DETERMINANTS OF INTEREST RATE SPREAD IN NEPALESE COMMERCIAL BANKS

A Dissertation submitted to the Office of the Dean, Faculty of Management in partial fulfilment of the requirements for the Degree of Master of Business Studies

By

Sukadev Subedi

Symbol No:15784/19

Campus Roll NO:089/075

Registration no:7-2-271-375-2013

People's Campus

Kathmandu, Nepal

December, 2022

Certification of Authorship

I hereby corroborate that I have researched and submitted the final draft of dissertation entitled "**Determinants of interest rate spread in Nepalese Commercial Banks**." The work of this dissertation has not been submitted previously for the purpose of conferral of any degrees nor has it been proposed and presented as part of requirements for any other academic purpose.

The assistance and cooperation that I have received during this research work has been acknowledged. In addition, I declare that all information sources and literature used are cited in the reference section of the dissertation.

Sukadev Subedi

December, 2022

Report of Research Committee

Mr. Sukadev Subedi has defended research proposal entitled "**Determinants of interest rate spread in Nepalese Commercial Banks**." successfully. The research committee has registered the dissertation for further progress. It is recommended to carry out the work as per suggestions and guidance of supervisor, **Madhusudan Gautam** and submit the thesis for evaluation and viva voce examination.

Signature……

Supervisor (Defended)

Dissertation Proposal Defended Date:
21-07-2022

Madhusudan Gautam

Signature……

Supervisor

Dissertation Submitted Date:

Gopal Krishna Shrestha, PhD

Signature……

Head Researcher Committee

Dissertation Viva Voce Date:

Approval Sheet

We have examined the dissertation entitled "**Determinants of interest rate spread in Nepalese Commercial Banks**." presented by Mr. **Sukadev Subedi** for the degree of Master of Business Studies. We hereby certify that the dissertation is acceptable forthe award of degree.

_____

Madhusudan Gautam

Dissertation Supervisor

_____

Internal Examiner

_____

External Examiner

_____

Gopal Krishna Shrestha, PhD

Chairperson, Research Committee

Acknowledgement

The study entitled "**Determinants of interest rate spread in Nepalese Commercial Banks**." has been prepared to fulfill the partial requirement for Masters of Business Studies.

I am heartily thankful to my supervisor**, Madhusudan Gautam**, whose encouragement, guidance and support from the initial to the final level enabled me to develop an understanding of the subject. His insightful scholarship and meticulous accuracy were instrumental in shaping this work into its final form.

I would like thank Head of Department, **Pramod Sharma**, Research Committee Head, **Gopal Krishna Shrestha,PhD** and campus chief **Manoj Kunwar** for their constant support.

I am also very thankful and grateful towards my seniors, colleagues and authorities ofPeoples Campus for their support, encouragement, and valuable suggestions as wellas for the generosity and co-operation for the completion of this project.

Last but not the least, I would like to express my sincere thanks to all my family, friends and well-wishers for their immense support and best wishes throughout the project.

Sukadev Subedi

December, 2022

Tables of Contains

Contents **Page No**

List of Tables

Page No

List of Figures

Page No

Abbreviations

APR	:Annual percentage rate
NRB	:Nepal Rasta Bank
IRS	:Interest rate spread
NIM	:Net interest margin
TAR	:Total assets ratio
SL	: Supply of loanable funds
S	: Aggregate saving
H	: Aggregate dishoarding of money
DL	:Demand of loanable funds
MD	: Demand of money
MS	: Supply of money
ROA	:Return of assets
CPI	:Consumer price index
FDI	:Foreign direct investment
NEPSE	:Nepal stock exchange
WADR	:Weighted average deposit rate
WALR	:Weighted average lending rate
TA	:Total assets
OC	:Operating cost
LR	:Liquidity ratio
CR	:Credit risk
INF	:Inflation
GDP	:Gross domestic product
CV	:Coefficient of variance
NPL	:Non-performing loan
SPSS	:Statistical package for the social science

Abstract

The aim of this study is to investigate the determinants of interest rate spread of Nepalese commercial banks. The analysis of data was based on a sample of 12 commercial banks observed over the period 12 years (2009-10 to 2020-21). The models used in the study were correlation and linear regression analysis. This study has used 'interest rate spread' as dependent variable, while the independent variablesare: Bank size, operating cost, liquidity ratio, credit ratio, inflation rate, and GDP. The estimated results of these regression models reveal that operating costs to total assets ratio, liquidity ratio(liquidity assets to total assets), and credit ratio(non- performing loans to total loans ratio) have significant positive impact on interest rate spread of the commercial bank in Nepal. However, bank size, inflation, and GDP have positively impact but low level significance on interest rate spread. Thus, this study concludes that the major determinants of commercial banks' interest rate spread are: operating costs, credit ratio, and liquidity ratio in Nepalese perspectives.

Keywords: Credit risk, Liquidity risk, Operating cost, Inflation, and GDP

CHAPTER I

INTRODUCTION

1.1 Background of the study

Commercial banks have been playing a significant role in boosting performance of the economy and act as financial agency. The banking sector is largely responsible for collecting household savings in terms of different types of deposits and regulating them into the society by lending them in different sectors of the economy (Goet, 2021). Interest rates are major economic factors that influence the economic growth in an economy. Interest is a charge to the borrower for the use of an asset. Assets borrowed can include cash, consumer goods, vehicles, and property. The interest rate is the cost of debt for the borrower and the rate of return for the lender. The money to be repaid is usually more than the borrowed amount since lenders require compensation for the loss of use of the money during the loan period. The lender could have invested the funds during that period instead of providing a loan, which would have generated income from the asset. The difference between the total repayment sum and the original loan is the interest charged.

Interest spread rate is a difference between two related interest rates. In banking industry, spread rate is the difference between debts rate (especially for deposit) and assets rate (especially for loan). Interest rate spread has always been one of the most important and significant economic issues in different countries of the world (Ghasemi and Rostami, 2015).

Interest rate is the price a borrower pays for the use of money they borrow from a lender/financial institutions or fee paid on borrowed assets. Interest can be thought of as rent of money. Interest rate as a price of money reflects market information regarding expected change in the purchasing power of money or future inflation. Commercial banks mobilize savings by offering various types of deposit products to savers and channel such savings as loans and advances to borrowers and investors (Were and Wambua, 2014).Conceptually, interest is both a payment and receipt for the use of money, interest therefore can be considered as a 'cost .On the other hand, if interest is paid, it can be considered as a 'cost' on the other hand if interest is received it can be considered as a 'return'

'Since money can earn return over a period of time, interest rates are often considered as an expression of the time value of money (Kiptui, 2014).

Interest rates play an important role in our everyday lives and can greatly affect our buying power. Consequently, the overall trend of interest rates can have a major effect on our investments, thus, as an investor it is important to pay close attention to different trends in interest rate. Major shifts in direction, be increase or decrease, should cause you to review present investments as well as point towards potential investment opportunities. Interest rates are normally calculated on annual basis known as the annual percentage rate (APR). Interest rates control the flow of money in an economy. Normally when interest rates are high in an economy, it will control the inflation rate but at the same time it has a negative impact on economy by slowing down the economic activities. Whereas, low interest rate speedup the economic performance but could lead to inflation in an economy. So therefore, it is not only important to keep an eye on increase and decrease of interest rate but also to consider the different reaction of other economic indicators in an economy (Aleemi et al, 2015).

The difference between lending and deposit interest rate is known as interest rate spread. It is an important determinants of the efficacy of the financial system in a country. In another word, the ways of measuring interest rate spread (IRS) in the literature, such as the difference between interest income received and interest paid by financial institution as a ratio of total assets or difference between the ratio of interest received and all interest bearing assets and the ratio of interest paid and all interest earning liabilities (Paudel and Khanal, 2016).

Interest rate spread is defined by market microstructure characteristics of the banking sector and the policy environment. In differentiating between the pure spread and the actual spread. Observe that pure spread is a microstructure phenomenon, influenced by the degree of bank risk management, the size of bank transactions, interest rate elasticity and interest rate variability. considering risk management by the bank, found that risk averse banks operate with a smaller spread than risk-neutral banks, explains that risk aversion raises the bank‘s optimal interest rate and reduces the amount of credit supplied. Actual spread, which incorporates the pure spread, is in addition influenced by macroeconomic variables including monetary and fiscal policy activities. Emphasize the role of direct taxes, reserve requirements, cost of transactions and forced investment in defining interest rate spread (Maigua and Mouni, 2016).

The difference between the rates at which banks lend money to borrowers and the rate they are paying to depositors are generally known as interest rate spread (IRS).The efficiency of the banking system is reflected by series of financial indicators and more importantly by IRS and Net Interest Margin (NIM). IRS is an important indicator of efficiency level of a bank or banking system. It reflects profit maximizing ability of the financial intermediaries (Kanwal et al, 2014).

Under general conditions, bank profits increase with rising interest rates under general conditions, bank profits increase with rising interest rates. He argued that the banking system as a whole is immeasurably helped rather than hindered by an increase in interest rates. The financial performance of banks is expressed in terms of profitability. Profitability is a company's ability to earn a reasonable profit on the owner's investment. The most popular profitability measurements are: Profit margin on sale, Return investment ratios, and return on equity. The financial performance of commercial banks is of great importance on its future operating activities hence need to understand the different interest rates determinants and the impact they create on the performance.

Interest rates spread are controlled by a number of factors. If the central bank targets quantities and keeps the monetary base constant, the effects of an increase in reserve requirements are analogous to a standard monetary contraction. Higher reserve requirements increase the level of interest rates. In order to fulfill the reserve requirements without reducing credit extended, banks need to attract more deposits, which drive up deposit rates. A decrease in the discount rate encourages banks to borrow and in turn this increases the amount available in form of reserves thereby enhancing or increasing the amount money supply in the economy (Maigua and Mouni, 2016). Consequently this leads to a decrease in the interest rates thereby encouraging the public to borrow more and the level of money supply going up. However, an increase in the discount rates will work the other way. That is it will discourage the level of borrowing, interest rates go up resulting into a decline in the level of money supply. The increased marginal funding costs in turn will drive up lending rates as well and raise the general level of interest rates.

A bank known as a credit institution or deposit entity is a financial company that is responsible for raising funds in the form of deposits, lending money, as well as the provision of financial services. Commercial bank are performing it's all kind of banking transactions by accepting deposits , advancing loans , credit creation and agency function, They provide short-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. Furthermore, the low attraction of demand for the loan applicant puts the bank in a dominant position to impose its conditions on the applicant. In fact, the strong demand of entrepreneur has to stop the activity and tolerate serious losses, provides conditions that the bank could easily and with bearing the lowest possible cost, collects some profits from the investment in the form of interest. However, the bank unlike other economic activities that the profitability is not ensured in advance, in exchange of the origin and profit of the loan, takes pledge or different guarantees and thus bears no risk. In fact, bank achieves the main benefit from the difference between interest paid on deposits and interest received from facilities and loans. The difference between these two rates is called spread rate. This index with multiple definitions in the banking literature generally equals to the difference between the average interest earned from interest-earning assets and average interest paid for resources (Ghasemi and Rostami, 2015). Interest rate spread shows the cost of financial intermediation in a period. The spread, in Nepal, is a function of interest expenses on deposit and interest income from the domestic loan. This also shows the general level of competition in the banking sector, the extent of credit risk, and the managerial efficiency of the concerned bank. Nepal Rasta Bank had directed "A" class banks to bring down their interest spread rate within 4.4 percent. BFIs have also been directed to publish their interest spread monthly. The overall interest spread of commercial banks gradually decreased in last three years and it stood at 3.78 percent in mid-July 2021(Nepal Rasta Bank, 2021).

Banking is one of the most important sectors of the economy of Indonesia, which is a bank-based country. A bank acts as an institution that performs the intermediation function of the fund from the public, which is channeled back in the form of a loan. The bank’s intermediary activity presupposes the availability of interest rates paid to depositors, as well as interest rates on credits. The interest rate paid to depositors and the credit interest rate will form the spread or margin of interest rate. In general, interest paid to depositors is lower than interest charged to the borrower’s funds (Wijaya, lucianna and Indriati 2020).

Interest rate spread is one of the most important tools for a bank. Interest rate spreads are related to the bank’s efficiency rate and profitability.

1.2 Statement of problem

Banking sector play a dominant role in the financial sector, particularly with respect to mobilization of savings and provision of credit. An analysis of the high interest rate spreads in the sector is not only useful in its own right, but is also central to the understanding of the financial intermediation process and the macroeconomic environment in which the banks operate. That notwithstanding, there has been little empirical research on this issue, particularly with respect to the investigation of industry-level or bank-level determinants of interest rate spreads. Were and Wambua (2013) examined and empirically investigated factors that drive the interest rate spread in Kenya's banking sector. Bank-specific factors like bank size, credit risk, liquidity risk, and operating risk played the significant role then the macroeconomic factors like inflation and read economic growth rate.

Mwamtambulo and Ntulo (2018) analyzed the factors for high interest rate spread in Tanzania, with the focus on the external characteristics that is macroeconomics. Developing countries have shown that high interest rate spreads are caused by the internal characteristics of the banks themselves rather than the external characteristics. The study that determined factors such as loan loss reserves, high operating costs, mounting statutory non-interest bearing reserves, liquid assets and net worth contribute to high interest rate spread while on the other hand factors of required reserve, administration expenses and non- interest income decrease the interest rate spread.

Ghasemi and Rostami (2015) examined about the interest rate spread and concludes that the spread rate increases with capital to assets ratio of banks. A positive relationship exists between spread rate and market structure that reflects the non-competitive pricing behavior in the centralized market. High spread rate may be inappropriate because it causes the lack of intermediation. Low interest rate on deposits would be the cause of reduction in depositing. High Interest rates on loans, on the other hand increases the cost for investors. Hence, the high spread rate can be indicative of inefficiency in the banking system. There was a positive relationship between the ratio of low-cost deposits and spread rates. Results show there is a significant correlation between the ratio of non-performing loan (NPL) and spread rate. Income-earning assets to total assets ratio (TAR) including management performance indicators, had a negative relation with spread rate. The empirical results show the existence of an inverse relation between exchange rate fluctuations and interest rate spreads.

Kiptui (2014) studied the Kenya's banking sector and find that operational costs, financial taxation and loan quality determine spread. In their study show that inelasticity of deposit supply is a major determinant of interest spread whereas industry concentration has no significant influence on interest spread. Similarly, the study shows that high operating costs raise spreads as do high levels of non-performing loans, although the size of these effects differs across the countries. In addition, reserve requirements in a number of countries still act as a tax on banks that gets translated into a higher spread. The study also attributes high spread to monopoly power of existing banks. The study observed that larger banks enjoyed lower overhead costs than smaller banks and also charged lower spreads. The study analyzed that both liquidity and equity holdings are positively related to spreads.

The determinants of interest margin in North Cyprus where thousands of families have been facing social difficulties due to legal issues and investigated that the determinants of margin and spread are different (Bektas, 2014). The study examined that credit risk, market power and bank efficiency consistently have positive and significant effect on bank spreads and net interest margin. Lower liquidity risk, higher required reserve and ownership have positive and significant effect solely to the spread. On the other hand, portfolio management has negative effect solely to banks spread. The macroeconomic variables, inflation rates seen significant values in the net interest margin model. Implications of the study suggested that banks behave differently in the determination of net interest margin and spread.

