



**BANK SPECIFIC DETERMINANTS OF NON-PERFORMING LOANS IN THE
CASE OF ETHIOPIAN PRIVATE COMMERCIAL BANKS**

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BY: SAWIT WASSIE

ID NO. GSR/2173/11

ADVISOR: ABEBAW KASSIE (PhD)

ADDIS ABABA UNIVERSITY COLLEGE OF BUSINESS AND ECONOMICS
DEPARTMENT OF BUSSINESS ADMINSTRATION IN FINANCE

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ADDISS ABABA

DECLARATION

I, Sawit Wassie, hereby declare that this thesis entitled "**BANK SPECIFIC DETERMINANTS OF NON-PERFORMING LOANS IN THE CASE OF ETHIOPIAN PRIVATE COMMERCIAL BANKS**" submitted in partial fulfillment of the requirements for the award of Masters of Business Administration College of Business and Economics, Addis Ababa University, under the direct supervisions and guidance of the research advisor is my own original work that has not been submitted for the award of any degree, diploma, or fellowship in this or any other institution. All sources and materials used for this thesis have been appropriately recognized.

Name: Sawit Wassie

Advisor: Abebaw Kassie (PhD)

Id no: GSR/2173/11

Signature _____

Signature: _____

Date_____

Date: _____

CERTIFICATION

Addis Ababa University

This is to certify that this thesis entitled "**Bank specific determinants non-performing loans of in the case of Ethiopian private commercial**" submitted in partial fulfillment of the requirements for the award of degree of Masters of Business Administration, done by **Sawit Wassie** compiles with the regulations of Addis Ababa University and meets the accepted standards with respect to originality and quality.

Approve by

Examiner Zenegnaw Abiy (PhD) Signature _____ **Date**_____

Examiner Alem Hagos (PhD) Signature _____ **Date**_____

Advisor Abebaw Kassie (PhD) Signature _____ **Date**_____

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Regards,

Sawit Wassie

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List of Acronym and Abbreviations

AB: -	Abay Bank
AD: -	Addis International Bank
AIB: -	Awash International Bank
BIB: -	Berhan International Bank
BOA: -	Bank of Abyssinia
BS: -	Bank Size
BUIB: -	Buna International Bank
CBO: -	Cooperative Bank of Oromia
DB: -	Dashen Bank
EAR: -	Equity to Asset ratio
EB: -	Enat Bank,
LGR: -	Loan Growth Rate
LIB: -	Lion International Bank,
LTD: -	Loan to Deposit ratio
NBE: -	National Bank of Ethiopia
Nib: -	Nib International Bank
NIM: -	Net interest margin
NPL: -	Non-Performing Loans
OIB: -	Oromia International Bank,
ROA: -	Return on Asset
ROE: -	Return on Equity
UN: -	United Bank
WB: -	Wegagen Bank

ABSTRACT

This study aims to find out the determinants of NPLs in Ethiopian private commercial banks. The variables were picked based on findings from the past written literatures. A quantitative research approach and explanatory research design were taken on in completing this research. Data collection method adopted for the study was document review. Secondary panel data were gathered from audited annual reports of the banks and from Ethiopian national bank then the desired ratios were calculated. Multiple linear regression equation was used to make an estimate of the model using Stata version 10 software. Data was collected from 16 private banks Tables, percentages; mean and standard deviation were established to survey the data. Furthermore, Random Effect Model was used to examine bank specific determinates of non-performing loan. loan growth rate, bank size, net interest margin ratio, return on asset and loan to deposit ratio has impact on the degree of NPLs. However, the outcomes did not suggest that equity to total asset ratio activities change the level of NPLs. The study suggests that private commercial banks should focus on many factors when providing loans so as to decrease the amount of NPLs. loan to deposit ratio, net interest margin, loan Growth rate, return on asset, bank Size were critical driver of NPLs, consequently centering and inciting the establishment close by these indicators could reduce the likelihood of NPL in Ethiopian private commercial banks. Further studies are recommended by including macroeconomic and other bank specific variables additionally by increasing the sampled periods.

Key words: Loan to deposit ratio, Net interest margin, Loan growth rate, Return on asset, Bank size, Equity to asset ratio

CHAPTER ONE

INTRODUCTION

This part of the study concentrated on background of the study, statement of the problem, objectives of the study (both general and specific objectives) formulated hypothesis, significance of the study, scope of the study, limitation of the study and organization of the paper.

