FACTORS DETERMINING THE INTEREST RATE OF THE COMMERCIAL BANKS

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RECOMMENDATION

This is to certify that the Thesis

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Entitled:

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has been prepared as approved by this Department in the prescribed format of the Faculty of Management. This thesis is forwarded for examination.

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VIVA-VOCE SHEET

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DECLARATION

I hereby declare that the work reported in this thesis entitled "FACTORS DETERMINING THE INTEREST RATE OF THE COMMERCIAL BANKS" submitted to Office of the Dean, Faculty of Management, Tribhuvan University, is my original work done in the form of partial fulfillment of the requirement for the Master's Degree in Business Study (M.B.S.) under the supervision of **Mr. Bodhnath Gajurel** of Shaheed Smriti Multiple Campus.

Date: November, 2012

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Saheed smriti multiple campus

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ABBREVIATIONS

$	:	American Dollar
AMT	:	Amount
ATM	:	Any Time Money
BOK	:	Bank of Kathmandu
d.f	:	Degree of Freedom
DEP	:	Deposit
FY	:	Fiscal Year
GDP	:	Gross Domestic Product
HBL	:	Himalayan Bank Ltd
Int	:	Interest
LTD	:	Limited
NABL	:	Nepal Arab Bank Ltd
NBL	:	Nepal Bank Ltd
NIBL	:	Nepal Investment Bank Ltd
NRB	:	Nepal Rastra Bank
Rf	:	Risk Free
RS	:	Nepalese Rupees
SCBL	:	Standard chartered bank ltd
TU	:	Tribhuvan University

CHAPTER-I

INTRODUCTION

1.1. Background of the Study

The actual interest on a loan is not fully known until the duration of the borrowing arrangement has been specified. Interest rates on loans are typically figured on an annual basis, though other periods are sometimes specified. This does not mean that the loan is supposed to be paid back in a year; indeed, many loans-especially in the realm of small business do not mature for five or ten years, or even longer. Rather, it refers to the frequency with which the interest and "principal owed"-the original amount borrowed are recalculated according to the terms of the loan.

Interest is usually charged in such a way that both the principal lent and the accrued interest is used to calculate future interest owed. This is called compounding. For depositor and borrowers, this means that the unpaid interest due on the principal is added to that base figure in determining interest for future payments. Most loans are arranged so that interest is compounded on an annual basis, but in some instances, shorter periods are used. These latter arrangements are more beneficial to the loaner than to the borrower, for they require the borrower to pay more money in the long run.

Borrowing is a staple in many areas of foreign economy. This has resulted in a dizzying array of borrowing arrangements, many of which feature unique wrinkles in the realm of interest rates. Common borrowing and lending arrangements include business and personal loans. (from commercial bank, finance companies), credit cards (from corporations), mortgages, various federal and municipal government obligations, and corporate bonds. In addition, interest is used to reward investors and others who place money in savings accounts, individual retirement accounts, Certificates of Deposit, and many other financial institutions.

Commercial banks pass along the cost of borrowing money when they establish the rates at which they lend money. One factor in establishing those rates is the rate established by the Federal Reserve Bank, although other factors play into the calculation. The Market rate is the

lowest rate at which commercial banks lend. Although often thought of as a set interest rate, the Market lending rate is not actually a uniform rate. National City Bank may, for example, have one rate while City Bank has another slightly different rate. As a result, the most widely quoted Market rate figure in the United States is the one published in the Wall Street Journal. What they publish is an average rate that results from polling the nation's thirty largest banks; when twenty-three of those institutions have changed their Market rates, the Wall Street Journal responds by updating the published rate. The reason that the Market rate is so well known is that it is used as a basis off of which most other interest rates are calculated.

Other important interest rates that are used in financial environment decisions include:

Commercial Paper Rate—these are short-term discount bonds issued by established corporate borrowers. These bonds mature in six months or less.

Treasury Bill Rate—A Treasury bill is a short-term (one year or less) risk-free bond issued by the U.S. government. Treasury bills are made available to buyers at a price that is less than its redemption value upon maturity.

Treasury Bond Rate—unlike the short-term Treasury bills, Treasury bonds are bonds that do not mature for at least one year, and most of them have a duration of 10 to 30 years. The interest rates on these bonds vary depending on their maturity.

Corporate Bond Rate—The interest rate on long-term corporate bonds can vary depending on a number of factors, including the time to maturity (20 years is the norm for corporate bonds) and risk classification. (Interest Wikipedia, The frees encyclopedia)

How interest rates are established, why they fluctuate, and why they vary from lender to lender and borrower to borrower are complicated matters. Two terms used in banking whose definitions it will be helpful to know in reading further about interest rates are "real" and "nominal." The "real" interest rate on a loan is the current interest rate minus inflation. It is, in essence, the effective rate for the duration of the loan. The "nominal" interest rate is the rate that appears on the loan agreements, the stated rate that does not account in any way for inflation.

Interest rate levels are determined by the laws of supply and demand and fluctuate as supply and demand change. In an economic environment in which demand for loans is high, lending institutions are able to command more lucrative lending arrangements. Conversely, when banks and other institutions find that the market for loans is a tepid one (or worse), interest rates are typically lowered accordingly to encourage businesses and individuals to take out loans.

Otherwise, interest rates are a key instrument of American fiscal policy. The Federal Reserve determines the interest rate at which the federal government will bestow loans, and banks and other financial institutions, which establish their own interest rates to parallel those of the "Fed," typically follow suit. This ripple effect can have a dramatic impact on the U.S. economy. In a recessionary climate, for instance, the Federal Reserve might lower interest rates in order to create an environment that encourages spending. Conversely, the Federal Reserve often implements interest rate hikes when its board members become concerned that the economy is "overheating" and prone to inflation.

Commercial banks remain the primary source of loans for small business firms any sector, especially for short-term loans. Small firms who are able to secure loans from these lenders must also be prepared to negotiate several important aspects of the loan agreement which directly impact interest rate payments. Both the interest rate itself and the schedule under which the loan will be repaid are, of course, integral factors in determining the ultimate cost of the loan to the borrower, but a third important subject of negotiation between the borrowing firm and the bank concerns the manner in which the interest on a loan is actually paid.

By raising or lowering rate on loans to banks, By influencing the commercial bank's cost of money, changes in the discount rate tend to influence the whole structure of interest rates, either tightening or loosening money. When interest rates are high, we have what we call tight money. This means not only that borrowers have to pay higher rates, but that banks are more selective in judging the creditworthiness of businesses applying for loans. Conversely, when interest rates decline, money is called easy, meaning that it is both cheaper and easier to borrow. Interest rates charged for loans of longer duration are indirectly affected through

the market's perception of government policy and its impact on the economy. (Federal Reserve Bank of New York: fed fund data)

Every commercial bank are performing its all kind of banking transactions by accepting deposits, advancing loans, credit creation and agency function. They provide short-term loan, medium term loan and long-term loan for trade and industrial promotion. They are also operating off balance sheet function such as issuing guarantee, bonds letter of credit etc.

As per Bank and financial Institution Act.2063 in Nepal, "A commercial bank means the bank which deals in exchanging currency accepting deposit, giving loans and doing commercial transaction." (Banking and Financial institution act 2063, Nepal)

Keeping above act in mind, we can say that commercial banks play an important on growth of Nepalese economy. Nepal bank ltd. is the first commercial bank of Nepal, which was established in 1937A.D. in private sector participation. The government owned Nepal Banijya Bank is also established in 1966 A.D. and this bank is spread over most of the rural and urban areas of Nepal.

1.2 Statement of the Problem

The interest rate plays important role for the banking development. The favorable investment climate makes appropriate interest rate. We have seeing the commercial banks have to shoulder more risk and un certainty in on investment. The bank gain some profit now as well as they has lot of risk on bad debts. They are facing the problems on refund of investment like government owned bank more but in. Another parts Joint venture and private bank were making good profit in competition each other. They are generating the new ideas and providing the various facilities to accuracy the bank customer.

The Interest is a price of money. The interest rate is different in depositor and lender. That differences margin is the gain of bank. The interest rate charged and offered of financial institution and commercial banks was regulated by central bank until before few years, But now these institution are free to fix their interest rate.

Interest rate is most important factor in economy and organization. Most of the organizations are not calculate the true or effective interest rate. They are motivated in gain profit. It is different on as per banks. They have own policy on determination. So this researcher has influenced to analyze that what factors affect interest rate and what are the methods used in interest calculation. But so it is very difficult to calculate the effective rate not only public. Since the determination of interest rate offers the performance of commercial banks.

The research work intends to explorer the following questions:

1. What are the major factors to determine the interest rate in Nepalese commercial banks?
2. What is the difference between interest rate theory and in practice?
3. What are the methods used in commercial bank to calculate interest rate?
4. Is the market interest rate is affected by inflation rate and risk free rate?
5. Is Interest rate important factor in economy?
6. Is it affected by environmental factors?

1.3 Objectives of the Study

The specific objectives of this study are as follows:

1. To analyze the determinants of interest rates and method of charging interest rate.
2. To analyze the trend of deposit rate, lending rate, inflation and risk free rates.
3. To examine the relationship of interest with deposit, leading, interest rate, inflation and risk free rates of commercial bank.
4. To analyzes the environmental factors regarding determinants of interest rate.

1.4 Significance of the Study

Development of banking system is a vital issue for the growth of the economy. The economic development of any country depends up on the effective mobilization of the accumulated and mobilization of funds colleting and lending strategy is effected by interest rate. Interest rate is the main factor of the commercial banks. It is also important in depositor and lenders.

Present study is important in the point of view national economy. It is determining price of money, which is called interest rate, whose effects shows on financial system, economic growth in business sector and public sector.

Nepal is sufferings a high inflation rate and it is important factor in economy .It plays role in determination of interest rate. The interest rate is difference in commercial banks. They have own strategy to determine in rate. The rate of interest is one clue for competition in financial market. The reason of fluctuation in interest, these factors are affecting in rate default risk, political crisis, uncertainty, demand and supply, computation of financial market etc. These various factors are responsible in determination of interest rate.

The subject is important in national and international financial markets, person, parties, business holder's depositors etc. it is a one key of business sector. It also important to measure on running positions of economy so many reason and objectives it is significant in study.

1.5 Limitations of the Study

This study to fulfill the requirement of master degree of business studies. It cannot covert all determination of sub matter and resources. The main limitation of the study is as follows:

i. This study concerns only factors determining the interest rates of commercial bank.

ii. This study is based on 10 years data of commercial bank

iii. The accuracy of data depended upon collected and provided by the concerned bank and perception of respondents.

iv. The primary data based on public opinion and surveys.

v. The research is concerned with six listed commercial bank only.

1.6 Organization of the study

The study has been organized in to five different chapters. They are follows:

Chapter I – Introduction

This chapter will describe the brief introduction to the simple bank and background of the Study. It will serve orientation for study to know about the various statement of the problem, objective of the study, limitation of the study, organization of the study etc. this chapter will be oriented far study far reporting giving them the perspectives they need to understand the details information about coming chapter.

Chapter-II Review of Literature

The second chapter contains the review of available literature related to the area of the study that may be reviews of literature about introduction, meaning, theory of interest rates and interest levels of different commercial bank etc. It also established that the study as a link in a chain research that is developing and emerging knowledge about concerted field.

Chapter III- Research Methodology

This chapter presents research methodology will refer to the various sequential steps to be adopted by a researcher in studying problem with certain objectives in view. It will described about the various tools and techniques of data it contains research design, population and samples, sources of data, procedures of data collection, tools for data analysis etc.

Chapter IV- presentation and analysis of data

This chapter presents the presentation and analysis of data by using various methods of statistics and financial tools, tables, figures etc. it will analyze the data related with study

Chapter V- Summary, Conclusion and Recommendation This is final chapter summary of study. Base on the result from data analysis. The researcher will concluded about the

performances of the concerned organization in topic "factors determining the interest rates of commercial bank" . it will also give important suggestion the concerned organization for better improvement.

CHAPTER -II

REVIEW OF LITERATURE

2.1 Introduction

In this chapter, the researcher shall review briefly about some of the earlier published articles and studies conducted abroad on factors determination of interest rate on commercial bank.

The purpose of reviewing the literature is to develop some expertise in one's area, to see what new contributions can be made, and to receive some ideas for developing research design. It includes the reviews of previous writing and studies relevant to the problem being explored and with the framework of theory structure.

The review of literature is the process locating, reading and evaluating the research literature in area interest (Wolff & Pant, 2002: 39).

2.2 Meaning of Interest

In common parlance interest in payment made by a borrower to the lender for the money borrowed and it is expressed on percentage rate per year .But in economics varieties of views have been put forth from the time to Aristotle to the present day. Aristotle recognized only annual husbandry and stock rising as two legitimate industries whose product could be lent and interest earned on them (Jhingan, 2002: 621).

According to Carver “Interest is the income which goes to the owner of capital” (Jhingan m.l, 1986)

According to Mill's "Interest is the remuneration for more abstinence".

Interest is the amount paid to the creditor in return to a debt borrowed by a debtor for a fixed period of time. As the reward of their factors of production interest is reward paid to the capitalist for the use of capital (Joshi, 2058: 384).

Prof. Wicksell - “Interest is payment made by the borrower of capital b virtue of its

productivity as a remain for his (capitalist's) abstinence"

Prof Meyer- "Interest is the price paid for the use of lovable funds".

Prof Seliqman - "Interest is the Return for the fund of capital". (Joshi s, 2058)

Prof. Lord J.M Keynes -"Interest is the reward for parting with liquidity '' (M.M. Joshi 2058)

In this way there is different definition of interest .Even then the same conclusion may be drawn from all these definition and the conclusion is that the interest is the amount of return paid for the use of capital.

Interest is the amount paid to the creditor in return to a debt borrowed by a debtor for a fixed period of time. As the reward of other factors of production interest is also a reward paid to the capitalist for the use of capital. The system of borrowing loan and of paying the interest is very old. The economics of different times had hated the system of interest. Even then the poor people were compelled to take loans and pay interests due to various reasons. Those days the loans were taken mostly for consumption purpose. But in the modern days, there are differences in the nature of loans. These days the loans are taken mostly by the businessmen and the industrialists and these loans are used for the purpose of production. The amount of loan is received from the fund of capital. The capital fund has a productive capacity. Therefore, the interest is paid for the use of capital. Various economists have defined interest differently. According to Prof. Wicksell, "Interest is payment made by the borrowers of capital by virtue of its productivity as a reward for his (capitalist's) abstinence." According to Prof. Meyers, "Interest is the price paid for the use of loan able funds." According to Prof. Carver, "Interest is the income which goes to the owner of capital." According to Prof. Lord J.M. Keynes, "Interest is the reward for parting with liquidity." In this way, there are different definitions of interest. Even then the same conclusion may be drawn from all these definitions and the conclusion is that the interest is the amount of return paid for the use of capital.

2.3 Interest Rate Levels

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

2.4 Factor influencing the interest rates

Various factors that might influences the general level of interest rates such as government policy, budget deficit or surplus, international factors, business condition, inflation rates and different kinds of risk inherent to securities. (Western and Brigham, Van Horne)

1. Government Policy

The money supply by the government has a major impact on both the level of economics activities and the inflation rates. The government increases the supply of money to stimulate the economic activities this action caused the decline in interest immediately. Bulk quantity of money supply also causes to increases in expected inflation rate.

2. Budget deficit or Surplus

If current budgetary expenditures government exceeds over the receipts, collection of tax and user fees, it runs into deficit such deficit is covered either by borrowings or by printing paper money. Borrowing drives interest rates up due to increases in money demand. Printing of money increases the futures inflation rates. Thus, greater amount of deficit leads to higher interest rate in economy.

3. International Factor

Un economies unit is said to be in a foreign trade deficit when their imports higher than the exports such a trade deficit must be financed and the major sources of financing would be the borrowing other potential sources may be the selling of real assets. The borrowing to cover such trade deficit the interest rates in rising mode.

4. Business Condition

There is a general tendency of declining interest rates if the business suffers forms the depression period. If this state occurs, both the demand for money as well as inflationary rate in the economy will turn down.

5. Inflation Rate

The expectation about the futures inflation rates causes to driving the budget unit also causes to increase in inflation.

6. Risk

Comparables types of securities carries different levels of interest due the special characteristics of particulars assets inherent in it. Even the securities issued by same borrower carry dissimilar interest rates it is because the interest rates is guided by many risk premiums, which may vary forms security to security.

2.5 The Determinants of Market Interest Rates

In general, the quoted (or nominal) interest rate on a debt security, is composed of real risk-free rate of interest, k*, plus several premiums that reflect inflation. The riskness of the security and the security's marketability. This relationship can be expressed as follows (Weston & Brigham, 2004: 45).

Quoted Interest Rate (k) = k*+IP + DRP+ LP +MRP…….(i)

K= the quoted, nominal, rate of interest on a given security. There are many different securities; hence many different quoted interest rates.

K*= the real risk free rate of interest

The rate of interest that would exist on default-free U.S Treasury Securities if no inflation were expected.

IP=Inflation Premium

A premium for expected inflation that investors add to the real risk-free rate of return.

DRP= Default Risk Premium

The difference between the interest rate on a U.S treasury bond and a corporate bond of equal maturity and marketability.

LP=Liquidity, or Marketability, Premium

A premium added to the rate on a security if the security if the security cannot be converted to cash on short notice and at close to the original cost.

MRP=Maturity Risk Premium

A premium that reflects interest rate risk; bonds with longer maturities have greater interest rate risk.

1. Nominal rates of interest (k)

The interest rates (or yield) on a security that we observe in the market sum of all the risk premium factor that required for the compensation for bearing some kind of risk and risk free rates of interest. It is called by various names the nominal on quoted or going rates or market rates of interest which is charged by the supplier of funds or paid by the demander.

2. Real risk free rates of interest (k*)

It is the rates of interest from risk less government in the absences of inflation but these rates of interest in never seen in the economy. This rates in taken as the component (or foundation) of all interest rates because one this real risk free rates of interest is determined then market interest is determined by examining the special characteristics of the security issued by individual borrower.

3. Inflation Premium

Inflation premium is called risk frees rates of return i.e. K_{rf} = K*+IP. This means that the rates of interest that has absolutely no risk at all i.e. no risk of default, no maturity risk, no liquidity. This is only possible to a short term security issued by the government because. T-bonds are also exposed to some risk due to charge in the general levels interest rates.

4. Default Risk Premium

This is the premium charged for accepting risk of borrower default which arises due to the borrower default on some or all of his promised payments i.e. the borrower will not pay either the interest amount the default risk perceived by investors. The higher the premium demand by the lenders.

5. Liquidity Premium

It is the premium charged for taking the risk on a security with a weak liquidity. If an assets has strong ability to convert into cash on short spun of times then it carries low liquidity premium otherwise it is charged higher according to the levels of risk.

6. Maturity Risk Premium

The interest and prices of the securities have inverse relationship. Prices of long-learn securities declines sharply when market rates of interest increases. This interest rates prices risk causes to capital losses to the investor. The levels of such risk increases with increase in maturity period. Therefore the MRP is charged higher for longer the years to matures the bond and vice versa.

2.6 Theory of interest rate

2.6.1 Theories term structure of interest rate

Several theories have been developed to explain the shape and behavior of term structures. While there is no general consensus on these theories among economists, the general trend has been toward more complex theories that address issues like volatility in bond prices. Three main perspectives on term structure are the expectations theory, the liquidity preference theory, and the market segmentation theory. (Reference for business: encyclopedia of business, 2nd ed.)

2.6.1.1 Expectation Theory

Expectations theory, also termed expectations hypothesis, is one of the most common economic theories of term structure. It comes in several variations, the most widely known being the unbiased expectations theory. The unbiased expectations theory contends that the long-term rate is the geometric mean of the intervening short-term rates. Further, it suggests that if the term structure is upward sloping, inflation rates are expected to rise in the future. A flat term structure, according to the theory, indicates little change in inflation is expected, and if the term structure is downward sloping, inflation is expected to fall over the period. Another variation is local expectations theory, which posits that the expected rate of return on future maturities is actually equal to the short-term risk-free rate (e.g., current Treasury bill yield) adjusted for inflation.

2.6.1.2 Liquidity preference theory

Concerned with risk-aversion investment behaviors, the liquidity preference theory asserts that lenders anticipate the potential need to liquidate an investment earlier than expected. Since for a given change in interest rates, the price volatility of a short-term investment is lower than the price volatility of a long-term investment, investors prefer to lend short term. Therefore, they must be offered a risk premium to induce them to lend long-term. Borrowers, on the other hand, often prefer long-term bonds because they eliminate the risk of having to refinance at higher interest rates in future periods. Furthermore, the fixed costs of frequent refinancing can be quite high. Therefore, borrowers are willing to pay the premium necessary to attract long-tern financing.

The liquidity preference theory, in conjunction with the unbiased expectations theory, suggests that an upward sloping term structure would be expected to occur more often than a downward sloping term structure. In fact, as stated earlier, this is the most common situation.

2.6.1.3 Market segmentation theory

Market segmentation theory (MST) is also known as institutional hedging or habitat theory. This theory sees two separate maturity habitats or segments—one long and the other short. Each segment has a schedule of supply (lenders) and demand (borrowers) for loan able

funds. The point at which the demand and supply intersect determines the prevailing rate for that sector.

MST recognizes that there are institutional restrictions on the asset side and hedging pressures on the liability side which allow for very little substitutability between bonds of different maturities. Some of these restrictions result from government regulation, company policy, Securities and Exchange Commission regulations, goals and objectives, and fiscal and operational considerations.

Commercial banks and nonfinancial corporations generally supply loans in the short-term segment of the market. Nonfinancial corporations invest (hedge) their excess liquidity until it is needed to meet cash distributions.

Life insurance companies, pension funds, and the like supply the long term segment in anticipation of a steady stream of income over the long haul. Their goals and objectives seem to differ completely from the short-term suppliers except that, for each to be successful over the long-term, they each must consistently operate within their predetermined habitat.

The flow of funds into these institutions, however, is not static. Customers make withdrawals, receive payments, and reallocate resources. As a result, the supply schedule in each market shifts among different institutions. Pensioners may place their monthly funds into commercial banks. The supply decreases in the long-term segment, thus putting upward pressure on rates to attract more funds. The increase of capital in commercial banks increases the supply in the short-term, thus putting downward pressure on short-term rates.

The demand schedules for loan able funds also shifts with changes in the economic cycles. The demand for long-term funds increases when an upturn in the economy is perceived, putting upward pressure on rates. As a business cycle matures, the need to expand inventories creates upward pressures on short-term rates, thus attracting additional supply to the short segment.

The market segmentation model proposes that the spread between long and short-term rates depends largely on the relative supply and demand for these instruments by transistors in their preferred habitats.

2.6.2 Theory of Interest Rate

Various interest rate theories have been propounded by various economists which describe have interest rates determined in various situation some well known theories of interest rate are as follows:

2.6.2.1 Gross Interest and Pure Interest

In ordinary terms, the amount, to which we call interest, is the total interest in economics. The pure interest is also included in this total interest. Pure or Net interest: - The net interest is the net return paid only for use of capital.

Insurance against Risk:-interest also includes reward for risk taking .While investing capital; a capitalist has to been some risks. He includes some amount in the net interest for this risk the amount for insurance against risk.

The additional amount is called the amount for insurance against risk .The capitalist bearing two ways of risk.

a. personnel risk

b. Trade risk

Reward for inconvenience

While investing capital, a capitalist has to face two kinds of inconvenience. The first inconvenienced is that after an investment is done, he cannot be able to use capital in his need. The second inconvenience is that when he receives back the amount he has invested, the golden opportunity to invest the capital elsewhere has already been cost. The amount over the net interest due to the possibilities of these inconveniences is the reward for inconvenience.

Payment for management expenditure

While investing capital, the capitalist should also keep the account. In order to keep the account he has to spend a separate amount. If may also be possible that the creditors should knock the debtors door many times to receive back his amount. In this way, the creditor

should spent some among for keeping accounts, for hiring employees, for visiting the debtors repeatedly etc for all these difficult the creditors charge some amount over the net interest against the borrowers and these expenses are called the payments for management expenditure (Joshi,2058:385).

Forces Determining Interest Rate

The problem with interest rates is that although interest rates are critical to every bank. Bankers simply cannot control either the level of or the trend in market rate of interest. The rate of interest on any particular loan or security is ultimately determined by the financial market place where supplies of loanable funds (credit) interact with demands of loanable funds (credit) trends to settle at the point where the quantities of loanable funds (credit) demanded and supplied are equal (Rose, 1998: 120).

Interest Rate Risk one of the Bankers greatest ALM challenges The Interest rate is one of the sources of revenue When interest rate charge in the financial Marketplace, Bankers find that the change affects. Changing interest rate also change the market value of a bank's assets and liabilities. Interest rate impacts both a bank's balance sheet and its statement of income and expenses.

2.6.2.2 Loanable Funds Theory of Interest

The Loanable Funds Theory of Interest was propounded simply to remove the drawbacks of the classical Theory of Interest. First of all, this theory was propounded by the famous Swedish economist Johan Gustav Knut Wicksell. Later on, the other Swedish economists, like Bertil Ohlin, Erich Lyndahl, Gunnar Myradah, etc. and the British economist Sir Dennis Robertson, improved and developed the theory very much. These economists are of the neo-classical age. So this theory is also called the Neo-classical theory of Interest. This theory shows that the rate of interest is determined by the interaction of the demand for and the supply of the loanable funds. In the demand for loanable funds, the investment for the production of the capital goods and the loans for consumption purpose are also included. And in the supply of loanable funds, the disposable income, the bank money or credit, etc. are included. In this way, in context to the determination of the rate of interest, both the monetary and real factors are involved. On the

other hand, this theory is also called the Periodic Analysis funds on the period of time. According to this theory, the demand for and the supply of the loanable funds are influenced by different factors (Joshi, 2058:386).

Demand for Loanable Funds

The classical theory of interest has mentioned that the capital is demanded only for the investment to produce the capital goods. But the demand for the loanable funds (capital) depends on the following factors:

I) Demand for Investment

Generally the business firms demand for capital to purchase the capital goods like buildings, machines, tools, etc. And to conduct the production activities. The amount to be paid to receive such loans is called the interest. The demand for such loans depends on the marginal revenue productivity of capital or on the expected net rate of return of capital. Therefore, the loanable fund is demanded only up to the point where the marginal revenue productivity of capital and the rate of interest to be paid are equal to each other. If the rate of interest is low, the demand for capital or the loanable funds is high and if the rate of interest is high, the demand for loanable funds is low. Thus, the demand for loanable funds is interest elastic and its curve slopes downwards from left to right.

II) Demand for Consumption

The loanable fund is also demanded for the consumption purposes. Generally, the loanable funds for consumption purposes are demanded for purchasing durable goods like houses, radios, T.V. sets, motor cars, refrigerators, etc. The people demand for the loanable funds especially at the time when their current incomes and idle cash resources are insufficient to buy the durable goods they desire. Such demand for loanable funds is called the Dissaving. If the rate of interest is low, the demand for loanable funds for the consumption of such durable goods will be high and if the rate of interest is high, the demand for loanable funds for such purposes will be low. Therefore, the demand for loanable funds for consumption purposes is also interest-elastic and its curve also slopes downwards from left to right.