In Nepalese context, banking sectors in Nepal are committed to avail the capital for different sectors and these are established targeting different groups. Interest charge and offered by the institution have regulated by central bank until before few years. Nepalese market has not reached its maturity but in recent years institution is determining their interest rate themselves. Thus, it is important to know whether the interest rate is determined by market forces or by managerial discretion. Therefore, this researcher has influenced analysis that interest rate on deposit is affected by inflation rate and interest rate on loan and advance of finance companies in Nepal (Ojha, 2020).

Goet (2021) examined the relationship between loan and advances with total deposit, cash reserve ratio, interest rate spread and inflation rate and also to find the impact of total deposit, cash reserve ratio, interest rate spread and inflation rate on loan and advance. Commercial banks have been at the middle of driving the economy as evidenced through the incredible growth in the private sector credit over time. The banking sector is largely responsible for collecting household savings in terms of different types of deposits and

regulating them into the society by lending them in different sectors of the economy. Credit policy provides a framework for achieving asset quality and earnings objectives, sets risk tolerance levels, and guides the bank's lending activities in a manner consistent with the bank's strategic direction. Credit management is one of the major and most challenging functions of the commercial Bank. The efficiency of loan decision shall be all standards depend upon sound judgments of the officer or manager.

Bhattarai (2015) analyzed of interest rate in commercial bank have often been a subject of heated debate in Nepal. The main concern of debate is that the price of loans of Nepalese commercial banks was relatively high for a long period, thus limiting access to capital and inhibiting economic growth. A comparison of the trends in the lending rate shows that a much greater range is invariably found for increases in the lending rate than for reductions. Although there has been a trend towards lower lending rates and narrower spreads in recent years, they are still relatively high. However, the achievement to reduce lending rates will depend on how banks determine the interest rates that they charge.

Thus the process of study attempts at answering the following questions.

- What are the key determinants of interest rate spread in Nepalese commercial banks?
- Is there any relationship between operating cost, credit risk, liquidity risk, bank size, inflation, and GDP with interest rate spread?
- What is the effect of operating cost, credit risk, liquidity risk, bank size, inflation, and GDP on interest rate spread?
- Which variable(s) has a more explanatory power to determine the interest rate spread?

1.3 Objective of the study

The objective of the study is to deepen understanding on the determinants contributing to interest rate spreads in Nepal banking sector so as to resolve debates on the possible causes of the relatively high spread. For the study there has to be some objectives which highlight the purpose of doing research work. The major objectives of this research are as follows.

- To investigate the key determinants of interest rate spread in Nepalese commercial banks.
- To determine the relationship between operating cost, credit risk, liquidity risk, bank size, inflation, and GDP with interest rate spread.

- To analyze the effect of operating cost, credit risk, liquidity risk, bank size, inflation, and GDP on interest rate spread.
- To identify the most explanatory variables to determine the interest rate spread.

1.4 Rationale of the study

Nepalese interest rate varies time to time, region and sector to sector. The function in interest rate is a regular phenomenon in developing countries. Therefore, it is necessary develop some ideas about the impact of interest to the economic.

Interest income contributes major portion of net profit of any bank. Level of interest income is determined by the level of interest spread rate. The significance of this study is to identify, analyze and interpret determinants of the interest spread rate of bank. Determinants of interest rate spread of bank can be measured though the study of variables like credit Risk, operating risk and market risk. Interest spread rate also affect total lending and total deposits in an economy. So, bank must manage appropriate interest spread rate. Higher deposit interest rate encourages depositors to deposit money on bank but, side by side, high lending interest rate discourages business organization and household to carry loan from bank as it increases cost of capital to them. So, bank must maintain appropriate lending and deposit rate that can attract both depositor and debtor. This study helps bankers to analyze the past impact of interest rate spread and its impact on profitability. It helps the bankers to carry out necessary steps to determine appropriate lending and deposit rate. Some of the other significance of this study is highlighted below.

- This study help to identify the determinants of interest rate spread among commercial banks in Nepal.
- This study help to bankers carry out necessary steps to determine appropriate lending and deposit rate.
- This study help to new researchers to learn more about the interest rate spread among commercial banks in Nepal.

1.5 Limitation of the study

As we know that every activity has limitations due to time and resources, this thesis also pass through some boundaries. The main limitations of study are mentioned below:

- The samples are taken only from twelve commercial banks on the basis of high volume capital and high market efficiency in Nepalese market, other financial intermediaries are not included in the study.
- The interest rate spread of commercial banks are influenced by several factors. However, this study mainly focuses on the bank size, liquidity, credit, operation cost, inflation, and GDP on the basis of arranging all different types of bank-specific factors, and macroeconomic factors.
- The study is based on secondary data only.
- The study only covers twelve fiscal years, i.e. 2009/10 to 2020/21
- The study will be based on the annual data only.
- The reliability of this study depends upon the information provided by concerned commercial banks and published data.

CHAPTER II

LITERATURE REVIEW

2.1 Theoretical review

The theories that are reviewed in this study are: the classical theory interest rate or the real theory of interest rate, neo-classical theory of interest or loanable fund theory of interest rate, theory of liquidity preference and rational expectancy theory of interest.

2.1.1 The classical theory interest rate

The origin of monetary theory lies in classical economics, starting with the work of Adam Smith (1723-1790), (Elijah Saushini, 2016). The classical theory argues that the rate of interest is determined by two forces. Firstly the supplies of savings, derived mainly from households, and second the demand for investable capital, coming mainly from the business sector. Furthermore, this theory defines interest rate as the element that equates savings and investment. Thus, the classicists believe in the existence of a fully employed economy where saving and investment are always equal. Accordingly, interest rate is a function of savings and investment such that the higher the rate of interest the more saving will be made and the lower the rate of interest, entrepreneurs will opt to borrow in order to invest. Therefore, any shift in the supply or demand of loanable funds will cause market forces to drive the rate of interest back into equilibrium at different levels. In addition, it was found that it is the flexibility of interest rate that will ensure that the amount of savings is always equal to investment and total income will always be equal to total spending.

2.1.2 Loanable fund theory of interest rate

Loanable funds theory is a reformulation of the classical saving and investment theory of rate of interest. It incorporates monetary factors with the non-monetary factors of saving and investment. This loanable funds theory is associated with the names of Wickells, and several other Swedish economists and the British economists D. H. Robertson. This theory is an improvement over old classical theory of interest.

According to this theory, the rate of interest is determined by the demand for and supply of loanable funds. Classical theory of interest considered only saving out of current income in the supply of saving while neo-classical economists considered not only saving but also bank credit, dishoarding and disinvestment. In classical theory, only saving was available

for investment while in loanable funds theory of interest of neo-classical economists not only savings, but also hoarded wealth, bank loans, disinvestment wealth are another sources of funds available for investment to the borrowers. Since loanable funds theory of interest considered both savings of classical theory of interest and bank loans, dishoarding, and disinvestment; it is often referred as real as well as monetary theory of interest. Thus, it is both real and monetary theory of interest. The supply of loanable funds (SL) in loanable funds theory of interest is given by

$SL = S + H + \Delta M$

Where, S is aggregate saving of all households and firms net of their dissaving; H is aggregate dishoarding of money ; and ΔM is incremental supply of money, which is under the control of monetary authorities. The demand for loanable funds (DL) is given by

$DL = I + \Delta MD$

Where, I is gross investment expenditure; and ΔMD is incremental demand for hoarding money. The equilibrium rate of interest is determined at a point where

$DL = SL$

$I + \Delta MD = S + H + \Delta M$

2.1.3 Theory of liquidity preference

The rate of interest, according to Keynes, is a purely a monetary phenomenon, a reward for parting with the liquidity, and the rate of interest is determined in the money market by the intersection of demand for and supply of money. According to loanable funds theory of interest, rate of interest is determined by the intersection of supply of savings and demand for investment. Loanable funds theory of interest is different from classical theory of interest in the sense that it includes bank loans, dishoarding, and disinvestment besides savings in supply of loanable funds. With this background in mind let us move to study the Keynes theory of liquidity preference.

In his classic work, “The General Theory of Employment, Interest and Money (1936),” Keynes offered his view of how the interest rate is determined in the short run. That explanation is known as the theory of liquidity preference because it posits that the interest rate adjusts to balance the supply and demand for the economy’s most liquid asset – money. The theory of liquidity preference posits that the interest rate is one determinant of how much money people choose to hold. The reason is that the interest rate is the opportunity

cost of holding money: it is what you forgo by holding money in liquid or cash, which does not bear interest rate. When the interest rate rises, people want to hold less of their wealth in the form of money/liquid/cash.

According to Keynes, rate of interest will be determined at the point where demand for money (Md) equals supply of money (MS). This can be written as,

$M^d=M^S$

Keynes said that the money was demanded for three motives:

- The transaction motive;
- The precautionary motive
- The speculative motive.

Ever since this threefold classification of motives has become standard stock-in-trade of monetary economics. demand for money is summed up in the following equation:

$$M^d=L1(Y)+L2(r)$$

Where, M^d is demand for money. The first component of demand for money is L1(Y) representing the transactions and precautionary demand for motive and both (i.e., transaction and precautionary motives) are increasing function of income so that the first component of demand for money becomes L1(Y). The second component of demand for money is L2 (r) representing the speculative demand for money, which is a declining function of rate of interest such as if rate of interest (r) increases, speculative demand for money decreases. So, speculative demand for money depends on rate of interest rate, so that the second component of demand for money becomes L2 (r). like other economists, Keynes also assumed that the supply of money M^s to be exogenously given by the monetary authority, so that

$M^S = \acute{M}$

Where, M^S is the supply of money, and money $\acute{M}$ is given by the monetary authority.

The money market will be in equilibrium when Md = MS , i.e.,

$L1 (Y) + L2 (r) = M^S$

2.1.4 Rational expectancy theory of interest rate

The rational expectancy theory assumes that equilibrium interest rate depends upon the changes in investor's expectation regarding future security price and return. Investor's decision towards the borrowing and lending funds come from the availability of new information .When new information appears about investment, saving or the money supply, investors begin immediately to translate that new information into decision to borrow and lend funds. So rapid is the process of the market digesting new information that security prices and interest rates presumably impound the new data from virtually, the moment they appear. In absence of new information, the next period's interest rate. In other words the knowledge of past interest rate will not be a reliable foresaid of future interest rate. In a perfectly efficient market, it is impossible to win excess returns continuously by trading on publicly available inform.

2.2 Empirical review

Interest rate spread is affected by a variety of factors such as: bank-specific factors; factors specific to the banking industry; and macroeconomic factors. The bank specific factors which are the operating or administrative costs, non-performing loan, return on assets, structure of the balance sheet, non-interest income, bank size, liquidity risk(liquid assets to total assets), profitability, credit risk, default risk, management efficiency, legal risk, return of average assets. Factors specific to the banking industry which are market competition, Nepal Rasta Bank requirement, monetary policy, discount rate. Macroeconomic factors GDP, Inflation, exchange rage, trade or budget deficit, government intervention, and market expectation. Though, this study concentrated mainly on the effects of bank size, credit risk, operating cost, liquidity, inflation, and GDP.

2.2.1 Review of international studies

Aikaeli and Mugizi (2011) examined the determinants of the interest rate spreads in Tanzania. Ordinary Least Squares method has been used to estimate equation. The analysis is based on secondary quarterly time series data for the period 1991- 2009, a period that was characterized by financial sector reforms started in Tanzania since 1991. The data for interest rate spread, statutory minimum reserves ratio, and the discount rate were directly obtained from the reports and publications of the Banks of Tanzania. The net government debt, deposits and assets of the commercial banks respectively used to generate the inflation rate. Volatility of the real exchange rate was generated by using official nominal exchange

rate was obtained from the International Financial Statistics and the USA Department of Labour-Bureau of Labour Statistics. The data for nominal GDP was obtained from World Economic Outlook data published by the International Monetary Fund. The variables ware gross domestic product, the statutory reserve requirement, inflation exchange rate, discount rate, and the degree of development of the banking sector.

The results revealed that interest rate spread in Tanzania was most significantly determined by net government borrowing from commercial banks and the discount rate. The effect on interest rate spread from inflation and real exchange rate volatility was found to be inconsistent with theory. Moreover, the regression results suggested that development of the banking sector was positively related to interest rate spread; the statutory minimum reserve requirement by the central bank was positively and statistically significant related to the interest rates spread during the sample period; and, the discount rate impacted positively on interest rate spread during the sample period.

Were and Wambua (2013) investigated the determinants of interest rate spreads in Kenya's banking sector based on panel data analysis. The major variables included were bank size(bank assets),credit risk(non-performing loans to total loans ratio),liquidity risk(ratio of bank liquidity assets to total assets),operating cost(ratio of total net operating income, and net interest income as a ratio of total income), GDP(real economic growth rate),and inflation(annual inflation rate).Both descriptive and regression analyses are undertaken. The former is used to show trends and comparative analysis of interest rate spreads and other variables of interest. Regression analysis is undertaken to empirically investigate the determinants of interest rate spreads by employing panel data estimation methodology on a panel of commercial banks using annual data for the period 2002 to 2011. Panel data models provide much more insights than time series models or cross section data models because it is theoretically possible to isolate the effects of specific effects and actions.

The empirical results examined that bank-specific factors play a significant role in the determination of interest rate spreads. These include bank size, credit risk, liquidity risk, and operating costs. The impact of macroeconomic factors such as real economic growth and inflation is not significant. On average, big banks have higher spreads compared to small banks.

Dhal and Ansari (2013) investigated how commercial banks' loan pricing decisions could be influenced by host of factors, using dynamic panel data methodology and annual

accounts data of 33 commercial banks in India over the period 1997 to 2011. The determinants of loan interest rate and spreads were classified into regulatory and policy variables such the cash reserve requirement, statutory liquidity requirement, bank specific variables pertaining to capital adequacy, asset quality, managerial efficiency, earnings, liquidity, bank size, loan maturity, cost of funds, and opportunity cost of loans and macro variables including the rate of growth of GDP and wholesale price inflation rate.

The finding suggested that determinants and impacts of bank loan interest rate and margins vary considerably. Multiple factors wholly or partially can contribute to high interest rates and spreads in a less developed financial system. Generally, interest rate and spreads are fairly higher in developing countries than developed countries. Banks' operating efficiency hold the key to effective loan pricing decisions in the Indian context. Higher capital charge induced risk aversion and positively affect loan interest rate. Significant and positive impact of the asset quality variable, i.e., non-performing loans, on loan interest rate and its spread, suggested that there is a need for strengthening risk pricing culture in the Indian context. Bank size variable, which is often considered for gauging economies of scale effect, does not hold for the Indian context. From policy and regulation perspective, these findings along with the evidence of moderate pass-through from the policy rate to loan pricing decisions of banks suggests that there is a need for strengthening the price discovery in the loan market by way of further reform in the banking sector with focus on operating efficiency, capital adequacy, scale economies and risk pricing culture.

The interest rate spread (IRS) of the commercial banks in Bangladesh perspective. Based on the empirical data for the period 1974-2011 drawn from various publications of Bangladesh Bank and other sources, the empirical findings of this study found statistically significant correlation between IRS and deposit rate but no correlation with the lending rate. The data series for IRS, deposit rate, and lending rate contained a unit root and were integrated of order one. However, the Granger causality test failed to indicate any bilateral causal relationship between IRS and deposit rate, IRS and lending rate, and also to deposit rate and lending rate. The study also found that IRS prevailing 18 in the Bangladeshi banking sector was high compared to that in its neighboring countries (Afroze, 2013).