1.1 Background of the Study

A strong financial system is very important for a country to grow. The economic progress of a nation and development of banking is invariably interrelated. The Banking sector is an indispensable financial service sector supporting development plans through channelizing funds for productive purpose. (Garima Vasishtha, 2002)

Banking is often characterized as the business movement of accepting and safeguarding money owned by other individuals and entities, and afterward loaning out this cash so as to gain a benefit. Banks are financial institutions that accept deposits and make loans. Included under the term banks are firms such as commercial banks, savings and loan associations, mutual savings banks, and credit unions. (Frederic Mishkin, 2002)

Banks assume a key part in improving monetary effectiveness by moving assets from asset surplus unit to have better beneficial venture openings. A bank is a budgetary foundation which plays out the store and loaning capacity. A bank permits an individual with abundance cash (Saver) to store his cash in the bank and acquires a loan fee. Additionally, the bank loans to an individual who needs cash (speculator/borrower) at a financing cost. Consequently, the banks go about as a delegate between the saver and the borrower.

Commercial banks are one of the economic actors who have a lion share in the economy of a country. Banks to perform well must pay attention to their asset quality and management. Loan is the main business, largest asset and vital source of revenue for commercial banks and hence should be managed properly. (Kipyego, 2013)

An advance is the loaning of cash by at least one person, associations, or different entities to other individuals, organizations, and so on. The beneficiary (i.e., the borrower) brings about an obligation and is normally at risk to pay interest on that obligation it's repaid in addition to repaying the principal amount borrowed. Loans are the dominant asset and represent 50-75 percent of the total amount at most banks, generate the largest share of operating income and represent the banks greater risk exposure. (Mac Donald, 2006)

(NATIONAL BANK OF ETHIOPIA) Article (4.6) loans and advances are defined as: “any financial assets of a bank arising from a direct or indirect advance (i.e., unplanned overdrafts, participation in a loan syndication, the purchase of loan from another lender etc.) or commitment to advance funds by a bank to a person that are conditioned on the obligation of the person to repay the funds, either on a specified date or on demand, usually with interest. The term includes a contractual obligation of a bank to advance by the bank on behalf of a person. The term does not include accrued but uncollected interest or discounted interest.”

In Ethiopia even though all commercial banks are required to maintain their non-performing loan below 5% of their total loan many studies shows that most of our commercial banks are suffering from non-performing loan. For example; (ABEBE, 2018) NPLs ratio calculated by NPLs divided by total loan ranges from 0.21% - 60.04 %. It has a mean of 5.14 % showing the lowest deviation (2.49%) from its mean value. Which shows that, from the total loans that Commercial banks in Ethiopia disbursed, an average of 5.14% were being default or uncollected over the sample period, (BEJU, 2016) The mean value for NPL (impaired loan to total loan) of banks was 5.67 percent with a standard deviation of 3.76 percent. The average value of NPL for eight consecutive years was above the average requirement of national bank of Ethiopia (5%).

Non-performing advances are viewed as bad debts in light of the fact that of probabilities of recovering the defaulted loan repayments reimbursements are minimal. Notwithstanding, having more non-performing advances harms the bank's incomes, just as its stock cost. The essential focal point of this proposal is to take look on bank specific determinants of NPL in private commercial banks in Ethiopia.

1.2. Statement of the Problem

Non-performing loans, which are a problematic fact for banks, and defined as those loans whose payments, are due more than one year and having no repayment. (Dimitrios, 2016), reported that Euro-area non-performing loans (NPLs) are enhanced stress over banks financial position. Bank NPLs to total gross loans (%) in Ethiopia was reported at 19.9 % in 2005, according to the World Bank collection of development indicators, compiled from officially recognized sources.

The average value of the NPLs for ten consecutive years was above the average requirement of the national bank of Ethiopia (5%) for the sample period from 2009 to 2018 (BEYENE, 2019). The mean value suggests that from the total loan Ethiopian commercial banks disbursed on average 7.49% were being default or uncollected over the sample period (2006-2016). This indicates that Commercial banks in Ethiopia incurred 7.49 % NPLs on averages from its total loan. (Fekadu, 2018)

Potential investors have an interest in putting resources into organizations with healthy books of records. At the point when the level of non-performing credits expands, the bank's stock price will likewise go down. The more NPLs a bank holds in its books, the less appealing it is for potential investors since its future gainfulness will endure if the lender won't win an income from its credit business. Being concerned that non-performing loans are a major problem in commercial banks, it is important to determine the extent of factors affecting non-performing loan and to determine most critical factors that affect non-performing loan. Identifying the factors will lead to solutions to minimize them in advance hence improving the percentage of NPLs in Ethiopia.