III) Demand for Hoarding

People are naturally liquidity-prefers. Therefore, they desire to keep some portions of their incomes in liquid-money or cash-money or idle-money. They do this by spending some percentages of their disposable income. The amount saved in this way is called the Hoarded-money or Hoarding. This hoarding may be used to buy shares, securities the capital goods and to provide loans to somebody else. Or this hoarding may be kept with one self in cash form or in the form of idle money. This act of hoarding is done for two objectives: a) the hoarded or cash money may be invested immediately when the rate of interest goes up in the market and the higher profits may be secured, b) the hoarded money may be invested to purchase shared and securities when their prices are low and aim at selling them at higher prices in the future. Thus, people desire to hoard too much cash money at low rates of interest and desire to hoard less cash money at higher rates of interest. Therefore, the demand for loanable funds to hoard cash money also makes a supply of loanable funds.

Supply of Loanable Funds

The classical theory of interest tells us that the saving is formed out of current income and the capital is supplied from this saving. But according to the loanable funds theory, the sources of supply of capital depend on the following factors.

I) Savings

The supply of loanable funds is made out of savings of individual persons, families, business concerns, etc. According to Prof. Robertson, the amount of difference between the past income and the present consumption expenses is the amount of savings of a person of a family. This amount of savings depends upon the level of income of a person. But if we assume the level of income as constant, the amount of savings changes with a change in the rate of interest. The business firms also save some amount out of their incomes. These firms save aiming at not borrowing from the loan markets. Therefore, if the rate of interest is high in the market, they save more and if the rate of interest is low, they save less. In fact, such business firms do not enter into the

loan markets even the amount of their savings substitute for the loanable funds of the loan market. Therefore, the amount of this savings influences the rate of interest. Thus, the savings of all kinds are interest elastic. Or if the rate of interest is high, the volume of savings is greater and if the rate of interest is low, the volume of savings is also low. Therefore, the savings curve slopes upwards form left to right.

II) Dishoarding

People hoard some portions of their past income in the form of liquid or idle money. When such hoarded idle money is invested, ten it is called Dishoarding. This is another important source of supply of the loanable funds. People invest a greater volume of such hoarded money when the rate of interest is high and when the price of shares and securities is low in the market. Likewise, the investment of such hoarded money decreases when the rate of interest is low and when the price of shares and securities is high in the market. Thus, such dishoarding is also interest-elastic and its curve also slopes upwards from left to right.

III) Disinvestment

It there is an economic havoc in the economy or if the current market rate of interest of capital is higher than the marginal revenue productivity of capital to be received or the expected net rate of return of capital, then the business firms start to disinvest their capital. The amount of such disinvestment may be found from both the fixed and the working capitals. The business firms keep some amounts in form of capital consumption allowances or the depreciation charges for their fixed capital. Now, when they think not to continue or not to run the business, they make the amount of disinvestment received from the capital consumption allowances available in the market in the form of loanable funds. In the same way, the amount received from the sales of the firm's output may also be made slowly available in the market in the form of loanable funds. The volume of the amount of such disinvestment is greater at higher interest rates and smaller at lower interest rates. Therefore, the disinvestment is also interest-elastic and its curve also slopes upwards from left to right.

IV) Bank Money

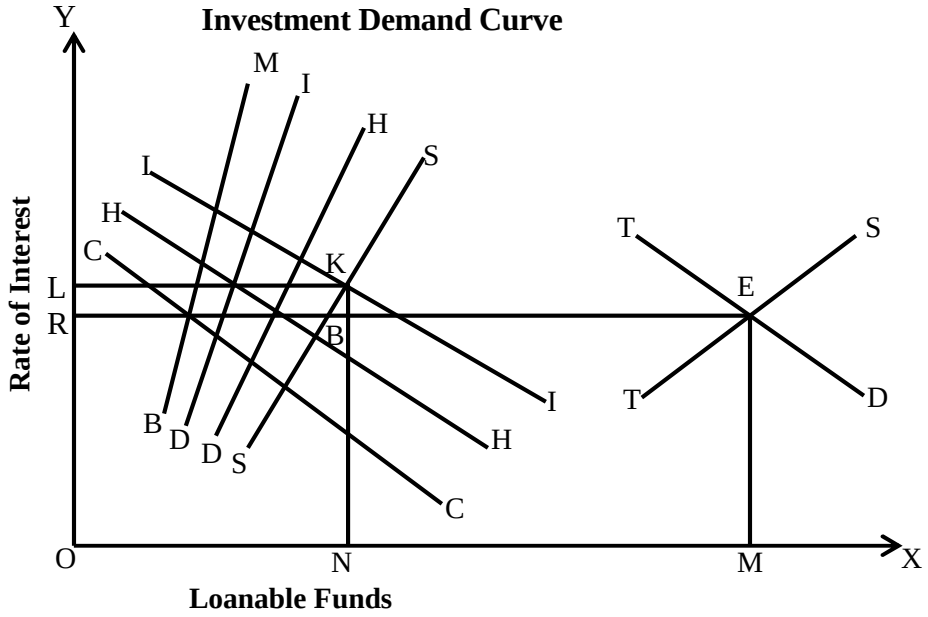
The commercial banks create credit which is called bank money. The banks provide loans to the businessmen and the industrialists by means of credit or bank money created in this way. The commercial banks can also contract credit when necessary. These also buy and sell securities. Thus, the commercial banks play an important role to supply the loanable funds. But Prof. Knut Wicksell was of the opinion that the bank money is interest inelastic. According to him, the bank money is influenced by the liquidity position of the bank not by the rate of interest. Therefore Prof. Wicksell opined that the curve of bank money is a vertical straight line or is parallel to OY axis. But the economists after Prof. Wicksell improved a lot on their ideas and argued that the bank money is not perfectly interest-inelastic but it is interest-elastic to some extent. These economists argue that the less the interest rate is, the less credits the bank creates and the higher the interest rate becomes, the more credits the bank creates. Therefore the curve of bank money also slopes upwards from left to right. We explained the different states of the demand for and the supply of the loanable funds. If we collect all the demand curves at one side and all the supply curves at the other side we get separately the total demand curve and the total supply curve.

Determination of the Rate of Interest

The rate of interest is determined by the interaction of the demand for and the supply of the loanable funds. The determination of the rate of interest is presented in figure 2.1.

Figure 2.1

Investment Demand Curve



Source: Self generated figure

In the figure, CC, HH and II are consumption, hoarding and investment demand curves respectively. In the same way, BM, DI, DH and SS are bank money, disinvestment, dishoarding and savings supply curves respectively. TD is the total demand curve for loanable funds and this curve is sloping downwards from left to right while TS is the total supply curve of loanable funds and this curve is sloping upwards form left to right. E is the interaction point of these two curves. Therefore, the rate of interest is determined at point E or when the demand for and the supply of capital are OM, the rate of interest is OR. Although the total demand for and the total supply of the loanable fund are equal at point E, the amounts of investment and of saving are not equal at this point. Here the amount of investment is RG and the amount of saving is RB or the amount of investment exceeds the amount of saving. Therefore, this is only the short-run state of equilibrium. For the volume of investment is greater than the volume of savings, the income of the people increases in the long-run and as a result, the savings also increases and finally the long-run rate of interest is determined at a point where both savings and investment are equal to each other.

In the context of the determination of the rate of interest, Prof. Wick sell has also mentioned the natural and the market rates of interest. Here, we once turn back to the classical theory of interest. According to this theory, the rate of interest is determined at a point where the demand for (investment) and the supply of (savings) are equal to each other. Therefore, while the investment and savings are equal to point to KN (OL). But Prof. Wicksell argues that this KN (OL) is the natural rate of interest and OR is the market rate of interest. Because, according to him, the natural rate of interest is determined by the interaction of the savings and the investment and the market rate of interest is determined by the interaction of the demand for and the supply of the loanable funds.

The process of the determination of the rate of interest of the Loanable Funds Theory may be simplified by the use of pure savings (savings-dissavings), pure hoarding (hoarding-dishoarding) and pure investment (investment-disinvestment). Or the rate of interest is determined at a point where the pure investment and pure hoarding from the demand side and pure savings and bank money from the supply side are equal to each other.

Criticisms

The Loanable Funds Theory of Interest has included both the monetary and the real factors of the economy in the context of the determination of the rate of interest. Therefore, this theory is considered very much superior to the classical theory. Even then, this theory has been criticized on various grounds.

a) First of all, the loanable funds theory also has assumed the state of full employment. But the economists argue that the state of full employment may not be found in the real world. According to Prof. Keynes, the state of equilibrium in an economy may be achieved only below the level of full employment.

b) This theory has attempted to curb the difficulties of the determination of the rate of Interest seen in the classical theory by mixing the real and the monetary factors. But the critics of the theory opine that real factors like savings and investment indicate the flows of money while the monetary factors like bank credit and liquidity indicate the changes in the stock of money and therefore the real and the monetary factors cannot be mixed in one place.

c) The theory states that the rate of interest is determined by the loanable funds. But the loanable funds depend upon the disposable income, the disposable income depends upon the investment and the investment depends upon the rate of interest. Thus, according to Prof. Hansen, this theory involves us in such a circular reasoning that we cannot come out of it. Therefore, Prof. Hansen and other economists call this theory an indeterminate theory.

d) This theory has assumed the level of income constant and states that a change in investment does no bring any change in the level of income. But this statement is not considered correct. Because when the rate of interest falls the amount of investment increases and an increase in the amount of investment rises up the level of income.

e) This theory has laid special emphasis on the fact that an increase in the rate of interest increases the amount of savings. But in fact, it is an exaggeration. Sometimes, a change in the rate of interest may not have any influence on the amount of savings. Especially the

saving of a very low income group of people is interest-elastic. In the same way, the people who care more for future may save more than before although the rate of interest has not been increased. Therefore, the statement that a change in the rate of interest highly influences the amount of savings may not always and in all uses be proved true.

f) Prof. Keynes has expressed his doubt on the concept of hoarding as used in the Loanable funds theory. Because, according to Keynes, the amount of hoarding may not change less there is a change in the quantity of money. If the total quantity of money remains the same, the total amount of hoarding in the beginning and at the end of a period remains the same too. The smaller hoarding of money by a person is compensated by a greater hoarding of money by another person. But Keyne's doubt on the concept of hoarding (passive money) does not only depend on the total quantity of money but also depends on the velocity of the circulation of money. And this velocity of the circulation of money itself also depends upon the amount of hoarding of money. Thus, it influences the total supply of money.

g) The critics have also criticized the theory on the ground that the Loanable Funds Theory is only a synthesis between the classical Theory of Interest and the Keynesian Liquidity Preference Theory of Interest. Because of this theory only incorporates the savings and investment demand of the classical theory and the liquidity preference of the Keynesian theory into one.

Thus, many critics have criticized the Loanable Funds Theory on various grounds. Even then, it is regarded superior to the classical theory because it has attempted to explain the determination of the rate of interest by amalgamating the real factors such as savings and investment and the monetary factors such as bank money, liquidity preferences, etc Pro. H.G. Johnson has called this theory as dynamic and the Keynesian theory as static.

2.6.2.3 Liquidity Preference Theory of Interest

Prof. Lord John Maynard Keynes had propounded the Liquidity Preference Theory of Interest. Therefore, this theory is also called the Keynesian. Theory of Interest.

Prof. Keynes has propounded this theory by criticizing the classical and the Loanable Funds Theories of interest. According to Keynes, the rate of interest is calculated by means of money and the interest is a purely monetary phenomenon. Therefore, the Keynesian Theory of Interest is also called the Monetary Theory of Interest. According to this theory, the rate of interest is determined by the demand for money; Keynes has indicated the liquidity preference of the people. On the other hand, the supply of money indicates the total quantity of money available in a fixed period of time. This total quantity of money is changed by the Central Bank of a Country (Joshi, 2058:394).

People spend a fixed percentage of their income on consumption on the basis of their propensity to consume. The remaining portion of income after having been spent on consumption may be kept by the people in idle or liquid form or may also be invested to get an additional or extra income. The fact that how much of the income should be invested depends upon the liquidity preference of a person. If the liquidity preference is greater, people will prefer a greater portion of income to keep in the form liquid money with them and if the liquidity preference is smaller, people will prefer a smaller portion of their income to keep in the form of liquid money with them and they will invest the remaining portion of their income to a place from where an extra income may be secured. But, by nature, people prefer to hold cash money with them. So they expect to receive some returns as remunerations for money they have invested. Or people desire to get remuneration for parting with their income even for a specified period. To the amount of remuneration received in this way, Prof. Keynes has called 'Interest'. According to Prof. Keynes, "Interest is the reward for parting with liquidity for specified period". Thus the liquidity preference of the people may be bought by paying them the amount in the form of interest.

It is necessary to explain both, the demand and supply sides of money, separately on the basis of the Keynesian liquidity preference theory of interest.

Demand Side

People prefer to keep a fixed portion of their income in the form of cash or liquid money for the fulfillment of their different objectives. This preference (desire) of

cash or liquid money has a great influence on the determination of the rate of interest. If the liquidity preference is greater, the rate of interest is also higher and if the liquidity preference is smaller, the rate of interest is also lower. In the same way, if the current rate of interest is higher is the market, people prefer less cash money to hold, and if the current rate of interest is lower, people prefer too much cash money to hold with them. Prof. Keynes has divided the objectives or the preferences of the people to hold cash with them into three parts.

I) Transactions Motive

People hold a certain portion of their income in the form of cash for their daily transactions. Prof. Keynes has again divided this transactions motive into two parts.

a) Income Motive

There is a certain period for the people to receive income. The period may be once a month (monthly), twice a month (bi-monthly), once a year (annually), etc. But each person should spend a certain amount of money for their daily consumption. Due to these necessities, people hold a certain portion of their income in the form of cash or liquid money. The preference to hold cash money depends on the level of income, duration of receiving income, methods of payment, etc.

b) Business Motive

As the individuals desire to hold a certain percentage of their income in the form of cash, the businessmen and the industrialists also do the same. Because these businessmen and the industrialists need a certain fund to pay salaries to their employees, to pay wages to the laborers, to pay for transportation charges, to pay for raw materials, etc. In the same way, the banks create a certain cash reserve fund to fulfill the daily demands for cash of their customers. How much percentage of their incomes does these businessmen, industrialists, banks, etc. hold in the form of cash depends upon the amount of their daily transactions.

II) Precautionary Motive

The future is uncertain of dark. Nobody can certainly predict the future incidents or the future problems. Therefore, people prefer to hold a certain percentage of their future. To fall ill (sick), to come into accidents, to be unemployed, etc. may be such incidents (events). Keeping objectives to be free from all these sudden uncertainties people hold some cash balances with them. This objective is called the precautionary motive. The demand for cash balances for this precautionary motive depends upon the level of income of the people, standards of living, habit, nature, circumstances, etc.

III) Speculative Motive

The idea of speculative motive is an original idea of Prof. Keynes. The objective of holding cash to earn more income in future on the basis of a change in the prices of bonds and the rate of interest is called the speculative motive. The security papers as well as such other papers which provide a fixed rate of interest in a fixed period of time are called the bond papers. As the cash money held for precautionary motive, the cash money held also for speculative motive acts as a store of value. The cash money held for the precautionary motive makes people away from the speculative motive helps people earn more profits in the future. In the speculative motive the sales and purchases of bonds and the rate of interest are included. There is an inverse relationship between the prices of bonds and the rate of interest. Or if the price of bonds rises the rate of interest falls and if the rate of interest rises the price of bonds falls. People hold cash money with them to earn more profits in future through the changes in the prices of bonds and the rate of interest. If there is a possibility of rising prices of bonds or falling the rate of interest, people prefer to hold less cash with them and they want to invest a higher percentage of their income in bonds. The businessmen purchase bonds at low prices now and sell them at higher prices in the future. The difference between the prices of sales and buys of the bonds becomes the profit of the businessman. Contrary to it, if the prices of bonds are expected to fall and the rate of interest is expected to rise, the businessmen start selling the bonds they possess and they

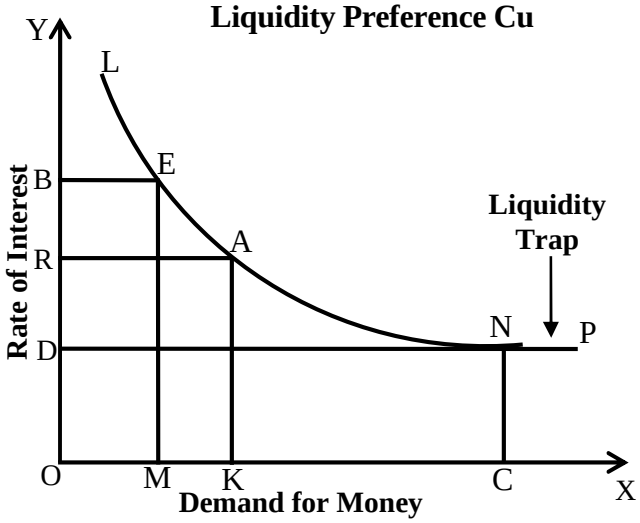
hold much cash balances to earn more profits in the future when the rate of interest is expected still to rise. Thus, there is an inverse but direct relationship between the rate of interest and the cash balances, can earn more profits.

We have explained above the demand for liquidity preferences for transactions motive. According to Prof. Keynes, the rate of interest does not have any influence on the demand for cash balances kept for both these objectives. Therefore, he argues that the demand for such cash balances is interest-inelastic. Both these cash balances remain constant and they can be changed only on the basis of the level of income. Therefore, the demand curve of cash balances for both these objectives slopes upwards being parallel to OY axis.

The other side is the portion of income held in the form of cash balances for speculative motive. Due to the reason, the desire for cash balances increases when the rate of interest falls and the desire for cash balances decreases when the rate of interest rises, this cash balance becomes interest-elastic. Finally, when the rate of interest is minimum, the desire to hold cash balances becomes perfectly elastic and the demand curve of the cash balances of this situation (only) becomes horizontal being parallel to OX axis. Before this situation is reached, the cash balances demand curve for speculative motive slopes downwards from left to right. The cash balances demand curve of this situation is presented in figure 2.2

Figure 2.2

Liquidity Preference Cu



Source: self generated figure

In the figure, OX axis measures the speculative demand for money and OY axis measures the rate of interest. LP is a liquidity preference curve. According to Prof. Keynes, of the cash balances held for three different motives, the cash balances for and for precautionary motives are more active and the cash balance for the speculative motives is passive and this cash balance for speculative motive plays an important role in determining the rate of interest. In this figure, the liquidity preference demand curve (LP) slopes downwards from left to right, from L to N. It is clear from this that the demand for liquid money is less when the rate of interest is high and the demand for liquid money is more when the rate of interest is low.

For example, when the rate of interest is OB, the demand for liquid money is OM and when the rate of interest is OR the demand for liquid money is OK and in this way, when the rate of interest is OD the demand for liquid money is OC. Till the rate of interest reaches OD the demand for liquid money is already perfectly elastic. So, after the point N, the curve becomes horizontal and proceeds up. The econo9mists have called the Liquidity trap to the portion of the curve after the point N. The people's demand for liquid money is influenced much more by the future expectations of the rate of interest than by the current rate of interest.

Supply Side

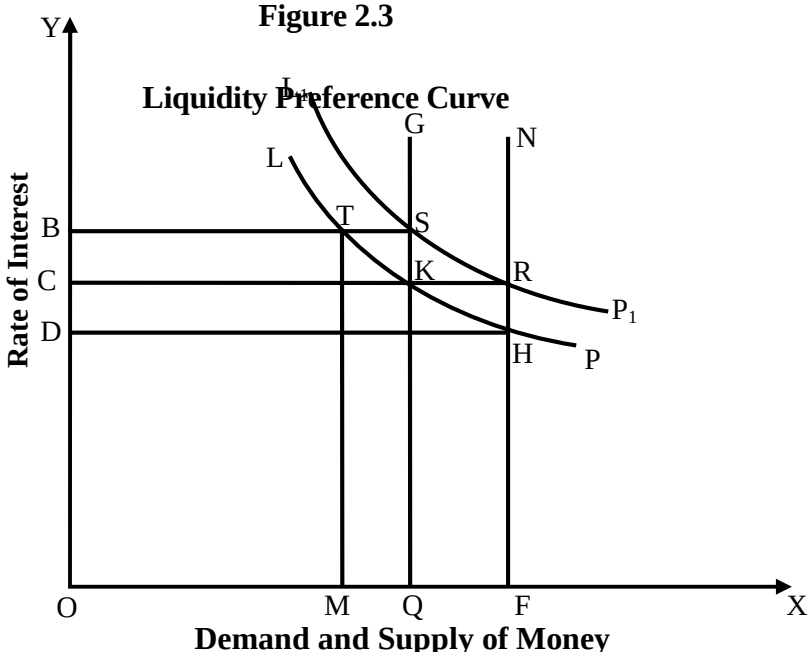
The total supply of money is composed of the total coins, total notes (paper money) and the total bank money available in a country. In fact there is a special difference between the supply of goods and the supply of money. The supply of goods refers to a production and a continuous consumption of it. Therefore, the supply of goods is a flow. But the Central Bank makes the supply of money under the laws and regulations of the government of a country. This supply of money is a stock. Therefore, Prof. Keynes has considered the supply of money as constant and the supply curve of money is a vertical straight line. A change in the rate of interest does not have any influences the rate of interest and it also directly influences the liquidity preference of the people through changes in the rate of interest. The more the supply of money is, the lower the rate of interest becomes

and the less the supply of money is, the higher the rate of interest becomes. But if both the supply of and the demand for money have been increased simultaneously, there will be no increase in the rate of interest. For the supply of money, if the monetary authority of the Central Bank increased the supply of money any time the supply curve of money shifts to the right than the previous one.

Determination of the Rate of Interest

According to Prof. Keynes the rate of interest is determined by the interaction of the total demand for liquid money and the total supply of money. The total demand for liquid money includes the demand for liquid money for transactions, precautionary and speculative motives. Prof. Keynes has given the name M_1 to the demand for cash balances for the first and the second motives and M_2 to the demand for cash balances for the third motive. M_1 completely depends upon the level of income and M_2 completely depends upon the rate of interest. The total of M_1 and M_2 to the total demand for money of a country and Keynes has named as M. This total demand for money (M) is interest-elastic or a change in the rate of interest influences it. On the other hand, the total supply of money depends upon the rules and regulations of the government of the Central Bank of the country. The total supply of money is interest inelastic or a change in the rate of interest does not influence it any more. The rate of interest is determined at a point where the liquid money demand curve (Liquidity preference curve) and the money supply curve meet each other. The process of the determination of the rate of interest is presented in figure 2.3.

Figure 2.3



Source: Self Generated Figure

In the figure, LP curve represents the total demand for cash balances. This LP curve slopes downwards from left to right fort the demand for the cash balances is interest-elastic. QG curve represents the total supply of money and this curve goes upwards straight being parallel to OY axis because the total supply of money is controlled by the government or the Central Bank. OX axis measures the total demand for and the total supply of money and OY axis measures the rate of interest. At the outset, OC rate of interest is determined because here the demand for money and the supply of money are equal at point K or OC is the equilibrium rate of interest. In this situation both the demand for and the supply of money are equal to OQ. Now, let us suppose that by any reason the Central Bank increased the supply of money and the supply curve shifts to the right from QG to FN, but the demand curve of cash balances (LP) is the same. In this situation, the equilibrium rate of interest becomes OD because the constant cash balance demand curve LP and the new supply curve FN meet at the point H. Thus, when the demand for cash balances is constant and only the supply of money is increased, the rate of interest falls. In his situation also, the total demand for and

the total supply of money becomes equal. On the other hand when the demand for money is constant and the supply of money decreases to OM, then the demand for and supply of money become equal at point T and the equilibrium rate of interest is determined equal to OB, On the contrary, even when the supply of money is constant and the demand for cash balances changes, the rate of interest also changes. It happens when the level of income changes or there is an expectation of a change in the rate of interest in the future. If the demand for cash balances increases, the LP curve shifts upwards to the right and if the demand for cash balances decreases, the LP curve shifts downwards to the left and on this ground the equilibrium rate of interest is determined. For example, if the demand for cash balances increases and its curve shifts from LP toL_1P_1, the new equilibrium rate of interest reaches from OC to OB. Thus, on the one hand, the demand for cash balances influences the rate of interest, on the other hand, also the rate of interest influences the demand for cash balances. Prof. Keynes has assumed M1 (the demand for cash balances for the transactions and the precautionary motives) constant and M_2 (the demand for cash balances for speculative motive) variable. Therefore, when we talk about the changes in the demand for cash balances, it indicates only M_2.

Whatever might have been told above, if the Central Bank changes the supply of money in the same proportion as there is a change in the demand fro cash balances of the people or if there is a change in the demand for cash balances of the people in the same proportion as there is a change in the supply of money, the rate of interest remains constant.

According to Prof. Keynes, the supply of money refers to the total of money people hold or desire with them. The rate of interest is determined by the interaction of this supply of money and the demand for cash balances. Therefore, according to Keynes, the rate of interest is not the result of savings, thrift, abstinence, etc. rather it is the result of parting with liquid money. The rate of interest may be equal to the marginal revenue productivity of capital but the marginal revenue productivity of capital cannot determine the rate of interest. In

the same way, according to Keynes, it is not the rate of interest but a change in the level of income which brings equality between the saving and the investment. Thus, Prof. Keynes has explained the determination of the rate of interest on the basis of the purely monetary activities (pure demand for and supply of money).

Therefore, this theory is also called the monetary theory of interest.