Determinants of interest rate spreads in commercial banks of Kenya based on data analysis and quantified the impact of those factors on interest rate spreads. Despite the liberalization of the financial sector, high interest rate spreads is still an issue of concern in a number of African countries, including Kenya. The project involved conducting an intensive study of

the banking industry in Kenya. Various aspects contributing to bank interest rate spreads in the banking industry were explored. The research involved collecting data from commercial banks in Kenya, CBK, financial journals and newspapers. The target population was 1036 credit officers. The sample size was 103. Stratified random sampling was used. Questionnaires were used to collect primary data where drop and pick method was used. The data was processed using statistical package for social sciences (SPSS) to get various statistical measures such as the mean, frequencies and standard deviation which were applied in various processes which included validation, sorting, summarizing and aggregation of data. The data collected was analyzed using inferential statistics and descriptive statistics which involved frequencies and mean. The inferential statistics involved the use of Pearson's correlation and regression analysis. The results obtained helped to infer the determinants of interest rate spread in commercial banks of Kenya. Results indicated that all the variables of the study: Inflation rate, return on average assets, liquidity risk and credit risk influences interest rates spreads of commercial banks in Kenya. This was evidenced by the responses from respondents in regards to the study variables. The study concluded that indeed inflation rate, credit risk, liquidity ratio and returns on average assets influences interest rates spreads in commercial banks of Kenya by a substantial extent. It was recommended that a similar study should be done in Kenya. Further studies should also be carried out on operation cost and financial performance of commercial banks in Kenya with an aim of finding out their effect on interest rates spreads of the commercial bank (Olweny and Shipho, 2014).

Bektas (2014) examined that the determinants of interest margin in North Cyprus where thousands of families have been facing social difficulties due to legal issues and investigated that the determinants of margin and spread are different. The variable were Credit risk (Provision for loan losses divided by total loans), Liquidity risk(Cash and due from accounts divided by total assets),Capital risk(Total equity to total assets), Cost efficiency(Total cost to total assets ratio) and Inflation rate(Annual inflation rate). This study used single-step regression approach to investigate spread and net interest margin determinants in the North Cyprus banking industry.

Findings suggested that credit risk, market power and bank efficiency consistently have positive and significant effect on bank spreads and net interest margin. Lower liquidity risk, higher required reserve and ownership have positive and significant effect solely to the spread. On the other hand, portfolio management has negative effect solely to banks spread.

The macroeconomic variables, inflation rates seen significant values in the net interest margin model. Implications of the study suggested that banks behave differently in the determination of net interest margin and spread.

Kiptui (2014) examined the determinants of interest rate spread in kenya's banking sector. This studied to analyze the role played by bank and industry-specific factors as well as macroeconomic variables in the determination of interest margins in Kenya's banking sector. This study applied two methods; decomposition technique and panel data analysis. The decomposition approach combined data from income statements and consolidated balance sheets of commercial banks to analyze the spread. Panel data examined the independent variables (bank specific, industries, and macro-economic variable and that effect on dependent variables (interest rate spread).The major variable included were interest margin (interest on loans & advances over loans &advances to customers minus (-) interest on deposits over total deposits), liquidity ratio (ratio of liquid assets to total assets),non-performing loan ratio(ratio of total non-performing loans to total loans), cost ratio(ratio of total operating expense to total assets total operating expenses include general administrative expenses and other operating costs),market share or deposits(ratio of bank's deposits to total banking sector deposits),inflation rate(per cent change in CPI),and GDP growth rate(real GDP growth rate).

The finding suggested that operating costs turning out to be highly significant and with highest interest margin elasticity implying that bank specific factors indeed play a significant role in determining interest rate margins. In addition to liquidity ratio. Liquidity is positively correlated with interest margin at levels and in differences. Non-performing loans also was significant positive effects on interest margins. Macroeconomic factors contribute to the interest margin. Likewise, GDP growth has significant positive effects.

Ghasemi and Rostami (2015) determined the affecting factors on spread rate in an Iranian bank during the last 19 month. Some variables such as NPL ratio, ratio of demand deposits on deposits, non-interest income, and interest assets to assets, capital adequacy ratio, ROA ratio and inflation and exchange rate are analyzed on spread rate. This study is applied research in terms of aim and is Cross-correlation in terms of way.

The major finding analyzed that there was a positive relationship between the ratio of low-cost deposits and spread rates. The ratio of deposits to total deposits (SDD) in accordance with the theoretical expectations with the plus sign and the numeric value is the highest

among other explanatory variables. Non-performing loan (NPL) coefficient stated that the increase in non-current loans, the mount of loans receivables and profit reduced and eventually lead to a reduction in spread rate. Results show there is a significant correlation between the ratio of NPL and spread rate. Income-earning assets to total assets ratio (RAR) including management performance indicators, had a negative relation with spread rate. Therefore, the relationships between these two indicators are not meaningful, but statistically significant amount. The return of assets (ROA) measured this variable is positively related to bank profit margins and the results also showed a significant and positive coefficient of this variable. The empirical results show the existence of an inverse relation between exchange rate fluctuations and rate spreads.

Achille (2016) conducted the determinants of interest rate spread: empirical evidence from the central African economic and monetary community. The variables revealed that among bank-specific characteristics were bank asset, doubtful loan and the volume of credit. As for macroeconomic characteristics included oil rents, foreign direct investment (FDI) inflows, real gross domestic product (GDP) growth, and bank concentration in the deposit market retained the determinants of the interest rate spread in CAEMC countries. The methodology used in this study is the two-step regression to assess the determinants of banking spread. This methodology allowed the study to assess the micro and macroeconomic determinants of interest rate spread; it also allows estimating the pure spread prevailing in CAEMC countries.

The major finding of this studied that, bank asset, doubtful loan, and the volume of credit were among bank-specific characteristics, the significant determinants interest rate spread in CAEMC countries during the period spanning from 2000 to 2010. On the other hand, oil rents, FDI inflows, and real GDP growth were the significant macro-economic determinants. Besides, the results revealed that in Central African countries, macro factors do explain banking spread better than micro factors.

Mwamtambulo and Ntulo (2018) analyzed the determinants of Interest rate spread in Tanzania commercial banks focusing on the internal characteristics. Used a linear regression analysis and data covering 7 commercial banks over a period of eight years. Determinate of interest rate spread ware Bank-specific variables such as credit risk levels, efficiency, bank profitability and excess liquidity, Macro-Economic such as interest rates on alternative financial instruments, inflation, GDP growth and exchange rates, system-wide measures of market structure, Regulatory Environment, and The legal and

institutional environment. The variables ware opportunity cost of non- interest bearing reserves(non-interest bearing reserves), liquidity risk(liquid assets to total assets), operating cost(operating costs to total earning assets), provision for loan loss(provision for loan loss to total earning assets) and non-interest income (non-interest income to total earning assets).

The results obtained from the paper showed factors such as operating cost, provision for loan loss, tax expenses, liquidity risk, and profitability play a major role in increasing the interest rate spread while on the other hand factors of required reserve, administration expenses and non- interest income decrease the interest rate spread. The results supported the need for the banks to find the optimum level for the operating costs, increase the level of operational efficiency and effectiveness. This achieved by ensuring proper motivation and treatment of human capital and providing good management packages. The increasing of human resources efficiency ware minimizing loan defaults and operating costs.

Wijaya, Lucianna and Indriati (2020) examined the variables that determine the interest rate spreads of conventional banks listed on the Indonesia Stock Exchange. There were four major variables that affect a bank's interest rate spreads, namely financial bank, macroeconomics, economic freedom and market structure variables. This studied participants ware conventional banks listed on the Indonesia Stock Exchange from 2013 to 2017. Data was tested by using the OLS regression model. The results shown that all of the financial bank variables liquidity risk, return to asset ratio, capital adequacy, cost efficiency ratio, and risk aversion can significantly affect interest rate spreads. While of the macroeconomic variables, only two can significantly affect interest rate spreads, namely gross domestic product and inflation rate. Furthermore, all of the variables of economic freedom and market structure can significantly determine interest rate spreads.

2.2.2 Review of national studies

Bhattarai (2015) investigated the factors that influence lending interest rates in Nepalese commercial banks. A class commercial bank listed in the Nepal stock exchange (NEPSE) was the population and sample bank got 6 banks that is global Ime bank, Everest bank, Nepal investment bank, Kumari bank, Laxmi bank, and Nabil bank. Applied method was descriptive and casual comparative research design. The variables were operating cost to total assets ratio, deposit interest rate, profitability, default risk (non-performing loan to total loan) and lending interest rate.

The finding revealed that operating costs to total assets ratio has positive and statistically significant impact on commercial bank lending rate. Profitability (ROA) is found significantly positively associated with lending rate. Moreover, default risk has significant and positive impact on lending interest rate. However, deposit rate seems weak in explaining the variation of lending interest rate. Eventually, this study concludes that the major determinants of commercial banks' lending rate are operating costs to total assets ratio, profitability and default risk in Nepalese context.

Bhattarai (2020) analyzed the determinants of interest rate spread in Nepalese banking sectors, based on panel data for the 5 years period of 12 commercial banks, from 2012/13 to 2017/18. The data were collected from the respective banks' annual report, which has been published in the web page of the particular banks. To examine the determinants of interest rate spread, three different models like Pooled ordinary least square, Fixed Effects and Random Effects analysis methods have been employed. The Interest rate spread has been taken as the dependent variables and default risk, cash reserve ratio, return on assets, bank size, GDP growth rate, inflation and exchange rate as independent variables.

The major finding analyzed that there is positive and significant result between default risk, profitability and inflation rate with interest rate spread. The other remaining variables such as cash reserve ratio, size of the banks and GDP growth rate are positive, but insignificant result have been found except exchange rate negative and insignificant. Hence, the study concluded that the default risk, profitability and inflation rate were determinants of interest rate spread in Nepalese commercial banks perspectives.

Timsina (2020) tested and confirmed the effectiveness of the determinants of commercial bank lending in Nepal. Independent variable ware volume of deposits, cash reserve requirements ratio, liquidity ratio, inflation, exchange rate, and gross domestic. The study has applied time series regression (ordinary least square) approach for the empirical measurement of the relationship between the private sector credit and each of the other explanatory variables .Secondary data that captures the whole population of all commercial banks in Nepal for the period 1975 –2014 are used in the study. Secondary data are gathered from various sources such as Banking and Financial Statistics of Nepal Rasta Bank, Economic Survey (Ministry of Finance), Quarterly Economic Bulletin, Commercial Banks' individual website, Annual Bank Supervision Report, Quarterly Financial Indicators.

The Studied finding that commercial banks' lending is mostly determined by the gross domestic product of the country and liquidity ratio to be maintained by the commercial banks. As there was significant positive relationship between GDP and private sector credit of commercial banks, they seen in to account the overall macroeconomic situation and factors affecting the GDP in general and their liquidity ratio in particular while taking lending decision. If macro-economic situation was conducive and supportive, banking performance enhanced and good lending behavior guaranteed.

Ojha (2020) determined of interest rate spread in Nepalese Finance Companies. The basic objective of this study is to identify the influencing factors of the interest rate charged and offered by Nepalese finance companies through examination of the relation between influencing factors and interest rate spread is the main aim of this study. Finance companies are the institutions that are incorporated under company act to perform non-banking activities arrangements and operation of different schemes. The finance companies survive by making profit which is the interest spread i.e. difference between interest received and interest charged. The main aim of this paper was to determine the responsible factors for the interest rate determination of Nepalese financial companies. The factors affecting interest rate charged and offered by Nepalese financial companies are analyzed using Regression Analysis. Out of the total financial companies only two ICFC Finance Company and United Finance Company are taken as samples. Research methodology refers to the four various sequential steps to be adopted by a researcher in the studying a problem with certain objective in view. Research is the process of systematic and in-depth study or search for any particular topic, subject, or area of investigation backed by collection, presentation, interpretation or relevant details or data. Descriptive cum analytical research design is used in this study and interpretation of finding with collecting data. This design explored quantitative fact about the finance company and their interest rates, influencing factors and financial condition of the company. A small portion chosen from the population for studying its properties is called a sample and the number of units in the sample is known as sample size. There are 22 finance companies operating in Nepal which is the population for the study and among them two finance companies are selected as sample for the study using non-random sampling method namely ICFC Finance Company Ltd. and United Finance Company Ltd. For this study only secondary data are used ant the data are collected mainly from published annual report of the sample companies and other relevant data are collected from official website of the companies and the Nepal Rasta Bank bulletins.

The major finding suggested that Interest rate on deposit of ICFC Finance has significant negative association with inflation rate and significant positive relation with interest rate on loan and advance of the company. Similarly, interest rate on loan and advance of the company has significant positive relation with interest rate on deposit and interest rate on loan and advance also has positive relation with inflation rate. Interest rate on deposit of United Finance has significant negative association with inflation rate and significant positive relation with interest rate on loan and advance of the company. Similarly, interest rate on loan and advance of the company has significant positive relation with both interest rate on deposit and inflation rate.

Bhattarai (2020)examined the determinants of lending rate of commercial bank in Nepal. The descriptive, correlational and casual comparative research design has been employed in this study. The present study has been based the secondary data of ten commercial banks for the periods of 2012-2013 to 2016- 2017. The data were collected through the annual report of sample commercial banks and economic survey. The commercial banks were Nabil Bank, Siddhartha Bank, Himalayan Bank, Nepal SBI Bank, Agricultural Development Bank, Nepal Investment Bank, Standard Chartered Bank, Everest Bank, Nepal Bangladesh Bank and Laxmi Bank. variables were liquidity (liquid assets/ total assets ratio) investment portfolio(investment in security / total assets ratio), cash reserve ratio(cash reserve ratio %), bank size (natural logarithm of total assets), gross domestic products (real gross domestic products growth rate)and inflation rate (consumer prices index).

The finding of this studied investment portfolio, cash reserve ratio and bank size have positive and significant effects on loan and advance. But the liquidity has negative and statically significant with loan and advance. The macroeconomic variables gross domestic products growth rate and inflation rate have not effective roles plays to determine the loan and advance. The concluded that liquidity, investment portfolio, cash reserve ratio and bank size were major determinants of loan and advance.

Goet (2021) investigated lending behavior on loan and advances in Joint Venture Commercial Banks in Nepal. The bank specific and macroeconomic variables including total deposit, cash reserve ratio, interest spread rate and inflation rate on the loan and advances of joint venture banks operating in Nepal. The association and impact of determinants of lending behaviors had been assessed by the panel data (28 observations) of 4 joint venture banks out of 7 joint venture banks. The secondary panel data had been used

that covered a period of seven years (2013/2014-2019/2020). This study found that there was the significant and positive correlation between loan & advances and total deposit. Loan & Advances has significant and negative correlation with interest rate spread. This study also found that the total deposit and interest rate spread were significant impact on loan and advances but cash reserve ratio and interest rate spread do not give any significant influence on loan and advance.

CHAPTER III

RESEARCH METHODOLOGY

3.1 Research design

This study follows descriptive and causal research design. Descriptive research is the systematic collection and presentation of data to give a clear picture of a particular situation. The descriptive statistic are minimum, maximum, mean, standard deviation, coefficient of variation, and number of observation. Casual research conducts to identify the extent and nature of cause-and effect relationship between the variables. For analytical purposes, the annual reports published by the related banks. After tabulation, they will analyze by applying both financial and statically tools. It involves measuring variables and assessing the relationship between them, with no manipulation of an independent variables. The research determines how interest rate spread are influenced by change to Bank size, credit risk, liquidity risk, operating risk, inflation and GDP.

3.2 Nature and sources of data, and the instrument of data collection

This study base only on secondary data. To collect the secondary data, published annual reports, balance sheet, prospectus, journals, magazines, articles, government and university publications, Nepal Rasta Bank as well as websites of sampled banks have been used as the sources of secondary information to determine the factor affecting on interest rate spread.

