide loan in easy terms, the volume of credit may be high. If the banking facilities in the country expanded the volume of credit rises automatically.

5. Basic Infrastructure

The development of basic infrastructure in the country automatically increases the financial activities and leads to increase in the volume of credit.

6. Political Condition

The political condition of the country, especially political in-stability, is also one of the major causes of low volume of credit. In this situation no one would like to take risk on his new capital.

2.2 Review of Related Studies

Pradhan (2000) in his article, “*Deposit Mobilization, Its Problem and Prospects*”

He has presented the following issues in the context of Nepal:

- People do not have knowledge and proper education for saving in institutional manner. They so now know financial organizational process, withdrawal system, depositing system etc.
- Financial institutions do not want to operate and provide their services in rural areas.
- He has also recommended about how to mobilize the deposit collection by the financial institutions by rendering their services in rural areas, by adding various services.
- By operating rural banking programmers and unit
- Nepal Rastra Bank must organize training programmers to develop the skilled human resources.
- By spreading a numbers of co-operative societies to develop mini banking services and improves the habits of public on deposit collection to the rural areas.

Manandhar (2004) conducted a study on the topic “*NRB Directives and Interest Rate in Nepal*” Nepal Rastra Bank as a central bank of Nepal control and regulate all the financial activities as well as formulate and implement necessary financial rules and regulation in the country. As a central bank of the country it is the sole controller for regulating interest rate in the country. Taking the reference of history of interest rates, we observe different changes in interest rate. In the beginning, the interest rate charged and offered by banks and financial institutions was mentioned at a lower level with a view to stimulate real income and employment. Regulation of interest rate by NRB is made in the early stage of financial market development taking the period from 1955 to 1965. But NRB gradually began to liberalize the determinations of interest rate on phase wise basis according to compatibility of the banks and the financial institutions that have developed in the country. In the early 1980’s Nepal has adopted liberal economic

policy. Number of finance companies and commercial banks begin to develop and government made the liberal policy in maintaining the interest rate were encouraged for commercial banks, established under joint venture in association with foreign banks in private sector. Similarly, deregulated of interest rate was applied to under finance companies established finance company acts. As a sole institution authorized to determine interest rate, NRB has full discretions on determining interest rates structure from 1960 to 1975.

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

Shrestha (2006) has given a short foretaste on the “*Lending Management in Commercial Bank, Theory and Practice*”. The lending management becomes very important for both individuals as well as institutional investors. Investors would like to select a best mix of investment assets subject to the following aspects.

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

NRB (2013) “*Provisions Relating to Interest Rates*” the following Directives have been issued, having exercised the powers conferred by Section 79 of the Nepal Rastra Bank Act, 2002, with regard to the interest to be paid for the deposits and interest to be charged for loans and advances by the licensed institutions.

- a. **Provisions Relating to Interest Rates:-** The "A", "B" and "C" Class licensed institutions shall be free to fix interest rates for both deposits and lending, including fixation of types of interest and procedures on their own.
- b. **Prohibition for Fixing Flat Rate of Interest:-** The licensed institutions other than "D" Class institutions shall not be allowed to fix flat interest rates on the loan and advances.
- c. **Interest Rate to be approved:-** Licensed institutions shall implement the interest rates for deposits and lending, procedures for calculation of interest, penal interest, commission and service charges only after approval. The institutions may increase the interest rate for deposits up to a point of 0.5 percent over the published rates, but in case of interest rate on lending it should not be higher than published rate. Provided that;
 1. Interest rate may be fixed on the agreement between bank or financial institution and customer in the case of perpetual fund or in case of deposit having the maturity period of more than five years.
 2. No provision of published interest rate shall be applicable in case of the institutional deposit to be collected on the basis of bidding.
- d. **Submission of Return on Interest Rate:-** The licensed institutions shall compulsorily furnish the statements of interest rates on deposits and lending to Banks and Financial Institutions Regulation Department and the concerned Supervision Department of this Bank within seven days of the end of each quarter. Moreover, the licensed institutions shall submit all provisions and procedures relating to interest rates according to Clause 3 above at the time of beginning of the implementation and changes made thereto within seven days.

- e. **Interest Rates to be published:-** The national level "A", "B", and "C" Class licensed institutions shall publish the particulars according to Clause 4 above at the time of each amendment made in the interest rates on deposit and lending in national daily newspapers. The regional/ district level institutions shall publish the particulars of changes in the requirement of about the minimum level of balance to be maintained in the regional/district level newspapers. Provided that the "D" Class institutions may publish the rates putting the information on its notice board.
- f. **Provisions of recording interest income:-** The interest accruals on loan and advances shall be recognized as income on cash basis only. The interest accrued but not realized in cash shall be recognized in the year of cash realization and the account shall be reconciled accordingly. Interest receivable for a period shall be debited to "interest receivable account" and credit to "interest suspense account".
- g. **Provisions relating to providing interest:-** In situation where interest on credit/lending by banks and financial institutions on a quarterly basis, interest shall be credited to the savings account of depositors at least on every 3/3 months basis. Interest to be provided to depositors shall be provided at least on average deposit balance of week, month, quarter or other duration on the basis of which the interest has to be calculated according to the policy of the concerned bank and financial institution to provide interest on deposit liability.

(**Note:**"Average deposit balance" means the average of daily closing balance to be maintained after the end of daily transaction. (For example, the procedures according to which licensed banks and financial institutions use to have calculated interest on the remaining amount of credit and lending, the same procedures shall be applied in the calculation of the interest.)

On August 22, 1992, Nepal Rastra Bank issued some directives to commercial banks and financial institutions to clearly spell out the interest rate on deposits. NRB also instructed the bank and financial institutions to limit their interest rate

spread on deposit and credit at 6% within mid-December 1993. A further instruction to banks and financial institutions was issued in 2002, and now the interest rate spread required to be maintained by commercial banks and financial institutions has also been removed. The interest rate regime in Nepalese perspective changed from rigid control and monopoly of NRB to liberalization from 1960. At present there is complete freedom to have competitive system as an important part of government's liberalization policy. In this way interest rate became a market determined phenomena rather than a regulated phenomena. The process of interest rate deregulation becomes a major indicative factor of the financial system reform in the country.

2.3 Review of Previous Thesis

Bhatta (2009) conducted a study entitled "*Interest Rate and its effect on Deposit and Lending*" with the following objectives.

- To examine the relationship between interest rate and deposits
- To examine the relationship between interest rate and loans
- To present and analyze interest rate structure of various commercial banks in different time period
- To show the relationship between inflation and interest rate on deposit and lending.

The major findings of his study are as follows.

- Deposit rates of all the sample banks under study are in decreasing trend; means that every year deposit rates of sample banks under study have decreased.
- Lending rates of all the sample banks under study are also in decreasing trend; means that every year lending rates of sample banks under study have decreased.

- Analysis shows that interest rates on lending are far higher than deposit rates of sample banks. The correlation coefficient between these two variables (deposit rate and lending rate) of sample banks comes highly positive.
- 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. This thesis 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.

Parajuli (2010) carried out a study entitled "*Interest rate and its relation with Deposit, Lending and Inflation in Nepal*". The major objective of this study is to find out the relation of interest rate with deposit and lending amount (i.e. existence of substitution effect).

The findings drawn by Parajuli were as follows.

- The interest rate on both deposit and lending of all the sample banks are found to be in decreasing trend. Theoretically, there is positive relationship between saving amount and saving interest rate but here negative relationship is found. It states that there is no substitution effect in Nepalese financial market.
- Analysis of fixed deposit amount and fixed interest rate shows negative relationship except RBB and NBL. Theoretically, there is negative relationship between lending interest rate and lending amount. In this study for the 5 sample banks except NBL have negative correlation between these two variables.
- The relationship between interest rate on deposit and inflation rate is positive. Similarly, the correlation between interest rate on lending and inflation rate is found to be moderately positive.

- This thesis concluded that the spread between deposit interest rate and lending interest rate is in decreasing trend.

Shrestha (2011) conduct a study on the topic “*A study of Interest Rate & its impact on Resource Mobilization and Utilization*”. The main objectives of the study were;

- How far the interest rate impact on the mobilization in order to meet the lack of capital for the implementation of various project.
- To see the deposit credit margin ratio throughout the changed incurred in the interest rate by which one can see that how far the deposits have been effectively utilized.

With the above mention objective his major findings were;

- The structure of interest rate has greater influence over the resource mobilization and utilization in the productive sector.
- The commercial banks of Nepal are not fully succeeded in this regards.
- The commercial banks are not fully been able to motivate and facilitate to their customer except the change in interest rate as instructed by central bank.
- It can be solved by attracting saving into maximum and mobilization these savings into the sector where money is needed. For this branches should be extended even to the remote area of the country and mobilized those idle deposits and diversified their money according to needs.

Joshi (2012) has conducted a study on “*Deposit and Lending of Commercial Bank of Nepal*” a comparative study of SCBNL with NABIL Bank and BOK.

Her Main Objectives

- To examine the liquidity assets management and profitability position and investment policy of SCBNL in comparison to NABIL and BOKL.

- To analyze the relationship between loan and advance and total investment with other financial variable of SCBNL and compare with NABIL and BOKL.
- To study the various risks in investment of SCBNL in comparison to NABIL and BOKL.

Her Majors Findings

- SCBNL has higher idle cash and bank balance. It may decrease profit of bank. It is good to invest more on share & debentures as it encourage financial and economic development of the country.
- A commercial bank must mobilize its fund in different sector such as to purchase share & debentures of other financial and non financial companies out of total working fund.
- SCBNL has invested its more of the funds i.e. total investment on total deposit ratio, in comparison to other commercial banks but percentage of investment on share and debenture in very nominal.
- Portfolio condition of a bank should be regularly revised from the time to time. It should always try to maintain the equilibrium in the portfolio condition of the bank. So it can be said “all eggs should not be kept in the same basket”.
- On the basis of above facts, it is seen that SCBNL has invested much of its fund in total outside assets but it has not achieved the desired result.
- The risk taken by SCBNL, from the angle of credit and capital are in an average whereas the consistencies of the same are highly volatile which may result higher loss. The bank should not test those risks on an experiment basis as seen from the consistency angle.

2.4 Research Gap

Research gap refers to the gap between previous research and this research. Many research studies have been conducted by the different students, experts and

researcher about deposit mobilization, lending and interest rate. There have been fund numerous research studies on financial companies and public enterprises regarding deposit mobilization, lending and interest rate. But impact of interest rate on deposit & lending of Nepalese commercial banks can be hardly fund from the review of related studies no one study have been found on impact of interest rate on deposit & lending of Nepalese commercial banks with reference to SBL and LBL.

The financial and statistical tools used by most of the researchers were ratio analysis, test of hypothesis and regression analysis. This study includes different tools like ratio analysis, correlation analysis and co-efficient of variation, trend analysis, t-test as specific tools. Thus the research study made on " impact of interest rate on deposit & lending of Nepalese commercial banks with reference to SBL and LBL " will be an effort to analyze on detail about the interest rate, deposit and lending of the SBL & LBL in present situation with the help of various related financial as well as statistical tools and techniques. The study can be beneficial to all the concerned parties and people as well.