Criticisms

Prof. Keynes propounded his theory of interest criticizing the classical and the neo-classical theories of interest. He has presented his new concept to interest in his famous book "The General Theory of Employment, Interest and Money." In fact, the Keynesian theory of interest is an original theory and it becomes successful to provide a new contribution to the economic world. By leaving aside both the purely real phenomenon of the classical theory Prof. Keynes has attempted to explain the determination of the rate of interest only on the ground of purely monetary phenomenon. Thus, although the Keynesian theory of interest is an original theory, different economists have criticized this theory on various grounds.

a) Prof. Keynes has expressed in his theory that money is demanded due to the preferences of liquidity for speculative purpose. In the same way, he has also expressed that money is supplied by the Central Bank or other monetary units of a country. He opines that the supply of money is independent of the rate of interest and the government, the Central Bank and the monetary authorities have control over it. Therefore, the supply of money is considered as constant and the supply curve of money is a vertical straight line being parallel to OY axis. Prof. J.R. Hicks have severely criticized this statement. According to Prof. Hicks also, the supply of money is influenced by the rate of interest or the supply of money may not remain independent of a change in the rate of interest. But because Prof. Keynes has assumed the supply of money as fixed and has laid a great emphasis only on the demand for liquid money, the Keynesian theory to the determination of the rate of interest is considered as one sided theory.

b) According to the classical theory of interest, the rate of interest is completely

determined by the real factors like savings, investment, etc. Prof. Keynes criticized the classical theory on this very ground and propounded a theory which tells us that the rate of interest is determined by the purely monetary factors like the demand for and the supply of money. But because the demand for cash balances depends upon the productivity of capital, investment, the propensities to save and consume, etc, in reality, the determination of the rate of interest may not be separated from the real factors. In this context, the words of the Swedish economist Prof. Knut Whicksell are worth mentioning. He says that any theory which does not include the monetary and the real factors in relation to the determination of the rate of interest may not be considered as a complete theory. Therefore, the Keynesian theory while being a purely monetary theory cannot explain the determination of the rate of interest.

c) All the economic theories of Prof. Keynes are based on the short-run explanations. Therefore, also this theory of Keynes explains only how the rate of interest is determined in the short-run. This theory is unable to mention how the rate of interest is determined in the long-run.

d) The Keynesian theory is not considered successful even in explaining the determination of the rate of interest on the short-run because, according to this theory, the rate of interest should be higher due to the higher liquidity preferences at times of depression. But in reality, the rate of interest is very low at times of depression. In the same way, the liquidity preference of the people is very low at times of boom. Therefore, according to Keynes, the rate of interest should be low at such times. But the reality is just reverse to it. Due to, at times of boom although the liquidity preference is low, the rate of interest is rising due to industrial progresses. Therefore, the Keynesian theory of the determination of the rate of interest is considered completely wrong in the context of depression and boom.

e) According to Prof. Keynes, interest is reward for parting with liquidity, not the return for saving and waiting (abstinence). But Keynes could not remember that savings and waiting (abstinence) are the compulsory factors for getting loanable funds. According to Prof. Jacob Viner, there is no possibility of parting with liquidity without savings and the rate of interest is the reward for savings without the parting with liquidity.

f) Prof. Keynes has stressed that the people demand for cash balances due to changes in the price of bonds and the rate of interest. But people get both the interest and the cash balances by depositing their funds in the savings and current accounts in the banks and by investing their funds in the short- run treasury bills. In such situations, the Keynesian concept of holding cash balances for speculative motives may disappear and it makes the Keynesian theory controversial.

g) Prof. Keynes has criticized the classical and the neo-classical theories as indeterminate. According to Keynes, the rate of interest is determined by the demand for cash balances and the supply of money. But the Keynesian theory itself is indeterminate because the demand for cash balances depends up-on the level of income and the level of income upon the rate of interest. Because, unless we know the rate of interest, we may not know the level of income and unless we know the level of income we may not know the amount of demand for cash balances. Therefore, also the Keynesian theory of interest is uncertain and indeterminate as the classical and the neo-classical theories are.

h) According to some critics, people demand for cash balances due to other different objectives apart form the three motives presented by Keynes. But they argue, the interest is not received for parting with these cash balances (liquidity). They again opine that the interest is received for the productivity of capital.

In this way, different economists have criticized the Keynesian theory of the rate of interest on various grounds. Even then, the importance of liquidity preference presented by Keynes should be considered correct and this is his originality, too. Although the liquidity preference is glimpsed through the explanation of hoarding and dishoarding in the neo-classical theory, too, this neo-classical theory is unsuccessful to explain it in details.

2.6.2.4 The Modern Theory of Interest

All the theories of the rate of interest appeared till today are uncertain and indeterminate. For example, the classical theory has laid a great emphasis on the role of real factors in determining the rate of interest. The Loanable Funds Theory has included both the real and the monetary factors in this work, but it has not been succeeded in it. In the same way, Prof. Keynes has laid a special emphasis

only on the monetary factors. Thus, not any theory has been able to present a satisfactory explanation in relation to the determination of the rate of interest. Therefore, Prof. Hicks and Hansen have propounded a separate theory about it. This theory is called the Modern Theory of Interest. This theory is also called the Determinate Theory of Interest. Profs. Hicks and Hansen have opined that there is only a difference in the concept of savings between the classical and the Loanable Funds Theories and in all other things they are same. Therefore, these economists have attempted to mix from the one side the classical and the neo- classical theories and from the other side the Keynesian theory of interest in their modern theory of interest. Or in this Modern Theory attempts have been made to mix both the real and the monetary factors. In fact, in the determination of wages, both the real factors of the classical theory and the monetary factors of the Keynesian theory are logical. Therefore, these modern economists have presented a satisfactory explanation of the determination of the rate of interest by mixing both these factors. According to this modern theory, (i) Saving Function, (ii) Investment Function, (iii) Liquidity Preference Function and (iv) Supply Function are included in the determination of the rate of interest. The theory may be brought into a complete form also by including the level of income in these four factors. To present a combination of these different factors, Prof, Hicks has constructed an IS curve. This IS curve states a situation of an equilibrium established in the real sector. On the other hand, Prof, Hansen has constructed an LM curve to present the same combination. This LM curve expresses a situation of an equilibrium established in the monetary sector. According to the modern theory of the rate of interest, the rate of interest is determined at a point where these two curves intersect each other. Now, let us explain the construction of the IS and LM curves in short.

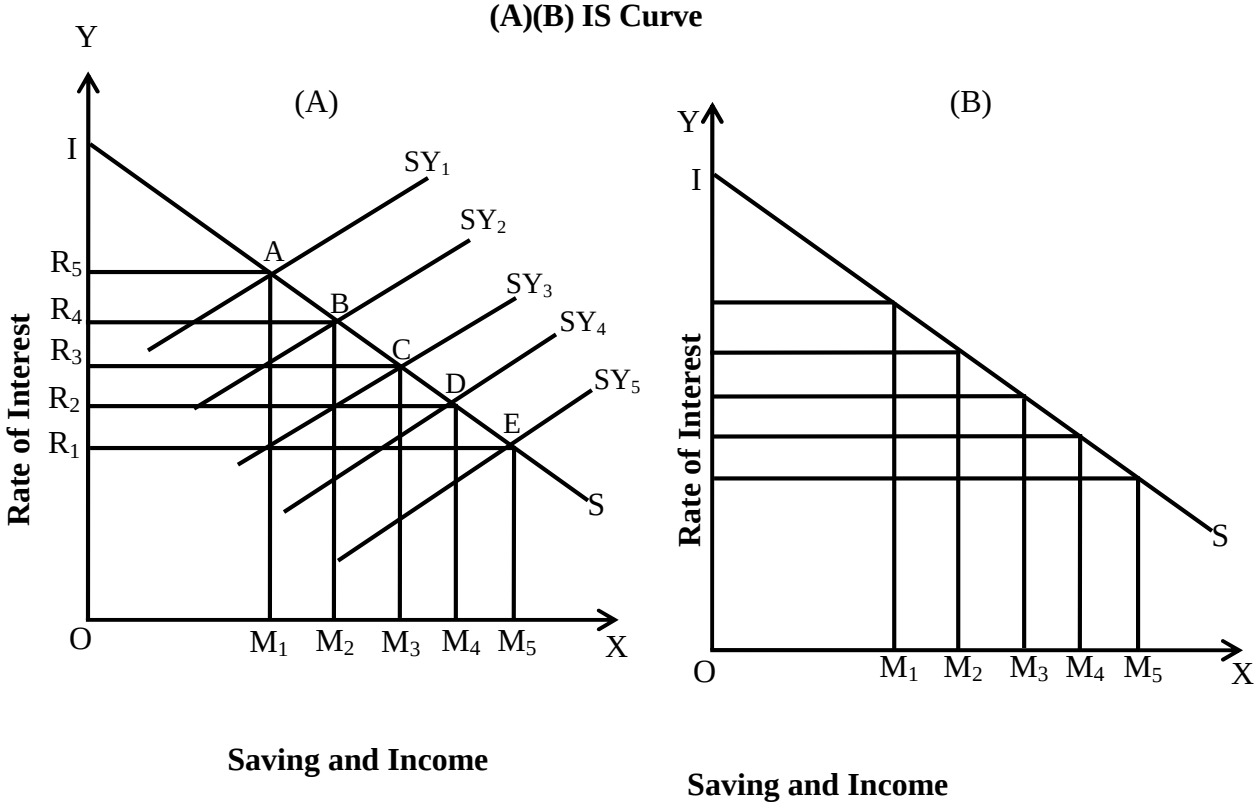
Construction of IS Curve

In a society, there are people of various income levels. The amount of savings is as much higher as the level of income is. The rate of interest is as much lower as amount of savings is high. On this ground, Loanable Funds Theory has presented us a group of loanable funds in different income levels. This group of loanable funds amalgamating with

the investment curve makes available to us a new curve which is called a Hicksian IS curve. The construction of an IS curve is presented in figure 2.4(A) (B)

Figure 2.4

(A)(B) IS Curve



Source: self generated figure

Here, the investment curve is assumed as constant. In the figure, OX axis measures the level of income and OY axis the rate of interest. It may clearly be seen in the figure that each increase in the level of income has increased the amount of savings and has reduced the rate of interest. For example, when the level of income was OM_1 the savings and income curve as SY_1 and the rate of interest was R_5. Gradually when the level of income reaches OM_5 the savings and income curve becomes SY_5 and the rate of interest becomes R_1. When we join all the points of savings and income curves received in this way we get Hicksian IS curve which is shown in figure 5-B The position of this IS curve depends upon the position of savings and investment. A change in savings and investment

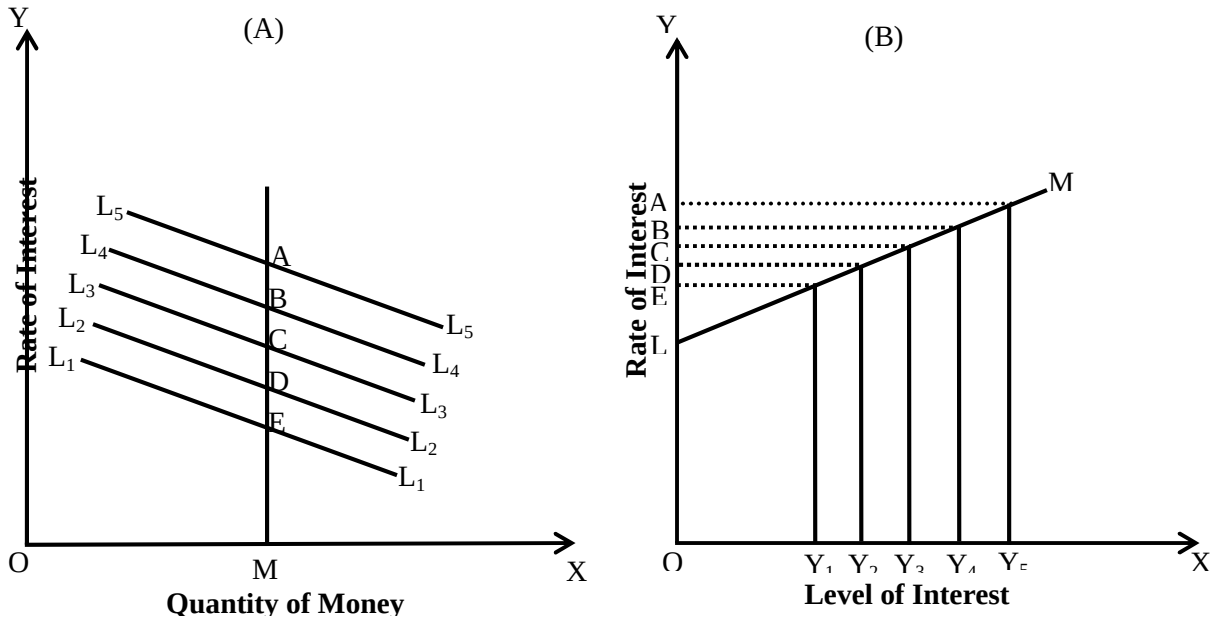
also causes a change in the position of IS curve. Therefore, the IS curve slopes downwards to the right in each increase in the level of income.

Construction of LM Curve

The liquidity preference of the people is different at the different levels of income. When the level of income increases, the liquidity preference of the people also increases and it causes an increase in the rate of interest. On this ground, the Liquidity preference Theory of Prof. Keynes provides us a group of liquidity preference curves. This group of the liquidity preference curves, along with the supply curve of money, provides us a new curve to which Prof. Hansen has named as LM curve. The supply curve of money is supposed to be constant because the supply of money is conducted by the Central Bank or the monetary authority of a country. This LM curve maintains a state of equilibrium between the supplies of money received from various levels of income and the demand for the cash balances of the people and shows the rate of interest determined on this ground.

Figure 2.5

LM Curve



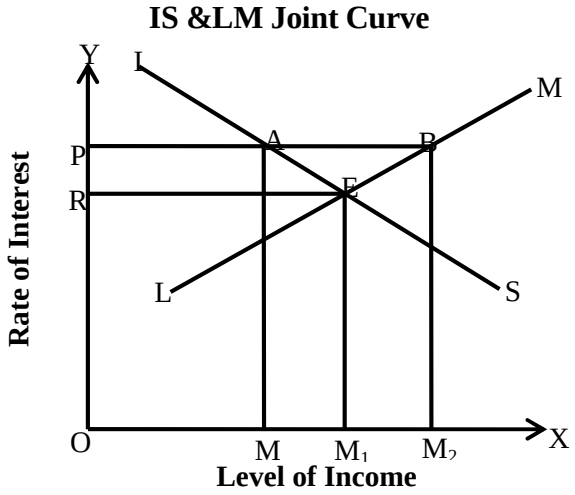
Source: self generated figure

In figure 2.5(A) and 2.5 (B) a construction of LM curve is presented. In the figure, MP is the supply curve of money which is constant at the OM quantity of money. L_1, L2, L3, L4, and L_5 represent the demand for money at various levels of income respectively. A, B, C, D and E are the equilibrium points of the demand of and the supply of money. If we draw straight lines from each point to reach the OY axis, we may clearly see the determination of the rate of interest by equilibrating the demand for and the supply of money at different levels of income. Thus, if we join the points of the rats of interest determined at various levels of income by equilibrating the demand for cash balances and the supply of money, a new curve is constructed and this curve is called the Hansen's LM curve.

Determination of the Rate of Interest

We have already presented a process of construction of IS curve. The IS curve is a joint curve of savings and investment. Or at this IS cure the investment and the savings have reached a state of equilibrium. According to the classical economists, the rate of interest is determined at the state of equilibrium of these investments and savings (real factors). On the other hand, we have also presented above the process of construction of LM curve. This LM curve is a joint curve of the demand for cash balances and the supply of money. Or at this LM curve, the demand for cash balances and the supply of money have reached a state of equilibrium. According to Prof. Keynes, the rate of interest is determined at the state of equilibrium of this demand for cash balances and the supply of money (monetary factors). But both these processes of the determination of the rate of interest are one sided and according to Profs. Hicks and Hansen, the rate of interest is determined only by the interaction of these two processes. The process of the determination of the rate of interest according to the modern theory is presented in the figure 2.6

Figure 2.6



Source: Self generated figure

In this figure, OX axis measures the level of income and OY axis the rate of interest. IS curve is sloping downwards from left to right. LM curve is sloping upwards from left to right. These two curves meet at point E. So OR (EM_1) rate of interest is determined. Apart from this, the point of equilibrium also shows that the level of income is determined at OM. Thus, the modern theory of the determination of the rate of interest explains the determination of the rate of interest together with the determination of the level of income.

Thus, the modern theory has included all the factors like the desire to save (propensity to save), supply of money, investment, liquidity preference, etc. in the process of the interest rate determination and it also explains how a change in any factor among them affects the rate of interest and the level of income. Besides, the theory also explains how the government of a country influences the supply of money (LM curve) by changing her monetary policy and how the government influences the savings and the investment (IS curve) by changing the public expenditures.

Criticisms

The economists like Hicks and Hansen have provided a new contribution to the economic world by propounding the modern theory of the rate of interest. This theory is also successful in coordinating fiscal and monetary policies or the

income determination and the monetary theories by integrating the classical and the Keynesian theories of interest. Even then, there are some weaknesses of this theory.

a) First of all, the theory of the determination of the rate of interest of Hicks and Hansen is based on the assumption that the rate of interest is perfectly variable. But the rate of interest is not always perfectly variable in practice. The Central Bank of a country can adopt a policy to control the rate of interest. This theory may not be applied if the rate of interest is not completely variable.

b) This theory is based on the assumption that the investment is interest-elastic. But it may not be said that the investment is always interest, elastic. This theory does not apply if the investment is interest inelastic any time.

c) According to Prof. Don Patinkin and Prof. Milton Friedman, this theory is very much artificial and very much simple as well. According to them, to divide the economy into real and monetary sectors is itself an artificial and unreal. In fact, both these sectors are tied up together and they act and react to each other.

d) According to Prof. Don Patinkin, the factors like supply of money, savings, propensities to consume, investment, liquidity preference, etc. do not only influence the rate of interest and the level of income but they also influence the prices of the goods and services. The theory of „determination of rate of interest" of Profs. Hicks and Hansen has not mentioned anything about it.

2.7 Review of Related Studies

2.7.1 Review of Articles

i. Determinants of the Term Structure of Interest Rates-Approaches to Combining Arbitrage Free Models and Monetary Macroeconomics

The term structure of interest rates represents the relationship between the maturities and the yields of bonds. While short-term interest rates are influenced crucially by monetary policy, longer-term interest rates mainly reflect market

players" expectations of future macroeconomic developments. Interest rates of different maturities do not move independently of each other, however. Rather, they are linked by the condition of absence of arbitrage, which means that the term structure must not allow any trading strategy which permits risk-free investment profits from investment in bonds of differing maturities. Modern term structure models link this key concept from the finance literature to explanatory approaches from macroeconomics. This article presents the basic idea of such combined modeling using the German term structure as an illustration. It identifies how the term structure reacts to inflationary and business cycle movements and calculates the level of the risk premiums contained in bond yields. Basic concepts and shape of the term structure over time the nominal term structure reflects the relationship between the maturities of a bond (Deutsche Bundes Bank Monthly Report April, 2010).

ii. The Corresponding Rate of Interest

1. The securities issued by the Federal Government have maturities at issue Ranging from six months to over 30 years. The term structure of Federal bonds is calculated and published by the Bundesbank on a daily basis.

2. At the beginning of April this year, the German term structure, as calculated by the Bundesbank, was somewhat flatter than its long-term average. The spread between the yields for ten-year and one-year bonds was somewhat more than 0.9 percentage point; on a 30-year long-term average, the pread between the long and short ends of the bond market amounted to 1.26 percentage points.

Accordingly, the mean term structure, i.e. the average of the yield curves over a period of several years, slopes upward. Besides this "normal" shape, which implies an annual yield that increases with the time to maturity of the bonds, the curve may occasionally be inverted. This means that a lower annual yield prevails for longer maturities than for shorter ones; the spread between one-year and ten-year bonds becomes negative. For example, the monetary policy tightening that began in1979 resulted in short-term interest rates rising to record levels, while the longer-term yields in the capital market did not entirely keep pace: the market

players assumed that the increase in short term rates would be temporary, with rates going back down in the longer term. In line with this, an inverted yield curve could be observed beginning in September 1979. With the decline in interest rates that began in autumn 1981, the interest rate differential gradually returned to “normal" again; from August 1982, the slope of the Yield curve was positive. There were similar periods of high short-term interest rates from May 1989 to March 1990, and from November- Current as at 7 April 2007 % Time to maturity in years 0,1,2,3,4,5,6,7,8,9 and 10 Term structure of German bond market interest rates for maturities of one, three and six months: money market rates reported by Frankfurt banks. For maturities of one to ten years: interest rates for (hypothetical) zero-coupon bonds (Svensson method), based on listed Federal securities.

Deutsche Bundesbank 4.0, 3.8, 3.6, 3.4, 3.2, 3.0, 2.8, 2.6, 1 In this context, the term structure typically represents the yields of zero-coupon bonds. Such bonds are characterized by the fact that, while no payments are incurred until their maturity, their purchase price is lower than the fixed amount to be paid back. The yield associated with such a bond corresponds to its return, ie the constant annual rate of growth by which the invested capital finally increases up to the amount to be paid out. Unlike zero-coupon bonds, most traded bonds are characterized by the fact that payments (coupons) are paid to the creditor during the life of the bond at pre-determined dates. Nevertheless, in principle, any coupon bond may be expressed as a portfolio of zero-coupon bonds. This means that the price of every coupon bond can be calculated from the term structure of zero-coupon bonds.2 Using a numerical procedure, the yields on “artificial" zero-coupon bonds are calculated for fixed times to maturity from the bonds traded on the market. A detailed account of the estimation technique and the data used may be found in Deutsche Bundes bank, Estimating the term structure of interest rates, Monthly Report, October1997, pp 61-66.3 The average was calculated from the month-end levels From January 1976 to March 2009.Term structure based on Federal Government issues Shape of the term structure over time (Deutsche Bundes Bank Monthly Report April, 2010).

iii. Approaches to Explaining the Shape and Dynamics of the Term Structure of Interest Rate

The determinants of interest rates of differing maturities and their behavior over time are of great interest to financial markets and central banks. For monetary policy, the term structure is of importance in two respects. First, it contains information not only on market expectations of future interest rate movements but also of future envelopments in inflation and the business cycle. Second, the relationship between short-term and long-term interest rates is relevant to the monetary policy transmission mechanism; although monetary policy has a crucial impact on the short end of the term structure, it is mainly longer-term interest rates which influence decisions on investment, the acquisition of consumer durables or, say, purchasing owner-occupied housing. The expectations hypothesis is one of the oldest and most prominent approaches to explaining the relationship between interest rates of differing maturities. In its pure form, his hypothesis states that, in equilibrium, investment in a long-term bond is equivalent to the expected return on successive short-term investments. Under this condition, the one year interest rate, for example, equals the average of the current interest rate and the 11 expected future one (Deutsche Bundes Bank Monthly Report April, 2010).

2.7.2 Review of Journals

a) Review of NRB Directives Regulated

1. Nepal Rastra Bank and interest rates determinations

Interest rate is a monetary phenomenon and the matter of concern of the monetary authority. In case of Nepal the monetary authority NRB is responsible for the policy measures which are adopted to maintain and charge the interest rates structure of the country.

2. NRB and control interest rates

NRB had control the interest for commercial banks and financial institution for a long time before the deregulation of May 1986 were about 20 controlled lending rate differentiated between sectors, use of fund and types of collateral, further the interest rate structure was not very rational and the central bank was determine the whole sets of deposit rates and

instruments. The interest rate had not charged much overtime. Although a significant and a historical upward revision in interest rate structures took place in 1975.the direct control of lending rate provide on easy mechanism for credit allocation by different between priority and non priority sectors in which the farmer received concessionary interest rate. The direct control of deposit rate before the deregulatory moves imitation of 26th may 1986 was considered a potentially effective instrument for mobilizing domestic savings.

Some of the inconsistencies, existing in the financial system under the control interest rate regime induced NRB to move toward. The non flexibility of the interest rates restricted the institutions (with less resource) in mobilizing more saving by offering higher rates. The wide margin between deposit and lending rate, the introduction of commercial banks with foreign bank's collaboration of commercial banking activities were some of the main reason motivation the regulatory authority toward financial deregulation. A move towards deregulation by granting commercials banks and financial institutions the authority to fix interest rate were initiated on may 26, 1986.

The overall impact of controlled interest rate and other regulation was that the assets and liability structures of the commercial banks was tightly controlled. The direct control of deposit and lending rates becomes redundant. During the year after deregulation the banking activities developed rapidly as is evident by the grown of assets. The expansion of bank branches in rural areas and gradual decline of currency deposit ratio over the year.

3. NRB and Liberalized interest rate

Effective August 31, 1989, the interest rates of commercial bank were completely liberalized. According commercial banks was granted autonomy in fixing its own deposit and lending rate. The rational for ending the administered interest rate regime was to let market for ending the determine interest rates of commercial bank, bring about flexibility in the mobilization of financial saving and make efficient allocation of available resources.

Interest rate liberalization, however could not fully meet the objective behind this step. The oligopolistic nature of commercial banking system produced controlling in interest rate structure. Could not be transparent and depositors and borrowers were not treated uniformly in term of interest rate. Thus, instead rates structures. To correct this effective August 22,

1992 the NRB issued the following directive to bank and the other financial institution (40 year of NRB 1956-1996 NRB, April 1996)

Interest rate on deposit of at least up to one year to be clearly spells out

1 Ranges of interest rate on the credit same types or purpose not to be more than one percent

2 Fixation of interest rate on flat basis to be stopped in addition to this, the NRB also suggested commercial banks to limit the spread of interest rate at 6% within mid Dec 1993. This was necessary because the widening interest rate spread had not only a delirious impact on the global competitiveness of the domestic system but also had created exploitative types of financial intermediation. The compliances of the financial institution to this suggestion however remained less than satisfactory. In considering the situation of sluggish grown, slow down in the grown of private sector credit higher interest rate spread of commercial banks, rising demand of the entrepreneurs and businessman for the reduction of interest rate and as per the commitment of the government in the budget spread of the fiscal year (1998/99) to limit the interest spread within 5%. The NRB issued the following directives on interest rate on July 30, 1998 (NRB, economic Report 1998/99)

3 The commercial banks required to maintain the weighted interest spread of their deposit and lending rates below 5%. In order to maintain this level, commercial banks had to make necessary adjustment in their interest rate structures.

4 Counting procedures for weighted interest spread:

The interest spread would be calculated as the weighted different between interest income of commercial bank derivate from total domestic and foreign loan and advances, money at call and balance held abroad and interest expenditure payable on the deposit held by the commercial banks.

For the simplicity and understanding the accounting procedure the following simple mathematical formula could be used.

i) Derivation of weighted average lending

$$\frac{\text{Total interest incomes from loan \& adcance}}{\textit{average}\ \text{loan \& advance}} \times 100$$

ii) Derivation of weighted average deposit rate:

$$\frac{\text{Total interest expense on total deposit}}{\textit{average deposit}} \times 100$$

iii) Derivation of weighted interest spread

= *weighted* average lending rate - weighted average deposit rate

5 This interest spread would be mentioned on the basis of half yearly statistic (August to January and February to July). That are filled in a presented format and dispatch to banking operation department and inspection and supervision department of the NRB.

6 If the interest spread of any commercial banks exceed the stipulated spread limit of 5%. The exceeding percent multiplied by total interest income of that period would have to be deposited in a separate special fund created for it the distribution of dividend out of this fund account is to be restricted. However, such special fund would be taken as a part of supplementary capital for the calculating purpose of capital adequate rate.

In case of newly established commercial banks the provision of interest spread would be applied only after a year from the date of their operation.

On the basic of journals published from NRB and other commercial banks report the following are the major factors to be considered while studying "Factors determining the interest rate of commercial banks". Deposit is affected through the factors of income, inflation and interest rate. Deposits are positively and significantly correlated with the interest rate. There is significant correlation between the saving deposit and the rate of interest.