In Ethiopia case literatures indicate bank specific factors affects NPLs. However, the result of the variables differs.

(Aynalem, 2016) Found that loan growth rate was statistically insignificant in affecting NPL whereas (Tsige, 2013) and (Amino, 2018) found that loan growth and significant and negatively affect NPL. (ABEBE, 2018) Found that Return on Asset had negative and statistically significant effect on NPL whereas (GEZU, 2014) found that ROA had positive and statistically significant effect on NPLs.

(GEZU, 2014) found that LTD ratio had insignificant effect on NPLs whereas (BEJU, 2016) and (BEYENE, 2019) found that LTD ratio had positive and significant effect on NPLs (Fekadu, 2018) Found that there is statistically insignificant relationship between NIM and the level of NPL. (ABATE, 2015) And (BEYENE, 2019) found that bank size had insignificant effect on NPLs. Whereas (Tsigie, 2013) found that bank size had positive and statistically significant relationship with banks' NPLs.

The findings of the different studies conducted on the determinant of NPL are inconsistent each other This study will incorporate significant bank specific determinants of NPL namely Equity to total asset ratio, Loan growth rate, Bank size, Net interest margin ratio, return on Asset and Loan to Deposit ratio because those variables has been identified as the major bank specific determinant of bank non-performing loan in the previous studies, the researcher wants to look if those variables are the major determinant of NPLs in Ethiopian private commercial banks by using different observations. This study will be performed by expanding the quantity of banks under the study all together to check whether increasing of observation for sample period changes previously settled findings for the same factors or not.

1.3. Objectives of the Study

1.3.1. General Objective

The main objective of the study is to determine the bank specific factors of NPLs within Ethiopian private commercial banks.

1.3.2. Specific Objectives

1. To determine the significance of Return on Asset on NPLs in the case of Ethiopian private commercial banks.
2. To determine the significance of Loan growth ratio on NPLs in the case of Ethiopian private commercial banks.
3. To determine the significance of Loan to Deposit ratio on NPLs in the case of Ethiopian private commercial banks.

4. To determine the significance of Equity to total asset ratio on NPLs in the case of Ethiopian private commercial banks.

5. To determine the significance of Net interest margin ratio on NPLs in the case of Ethiopian private commercial banks.

6. To determine the significance of Bank size on NPLs in the case of Ethiopian private commercial banks.

1.4. Research Hypotheses

A hypothesis states your predictions about what your research will find. Hypothesis is central to all research attempts, whether qualitative or quantitative, exploratory or explanatory. It is the tentative answer to the research question that guides the entire study. (McCombes, 2020)

Hypotheses propose a relationship between two or more variables. The variable that affects other variables or sampling units is called the independent variable. The variable which is affected by the independent variable is called the dependent variable.

In compliance with the general objective of the study the following six hypotheses were formulated and tested.

(Godlewski C. , 2008) stated that there is a direct relationship between NPLs and ROA; the lower the ROA, the higher will be NPLs and vice versa. (Ahmad, 2015) affirm that ROA and NPLs have direct association. (Hue, 2015) concluded from her study that the growth rate of loans increased the NPLs for Vietnamese banks from 2009 to 2012. (Kirui, 2014) stated that the impact of NPLs on the profitability of commercial banks in Kenya was negative, and NPLs decreased the profitability of the banks from 2004 to 2013. (Dimitrios A. H., 2016) investigated various determinants of NPLs in euro banking system and concluded that ROA has a significant impact upon NPLs. (Rachman, 2018) examined various banking factors that affected the NPLs in Indonesia and concluded that the high profitability of banks has lower NPLs due to their better advancing activity and effective credit supervision system. (Kumar, 2019) studied various banking and microeconomic factors as elements of NPLs in the banking system of the UAE and

revealed that ROA has an insignificant association with NPLs. Based on earlier argument, the researcher supposes that:

H1. There is a positive and significant effect of Return on asset (ROA) on the NPLs (NPLs) of banks.