CHAPTER – III

RESEARCH METHODOLOGY

Research methodology describes the methods and process applied in the entire aspect of the study focus of data, data gathering instrument and procedure, data tabulating and processing and methods of analysis. It is really a method of critical thinking by defined and redefining the problems, formulating hypothesis or suggested solution and collecting and organizing and evaluating data, making deduction and making conclusions.

Research methodology is a path from which we can solve research dilemma systematically to accomplish the basic objective of the study. It consists of a brief explanation of research design, nature and sources of data, method of data collection and methods of tools used for analyzing data.

3.1 Research Design

A research design is the arrangement of conditions for collection and analysis of data that aim to combine relevance to the research purpose with economy in procedure. Research design in the plan, structure and strategy of investigation conceived to obtain answers to research questions and to objective of this study. To achieve the objective of this study, descriptive and analytical research design has been used. It is the process, which gives us an appropriate way to reach research goal. It includes definite procedures and techniques, which guide in sufficient way for analyzing and evaluating the study. This study is carried out by using quantitative analysis method. Mostly, secondary data has been used for analysis; hence, research design of this study is based on descriptive and analytical method.

3.2 Nature & Sources of Data

Mainly the study is conducted on the basis of secondary data. The data relating to the interest rate, deposit and lending are obtained from the annual reports of the concern banks and the other data relating to the topic is obtain from the economic bulletin of Nepal Rastra Bank and the different government publications. The supplementary data and information are obtained from the sample banks.

3.3 Population and Sample

The term population of data denotes for the data of each organization which is within the boundary of specific organization whereas sample data are the data of those organization which has been selected from that whole population for study. There are thirty-one commercial banks are operating in Nepal these are population of the study and to banks are selected for the study purpose using judgmental sampling method which are sample of the study. The Sample to be selected are as follows.

- Siddhartha Bank Limited
- Lumbini Bank Limited

3.4 Research Variables

The basic research variables of this study are mainly related with the “ Impact of Interest Rate on Deposit & Lending of Nepalese Commercial Banks.". Such variables are interest rate, deposit and lending.

3.5 Data Processing and Presentation

The information or data obtained from the different sources are in raw form. From that information, direct presentation is not possible. So it is necessary to process data and converts it into required form. After then only, the data are presented for this study. This process is called data processing. For this study, only required data are taken from the secondary source (bank’s publication) and presented in this

study. For presentation, different tables are used. Similarly, in some case graphical presentation is also made

3.6 Data Analysis Tools

In order to get the concrete results from this research, data are analyzed by using different types of tools. As per topic requirements, emphasis is given on statistical tools rather than financial tools.

3.6.1 Financial Tools

Financial analysis is the process of identifying the financial strengths and weaknesses of the organization by properly establishing relationships between the items of the balance sheet and the profit and loss account.

3.6.1.1 Credit Deposit Ratio

The total credit is the loan and advance and investment. Loan is the sum of the money that will be repay by the borrower. Investment is defined simply to be the sacrifice of current consumption for future consumption whose future objective is to increase future wealth.

$$\text{Credit deposit ratio (CD Ratio)} = \frac{\text{Total Credit}}{\text{Total Deposit}}$$

3.6.1.2 Growth Ratio

Growth Ratio is calculated to find out how would the bank is maintaining economic and financial condition. The following formula has been used to calculate growth ratio.

$$D_n = D_0 (1+g)^{n-1}$$

Where,

D_n = Total amount in nth year.

D_0 = Total amount in beginning year

G = Growth rate of amount

N = Total no. of years during the study period.

3.6.2 Statistical Tools

Statistical tools are used to analyze the relationship between two variables and to find how these variables are related. In this study, following statistical tools are used.

3.6.2.1 Summary Measures

The summary measures such as mean \pm standard deviation for summing the data related to deposit, lending and interest rate etc. has been applied. Mean and standard deviation computed as follows.

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

Where,

$$\begin{aligned}\bar{X} &= \text{Arithmetic Mean} \\ \sum X &= \text{Sum of values of all items, and,} \\ N &= \text{Number of items}\end{aligned}$$

$$\text{Standard deviation } (\sigma) = \sqrt{\frac{1}{n} \left[\sum X^2 - \frac{(\sum X)^2}{n} \right]}$$

Where,

$$\begin{aligned}\sigma &= \text{Standard deviation} \\ \sum X^2 &= \text{Sum of square of the variables} \\ (\sum X)^2 &= \text{Square of the sum of x variables} \\ n &= \text{Number of items}\end{aligned}$$

3.6.2.2 Coefficient of Variation (CV)

The coefficient of variation is the ratio of standard deviation to the mean for a given sample used to measure spread. It can also be thought of as the measure of relative risk. The larger the coefficient of variation, the greater the risk relative to the average. Mathematically,

$$CV = \frac{\sigma}{\bar{X}} \times 100$$

Where,

CV = Coefficient of Variation

σ = Standard Deviation

\bar{X} = Arithmetic Mean

3.6.2.3 Coefficient of Correlation

Correlation is a statistical tool design to measure the degree of association between two or more variables. In other word if the changes in one variable affects the changes in other variable, then the variable are said to be co-related when it is used to measure the relationship between two variables, then it is called simple correlation. The coefficient of correlation measures the degree of relationship between two sets of figures. Among the various methods of finding out coefficient of correlation, Karl Pearson's method is applied in the study because of the simplicity and suitable for the nature of data. The result of coefficient of correlation is always lying between +1 and -1. The formula for the calculation of coefficient of correlation between X and Y is given below.

$$\text{Correlation } (r_{xy}) = \frac{n \sum XY - \sum X \sum Y}{\sqrt{n \sum X^2 - (\sum X)^2 \times n \sum Y^2 - (\sum Y)^2}}$$

Where,

r_{xy} = Correlation between X & Y variables

$\sum XY$ = Sum of Multiply of Variables X & Y

$\sum X$ = Sum of Variables X

$\sum Y =$	Sum of Variables Y
$\sum X^2 =$	Sum of Square of Variables X
$\sum Y^2 =$	Sum of Square of Variables Y

Under this topic, Karl Pearson's correlation coefficient is used to measure the degree of relationship between the following variables.

- Coefficient of correlation between Interest rate & Deposit.
- Coefficient of correlation between Interest rate & Lending.

The interpretation of calculated value of correlation coefficient by following way.

- If $r = 0$, then there is no correlation between variables.
- If $r > 0$, then there is positive correlation between variables.
- If $r < 0$, then there is negative relation between variables.
- If $r = +1$, then there is perfect positive correlation.
- If $r = -1$, then there is perfect negative correlation.

3.6.2.4 Least Square Linear Trend Analysis

Trend analysis has been a very useful and commonly applied statistical tool to forecast the future events in quantitative terms. On the basis of tendencies in the dependent variables in the past periods, the future trend is predicted. This analysis takes the historical data as the basis of forecasting. This method of forecasting the future trend is based on the assumptions that the past tendencies of the variable are repeated in the future or the past events affect the future events significantly. The future trend is forecasted by using the following formula.

$$Y = a + bx$$

where,

Y = the dependent variable

a = Y intercept

b = the slope or the rate of change of Y per unit change in x

x = the independent variable

3.6.2.5 Assessment of the Sample Correlation Coefficient

For this study, t-test for significance of an observed and sample correlation coefficient is used.

Set up Hypothesis

Null hypothesis (H_0); $\rho = 0$ i.e. There is no correlation between the considered variables.

Alternative Hypothesis (H_1); $\rho \neq 0$ i.e. There is significant correlation between the considered variables.

Test statistic under H_0 ;

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

Where,

r = Sample correlation between two variables

r^2 = Sample correlation Coefficient

n = No of Pair of observations

Level of significance: Level of significance $\alpha = 5\%$

Critical Value: Tabulated or critical value of t at α % level of significance for (n - 2) degree of freedom obtain from 't' tables.

Decision: If calculated 't' is less than or equal to tabulated value of 't' it falls in the accepted region and the null hypothesis is accepted and if calculated 't' is greater than tabulated 't' null hypothesis is rejected.

CHAPTER - IV

PRESENTATION AND ANALYSIS OF DATA

This chapter of data presentation and analysis related to assets management of commercial banks begins with analysis different financial ratios. These financial indicators of concerned banks are compared with the help of statistical tools viz. Mean standard deviation and coefficient of variables which are calculated and interpreted. At last, correlation and trend analysis of some specific component has been made. The data are also presented in graph.

4.1 Analysis of Deposit and Interest Rate

Deposit is the sum of money lodged with a bank, discount house or other financial institution. Deposit is nothing more than the assets of an individual which is given to the bank for safe-keeping with an obligation to get something (interest) from it. To a bank these deposits are liabilities. In this section, detail study is made about deposit amount and interest rate of sample banks. For this study, only saving and fixed deposits (One & More than One Year) are considered because current deposit doesn't earn any interest.

4.1.1 Siddhartha Bank Limited (SBL)

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 every sample banks. These differences are due to the numerous factors like maturity period, policy of bank, goodwill of organization and so on.

Table: 4.1

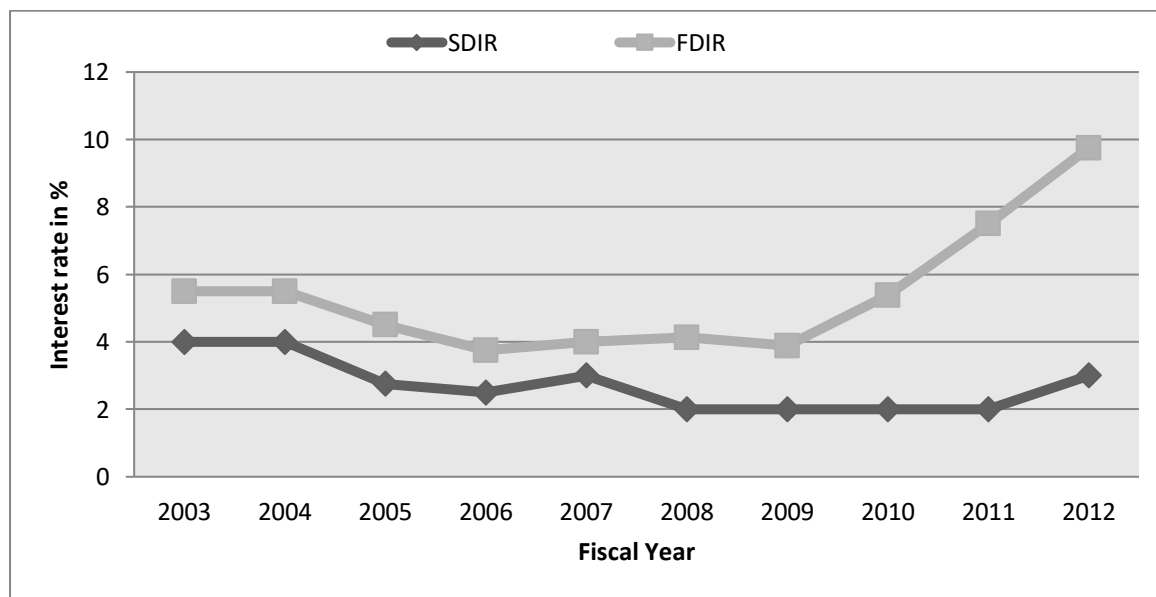
Interest Rate on Deposit of SBL

Deposit	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Saving	4.00	4.00	2.75	2.50	3.00	2.00	2.00	2.00	2.00	3.00
Fixed										
1 Year	5.50	5.50	4.50	3.50	4.00	4.00	3.50	5.00	7.00	9.50
2 Years Above	-	-	-	4.00	4.00	4.25	4.25	5.75	8.00	10.00
Mean of FDIR	5.50	5.50	4.50	3.75	4.00	4.13	3.88	5.38	7.50	9.75
Average Rate	4.75	4.75	3.63	3.13	3.50	3.07	2.94	3.69	4.75	6.38

Source: Banking and financial statistics NRB (2003 to 2012)

Figure: 4.1

Trend of Interest Rate on Deposit of SBL



The table 4.1, portrays the interest rate of SBL on saving deposit and fixed deposits. The interest rate on deposits are fluctuated, means both on increasing and decreasing trend. In the 10 years fiscal periods, the saving deposit interest rates are fluctuate. The average interest rate on fixed deposit is 5.50% in 2003 and 2004 but it was 4.50%, 3.75%, 4%, 4.13%, 3.88%, 5.38%, 7.50% and 9.75% in FY 2005, 2006, 2007, 2008, 2009, 2010, 2011 and 2012 respectively. It shows that the average interest rate is in decreasing trend during FY 2003 to 2006, it increase at 2007 to 2008 and decreased at 2009 after that increasing up to 2012. Similarly the

saving deposit interest rate is 4%, 4%, 2.75% and 2.50% and 3% in FY 2003, 2004, 2005, 2006 and 2007 respectively after that the rate of interest remain constant up to the FY 2011 at the rate of 2% and increase in 2012.