Negative correlation between loans and interest rate.

i. Higher level of income increase saving and may decrease the depositing rate of commercial banks.

ii. Fluctuation in risk free rate is not favourable.

iii. Spread rate (the difference between landing rate and deposit rate) is the almost

entire revenue of commercial banks.

iv. Compulsory deposit by commercial banks in central bank is also important factor to control interest rate of commercial banks.

2.7.3 Review of Unpublished Thesis

Narendra Bahadur Rajbhandary (1978) entitled "*The Interest Rate Structure of Commercial Banks in Nepal"*. I have pointed out some important factors in his study which is follows:

The relation of interest rate with saving and fixed deposit, with loans and advances and with interest earning.

Deposits are positively and significantly correlated with the interest rate.

There is significant correlation between the saving deposits and the rate of interest.

Negative correlation between loans and interest rate

Mean that loans decrease higher interest Rate and Vice-versa. The Net interest earning is depended upon interest convey.

Chettri Kishore Khatri (1980) entitled *"Interest Rate Structure and its Relation with Deposit, Inflation and Credits in Nepal".* Following are the Objectives from his study.

i. To examine and analyze the position of interest rate and loan and advance ratio of commercial banks.

ii. To analysis the effect of NRB direction in interest.

iii. To explore the problems and to suggest for further improvement on the basic of finding of the study.

Findings:

i. To present a concrete picture of the interest Rate and other economic variable like deposit, inflation and credit flow in Nepal.
ii. To analyze the impact and implementation the policy of interest Rate of Nepal Rastra Bank.

iii. To provide suggestions and recommendations for improvement in the rate structure in Nepal.

iv. He concluded in his study.

v. Deposit is affected through the factors of income, inflation and interest Rate.

Bhandari Deepak Raj (1998), entitled "A Study on Impact of Interest Rate Structure on Investment Portfolio of Commercial Banks" has found as:

i. To cast a glance of the historical background of interest rate structure of commercial banks, policies, decision and strategies regarding it and their impact.

ii. To access the impact of interest rate structure of commercial banks on their investment portfolio by analyzing their deposits, loans/advance, interest spread, investment and bills purchased and discounted.

The interest rate is important for amount of deposit collection of the commercial banks is incensement declining with the deposit Rate. The depositors are very conscious. They increase their deposit, if higher deposits Rate are offered.

In his study on Impact of Interest Rate Structure on Investment Portfolio of Commercial Bank of Nepal" Master Degree Thesis submitted to Tribhuvan university center library.

Bhatta Sashi (2007), Entitled *"Interest rate and its effect on deposit and lending".* Following are the objectives from his study.

i. To Present and analysis the interest rate structure of various commercial banks at different time period.

ii. To examine the influence of interest rate on deposit and lending amount of Commercial Banks.

iii. To recommend appropriate suggestions base on the analysis of the data to concern authority.

Findings:

Deposit Rate of all sample banks under study are in decreasing trend. Meaning that

every year deposit Rates of Sample banks under study have decreased.

Lending Rates of all sample banks under study are also in decrease trend, means that every year lending rates of sample banks under study have decreased.

Analysis shows that interest rates on lending are for higher than deposit rates of sample banks.

Ms Bhatt going to find out the deposit rate and lending rate.

Pokhrel Jhabindra (2008) entitled "Determinants of Interest Rate in Nepalese Financial Market", I have pointed out some important factors in his study which is as follows:

i. To show the relationship between the liquidity position and interest rate on deposit and lending.

ii. To find out the effect of maturity period and other economic factors on the interest offered by finance companies.

iii. To show the effect of foreign employment and remittance income to the interest rate.

Findings:

i. To show the relationship between the liquidity position and interest rate on deposit and lending.

ii. To identify the effect of inflection on interest rate changed and offered by various Nepalese Financial institution.

iii. To identify the different methods used by Nepalese Financial institution to calculate interest on lending.

Pokharel is going to find out determination of interest rate in Nepalese Financial Markets banks, finance etc. he is going to find out the objectives, qualitative method and quantitative method. He found that the correlation confection between interest rate on deposit and amount of deposit highly negative.

i. Lending rate and lending amount co-relation coefficient to be found negative.

ii. Interest rate on deposit and inflation rat e is little positive.

iii. The relationship of interest rate on lending with risk free rate is both positive and negative.

Ojha , conducted a study on "Lending practices: A study of Nabil Bank Ltd., SCB Nepal Ltd. and Himalayan Bank Ltd." objectives that follows:

i. To determine the liquidity position, impacts of deposit in liquidity and its effects on lending practices.

ii. To measure the bank lending strength.

iii. To analyzed the portfolio behavior of lending and measuring the ratio and volume of loan and advances made on agriculture priority and productive sector.

iv. To measure the lending performance in quality, efficiency and it contribution in total income.

The study was conducted on the basis of secondary data the research findings of the study were as follows:

i. Liquidity position SCNBL is comparatively better than that of financial companies. Finances companies have made nominal amounts of investment in government securities.

ii. Highest rate is the results of high value of share holder equity in the lending mix.

iii. HBL had high volume of saving and fixed deposit compare to current deposit resulting into low rates of non interest bearing deposit to total deposit rate compare to the combine.

iv. Lending is commercial purpose was the highest in case of Nabil and the least in case of SCBNL.

v. Performance of SCBNL was significantly better than two banks in case of profitability.

vi. EPS was the highest in the case of SCBNL.

Maharjan (2009) "Evaluating the interest rates structures of commercial bank in Nepal" with the objectives that follows:

i. To analyzes the relationship between deposit rates and deposit rate on lending amount.

ii. The effectiveness of interest rates structures of commercial banks.

iii. To examines how far the interest rates of deposit have positive relationship with the deposit collection of commercial banks.

iv. To see the impacts of an interest rate of loan on the credit extended by commercial banks.

The study was conducted based on the primary and secondary data. The research findings of the study were the followings.

i. To show the relationship between the liquidity position and interest rates on deposit and lending.

ii. To evaluated the interest rate structures and effect of inflation on interest rate charged by various Nepalese commercial banks.

iii. Correlation coefficient between deposit and lending amount are positives correlation.

iv. Relationship between deposit rate and on deposit amount with inflation rates is both positives and negatives.

Karmacharya M.N. (2010) in his thesis paper "A study on the deposit mobilization by the joint venture bank" has mentioned that the bank has successfully maintained its liquidity assets position but could not mobilization it resources efficiently he has concluded that Nepal bank's utilization side is weak as compare to the collection of resources. He suggested for extending its branch, so NBL's deposit collections and also long term as well as short terms credit may increase. He has recommended not to consider security factor only but to provide loan to genuine project without securing.

2.7.4 Research Gap:

All above researches are based on very old data before 2010 and not an above. Single research is belongs to the joint ventures commercial bank at this factor determining the interest rates of commercial bank to fulfill the times period gap and find out. The research matter at financial organization associated with purely joint venture commercial banks. I

realize the need of a new research based on recent data. Hence, I have done this study using new data of joint venture bank from (2010-2011). This study use recent data from 9 year. Commercial bank and attempt to diagnose “factors determining the interest rates of commercial bank” position of investor investing an about the study of commercial bank in Nepal.

CHAPTER-III

RESEARCH METHODOLOGY

A research methodology helps to solve the research problem in a systemic way. This chapter has been designed and developed as a guideline or a plan for the achievement of objectives set and developed for the purpose of this study in the first chapter. Reliability and validity of research work is facilitate by research methodology and the basic objective of this chapter is to guide chapter four for data presentation, descriptive and empirical analysis of interest rate and its effect on deposits and landings. So, suitable research methodology as demanded by the study has been followed. It is intended to use simple and lucid research methodology.

3.1 Research Design

Research design is a plan, structure and strategy of investigation. It is a blue print for the collection measurement and analysis of data. Research design is the arrangement of conditions and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure. This is an ex-post facto or historical research design. Research design is more analytical and less descriptive. The relevant and needed data has been collected from various publications of various commercial banks and publication of Nepal Rastra bank (Wolff and Pant, 2002:92).

3.2 Population and Sample

The "population" or universe for research means all the members of research study in which the research is based. Here the population or universe of the study comprises of all 31 commercial banks are operating in Nepal. As the study only 6 banks are selected thinking that the selected samples will best represent the population. Analysis of interest rates of these bank for 10 fiscal year. FY(2002- 2011) will be taken as samples for the study.

The sample banks are as follows:

1. NABIL Bank Limited
2. Nepal Investment Bank
3. Standard Chartered bank
4. Himalayan Bank Limited
5. SBI Bank Limited.
6. Bank of Katmandu Limited

1. Nabil Bank Limited (Nepal Arab Bank Limited)

NABIL Bank Limited (Nepal Arab Bank Limited was incorporated in the year 1984 A.D. (2041 BS). It commenced its operation on 112 July 1984 as the first joint venture bank in exchange in the year 1986 A.D. (081/09/042 B.S.). Emirate Bank International Ltd., Dubai was the first Joint venture partner of NABIL. Warranty, NB (international) Ltd., Ireland is the foreign partner. NABIL Bank Limited had the official name Nepal Arab Bank Ltd. till 31st December 2002. The equity composition of Nepal Arab Bank Limited is NB (International) Ltd. Ireland 50%, Nepal Industrial Development Corporation (NIDC 10%, Rastriya Beema Sansthan 9.67%, Nepal Stock Exchange Limited0.33%, and General Public 30%.

NABIL Bank is the Pioneer in introducing many innovative banking services and marketing concept in banking sector of Nepal. It operates its activities through 43 branches and 2 counters. It is the only bank having presence in the Tribhuvan International Airport. Some of the services provided by NABIL Bank Limited are accepting deposits, documentary credit, guarantees, collections, credit cards, tele banking safe deposit lockers, fund transfer etc.

2.Nepal Investment Bank Limited

Nepal Investment Bank Ltd. (Nepal Indosuez Bank Ltd.) was established in 21" January 1986 as a third joint venture bank under the Company Act 1964.

Initially the bank is managed by 'Barque Indosuez' Paris in accordance with joint venture and technical services. Fifty percent of the share of Nepal

Indosuez Bank Ltd. held by credit Agricole Indosuez was sold to the Nepalese promoters on April 25, 2003 as per the transaction record of NEPSE. After this divestment of share by Nepalese owners, the name of the company was changed to Nepal Investment Bank Ltd by its 15`" AGM held on May 31, 2003. Out of total equity shares of Nepal Investment Bank Ltd., 50% shares are held by a group of companies, 15% by commercial banks, another 15% by financial Institutions and remaining 20% by general public. Authorized capital of NIBL is Rs. 270 million and issued and paid up capital are Rs.169.9845 respectively.

3. **Standard Chartered Bank Nepal Limited**

Standard chapter Bank Nepal Limited, formerly known as Nepal Grind lays Bank Limited was in corporate in the year 1985 and has been in operation since 1987. On 31st July 2000, standard chartered Bank concluded the acquisition of ANZ grind lays Bank from the Australia and New Zealand Banking Group Limited. with this acquisition, 50% shares of Nepal Grindlays Bank ltd.(NGBL) previously owned by ANZ grind lays are now owned by standard chartered Grindlays Bank Ltd. Leading to the name change of the Bank to standard chartered Bank Nepal Limited with effective from July 16, 2002. The equity composition of standard chartered Bank Nepal Ltd. Is Standard chartered Grindlays Bank 50%, Nepal Bank Limited 33%, General Public 17%. It operates its activities through 14 branch.

The Bank focuses mainly on corporate, consumer and commercial banking, providing services for international firms, as well as Embassies, aid agencies, airlines, hotels, and government corporations

4. Himalayan Bank Limited (HBL)

Himalayan Bank Limited was established in 1992 by the distinguished business personalities of Nepal in partnership with Habib Limited, one of the largest commercial bank of Pakistan. Bank operations were commenced form January 1993. It is the first commercial bank of Nepal with maximum shareholding by Nepalese private sector. Besides commercial activities, the bank also offers industrial and merchant banking facilities. The bank at present has the five

branches in Kathmandu valley and Thirty branches outside the valley. The bank is also operating a counter in the premise of the Royal palace. The bank has a very aggressive plan of establishing more branches in different past of the kingdom in near future. The bank's policy is to extend quality and personalized services to its customers as promptly as possible. The bank, as far as possible, offers tailor made facilities to its clients, based on the unique needs and requirements to extend more efficient services to its customers. Himalayan Bank has been adopting of new technology. HBL has listed on Nepal stock exchange in July 5, 1993. The share participation of the bank is public and 20% Habib Bank of Pakistan.

5. Nepal SBI Bank Limited

Nepal SBI Bank Ltd. (NSBL) is the first Nepal - Indo joint venture bank in the country. It is sponsored by three institutional promoters, namely, state bank of India, Karmachari Sanchaya Kosh (Employees provident fund) and agricultural development bank of Nepal. Nepal SBI Bank Limited became operational on the 8th July 1993.

The Bank was registered on 2050/01/16 (28.04.1993) in the department of Industry, HMG/N under the company Act 2021 and commercial Bank Act 2031. The equity composition of the bank is state bank of India 50%, employ provident fond 15%, ADB 5%, General public 30%.

It has been providing services through its 38 Branches and 3 Extension counters. The services provided by Nepal SBI Bank Limited Include deposits, remittances, various type of loan facilities, letter of credit, bank guarantees, retail financing (house loans, vehicle loans and education loans) etc. it has recently launched 365 days banking and ATM facility from its new road branch.

6. Bank of Kathmandu Limited (BOK)

It was established in 1993 in collaboration with SIAM Commercial bank, Thailand under the company act, the major objective of the bank is to operate commercial banking activities throughout the country with the approval of NRB. The SIAM commercial bank diluted its holdings to the Nepalese citizens in 1998. Hence, Nepalese public hold 97.72% of the equity shares of BOK and remaining share are held by financial insertions (0.9%) and

organized institutions (1.38%). BOK is one of the modern banks in Nepal .This dank accepts the deposit and provides the loan in various sector. The current interest rate of bank in deposit 4.41% in average and lending rate is 11.18% in average.

For the Primary Research

Following table presents the detail of the respondents group of the selected sample and given opinion in descriptive statistics for the primary research purpose. The research designed the various determine factors to express by following respondents.

Age Group of Respondents

Table 3.1

Age group of Respondents

Age Group	Frequency	Percent	Valid Percent	Cumulative Percent
20-29 year	23	34.8	34.8	34.8
30-39 year	24	36.4	36.4	71.2
40-49 year	15	22.7	22.7	93.9
50-59 year	4	6.1	6.1	100.0
Total	66	100.0	100.0	

Source: Opinion Survey-Questionnaire 2012

Table 3.2

Profession of Respondents

Profession	Frequency	Percent	Valid Percent	Cumulative Percent
Academicians	15	22.7	22.7	22.7
Officials (Banking & Finance)	34	51.5	51.5	74.2
Officials (Govt. Service)	8	12.1	12.1	86.4
Officials (Other sector)	5	7.6	7.6	93.9
Business	4	6.1	6.1	100.0
Total	66	100.0	100.0	

Source: Opinion Survey-Questionnaire 2012

Table 3.3

Experience of Respondents Cumulative

Experience	Frequency	Percent	Valid Percentage	Cumulative Percent
1-5 year	23	34.8	34.8	34.8
6-10 year	16	24.2	24.2	59.1
11-15 year	21	31.8	31.8	90.9
15 & above year	6	9.1	9.1	100.0
Total	66	100.0	100.0	

Source: Opinion Survey-Questionnaire 2012

Table 3.4

Profession Level of respondents

Profession Level	Frequency Percent	Percent	Valid Percentage	Cumulative Percentage
Assistant Level	15	22.7	22.7	22.7
Officer Level	32	48.5	48.5	71.2
Manager Level	13	19.7	19.7	90.9
Director Level	6	9.1	9.1	100.0
Total	66	100.0	100.0	

Source: Opinion Survey-Questionnaire 2012

Table 3.5

Gender Group of Respondents

Gender	Frequency	Percent	Valid Percentage	Cumulative Percentage
Male	45	68.2	68.2	68.2
Female	21	31.8	31.8	100.0
Total	66	100.0	100.0	

Source: Opinion Survey-Questionnaire 2012

Table 3.6

Education status of respondents

Formal Education	Frequency Percent	Percent	Valid Percentage	Cumulative Percentage
Bachelor Degree	23	34.8	34.8	34.8
Master Degree	42	63.6	63.6	98.5
Above Master Degree	1	1.5	1.5	100.0
Total	66	100.0	100.0	100.0

Source: Opinion Survey-Questionnaire 2012

3.3 Sources of Data

Basically this study is based on published sources of information. Thus, this study is based on secondary as well as primary source of data to fulfill above-mentioned objectives.

3.3.1 Primary Data

Primary data collected through questionnaire to the staffs related to the subject of the study. Related departments were also observation method, questionnaire method to get practical knowledge. Please see questionnaire and respondent view point.

3.3.2. Secondary Data

Secondary data are collected from various publication of commercial bank, Nepal Rastra bank and even from websites of various banks. Published articles and also taken help with the lecture of campus.

3.4 Data Processing and Analysis Techniques

Data obtained from various sources cannot be directly used in their original form. When data will not be presented in understandable and easier way there would be no use of conducting data research study or analysis of data. Analysis part would be difficult without processing data, even difficult to understand to the readers. So, to make the study understandable at the first sight data should be processed. Presentation of data means to keep raw data into understandable form by editing, rechecking and using various tools such as tables, charts, figures and trend lines. In this study also data are presented using all the above-mentioned tools so as to make understand the analysis part in proper and easier way. Homogeneous data have been sorted in one table and similarly various tables have been prepared to keep required data. Using financial and statistical tools, the data have been analyzed and interpreted.

3.5 Tools for Data Analysis

As this study required more statistical tools rather than financial tools to attain the objectives set above various statistical tools have been used which as follows:

Arithmetic Mean

Arithmetic mean of a given set of observations is their sum divided by the number of observations.[3] In such a case all the items are equally important. Simple arithmetic mean is used in this study as per the necessity for analysis.

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

Where,

∑x= sum of all values of the variable 'x'

n= number of observations

x= variables involved

Standard Deviation

The standard deviation usually denoted by the letter sigma (ō). Karl Pearson suffused it as a widely used measure of desperation and is defined as the positive square root of the arithmetic mean of the squares of the deviation of the give observations from their arithmetic mean of a set of value. [4] It is also known as root mean square deviation. Standard deviation, in this study, has been used to measure the degree of fluctuation of interest rate and that of other variables as per the necessity of the analysis.

Standard Deviation = $\sigma = \sqrt{\frac{\Sigma(X-\bar{X})^2}{N}}$

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

Coefficient of Correlation

Correlation is a statistical tool, which studies the relationship between two variables, and correlation analysis involves methods techniques used for studying and measuring the extent of the relationship between the two variables. Two or more variables are said to be correlated if change in the value of one variable appears to be related or linked with the change in the other variables. When the relationship is of a quantitative nature, the appropriate statistical tool for discovering and the relationship and expressing it in a brief formula is correlation analysis (Gupta, p: 49).

$$\text{Simple Correlation Coeficient (r)} = \frac{n\sum xy - (\sum x)(\sum y)}{\sqrt{n\sum x^2 - (\sum x)^2}\sqrt{n\sum y^2 - (\sum y)^2}}$$

Correlation may be positive or negative and ranges from -1 to +1. When r = +1, there is perfect correlation; when r = -1, there is perfect negative correlation; when r=0, there is no correlation and when r <0.5 then there is low degree of correlation.

When 'r' lies between 0.7 to 0.999 (or -0.7 to -0.999) there is high degree of positive or negative correlation.

When 'r' lies between 0.5 to 0.699, there is a moderate degree of correlation. Simple correlation between interest rate and deposit, between interest rate, inflation rate and deposit rate and lending is examined in this study.

Coefficient of Determination (r^2): the square of simple correlation co-efficient is called co-efficient of determination. It measures the percentage of total variation in dependent variable explained by independent variable.

Similarly multiple correlation coefficients between above mentioned variables also have been determined once assuming interest rate on deposit as dependent variable and other two variables (deposit amount and lending rate) as independent and then assuming interest rate on lending as dependent variable and other two variables (lending amount and deposit rate) as independent.

Where,

X and Y = two variables, correlation between which is calculated n = total number of observations

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

Multiple Correlation Coefficient; variable one as dependent and variables two and three is independent.

$(R_{1.23})$ =

Where,

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

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

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

Coefficient of Multiple Determinations: The Square of multiple correlation coefficients is called coefficient of multiple determination and it is very useful in interpreting the value of multiple correlation coefficient. The main significance of the multiple determinations is to represent the proportion of total variations in the dependent variable, which is explained, by the variations in the two independent variables. Co-efficient of multiple determination measures the percentage of total variation in dependent variable. The significance of it is to represent the proportion of total variations in the dependent variable which is explained by the independent variables.

T-test for Significance of Correlation Coefficient

T-distribution is commonly called student's t-distribution and is used when the sample size is less than 30, given a random sample from a bi variate normal population. When hypothesis is tested that the correlation coefficient of the population is zero, i.e. the variables in population are uncorrelated, the following t-test is applied; which is applied in this study.

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

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

If the calculated value of "t" exceeds $t_{0.05}$ for (n-2) d.f.; we say that the values of 'r' is significant at 5% level. If "t" $< t_{0.05}$ the data are consistent with the hypothesis of an uncorrelated population.

3.6 Variables

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

3.6.1 Dependent Variables

The variables that values dependent upon the variables in call dependent variables. The researchers purpose is to study analyze and predict the variability in dependent variables. Hare, deposit rates and lending rates are the dependent variables in this study.

3.6.2 Independent Variables

The variable that is not influenced by any other variables is called independent variable. Any change in the independent variables. Here, deposit amount, lending amount, inflation rates and risk free rate are the independent variables. While calculating correlation coefficient. Multiple correlation multiple determination and t-statistics in this study.

Deposit rate, lending rate, deposit amount, lending amount, inflation etc are variables of this study can be symbolic are as follows:

a = Deposit Amount

b = Interest rates on deposit

c = Lending Amount

d = Interest rates on lending Amount

e = Inflation rates

f = Risk free rates

CHAPTER - IV

DATA PRESENTATION AND ANALYSIS

Presentation and analysis of data is the major part of this research study. Using the various financial variables and statistical tools discussed in 'Research Methodology', we analyze the data to achieve our objective of the study.

4.1 Determinants of Interest Rate and Appropriate Model to Determine the Interest Rate

Interest Rate is the scarifying cost of money. It is determined for bearing the various costs like, Insurance against Risk, Reward for Inconveniences and payment for management expenditure etc. The determinants of Interest Rate is the composition of risk free Rate, Risk factor, inflation rate, Time period etc

The classical theory the determinant of Interest rate is determined by the financial market place where supply of loanable funds interest with demands of loanable funds trends to settle at the point where the quantities of loanable funds demand and supply are equal.

The loanable funds show that the rate of interest is determined by the interaction of the demand for and the supply of the loanable funds. In the demand for loanable funds, the investment of the production of the capital goods and the loans for consumption purpose are also included.

The liquidity preference Theory of Interest, The interest rate is determined by the demand for money. Keynes has indicated the liquidity preference of the people. On the other hand, the supply of money indicates the total quantity of money available in a fixed period of time .This total quantity of money is changed by the central Bank of a country.

According to Professor Keynes the rate of interest is determined by the interaction of the total demand for liquid money and the total supply of money. The total demand for liquid money includes the demand for liquid money transaction precautionary and speculative motives.

The modern theory explanation of the determination of the rate of interest by mixing classical theory and monetary factors, saving function, investment function, liquidity preference function and supply function are included in the determination of the rate of interest.

Above presentation various model are use for determinate of interest rate the modern theory is more suitable in practice.

Methods of Interest Rate

The Methods of charging interest on lending as follows.

i. Add on installment method

ii. Simple interest/ collect basis

iii. Discounted method

iv. Simple or regular installment method

v. Flat method

i. Add on Installment Method

Add on installment Method interest on whole principle is added to principle amount and the sum is the divided by the number of payments to fix the size of installment. This method used in finance companies.

ii. Simple Interest / Collect Basis Method

This method calculates installment might be monthly, quarterly and even daily. Duration of installments depends upon the nature of loan i.e. it differs according to the sector and borrowing party. Most of the commercial bank uses this method.

iii. Discounted Method

Under this method interest on whole amount is deducted from principle and remaining is provided to borrowers as proceeds.

iv. Simple or Regular Installment Method

This simple method amount of principle and interest together is payable at the end of maturity.

v. Flat Method

The flat method interest is charged on whole amount and payable in installment. Principle also payable in installment but interest is charged on whole principle amount even if remaining balance of principle is decreasing.

4.2 Analysis of Trend and Relationship of Deposit, Lending, and Various Rates

The analysis of trends and relationship between the various variables are presented in tables, calculation of correlation, analysis, presentation on figure and show the relationship, t-test and verification in statistics tools and techniques.

Correlation Analysis

Correlations analysis represents the statistical technique for identifying the degree of relationship between two or more variables. It is the tool generally used to analyze the nature and degree to which one variable is related to another. Karl Pearson's coefficient of correlation is a widely accepted method for the correlation analysis that finds the coefficient of correlation.

4.2.1 NABIL Bank Limited

The following table 4.1 presents the different information of NABIL bank related to yearly deposit amount, loan amount interest rate on deposit and lending, inflation rate and risk free rate.