(Clair, 1992) the study finds rapid loan growth reduces loan quality with highest effect on banks with low capital adequacy ratio. (Jimenez, 2006) The results show that a positive, but quite lagged, credit growth during boom periods, lower credit standards and lower interest rates are associated with higher loan losses.

(Tsige, 2013) and (Amino, 2018) found that loan growth rate affects NPLs negatively and significant. That means an increase in loan disbursement practice of Ethiopian banks, lead to a decrease in their volume of NPLs.

(Kenton, 2019) during periods of economic growth, the financial institutions engage in market share conquest campaigns discarding the necessary assessment of credit quality of borrowers. (Santiago Fernández de Lis, 2000) The search for rapid growth of loans is achieved by either reducing interest rate charged to borrowers or by lending to lower credit quality borrowers. This will lead, through adverse selection reasoning in which banks lend to lower credit quality borrowers and ultimately increase the probability of NPLs. Along with these lines, this ratio is relied upon to have positive associations with NPLs during this study.

H2: There is a positive and significant effect of Loan growth rate (LGR) on the NPLs (NPLs) of banks.

(Khafid, 2020) The greater the amount of credit given; the more consequences the risk should be borne by the bank concerned. It means that the higher the LDR of a bank, the higher the chance of credit risk that will occur, and vice versa. (Kumar, 2019) Loan to deposit ratio have positive impact on non-performing loan, When the banks are more liquid, they can reduce risk of insolvency.

(BEJU, 2016) and (BEYENE, 2019) found LTD ratio had positive significant effect on NPLs. Because at the time of low loans to deposits proportion as to earn more banks begin loaning even to the low-quality borrowers and don't follow the standard loan allocation practices, which ends

up in expansion in NPLs. Along these lines, this ratio is relied upon to have positive associations with NPLs during this study.

H3. There is a positive and significant effect of Loan to deposit ratio (LTD) on the NPLs (NPLs) of banks.

(Constant, 2012) stated that NPLs and EAR are having a positive association with each other. (Amuakwa–Mensah, 2015) studied the various banking factors that effected the NPLs in Ghana and revealed that microeconomic factors have a negative impact on NPLs while EAR has a positive impact on NPLs.

(ABEBE, 2018) and (Fekadu, 2018) examined Total Equity/ Total Assets have negative and significant impact on NPLs. They confirmed that significant and negative impact of EAR on the levels of NPLs by supporting the arguments that state well capitalized banks are better able to resist the levels of risk.

(Klein, 2013) and (Morris W. R., 1987) banks with relatively low capital in the form of a smaller equity-to-assets ratio tend to have higher NPLs, (Makri, 2014) also stated that there is a negative association between EAR and NPLs. (Kumar, 2019) stated that concerning banking factors, the NPLs and EAR are having a negative association in the banking sector. (Koju, 2018) conducted a study on the banking sector of Nepal and concluded that EAR has a negative relationship with NPLs. Along these lines, this ratio is relied upon to have negative associations with NPLs during this study.

H4. There is a negative and significant effect of Equity to total asset ratio (EAR) on the NPLs (NPLs) of banks.

(Angbazo, 1997) showed that banks with more risky loans and higher interest rate risk exposure would select loan and deposit rates to achieve higher net interest margins. (Abid, 2016) show that Net Interest Margin has a positive relationship with NPL. It happens because a higher NIM will increase interest expense. (Macit, 2012) which states that Net Interest Margin has a positive relationship to Non-Performing Loans (NPL). It means that cooperatives with higher net interest margins are thought to have a higher NPL ratio. Therefore, it is very normal that these cooperatives tend to have higher Non-Performing Loans.

whereas (Ataur Rahman, 2017) and (Shingjergji, 2013) examined interest margin a positive relationship with aggregate NPLs. Such a positive relationship suggests that a high proportion of problem loans may cause banks to increase their interest margin to compensate for possible default risks.

H5: There is a positive and significant effect of Net interest margin (NIM) on the NPLs (NPLs) of banks.