3.3 Population and sample, and sampling design

The population are all the commercial banks to involve in holding of deposits and lending in Nepal. The total no of bank is 27 commercial banks on the basis of financial stability report for the fiscal year 2020/21 which is published by Nepal Rasta Bank. Out of them 12 banks are taken as sample on the basis of high share capital, foreign investment and high market sharing. The purposive sampling method is used. It is difficult to study all of them regarding the study topic because of limited time and resources factors too. So only following twelve banks are selected as sample.

Table 3.1

List of sample banks items

S N	Banks	Category	No of Observations	Year
1	Nepal Bank Ltd	Government	12	2009/10-2020/21
2	Rastriya Banijya Bank Ltd		12	2009/10-2020/21
3	Nabil Bank Ltd	Joint	12	2009/10-2020/21
4	Standard Chartered Bank Ltd	Venture	12	2009/10-2020/21
5	Himalayan Bank Ltd		12	2009/10-2020/21
6	Everest Bank Ltd		12	2009/10-2020/21
7	Nepal Investment Bank Ltd		12	2009/10-2020/21
8	Kumari Bank Ltd		12	2009/10-2020/21
9	Machhapuchhre Bank Ltd	Private	12	2009/10-2020/21
10	NIC Asia Bank Ltd		12	2009/10-2020/21
11	Global IME Bank Ltd		12	2009/10-2020/21
12	Siddhartha Bank Ltd		12	2009/10-2020/21

3.4 Methods of analysis

3.4.1 Descriptive analysis

The descriptive method of research uses of many different kinds of research methods to investigate the variables in question. The most common tools are minimum, maximum, mean, standard deviation, coefficient of variation and number of observation. The objective of this study was to analyze the structure and pattern of interest rate spread and to document the key microeconomic and determinants of interest rate spread in Nepal. Mean is calculated to find out the average of the variables used in research, which are interest rate spread, bank size, operating cost, liquidity, credit risk, inflation, and GDP. Standard deviation measures the percentage of total variation in dependent variable explained by independent variable. Coefficient of variation measures the ratio of the standard deviation to mean. It is usually used to compare the variation of different date sets in the research.

3.4.2 Correlation analysis

Correlation is a statistical tool designed to measure the degree of association between two or more variables. In other words if the changes in one variable affects the change in another variable, then the variable are said to be co-related when it is used to measure the relationship between two variables, then it is called simple correlation. The coefficient of correlation measure the degree of relationship between two sets of Figures. Among the various methods of finding out coefficient of correlation, Karl Pearson's method is method is applied in the study. In this study, correlation is calculated for the observation to find out the degree of relation between independent and dependent variables for all samples.

3.4.3 Regression analysis

In statistical modeling, regression analysis is a set of statistical processes for estimating the relationships among variables. It includes many techniques for modeling and analyzing several variables, when the focus is on the relationship between a dependent variable (interest rate spread) and one or more independent variables (bank size, operating cost, liquidity, credit risk, inflation, and GDP). More specifically, regression analysis helps one understand how the typical value of the dependent variable changes when any one of the independent variables is varied, while the other independent variables are held fixed. The statistical software SPSS is used to analyze the impact of the independent variables into dependent variable under the regression model.

$IRS_{it} = \beta_0 + \beta_1 CR_{it} + \beta_2 LR_{it} + \beta_3 OC_{it} + \beta_4 BS_{it} + \beta_5 GDP_{it} + \beta_6 IR_{it} + E_{it}$

β_0 = Constant term

β_1 to β_6 = Coefficient of variable

IRS_{it} = Interest rate spread ofi^{th} ith bank in year t

CR_{it} =Credit risk ratio ofi^{th} bank in year t

LR_{it} = Liquidity risk ratio of i^{th} bank in year t

OC_{it} = Operating cost ofi^{th} bank in year t

BS_{it} = Bank size of i^{th} bank in year t

GDP_{it} = Domestic growth rate in year t

IR_{it} = Inflation rate in year t

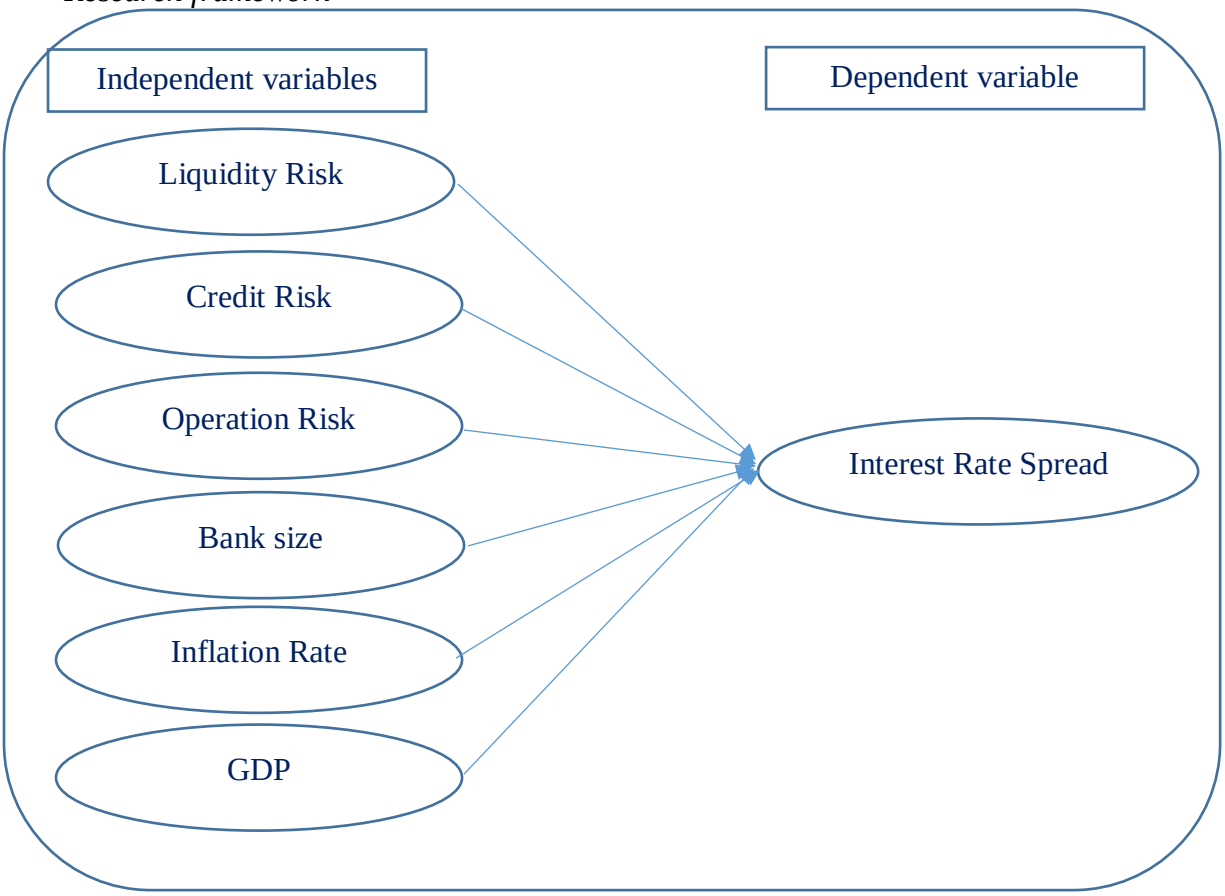
E_{it} = Error term

3.5 Research framework

A theoretical framework was used to help focus on the variables in the study. The Figure shows different variables i.e. interest rate spread, credit risk, liquidity risk, operating risk, bank size, inflation rate, and GDP.

Figure 3.1

Research framework



3.6 Variable definition and their specification.

Various variables are used in this study in the form of dependent and independent variables. The definitions of each variables used in this study are as follows:

3.6.1 Interest rate spread

The interest rate spread is the difference in the interest rate between the lending rate and the deposit rate. The interest rate can be calculated as follow: (rupees of interest earned

divided by the Rupees amount of interest earning assets) minus (Rupees of interest paid divided by the rupees amount of interest costing liabilities.

$$\text{WADR} \quad \frac{\text{Amount of interest paid for the year in rupees}}{\text{Amount of interest costing liabilities for the year in}}$$

$$\text{WALR} = \frac{\text{Amount of income for year in rupees}}{\text{Rupees interest earning currents for the year}}$$

$$\text{WALR} = \frac{\text{Interest on loan} + \text{Interest on investment}}{\text{Total loan amount} + \text{Total investment}}$$

WALR = Weighted average lending rate

WADR = Weighted average deposit rate

Interest rate spread = WALR – WADR

The interest rate spread for the bank can be obtained by subtracting the weighted average deposit rate (WADR) from the weighted average lending rate (WALR). The percentage obtained from this is the interest rate spread for a specific year.

3.6.2 Credit risk

Non-performing loans to total loans ratio is used as an indicator of credit risk or quality of loans. An increase in the provision for loan losses implies a higher cost of bad debt write-offs. Given the risk-averse behavior, banks face higher credit risk is likely to pass the risk premium to the borrowers, leading to higher borrowing rate. This variable expected to have a positive relationship with lending rate. Credit risk is the potential for loss due to the failure of counterparty to meet its obligations to pay the Bank in accordance with agreed terms. The credit risk management covers credit rating and measurement, credit approval, large exposures and credit risk concentration, credit monitoring, and portfolio analysis. All business banking, commercial and corporate & institutional borrowers, at individual and group levels, are assigned internal credit rating that supports identification and measurement of risk and integrated into overall credit risk analysis. Non-performing loan is also another variable which affect lending rate, this variable is measured as the ratio of the total loan or non-performing loans to total loans. Kiptui (2014) , Were and Wambua (2013) and Bhattarai (2015) also found positive association between interest rate spread and credit risk.

$$\text{Credit risk} = \frac{\text{Non-performing loans}}{\text{Total loans ratio}}$$

3.6.3 Bank size

Bank size is measured as the log of total bank's assets. Ideally one would expect bigger banks to be associated with lower interest rate spreads, arguably because of large economies of scale and ability to invest in technology that would enhance efficiency. However, to the extent that bank size connotes control of the market in the deposit and loan markets, Were and Wambua (2013) playing the significant role to determine the interest rate spread.

3.6.4 Operational risk

The ratio of operating expenses to total assets measures the cost required to provide a loan unit, and depends on the productivity of staff and other operating costs (administrative, network, transport, depreciation, etc.). The key indicator of efficiency of commercial bank is the ratio of operating costs to total assets. The lower the ratio is, the higher the efficiency of the commercial banks. Moreover, high operating costs are likely to include costs due to inefficiency leading to higher lending interest rate and hence this variable is used as an indicator of operational inefficiency. Operational cost is the potential for loss from inadequate or failed internal processes, systems, and human error. The bank allocates responsibilities for the management of operational risk consistent with the three lines of defense. Operational risks can arise from all business lines and from all activities carried out by the Bank. However, commercial banks can lower their lending rates in order to remain competitive by reducing operating costs. Bhattarai (2015) also found that operating costs has positive effect on lending rates.

$$\text{Ratio of operation cost} = \frac{\text{Operating cost}}{\text{Total assets}}$$

3.6.5 Liquidity risk

Computed as the ratio of bank's liquid assets to total assets. The degree to which banks are exposed to liquidity risk varies across banks. A bank with higher liquidity faces lower liquidity risk hence is likely to be associated with lower spreads due to a lower liquidity premium charged on loans. Banks with high risk tend to borrow emergency funds at high costs and thus charge liquidity premium leading to higher spreads. A liquid financial asset is readily marketable. In addition, its price tends to be stable over time and it is reversible, meaning the holder of the asset can usually recover his/her funds upon resale with little risk of loss. Because the liquidity feature of financial assets lowers their risk, liquid assets carry

lower interest rates. Inventory strongly interested in maximum profitability try to minimize their holding of liquid assets. Were and Wambua (2013) and Mwamtambulo and Ntulo (2018) has support in this line. But the study to find the negative relation with interest rate spread rate (Bhattarai, 2020). The present study has expected positive relation with interest rate spread.

$$\text{Liquidity risk} = \frac{\text{Liquidity assets}}{\text{Total assets}}$$

3.6.6 Inflation Risk

The consumer price index has been taken as proxy for inflation rate. The past studied represent that there were inverse relationship between the inflation risk and interest rate spread (Ghasemi and Rostami, 2015).Mild inflation is considered to be desirable for economic growth. However, high and variable inflation, in general, leads to uncertainties in income and expenditure decisions of the different groups of the society; distorts economic growth; lowers savings and investments; and makes more expensive cost of capital. Inflation shocks are not passed on equally in terms of magnitude as well as speed to deposit and lending rate, then the spread would change. As expected the impact of inflation on interest spread is positive and significant. Among those macroeconomic characteristics, inflation is the most cited determinant of interest rate spread, especially in developing countries. Indeed, inflation was found to be positively correlated to banking spread in Malawi (Chirwa and Mlachila, 2004). The reason of this positive effect of inflation on interest rate spread is that it creates a monetary depreciation that allows borrowers to reimburse in real terms, less than what banks lent to them. Therefore, banks cover this loss profit by increasing their lending rate and widening their interest rate spread. This is particularly true in developing countries because they suffer from higher and more volatile inflation compared to developed countries. Annual present rate of inflation is used which is taken from NRP reports.

3.6.7 GDP

Gross domestic product is the macro factor that determining banking interest rate spread. Indeed, the Gross domestic product improves the creditworthiness of economic agents and reduces their default risk. It also increases the resources that banks can lend because they receive more deposits. Banks react to these favorable conditions by lowering their interest rate spread. One should also notice that banking interest rate spread affects economic growth in return by its effect on saving and mostly on investment. Increased economic

activity can heighten demand for loans leading to higher lending rates. On the other hand, increased economic activity can make projects more profitable, reduce defaults, and increase deposits, all of which reduce the spreads. The variables, negative as well as positive parameters have been observed (Were and Wambua, 2013). Annual GDP growth rate in percentage is taken in its research.

CHAPTER IV

RESULTS AND DISCUSSION

4.1 Data presentation and analysis

The analysis is mainly based on secondary data of sampling bank form 2009/10 to 2020/21 which were collected from public annual financial report. The data has been collected after the economic crisis 2008/09 in Nepal analyzed the objectives of the study as mentioned in the chapter. This chapter consists of analysis and presentation of empirical data. The data are presented with Tables and Figure to make it convenient possible to interpret. Finally, the statistical methods of analysis are discussed, which include a descriptive analysis, a correlation analysis, and a multiple regression analysis. The variables are very sensitive and taken into consideration, so this chapter will present the analysis of components of liquidity risk, credit risk, operating cost, bank size, inflation, and GDP and its impact on interest rate spread. The descriptive analysis of the data collected through the Bank websites during the research process. Descriptive statistics is describing quantitatively the main features of a collection of data. Descriptive statistics help us to simplify large amounts of data associated with these variables in a sensible way. Descriptive analysis incorporates calculation of statistical measures such as mean, standard deviation(S D), minimum (min), maximum (max), Co-efficient of variation(C V) values. The objective of this study was to analyze the pattern in interest rate spread and to document the key microeconomic and determinants of interest rate spread in Nepal. Secondary data obtained from the annual report of banks and database was compiled and analyzed. Table and line chart presents a summary of the description of the data used in the analysis.