Table 4.1

Position of Deposit Amount, Rate, Lending Amount, Rate, Inflation and Risk Free Rate

(Rs in Million)

Year	Deposit (a)	Int Dep (b)	Loan Amount (c)	Int Lending (d)	Inflation (e)	RF Rate (f)
2002	9464.4	6.75	5811.7	13.23	11.4	2.33
2003	12780.1	6.75	7323.6	13.09	3.5	4.66
2004	15838.9	4.64	8437.6	11.01	2.4	4.96
2005	15370.6	3.842	7328.2	10.4425	2.9	4.71
2006	13437.7	3.34	8267.8	9.25	4.8	3.48
2007	14098	2.8	8769.7	9.67	4	2.93
2008	14586	3.2	11078	9.354	4.5	2.46
2009	19348.4	2.77	13021	9.54	4.5	2.46
2010	37348.3	8.1	27816.6	16.1	7	2
2011	46334.8	5.91	32902.9	13.91	7	4

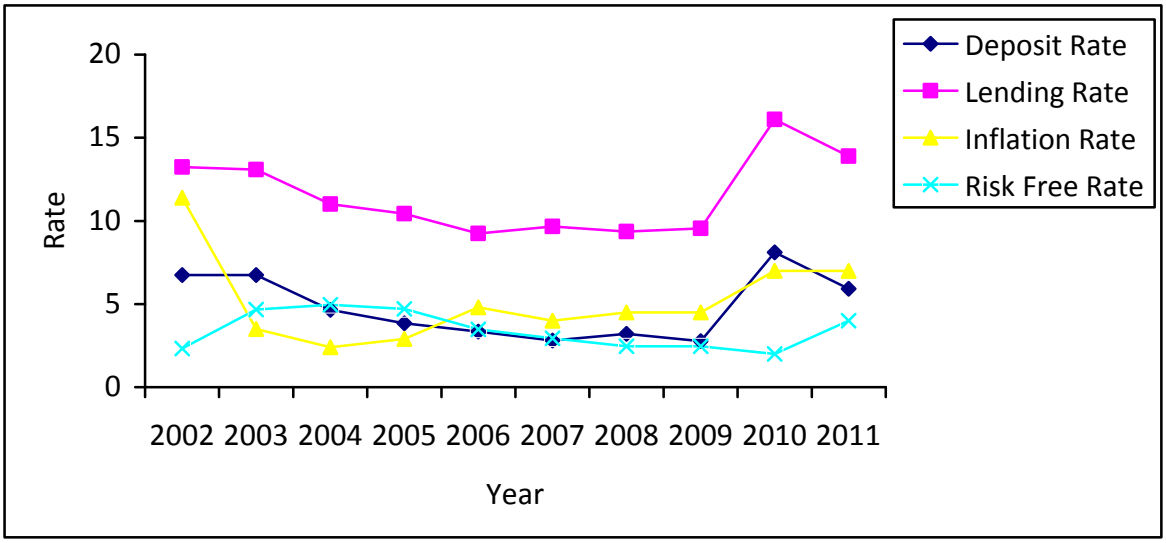
Source: Banking and Financial Statistics 2002 -2011

Above 4.1 table presents the details for calculation various information. It helps to identify the trend of deposit, lending interest rate and other factors .the main objectives of this table is also to identify their relationship between different rate through the calculation of correlation coefficients .

Figure 4.1

Trend of Interest Rate Deposit and Lending, Inflation Rate and Risk Free Rate

Relationship between rates with NABIL Bank



Source: Table No.:4.1

This figure shows the relationship between rates of NABIL bank deposit rate, lending rate, inflation rate and risk-free rate. The figure shows the trend of rates every year interest on deposit and lending rate decrease continuously and inflation rate and risk free rate shows up and down in different years.

Table 4.2

Correlation between Different Components of NABIL

Variables	Coefficient of correlation	Coefficient of Determination	t-Statistics	Table value	Remark
ab	0.423	0.179	1.32043	2.306	Not Significant
bd	0.965	0.932	10.462	2.306	Significant
cd	0.164	0.2683	4.702	2.306	Significant
be	0.5397	0.2913	1.813	2.306	Not Significant
bf	0.064	0.0041	1.814	2.306	Not Significant
de	0.0341	0.0012	0.0965	2.306	Significant
df	-0.198	0.01435	3.413	2.306	Significant

Table 4.3

Multiple Correlation Coefficients and Multiple Determinations

Variables	Coefficient of multiple correlation	Coefficient of multiple determination
b.ad	0.991	0.982
d.bc	1.29*	1.66*
b.ef	0.632	0.999
d.ef	0.108	0.0116

∗ Since the values of Rd.bc is greater than 1. There is some in consistency in the given data.

NABIL bank is one of commercial bank in Nepal. We are analyzed about the bank correlation about activities of different factor here.

The correlation coefficient between deposits and interest rate on deposit (r_{ab}) is -0.0423 which is positive. The coefficient of determination between two variables r^2_{ab}=0.179. T-statistics for testing significance of correlation is 1.32043. Since the tabulated T- value at 5%

level of significance for 8 degree of freedom 2.306 is greater than calculated value. Therefore Correlation coefficient is not significant.

The correlation coefficient between deposit rate and lending Rate (r_{bd}) is 0.965 which is positive correlation. The coefficient of determinations between deposit rate and lending rate is (r^2_{bd}) =0.9643. T-statistics for testing, significance of correlation is 10.467. Since the tabulated T- value at 5% level of significance for 8 degree of freedom 2.306 is less than the calculated value. Therefore correlation coefficient is significant.

The correlation coefficient between loan amount and lending rate (r_{cd}) is 0.164 which is positive correlation. The coefficient of determinations between two variable (r^2_{cd}) =0.02683. T-statistics for testing the significance of correlation is 4.702. Since the tabulated T-value at 5% level of significance for 8 degree of freedom 2.306 is less than calculated value. Therefore correlation coefficient is significant.

The correlation coefficient between deposit rate and inflation rate (r_{be}) is 0.5397 which is positive correlation. The coefficient of determination between two variables (r^2_{bc}) is 0.2913. T-statistics for testing the significance of correlation is 1.813. Since the tabulated rate at 5% level of significance 8 degree of freedom 2.306 is greater than calculated value. Therefore correlation coefficient is not significant.

The correlation coefficient between deposit rate and risk free (r_{bf})= -0.064 which is negative. The coefficient of determination between two variables (r^2_{bf}) is 0.0041 positive T-statistics for testing significance of correlation is 1.814. Since the tabulated T- value at 5% level of significance for 8 degree of freedom 2.306 is greater than calculated value. Therefore correlation coefficient is not significance.

The correlation coefficient between lending rate and inflation rate is (r_{de}) is 0.0341 which is positive correlation coefficient and determination between two variables (r^2_{de}) = 0.2152. T- Statistics for testing significance correlation is 0.0965. Since the tabulated T- value at 5% level of significance for 8 degree of freedom 2.306 is less than calculated value. Therefore correlation coefficient is significant.

The correlation between the lending rate and risk free rate (r_{df}) is -0.198 which is positive.

The determination of between two variables (r^2_{df}) =0.01435. T-statistics for testing significance of correlation is 3.413. Since the tabulated T- value at 5% level of significance for 8 degree of freedom 2.306 is less than calculated value. Therefore correlation coefficient is not significance.

The multiple correlation coefficients on interest rate deposit depend on lending and deposit amount ($r_{b.ad}$) is 0.9991. The coefficient of multiple determinations ($r^2_{b.ad}$) is 0.982.

The multiple correlation coefficient lending rate amounts independent is ($r_{d.bc}$) 1.29 the coefficient of multiple determination ($r^2_{d.bc}$) is 1.6641

The multiples lending rate and lending amount ($r_{d.bc}$) is 0.981. The coefficients of multiples determination ($r^2_{b.ef}$) is 0.9632.

The multiples correlation coefficients interest rates on deposit depend inflation rates and risk free rates ($r_{b.ef}$) is 0.632. The coefficients of multiples determination ($r^2_{b.ef}$) is 0.399.

The multiples correlation coefficient lending rates depend on inflation rates and risk free rates is ($r_{d.ef}$) is 0.104. The coefficient of multiples determination ($r^2_{d.ef}$) is 0.116.

4.2.2 Nepal Investment Bank Limited

The following table 4.4 presents the different information of Nepal Investment bank related to yearly deposit amount, loan amount interest rate on deposit and lending, inflation rate and risk free rate.

Table 4.4

Position of Deposit Amount, Rate, Lending Amount, Rate, Inflation and Risk Free Rate

(Rs in Million)

Year	Deposit (a)	Int Dep (b)	Loan Amount (c)	Int Lending (d)	Inflation (e)	RF Rate (f)
2002	2438.9	6.25	1421.60	13.18	11.40	2.33
2003	2982.4	5.71	2071.30	12.69	3.50	4.66
2004	4256.2	5.10	2431.30	11.12	2.40	4.96
2005	4174.8	5.11	2715.70	11.80	2.90	3.48
2006	7922.8	5.11	2715.70	11.80	2.90	4.71
2007	11706.3	5.10	7290.20	11.80	4.00	2.93
2008	14254.	2.66	10295.0	9.05	4.50	2.46
2009	18927.3	2.64	13007.0	9.05	4.50	2.64
2010	46697.9	6.92	36250.4	14.92	7	2
2011	50094.73	7.50	4568963	17.50	7	4

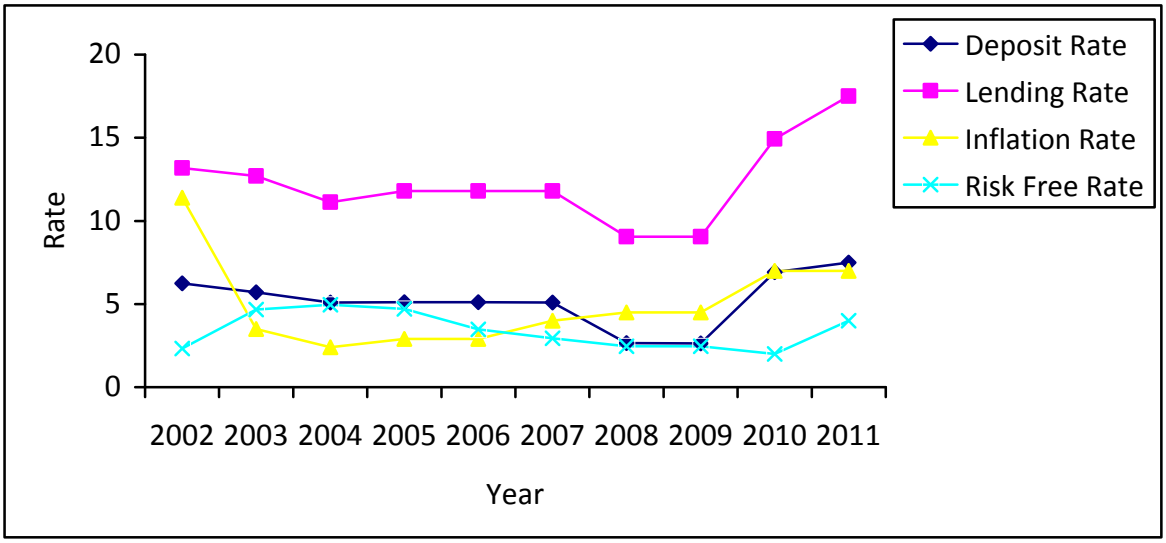
Source: Banking and Financial Statistics 2002 -2011

Above table No. 4.4 presents the details for calculation various information. It helps to identify the trend of deposit, lending interest rate and other factors the main objectives of this table is also to identify the relationship between different rate through the calculation of correlation.

Figure 4.2

Trend of Interest Rate Deposit and Lending, Inflation Rate and Risk Free Rate

Relationship between rates with NIBL



Source: Table No.:4.4

This figure shows the relationship between rates of NIBL bank deposit rate, lending rate, inflation rate and risk-free rate. The figure shows the trend of rates Every year interest on deposit and lending rate increase continuously and inflation rate and risk free rate shows up and down in different years

Table 4.5

Correlation between Different Components of NIBL

Variables	Coefficient of correlation	Coefficient of Determination	t-Statistics	Table value	Remark
ab	0.437	0.191	1.3742	2.306	Not Significant
bd	0.949	0.9005	8.51	2.306	Significant
cd	0.6785	0.460	2.6115	2.306	Significant
be	0.451	0.203	1.4289	2.306	Not Significant
bf	0.165	0.0272	0.4732	2.306	Not Significant

de	0472	0.223	1.514	2.306	Not Significant
df	0.0886	0.00784	0.2516	2.306	Not Significant

Table 4.6

Multiple Correlation Coefficients and Multiple Determinations

Variables	Coefficient of multiple correlation	Coefficient of multiple determination
b.ad	0.9775	0.955
d.bc	0.985	0.9705
b.ef	0.7096	0.504
d.ef	0.6653	0.443

NIBL is one of the commercial bank in Nepal. We analyzed about the bank correlation about these activities of different fore here.

The correlation coefficient between the deposit amount and deposit rate (r_{ab})=0.437 which is positive correlation .The coefficients between determination two variables (r^2_{ab})=0.191. T-statistics for testing the significance of correlation is 1.3742. Since the tabulated value at 5% level of significance for 8 degree of freedom 2.306 is greater than the calculated value. Therefore correlation coefficient is not significant.

The correlation coefficient between the deposit rate and lending rate (r_{bd}) is 0.949 which is positive .The coefficients of determination of two variables (r^2_{bd}) is 0.9005. T-statistics for testing the significance of correlation is 8.51. Since the tabulated value at 5% level of significances for 8 degree of freedom 2.306 is less than the calculated value. Therefore correlation coefficient is significant.

The correlation coefficients between loan amount and lending rate (r_{cd})=0.6785. The positive correlation of coefficient of determination between two variables (r^2_{cd}) is 0.460. T-statistics for testing the significance of correlation is 2.6115.Since the tabulated value at 5% level of significance for 8 degree of freedom 2.306 is less than calculated value. Therefore correlation coefficient is significance.

The correlation coefficient between the interest on deposit and inflation rate (r_{bc})=0.451.the determination of correlation coefficient is 0.203. T-statistics for testing the significance of correlation is 1.4289. Since the tabulated T-value at 5% level of significance for 8 degree of level of freedom 2.306 is greater than the calculated value. Therefore correlation coefficient is not significant.

The correlation coefficient between interest on deposit and risk free (r_{bf})=0.165 which is positive. The coefficient of determination between the two variables (r^2_{bf}) =0.0272 which is positive. T- Statistics for testing the significance of correlation is 0.2732. Since the tabulated value at 5% level of significance for 8 degree of level freedom 2.306 is greater than the calculated value. Therefore correlation of coefficient is not significant.

The correlation coefficient between the interest on lending and inflation rate (r_{de})=0.472 which is positive . The coefficient of determination of two variable (r^2_{de}) is 0223. T-statistics for testing the significance of correlation is 1.514. Since the tabulated value at 5% level of significance for 8 degree of freedom 2.306 is greater than calculated value. Therefore correlation coefficient is not significant.

The correlation coefficient between the lending rate and risk free rate (r_{df}) =0.0886 which is positive correlation. T-statistics for testing the significance of correlation is 0.00784. Since the tabulated value at 5% level of significance for 8 degree of freedom 2.306 is greater than calculated value. Therefore correlation of coefficient is not significant.

The multiples correlation coefficients interest rates on deposit depend on deposit amount and lending rates Rb.ad is 0.9775. The coefficient of multiples determination is 0.955.

The multiples correlation coefficient is lending depend on interest rates deposit and lending amount ($r_{b.bc}$) is 0.985. The coefficient multiples determination ($r^2_{b.ad}$) is 0.9705.

The multiples correlation coefficients interest rates on deposit depend on inflation rates and risk free rates ($r_{b.ef}$) is 0.7096. The coefficient of multiples determination ($r^2_{b.ef}$) is 0.504.

The multiples correlation coefficient lending rates depend on inflation rates and risk free rates ($r_{d.ef}$) is 0.6653. The coefficient of multiples determination ($r^2_{d.ef}$) is 0.443.

4.2.3 Standard Chartered Bank

The following table 4.7 presents the different information of standard chartered bank related to yearly deposit amount ,loan amount interest rate on deposit and lending, inflation rate and risk free rate.

Table 4.7

Position of Deposit Amount, Rate, Lending Amount, Rate, Inflation and Risk Free Rate

(Rs in Million)

Year	Deposit (a)	Int Dep (b)	Loan Amount (c)	Int Lending (d)	Inflation (e)	RF Rate (f)
2002	11160.8	5.71	4693.10	13.28	11.40	2.33
2003	12566.4	4.39	4957.50	12.30	3.50	4.66
2004	15430.10	3.46	5924.10	11.12	2.40	4.96
2005	15835.7	2.89	5787.90	10.61	2.90	4.71
2006	18755.5	2.82	6080.70	10.41	4.80	3.48
2007	21161.4	1.96	6729.60	10.11	4.00	2.93
2008	19344	1.72	8214.00	9.84	4.50	2.46
2009	23050.5	1.75	8905.00	8.78	4.50	2.64
2010	35871.80	6.76	13118.6	9.65	7.00	2.00
2011	35182.7	6.26	15932.2	9.53	7.00	4

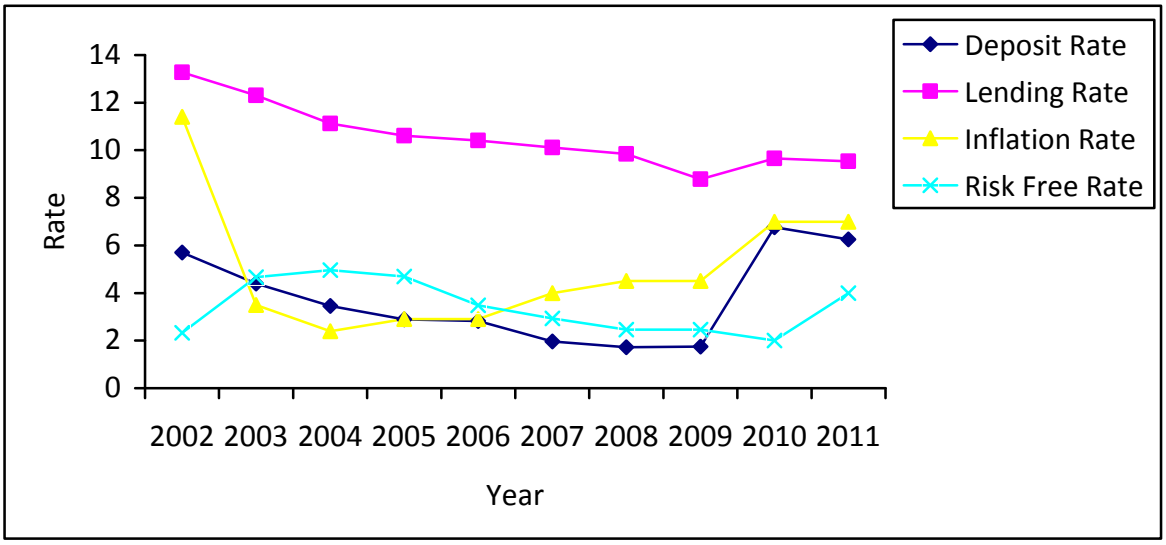
Source: Banking and Financial Statistics 2002-2011

Above 4.7 table presents the details for calculation various information. It helps to identify the trend of deposit, lending interest rate and other factors .the main objectives of this table is also to identify the relationship between different rate through the calculation of correlation.

Figure 4.3

Trend of Interest Rate Deposit and Lending, Inflation Rate and Risk Free Rate

Relationship between rates with SCBL



Source: Table No.:4.7

This figure shows the relationship between rates of standard chartered bank deposit rate, lending rate, inflation rate and risk-free rate. The figure show the trend of rates Every year interest on deposit and lending rate decrease continuously and inflation rate and risk free rate shows up and down in different years.

Table 4.8

Correlation between Different Components of SCBL

Variables	Coefficient of correlation	Coefficient of Determination	t-Statistics	Table value	Remark
ab	0.4264	0.1835	1.34	2.306	Not Significant
bd	0.2960	0.08782	0.8765	2.306	Not Significant
cd	-0.645	0.416	2.3873	2.306	Significant
be	0.640	0.6963	2.356	2.306	Significant
bf	-0.07368	0.00543	0.20896	2.306	Not Significant
de	0.342	0.1169	1.0288	2.306	Not Significant
df	0.228	0.052	0.6623	2.306	Not Significant

Table 4.9

Multiple Correlation Coefficients and Multiple Determinations

Variables	Coefficient of multiple correlation	Coefficient of multiple determination
b.ad	09694	09398
d.bc	0.953	0.9078
b.ef	0.8365	0.6997
d.ef	0.343	0.11762

Standard Charted Bank is one of the Joint Venture Commercial Bank in Nepal. We are analyzed about the bank correlation about these activities of different factor here.

The correlation coefficient between deposits and interest rate on deposit (r_{ab}) is -0.4284.The coefficient of determination between the interest rate on deposit and two variables. (r^2 ab) is 0.1835 .T-statistics for testing significance of correlation is 1.34. Since the tabulated T-value at 5% level of significance for 8 degree of freedom 2.306 is greater than calculated value. Therefore Correlation coefficient is not significant.

The correlation coefficient between deposit rate and lending Rate (r_{bd}) is 0.296 which is positive. The determination of coefficient between deposit rate and lending rate is (r^2_{bd}) =0.08762 which is positive T- value for the testing, significance of correlation is 0.8765. Since the tabulated T- value at 5% level of significance for 8 degree of freedom 2.306 is greater than the calculated value therefore correlation coefficient is not significant.

The correlation coefficient between loan amount and lending rate (r_{cd}) is -0.645 which is negative correlation. The coefficient of determinations between two variable (r^2cd) = 0.0.416. T-statistics for testing the significance of correlation is 2.3873. Since the tabulated T-value at 5% level of significance for 8 degree of freedom 2.306 is less than calculated value correlation coefficient is significant.

The correlation coefficient between deposit rate and inflation rate (r_{be}) is 0.64, which is positive correlation. The coefficient of determination between two variables (r^2_{be}) is 0.4096. Since the tabulated T-values at 5% level of significance 8 degree of freedom 2.306 is less than calculated value therefore correlation coefficient is sufficient.

The correlation coefficient between deposit rate and risk free (r_{bf})=-0.07368 which is negative correlation. The coefficient of determination between two variables is (r^2_{bf}) 0.00543. T-statistics for testing significance of correlation is 0.20896. Since the tabulated T- value at 5% level of significance for 8 degree of freedom 2.306 is greater than calculated value. Therefore correlation coefficient is not significance.

The correlation coefficient between lending rate and inflation rate (r_{de}) is 0.342 . Which is positive correlation. The determination of correlation coefficient is (r^2_{de}) =0.1169 which is positive correlation. T- Statistics for testing significance correlation is 1.0288. Since the tabulated T- value at 5% level of significance for 8 degree of freedom 2.306 is greater than calculated value. Therefore correlation coefficient is not significant.

The correlation between the lending rate and risk free rate(r_{df}) is 0.228.which is positive correlation. The coefficient of determination between two variables (r^2_{df}) is 0.052. T-statistics for testing significance of correlation is 0.6623. Since the tabulated T- value at 5% level of significance for 8 degree of freedom 2.306 is greater than calculated value. Therefore

correlation coefficient is not significance.

The multiple correlation coefficients of interest rate deposit depend on lending rate and deposit amount is 0.9694. The coefficient of multiple determinations ($r^2_{b.ad)}$ is 0.9398.

The multiple correlation coefficient lending amount and deposit rate independent is 0.8365 the coefficient of multiple determination ($r^2_{d.bc}$) is 0.0.9078.

The multiples correlation coefficient interest rate on deposit depend on inflation and risk free rates is 0.8365. The coefficient of multiples determination ($r^2_{b.ef}$) is 0.6997.

The multiples correlation coefficient lending rate depends on inflation rate and a risk free rate is 0.865. The coefficients of multiples determination ($r^2_{d.ef}$) is 0.11762.

4.2.4. Himalayan Bank Limited

The following table 4.10 presents the different information of HIMALAYAN bank related to yearly deposit amount, loan amount interest rate on deposit and lending, inflation rate and risk free rate.

Table 4.10

Position of Deposit Amount, Rate, Lending Amount, Rate, Inflation and Risk Free Rate

(Rs in Million)

Year	Deposit (a)	Int Dep (b)	Loan Amount (c)	Int Lending (d)	Inflation (e)	RF Rate (f)
2002	9780.4	6.07	5372	12.46	11.4	2.33
2003	14082.5	5.57	7423.2	12.06	3.5	4.66
2004	17613.6	4.357	9176.9	10.88	2.4	4.96
2005	18595.2	4.192	7673.5	10.75	2.9	4.71
2006	21002.8	4.01	11079.2	10.61	4.8	3.48
2007	22760.9	4.01	13081.7	10.61	4	2.93
2008	24831.1	2.875	13245	9.047	405	2.46
2009	26456.2	2.68	15516	9.05	4.5	2.64
2010	34681	9.28	2529201	17.28	7	2
2011	37609.4	6.05	28976.6	14.05	7	4

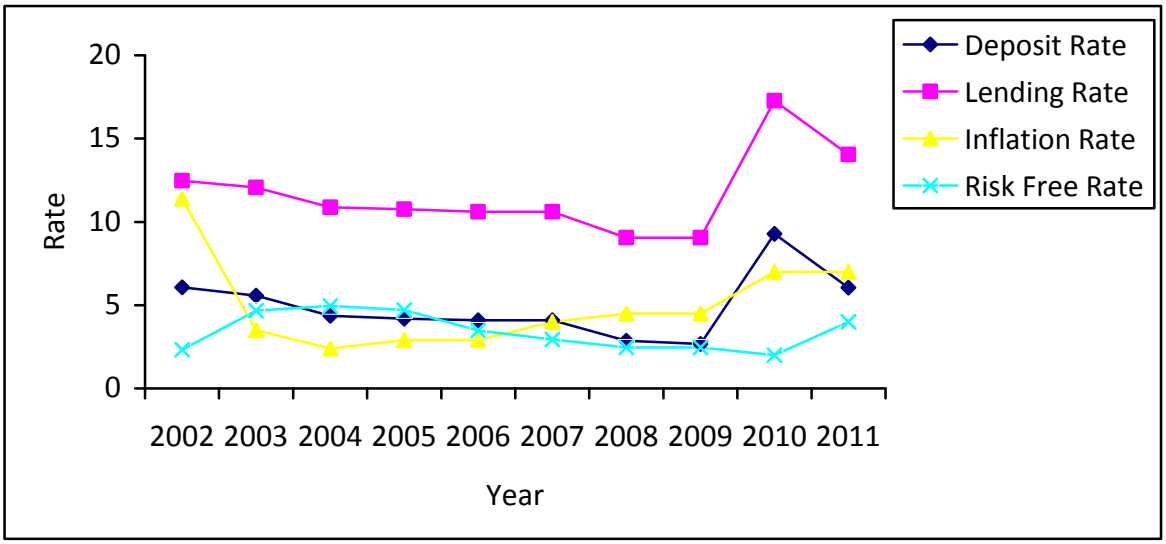
Source: Banking and Financial Statistics 2002 -2011

Above 4.10 table presents the details for calculation various information. It helps to identify the trend of deposit, lending interest rate and other factors .the main objectives of this table is also to identify the relationship between different rate through the calculation of correlation coefficients .

Figure 4.4

Trend of Interest Rate Deposit and Lending, Inflation Rate and Risk Free Rate

Relationship between rates with HBL



Source: Table No.:4.10

This figure shows the relationship between rates of Himalayan bank deposit rate, lending rate, inflation rate and risk-free rate. The figure shows the trend of rates every year interest on deposit and lending rate decrease continuously and inflation rate and risk free rate shows up and down in different years.

Table 4.11

Correlation between Different Components of Himalayan Bank Limited

Variables	Coefficient of correlation	Coefficient of Determination	t-Statistics	Table value	Remark
ab	0.2875	0.0827	0.849	2.306	Not Significant
bd	0.9456	0.893	8.189	2.306	Significant
cd	0.594	0.353	2.0885	2.306	Not Significant
be	0.5102	0.2603	1.678	2.306	Not Significant
bf	-0.1913	0.0366	0.5512	2.306	Not Significant
de	0.478	0.228	1.54	2.306	Not Significant
df	-0.0947	0.008965	0.2691	2.306	Not Significant

Table 4.12

Multiple Correlation Coefficients and Multiple Determinations

Variables	Coefficient of multiple correlation	Coefficient of multiple determination
b.ad	0.9775	0.956
d.bc	0.9634	0.928
b.ef	0.8519	0.736
d.ef	0.6773	0.4788

Himalayan bank is ones of commercial bank in Nepal. We are analyzed about the bank correlation about these activities of different factor here.