(Wairimu, 2017), (JIN-LI HU Y. L.-H., 2004) large banks have more resources and are more experimented for efficient information gathering, processing and analyzing to tackle moral hazard and adverse selection and ultimately better deal with bad borrowers. Cole et al. (2004) suggested that, smaller banks adopt small business loan underwriting practices. Hence, the extents that the failure rates of small businesses are higher than those of larger and established firms. (Tsige, 2013) found that bank size had positive and statistically significant relationship with banks' NPLs. The result of regression analysis reveals that one percent increase in bank size causes a small unit increase in a non-performing loan.

(Poposki, 2013) Bank size could reflect bank strength and ability to cope with the problem of information asymmetry, resulting in lower level of non-performing loans. Contrary, smaller banks have fewer resources to realize credit analysis efficiently. (Salas, 2006) found a negative relation between bank size and NPLs and argued that bigger size allows for more diversification opportunities. Along these lines, this ratio is relied upon to have positive associations with NPLs during this study.

H6: There is a negative and significant effect of the size of a bank (BS) on the NPLs (NPLs) of banks.

1.5 Scope of the Study

This study focuses on NPLs and bank specific factors affecting it. This study considers only six bank specific independent constructs, return on asset, loan growth rate, loan to deposit ratio, equity to asset ratio, net interest margin and bank size to determine their effect on non-performing loan which is dependent variable for this study, the researcher believes that those factors are major bank specific factors that determine non-performing loan from previously

studied factors. The study utilizes seven years balanced panel data from 2013-2019 of Ethiopian private commercial banks. Which is obtained from the National Bank of Ethiopia and the banks annually audited financial report focusing on banks namely, Abay Bank, Addis International Bank, Awash International Bank, Bank of Abyssinia, Berhan International Bank, Bunna International Bank, Cooperative Bank of Oromia, Dashen Bank, Enat Bank, Lion International Bank, Nib International Bank, Oromia International Bank, United Bank, Wegagen Bank, and Zemen Bank.

1.6 Limitations of the Study

This study was restricted by some means. First and foremost, getting the proposed financial records from the potential sources straightforwardly may have been an extensive process that essentially will result delay in the delivery time of the study. To address this limitation, the study has additionally obtained data from online sources as well the study tested the problem of multicollinearity between independent variables, which implies that some variables have been dropped from the study like capital adequacy ratio to avoid the problem of multicollinearity. The study focuses on six bank specific factors and didn't include all bank specific factors that have been identified as determinates of NPL by others which needs much time to conduct the research but little impact on the overall percentage.

1.7 Significance of the Study

Essentially, the study is required to give an important contribution to Ethiopian private commercial banks by recognizing the most causes of NPLs in the banking sector, the finding of the study will give significant recommendations for the banks and bank controlling government experts in handling NPLs better. The result of this undertaking would empower private commercial banks to adopt better procedures to manage the current non-performing loan portfolios and to develop strategic measures to be taken on the area of non-performing loans in the future; this will improve their NPLs percentage.

It will serve as a source of perspective for additional investigations within the area. Also, it could give baseline information in respect to those organizations that have the interest to direct further

investigation. The investigation will explain the reasons for unsecured credits in banks and suggest a few suggestions that can take care of these problems. The findings would likewise empower the management of banking institutions to come out with realistic strategies for loan portfolios management to help towards the improvement of the standard of their advance portfolios.

1.8 Definition of Terms

Non-Performing loan; A loan in which the borrower is in default due to the fact that they have not made the scheduled payments for a specified period.

Private Bank; A bank owned by either the individual or a general partner, not by the government.

Commercial Bank; A financial institution that takes deposits from individuals, businesses and organizations, and lends money to its customers.

Dependent Variable; A variable that depends on other factors that are measured.

Independent Variables; It is the cause, which value is independent of other variables.

Bank Specific factors; are caused by internal functions and activities of bank.

1.9 Organization of the Paper

The first part starts with introducing background of the study, statement of the problem, objective of the study, significance of the study, scope and limitation of the study. The subsequent part concentrated on both theoretical and empirical review of related literatures and conceptual framework is distinguished. part three contain research methodology where research design, research approach, population, sampling method, sample size, sources of data, instruments, data analysis technique, model specification, variable definition were covered. Part four spotlights on the outcomes and discussion in which the findings result that are interpreted. At last, part five carried an end of research with summary, conclusion and possible recommendation.