Table: 4.2
Deposit Position of SBL

Year	SDIR %	SD (Rs. In Millions)	FDIR %	FD (Rs. In Millions)
2003	4	4917.1	5.5	3719.2
2004	4	4889	5.5	2446.8
2005	2.75	5237.4	4.5	2252.6
2006	2.5	5994.1	3.75	2310.6
2007	3	7026.4	4	2078.6
2008	2	8770.8	4.13	3450.2
2009	2	10187.4	3.88	5435.2
2010	2	12160	5.38	8464.1
2011	2	14620.4	7.5	8310.7
2012	3	13783.6	9.75	14711.1
Mean \pm SD	2.73 \pm 0.79	-	5.39 \pm 1.91	-
CV	28.83%	-	35.41%	-

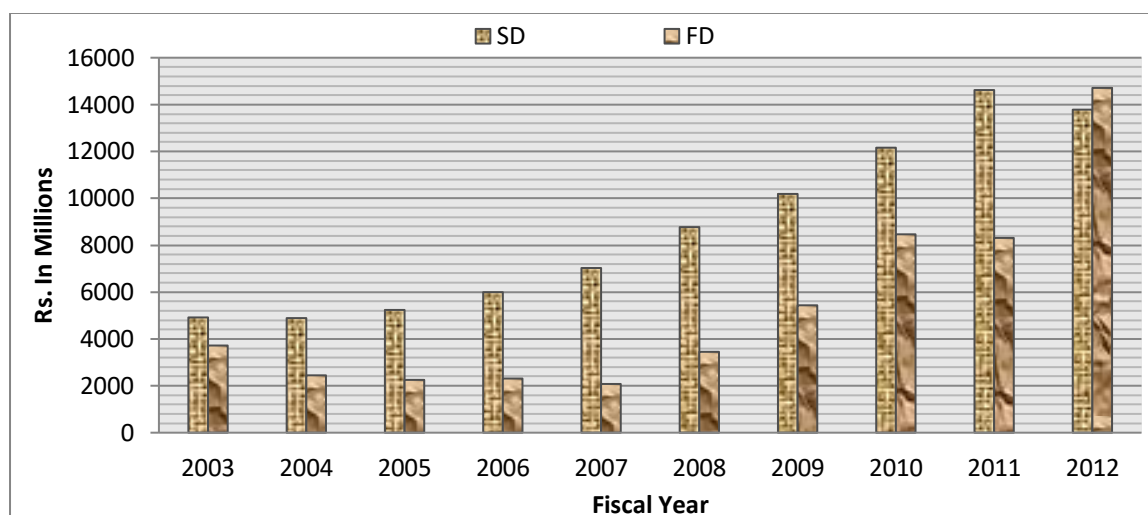
Source: Banking and financial statistics NRB (2003 to 2012)

The table 4.2, shows the amount of saving deposit and its interest rate as well as amount of fixed deposit and its interest rate for 10 fiscal year. The table indicates that, saving deposit rates are declining except the year 2007 and 2012 and deposit amount is increasing in each fiscal year except the year 2004. This suggests that saving deposit interest rate and saving deposit amount may have negative relationship, i.e. when SDIR is found to be decreased, amount of Saving deposit increase. But the fixed deposit amount has been fluctuated over the study period except.

The average value of SDIR is 2.73% and the FDIR is 5.39%. The Standard Deviations of SDIR, and FDIR are 0.79% and 1.91% respectively, it means SDIR

is less variability in compare to FDIR. The CV of SDIR and FDIR ratio of RBB is 28.83% and 35.41% respectively which indicate that FDIR is more variable than SDIR.

Figure: 4.2
Deposit Position of SBL



4.1.2 Lumbini Bank Limited (LBL)

Table: 4.3
Interest Rate on Deposit of LBL

Deposit	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Saving	5.25	5.25	5.25	5.00	3.25	3.25	3.00	3.00	3.00	3.00
Fixed										
1 Year	6.25	6.25	6.00	5.50	3.50	4.00	4.00	5.00	5.00	5.00
2 Years Above	6.75	6.75	6.25	6.00	4.00	4.50	4.50	5.25	5.25	5.25
Mean of FDIR	6.50	6.50	6.13	5.75	3.75	4.25	4.25	5.13	5.13	5.13
Average Rate	5.88	5.88	5.69	5.38	3.50	3.75	3.63	4.07	4.07	4.07

Source: Banking and financial statistics NRB (2003 to 2012)

The table 4.3, portrays the interest rate of LBL on saving deposit and fixed deposits. The interest rate on saving deposit is fluctuated, means both on increasing and decreasing trend. The interest rate on saving deposit is 5.25% in the 2003 to 2005 but it was 5% in 2006, 3.25% in 2007 & 2008 after that the rate is constant at the rate of 3%. It shows that the interest rate is in constant during FY

2003 to 2005, it decrease at 2006 to 2008 after that constant up to 2012. Similarly the average fixed deposit interest rate is 6.50%, 6.50%, 6.13%, 5.75%, 3.75%, 4.25% and 4.25% in FY 2003, 2004, 2005, 2006, 2007, 2008 and 2009 respectively after that the rate of interest remain constant up to the FY 2012 at the rate of 5.13%.

Figure: 4.3

Trend of Interest Rate on Deposit of LBL

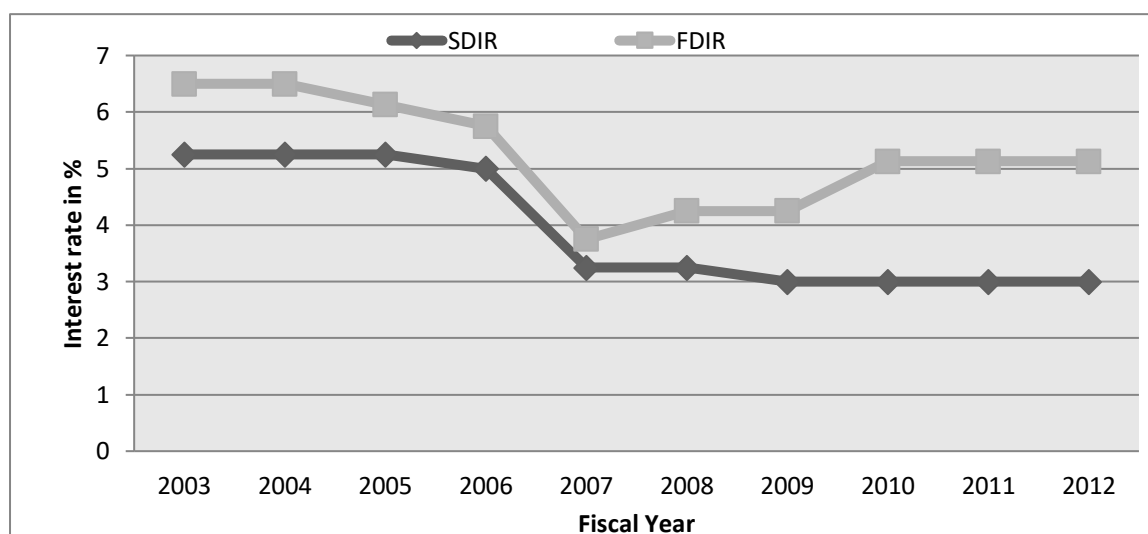


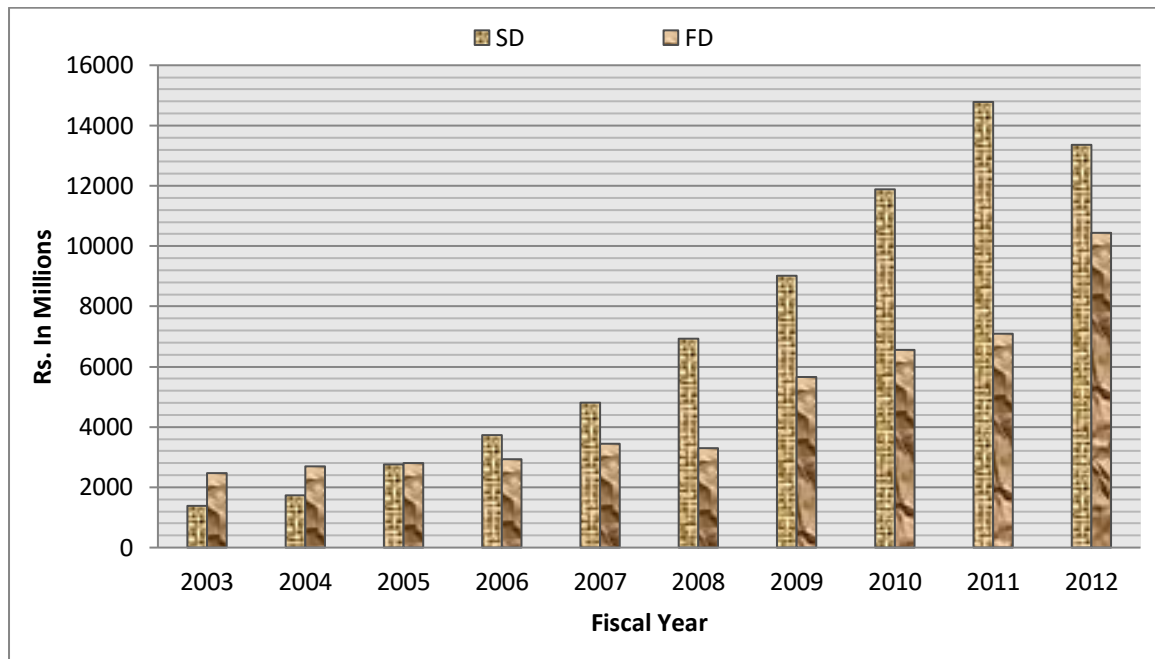
Table: 4.4

Deposit Position of LBL

Year	Saving Deposit Interest Rate (SDIR %)	Saving Deposit (Rs. In Millions)	Fixed Deposit Interest Rate (FDIR %)	Fixed Deposit (Rs. In Millions)
2003	5.25	1384.1	6.5	2470.2
2004	5.25	1733.3	6.5	2694.6
2005	5.25	2758	6.13	2803.4
2006	5	3730.7	5.75	29131.1
2007	3.25	4806.9	3.75	3444.5
2008	3.25	6929.2	4.25	3298.2
2009	3	9018	4.25	5658.7
2010	3	11883.9	5.13	6558
2011	3	14782.3	5.13	7094.7
2012	3	13360	5.13	10440.3
Mean ± SD	3.93 ± 1.09	-	5.25 ± 0.97	-
CV	27.85%	-	18.44%	-

Source: Financial Statement of Sample Banks from 2003 to 2012

Figure: 4.4
Deposit Position of LBL



The table 4.4, shows the amount of saving deposit and its interest rate as well as amount of fixed deposit and its interest rate for 10 fiscal year. The table indicates that, in one hand deposits rates are declining where as in other hand deposits amount is increasing in each fiscal year, except the year 2012. This suggests that deposit interest rate and deposit amount may have negative relationship, i.e. when DIR is decreased, amount of deposits increase.