The correlation coefficient between interest rate on deposits and interest rate on deposit (r_{ab}) is 0.2875 which is positive correlation. The coefficient of determination between the two variables (r^2_{ab}) is 0.0827. T-statistics for testing significance of correlation is 0.849. Since the tabulated T- value at 5% level of significance for 8 degree of freedom 2.306 is

greater than calculated value. Therefore correlation coefficient is significant.

The correlation coefficient between deposit rate and lending Rate (r_{bd}) is 0.0.9456 which is positive correlation. The determination of coefficient between two variable (r^2_{bd}) is 0.893. T-value for the testing, significance of correlation is 20.55. Since the tabulated T- value at 5% level of significance for 8 degree of freedom 2.306 is less than the calculated value correlation coefficient is significant.

The correlation coefficient between loan amount and lending rate is (r_{cd}) is 0.594 which is positive correlation. The coefficient of determinations between two variable (r^2_{cd}) is 0.353. T-statistics for testing the significance of correlation is 2.0885. Since the tabulated T-value at 5% level of significance for 8 degree of freedom 2.306 is greater than calculated value. Therefore correlation coefficient is not significant.

The correlation coefficient between deposit rate and inflation rate is (r_{be}) is 0.5102 which is positive correlation. The coefficient of determination between two variables r^2be is 0.2603. T-stastics for testing the significance of correlation is 1.678. Since the tabulated value at 5% level of significance 8 degree of freedom 2.306 is greater than calculated value. Therefore correlation coefficient is not sufficient.

The correlation coefficient between deposit rate and risk free (r_{bf}) is -0.1913 which is negative correlation. The coefficient of determination between two variables (r^2_{bf}) is 0.0366. T-statistics for testing significance of correlation is 0.5572. Since the tabulated T- value at 5% level of significance for 8 degree of freedom 2.306 is greater than calculated value. Therefore correlation coefficient is not significance.

The correlation coefficient between lending rate and inflation rate is (r_{de}) is 0.478 which is positive and correlation determination. The coefficient of between two variables (r^2+) is 0.228. T- Statistics for testing significance correlation is 1.54. Since the tabulated T- value at 5% level of significance for 8 degree of freedom 2.306 is greater than calculated value. Therefore correlation coefficient is not significant.

The correlation between the lending rate and risk free rate (r_{df}) is -0.0947 which is negative correlation. The coefficient of between two variables (r^2_{df}) is 0.0089650. T-statistics

for testing significance of correlation is 0.2691. Since the tabulated T- value at 5% level of significance for 8 degree of freedom 2.306 is greater than calculated value. Therefore correlation coefficient is not significance.

The multiple correlation coefficients on interest rate on deposit depend on lending and deposit rates amount ($r_{b.ad}$) is 0.9775 the coefficient of multiple determinations ($r^2_{b.ad}$) is 0.956.

The multiple correlation coefficient lending rates depend on interest on deposit and lending amount ($r_{d.bc}$) is 0.9634. The coefficient of multiple determinations ($r^2_{d.bc}$) is 0928.

The multiples correlation coefficient interest rates deposit depend on inflation rates and risk free rates ($r_{b.ef}$) is 0.8579. The coefficient of multiples determination is ($r^2_{b.ef}$) 0.736.

The multiples correlation coefficient lending rates on inflation rates and risk free rates ($r_{d.ef}$) is 0.677. The coefficient multiples determination ($r^2_{d.ef}$) is 0.4788.

4.2.5 SBI Bank Limited

The following table 4.13 presents the different information of SBI bank related to yearly deposit amount, loan amount interest rate on deposit and lending, inflation rate and risk free rate.

Table 4.13

Position of Deposit Amount, Rate, Lending Amount, Rate, Inflation and Risk Free Rate

(Rs in Million)

Year	Deposit (a)	Int Dep (b)	Loan Amount (c)	Int Lending (d)	Inflation (e)	RF Rate (f)
2002	4362.2	7.05	2930.4	13	11.4	2.33
2003	4543.2	6.25	3560.1	12.1	3.5	4.66
2004	6618.4	6.05	4176.3	11.44	2.4	4.96
2005	5572.2	4.571	4593.9	10.6	2.9	4.71
2006	6522.8	4.6	4766.1	10.34	4.8	3.48
2007	7232.1	3.464	5552.5	9.56	4	2.93
2008	8645.8	3.355	6619	9.315	4.5	2.46
2009	10852.7	3.67	8060	9.33	4.5	2.64
2010	15984.9	8.5	13504.8	14.5	7	2
2011	20217.69	11	1689541	16.59	7	4

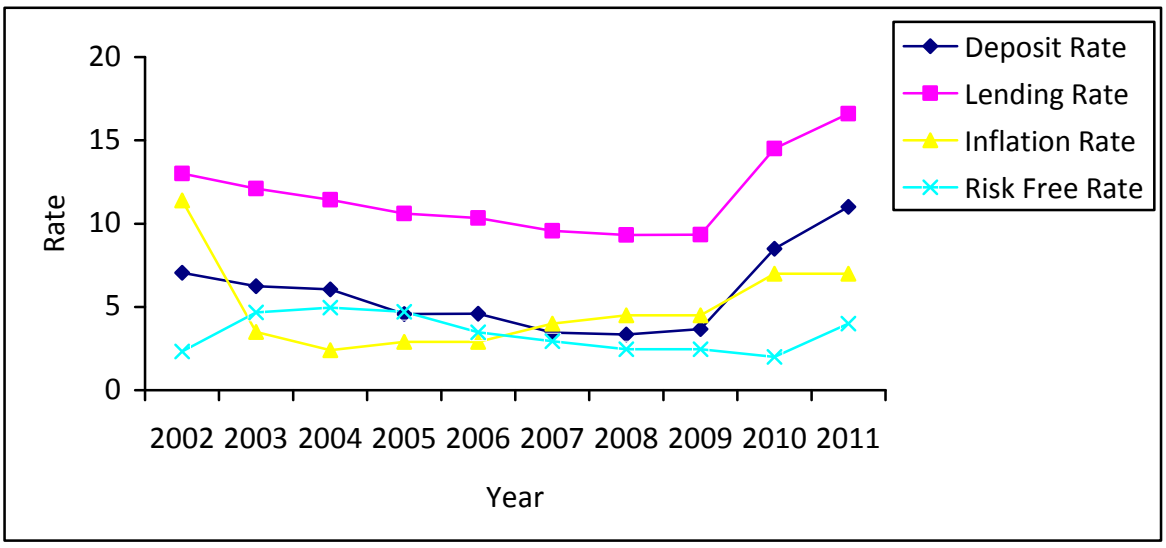
(Source: Banking and Financial Statistics 2002-2011)

Above table 4.13 presents the details for calculation various information. It helps to identify the trend of deposit, lending interest rate and other factors .the main objectives of this table is also to identify the relationship between different rate through the calculation of correlation coefficients

Figure 4.5

Trend of Interest Rate Deposit and Lending, Inflation Rate and Risk Free Rate

Relationship between rates with SBI



S ource: Table No.:4.13

This figure shows the relationship between rates of SBI bank deposit rate, lending rate, inflation rate and risk-free rate. The figure shows the trend of rates every year interest on deposit and lending rate increase continuously and inflation rate and risk free rate shows up and down in different years.

Table 4.14

Correlation between Different Components of SBI

Variables	Coefficient of correlation	Coefficient of Determination	t-Statistics	Table value	Remark
Ab	0.379	0.335	2.01	2.306	Not Significant
Bd	0.996	0.992	31.492	2.306	Significant
Cd	0.5584	0.312	1.9041	2.306	Not Significant
Be	0.5044	0.2544	1.652	2.306	Not Significant
Bf	0.09267	0.0086	0.2632	2.306	Not Significant
De	0.535	0.2861	1.791	2.306	Not Significant
Df	0.05115	0.00262	1.45	2.306	Not Significant

Table 4.15

Multiple Correlation Coefficients and Multiple Determinations

Variables	Coefficient of multiple correlation	Coefficient of multiple determination
b.ad	0.992	0.985
d.bc	0.997	0.993
b.ef	0.709	0.50225
d.ef	0.712	0.507

SBI Bank is the one of commercial bank in Nepal. We analyzed about the bank correlation coefficient about these activities of different factor here.

The correlation between the deposit amount and interest on deposit (r_{ab}) is .579.Which is positive correlation. The coefficient of determination of two

variables (r^2_{ab}) is.335. T-statistics for testing the significance of correlation is 2.01.Since the tabulated t-value at 5%level of significance for 8degree of freedom (2.306) is greater than

calculated value. therefore correlation coefficient is not significant.

The correlation between interest on deposit and interest in lending is (r_{bd}) is 0.996 .which is positive correlation. The coefficient of determination between two variables (r^2_{bd}) is 0.992. T-statistics for testing the significance of correlation is 31.492.Since the tabulated T-value at 5% level of significance for 8 degree of freedom (2.306) is less than the calculated value. Therefore correlation coefficient is significant.

The correlation coefficient between the loan amount and interest rate on lending (r_{cd}) = -0.5584 which is positive correlation. The coefficient of determination between two variables (r^2_{cd}) is 0.312. T-statistics for testing the significance of correlation is 1.9041. Since the tabulated value at 5% level of significance for 8 degree of freedom 2.306 is greater than calculated value. Therefore correlation coefficient is significant.

The correlation coefficient between to interest rate on deposit and inflation rate is (r_{be}) is 0.5044, Which is positive correlation. The coefficient of determination between two variables (r^2_{be}) is 0.2544 which is positive. T-static for testing the significance of correlation is 1.1.652. Since the tabulated value at 5% levels of significant for 8 degree of freedom 2.306 is greater than calculated value. Therefore correlation coefficient is not significant.

The correlation coefficient between the deposit and risk free rate is (r_{bf}) is 0.09267 which is positive correlation. The coefficient of determination of two variables (r^2_{bf}) is 0.0086. T-statistics for testing the significance of correlation is 0.2632. Since the tabulated value at 5%level of significance for 8 degree of freedom 2.306 is greater than calculated value. Therefore correlation coefficient is not significant.

The correlation coefficient between the interest rate on lending and inflation rate (r_{de}) is 0.535 which is positive correlation. The coefficient of determination two variables (r^2_{de}) is 0.2861. T- Statistics for testing. The significance of correlation is 1.791 since the tabulated t-value at 5% level of significance for 8 degree of freedom 2.306 is less than calculated value. Therefore correlation coefficient is not significant.

The correlation coefficient between lending rate and risk free rate (r_{df}) is 0.05115, which is

positive. The coefficient of determination of two variables (r^2_{df}) is 0.00262. T-statics for testing the significance of correlation is 1.45. Since the tabulated value at 5% level of significance for 8 degree of freedom 2.306 is greater than the calculated value. Therefore coefficients correlation is not significance.

The multiples correlation coefficients interest on deposit depended on deposit amount and lending rates ($r_{b.ad}$) is 0.992. The coefficients of multiples determination ($r^2_{b.ad}$) is 0.9835.

The multiple correlation coefficients lending rates depend on interest on deposit and lending amounts ($r_{d.bc}$) is 0.997. The coefficients of multiples determination ($r^2_{d.bc}$) is 0.993.

The multiples correlation coefficients interest o deposit depends on inflation rates and risk free rates ($r^2_{d.bc}$) is 0709. The coefficients of multiples determination ($r^2_{b.ef}$) is 0.50255.

The multiples correlation coefficient lending rates depend on inflation rates and risk free rates is 0.712. The coefficient of multiples determination is R^2.ef is 0507.

4.2.6 Bank of Kathmandu Limited

The following table 4.16 presents the different information of BOK related to yearly deposit amount, loan amount interest rate on deposit and lending, inflation rate and risk free rate.

Table 4.16

Position of Deposit Amount, Rate, Lending Amount, Rate, Inflation and Risk Free Rate

(Rs in Million)

Year	Deposit (a)	Int Dep (b)	Loan Amount (c)	Int Lending (d)	Inflation (e)	RF Rate (f)
2002	2396.50	7.00	1811.50	14.24	11.40	2.33
2003	3983.00	5.34	2995.30	12.48	3.50	4.66
2004	5724.10	4.75	4327.10	11.36	2.40	4.96
2005	5735.90	4.75	4977.60	11.52	2.90	4.71
2006	6169.60	4.02	4956.20	10.54	4.80	3.48
2007	7741.60	3.38	6104.90	9.92	4.00	2.93
2008	8942.80	3.03	6167.00	9.83	4.50	2.46
2009	10429.30	3.04	7525.00	9.55	4.50	2.64
2010	18083.9	8.02	14894.7	16.02	7	2
2011	20315.8	9.00	16847.1	13.625	7	4

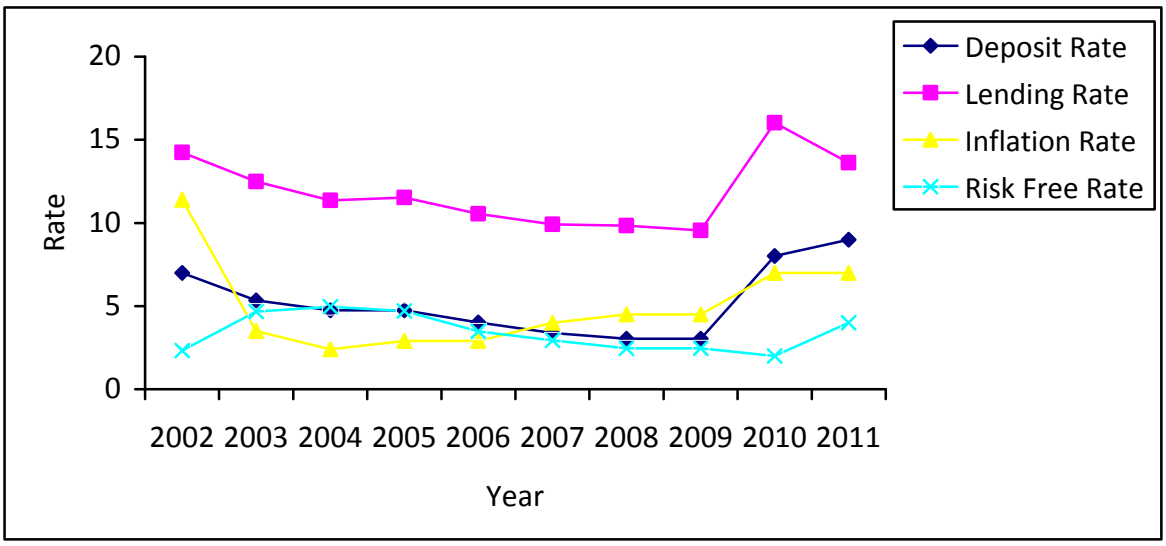
Source: Banking and Financial Statistics 2002-2011

Above 4.16 table presents the details for calculation various information. It helps to identify the trend of deposit, lending interest rate and other factors .the main objectives of this table is also to identify the relationship between different rate through the calculation of correlation.

Figure 4.6

Trend of Interest Rate Deposit and Lending, Inflation Rate and Risk Free Rate

Relationship between rates with BOK



Source: Table No.:4.16

This figure shows the relationship between rates of BOK deposit rate, lending rate, inflation rate and risk-free rate. The figure shows the trend of rates every year interest on deposit increases and lending rate decreases continuously and inflation rate and risk free rate shows up and down in different years.

Table 4.17

Correlation between Different Components of BOK

Variables	Coefficient of correlation	Coefficient of Determination	t-Statistics	Table value	Remark
ab	0.551	0.30335	1.867	2.306	Not Significant
bd	0.5164	0.2667	1.706	2.306	Significant
cd	0.24806	0.06153	0.724	2.306	Significant
be	0.06106	0.3229	2.181	2.306	Not Significant
bf	-0.1299	0.00169	0.3678	2.306	Not Significant
de	0.354	0.1250	1.0704	2.306	Not Significant
df	-0.0867	0.00752	0.24615	2.306	Not Significant

Table 4.18

Multiple Correlation Coefficients and Multiple Determinations

Variables	Coefficient of multiple correlation	Coefficient of multiple determination
b.ad	0.684	0.4676
d.bc	0.5704	0.3254
b.ef	0.8132	0.6613
d.ef	0.5165	0.267

BOK is ones of commercial bank in Nepal. We are analyzed about the bank correlation about these activities of different factor here.

The correlation coefficient deposits amount and interest rate on deposit (r_{ab}) is 0.551 which is positive correlation. The coefficient of determination between two variables (r^2_{ab}) is

0.30335. T-statistics for testing significance of correlation is 1.876. Since the tabulated T-value at 5% level of significance for 8 degree of freedom 2.306 is less than calculated value. Therefore correlation coefficient is not significant.

The correlation coefficient between interest rate, deposit and lending Rate (r_{bd}) is 0.5764 which is positive. The coefficient of determination between two variables (r^2_{bd}) is 0.2667.T-satistics for the testing, significance of correlation is 22.23. Since the tabulated T- value at 5% level of significance for 8 degree of freedom 2.306 is greater than the calculated value. Therefore correlation coefficient is not significant.

The correlation coefficient between loan amount and lending rate (r_{cd}) is 0.24806 which is positive correlation. The coefficient of determinations between two variables (r^2_{cd}) is 0.06153. T-statistics for testing the significance of correlation is 0.724. Since the tabulated T-value at 5% level of significance for 8 degree of freedom 2.306 is greater than calculated value. Therefore correlation coefficient is significant.

The correlation coefficient between deposit rate and inflation rate (r_{be}) is 0.610624 which is positive correlation. The coefficient of determination between two variables (r^2_{be}) is 0.3229. T-statistics for testing the significance of correlation is 2.181. Since the tabulated rate at 5% level of significance 8 degree of freedom 2.306 is greater than calculated value. Therefore correlation coefficient is not significant.

The correlation coefficient between deposit rate and risk free (r_{bf}) is -0.1299 which is negative .The coefficient id determination (r^2_{bf}) 0.00169. T-statistics for testing significance of correlation is 0.3678. Since the tabulated T- value at 5% level of significance for 8 degree of freedom 2.306 is greater than calculated value. Therefore correlation coefficient is not significance.

The correlation coefficient between lending rate and inflation rate (r_{de}) is 0.354 which is positive and the coefficient of determination between two variables (r^2_{dc}) is 0.1250. T-Statistics for testing significance correlation is 1.0704. Since the tabulated T- value at 5% level of significance for 8 degree of freedom 2.306 is greater than calculated value correlation coefficient is significant.

The correlation between the lending rate and risk free rate (r_{df}) is -0.0867 which is negative correlation. The determination of correlation coefficient is (r^2_{df}) is 0.00752. T-statistics for testing significance of correlation is 0.24615. Since the tabulated T- value at 5% level of significance for 8 degree of freedom 2.306 is greater than calculated value. Therefore correlation coefficient is not significance.

The multiples correlation coefficient deposit rates depend on deposit amount and lending rates ($r_{d.ad}$) is 0.684. The coefficient of multiples determination ($r^2_{d.ad}$) is 0.4676.

The multiples correlation coefficients lending depend on deposit rates and lending amount ($r_{d.bc}$) is 0.5704. The coefficient of multiples determination ($r^2_{d.bc}$) is 0.3254.

The multiples correlation coefficients deposit rates depend on inflation rates and risk frees rates ($r_{b.ef}$) is 0.8132. The coefficient of multiples determination ($r^2_{d.ad}$) is 0.6613.

The multiples correlation coefficients lending rates depend on inflation rates and risk frees rates ($r_{d.ef}$) is 0.5165. The coefficients of multiples determination ($r^2_{d.ef}$) is 0.267.

4.3 Presentation and Analysis of Primary Data

For the meaningful research basically secondary and primary data are very important and fundamental thing too. The primary data is collected on the basis of a questionnaire spread over to different financial sectors. The basis purpose of the distributing the questionnaire was to obtain a knowledge on the various aspects of the interest rate especially the view point of academicians. Banking officers, NRB officials, lecturer and investor as how to they regard the interest rate in Nepal.

4.3.1 Analysis of Environmental Factors for Determinants of Interest Rate

The environmental factors are important for determinants of interest rate. The valuable opinion viewer presents their opinion as given below.

The present section describes the various environmental factors that directly affected the interest rate. The environmental factors must be analyzed because they have high influence on determining interest rate. The mean score above the average level indicates that the environmental factors have high influence on determining interest rate and vice-

versa.

Table 4.19

Descriptive Statistics of Environmental Factors

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Nepalese economic environment is favorable to determine interest rate	**66**	**1.00**	**6.00**	**2.7573**	**0.5615**
Nepalese political environment is favorable to determine interest rate	66	1.00	6.00	1.7727	0.7324
Nepalese social environment affects to determine interest rate	66	1.00	6.00	3.2424	0.52075
Open boarder of the Nepal affects to determine the interest rate	66	1.00	6.00	2.7121	0.5671
Easy to hold Indian currency affects to determine the interest rate	66	1.00	6.00	2.5000	0.59671
Valid N (list wise)	66				

Source: Sample survey 2012

Above table shows the clear picture of descriptive result for all the variables. The average mean show the results to Nepalese economic environment favorable (2.7575) disagree, political environment is favorable (1.7727) results shows very poor. Nepalese social environment (3.2424) shows slightly agreed .Open border affects to determine (2.7121) strongly agreed. Easy to hold Indian Currency affect (2.50) shows agree.

T-test for Descriptive Statistic of Environment Factor

	Test Value = 3					
	T	**Df**	**Sig. (2-tailed)**	**Mean Difference**	**95% Confidence interval of the Difference**	
					Lower	**Upper**
Nepalese economic environment is favorable to determine interest rate	3.213	65	1.96	-0.2425	2.621	2.894
Nepalese political environment is favorable to determine interest rate	13.51	65	1.96	-1.2273	-1.4053	-1.0492
Nepalese social environment affects to determine interest rate	3.753	65	1.96	0.2424	0.1158	0.3689
Open boarder of the Nepal affects to determine the interest rate	4.093	65	1.96	-0.2879	-0.4258	-0.150034
Easy to hold Indian currency affects to determine the interest rate	6.755	65	1.96	-0.5	-0.6451	-0.3549

Source: Table 4.19

4.3.2 Basic Determinants Factor for Interest Rate

The various factors are affected for the determinants of interest rate .these factors are presents in table and given opinion in descriptive statistics. For the research purpose, the research designed the various determinants factors to express the agreement or

disagreement of the respondents. The respondents" view shows the factors that have higher or lower implication in interest rate. The higher mean value (i.e. above the average level & more) indicates that those factors may be regarded as the basic determinants for interest rate and vice-versa

. Table 4.20

Descriptive Statistics of Determinants Factor of Interest Rate

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Fair competition is needed determine appropriate interest-rate	66	1.00	6.00	4.2272	0.5596
Depositors and lender activities are the important factors to determine interest rate	66	1.00	6.00	4.7121	0.63143
Maturity period affects to determine of interest rate	66	1.00	6.00	5.4697	0.78604
Investment climate affects to determine interest rate	66	1.00	6.00	5.1667	0.7195
Tax rules of Nepal affects to the determine of interest rate in Nepalese commercial banks	66	1.00	6.00	3.1061	0.52845
Valid N (list wise)	66				

Source: Sample Survey 2012

Above table shows the clear picture of descriptive results of the entire variable. In the factors fair completion is the important factors (4.2272) average show the results agreed. Depositor and lender activities also another important factor (4.7121) agreed. The maturity

period is most important factor (5.1667) agreed. Investment climate also affects to determinants (5.1212) agreed. Tax rules effects to determinants of interest rate (3.1061) slightly agreed.

T-test for Descriptive Statistics of Determinants Factor of Interest Rate

	Test Value = 3					
	T	**Df**	**Sig. (2-tailed)**	**Mean Difference**	**95% Confidence interval of the Difference**	
					Lower	**Upper**
Fair competition is needed determine appropriate interest-rate	17.6805	65	1.96	1.2272	1.09098	1.3634
Depositors and lender activities are the important factors to determine interest rate	21.699	65	1.96	1.7121	1.55746	1.86674
Maturity period affects to determine of interest rate	25.3636	65	1.96	2.4697	2.27885	2.6605
Investment climate affects to determine interest rate	24.2786	65	1.96	2.1667	1.9918	2.34162
Tax rules of Nepal affects to the determine of interest rate in Nepalese commercial banks	1.619	65	1.96	0.1061	-0.0224	0.23458

Source: Table 4.20

4.3.3. Role of Interest Rate in Banking Sector

The interest rate plays vital role for the extension of investment as well as the development and strength of the business. The researcher tried to know the role of interest rate viewing from the respondents designing four variables. The higher mean score shows that the interest rate may be played as the important role in this regard and vice-versa.

Table 4.21

Descriptive Statistics Role of Interest Rate

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Interest rate is prime factor for the competition of banking sectors	66	1.00	6.00	4.2121	0.5579
It is favorable to freely determine the interest rate for development of banking sector	66	1.00	6.00	5.0454	0.6945
Regularly decline of interest is favorable to extend the investment	66	1.00	6.00	4.3030	0.56901
There is needed to minimize the interest the interest rate to the extent of investment	66	1.00	6.00	4.8485	0.65610
Valid N (list wise)	66				

Source: Sample Survey 2012

Above table shows the clear picture of descriptive results of the entire variable. The in prime role of interest rate for banking sector (4.2121) opinion agreed. it is favorable to development of banking sector (5.0454) agreed. Regularly decline of interest rate attracts to investor so (4.3030) agreed to favorable to extend the investment. There is needed to minimize the interest rate for extend to the business.

T-test for Descriptive Statistics Role of Interest Rate

	Test Value = 3					
	T	**Df**	**Sig. (2-tailed)**	**Mean Difference**	**95% Confidence interval of the Difference**	
					Lower	**Upper**
Interest rate is prime factor for the competition of banking sectors	17.516	65	1.96	1.2121	1.0765	1.3478
It is favorable to freely determine the interest rate for development of banking sector	23.744	65	1.96	2.0445	1.8766	2.21423
Regularly decline of interest is favorable to extend the investment	18.456	65	1.96	1.303	1.165	1.4414
There is needed to minimize the interest the interest rate to the extent of investment	22.709	65	1.96	1.8485	1.6896	2.00

Source: Table 4.21

4.3.4. Relation of Interest Rate with Various Sectors

The researcher tried to show the relationship between interest rate with various factors with regard to view the positive or negative relationship. The positive relationship shows that they have high influence in this regard and vice-versa.