CHAPTER TWO

LITERATURE REVIEW

This literature part of the study deals with the main areas of NPLs and their determinants in private commercial banks of Ethiopia. Furthermore, the theoretical literature review and empirical evidence elaborates about the relationship between the studies variables used in this study.

2.1 Theoretical review

Banking segment is a basic aspect of a country's economy and speaks to one of the most significant parts of a country's capital (Aynalem, 2016). Commercial banks are considered the most important financial transactions facilitator in any country's economy and the principal source of credit (S.Rose, 2002). For developing countries enhancements in the banking area could have significant impact on the allocation of financial resources since the area is the main source of financing investment yet financial markets are under development. (Habibulla, December 2010)

It is very regular that banks attempt to loan in safe at one hand and to expand the benefit on the other. Consequently, the banks must be incredibly cautious with regards to giving credits at a riskier avenue. (Tamiru, 2017)

They serve as a bridge between surplus finance and scares finance by collecting funds from savers in the form of deposit and provide loans for borrowers that generate higher return more than interest pays for depositor (MacDonald, 2009- 2010). Commercial bank is a depository establishment that is moderately unlimited in its capacity to make business credit and that is that is to a great extent allowed to issue checking accounts. (ABEBE, 2018)

Because of the character of their business, commercial banks presented themselves to the risks of default from borrowers and NPLs are closely related to banking crises (Nelson Waweru, 2009).In less creating nations, similar to Ethiopia, budgetary area is overpowered by banking industry however the banking business is infant and one among under-ranked economy. (Eshete, 2013)

Loaning speaks to the heart in banking industry and the credit portfolio speaks to a significant segment of a bank's all out resources. These advantages produce gigantic premium salary which is a basic proportion of the bank's money related execution and dependability. In many banks' loans generate the biggest portion of operating income and address banks greater risk exposure. (Mac Donald, 2006) According to (Lin Peter Wei Shong, 2006) the administration of loan portfolios seriously influences the productivity of banks since the main portion of gross profit of the banking industry is earned from loans.

Loans and advances are defined as, any financial assets of a bank arising from a direct or indirect advance (i.e., unplanned overdrafts, participation in a loan syndication, the purchase of loan from another lender etc.) or commitment to advance funds by a bank to a person that are conditioned on the obligation of the person to repay the funds, either on a specified date or on demand, usually with interest. The term includes a contractual obligation of a bank to advance by the bank on behalf of a person. The term does not include accrued but uncollected interest or discounted interest (Ethiopia, 2008). Banks lend money in different forms. They can be either secured or unsecured. The most popular forms of lending are

An overdraft is an arrangement by which the customer is permitted to draw money over and above the credit balance in his account. This facility is provided only to holders of current accounts. It is granted against some collateral security. However, the customers have to pay interest for the overdrawn amount.

Cash credit is a short-term credit given to the businessmen for meeting their working capital requirements. It is normally made against certain security. Entire amount of loan will not be given at one particular time. The banker opens the cash credit account in the name of the borrower and permits him to withdraw money from time to time up to a certain limit fixed by the value of stocks kept in the go-down of the borrower. The go-down remains in the possession of the bank.

Loans and Advances are direct loans given to all type of customers. These loans are given against the security of the movable and immovable properties. The amount of loan is paid as cash, or customer's account is credited with it so that he can withdraw the amount from his account at any time. The interest is charged on the full amount of the loan irrespective of the

amount of cash withdrawn by him. The loan is repayable in a lump sum on the expiry of the term for which loan was given. Banks themselves are permitted to determine the rate of interest to be charged on direct loans. However, banks are asked to observe the minimum rate known as Prime Lending Rate while fixing the interest rate here.

Discounting of bills of exchange is another type of lending by the modern banks. If the holder of bill of exchange needs money immediately, he can get it discounted by the bank. The bank pays the value of the bill to the holder after deducting its commission. When the bill matures, the bank gets payment from the party, which had accepted the bill. By discounting the bills, the banker actually converts a future claim into present money, which enables the holder to carry on his business smoothly. The banker should protect himself against bogus bills. Otherwise, he will incur a heavy loss.

Banks are institutions designed to optimize the transfer of funds from savers to borrowers. However, with lending comes the inherent risk that loan repayments might fall behind schedule or that the borrower might not be able to repay the debt altogether. Therefore, sound banking hinges profoundly on the quality of the loans in the portfolio of the bank.