The average value of SDIR is 3.93% and the FDIR is 5.25. The Standard Deviations of SDIR, and FDIR are 1.09% and 0.97% respectively, it means FDIR is less variability in compare to SDIR. The CV of SDIR and FDIR ratio of RBB is 27.85% and 18.44% respectively which indicate that SDIR is more variable than FDIR.

4.2 Analysis of Lending and Interest Rate

This is second area of the analysis where mainly the relationship between lending interest rate and its effect upon lending amount is measured.

4.2.1 Interest Rate on Lending

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.

Table: 4.5
Interest Rate on Lending

Year	Banks (Interest Rates in %)	
	SBL	LBL
2003	11.93	11.46
2004	11.48	12.33
2005	11.05	11.90
2006	11.10	11.94
2007	11	10.62
2008	10.95	9.63
2009	10.45	9.92
2010	10.35	10.21
2011	14.06	10.21
2012	14.75	10.25
Mean \pm SD	11.71 \pm 1.50	10.85 \pm 0.97
CV	12.79%	8.93%

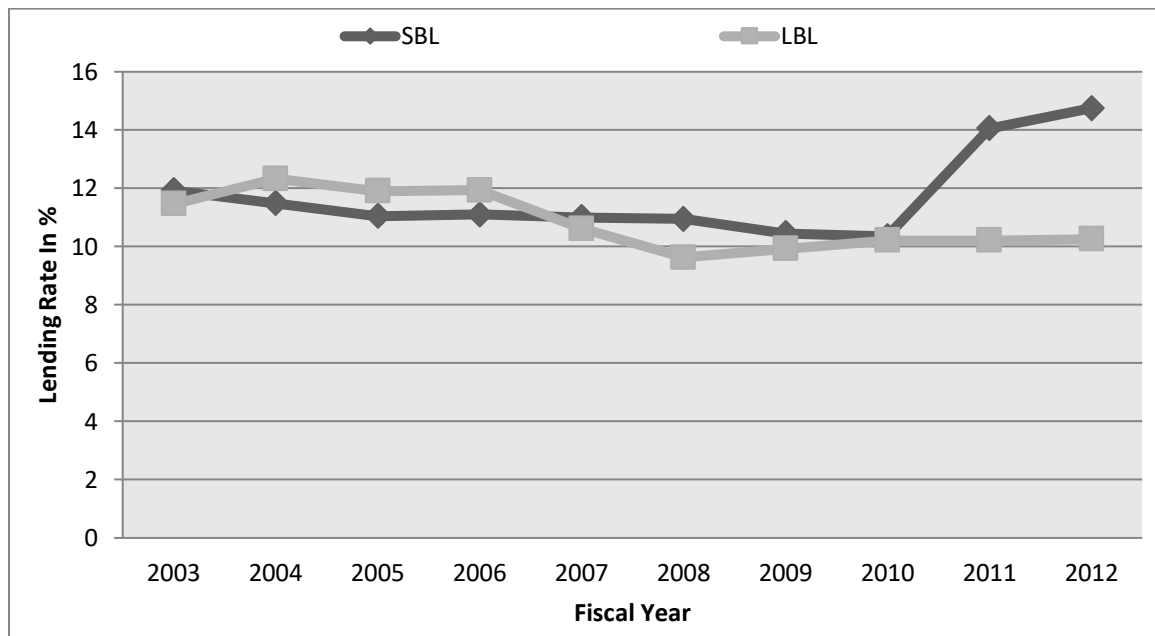
Source: Banking and financial statistics NRB (2003 to 2012)

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 LC, commercial loan and so on. Besides this there are other section (area) when bank provides loan and these areas are placed in the topic of “others”. For this study, lending area are categorized as classified by NRB. According to table 4.5, it shows that average interest rate on lending of different

area. The average interest rate in lending of SBL is in decreasing trend except the year 2011 and 2012 and the average interest rate in lending of LBL is in fluctuating trend over the study period. Over the study period, the average lending rate of SBL is high than LBL. The average lending rates are 11.71 and 10.85% of SBL and LBL respectively. The standard deviation of lending rate of SBL is the high than LBL, it means in the lending rate SBL has high variability than LBL and the CV also shows the same result. It is also observed that, there is least variability found in interest rate on lending of LBL than the SBL bank.

Figure: 4.5

Trend of Interest Rate on Lending of Sample Banks



4.2.2 Lending Amount (Credit)

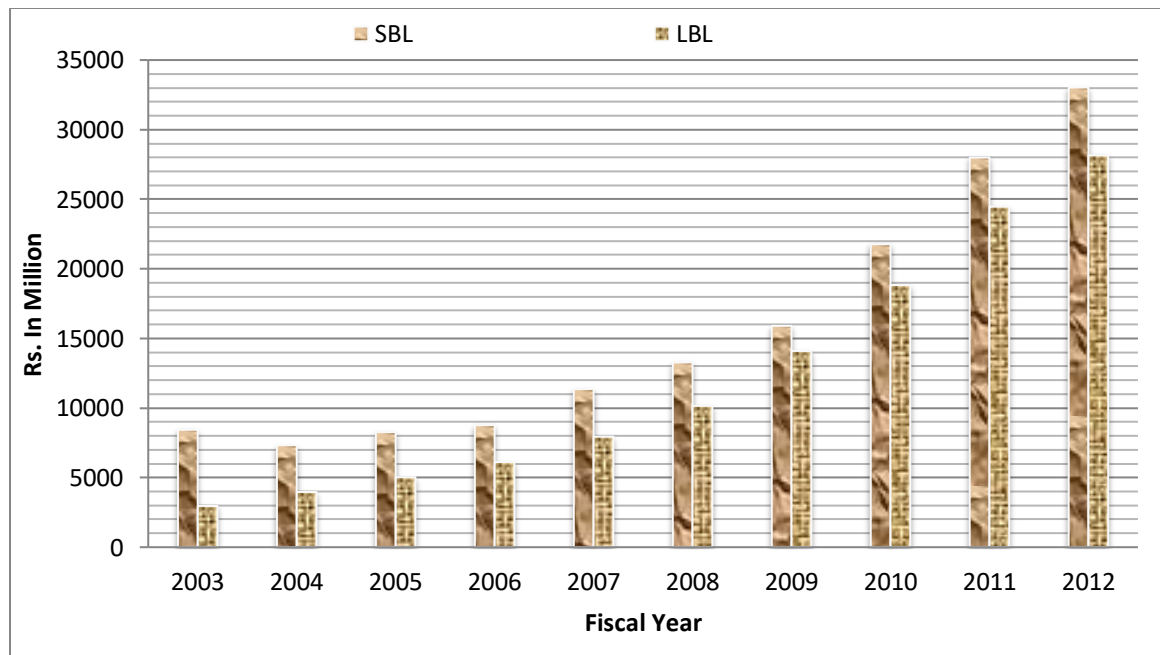
The total credit is the loan and advance and investment. Loan is the sum of the money that will be repay by the borrower. Investment is defined simply to be the sacrifice of current consumption for future consumption whose future objective is to increase future wealth. The general public gets attracted to take loan and advances from the bank if the interest rate is lower. The bank provides loan to the general public for different purposes like industry, trade, commerce etc.

Table: 4.6
Lending Amounts of Sample Banks

Year	Lending Amounts (Rs. In Millions)	
	SBL	LBL
2003	8437.60	2963.70
2004	7328.20	3969.60
2005	8267.80	5030.90
2006	8769.70	6116.60
2007	11360.30	7944.10
2008	13278.80	10154.90
2009	15903.00	14100
2010	21769.70	18836.40
2011	27997.10	24469.60
2012	33031	28156.40
Mean	15614.32	12174.22

Source: Banking and financial statistics NRB (2003 to 2012)

Figure: 4.6
Lending Position of Sample Banks



The above table shows the lending amount of sample banks. Over the study period, the amount of lending of SBL is decrease in 2004 after that increasing trend up to 2012 and LBL has increasing trend of lending amount over the study period.

The above table 4.6 clear that there is positive relationship between lending rate and lending amount i. e. if lending rate is increase the amount of deposit also increase and if the lending rate is decrease the amount of lending also decrease.

4.3 Analysis of Credit Deposit Ratio (CD Ratio)

The total credit is the amount of loan and advance and bills purchased. Loan is the sum of the money that will be repay by the borrower. It shows the effectiveness of firm to utilize the collected deposit, higher the ratio higher the firm effectiveness.

$$\text{Credit deposit ratio (CD Ratio)} = \frac{\text{Total Credit}}{\text{Total Deposit}}$$