Table 4.22

Descriptive Statistics Role of Interest Rate

Variable	N	Minimum	Maximum	Mean	Std. Deviation
There is positive relationship between customer service cost and interest rate of banking	66	1.00	6.00	3.2575	0.52094
There is positive relationship between profit and interest rate of bank	66	1.00	6.00	3.9091	0.52950
There is relationship between stock price and interest rate	66	1.00	6.00	4.9242	0.67048
Rapidly increasing the price of goods effects to interest rate	66	1.00	6.00	3.2424	0.52075
Valid N (list wise)	66				

Source: Sample Survey 2012

Above table shows the clear picture of descriptive results of the entire variable. The interest rate shows the relationship between the other factors. The interest rate shows the relationship between the other factors. Slightly Positive relationship with customer service cost. The (3.2575) opinion agreed. Every bank open for profit motive so there is positive relationship between profit and interest rate. The opinion (3.9091) agreed. There is positive relationship between stock price and interest rate. The opinion (4.9242) agreed. Rapidly increasing the price of goods and interest relation slightly (3.2424) agreed.

T-test for Descriptive Statistics Role of Interest Rate

	Test Value = 3					
	T	**Df**	**Sig. (2-tailed)**	**Mean Difference**	**95% Confidence interval of the Difference**	
					Lower	**Upper**
There is positive relationship between customer service cost and interest rate of banking	3.9852	65	1.96	0.2575	0.1318	0.3832
There is positive relationship between profit and interest rate of bank	13.8421	65	1.96	0.9091	0.7804	1.0378
There is relationship between stock price and interest rate	23.14	65	1.96	1.9242	1.7612	2.0872
Rapidly increasing the price of goods effects to interest rate	3.753	65	1.96	0.2424	0.1168	0.36802

Source: Table 4.22

4.3.5. NRB Role for Interest Rate

NRB is the center bank of Nepal all the commercial banks are controlling monitoring and guided through center bank.

Table 4.23

Descriptive Statistics Role of Interest Rate

Variable	N	Minimum	Maximum	Mean	Std. Deviation
NRB must to play prime role and responsibility to determine interest rate	66	2.00	6.00	4.57575	0.60857
Valid N (list wise)	66				

Source: Sample Survey 2012

Above tables shows that clear, picture of descriptive results of the entire variables the NRB must be play prime role responsibility to determine interest rate (4.57575) average agree.

T-test for Descriptive Statistics Role of Interest Rate

	Test Value = 3					
	T	Df	Sig. (2-tailed)	Mean Difference	95% Confidence interval of the Difference	
					Lower	Upper
NRB must to play prime role and responsibility to determine interest rate	20.871	65	1.96	1.57575	1.4278	1.72373

Source: Table 4.23

NRB Must to Play Prime Role and Responsibility to Determine Interest Rate

	Frequency	Percent	Valid percent	Cumulative percent
Disagree Moderately	4	6.1	6.1	6.1
Disagree Slightly	6	9.1	9.1	15.2
Agree Slightly	13	19.7	19.7	34.8
Agree Moderately	35	53.0	53.0	87.9
Agree Totally	8	12.1	12.1	100.0
Total	66	100.0	100.0	

Source: Questionnaires for Primary Data 2012

The center bank plays the vital role for controlling the commercial bank. NRB must play prime role and responsibility for determinant interest rate. The 53% opinion agreed. Which is 4.57575 average agreed. Center bank opens for commercial bank to determinant interest rate in certain criteria.

4.3.6. Lending Interest Rate for Different Sector

The interest rate is one of the important factors of banking procedure. The different interest rates have to charge for the different sectors in lending. The analysis shows the following statistics.

Table 4.24

Descriptive Statistics of Different Interest Rate in Different Sector

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Different interest rate have to charge for the different sectors in lending	66	1.00	6.00	4.7879	0.644935
Valid N (list wise)	66				

Source: Sample Survey 2012

Above tables show the clear picture of descriptive result of entire variables. Different interest rates have to charge for the different sectors in lending are (4.7879) agree option.

T-test for Descriptive Statistics of Different Interest Rate in Different Sector

	Test Value = 3					
	T	**Df**	**Sig. (2-tailed)**	**Mean Difference**	**95% Confidence interval of the Difference**	
					Lower	**Upper**
Different interest rate have to charge for the different sectors in lending	22.35	65	1.96	1.7879	1.6311	1.945

Source: Table 4.24

Different Interest Rates have to charge for the Different Sectors in Lending

	Frequency	**Percent**	**Valid percent**	**Cumulative percent**
Disagree Totally	1	1.5	1.5	1.5
Disagree Slightly	3	4.5	4.5	6.1
Agree Slightly	10	15.2	15.2	21.2
Agree Moderately	45	68.2	68.2	89.4
Agree Totally	7	10.6	10.6	100.0
Total	66	100.0	100.0	

Source: Questionnaires for Primary Data 2012

Above table shows the clear picture of descriptive result of variable. The results 68.2% option agree which is (4.7879) agreed. There is needed to differences of interest rate in different sector for lending.

4.4 Major Findings of the Study

Determinants of interest in Nepalese commercial bank, the subject matter is important in financial market. There are some objectives are presented for analysis. To identify the appropriate method and model of interest rate, calculation of trend and relationship in various factor. Environmental factors are analysis through the primary research. The recommendation and suggestion attempts the major suggestion in this issued. There are some findings as follows.

a) There is presentation some interest rate theory and models through the descriptive method. Most of the commercial banks used simple regular method. The main factors are Risk, return, inflation and risk free rate. The trend of rates presents in figure, this figure shows the relationship between deposit rate, lending rate, inflation rate and risk-free rate. The figure show the trend of rates every year interest on deposit and lending rate decrease continuously and inflation rate and risk free rate shows up and down in different years The correlation analysis between the deposit rate and deposit amount, lending amount and lending rate show the result negative correlation and others factors show the positive relation .Another presentation t-statistics show the result between rates deposit rate and deposit amount and lending rate, lending amount and lending rate, deposit rate and lending rate . T- Value at 5% level of significance for 8 degree of freedom 2.306 is less than calculated value. Correlation coefficient is significant.

b) The environmental factor analysis through the questionnaire method. The results presented through the SPSS program basis. Interest rate is affected by maturity period. Market competition is important factor in interest rate. Political instability and violence is bad for economic sector. It is affected the interest rate. Depositor and lender activity plays the vital role in determination in interest rate.

c) The basic determinants factors are inflation rate, risk and return, and others. As then other factors also affected to determinants of interest rate. Investment climate, tax rules and regulation re affected factors for determinants. The valuable opinions viewers are agree in factors.

d) Interest rate is important factor for commercial bank. It plays the vital role in banking business environment. It plays prime role for banking competition .it is needed to regularly decline for extend the business. Most of the opinion is supported in this question.

e) The relation of interest rate related in various sector. Interest rate affects customer service cost, profit, stock price, price of goods etc.

f) NRB is one of the center banks of Nepal. NRB has major responsibility for control national economy. It plays the vital role and responsibility for commercial banks. All the commercial banks are controlled and monitoring through the NRB bank.

g) Commercial banks apply the different rate for lending in different sector. It helps to develop in various sectors. The respondent also agreed in segregate interest rate.

CHAPTER -V

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

Commercial bank is on backbone of the economic development of an underdeveloped country in Nepal. They are performing its all king of banking transaction by accepting deposits, advancing loan, credit creation, agency function and provided short term, medium and long term loan; it accepts deposit from public and mobilization the fund to productive sector. Nepal bank ltd. is the one of first bank in Nepal which is established 1994 B.S. as a joint venture between government and private sector. Now in Nepal 31 commercial bank established. 87 development bank, 79 finance companies, 21 micro credit development banks, more than 50 saving and credit co-operation, 47 NGOs in Nepal. Mainly bank are providing services to Nepalese and other customer in Nepal.

Interest is the scarifying cost of money and it is medium of collecting and lending money respectively, Interest Rate is vital role in banking sector. Commercial bank and financial institution could determine the interest rate by own strategy. They are calculating interest rate as per risk, inflation rate, banking cost Environmental factors etc.

There are important issues in this thesis are which factors are affected to determine the interest rate in commercial bank. How to calculate the interest rate that is the major parts of qualification factors of determine interest rate all the issue of the research focused to some modern commercial bank. They are gaining public popularity too. The study fulfills the objective of qualitative and quantitative factors of interest rate, banking competition through interest rate. Method of calculating interest rate activity of depositor and lenders. Identifying the effects of inflation risk and relation and environmental factors of determination of interest rate to find out the overall performance and factors affecting the rate of interest. The study introduction of statement of problem research hypothesis limitation of the study chapter plan are also the components first chapter.

Review of literature is an essential part of all studies .It is the way to discover what other

resources have concern and left in the area a critical review of literature helps to the researcher to develop a thorough understanding an insight into previous research work that relates to the present study. This chapter introduced to meaning of commercial which is accepted different types of deposit and invested in various which is one of the financial intuition, the commercial bank has worked various sector in economical sector. They are accepting the deposit; provide the loan, Agency function and general utility function.

Interest is the cost of among which is very important factors. In financial work, it is price paid for use of loanable funds, Returns for the fund of capital in the interest are different theories rate of interest. The classical theories of interest emphasis save and interest demand as interest rate determining factors. The liquidity preference theory points to demand and supply of cash balance. The modern theory of interest. profs Hicus and Hansin have opened that there is only difference in the concept of saving between the classical and the loanable funds. The modern theory often has been made to mix both the real fund and the monetary factors.

The interest rate is affected the inflation rate economic greater budget deficit money supply. Specific risk and cost factors affecting interest rate on debt security are marketability, liquidity default risk taxability, servicing cost exchange rate risk and environment risks, political resources.

Research design is a plan structure and strategy of investigation. In this study plan to study through the secondary and primary data, collection on population and sample from all the 26 commercial bank, choose 6 bank in sample. The secondary data collection from publication and primary data collection from questionnaire collected data are presented in table and graphic and analyzed various statistical tools mean, Standard deviation, correlation coefficient-statistics coefficient of determination the study mainly forecasted to find out the factors of determinate the interest rate in various way.

5.2. Conclusion

The conclusion is the finding of the study. This study focused in find out the presented objectives. Through the method and techniques, First of all we can define the conclusion

come out from the presented data.

Conclusion from Secondary Data Analysis

The secondary data has presented to show the effects of inflation rate and risk and relation in interest rate through the related variables and also study to different rates correlation in the activities of deposit and lending amount and rates. Explain are as follows.

1. Deposit Amount and Interest rates on Deposit

The deposit amount and interest rates are negatives correlation. The coefficient of determination expresses the real variances of interest rates on deposit and has been explained by independent variables i.e. amount of deposit collected ad remaining is due to the effect of other factor in the economy.

The deposit amount is high then interest rates as on deposit. Therefore t-statistics of for testing the correlation is significant in all samples.

2. Interest Rate on Deposit and Lending Rate

The interest rate on deposit and lending rate are positive correlation. The determination variance effects between the factors. Always the lending rate is high then deposit rate; the t-statistics of correlation is significant.

3. Loan Amount and Lending Rate

The correlation coefficient between two variables tells that more loan is demanded of lower rate i.e demanded on interest rate. The determination of variance in interest rate on lending and remaining is the effects of other factors.

4. Interest Rate on Deposit and Inflation Rate

Two variables are positively correlated; an increment in inflation brings increment in interest rate on deposit vice versa. The inflation rate is affects to interest rate. The coefficient of determine explain total variance in dependent and independent variables. Therefore t-statistics of for testing the correlation is not significant.

5. Deposit Rate and Risk Free Rate

Deposit rate and risk free rate are positive correlation but coefficient is small. The affecting is risk free rate. The determination explained of total variance in dependent and independent variables and they are affected. The t-statistics of for testing the correlation is significantly of samples.

6. Interest Rates on Lending and Inflation Rate

Interest rate on lending and inflation rate is positive correlation coefficient. The determination of two variables explained. Variance and due to effect each other factors. The t-statistics of correlation in significant, this mean that lending rates of sample bank are significantly correlated with the inflation rates.

Conclusions from Primary Research

The conclusion shows the primary research depend on public opinion collection through questioner method. They are agreed and disagree in different options.

a) There are 66 respondent responses with 20-59years age group respondent. They are working in different field and education. Academician, bank officer, government service holder, and business man etc with 1to 15years working experience the respondent level is assistant to director level. Male and female both are involved in study. There are more than respondent are related in issued sector.

b) There is 20 leading question presented with six option, three disagree option and three agree option .in the total question fifteen question result is agree and five question result is disagree. These questions divided in various group.

c) The environmental group respondents are disagreed in option. The results show there is not a favorable environment for determinant of interest rate. Political environment affected the business climate. The risk factor is high and not a sure good return. So environmental is not favorable to determinants in interest rate.

d) The basic determinants factors are inflation rate, risk, and others. As then other

factors also affected to determinants of interest rate. Fair competition depositor and lender activities maturity period, investment climate, tax rules and regulation are affected factors for determinants. The valuable opinions viewers are agree in factors.

e) Interest rate is important factor for commercial bank. it plays the vital role in banking business environment. It plays prime role for banking competition .it is needed to regularly decline for extend the business.

5.3 Recommendations

Under development Nepal has economically exercising in slowly in contest of world. The technology and tools and education open the brain of peoples and they are come to concern in the new world. Most of the people are unknown above the lot of things lack of education, communication, techniques, and technology. In the sense of people are make strong and active in latest communicative world to development in various economically, socially etc.

1. Mobilize capital and optimum level

The national economy plays the vital role in development of every sector for that saving and lending is most necessary factor. It helps to mobilize the capital. Interest rate is the fundamental component to mobilize the capital so it must be optimum level.

2. Extensive expansion of branches

There should be more expansion of the branches within the various parts of the country so as to facilitate even the general people with the banking services. If the bank reach the each and every nook of the nation it will survey provides pace to the slow growing economy, rural credit, facilitate which will enhance the prosperity of the individuals as well as the nation as a whole.

3. Extend Business Environment

The interest rate is one of the basic components collecting the fund and lending to business sector. It is needed to minimize to extend the business environment.

4. Rule and Regulation

The NRB role is needed to strongly monitor to the banking sectors, which helps to maintain

and implement the rules and regulation. Government should make the strong policy for development of economy and implementation to develop the nation.

5. Motive depositor and Lender

Suitable interest rate motive to depositor and lenders, so suitable interest rate helps to increase the depositor and lenders so interest rate must be flexible on the basis of development reason. This can be success after the establishment of favorable investment clement and ruled by law and order.

6. Simplify Lending procedures

Procedures and policy relating to loan disbursement should be simple yet full. Fledged so that borrowers do not have to go through any sort of hassles and disappointments.

7. Effective guideline for banks

NRB the information house for public and other concerned parties has authority to control and stimulate the financial system. It should issue prudential guideline to discipline commercial bank in order to maintain effective interest rate with minimum spread.

8. Effective Service:

Success of commercial banks largely depend on effective delivery of service, for this commercial banks should be made its human resources vibrant with obtaining modern banking facilities in everywhere of the bank's branches.

9. Setting a practical interest rate

Capital and investment is considered as the key to success of any commercial banks, which is affected by the determining of interest rates. So commercial banks are suggested to set proper and practical interest rate policy.

10. Political instability

Political instability is the main barrier to progress the financial performance of each and every financial institution and also county's economics condition. Political leader are recommended to

make a political stability, which create various opportunities to financial institution and definitely progress it's financial to performances in large extent.

Interest rate is the very difficult topic for study and it is also important subject in Nepal. There is needed to study in more than researcher in this topic. Lack of some limitation this study is concerting with fulfills in objectives but we suggest the all to other researcher are interested to research in this topic in various angle.

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Appendix-1

List of Commercial Bank in Nepal

S.N.	Commercial Bank's Name	Head Office	Operation Date
1	Nepal bank Ltd	Kathmandu	1994/07/30
2	Rastriya Banijya Bank	Kathmandu	2022/10/10
3	Agriculture Development Bank	Kathmandu	2024/10/07
4	Nabil Bank Ltd	Kathmandu	2041/03/29
5	Nepal Investment Bank Ltd	Kathmandu	2042/11/26
6	Standard Chartered Bank Ltd	Kathmandu	2043/10/16
7	Himalayan Bank Ltd	Kathmandu	2049/10/15
8	Nepal SBI Bank Ltd	Kathmandu	2050/03/23
9	Nepal Bangladesh Bank Ltd	Kathmandu	2050/02/23
10	Everest Bank Ltd	Kathmandu	2051/07/01
11	Bank of Kathmandu Ltd	Kathmandu	2051/11/28
12	NCC Bank Ltd	Rupandehi	2053/06/28
13	NIC Bank Ltd	Biratnagar, Morang	2055/04/05
14	Lumbini Bank Ltd	Narayanghat, Chitwan	2055/04/01
15	Machhapuchhre Bank Ltd	Pokhara	2057/06/17
16	Kumari Bank Ltd	Kathmandu	2058/08/24

17	Laxmi Bank Ltd	Birgunj	2058/06/11
18	Siddartha Bank Ltd	Kathmandu	2058/06/12
19	Global Bank Ltd	Kathmandu	2063/09/18
20	Citizen Bank International Ltd.	Kathmandu	2064/01/07
21	Prime Bank Ltd.	Kathmandu	2064/06/07
22	Sunrise Bank Ltd.	Kathmandu	2064/06/25
23	Bank of Asia Nepal Ltd.	Kathmandu	2064/06/25
24.	Nepal Merchant Bank and Finance	Kathmandu	2065
25.	Development Credit Bank Ltd.	Kathmandu	2065
26.	Kist Bank Ltd.	Kathmandu	2066/01/24
27.	Janata Bank Ltd.	Kathmandu	2067/4/23
28.	Mega Bank Ltd.	Kantipath, Kathmandu	2067/7/7
29.	Commerz and Trust Bank Ltd.	Kamaladi, Kathmandu	2067/9/3
30.	Civil Bank Ltd.	Kamaladi, Kathmandu	2067/11/9
31.	Century Commercial Bank Ltd.	Putalisadak, Kathmandu	2068/3/27

Source: NRB, 2012

Appendix -2

Standard Chartered Bank Ltd.

Correlation Analysis

1. Deposit Amount and Interest Rate on Deposit (r_{ab})

Year	a	b	a.b	a^2	b^2
2002	11160.8	5.71	63728.168	12456366.45	32.6041
2003	12566.4	4.39	55166.496	151914409	19.2721
2004	15430.1	3.46	53388.146	238087986	11.9716
2005	15835.7	2.86	45765.173	250769394.5	8.3524
2006	18755.5	2.89	52890.51	351768780.3	7.9524
2007	21161.4	1.96	41476.344	447804850.0	3.8416
2008	19344	1.72	33271.68	374190336	2.9584
2009	23050.5	1.75	40338.375	531325550.3	30625
2010	35871.8	6.76	242493.04	1286786035	45.69
2011	35182.7	6.26	220243.70	12378223799.0	39.188
N=10	∑a=208358.9	∑b=37.72	∑ab=848761.93	$\sum a^2$=5001033177.0	$\sum b^2$=174.893

Using Karl Pearson's formula of correlation

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

$$= \frac{10 \times 848761.93 - 208358.9 \times 37.72}{\sqrt{10 \times 5001033177 - (2083589.2)^2}\sqrt{10 \times 174.893 - (37.72)^2}}$$

$$= \frac{8487619.3 - 7859297.71}{\sqrt{50010331770 - 43413431210} \times \sqrt{1748.93 - 1422.8}}$$

$$= \frac{628321.59}{\sqrt{6596900561} \times \sqrt{326.132}}$$

$$= \frac{628321.59}{81221.30608 \times 18.059}$$

$$= \frac{628321.59}{1466775.566}$$

$= 0.4284$ (+ve correlation)

Table 1

		VAR-1	VAR-2
VAR-1	Pearson Correlation		0.4284 *
	Sig. (2-tailed)		0.05
	N	10	10
VAR-2	Person Correlation	0.4284 *	
	Sig. (2-tailed)	0.05	
	N	10	10

∗ Correlation is significant at 0.05 level (2-talied).

2. Deposit Interest Rate and Lending Rate (r_{bd})

Correlations

Year	ab	d	b.d	b^2	d^2
2002	5.71	13.28	75.8288	32.6041	176.358
2003	4.39	12.30	53.997	19.2721	151.29
2004	3.46	11.12	38.4752	11.9716	123.6544
2005	2.89	10.61	30.6629	8.3521	112.5721
2006	2.82	10.41	29.3562	7.9524	108.3681
2007	1.96	10.11	19.8156	3.8416	102.2121
2008	1.72	9.84	16.9248	2.9584	96.8256
2009	1.75	8.78	15.365	3.0625	77.0884
2010	6.76	9.65	65.234	45.69	93.1225
2011	6.26	9.53	59.6578	39.188	90.8209
N=10	∑b=37.72	∑d=105.63	∑bd=405.32	$\sum b^2$=174.893	$\sum d^2$=1132.3125

Using Karl Pearson's formula of correlation

$$r_{bd} = \frac{N\sum bd - \sum b.\sum d}{\sqrt{N\sum b^2 - (\sum b)^2}\sqrt{N\sum d^2 - (\sum d)^2}}$$

$$= \frac{10 \times 405.32 - 37.72.9 \times 105.63}{\sqrt{10 \times 174.893 - (2083589.237.72)^2}\sqrt{10 \times 174.8931132.3125 - (105.63)^2}}$$

$$= \frac{4053.2 - 3984.364}{\sqrt{1748.93 - 1422.7984} \times \sqrt{1748.93113233.125 - 11157.6969}}$$

$$= \frac{68.836}{\sqrt{326.1316} \times \sqrt{165.428}}$$

$$= \frac{68.836}{232.274}$$

= 0.2960 (+ve correlation)

Table 2

		VAR-2	VAR-4
VAR-2	Pearson Correlation		0.2960 *
	Sig. (2-tailed)		0.05
	N	10	10
VAR-4	Person Correlation	0.2960*	
	Sig. (2-tailed)	0.05	
	N	10	10

∗ Correlation is significant at 0.05 level (2-talied)

3. Lending Amount and Lending Rate (r_{cd})

Correlations

Year	**c**	**d**	**c.d**	**c^2**	**d^2**
2002	4693.10	13.28	62324.368	22025187.61	176.3584
2003	4957.5	12.30	60977.25	24576806.25	151.29
2004	59241.10	11.12	65875.992	35094960.81	123.6544
2005	5787.9	10.61	61409.62	33499786.41	112.5721

2006	6080.70	10.41	63300.1	369749.1249	108.3681
2007	6729.6	10.11	68036.256	45287516.16	102.2121
2008	8214.0	9.84	80825.76	67469796	96.8256
2009	8905	8.78	78185.9	79299025	77.0884
2010	13118.6	9.65	126594.49	172097666	93.1225
2011	15932.2	9.53	151833.866	253834996.8	90.8209
N=10	∑c=80342.7	∑d=105.63	∑cd=819363.588	$\sum c^2$=770160653.5	$\sum d^2$=1332.3125

Using Karl Pearson's formula of correlation

$$r_{cd} = \frac{N\sum cd - \sum c.\sum d}{\sqrt{N\sum c^2 - (\sum c)^2}\sqrt{N\sum d^2 - (\sum d)^2}}$$

$$= \frac{10 \times 819363.588 - 80342.7 \times 105.63}{\sqrt{10 \times 770160653.5 - (80342.7)^2}\sqrt{10 \times 1132.3125 - (105.63)^2}}$$

$$= \frac{8193635.88 - 8486599.41}{\sqrt{7701606535 - 6454949443}\sqrt{11323.125 - 11157.6969}}$$

$$= \frac{-292963.53}{35308.03155 \times 12.862}$$

$$= \frac{-292963.53}{454127.860.9}$$

$= -0.645$ (-ve correlation)

Table 3

		VAR-4	VAR-3
VAR-4	Pearson Correlation		-0.645 *
	Sig. (2-tailed)		0.05
	N	10	10
VAR-3	Person Correlation	-0.645*	
	Sig. (2-tailed)	0.05	
	N	10	10

∗ Correlation is significant at 0.05 level (2-talied)

4. Interest Rate on Deposit and Inflation Rate (r_{be})

Correlations

Year	**b**	**e**	**b.e**	**b^2**	**e^2**
2002	5.71	11.40	65.094	32.6041	129.96
2003	4.39	3.50	15.365	19.2721	12.25
2004	3.46	2.40	8.304	11.9716	5.76
2005	2.89	2.90	8.381	8.3521	8.41
2006	2.82	4.8	13.536	7.9521	23.04
2007	1.96	4.00	7.84	3.8416	16
2008	1.72	4.5	7.74	2.9584	20.25
2009	1.75	4.5	7.875	3.0625	20.25
2010	6.76	7	47.32	45.69	49
2011	6.26	7	43.82	39.188	49
N=10	∑b=37.72	∑e=52	∑eb=225.275	$\sum b^2$=174.893	$\sum e^2$=333.92

Using Karl Pearson's formula of correlation

$$r_{be} = \frac{N\sum be - \sum b.\sum e}{\sqrt{N\sum b^2 - (\sum b)^2}\sqrt{N\sum e^2 - (\sum e)^2}}$$

$$= \frac{10 \times 225.275 - 37.72 \times 52}{\sqrt{10 \times 174.893 - (37.72)^2}\sqrt{10 \times 333.92 - (52)^2}}$$

$$= \frac{2252.75 - 1961.44}{\sqrt{1748.93 - 1422.7984}\sqrt{333.2 - 27.4}}$$

$$= \frac{291.31}{18.059 \times 25.203}$$

$$= \frac{291.31}{455.141}$$

$= 0.640$ (+ve correlation)

Table 4

		VAR-2	VAR-5
VAR-2	Pearson Correlation		0.640 *
	Sig. (2-tailed)		0.05
	N	10	10
VAR-5	Person Correlation	0.640*	
	Sig. (2-tailed)	0.05	
	N	10	10

∗ Correlation is significant at 0.05 level (2-talied)

5. Interest Rate on Deposit and Risk Free Rate (r_{bf})

Correlations

Year	b	f	b.f	b^2	f^2
2002	5.71	2.33	13.3043	32.6041	5.4289
2003	4.39	4.66	20.4574	19.2721	21.7156
2004	3.46	4.96	17.1616	11.9716	24.6016
2005	2.89	4.71	13.6119	8.3521	22.1841
2006	2.82	3.48	9.8136	7.9524	12.1104
2007	1.96	2.93	5.7428	3.8416	8.5849
2008	1.72	2.46	4.2312	2.9584	6.0516
2009	1.75	2.64	4.62	3.0625	6.9696
2010	6.76	2	13.52	45.69	4
2011	6.26	4	125.04	39.188	16
N=10	∑b=37.72	∑f=34.17	∑bf=127.5	$\sum b^2$=174.893	$\sum f^2$=127.65