4.2 Structure and pattern of interest rate spread

The Table 4.2 reveals the descriptive status for the interest rate spread. It is found that the maximum value of interest rate spread is 7.9 of NBL and minimum value is 0.77 of Kumari bank. On the other hand, the maximum value of interest rates spread is 7.9 in 2010/11 and minimum value is 0.77 in 2017/18. Mean value of NBL bank is highest among the other banks with mean value of 5.5 followed by RBB bank with mean value of 4.79 and lowest

Table 4.2

Descriptive statistics of interest rate spread

B/Y	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	Mean	S D	CV
EBL	3.68	3.78	3.71	4.19	4.30	2.85	2.79	3.11	3.14	2.55	2.14	3.24	3.29	0.66	0.20
GBL	2.83	3.56	1.83	3.48	2.79	3.15	3.23	2.86	2.87	3.08	2.30	3.49	2.95	0.50	0.17
HIM	3.78	4.24	3.47	4.35	3.34	3.30	3.60	3.41	3.55	3.33	2.55	3.31	3.52	0.47	0.13
KBL	3.08	3.10	2.93	3.51	2.59	2.28	2.86	1.79	0.77	1.84	1.50	3.13	2.45	0.82	0.34
MBL	3.36	4.14	2.02	3.50	2.97	2.94	3.23	3.12	2.45	3.17	3.05	3.82	3.15	0.56	0.18
NABIL	4.46	4.22	4.71	5.02	4.34	3.06	3.45	3.89	3.82	3.29	2.74	3.79	3.90	0.69	0.18
NBL	5.86	7.90	7.46	6.30	4.69	4.64	5.41	5.82	6.04	4.24	3.31	4.34	5.50	1.35	0.24
NIBL	3.48	3.38	3.04	4.11	3.30	2.74	2.78	2.80	3.07	3.24	2.48	3.33	3.15	0.43	0.14
NIC	3.14	3.27	3.11	2.63	3.23	2.39	2.22	2.26	2.22	3.12	2.64	3.73	2.83	0.50	0.18
RBB	7.82	6.55	4.71	3.65	3.47	3.64	3.76	4.43	5.96	5.56	3.53	4.37	4.79	1.40	0.29
SCBL	3.85	4.53	4.68	4.59	4.64	3.85	3.19	3.51	5.76	4.24	5.53	3.88	4.35	0.77	0.18
SBL	2.68	3.14	2.84	3.61	3.53	2.87	2.89	2.71	2.41	2.34	1.89	3.70	2.88	0.54	0.19
Mean	4.00	4.32	3.71	4.08	3.60	3.14	3.28	3.31	3.50	3.33	2.81	3.68	-	-	-
S D	1.47	1.47	1.53	0.94	0.72	0.65	0.79	1.06	1.65	0.98	1.03	0.40	-	-	-
CV	0.37	0.34	0.41	0.23	0.20	0.21	0.24	0.32	0.47	0.29	0.37	0.11	-	-	-

Sources: Data collected from annual and quartile reports of studied banks and Nepal Rasta bank

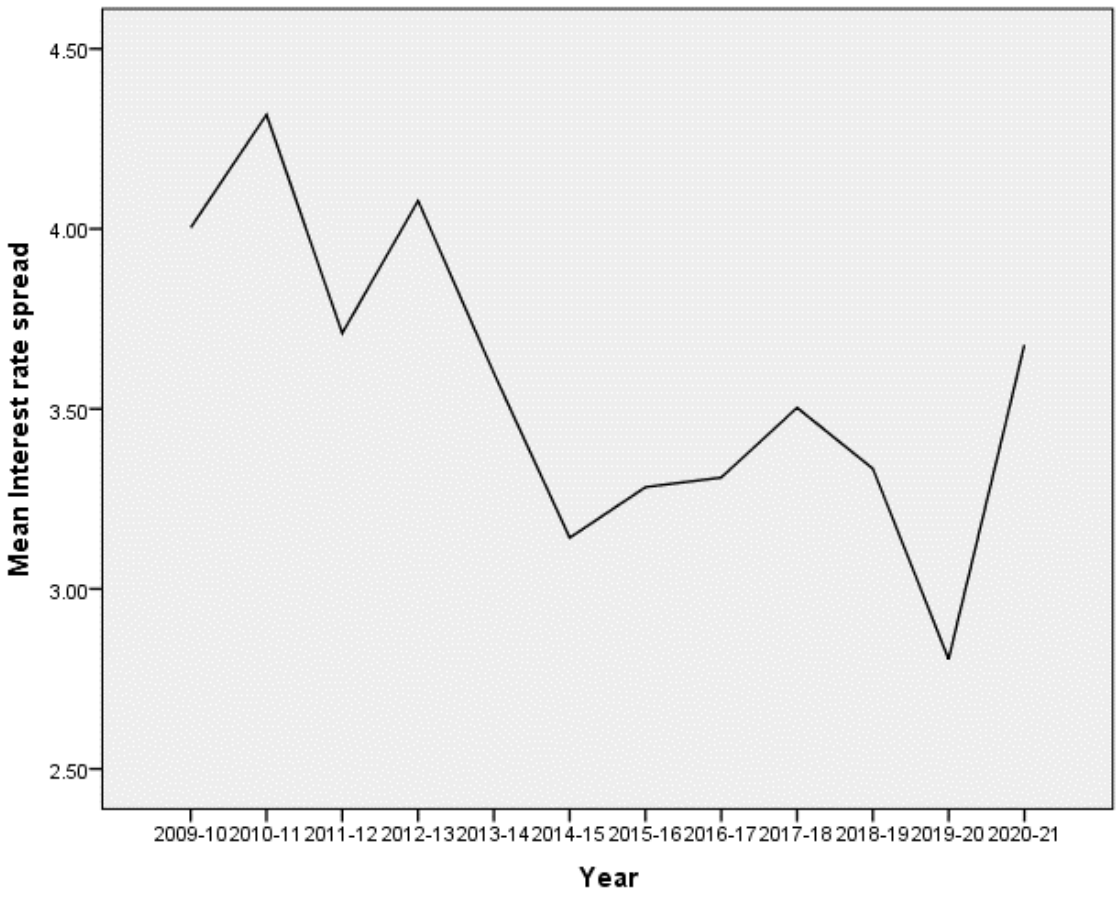
mean value is 2.83 of NIC Asia bank. Similarly, the highest mean value is 4.32 in fiscal year 2010/11 and lowest mean value is 2.81 in 2019/20, SCBL bank with mean value of 4.35, NABIL bank with mean value of 3.9, Himalayan bank with mean value of 3.52, Everest bank with mean value of 3.29, Machhapuchhre bank with mean value 3.15, NIBL bank with mean value of 3.15, Globle IME bank with mean value 2.95, Siddharth bank with mean value is 2.88 and Kumari bank with the mean value is 2.45.The mean value form the fiscal year 2011/12 to 2018/19 is 3.71, 4.08, 3.6, 3.14, 3.28, 3,31, 3.5, 3.33 respectively. The mean value in the fiscal year 2009/10 is 4.00 and mean value in the fiscal year 2020/21 is 3.68. The standard deviation of RBB bank is highest with standard deviation of 1.4 and the lowest standard deviation is 0.43 of NIBL bank. Similarly NBL bank with standard deviation of 1.35, Kumari bank with standard bank of 0.82, SCBL bank with standard deviation of 0.77, NABIL bank with standard deviation of 0.69, Everest bank with standard deviation of 0.66, Siddharth bank with standard deviation of 0.54, NIC Asia bank with standard deviation of 0.50, Global IME bank with standard deviation of 0.50, Himalayan bank with standard deviation of 0.47, Nepal investment bank with standard deviation of 0.43.The coefficient of variance of Kumari bank is higher with coefficient of variance 0.34 followed by RBB bank with coefficient of variance 0.29, and lowest coefficient of variance

is 0.13 of Himalayan bank. Similarly, NBL bank with coefficient of variance 0.24, Everest bank with coefficient of variance 0.20, NIBL bank with coefficient of variance 0.14, Machhapurchhre bank and other bank like NABIL, NIC, SCBL and Siddharth bank quite similar with coefficient of variance 0.19 and Global IME bank with coefficient of variance is 0.17.The highest coefficient of variance is 0.47 in fiscal year 2018/19 and lowest coefficient of variance is 0.11 in the fiscal year 2020/21.Similarly,the coefficient of variance in the fiscal year 2009/10 is 0.37, the coefficient of variance in the fiscal year 2010/11 is 0.34,the coefficient of variance in the fiscal year 2011/12 is 0.41, the coefficient of variance in the fiscal year 2012/13 is 0.23,the coefficient of variance in the fiscal year 2013/14 is 0.20,the coefficient of variance in the fiscal year 2014/15 is 0.21,the coefficient of variance in the fiscal year 2015/16 is 0.24,the coefficient of variance in the fiscal year 2016/17 is 0.32,the coefficient of variance in the fiscal year 2018/19 is 0.29,the coefficient of variance in the fiscal year 2019/20 is 0.37, and the coefficient of variance in the fiscal year 2020/21 is 0.11.

The Figure 4.2 shows the pattern of interest rate spread from the fiscal year 2009/10 to 2020/21of the twelve commercial bank in Nepal. The different of lending interest rate and deposit in 2009/10 is almost four percent and continuously upward trend next one years. However, the interest rate spread is decreasing in the fiscal year 2011-12 that is 3.71 percent. After that the pattern of interest rate spread is upward trend in the fiscal year 2012/13.The pattern of interest rate spread is continuously in downward trend in the two fiscal year. And then the trend the line of the interest rate spread is slowly increasing in the fiscal year 2015/16.The fiscal year 2016/17 and 2017/18 is also continuously increase the rate of interest margin. And then the pattern of interest rate spread in continuously in downward sloping upon the two fiscal year like 2018/19 and2019/20. The lowest interest rate spread is 2.81 in the fiscal year 2019-20 due the government take necessary action to solve the covid-19. And then the interest rate spread is increasing trend after the fiscal year 2019-20.

Figure 4.2

Pattern of interest rate spread



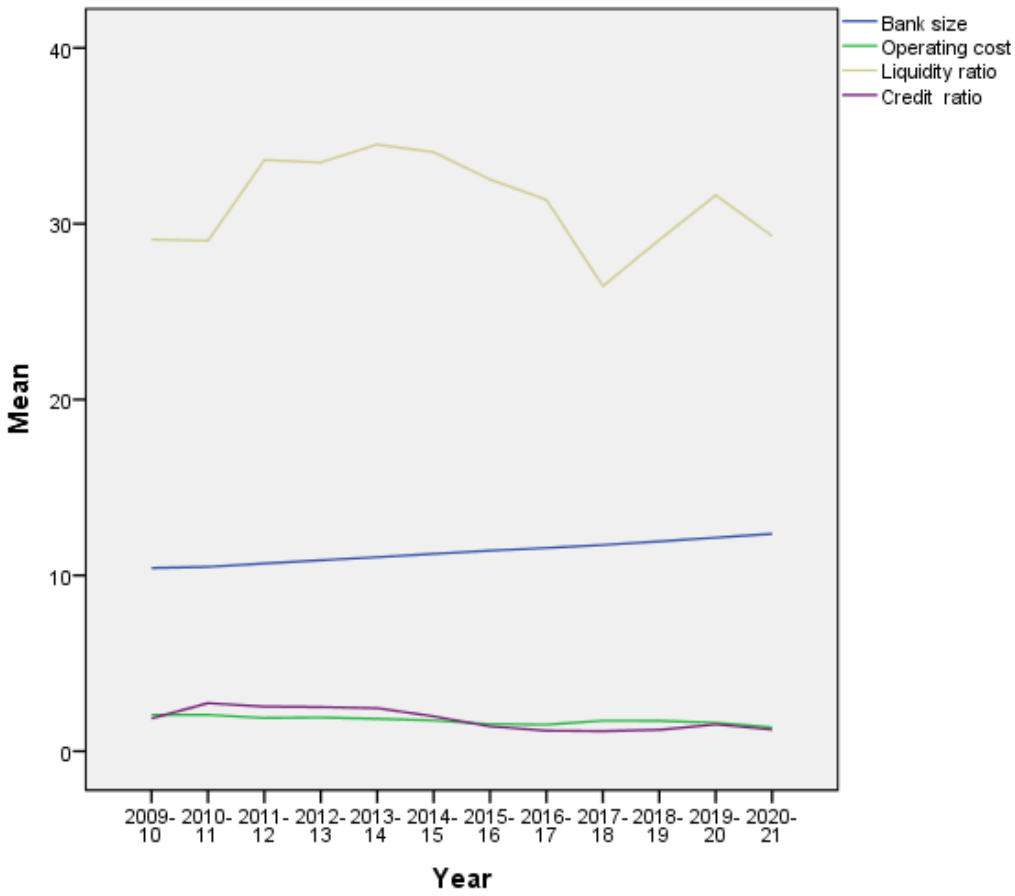
4.3 Pattern of bank specific variable with interest rate spread.

This Figure 4.3 shows the relationship between interest rate spread with the bank size, operating cost, liquidity ratio, and credit ratio. The fixed assets of all the twelve commercial bank is continuously increasing trend during the sample time period. The line shows the comparison of liquidity ratio and interest rates spread. The liquidity ratio is decreasing in initial of the given data form the fiscal year 2009/10 to 2010/11 is 29.03, increasing in the fiscal year 2011/12 is 33.63 percent, decreasing in 2012/13 is 33.49, and increasing in 2013/14 is 34.51.then, liquidity ratio is decreasing for four year i.e. it is decreasing from fiscal year form 2013/14 to 2017/18. However, in last three years, the liquidity ratio is fluctuated trend that is one time increasing and another time decreasing. The credit ratio, operating cost and interest rate spread is parallel in trend. The value of credit ratio and operating cost is not highly fluctuated. The minimum value of operating cost is 1.14 and

maximum value of operating cost is 2.17percent.similarly, the minimum value of credit ratio 0.43 and maximum value is 5.07 percent.