There is no basic meaning of nonperforming credits (NPLs) in the entire world since it is perceived that it is conceivable that what is suitable in one nation may not be so in another. (Dimitrios, 2016) Reported that loans past due more than 90 days are called NPLs. The credit risk of banking sector can be measured through various factors like capital ratio, management inefficiency, loan loss provision and non-performing loans.

Accordingly, the IMF's Compilation Guide on Financial Soundness Indicators, NPLs are characterized as of nonperforming when installments of premium as well as chief are past due by 90 days or more, or premium installments equivalent to 90 days or more have been promoted, renegotiated, or postponed by understanding, or installments are under 90 days late, yet there are other valid justifications, for example, a borrower seeking financial protection to question that installments will be made in full (IMF, 2010) as cited (BEYENE, 2019).

There are Predominant theories of non-performing loans.

Asymmetry Theory: The theory of asymmetric information state that it may be difficult to differentiate between good and bad borrowers. The problem of asymmetric information arises a result of incomplete information possessed by the lender and to a certain extent complete information being possessed by the borrower about the transaction. (Richard, 2011)

Risk Premium Theory: Financial decisions incur different degrees of risk. The “perceived credit risk” depends on a person’s judgment. Risk and expected return move in tandem when the expected return increases also the risk increase. According to (Ralf Ewert, 2000) the lender takes high risk to generate more return. This interest exposed for corresponding risk; it means that borrowers fail to pay their obligation when the interest rate is high.

Moral hazard Theory: (Morris W. R., 1987), who argued that banks with relatively low capital respond to moral hazard incentives by increasing the riskiness of their loan portfolio, which in turn results in higher non-performing loans on average in the future.

Patronizing effect Theory: This model proposes that there is a possibility that lenders are unwilling to collect. Unwillingness may arise from several factors such as poor policies, procedures, structure, and rewards physical setting.(Shamsudheen, 2015)

Agency problem: This problem arises from managers give priority for self-interest, public perception and short-term earning due to this take high risk. Conflict of interest between bank managers and shareholders may aggravate the adverse selection. (Breuer, 2006)

(Morris W. R., 1987) present one of the earliest studies to examine the causes of loan losses. In the latter paper the authors examined the losses by 2,470 insured commercial banks in the United States (US) over the 1979-85. Using NPLs net of charge-offs as the primary measure of loan losses Keeton and Morris (1987) shows that local economic conditions along with the poor performance of certain sectors explain the variation in loan losses recorded by the banks. The study also reports that commercial banks with greater risk appetite tend to record higher losses.

Several studies which followed the publication of (Morris W. R., 1987) have since proposed similar and other explanations for problem loans in the US. (Sinkey, 1991) investigate the loan

loss-experience of large commercial banks in the US; they argue that both internal and external factors explain the loan-loss rate (defined as net loan charge offs plus NPLs divided by total loans plus net charge-offs) of these banks. These authors find a significant positive relationship between the loan-loss rate and internal factors such as high interest rates, excessive lending, and volatile funds. Similar to the previous study, Sinkey and Greenwalt (1991) report that depressed regional economic conditions also explain the loss-rate of the commercial banks. The study employs a simple log-linear regression model and data of large commercial banks in the United States from 1984 to 1987.

Historically, the occurrence of banking crises has often been associated with a massive accumulation of non-performing loans which can account for a sizable share of total assets of insolvent banks and financial institutions, especially during episodes of systemic crises. Deterioration in bank's loan quality is one of the major causes of financial fragility. Past experience shows that a rapid buildup of bad loans plays a crucial role in banking crises. (ABEBE, 2018)

Bank specific factors or internal factors are the individual bank characteristics, which affect bank performance. These factors are influenced by the internal decisions of management and board. These factors are also within the scope of the bank to manipulate them and they differ from bank to bank. These include capital, size of deposit liabilities, size, and composition of credit portfolio, interest rate policy, labor productivity, and state of information technology, risk level management quality, bank size, and ownership among others (Dang, 2011). To proxy bank specific factors scholars often use CAMEL framework. CAMEL stands for capital adequacy, asset quality, management efficiency, earnings ability, and liquidity, (ABEBE, 2018)

2.2 Empirical Literature

There are numerous examinations led on the determinants of NPL in the financial part, the vast majority of them dependent on the connection between bank-specific factors and macroeconomic variables.