Using Karl Pearson's formula of correlation

$$r_{bf} = \frac{N\sum b.f - \sum b.\sum f}{\sqrt{N\sum b^2 - (\sum b)^2}\sqrt{N\sum f^2 - (\sum f)^2}}$$

$$= \frac{10\times 127.5 - 37.72\times 34.17}{\sqrt{10\times 174.893 - (37.72)^2}\sqrt{10\times 127.65 - (34.17)^2}}$$

$$= \frac{1275 - 1288.8924}{\sqrt{1748.93 - 1422.7984}\sqrt{1276.5 - 1167.5889}}$$

$$= \frac{-13.8924}{18.06 \times 1044}$$

$$= \frac{-13.8924}{188.5464}$$

$= -0.07368$ (-ve correlation)

Table 5

		VAR-2	VAR-6
VAR-2	Pearson Correlation		-0.07368 *
	Sig. (2-tailed)		0.05
	N	10	10
VAR-6	Person Correlation	-0.07368*	
	Sig. (2-tailed)	0.05	
	N	10	10

∗ Correlation is significant at 0.05 level (2-talied)

6. Interest Rate in Lending and Inflation Rate (r_{de})

Correlations

Year	**d**	**e**	**d.e**	**d^2**	**e^2**
2002	13.28	11.40	151.392	176.3584	129.96
2003	12.30	3.50	43.05	151.29	12.25
2004	11.12	2.40	26.688	123.654	5.76
2005	106	2.90	30.769	112.5721	8.41

2006	10.41	4.80	49.968	108.368	23.04
2007	10.11	4.00	40.44	102.212	16
2008	9.84	4.5	44.28	96.8256	2025
2009	8.78	4.5	39.51	77.0884	20.25
2010	9.65	7	67.55	93.1225	49
2011	9.53	7	66.71	90.8209	49
N=10	∑d=105.63	∑e=52	∑de=560.36	$\sum d^2$=1132.3125	$\sum e^2$=333.92

Using Karl Pearson's formula of correlation

$$r_{de} = \frac{N\sum de - \sum d.\sum e}{\sqrt{N\sum d^2 - (\sum d)^2}\sqrt{N\sum e^2 - (\sum e)^2}}$$

$$= \frac{10 \times 560.36 - 105.63 \times 52}{\sqrt{10 \times 1132.3125 - (105.63)^2}\sqrt{10 \times 333.92 - (52)^2}}$$

$$= \frac{5603.6 - 5492.76}{\sqrt{11323.125 - 11157.7}\sqrt{333.2 - 27.4}}$$

$$= \frac{291.31110.84}{12.862 \times 25.2032}$$

$$= \frac{110.84}{324.1635}$$

$= 0.342$ (+ve correlation)

Table 6

		VAR-4	VAR-5
VAR-5	Pearson Correlation		0.342 *
	Sig. (2-tailed)		0.05
	N	10	10
VAR-5	Person Correlation	0.342*	
	Sig. (2-tailed)	0.05	
	N	10	10

∗ Correlation is significant at 0.05 level (2-talied)

7. Interest Rate in Lending and Risk Free Rate (r_{df})

Correlations

Year	d	f	d.f	d^2	f^2
2002	13.28	2.33	30.9424	176.3584	5.4289
2003	12.30	4.66	57.318	151.29	21.756
2004	11.12	4.36	55.1552	123.6544	24.6016
2005	10.61	4.71	79.9731	112.5721	22.1841
2006	10.41	3.48	36.2268	108.3681	12.104
2007	10.11	2.93	29.6223	102.2121	8.5849
2008	9.84	2.46	24.2064	96.8256	6.0516
2009	8.78	2.64	23.1792	77.0884	6.9696

2010	9.65	2	19.3	93.1225	4
2011	9.33	4	38.12	90.8209	16
N=10	∑d=105.63	∑f=34.17	∑df=364	$\sum d^2$=11.32.3125	$\sum f^2$=127.65

Using Karl Pearson's formula of correlation

$$r_{df} = \frac{N\sum d.f - \sum d.\sum f}{\sqrt{N\sum d^2 - (\sum d)^2}\sqrt{N\sum f^2 - (\sum f)^2}}$$

$$= \frac{10\times 364 - 105.63\times 34.17}{\sqrt{10\times 1132.3125 - (105.63)^2}\sqrt{10\times 127.65 - (34.17)^2}}$$

$$= \frac{3640 - 3609.380}{\sqrt{11323.125 - 11157.6969}\sqrt{1276.5 - 1167.58}}$$

$$= \frac{30.62}{12.86188\times 10.44}$$

$$= \frac{30.62}{134.2781}$$

$= 0.228$ (+ve correlation)

Table 7

		VAR-4	VAR-6
VAR-4	Pearson Correlation		0.640 *
	Sig. (2-tailed)		0.05
	N	10	10
VAR-6	Person Correlation	0.640*	
	Sig. (2-tailed)	0.05	
	N	10	10

∗Correlation is significant at 0.05 level (2-talied)

Additional Informational

* Deposit Amount and lending rates (r_{ad})

Year	a	d	ad	a^2	d^2
2002	1160.8	13.28	148215.424	1245631456.6	176.3584
2003	12566.4	12.30	15466.72	157914409	157.29
2004	15430.1	11.12	171582.712	238087986	123.6544
2005	15835.7	10.61	168016.777	250769394.5	112.57
2006	18755.5	10.41	195244.455	351768780.3	108.3681
2007	21161.4	10.11	213941.734	447804850	102.2121
2008	19344	9.84	1903941.734	374190336	96.8256
2009	23050.5	8.78	202383.79	531325550.3	77.0884
2010	35871.8	9.65	346162.87	1286786035	93.1225
2011	35182.7	9.53	335291.131	1237822379.0	90.8209
N=10	∑a=208358.9	∑d=105.63	∑ad=2125750.493	$\sum a^2$=5001033177.0	$\sum d^2$=1132.3225

Using Karl Pearson's formula of correlation

$$r_{ad} = \frac{N\sum ad - \sum a.\sum d}{\sqrt{N\sum a^2 - (\sum a)^2}\sqrt{N\sum d^2 - (\sum d)^2}}$$

$$= \frac{10 \times 2125750 - 208358.9 \times 105.63}{\sqrt{10 \times 5001033177.0 - (202358.9)^2}\sqrt{10 \times 1132.3125 - (105.63)^2}}$$

$$= \frac{21257504.93 - 22008950.61}{\sqrt{50010331770 - 43413431210}\sqrt{11323.125 - 11157.6969}}$$

$$= \frac{-751445.68}{81221.31 \times 12.8623}$$

$$= \frac{-751445.68}{1044690.768}$$

$= -0.7193$ (-ve correlation)

* Interest rates and Lending Amount (r_{bc})

Year	b	c	b.c	b^2	c^2
2002	5.71	4693.1	26797.601	32.6041	22025187.61
2003	4.39	49575	21763.425	19.2721	24576806.25
2004	3.46	5924.1	20497.386	11.9716	35094960.81
2005	2.89	5787.9	16727.031	8.3521	33499786.41
2006	2.82	6080.7	17147.574	7.9524	36974986.41
2007	1.96	6729.6	13190.016	3.8416	45287516.16
2008	1.72	8214	14128.1	2.9584	67469796
2009	1.75	8905	11583.75	3.0625	79299025
2010	6.76	13118.6	88681.74	45.69	172097666
2011	6.26	15932.2	99735.57	39.188	253834996.8
N=10	$\sum b=37.72$	$\sum c=80342.7$	$\sum bc=334252.2$	$\sum b^2=174.893$	$\sum c^2=770160653$

Using Karl Pearson's formula of correlation

$$r_{bc} = \frac{N\sum bc - \sum b.\sum c}{\sqrt{N\sum b^2 - (\sum b)^2}\sqrt{N\sum c^2 - (\sum c)^2}}$$

$$= \frac{10 \times 334252.2 - 37.72 \times 80342.7}{\sqrt{10 \times 174.893 - (37.17)^2}\sqrt{10 \times 770160653.5 - (80342.7)^2}}$$

$$= \frac{3342522 - 3030526.644}{\sqrt{1748.93 - 1422.7984}\sqrt{7701606535 - 6454949443}}$$

$$= \frac{311995.356}{18.059 \times 35308.03155}$$

$$= \frac{311995.356}{637627.7418}$$

$= 0.4893$ (+ve correlation)

Appendix-2

T-statistics for Standard Chartered Bank

1. Deposit Amount and Deposit Rate (r_{ab})

$$rab = \frac{rab}{\sqrt{1 - r^2 ab}} \times \sqrt{N - 2}$$

$$= \frac{0.4284}{\sqrt{1 - (0.4284)^2}} \times \sqrt{10 - 2}$$

$$= \frac{0.4284}{\sqrt{0.81647}} \times 2.82843$$

$$= \frac{0.4284}{0.90358} \times 2.8284.3$$

$$= 1.34$$

2. Deposit rates and lending rates (r_{bd})

$$rbd = \frac{rbd}{\sqrt{1 - r^2 db}} \times \sqrt{N - 2}$$

$$= \frac{0.296}{\sqrt{1 - (10.296)^2}} \times \sqrt{10 - 2}$$

$$= \frac{0.296}{0.9552} \times 2.82843$$

$$= 0.8765$$

3. Lending Amount and lending rates (r_{cd})

$$rcb = \frac{rcd}{\sqrt{1 - r^2 cd}} \times \sqrt{N - 2}$$

4. Deposit rates and inflation rate (r_{be})

$$rbe = \frac{rbe}{\sqrt{1 - r^2 be}} \times \sqrt{N - 2}$$

$$= \frac{0.640}{\sqrt{1 - (0.64)^2}} \times \sqrt{10 - 2}$$

$$= \frac{0.640}{\sqrt{0.5904}} \times 2.82843$$

$$= 2.356$$

5. Deposit rates and risk frees rates (r_{bf})

$$rbf = \frac{rbf}{\sqrt{1 - r^2 bf}} \times \sqrt{N - 2}$$

$$= \frac{-0.07368}{\sqrt{1 - (0.73685)^2}} \times \sqrt{10 - 2}$$

$$= \frac{-0.07368}{\sqrt{0.9946}} \times \sqrt{10 - 2}$$

$$= \frac{-0.07368}{0.9973} \times 2.82843$$

$$= \frac{-0.07368}{0.90358} \times 2.8284.3$$

$$= -0.20896$$

6. Lending rates and inflation rate (r_{de})

$$rde = \frac{rde}{\sqrt{1 - r^2 de}} \times \sqrt{N - 2}$$

$$= \frac{0.345}{\sqrt{1 - (0.342)^2}} \times \sqrt{10 - 2}$$

$$= \frac{0.342}{\sqrt{0.8844}} \times 2.82843$$

$$= \frac{0.342}{0.94042} \times 2.8284.3$$

$$= 1.0228$$

7. Lending rates and rise free rate (r_{df})

$$rdf = \frac{rdf}{\sqrt{1 - r^2 df}} \times \sqrt{N - 2}$$

$$= \frac{0.228}{\sqrt{1 - (0.228)^2}} \times \sqrt{10 - 2}$$

$$= \frac{0.228}{\sqrt{0.948016}} \times 2.82843$$

$$= \frac{0.228}{097368} \times 2.8284.3$$

$$= 0.6623$$

Appendix-3

Determination and multiples Determination

1. $$rb.ad = \sqrt{\frac{r^2ab + r^2bd - 2rab.rbd.rad}{1 - r^2ad}}$$

$$= \sqrt{\frac{0.1835 + 0.08762 + 2 \times 0.4284 \times 0.296 \times (-0.7193)}{1 - (-0.7193)^2}}$$

$$= \sqrt{\frac{0.27112 + 0.18242}{1 - 0.5174}}$$

$$= \sqrt{\frac{0.27112 + 0.18242}{1 - 0.5174}}$$

$$= \sqrt{\frac{0.45354}{0.4826}}$$

$$= 0.9694$$

$$r^2b.ad = (rb.ad)^2$$

$$= (0.9694)^2$$

$$= 0.9398$$

2. $$rd.bc = \sqrt{\frac{r^2bd + r^2cd - 2rbd.rcd.rbc}{1 - r^2bc}}$$

$$= \sqrt{\frac{0.08762 + 0.416025 + 2 \times 0.296 \times (0.645) \times -0.7193}{1 - (0.4893)^2}}$$

$$= \sqrt{\frac{0.503645 + (0.1868)}{1 - 04893}}$$

$$= \sqrt{\frac{0.6905}{1 - 76058}}$$

$$= 0.953$$

$$r^2 d.bc = (rd.bc)^2$$

$$= (0.953)^2$$

$$= 0.9078$$

3. $$rb.ef = \sqrt{\frac{r^2 be + r^2 bf - 2rbc.rbf.ref}{1 - r^2 ef}}$$

$$= \sqrt{\frac{0.4963 + 0.00543 + 2 \times 0.64 \times (0.07368) \times (-0.6036)}{1 - (0.3643)^2}}$$

$$= \sqrt{\frac{0.50173 + (-0.569)}{0.6357}}$$

$$= \sqrt{\frac{0.44483}{0.6357}}$$

$$= 0.8365$$

$$e^2 b.ef = (rb.ef)^2$$

$$= (0.8365)^2$$

$$= 0.6997$$

4. $$rd.ef = \sqrt{\frac{r^2 de + r^2 df - 2rde.rdf.ref}{1 - r^2 ef}}$$

$$= \sqrt{\frac{0.1169 + 0.052 - 2 \times 0.342 \times 0.228 \times 0.6036}{1 - (0.3643)^2}}$$

$$= \sqrt{\frac{0.1689 + 0.09413}{0.6357}}$$

$$= \sqrt{\frac{0.07477}{0.6357}}$$

$$= \sqrt{0.11762}$$

$$= 0.343$$

$$r^2 d.ef = (rd.ef)^2$$

$$= (0.343)^2$$

$$= 0.11762$$

Appendix-4

SOURCE AND USES OF FUND OF STANDARD CHARTERED BANK

(Rs. in millions)

USE OF FUNDS

Mid-July									
	2003	2004	2005	2006	2007	2008	2009	2010	2011
1. **CAPITAL FUND**	834.70	920.30	1012.30	1119.0	1527.90	1278.20	1576.30	24934	2053
a. Paid-up Capital	339.5	339.5	339.5	339.5	374.60	374.60	374.60	932	1398.5
b. General Reserve	430.40	508.9	595.0	679.10	679.10	749.30	749.30	990.3	1195.3
c. Share Premium	-	-	-	-	-	-	-	-	-
d. Others Reserves	-	-	-	-	-	99.60	245.20	-	-
i. Ex. Eq. Fund	64.8	71.9	77.80	100.40	374.60	154.30	207.20	187.8	219.7
ii. Other	-	-	-	-	-	116.80	132.20	-	-
2. BORROWINGS	2380.80	1590.0	671.50	79.10	78.30	37.50	75	300	-
a. NRB	-	-	-	-	-	43.8	10.20	-	-
b. “A” Class Licensed	2380.80	1590.0	671.50	79.10	78.30	37.50	75	300	-

Institution									
c. Foreign Bank and Fin. Ins.	-	-	-	51.0	13.6	16.20	10.20	-	-
d. Other Financial Ins.	-	-	-	-	-	27.6	-	-	-
e. Bonds and Securities	-	-	-	-	-	-	-	-	-
3. **DEPOSITS**	12566.40	15430.10	15835.70	18755.50	21161.14	19344	23050.50	35871.8	35182
a. Current	2417.10	3279.40	3808.40	5768.60	5816.90	4356.30	4681.80	6202.8	9763.20
Domestic	-	-	-	-	-	2360.6	3071.60	3582.9	4942.5
Foreign	6632.70	8404.60	9441.80	10633.10	12771.80	1995.70	1610.20	2619.9	4820.7
b. Saving	-	-	-	-	-	13027.70	14597.50	19187.7	12430
Domestic	2926.20	3471.7	2264.90	1948.50	1428.50	10733.30	12078.90	15389.2	10561
Foreign	-	-	-	-	-	2294.40	2518.60	379805	1868.7
c. Fixed	-	-	-	-	-	1416.40	2136.30	7101.7	9175.1
Domestic	-	-	101.10	185.20	941.0	631.90	386.50	791.9	3603.1
Foreign	590.40	274.4	219.50	220.10	203.20	784.50	1749.80	6309.8	5572

d. Call Deposit	-	-	-	-	-	294.90	1125.50	3001.6	3563.2
e. Other	-	-	-	-	-	248.70	509.40	378.1	251.2
4. Bill Payable	-	-	-	-	-	55.0	55.8	72.9	89.2
5. Contra Accounts	-	-	-	-	-	-	-	-	-
6. Other Liabilities	2574.10	3477.7	2156.10	2355.50	1691.50	1279.90	1442.50	1912.4	2113.5
1. Sundry Creditors	-	-	-	-	-	1168.80	192.60	358.4	476.7
2. Loan Loss Provision	-	-	-	-	-	277.70	270.4	200.9	217.9
3. Interest Suspense	-	-	-	-	-	133.50	160.10	117.6	136.2
4. others	-	-	-	-	-	751.90	819.40	1235.5	1282.7
7. Reconciliation A/c	-	-	-	-	-	-	-	-	-
8. Profit & Loss A/C	-	-	-	-	-	757.90	662.50	1028.3	1086.8
Use of Funds	18356	21418.10	19675.60	22309.10	24459.10	22758.8	26797.8	41678.8	41525

SOURCE OF FUNDS

	2003	2004	2005	2006	2007	2008	2009	2010	2011
1. Liquid Funds	8063.40	8086.5	2890.60	3170	4241.80	3370.80	3253.50	6788.5	3598.8
a. Cash Balance	126.20	187.60	257.80	198.70	187.70	195.40	279.40	463.4	509.1
Nepalese Notes & Coins	109.40	169.90	224.0	153.20	154.20	162.10	243.30	416.8	471.6
Foreign Currency	16.8	17.7	33.80	45.50	33.50	33.3	36.10	46.6	37.5
b. Bank Balance	7937.20	7898.90	570.8	1313.40	1835.50	915.70	996.80	2673.9	1420.2
1. In Nepal Rastra Bank	649.9	659.50	369.80	1141.10	1534.20	692.20	749.80	1851.2	819.5
Domestic Currency	-	-	-	-	-	681	731.80	1835.8	669.4
Foreign Currency	-	-	-	-	-	11.20	18	18.4	150.1
2. "A" Class Licensed Institution	-4	1.4	16.70	112.30	165.10	15.5	18.6	51.3	28.6
Domestic Currency	-	-	-	-	-	15.5	18.6	51.3	28.6
Foreign Currency	-	-	-	-	-	-	-	-	-
3. Other Financial Institution	-	-	-	-	-	-	-	-	-

4. In Foreign Banks	7291.3	7238.0	184.30	60.0	136.20	208	228.40	7714.4	572.1
c. Money at call	-	-	2062.0	1657.90	2218.60	2259.70	1977.30	3651.2	1669.5
Domestic Currency	-	-	-	-	-	-	-	-	-
Foreign Currency	-	-	-	-	-	2259.7	1977.30	3651.2	1669.5
2. Investment	3338.7	4811.10	5784.80	6722.80	7948.20	72.04.60	8644.90	10007.3	8540
a. Govt. Securities	3338.70	4811.10	5784.80	6722.80	7948.20	72.04.60	8644.90	9998.8	8531.5
b. NRB	-	-	-	-	-	-	-	-	-
c. Govt. Non-Fin Ins.	-	-	-	-	-	-	-	-	-
d. Other Non-Fin. Ins.	-	-	-	-	-	-	-	8.5	8.5
e. Non Resident	-	-	-	-	-	-	-	-	-
3. Share & Other Investment	11.20	11.20	3491.20	3634.90	3412.10	2499.50	4205.70	8633.2	10844.9
1. Non Residents	-	-	-	-	-	2486.10	4190.30	8300.1	10844.9
2. Others	-	-	-	-	-	13.4	15.4	333.1	462.6
4. Loan and advances	4957.50	5924.10	5787.90	6080.70	6729.60	8214	8905	13118.6	15932.2

a. Govt. Entp.	365.50	359.90	286.20	51.50	6.7	315	83	-	-
❖ Financial Institution	169.3	239.70	90.0	6.2	-	-	-	252.1	244.6
❖ Non Financial Govt. org	196.20	120.20	196.20	45.30	6.7	315	83	144.1	94.1
b. Pvt. Sector	4394.30	5478.8	5389.40	5977.0	6655.30	7898	8822	12722.4	15593.5
c. For Bills P & D	197.70	85.40	112.30	52.20	67.60	-	-	-	-
d. Foreign A.B.C.	-	-	-	-	-	-	-	-	-
5. Bill Purchased	-	-	-	-	-	313.60	301.20	762.1	244.5
a. Domestic Bills Purchased	-	-	-	-	-	3	4.5	4.9	59.0
b. Foreign Bills Purchased	-	-	-	-	-	235.90	296.70	757.2	185.5
c. Import Bill and Imports	-	-	-	-	-	74.7	-	-	-
6. Loans Against collected Bills	-	-	-	-	-	-	-	-	-
a. Against Domestic Bill	-	-	-	-	-	-	-	-	-
b. Against Foreign Bill	-	-	-	-	-	394.40	390.70	-	-
7. Contra	1985.30	2585.30	1721.10	2700.70	2127.40	754.10	1095.40	-	-

8. Fixed Assets	137.40	186.60	216.0	167.60	290.70	266.60	378.40	471.5	480.4
9. Other Assets	-	-	-	-	-	-	14.20	1861.2	1390.3
a. Accrued Interests	137.40	186.6	216.0	165.10	290.70	266.60	364.20	337.6	251.3
Govt. Entp.	-	-	-	-	-	94.10	122.90	12.7	9.4
Private Sector	-	-	-	-	-	-	59.50	324.9	241.9
b. Staff Loans/Adv.	-	-	-	-	-	-	-	182.5	185.3
c. Sundry Debtors	-	-	-	-	-	-	534.60	143.8	310.5
d. Cash in Transit	-	-	-	-	-	-	1.3	-	-
e. Others	1847.90	-	-	-	1836.70	393.40	-	1197.3	643.2
10. Expenses not written off	-	-	-	-	-	-	-	36.4	31.5
11. Non Banking Assets	-	-	-	-	-	-	-	-	-
12. Reconciliation Account	-	-	-	-	-	-	-	-	-
13. Profit & Loss A/c	-	2398.70	1505.10	2533.10	-	8.3	-	-	-
Sources of Funds	18356.0	21418.10	19675.60	22309.10	24459.10	22758.80	26797.80	41678.8	41525.2

Appendix-5

Questionnaire for Primary Data Analysis

Dear all,

The purpose of this study is to access the performance of interest rate The information supplied will be used only for the study purpose and high level of secrecy will be strongly maintained .Please read the following statement and circle at the appropriate number that comes closest to your opinion.		Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
1	Depositors and lenders activities are the important factors to determine interest rate.	1	2	3	4	5	6
2	NRB must to play prime role and responsibility to determine the interest rate.	1	2	3	4	5	6
3	Interest rate is prime factor for the competition of banking sectors.	1	2	3	4	5	6
4	Investment climate effects to determine interest rate.	1	2	3	4	5	6
5	Fair competition is needed to determine appropriate interest rate.	1	2	3	4	5	6
6	It is favorable to freely determine the interest rate to development of Banking Sector.	1	2	3	4	5	6
7	Nepalese economic environment is favorable to determine interest rate.	1	2	3	4	5	6
8	Nepalese political environment is favorable to determine interest rate.	1	2	3	4	5	6

9	Regularly decline of interest rate is favorable to extend the Investment.	1	2	3	4	5	6
10	Nepalese social environment affects to determine interest rate.	1	2	3	4	5	6
11	There is positive relationship between customer service cost and interest rate of the banking sector.	1	2	3	4	5	6
12	There is needed to minimize the interest rate to the extent of investment.	1	2	3	4	5	6
13	There is positive relationship between profit and interest rate of bank.	1	2	3	4	5	6
14	Maturity period affects to determination of interest rate.	1	2	3	4	5	6
15	Different interest rates have to charge for the different sectors in lending.	1	2	3	4	5	6
16	Open border of the Nepal affects to determine the interest rate.	1	2	3	4	5	6
17	Easy to hold Indian currency affects to determine the interest rate.	1	2	3	4	5	6
18	Rapidly Increasing the price of goods effects to the interest rate.	1	2	3	4	5	6
19	There is the relation between stock price and interest rate.	1	2	3	4	5	6
20	Tax rules of Nepal effects to the determine of interest rate in Nepalese commercial banks.	1	2	3	4	5	6

Kulraj Paudel

Details of Respondents:

Age: 20-59 year

Profession: Lecturer, officer, services holder, business man etc

Experience in Profession (in Yr): 15 year

Level of profession: Assistant to Director Sex: Male and Female

Education: Bachelor to above Master Degree.

2012/08/08

Dear sir/Madam,

I am conducting a research on “Factor determining the interest rates of commercial bank”. I will deeply indebt with you provide me few minutes of year busy schedules to answer the questionnaires enclosed with this letter. Each of your idea and option will be grateful for present. Research to know more about the “Factor determining the interest rates of commercial bank in Nepal”. Thank you for your kind co-operation and help.

With Regards

Kulraj Paudel
Shaheed Smriti Multiple Campus

Respondents view point

Age Group of Respondents

Option / Respondents	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree	Frequency (Total)
20-29 Year	8	10	2	1	1	1	23
30-39 Year	4	9	5	2	2	2	24
40-49 Year	3	8	1	1	1	1	15
50-59 year	2	1	-	-	-	-	4
Total							66

(Note: 20 Questions are distributed each Group Respondents.)

Profession of Respondents

Option / Respondents	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree	Frequency (Total)
Academicians	1	1	1	5	4	3	15
Official (Banking & Financing)	4	5	2	4	7	12	34
Official (Gov. Service)	1	1	1	3	1	3	8
Official (Other sector)	-	-	-	3	1	1	5
Business	1	-	-	1	2	-	4
Total							66

(Note: 20 Questions are distributed each Group Respondents.)

Experience of Respondents

Option / Respondents	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree	Frequency (Total)
1-5 year	5	3	3	5	4	3	23
6-10 year	2	1	2	2	5	4	16
11-15 Year	3	2	2	2	7	5	21
15 & above	1	1	-	1	2	1	6
Total							66

(Note: 20 Questions are distributed each Group Respondents.)

Profession level of Respondents

Option / Respondents	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree	Frequency (Total)
Assistant Level	3	-	2	3	5	2	15
Officer Level	4	3	3	4	14	4	32
Manager Level	2	3	1	2	3	2	13
Director Level	1	1	-	1	2	1	6
Total							66

(Note: 20 Questions are distributed each Group Respondents.)

Gender Group of Respondents

Option / Respondents	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree	Frequency (Total)
Male	-	5	2	11	18	9	45
Female	4	3	3	3	6	2	21
Total							66

(Note: 20 Questions are distributed each Group Respondents.)

Education Status of Respondents

Option / Respondents	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree	Frequency (Total)
Bachelor Degree	-	-	8	9	3	3	23
Master Degree	6	5	10	12	5	4	42
Above Degree	-	-	-	1	-	-	1
Total							66

(Note: 20 Questions are distributed each Group Respondents.)

Source: Sample Survey for Primary Data 2012