Figure 4.3

Pattern of bank specific variables



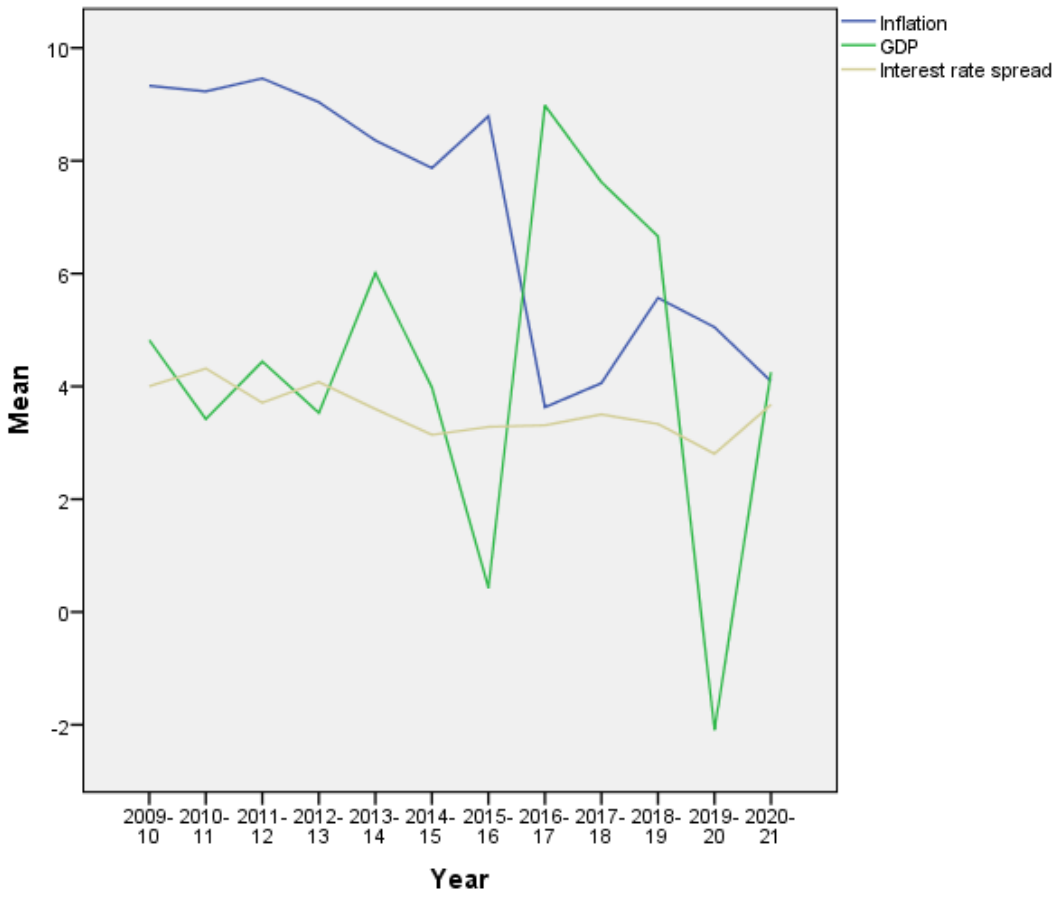
4.4 Pattern of macro-economic variables with interest rate spread

This Figure 4.4 shows the relationship between interest rate spread with inflation and GDP. The Figure shows the trend of rates. The trend line of inflation is always upper line than the interest rate spread. But, GDP and interest rate spread is overlap or fluctuated in the upcoming years. The inflation rate is continuously downward trend until in the fiscal year2014/15, and then increase in one year. However, the inflation rate is drastically decrease in 2016/17.after that, the line of inflation is continuously upward slop in two fiscal years that is 2017/18 and 2018/19 and the line is continuously decreased in the research data period. The GDP is highly fluctuated in the given data period. The Figure shows the percentage decreasing of GDP from 2009/10 to 2010/11.In the upcoming year, the GDP is increasing in the fiscal year 2011/12 which is over the line in interest rate spread. However,

the pattern of micro economic variable of GDP is decreasing in the fiscal year 2012/13.But, the line of GDP is rapidly upward trend in the upcoming year 2013/14 that is six per sent growth rate. The trend of GDP is continuously is fluctuated and the line is continuously decreasing in two fiscal year that is 2014/15 and 2015/16. And then , the pre sent of gross domestic product is drastically increasing from 2015/16 to 2016/17.The highest point of GDP is 9.47 in the fiscal year 2016/17and lowest point of GDP is minus 2.09 in the fiscal year 2019/20 which is due to the covid 19. In this fiscal year, all over the country face the economic crisis and then the economy of the country is continuously increased.

Figure 4.4

Pattern of micro economic variables



4. 5 Descriptive analysis

Table 4.3

Descriptive statistics of all variables

Variables	N	Minimum	Maximum	Mean	Std. Deviation	C V
Interest Rate Spread	144	0.77	7.90	3.563	1.154	0.324
Bank size	144	9.65	12.85	11.319	0.731	0.065
Operating Cost	144	0.91	6.55	1.751	0.690	0.394
Liquidity Ratio	144	15.63	57.44	31.181	7.827	0.251
Credit Ratio	144	0.12	10.92	1.813	1.695	0.935
Inflation	144	3.63	9.46	7.040	2.257	0.321
GDP	144	-2.09	8.98	4.338	2.882	0.664

Sources: Data collected from annual and quartile reports of studied banks and Nepal Rasta bank

The Table 4.3 reveals the descriptive status of the bank specific variable and micro economic variables like bank size, operating cost, liquidity, credit ratio, inflation, GDP and interest rate spread. Table shows that the average interest spread rate is 3. 563%, whereas minimum and maximum rates are 0.77% and 7.9% respectively. The standard deviation is more than one percent. It revealed that there is high deviation in term of interest spread rate. The coefficient of variance is 0.324%.The total no of observation of twelve bank with twelve years is 144%. It is found that the maximum value of bank size is 12.85% and minimum value is 9. 65%. Mean value of the bank assets is normally 11.319%. The standard deviation is 0.065%. The key indicator of efficiency is the ratio of operating costs to total assets and the results of operating costs to total assets ranged from 0.91% in the most efficient to6.55 % at the other extreme. The average operating cost to total assets ratio is 1.751% and the standard deviation of the same variable is 0. 69%. The result shows that Nepalese commercial banks are incurring high operating costs Moreover, the operating cost is found more volatile during sample period. 2. The average liquidity measure i.e. LR is 31.181% which is fluctuated by ± 7.827 % in average (i.e. as suggested by standard deviation). The maximum and minimum LR are 57.44% and 15.63% respectively. The result shows that the minimum and maximum credit risk of Nepalese commercial banks during the sample period are 0.12% and 10.92% respectively. The average credit risk is 1.813 % meaning that Nepalese commercial banks bearing non-performing loan in average. 1. 695% is the fluctuated in credit risk. It is found that the maximum value of inflation is

9.46% and minimum value is 3. 63%. Mean value of the inflation is normally 7.040%. The standard deviation is 2.257% which is highly fluctuated. The minimum and maximum value of GDP is-2.09% and 8.98% respectively. The average value of GDP in the sample periods is 4.338%.the fluctuation rate of GDP is 2.882% i e standard deviation.

4. 6 Correlation analysis

Correlation Analysis is used to determine the relation between various independent and dependent variables associated with the research. It measures the linear correlation between any two variables. In this study, correlation analysis is done between the bank size, Operating cost, Liquidity ratio, Credit risk ratio Inflation, GDP and interest rate spread.

The Table 4.4 shows the Pearson Correlation Coefficient of the variables under study which is conducted for the whole sample. The correlation between bank size and interest rate spread is0.003, which signifies that the two variables are positively correlated which stated that when independent variable bank size increases dependent variable interest rate spread also increase or vice versa. Further, this value indicates there is low significant between these two variables. The correlation between operating cost and interest rate spread is 0.545, which signifies that two variables are positively correlates which stated that when independent variable operating cost increases dependent variable interest rate spread increases. Further, this value indicates there is highly significance between these two variables at the level of 1% significant.

The correlation between liquidity and interest rate spread is 0.273, which signifies that two variables are positively correlates which stated that when independent variable liquidity increases dependent variable interest rate spread increases. Further, this value indicates there is highly significance between these two variables at the level of 1% significant. The correlation between credit and interest rate spread is 0.528, which signifies that two variables are positively correlates which stated that when independent variable credit increases dependent variable interest rate spread increases. Further, this value indicates there is highly significance between these two variables at the level of 1% significant.

Table 4.4

Relationship between variable of all samples

Variables	Bank size	Operating cost	Liquidity ratio	Credit ratio	Inflation	GDP	IRS
Bank size	1						
Operating cost	-.140	1					
	(0.095)						
Liquidity ratio	.029	.086	1				
	(0.731)	(0.306)					
Credit ratio	-.038	.482**	.064	1			
	(0.648)	(0.000)	(0.450)				
Inflation	-.728**	.225**	.149	.284**	1		
	(0.000)	(0.007)	(0.074)	(0.001)			
GDP	-.066	.017	-.088	-.058	-.299**	1	
	(0.431)	(0.838)	(0.295)	(0.486)	(0.000)		
IRS	.003	.545**	.273**	.528**	.187*	.085	1
	(0.975)	(0.000)	(0.001)	(0.000)	(0.025)	(0.309)	

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Sources: Data collected from annual and quartile reports of studied banks and Nepal Rasta bank

The correlation between inflation and interest rate spread is 0.187, which signifies that two variables are positively correlates which stated that when independent variable inflation increases dependent variable interest rate spread increases. Further, this value indicates there is highly significance between these two variables at the level of 5% significant. The correlation between GDP and interest rate spread is 0.085, which signifies that two variables are positively correlates which stated that when independent variable GDP increases dependent variable interest rate spread increases. Further, this value indicates there is low significant between these two variables. The correlation analysis shows the positive relationship with low significance between interest rate spread and bank size where as positive relationship between operating cost, liquidity, credit, inflation, GDP with the interest rate spread. The significance level is low in GDP and inflation and high significance in other variables likes operating cost, liquidity risk, and credit risk.

4.7 Regression analysis

The general purpose of multiple regressions is to learn more about the relationship between several independent and a dependent variable. While correlation analysis assumes no causal relationship between variables, regression analysis assumes causal relationship between two or more variables. Simple linear regression shows the effect of an independent variable on single dependent variable while multiple linear regressions show the effects of multiple independent variables on single dependent variable. Correlation analysis only provides the degree of relationship between two variables. Thus, regression analysis is done to have better understanding of the strength of relationship between two or multiple variables.

Table 4. 5

Effect of individual study variables on interest rate spread

Models	β_o	BS	OC	LR	CR	INF	GDP	Adj R^2	F
I	0.003**	0.031						-0.007	0.001
	(0.021)	(0.975)							
II	0.545***		7.754***					0.293	60.124
	(0.000)		(0.000)						
III	0.273***			3.378***				0.068	11.409
	(0.000)			(0.001)					
IV	0.528***				7.399***			0.273	54.746
	(0.000)				(0.000)				
V	0.187***					2.268**		0.028	5.145
	(0.000)					(0.025)			
VI	0.085***						1.021	0.000	1.043
	(0.000)						(0.309)		

***. Indicates significant at the 0.01 level (2-tailed).

**. Indicates is significant at the 0.05 level (2-tailed).

*. Indicates is significant at the 0.1 level (2-tailed).

Sources: Data collected from annual and quartile reports of studied banks and Nepal Rasta bank

Table 4.5 show the individual regression results of 12 commercial banks with 144 observations for the period of 2009/10 to 2020/21. The beta coefficient of bank size, operating cost, liquidity ratio, credit ratio, inflation and GDP are 0.003, 0.545, 0.273, 0.528, 0.187 and 0.085 respectively, which shows that interest rate spread of the sample banks are positively associated with independent variable. Further it is observed that the slope coefficient of OC, LR, and CR are positive and significant at 1 percent level of significant and slope coefficient of INF and GDP is positive and significant at 5 percent level of significant. The p-value of the coefficient of Bank size is 0.975 is less than 10 percent level

of significance, the coefficients are significant. In the study, Adjusted $R^2$of Bank size, operating cost, liquidity ratio, credit ratio, inflation, and GDP is -0.007, 0.293, 0.068, 0.273, 0.028, and 0.000 respectively. It indicates that 29.3% of the variation in the interest rate spread is explained by the operating cost. And other variables likes BS, LR, CR, INF and GDP explain -0.7%, 6.8%, 27.3%, 2.8%, and 0.0% in the interest rate spread respectively.

Table 4. 6

Effect of study variables on interest rate spread

Variables	Coefficients B	Std. Error	T value	Sig.
(Constant)	- 3.941*	2.297	-1.716	.088
Bank size	0.357**	.171	2.094	.038
Operating Cost	0.610***	.121	5.060	.000
Liquidity Ratio	0.030***	.010	3.112	.002
Credit Ratio	0.203***	.052	3.924	.000
Inflation	0.109*	.060	1.798	.074
GDP	0.077***	.029	2.619	.010
Adjusted R Square		0.445		
F-value		20.091		
Sig. of F test		0.000		

***. Indicates is significant at the 0.01 level (2-tailed).

**. Indicates is significant at the 0.05 level (2-tailed).

*. Indicates is significant at the 0.1 level (2-tailed).

Sources: Data collected from annual and quartile reports of studied banks and Nepal Rasta bank

The Table 4.5 presents the regression analysis result for the dependent variable (interest rate spread) and independent variables (bank size, operating cost, liquidity ratio, credit ratio, inflation and GDP) of twelve commercial bank over the study period. The beta coefficient of bank size, operating cost, liquidity ratio, credit ratio, inflation and GDP are 0.357, 0.610, 0.030, 0.203, 0.109 and 0.077 respectively, which shows that interest rate spread of the sample banks are positively associated with independent variable. Since, the p-value of the coefficient of operating cost, liquidity ratio, credit ratio and GDP i.e., 0.000, 0.002, 0.000 and 0.010 are less that 1 percent level of significance, the coefficients are significant at 1 percent. The p-value of the coefficient of bank size i.e., 0.38 is less that 5

percent level of significance, the coefficients are significant at 5 percent. . The p-value of the coefficient of inflation i.e., 0.074 is less that 10 percent level of significance, the coefficients are significant at 10 percent.

The Table 4. 5 shows that the value of R^2 is 0.468, indicate that the independent variables (bank size, operating cost, liquidity ratio, credit ratio, inflation and GDP) described for up to 46.8 % of dependent variable (interest rate spread). The remaining 53.2% can describe other factors like return on assets, structure of the balance sheet, non-interest income, profitability, management efficiency, legal risk, return of average assets, competition, Nepal Rasta Bank requirement, monetary policy, discount rate, exchange rage, trade or budget deficit, government intervention, and market expectation. Adjusted $R^2$0.445 is called the coefficient of determination which tells % of variation in dependent variable explained by independent variable. In the study, Adjusted R^2 is 44.5% which show that 44.5% of variations in interest rate spread is explained by bank size, credit ratio, liquidity ratio, operating cost, inflation, and GDP after adjusting by degree of freedom. The standard error of estimate measures the variability of observed value of dependent variable around regression line. In the study, the standard error of the estimate is 0.8596 indicate that the average distance of the data points from the fitted regression line is deviated by given calculated value. The sig. of F test is 0.000 which is less than 0.01 that means it is significant at 1% level of significant. The correlation coefficient had shown that there is significant correlation between interest rate spread and determinants factors.

4.8 Discussion

The main objective of this study is to determine interest rate spread of commercial banks in Nepal. This study helps to determine to what extent bank size, operating cost, liquidity ratio, credit ratio, inflation and GDP influence interest rate spread. Secondary data of the variables were collected through annual reports from sample size of 12 commercials banks where 12 year data have been collected. The findings were totally based upon the banks data.

The result of this study support Were and Wambua (2013) where the main finding is bank-specific factors play a significant role in the determination of interest rate spreads. These include credit risk, liquidity risk, and operating costs. The impact of macroeconomic factors such as real economic growth and inflation is not significant. But this study does not support the variable of bank size which is positive and not significance effect on interest rate spread.

. The result is consistent with (Ghasemi and Rostami, 2015) which have a positive relationship between the ratio of cost and spread rates and non-performing loan (NPL) coefficient stated that the increase in non-current loans, the mount of loans receivables and profit reduced and eventually lead to a reduction in spread rate. Results show there is a significant correlation between the ratio of NPL and spread rate. Aikaeli and Mugizi (2011)) study concluded that the effect on interest rate spread from inflation and real exchange rate volatility was found to be inconsistent with theory. Moreover, the regression results suggested that development of the banking sector was positively related to interest rate spread. The result of this study also support Dhal and Ansari (2013) where the main finding was multiple factors wholly or partially can contribute to high interest rates and spreads in a less developed financial system. Similarly, Banks' operating efficiency hold the key to effective loan pricing decisions in the Indian context. Significant and positive impact of the asset quality variable, i.e., non-performing loans, on loan interest rate and its spread. For there more, Bank size variable, which is often considered for gauging economies of scale effect, does not hold for the Indian context. The result of study confirms Kiptui (2014) where operating costs turning out to be highly significant and with highest interest margin elasticity implying that bank specific factors indeed play a significant role in determining interest rate margins. In addition to liquidity ratio, Liquidity is positively correlated with interest margin at levels and in differences. Non-performing loans is also significant positive effects on interest margins. Macroeconomic factors contribute to the interest margin. Likewise, GDP growth has significant positive effects. The results obtained Mwamtambulo and Ntulo (2018) that the factors such as operating cost, provision for loan loss, and liquidity risk play a major role in increasing the interest rate spread. The results supported the need for the banks to find the optimum level for the operating costs, increase the level of operational efficiency and effectiveness. Achille (2016) reveled the finding of this studied that, bank assets, doubtful loan, and the volume of credit were among bank-specific characteristics, the significant determinants interest rate spread in CAEMC countries. On the other hand inflation and real GDP growth were the significant macro-economic determinants. But, the macro economic factors play the positive but not significance in the contest of Nepal. The result is consistent with Bektas (2014) which credit risk, market power, bank efficiency, and liquidity risk consistently have positive and significant effect on bank spreads and net interest margin. Furthermore, the macroeconomic variables, inflation rates seen significant values in the net interest margin.