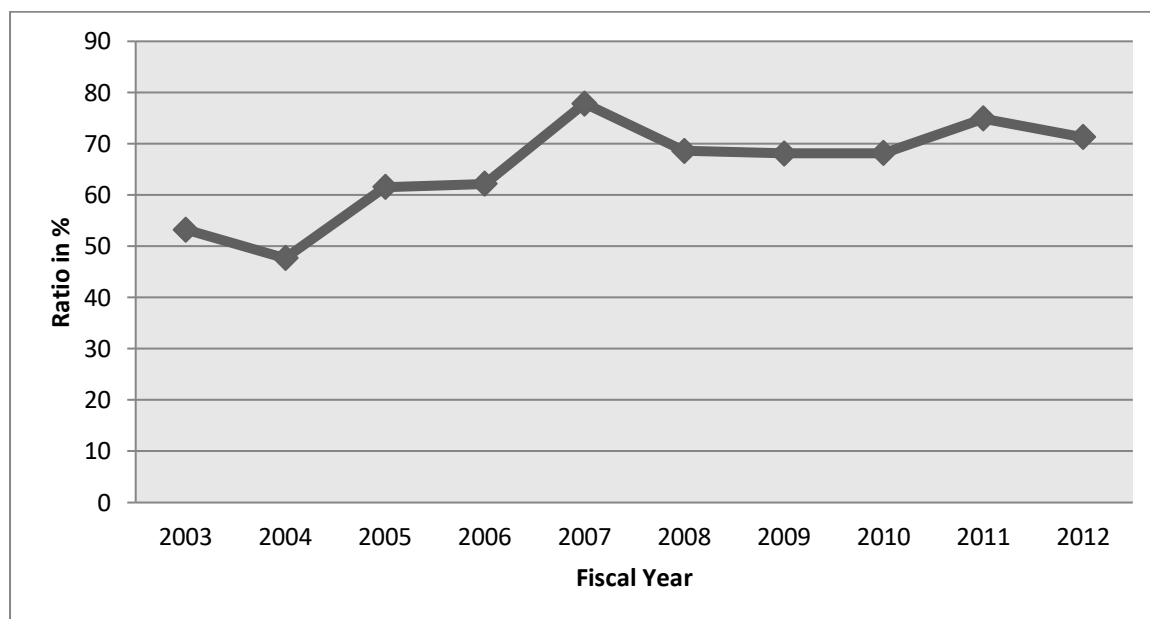
Table: 4.7

Computation of CD Ratio of SBL

Year	Total Credit (C) (Rs. In Millions)	Total Deposit (D) (Rs. In Millions)	CD Ratio (C/D Ratio) (In %)
2003	8437.6	15838.9	53.27
2004	7328.2	15370.6	47.68
2005	8267.8	13437.7	61.53
2006	8769.7	14098.0	62.21
2007	11360.3	14586.8	77.88
2008	13278.8	19348.4	68.63
2009	15903	23342.4	68.13
2010	21769.7	31915.0	68.21
2009	27997.1	37348.3	74.96
2012	33031	46334.8	71.29
Mean ± SD			65.38 ± 9.39
CV			14.37%

Source: Banking and financial statistics NRB (2003 to 2012)

Figure: 4.7
Trend of CD Ratio of SBL



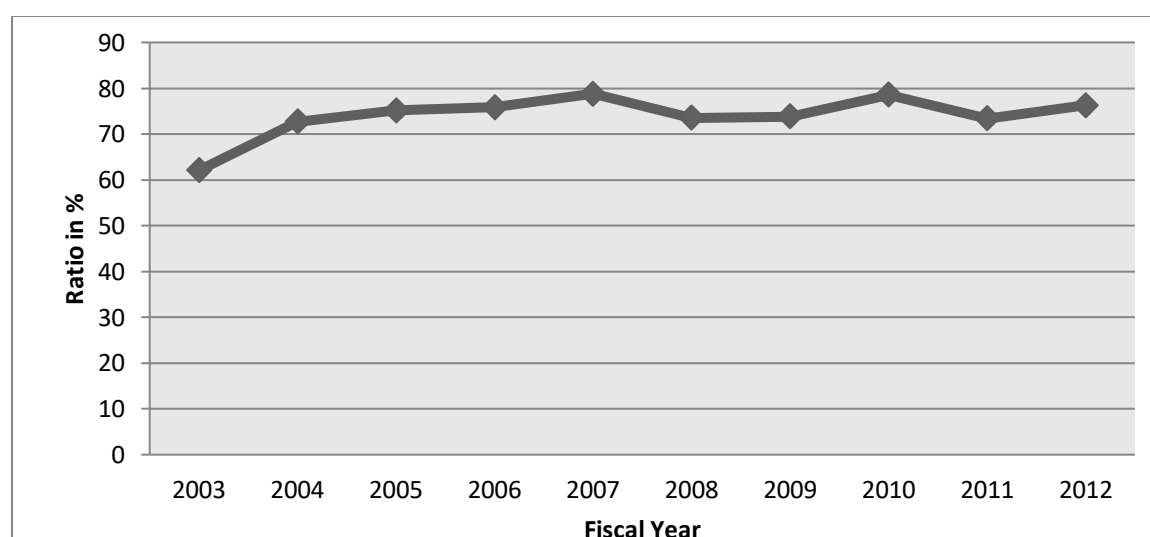
From the above table and figure, it can be said that there is a greater relationship between deposits and credit. Increase in deposits leads to increase in the loan and advance. The above analysis shows that more than 65% of the deposited amount has been succeeded to mobilize the resources. Its highest ratio is 77.88% and lowest ratio is 47.68%. The higher amount of deposit of this bank than credit is due to the constriction of this bank in deposit collection. The bank successes to attract people to deposit their savings. Higher the CD ratio indicates the more effective working policy of the bank. So that, higher utilization of the resources in the bank means good managing ideas or policy of the bank.

Table: 4.8
Computation of CD Ratio of LBL

Year	Total Credit (C) (Rs. In Millions)	Total Deposit (D) (Rs. In Millions)	CD Ratio (C/D Ratio) (In %)
2003	2963.7	4774.5	62.07
2004	3969.6	5461.1	72.69
2005	5030.9	6694.9	75.15
2006	6116.6	8064	75.85
2007	7944.1	10079.8	78.81
2008	10154.9	13802.5	73.57
2009	14100	19097.7	73.83
2010	18836.4	23976.3	78.56
2009	24469.6	33322.9	73.43
2012	28156.4	36932.3	76.24
Mean ± SD			74.02 ± 4.69
CV			6.34%

Source: Banking and financial statistics NRB (2003 to 2012)

Figure: 4.8
Trend of CD Ratio of LBL



The above analysis shows that more than 74% of the deposited amount has been succeeded to mobilize the resources. Its highest ratio is 78.81% and lowest ratio is

62.07%. The bank successes to attract people to deposit their savings. Higher the CD ratio indicates the more effective working policy of the bank. So that, higher utilization of the resources in the bank means good managing ideas or policy of the bank.

4.4 Correlation Analysis

To find out the correlation between two continuous variables, Karl Pearson's coefficient of correlation (r) is used. One of the very convenient and useful way of interpreting the value of coefficient of correlation(r) between the two variables is coefficient of determination, which is denoted by r^2 . It explains the total variation in dependent variable is explained by independent variable.

The significance of coefficient of correlation (r) is tested with the help of 't' test. If calculated 't' is less than or equal to tabulated value of 't' it falls in the accepted region and null hypothesis is accepted or 'r' is not significant, if calculated 't' is greater than tabulated 't' null hypothesis is rejected or 'r' is significant of correlation in the population.

4.4.1 Relationship between Deposit Rate and Deposit Amount

Coefficient of correlation measures the degree of relationship between two variables, Deposit Rate (DR) & Deposit Amount (DA). DR is independent variable (X_1) and DA is dependent variable (X_2). The purpose of computing is to find out the relationship between DR and DA is going to same direction or opposite direction.

Table: 4.9

Correlation between Ddeposit Rate and Deposit Amount

Factors	Banks	
	SBL	LBL
r	0.5422	-0.2615
r ²	0.2940	0.0683
Calculated 't' Value	1.825	0.766
Tabulated 't' Value	2.262	2.262
Remarks	Insignificant	Insignificant

Source: Appendix IV & V

From the Table-4.9, the values of coefficient of correlation (r) of LBL is -0.2615 respectively which shows that there is a negative correlation between DR and DA of LBL but the correlation of SBL bank is positive it shows the positive relationship between DR and DA of SBL. The value of coefficient of determination (r²) is 0.2940 and 0.0683 of SBL and LBL, which shows that 29.40% and 6.83% of the total variation in dependent variable (DA) is explained by independent variable (DR). The calculated 't' value of SBL and LBL are less than the tabulated value i.e. $1.825 < 2.262$, and $0.766 < 2.262$ respectively, therefore it reveals that the relationship between DR and DA has not come out significant statistically. The insignificant in the correlation coefficient might be because of the small sample size.

4.4.2 Relationship between Lending Rate and Lending Amount

Coefficient of correlation measures the degree of relationship between two variables, Lending Rate (LR) & Lending Amount (LA). LR is independent variable (X₁) and LA is dependent variable (X₂). The purpose of computing is to find out the relationship between LR and LA is going to same direction or opposite direction.

Table: 4.10

Correlation between Lending Rate and Lending Amount

Factors	Banks	
	SBL	LBL
r	0.7158	-0.6679
r ²	0.5124	0.4461
Calculated 't' Value	2.896	2.539
Tabulated 't' Value	2.262	2.262
Remarks	Significant	Significant

Source: Appendix VI & VII

From the Table-4.10, the values of coefficient of correlation (r) of LBL is -0.6679 which shows that there is a negative correlation between LR and LA of LBL but the correlation of SBL bank is positive it shows the positive relationship between LR and LA of SBL. The value of coefficient of determination (r²) is 0.5124 and 0.4461 of SBL and LBL, which shows that 51.24% and 44.61% of the total variation in dependent variable (LA) is explained by independent variable (LR). The calculated 't' value of SBL and LBL are higher than the tabulated value i.e. 2.896 > 2.262, and 2.593 > 2.262 respectively, therefore it reveals that the relationship between LR and LA has come out significant statistically.

4.5 Least Square Linear Trend Analysis

4.5.1 Trend Analysis of Deposit Amount

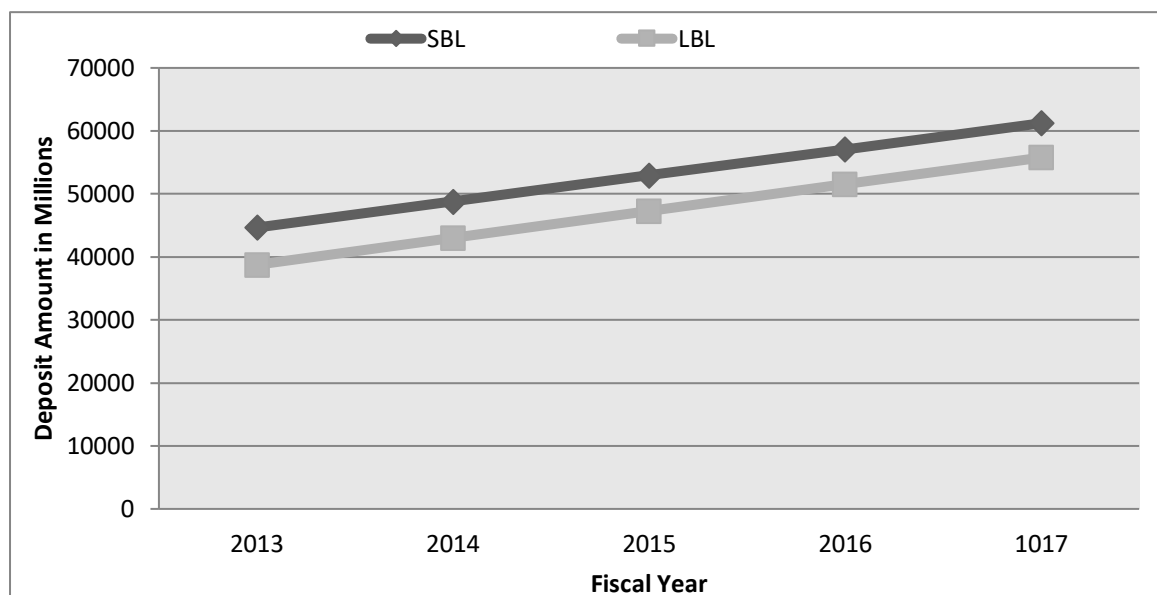
Under this topic, an effort has been made to calculate the trend value of DA of SBL and LBL with comparatively under nine years study period and project the trend for next five years. The following table describes the trend values of DA of sampled banks for five years.