The result consistent with Bhattarai (2020) which observed that there is positive and significant result between credit risk with interest rate spread. The other remaining variables such as size of the banks and GDP growth rate are positive, but insignificant. Result have been found that inflation rate is not support with the interest rate spread. Timsina (2020) reveled that commercial banks' interest rate spread is determined by the gross domestic product of the country and liquidity ratio and significant positive relationship between them. If macro-economic situation was conducive and supportive. Bhattarai (2015) revealed that operating costs to total assets ratio has positive and statistically significant impact on commercial bank in lending rate. Moreover, default risk has significant and positive impact on lending interest rate. Eventually, this study concludes that the major determinants of commercial banks' lending rate are operating costs to total assets ratio and default risk in Nepalese context.

CHAPTER V

SUMMARY AND CONCLUSION

5.1 Summary

Interest rates are major economic factors that influence the economic growth in an economy. The main purpose of this study is to determine the structure and pattern of interest rate spread and analyze relationship between operating cost, credit risk, liquidity risk, bank size, inflation, and GDP with interest rate spread. This study follows descriptive and causal research design. The descriptive statistic are minimum, maximum, mean, standard deviation, coefficient of variation, and number of observation. Casual research conducts to identify the extent and nature of cause-and effect relationship between the variables. The research determines how interest rate spread are influenced by change to Bank size, credit risk, liquidity risk, operating risk, inflation and GDP. This study base only on secondary data. To collect the secondary data, published annual reports, balance sheet, prospectus, journals, magazines, articles, government and university publications, Nepal Rasta Bank as well as websites of sampled banks have been used as the sources of secondary information to determine the factor affecting on interest rate spread. The population is 27 commercial banks on the basis of financial stability report for the fiscal year 2020/21 which is published by Nepal Rasta Bank. Out of them 12 banks are taken as sample on the basis of high share capital, foreign investment and high market sharing. The purposive sampling method is used.

The correlation analysis shows the positive relationship between operating cost, liquidity ratio, and credit ratio with high level of significance. But, interest rate spread is positive relationship with inflation with low level of significance. There is positive relationship between in interest rate spread with bank size and GDP without any level of significance. The impact of bank size is positively on interest rate spread without any level of significance which mean that if one per cent change in bank size, there will be 0.3% changing in interest rate spread. The impact of operating cost is positively on interest rate spread at the 1% level of significance which mean that if one per cent change in operating cost, there will be 54.5 % changing in interest rate spread. The impact of liquidity ratio is positively on interest rate spread at the 1% level of significance which mean that if one per cent change in liquidity ratio, there will be 27.3% changing in interest rate spread. The

impact of credit ratio is positively on interest rate spread at the 1% level of significance which mean that if one per cent change in credit ratio, there will be 52.8% changing in interest rate spread. The impact of inflation is positively on interest rate spread at the 5% level of significance which mean that if one per cent change in inflation, there will be 18.7% changing in interest rate spread. The impact of GDP is positively on interest rate spread without any level of significance which mean that if one per cent change in GDP, there will be 8.5% changing in interest rate spread. Interest rate spread measure the different of deposit and lending rate. The average interest rate is 3.56 per cent which is fluctuated by 1.15 per cent in average. The coefficient of variance of the interest rate spread is 0.32 per cent. Bank size measure the log of total assets. The average bank size is 11.31 per cent which is fluctuated by 0.73 per cent in average. The coefficient of variance of the bank size is 0.06 per cent. The ratio operating cost measure the operating cost divided by total assets. The average operating cost is 1. 75 per cent which is fluctuated by 0. 69 per cent in average. The coefficient of variance of the operating cost is 0.39 per cent. The ratio of liquidity measure the liquidity assets divided by total assets. The average liquidity is 31. 18 per cent which is fluctuated by 7.82 per cent in average. The coefficient of variance of the liquidity ratio is 0.25 per cent. . The ratio of credit risk measure the non-performing loan divided by total loan. The average risk is 1. 81 per cent which is fluctuated by 1. 69 per cent in average. The coefficient of variance of the credit risk is 0.93 per cent. Inflation and GDP is the micro economic variables which is measure consumer price index and annual GDP growth rate respectively. As for the standard deviation, the higher the coefficient of variation is greater the risk. The high risky variable is GDP than inflation due to the coefficient of variance of GDP is 0.66 per cent and coefficient of variance of inflation is 0.321.From the test results of regression, it can be seen that the overall model is fit. Factor based on significant scale in a sequence level bank size (0.357), operating cost (0.610), liquidity ratio (0.030), credit ratio (0.203), inflation (0.109), and GDP (.077). The result found that the bank specific factors likes bank size, liquidity risk, credit risk, operating cost, and micro economic factors likes inflation and gross domestic product ware found significant positive impact on interest rate spread. The value of R^2 is 0.468, indicate that the independent variables (bank size, operating cost, liquidity ratio, credit ratio, inflation and GDP) described for up to 46.8 % of dependent variable (interest rate spread). The remaining 53.2% can describe other factors like return on assets, structure of the balance sheet, non-interest income, profitability, management efficiency, legal risk, return of average assets, competition, Nepal Rasta Bank requirement, monetary policy, discount rate, exchange rage, trade or

budget deficit, government intervention, and market expectation and so on. Thus, this study summarized that the major determinants of commercial banks' interest rate spread are operating costs, credit ratio, and liquidity ratio in Nepalese perspectives.

5.2 Conclusion

This study analyses the key determinants of interest rate spread in Nepalese commercial banks over the period of 2009/10 to 2020/2021.This results concluded that liquidity risk, credit risk, and operating cost ware found positive and significant determinants of interest rate spread in Nepalese commercial banks. The macroeconomic variables gross domestic products growth rate and inflation and bank specific variable bank size have not effective roles plays to determine interest rate spread. The result concluded that the bank specific factors likes non-performing loan to total loan, total bank's assets, operating cost to total assets, liquidity assets to total assets and micro economic factors likes inflation and gross domestic product ware found significant positive impact on interest rate spread. It is shown that operating cost has higher influence on interest rate spread because without managing the operating cost, interest rate spread cannot be reduce. Other variables like liquidity and credit ratio are also higher influence than other variables likes bank size, inflation, and GDP ratio. Thus, it can be concluded that Bank size, Operating cost, Liquidity ratio, Credit ratio, Inflation, and GDP have impact on interest rate spread in Nepalese commercial banks.

5.3 Implication

Based on the analysis, interpretation and conclusions, a number of recommendations meant for the concerned authorities, future researchers, academicians, bankers have been made. The interest rate spread is too high in Nepal. Commercial Banks are suggested to decrease the interest rate spread as far as possible so that the people who want to lend the money should lend it. This will help to generate the profit of bank and also helps in enhance the economic condition in the long run. Deposit plays very important role for the growth of financial institutions. Without deposit banks cannot able to lend the loan to the customers. The banks are suggested to increase the deposit so that they could provide loan to needy customers. The bank and financial institution is needed to continuous increase the bank assets to reduce uncertain risk and unhealthy competition. If the non-performing loan increases the bank image have been not consider too good. Due to this customer did not grant loan which effects on bank growth and profitability. It is suggested to all the sample banks that they use well- trained manpower which helps in proving better service to

customers by increasing productive work operations. As Table government is needed to create the investment opportunity so excess liquidity can be utilized both in private, public and joint venture banks. Lending institutions are suggested to invest on new areas as well as to introduce competitive customer oriented schemes on lending and borrowing so that more lending and borrowing can be promoted. Banks plays a vital role in development of economic of the country. However all the banks have satisfactory performance, there is situation of inflation which is a cause of narrow scope operation. Therefore Nepal Rasta Bank has to come up with strong supervision and monitoring with one window service in deposit and investment activities.

REFERENCES

Aikaeli, J., and Mugizi, F. M. P. (2011). The determinants of interest rate spreads in developing countries : Evidence on Tanzania. *SSRN electronic journal, 2*(11), 12-16.

Dhal, S. C., and Ansari, J. (2013). Interest rate pass-through and determinants of commercial banks ' loan pricing decisions in India : Empirical evidence from dynamic panel data model. *Journal of banking and finance review, 24*(1), 108-113.

Were, M., and Wambua, J. (2013). Assessing the determinants of interest rate spread of commercial banks in Kenya: An empirical investigation. *KBA Centre for Research on Financial Markets and Policy Working Paper Series, 13*(1), 1–28.

Afroze, R. (2013). Interest rate spread of commercial banks: Empirical evidence from Bangladesh. *ASA University Review,* 7(2), 1-10.

Bektas, E. (2014). Are the determinants of bank net interest margin and spread different?: The case of North Cyprus. *Journal of banks and bank systems, 9*(4), 89–91.

Kiptui, M. C. (2014). Determinants of interest rate spread: Some empirical evidence from Kenya's banking sector. *International business research, 7*(11),100-107.

Were, M., and Wambua, J. (2014).What factors drive interest rate spread of commercial banks?: Empirical evidence from Kenya .*Review of development finance ,4* (20) 73–82.

Kanwal, K., Abbasi, A.M., Burney, A. I., Mubin, M. (2014). Determinants of interest rate: Empirical evidence from Pakistan. *Journal of economics and sustainable development, 5*(13), 28-30.

Olweny, T., and T. M. Shipho.(2014). Effects of banking sectoral factors on the profitability of commercial banks in Kenya. *Economics and Finance Review,* 1(5), 1-30.

Bhattarai, Y. R. (2015). Determinants of lending interest rates of Nepalese commercial banks, *Economic journal of development issues, 19*(1), 39–59.

Ghasemi, A., and Rostami, M. (2015). Determinants of interest rate spread in banking industry. *International journal of applied research, 1*(9), 338-346.

Timsina, N. (2015). Determinants of bank lending in Nepal. *NRB Economic Review,* 36-42.

Aleemi, R. A., Ahmed, S., and Tariq, M. (2015). The Determinants of savings: Empirical evidence from Pakistan. *International journal of management sciences and business research, 2*(11), 20-29.

Paudel, G. P., and Khanal, S. (2016). A study of liquidity and interest spread in Nepalese Cooperative Societies. *International journal of economics, finance and management sciences, 4*(6), 321-330.

Maigua, C., and Mouni, G. (2016). Influence of interest rates determinants on the performance of commercial banks in Kenya. *International journal of academic research in accounting, finance and management sciences, 6*(2), 121–133.

Achille, D. F. (2016). The determinants of interest rate spread: Empirical evidence from the Central African economic and monetary community. *Journal of economics and international finance, 8*(6), 66–78.

Mwamtambulo, D. J., and Ntulo, E. W. (2018). Determinants of interest rate spreads in Commercial Banks: A case of Tanzania. *Global journal of management and business research: C finance, 18*(6), 1-19.

Bhattarai, B. P. (2020). The factors driving interest rate spread of commercial banks: Empirical evidence from Nepal. *International journal of accounting and financial management research, 10*(1), 45–52.

Ojha, B. R. (2020). Determination of Interest Rate in Nepalese finance companies. *Journal of management dynamics. 23*(2), 265–283.

Bhattarai, B. P. (2020). Bank lending determinants: evidence from Nepalese commercial banks. *International journal of management, 11*(10), 1-10.

Wijaya,C., Lucianna,Y., and Indriati,F. (2020). Determinants of interest rate spreads of conventional banks listed on the Indonesia Stock Exchange. *Banks and Bank Systems*, 15(4), 69-79.

Goet, J. (2021). Effect of determinants of lending behavior on loan and advances in Joint Venture commercial banks in Nepal. *The journal of economic concerns,12*(1), 93-97.

DETERMINANTS OF INTEREST RATE SPREAD IN NEPALESE COMMERCIAL BANKS

A Dissertation submitted to the Office of the Dean, Faculty of Management in partial fulfilment of the requirements for the Degree of Master of Business Studies

By

Sukadev Subedi

Symbol No:15784/19

Campus Roll NO:089/075

Registration no:7-2-271-375-2013

People's Campus

Kathmandu, Nepal

December, 2022

CHAPTER I

INTRODUCTION

1.1 Background of the study

Interest rates are major economic factors that influence the economic growth in an economy. Interest is a charge to the borrower for the use of an asset. Assets borrowed can include cash, consumer goods, vehicles, and property. The interest rate is the cost of debt for the borrower and the rate of return for the lender. The money to be repaid is usually more than the borrowed amount since lenders require compensation for the loss of use of the money during the loan period. The lender could have invested the funds during that period instead of providing a loan, which would have generated income from the asset. The difference between the total repayment sum and the original loan is the interest charged.

Interest spread rate is a difference between two related interest rates. In banking industry, spread rate is the difference between debts rate (especially for deposit) and assets rate (Especially for loan). Interest rate spread has always been one of the most important and significant economic issues in different countries of the world (Ghasemi, and Rostami 2015)..

Interest rate is the price a borrower pays for the use of money they borrow from a lender/financial institutions or fee paid on borrowed assets. Interest can be thought of as rent of money. Interest rate as a price of money reflects market information regarding expected change in the purchasing power of money or future inflation. Commercial banks mobilize savings by offering various types of deposit products to savers and channel such savings as loans and advances to borrowers and investors (Achille, 2016).Conceptually, interest is both a payment and receipt for the use of money, interest therefore can be considered as a 'cost .On the other hand, if interest is paid, it can be considered as a 'cost' on the other hand if interest is received it can be considered as a 'return' 'Since money can earn return over a period of time, interest rates are often considered as an expression of the time value of money (Kiptui, 2014).

Interest rates play an important role in our everyday lives and can greatly affect our buying power. Consequently, the overall trend of interest rates can have a major effect on our

investments, thus, as an investor it is important to pay close attention to different trends in interest rate. Major shifts in direction, be increase or decrease, should cause you to review present investments as well as point towards potential investment opportunities. Interest rates are normally calculated on annual basis known as the annual percentage rate (APR). Interest rates control the flow of money in an economy. Normally when interest rates are high in an economy, it will control the inflation rate but at the same time it has a negative impact on economy by slowing down the economic activities. Whereas, low interest rate speedup the economic performance but could lead to inflation in an economy. So therefore, it is not only important to keep an eye on increase and decrease of interest rate but also to consider the different reaction of other economic indicators in an economy (Rahman Aleemi et al., 2015).

Interest rate spread shows the cost of financial intermediation in a period. The spread, in Nepal, is a function of interest expenses on deposit and interest income from the domestic loan. This also shows the general level of competition in the banking sector, the extent of credit risk, and the managerial efficiency of the concerned bank. NRB had directed "A" class banks to bring down their interest spread rate within 4.4 percent. BFIs have also been directed to publish their interest spread monthly. The overall interest spread of commercial banks gradually decreased in last three years and it stood at 3.78 percent in mid-July 2021(Nepal Rasta Bank, 2021).