Table: 4.11
Comparative Trend Analysis of DA

Fiscal Year	Banks (Rs in Millions)	
	SBL	LBL
2013	44663.53	38751.99
2014	48801.08	43003.91
2015	52938.63	47255.83
2016	57076.18	51507.75
1017	61213.73	55759.67
Mean (a)	23975.78	17492.39
Rate of Change (b)	4137.55	4251.92
Trend Equation (Y)	$Y = 23975.78 + 4137.55X$	$Y = 17492.39 + 4251.92X$

Source: Appendix IX

Figure: 4.9
Trend Line of DA of SBL & LBL



The above table 4.11 and figure 4.9 shows that the trend line of DA of sample banks are increasing trend. 'Y' has shown the trend value of total DA. Since, the calculated value of 'b' is positive of both sample banks; it is found that the bank's DA is increasing with time. Comparatively the slope of equation of SBL is high and its trend line is sloping upward rapidly. If other things remaining the same, it

shows that the DA increasing by Rs. 4137.55 and increase by Rs. 4251.92 millions every year of SBL and LBL respectively.

4.5.2 Trend Analysis of Lending Amount

Under this topic, an effort has been made to calculate the trend value of LA of SBL, and LBL with comparatively under nine years study period and project the trend for next five years. The following table describes the trend values of LA of sampled banks for five years.

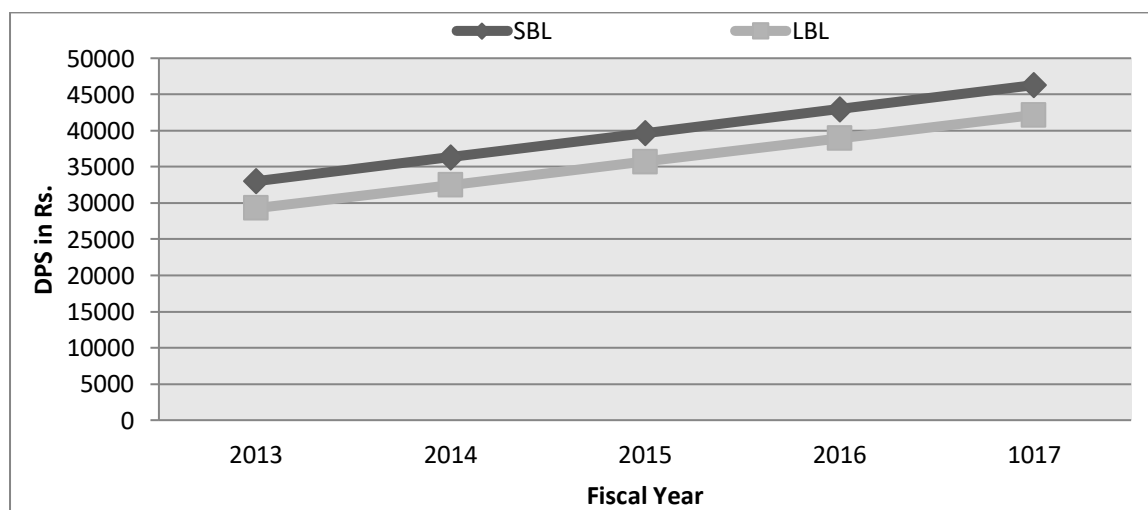
Table: 4.12
Comparative Trend Analysis of LA

Fiscal Year	Banks (Rs in Millions)	
	SBL	LBL
2013	33010.13	29288.86
2014	36329.81	32507.11
2015	39649.49	35725.36
2016	42969.17	38943.61
1017	46288.85	42161.86
Mean (a)	16411.73	13197.61
Rate of Change (b)	3319.68	3218.25
Trend Equation(Y)	$Y = 16411.73 + 3319.68X$	$Y = 13197.61 + 3218.25X$

Source: Appendix VIII

Figure: 4.10

Trend Line of LA of SBL & LBL



The above table 4.12 and figure 4.10 shows that the trend line of LA of sample banks are increasing trend. 'Y' has shown the trend value of total LA. Since, the calculated value of 'b' is positive of both sample banks; it is found that the bank's LA is increasing with time. Comparatively the slope of equation of SBL is high and its trend line is sloping upward rapidly. If other things remaining the same, it shows that the LA increasing by Rs. 3319.68 and increase by Rs. 3218.25 millions every year of SBL and LBL respectively.

4.6 Major Findings

- The average interest rate of SBL bank on fixed deposit is 5.50% in 2003 and 2004 but it was 4.50%, 3.75%, 4%, 4.13%, 3.88%, 5.38%, 7.50% and 9.75% in FY 2005, 2006, 2007, 2008, 2009, 2010, 2011 and 2012 respectively. Similarly the saving deposit interest rate is 4%, 4%, 2.75% and 2.50% and 3% in FY 2003, 2004, 2005, 2006 and 2007 respectively after that the rate of interest remain constant up to the FY 2011 at the rate of 2% and increase in 2012.
- The average value of SDIR of SBL is 2.73% and the FDIR is 5.39%. The Standard Deviations of SDIR, and FDIR are 0.79% and 1.91% respectively, it means SDIR is less variability in compare to FDIR. The CV of SDIR and FDIR ratio of RBB is 28.83% and 35.41% respectively which indicate that FDIR is more variable than SDIR.
- The interest rate on saving deposit of LBL is 5.25% in the 2003 to 2005 but it was 5% in 2006, 3.25% in 2007 & 2008 after that the rate is constant at the rate of 3%. It shows that the interest rate is in constant during FY 2003 to 2005, it decrease at 2006 to 2008 after that constant up to 2012. Similarly the average fixed deposit interest rate is 6.50%, 6.50%, 6.13%, 5.75%, 3.75%, 4.25% and 4.25% in FY 2003, 2004, 2005, 2006, 2007, 2008 and 2009 respectively after that the rate of interest remain constant up to the FY 2012 at the rate of 5.13%.

- The average value of SDIR of LBL is 3.93% and the FDIR is 5.25. The Standard Deviations of SDIR, and FDIR are 1.09% and 0.97% respectively, it means FDIR is less variability in compare to SDIR. The CV of SDIR and FDIR ratio of RBB is 27.85% and 18.44% respectively which indicate that SDIR is more variable than FDIR.
- The average interest rate in lending of SBL is in decreasing trend except the year 2011 and 2012 and the average interest rate in lending of LBL is in fluctuating trend over the study period. Over the study period, the average lending rate of SBL is high than LBL. The average lending rates are 11.71 and 10.85% of SBL and LBL respectively.
- The amount of lending of SBL is decrease in 2004 after that increasing trend up to 2012 and LBL has increasing trend of lending amount over the study period.
- SBL has more than 65% of the deposited amount has been succeeded to mobilize the resources. Its highest ratio is 77.88% and lowest ratio is 47.68% and that of LBL has 74%. Its highest ratio is 78.81% and lowest ratio is 62.07%.
- The values of coefficient of correlation (r) of LBL is -0.2615 respectively which shows that there is a negative correlation between DR and DA of LBL but the correlation of SBL bank is positive it shows the positive relationship between DR and DA of SBL.
- The value of coefficient of determination (r^2) is 0.2940 and 0.0683 of SBL and LBL, which shows that 29.40% and 6.83% of the total variation in dependent variable (DA) is explained by independent variable (DR).
- The calculated 't' value of SBL and LBL are less than the tabulated value i.e. $1.825 < 2.262$, and $0.766 < 2.262$ respectively, therefore it reveals that the relationship between DR and DA has not come out significant statistically.
- The values of coefficient of correlation (r) of LBL is -0.6679 which shows that there is a negative correlation between LR and LA of LBL but the

correlation of SBL bank is positive it shows the positive relationship between LR and LA of SBL.

- The value of coefficient of determination (r^2) is 0.5124 and 0.4461 of SBL and LBL, which shows that 51.24% and 44.61% of the total variation in dependent variable (LA) is explained by independent variable (LR).
- The calculated 't' value of SBL and LBL are higher than the tabulated value i.e. $2.896 > 2.262$, and $2.593 > 2.262$ respectively, therefore it reveals that the relationship between LR and LA has come out significant statistically.
- Deposit amount of sample bank's is increasing with time. If other things remaining the the DA increasing by Rs. 4137.55 and increase by Rs. 4251.92 millions every year of SBL and LBL respectively.
- Lending amount of sample bank's is increasing with time. If other things remaining the same, the LA increasing by Rs. 3319.68 and increase by Rs. 3218.25 millions every year of SBL and LBL respectively.

CHAPTER - V

SUMMARY, CONCLUSION AND RECOMMENDATION

This chapter is the last part of this study which is the most important chapter for the research because this chapter extracts of all the previously discussed chapters. When a study is completed, we should summarize and conclude in specific form, as it is an important issue in research. In this chapter, summary and conclusion made after analyzing and interpreting the necessary data regarding structure of interest rates and its impact on deposit and lending of selected commercial banks. Finally, constructive suggestions and recommendation, which can be of immense help to improve interest rates and its impact on deposit and lending of commercial banks. In this way, an attempt has been made to summaries the whole study in this chapter categorizing in three subsections namely summary, conclusion and recommendation.

5.1 Summary

Banking sector plays an important role in the economic development of the country. Commercial banks are one of the vital aspects of this sector, which deals in the process of channelizing the available resources in the needed sectors. It is the intermediary between the deficit and surplus of financial resources. After the adoption of economic liberalization policy, particularly the financial sector liberalization that paved the way for establishment of new banks and non-bank financial institutions in the country. Consequently, by the end of mid-march 2014, 31 commercial banks are established within the financial system of Nepal which is hoped to contribute for economic development by playing important role in the financial system of the country and living standard of people. Financial institution act as an intermediary between the individual who lend and who borrow. These institutions accept deposits and in turn lend it to people who are in need of financial resources. These institutions make the flow of fund easier. So we cannot deny the role a bank plays in developing an economy. It pools the fund scattered in

the economy and mobilizes them to the productive sector. As focus on the above explanation the study has covered on the study of interest rates regarding its impact on deposit and lending by ten years data and mainly concerns the below issues:

Though there are various factors in the economy that affects the volume of deposit and lending, 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, this study is undertaken.

The study is conducted to identify whether some of the theories of finance and economics are applicable or not in the Nepalese financial markets. The major theories are 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, and significance of the study and limitation of study 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, types of interest, factors affecting interest rate and so on are reviewed. Of the theories of interest, the main four theories: – The Classical Theory, Liquidity Preference Theory, Loanable Fund Theory and Rational Expectation Theory are reviewed. Similarly, the factor affecting interest rate like credit or default risk, liquidity risk, marketability risk, call or prepayment risk, servicing cost, exchange rate risk, taxability are explained. Similarly, factors affecting the volume of credit like credit risk, rate of return, investment opportunity and so on are explained. Research design used is mainly analytical. Out of the total financial system, two commercial banks are chosen for sample purpose. The study is mainly based on secondary data used for the analysis. These all are made on third chapter. Secondary data are collected form NRB,s economic reports and annual reports of related banks. Lastly on fourth chapter, collected data are presented in tabular and graphic form and analyzed using various financial and

statistical tools like mean, standard deviation, correlation coefficient and t-statistics.

5.2 Conclusion

However, as per t-test the relation is significant. Hence, there is relation between deposit interest rate and deposit amount. Therefore, it is concluded that for deposit also, there is no substitution effect at all. According to the theory, there is positive relationship between deposits rate and deposit amount. But the analysis of substitution effect for both fixed and saving deposit shows that substitution effect do not exist for all sample banks. After Presentation and data analysis of relevant data of sample commercial banks under study, using various analytical tools, some major's findings of this study as evaluated and found in analysis. are summarized as follows: But as per t-test the relation is not significant

In case of deposit, Both banks have negative correlation coefficient between interest rate and deposit and as per t-test the relation is significant. It may be due to the increase in liquidity position of people as well as commercial banks. As people have less investment opportunity, they put their money in banks and other financial institution rather than to hold. This may be due to the fact that, in the last 10 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 reliable place of investment, political instability and feeling of insecurity among people. The depositors place interest rate's rowle as secondary in their decision for keeping deposit in the banks. Absence of better investment opportunities, expectation of inflationary pressures and the associated safety, liquidity and profitability, whatever are their respective roles, must have been the factors responsible for increase in volume of deposit despite downscaling introduced in interest rates during the review period. This might have produced negatives relationship between interest rates and deposits.

The interest rates on both deposit and lending of sample banks are found to be in decreasing trend. But contrary to this, deposit amount and lending amount is increasing every year. From the study, it is found that the interest rate of saving deposit is decreasing continuously whereas on other hand saving deposit amount is increasing in every fiscal year. Therefore, there is a negative relationship between deposit interest rate and deposit amount of both sample banks as proved by negative correlation coefficient of both banks as well as successful significant t-test of both banks.

From the study, there is negative correlation coefficient between lending rate and lending amount of LBL, this negative correlation indicates that there is inverse relationship between lending interest rate and lending amount, as per t- test the relation is significant for all sample banks. Therefore it is conclude that there is substitution effect at all. According to theory, there is negative or inverse relationship between lending rate and lending amount. The study found that LBL has inverse relationship between lending rate and lending amount. But, increase in lending amount is not due to the decrease in lending rate but may be due to other factor, as it higher t-calculated value than tabulated value which indicated significant relationship between variables under study. So it can be concluded that the lending interest rate is also an important factor for expansion or contraction of lending amount.

It is found that deposit rate and lending rate of sample banks are moved into same direction. There is positive correlation between deposit rate and lending rate which indicates that change in one variable causes to change in other variable in same direction. Banks want to maintain the interest rate spread (i.e. difference of lending rate and deposit rate) to achieve uniform profitability due to which the positive relation between the rates is witnessed. But decrease in deposit interest rate is more than decrease in lending rate which is constraint for investment.

5.3 Recommendations

Productive sector implies trade, commerce, industry, hydropower, tourism and cultural sectors. Unproductive sector implies consumer loans, hire purchase loans, personal loans, pledge loans and those sectors which do not create wealth and do not add to GDP of the country. Commercial banks should emphasize on the repayment on loan and provide incentive to borrowers to encourage paying loan. Good repayment of loans is the strength of commercial banks. Commercial banks are suggested to charge higher rate in unproductive sectors and lower rate in productive sectors. So that scarce deposit collected from public goes to productive sector which ultimately enhances GDP and productivity of the country and provides safety to the deposits. On the contrary if deposit gets invested in unproductive sector, it does not generate any productive return and ultimately collapses rendering losses to banks and depositors as well.

Commercial banks should formulate and implement a client oriented service policy while fixing deposit rates and lending rates. It helps the banks to face the cutthroat competition very boldly. Base on the above conclusion following suggestions can be recommended to related banks and concerned parties.

- The financial institutions like Commercial banks are suggested to quote higher interest rate on deposit because it helps to generate more capital from depositors which are needed for the development of the country.
- Money gets invested in unproductive sector like gold, land and real estate due to low interest rate in bank. Hence, banks in Nepal had to face huge liquidity crunch in the recent past. In consequence of which, we could see hopping rise in interest rate of banks. NRB is suggested to provide clear cut policies related to interest rates on both deposit and lending rate.
- The financial institutions are suggested to include the inflation premium as far as possible while fixing the interest rates. If the inflation rate is not considered and real rate come out to be negative then depositors may withdraw their money and utilize it on non-productive sectors.

- Investment should be higher yield oriented. For this they have to invest their fund in sector with higher return as well as introduce competitive customer oriented schemes. It will increase the profit position of commercial banks.

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Appendix I
Lending Rate of SBL

Sector	2003	2004	2005	2006	2007	2008	2008	2010	2011	2012
Over Draft										
Export Credit	11.25	11.25	11.00	11.00	11.00	11.00	10.50	10.50	14.00	14.00
Import LC	11.50	11.50	11.00	11.00	11.00	11.00	10.50	10.50	14.00	14.00
HMG Bond	8.00	8.00	7.50	7.50	7.50	7.50	7.50	7.50	14.00	14.00
BG/CG	10.00	9.50	9.00	9.00	9.00	9.00	8.50	7.50	16.00	16.00
Industrial Loan										
Commercial	-	-	-	-	-	-	-	-	-	-
Priority Sector	14.00	13.50	13.00	13.00	12.00	12.00	11.00	11.00	-	-
Poorer Sector	10.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	10.00	12.00
Term Loan	13.50	13.00	13.00	13.00	13.00	13.00	12.00	12.00	12.50	16.00
Working Capital	13.00	12.50	12.00	12.00	12.00	12.00	11.50	11.50	15.00	15.00
Hire Purchases	14.00	13.00	12.00	12.50	12.50	12.00	12.00	12.00	-	-
Other	14.00	13.50	13.00	13.00	13.00	13.00	12.00	12.00	17.00	17.00
Average	11.93	11.48	11.05	11.10	11	10.95	10.45	10.35	14.06	14.75

Appendix II
Lending Rate of LBL

Sector	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Over Draft	13.00	13.50	12.50	13.00	11.50	11.00	11.00	11.00	11.00	11.00
Export Credit	10.50	10.50	10.00	10.00	8.50	8.00	8.00	10.00	10.00	10.00
Import LC	11.00	11.75	11.75	11.75	10.00	10.00	10.00	10.00	10.00	10.00
HMG Bond	8.00	8.00	8.00	8.00	6.50	6.00	6.00	8.00	8.00	8.00
BG/CG	10.00	11.00	10.50	10.50	8.50	8.50	8.50	8.50	8.50	8.50
Industrial Loan	13.00	13.50	13.00	13.00	12.00	11.00	11.00	11.00	11.00	11.00
Commercial	13.00	13.50	12.50	12.50	11.50	11.00	11.00	11.00	11.00	11.00
Priority Sector	13.00	13.50	13.00	13.00	12.00	-	-	-	-	-
Poorer Sector	9.00	11.00	11.00	11.00	11.00	10.00	10.00	10.00	10.00	10.00
Term Loan	13.00	13.50	13.50	13.50	12.00	11.00	11.00	11.00	11.00	11.00
Working Capital	13.00	13.50	12.50	12.50	10.50	11.00	11.00	10.50	11.00	11.00
Hire Purchases	12500	13.50	13.00	13.00	12.00	7.00	10.50	10.51	10.50	10.50
Other	10.00	13.50	13.50	13.50	12.00	11.00	11.00	11.00	11.00	11.00
Average	11.46	12.33	11.90	11.94	10.62	9.63	9.92	10.21	10.21	10.25

Appendix III
Average deposit of SBL & LBL

Year	SD	FD	Average	SD	FD	Average
2003	4917.1	3719.2	4318.15	1384.1	2470.2	1927.15
2004	4889	2446.8	3667.9	1733.3	2694.6	2213.95
2005	5237.4	2252.6	3745	2758	2803.4	2780.7
2006	5994.1	2310.6	4152.35	3730.7	29131.1	16430.9
2007	7026.4	2078.6	4552.5	4806.9	3444.5	4125.7
2008	8770.8	3450.2	6110.5	6929.2	3298.2	5113.7
2009	10187.4	5435.2	7811.3	9018	5658.7	7338.35
2010	12160	8464.1	10312.05	11883.9	6558	9220.95
2011	14620.4	8310.7	11465.55	14782.3	7094.7	10938.5
2012	13783.6	14711.1	14247.35	13360	10440.3	11900.15

Appendix IV
Calculation for Mean Value, & Correlation Between
Deposit Rate & Deposit Amount of SBL

Year	DR (X ₁)	DA (X ₂)	x ₁ =X ₁ - \bar{X}_1	x ₂ =X ₂ - \bar{X}_2	x ₁ · x ₂	x ₁ ²	x ₂ ²
2003	4.75	4318.15	0.69	-2720.12	-1876.88	0.48	7399052.81
2004	4.75	3667.9	0.69	-3370.37	-2325.56	0.48	11359393.94
2005	3.63	3745	-0.43	-3293.27	1416.11	0.18	10845627.29
2006	3.13	4152.35	-0.93	-2885.92	2683.91	0.86	8328534.25
2007	3.5	4552.5	-0.56	-2485.77	1392.03	0.31	6179052.49
2008	3.07	6110.5	-0.99	-927.77	918.49	0.98	860757.17
2009	2.94	7811.3	-1.12	773.03	-865.79	1.25	597575.38
2010	3.69	10312.05	-0.37	3273.78	-1211.30	0.14	10717635.49
2011	4.75	11465.55	0.69	4427.28	3054.82	0.48	19600808.20
2012	6.38	14247.35	2.32	7209.08	16725.07	5.38	51970834.45
N₁ = 10	∑ X₁	∑ X₂	-	-	∑ x₁·x₂ =	∑ x₁²=	∑ x₂²=
N₂ = 10	=40.59	=70382.65	-	-	10010.89	10.55	127859271.47

For DR,

$$\text{Mean } (\bar{X}) = \frac{\sum X_1}{N_1} = \frac{40.59}{10} = 4.06$$

For DA,

$$\text{Mean } (\bar{X}) = \frac{\sum X_2}{N_2} = \frac{70382.65}{10} = 7038.27$$

Correlation between DR & DA,

$$(r_{12}) = \frac{\sum x_1 x_2}{\sqrt{\sum x_1^2 \sum x_2^2}}$$

$$= \frac{19910.89}{\sqrt{10.55 \times 127859271.47}} = 0.5422$$

$$r^2 = 0.5422^2 = 0.2940 \text{ Or, } 29.40\%$$

T-value,

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

$$= \frac{0.5422}{\sqrt{1-0.2940}} \times \sqrt{10-2} = 1.825$$

Appendix V
Calculation for Mean Value, & Correlation Between
Deposit Rate & Deposit Amount of LBL