The difference between lending and deposit interest rate is known as interest rate spread. It is an important determinants of the efficacy of the financial system in a country. In another word, the ways of measuring interest rate spread (IRS) in the literature, such as the difference between interest income received and interest paid by a bank as a ratio of total assets or difference between the ratio of interest received and all interest bearing assets and the ratio of interest paid and all interest earning liabilities (Bhattarai, 2020).

Interest rate spread is defined by market microstructure characteristics of the banking sector and the policy environment. In differentiating between the pure spread and the actual spread. Observe that pure spread is a microstructure phenomenon, influenced by the degree of bank risk management, the size of bank transactions, interest rate elasticity and interest rate variability. considering risk management by the bank, found that risk averse banks operate with a smaller spread than risk-neutral banks, explains that risk aversion raises the bank‘s optimal interest rate and reduces the amount of credit supplied. Actual spread, which incorporates the pure spread, is in addition influenced by macroeconomic variables

including monetary and fiscal policy activities. Emphasize the role of direct taxes, reserve requirements, cost of transactions and forced investment in defining interest rate spread (Puroush, 1994).

1.2 Statement of Problem

Banking sector play a dominant role in the financial sector, particularly with respect to mobilization of savings and provision of credit. An analysis of the high interest rate spreads in the sector is not only useful in its own right, but is also central to the understanding of the financial intermediation process and the macroeconomic environment in which the banks operate. That notwithstanding, there has been little empirical research on this issue, particularly with respect to the investigation of industry-level or bank-level determinants of interest rate spreads. Were and Wambua (2013) examined and empirically investigated factors that drive the interest rate spread in Kenya's banking sector. Bank-specific factors like bank size, credit risk, liquidity risk, and operating risk played the significant role then the macroeconomic factors like inflation and read economic growth rate.

Thus the process of study attempts at answering the following questions.

- What are the key determinants of interest rate spread in Nepalese commercial banks?
- Is there any relationship between operating cost, credit risk, liquidity risk, bank size, inflation, and GDP with interest rate spread?
- What is the effect of operating cost, credit risk, liquidity risk, bank size, inflation, and GDP on interest rate spread?
- Which variable(s) has a more explanatory power to determine the interest rate spread?

1.3 Objective of the study

The objective of the study is to deepen understanding on the determinants contributing to interest rate spreads in Nepal banking sector so as to resolve debates on the possible causes of the relatively high spread. For the study there has to be some objectives which highlight the purpose of doing research work. The major objectives of this research are as follows.

- To investigate the key determinants of interest rate spread in Nepalese commercial banks.
- To determine the relationship between operating cost, credit risk, liquidity risk, bank size, inflation, and GDP with interest rate spread.

- To analyze the effect of operating cost, credit risk, liquidity risk, bank size, inflation, and GDP on interest rate spread.
- To identify the most explanatory variables to determine the interest rate spread.

1.4 Rationale of the study

Nepalese interest rate varies time to time, region and sector to sector. The function in interest rate is a regular phenomenon in developing countries. Therefore, it is necessary develop some ideas about the impact of interest to the economic.

Interest income contributes major portion of net profit of any bank. Level of interest income is determined by the level of interest spread rate. The significance of this study is to identify, analyze and interpret determinants of the interest spread rate of bank. Determinants of interest rate spread of bank can be measured though the study of variables like credit Risk, operating risk and market risk. Interest spread rate also affect total lending and total deposits in an economy. So, bank must manage appropriate interest spread rate. Higher deposit interest rate encourages depositors to deposit money on bank but, side by side, high lending interest rate discourages business organization and household to carry loan from bank as it increases cost of capital to them. So, bank must maintain appropriate lending and deposit rate that can attract both depositor and debtor. This study helps bankers to analyze the past impact of interest rate spread and its impact on profitability. It helps the bankers to carry out necessary steps to determine appropriate lending and deposit rate. Some of the other significance of this study is highlighted below.

- This study help to identify the determinants of IRS among commercial bank in Nepal.
- This study help to bankers carry out necessary steps to determine appropriate lending and deposit rate.
- This study help to new researchers to learn more about the IRS among commercial banks in Nepal.

CHAPTER II

LITERATURE REVIEW

2.1 Brief review of the literature

The theories that are reviewed in this study are: the classical theory interest rate or the real theory of interest rate, neo-classical theory of interest or loanable fund theory of interest rate, theory of liquidity preference and Rational Expectancy Theory of Interest.

Interest rate spread is affected by a variety of factors such as: bank-specific factors; factors specific to the banking industry; and macroeconomic factors. The bank specific factors which are the operating or administrative costs, non-performing loan, return on assets, structure of the balance sheet, non-interest income, bank size, liquidity risk(liquid assets to total assets), profitability, credit risk, default risk, management efficiency, legal risk, return of average assets. Factors specific to the banking industry which are market competition, NRB requirement, monetary policy, discount rate. Macroeconomic factors GDP, Inflation, exchange rage, trade or budget deficit, government intervention, and market expectation. Though, this study concentrated mainly on the effects of bank size, credit risk, operating cost, liquidity, inflation, and GDP.

Bhattarai (2020) investigated the factors that influence lending interest rates in Nepalese commercial banks. A class commercial bank listed in the Nepal stock exchange (NEPSE) was the population and sample bank got 6 banks that is global Ime bank, Everest bank, Nepal investment bank, Kumari bank, Laxmi bank, and Nabil bank. Applied method was descriptive and casual comparative research design. The variables were operating cost to total assets ratio, deposit interest rate, profitability, default risk (non-performing loan to total loan) and lending interest rate. Ngugi (2004) determined the affecting factors on spread rate in an Iranian bank during the last 19 month. Some variables such as NPL ratio, ratio of demand deposits on deposits, non-interest income, and interest assets to assets, capital adequacy ratio, ROA ratio and inflation and exchange rate are analyzed on spread rate. This study is applied research in terms of aim and is Cross-correlation in terms of way.

CHAPTER III

RESEARCH METHODOLOGY

3.1 Research design

This study follows descriptive and causal comparative research design. Descriptive research is the systematic collection and presentation of data to give a clear picture of a particular situation. The descriptive statistic are minimum, maximum, mean, standard deviation, coefficient of variation, and number of observation. Co-relational research design is selected to determine if there is relationship between the independent variables and dependent variable under the study. It involves measuring variables and assessing the relationship between them. Casual research conducts to identify the extent and nature of cause-and effect relationship between the variables. The research determines how interest rate spread are influenced by change to Bank size, credit risk, liquidity risk, operating risk, inflation and GDP.

3.2 Population and sample, and sampling design

The population are all the commercial banks to involve in holding of deposits and lending in Nepal. The total no of bank is 27 commercial banks on the basis of financial stability report for the fiscal year 2020/21 publish by Nepal Rasta Bank. Out of them 12 banks are taken as sample on the basis of high share capital, foreign investment and high market sharing. The purposive sampling method is used. The sample banks are Nepal Bank Limited, Nabil Bank, Nepal Investment Bank, NIC Asia bank, Himalaya Bank, Standard Chartered Bank Nepal Ltd, Everest Bank Ltd, Kumari Bank Ltd, Machhapuchhre Bank Ltd, Global IME Bank Ltd, Siddhartha Bank Ltd, and Rastriya Banijya Bank Ltd.

3.3 Nature and sources of data, and the instrument of data collection

This study base only on secondary data. To collect the secondary data, published annual reports, balance sheet, prospectus, journals, magazines, articles, government and university publications, NRB as well as websites of sampled banks have been used as the sources of secondary information to determine the factor affecting on interest rate spread.

3.4 Methods of analysis

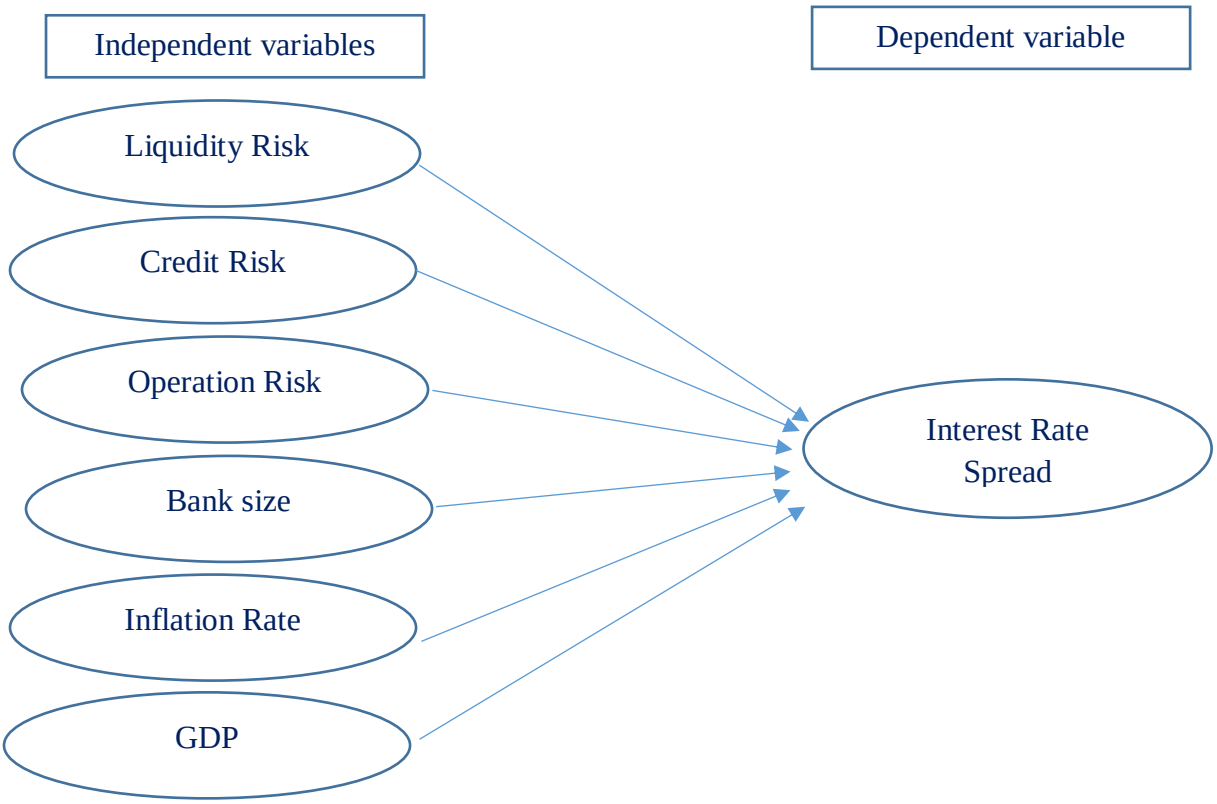
The descriptive method of research uses of many different kinds of research methods to investigate the variables in question. The most common tools are minimum, maximum, mean, standard deviation, coefficient of variation and number of observation. The objective of this study was to analyze the structure and pattern of IRS and to document the key microeconomic and determinants of IRS in Nepal. Mean is calculated to find out the average of the variables used in research they are interest rate spread, bank size, operating cost, liquidity, credit risk, inflation, and GDP. Standard deviation measures the percentage of total variation in dependent variable explained by independent variable. Coefficient of variation measures the ratio of the standard deviation to mean. It is usually used to compare the variation of different date sets in the research.

Correlation is a statistical tool designed to measure the degree of association between two or more variables. In other words if the changes in one variable affects the change in another variable, then the variable are said to be co-related when it is used to measure the relationship between two variables, then it is called simple correlation. The coefficient of correlation measure the degree of relationship between two sets of figures. Among the various methods of finding out coefficient of correlation, Karl Pearson's method is method is applied in the study. In this study, correlation is calculated for the observation to find out the degree of relation between independent and dependent variables for all samples.

In statistical modeling, regression analysis is a set of statistical processes for estimating the relationships among variables. It includes many techniques for modeling and analyzing several variables, when the focus is on the relationship between a dependent variable (interest rate spread) and one or more independent variables (bank size, operating cost, liquidity, credit risk, inflation, and GDP). More specifically, regression analysis helps one understand how the typical value of the dependent variable changes when any one of the independent variables is varied, while the other independent variables are held fixed. The statistical software SPSS is used to analyze the impact of the independent variables into dependent variable under the regression model.

3.5 Research Framework and definition of variables

A theoretical framework was used to help focus on the variables in the study. The figure shows different variables i.e. interest rate spread, credit risk, liquidity risk, operating risk, bank size, inflation rate, and GDP.



The interest rate spread is the difference in the interest rate between the lending rate and the deposit rate. The interest rate can be calculated as follow: (rupees of interest earned divided by the Rupees amount of interest earning assets) minus (Rupees of interest paid divided by the rupees amount of interest costing liabilities. Non-performing loans to total loans ratio is used as an indicator of credit risk or quality of loans. Non-performing loan is also another variable which affect lending rate, this variable is measured as the ratio of the total loan or non-performing loans to total loans. Bank size is measured as the log of total bank's assets. The ratio of operating expenses to total assets measures the cost required to provide a loan unit, and depends on the productivity of staff and other operating costs (administrative, network, transport, depreciation, etc.

Computed as the ratio of bank's liquid assets to total assets. The degree to which banks are exposed to liquidity risk varies across banks. A bank with higher liquidity faces lower liquidity risk hence is likely to be associated with lower spreads due to a lower liquidity

premium charged on loans. Banks with high risk tend to borrow emergency funds at high costs and thus charge liquidity premium leading to higher spreads. The consumer price index has been taken as proxy for inflation rate. The past studied represent that there were inverse relationship between the inflation risk and interest rate spread. Annual present rate of inflation is used which is taken from NRP reports. Increased economic activity can heighten demand for loans leading to higher lending rates. On the other hand, increased economic activity can make projects more profitable, reduce defaults, and increase deposits, all of which reduce the spreads. Annual GDP growth rate in percentage is taken in its research.

REFERENCES

Kiptui, M. C. (2014). Determinants of interest rate spread: Some empirical evidence from Kenya's banking sector. *International business research*, *7*(11),100-107.

Were, M., and Wambua, J. (2013). Assessing the determinants of interest rate spread of commercial banks in Kenya: An empirical investigation. *KBA Centre for Research on Financial Markets and Policy Working Paper Series*, *13*(1), 1–28.

Bhattarai, Y. R. (2015). Determinants of lending interest rates of Nepalese commercial banks, *Economic journal of development issues*, *19*(1), 39–59.

Ghasemi, A., and Rostami, M. (2015). Determinants of interest rate spread in banking industry. *International journal of applied research, 1*(9), 338-346.

Aleemi, R. A., Ahmed, S., and Tariq, M. (2015). The Determinants of savings: Empirical evidence from Pakistan. *International journal of management sciences and business research*, *2*(11), 20-29.

Paudel, G. P., and Khanal, S. (2016). A study of liquidity and interest spread in Nepalese Cooperative Societies. *International journal of economics, finance and management sciences, 4*(6), 321-330.

Achille, D. F. (2016). The determinants of interest rate spread: Empirical evidence from the Central African economic and monetary community. *Journal of economics and international finance*, *8*(6), 66–78.

Bhattarai, B. P. (2020). The factors driving interest rate spread of commercial banks: Empirical evidence from Nepal. *International journal of accounting and financial management research*, *10*(1), 45–52.

Bhattarai, B. P. (2020). Bank lending determinants: evidence from Nepalese commercial banks. *International journal of management, 11*(10), 1-10.