Year	DR (X ₁)	DA (X ₂)	x ₁ =X ₁ - \bar{X}_1	x ₂ =X ₂ - \bar{X}_2	x ₁ · x ₂	x ₁ ²	x ₂ ²
2003	5.88	1927.15	1.29	-5271.86	-6800.70	1.66	27792507.86
2004	5.88	2213.95	1.29	-4985.06	-6430.73	1.66	24850823.20
2005	5.69	2780.7	1.10	-4418.31	-4860.14	1.21	19521463.26
2006	5.38	16430.9	0.79	9231.89	7293.19	0.62	85227792.97
2007	3.5	4125.7	-1.09	-3073.31	3349.91	1.19	9445234.36
2008	3.75	5113.7	-0.84	-2085.31	1751.66	0.71	4348517.80
2008	3.63	7338.35	-0.96	139.34	-133.77	0.92	19415.64
2010	4.07	9220.95	-0.52	2021.94	-1051.41	0.27	4088241.36
2011	4.07	10938.5	-0.52	3739.49	-1944.53	0.27	13983785.46
2012	4.07	11900.15	-0.52	4701.14	-2444.59	0.27	22100717.30
N₁ = 10	∑ X₁	∑ X₂	-	-	∑ x₁·x₂ =	∑ x₁²=	∑ x₂²=
N₂ = 10	=45.92	=71990.05	-	-	-11271.11	8.79	211378499.20

For DR,

$$\text{Mean } (\bar{X}) = \frac{\sum X_1}{N_1} = \frac{45.92}{10} = 4.59$$

For DA,

$$\text{Mean } (\bar{X}) = \frac{\sum X_2}{N_2} = \frac{71990.05}{10} = 7199.01$$

Correlation between DR & DA,

$$(r_{12}) = \frac{\sum x_1 x_2}{\sqrt{\sum x_1^2 \sum x_2^2}}$$

$$= \frac{-11271.11}{\sqrt{8.79 \times 211378499.20}} = -0.2615$$

$$r^2 = -0.2615^2 = 0.0683 \text{ Or, } 6.83\%$$

T-value,

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

$$= \frac{-0.2615}{\sqrt{1-0.0683}} \times \sqrt{10-2} = 0.766$$

Appendix VI
Calculation for Mean Value, & Correlation Between
Lending Rate & Lending Amount of SBL

Year	LR (X ₁)	LA (X ₂)	x ₁ =X ₁ - \bar{X}_1	x ₂ =X ₂ - \bar{X}_2	x ₁ · x ₂	x ₁ ²	x ₂ ²
2003	11.93	8437.6	0.22	-7176.72	-1578.88	0.05	51505309.96
2004	11.48	7328.2	-0.23	-8286.12	1905.81	0.05	68659784.65
2005	11.05	8267.8	-0.66	-7346.52	4848.70	0.44	53971356.11
2006	11.1	8769.7	-0.61	-6844.62	4175.22	0.37	46848822.94
2007	11	11360.3	-0.71	-4254.02	3020.35	0.50	18096686.16
2008	10.95	13278.8	-0.76	-2335.52	1775.00	0.58	5454653.67
2009	10.45	15903	-1.26	288.68	-363.74	1.59	83336.14
2010	10.35	21769.7	-1.36	6155.38	-8371.32	1.85	37888702.94
2011	14.06	27997.1	2.35	12382.78	29099.53	5.52	153333240.53
2012	14.75	33031	3.04	17416.68	52946.71	9.24	303340742.22
N₁ = 10	∑ X₁	∑ X₂	-	-	∑ x₁·x₂ =	∑ x₁²=	∑ x₂²=
N₂ = 10	=117.12	=156143.20	-	-	87457.39	20.19	739182635.34

For LR,

$$\text{Mean } (\bar{X}) = \frac{\sum X_1}{N_1} = \frac{117.12}{10} = 11.71$$

For LA,

$$\text{Mean } (\bar{X}) = \frac{\sum X_2}{N_2} = \frac{156143.20}{10} = 15614.32$$

Correlation between LR & LA,

$$(r_{12}) = \frac{\sum x_1 x_2}{\sqrt{\sum x_1^2 \sum x_2^2}}$$

$$= \frac{87457.39}{\sqrt{20.19 \times 739182635.34}} = 0.7158$$

$$r^2 = 0.7158^2 = 0.5124 \text{ Or, } 51.24\%$$

T-value,

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

$$= \frac{0.7158}{\sqrt{1-0.5124}} \times \sqrt{10-2} = 2.896$$

Appendix VII
Calculation for Mean Value, & Correlation Between
Lending Rate & Lending Amount of LBL

Year	LR (X ₁)	LA (X ₂)	x ₁ =X ₁ - \bar{X}_1	x ₂ =X ₂ - \bar{X}_2	x ₁ · x ₂	x ₁ ²	x ₂ ²
2003	11.46	2963.7	0.61	-9210.52	-5618.42	0.37	84833678.67
2004	12.33	3969.6	1.48	-8204.62	-12142.84	2.19	67315789.34
2005	11.9	5030.9	1.05	-7143.32	-7500.49	1.10	51027020.62
2006	11.94	6116.6	1.09	-6057.62	-6602.81	1.19	36694760.06
2007	10.62	7944.1	-0.23	-4230.12	972.93	0.05	17893915.21
2008	9.63	10154.9	-1.22	-2019.32	2463.57	1.49	4077653.26
2009	9.92	14100	-0.93	1925.78	-1790.98	0.86	3708628.61
2010	10.21	18836.4	-0.64	6662.18	-4263.80	0.41	44384642.35
2011	10.21	24469.6	-0.64	12295.38	-7869.04	0.41	151176369.34
2012	10.25	28156.4	-0.60	15982.18	-9589.31	0.36	255430077.55
N₁ = 10	∑ X₁	∑ X₂	-	-	∑ x₁·x₂ =	∑ x₁²=	∑ x₂²=
N₂ = 10	=108.47	=121742.20	-	-	-51941.17	8.44	716542535.04

For LR,

$$\text{Mean } (\bar{X}) = \frac{\sum X_1}{N_1} = \frac{108.47}{10} = 10.85$$

For LA,

$$\text{Mean } (\bar{X}) = \frac{\sum X_2}{N_2} = \frac{121742.20}{10} = 12174.20$$

Correlation between LR & LA,

$$(r_{12}) = \frac{\sum x_1 x_2}{\sqrt{\sum x_1^2 \sum x_2^2}}$$

$$= \frac{-51941.17}{\sqrt{8.44 \times 716542535.04}} = -0.6679$$

$$r^2 = -0.6679^2 = 0.4461 \text{ Or, } 44.61\%$$

T-value,

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

$$= \frac{0.6679}{\sqrt{1-0.4461}} \times \sqrt{10-2} = 2.539$$

Appendix VIII

Calculation of Trend Value of LA of Sample Banks

Fiscal Year	t	X = t-5	x ²	SBL		LBL	
				LA (Y ₁)	XY ₁	LA (Y ₂)	XY ₂
2004	1	-4	14	7328.2	-29312.8	3969.6	-15878.4
2005	2	-3	9	8267.8	-24803.4	5030.9	-15092.7
2006	3	-2	4	8769.7	-17539.4	6116.6	-12233.2
2007	4	-1	1	11360.3	-11360.3	7944.1	-7944.1
2008	5	0	0	13278.8	0	10154.9	0
2009	6	1	1	15903	15903	14100	14100
2010	7	2	4	21769.7	43539.4	18836.4	37672.8
2011	8	3	9	27997.1	83991.3	24469.6	73408.8
2012	9	4	16	33031	132124	28156.4	112625.6
Total		0	58	147705.6	192541.8	118778.5	186658.8

Calculation of intercept of 'y' when x = 0

$$a_1 = \frac{Y_1}{N_1} = \frac{147705.6}{9} = 16411.73$$

$$a_2 = \frac{Y_2}{N_2} = \frac{118778.5}{9} = 13197.61$$

Calculation of Slope of Trend Line

$$b_1 = \frac{XY_1}{X^2} = \frac{192541.8}{58} = 3319.68$$

$$b_2 = \frac{XY_2}{X^2} = \frac{186658.8}{58} = 3218.25$$

Therefore the trend line equations are:

$$Y_1 = a_1 + b_1 x$$

$$Y_2 = a_2 + b_2 x$$

Forecasted Value for Next Five Years

Year	X	SBL	LBL
		$Y_1 = 16411.73 + 3319.68 X$	$Y_2 = 13197.61 + 3218.25 X$
2013	4	$16411.73 + 3319.68 \times 5 = 33010.13$	$13197.61 + 3218.25 \times 5 = 29288.86$
2014	5	$16411.73 + 3319.68 \times 6 = 36329.81$	$13197.61 + 3218.25 \times 6 = 32507.11$
2015	6	$16411.73 + 3319.68 \times 7 = 39649.49$	$13197.61 + 3218.25 \times 7 = 35725.36$
2016	7	$16411.73 + 3319.68 \times 8 = 42969.17$	$13197.61 + 3218.25 \times 8 = 38943.61$
2017	8	$16411.73 + 3319.68 \times 9 = 46288.85$	$13197.61 + 3218.25 \times 9 = 42161.86$

Appendix IX

Calculation of Trend Value of DA of Sample Banks

Fiscal Year	t	X = t-5	x ²	SBL		LBL	
				DA (Y ₁)	XY ₁	DA (Y ₂)	XY ₂
2004	1	-4	14	15370.6	-61482.4	5461.1	-21844.4
2005	2	-3	9	13437.7	-40313.1	6694.9	-20084.7
2006	3	-2	4	14098	-28196	8064	-16128
2007	4	-1	1	14586.8	-14586.8	10079.8	-10079.8
2008	5	0	0	19348.4	0	13802.5	0
2009	6	1	1	23342.4	23342.4	19097.7	19097.7
2010	7	2	4	31915	63830	23976.3	47952.6
2011	8	3	9	37348.3	112044.9	33322.9	99968.7
2012	9	4	16	46334.8	185339.2	36932.3	147729.2
Total		0	58	215782	239978.2	157431.5	246611.3

Calculation of intercept of 'y' when x = 0

$$a_1 = \frac{Y_1}{N_1} = \frac{215782}{9} = 23975.78$$

$$a_2 = \frac{Y_2}{N_2} = \frac{157431.5}{9} = 17492.39$$

Calculation of Slope of Trend Line

$$b_1 = \frac{XY_1}{X^2} = \frac{239978.2}{58} = 4137.55$$

$$b_2 = \frac{XY_2}{X^2} = \frac{246611.3}{58} = 4251.92$$

Therefore the trend line equations are:

$$Y_1 = a_1 + b_1 x$$

$$Y_2 = a_2 + b_2 x$$

Forecasted Value for Next Five Years

Year	X	SBL	LBL
		$Y_1 = 23975.78 + 4137.55 X$	$Y_2 = 17492.39 + 4251.92 X$
2013	4	$23975.78 + 4137.55 \times 5 = 44663.53$	$17492.39 + 4251.92 \times 5 = 38751.99$
2014	5	$23975.78 + 4137.55 \times 6 = 48801.08$	$17492.39 + 4251.92 \times 6 = 43003.91$
2015	6	$23975.78 + 4137.55 \times 7 = 52938.63$	$17492.39 + 4251.92 \times 7 = 47255.83$
2016	7	$23975.78 + 4137.55 \times 8 = 57076.18$	$17492.39 + 4251.92 \times 8 = 51507.75$
2017	8	$23975.78 + 4137.55 \times 9 = 61213.73$	$17492.39 + 4251.92 \times 9 = 55759.67$