This part gives indications which recognize the significant determinants of bank credits, particularly, nonperforming advances. Some studies are conducted on particular country and also the others directed on several nations. There are a lot of factors that influence the NPLs of banking areas. There are a ton of elements that impact the NPLs of banking parts. During this study, the researcher focused on bank specific determinants of NPLs of commercial bank in Ethiopia.

(Warue, 2013) Researched the relationship between NPLs and bank-specific and macroeconomic factors, in commercial banks in Kenya. The study covers the period 1995 to 2009 utilizing both secondary and primary data. A census of 44 commercial banks was taken a causal- comparative research design and panel econometrics approach employing both pooled (unbalanced) panel and fixed effect panel models were used. The major outcome was that return on assets (ROA) had negative and significantly related to NPLs.

(Shingjergji, 2013) Researched the relationship between NPLs and bank-specific factors in the Albanian financial framework utilizing a simple regression model for data analysis. The major outcome was capital adequacy ratio had (CA) had negative and insignificantly related to NPLs however return on equity and loans to asset ratio had negative and significantly related to NPLs.

(JIN-LI HU, 2004) Researched the relationship between NPLs and ownership structure, size of banks and income diversification with NPLs of commercial banks in Taiwan. The study covers the period 1996-1999. The major outcome was that government ownership recorded lower NPLs which means negatively related to it. While bank size and income diversification were natively significant and insignificantly related to NPLs.

(Fathi Jouini, 2013) Researched the relationship between NPLs and macroeconomic variables (GDP growth rate, unemployment rate and real interest rate) and bank specific variables (return on assets, loan growth and the loan loss reserve to total loans). The study covers the period 2004-2008 for sample of 85 banks on Italy, Greece and Spain. The major outcome ROA & GDP growth rate was significant and negatively related to NPLs. unemployment rate, the loan loss reserves to total loans and the real interest rate was significant and positively related to NPLs.

(Mohanty, 2010) Researched the relationship between NPLs and macro and bank specific variables. The study covers the period 1994-2005 in Indian state-owned banks. The major outcome was GDP growth rate at macro level and loan growth rate, operating expenses and bank size at bank level significantly related to NPLs.

(Morris, 1987) Researched the relationship between NPLs and local economic conditions, poor performance. The study covers the period of 1979–1985 for a sample of nearly 2,500 US commercial banks. The major outcome was local economic conditions along with the poor performance of certain sectors explain the variation in loan losses recorded by the banks. The study also reported that commercial banks with greater risk appetite tend to record higher losses.

(Nkusu, 2011) Researched the relationship between NPLs and the macroeconomic performance of 26 advanced economies from 1998 to 2009. The major outcome was a poor macroeconomic performance (i.e., slower GDP growth, higher unemployment or decreasing asset prices) could be related to the increasing non-performing loans in advanced economies.

2.2.1 Empirical Studies in Ethiopia

(Negera, 2012) Researched determinates of NPLs. The study covered the period of 2005-2010 in Ethiopian commercial banks. Mixed research approach and a Survey were conducted using a self-administered questionnaire, structured review of documents and records of 8 banks and analyzed the data by a descriptive statistics and correlation matrix. The major outcome was poor credit assessment, failed loan monitoring, underdeveloped credit culture, lenient credit terms and conditions, aggressive lending, compromised integrity, weak institutional capacity, unfair competition among banks, willful defaults by borrower and their knowledge limitation, fund diversion for un expected purposes and overdue financing were significantly related to NPLs.

On the other hand (ROA and ROE), banks size; loan to deposit ratio; regulatory requirements; loan growth rate had insignificant relationship to NPLs.

(Tsige, 2013) Researched the relationship between NPLs and the bank-specific and macro-economic determinants. The study covered the period from the year 2000 to 2011 for eight commercial banks in Ethiopia. A mixed methods research approach by combining documentary analysis (structured review of documents) and in-depth interviews. The major outcome was loan growth, financial performance; operational efficiency, effective exchange rate, inflation rate and gross domestic product were negative and significantly related to the banks' NPLs. In addition to that bank size and state ownership were significant and positively related to the banks' NPLs. Also, the study recommended that focusing on and reengineering the banks alongside the key drivers of NPLs could reduce the probability of loan default in Ethiopian commercial banks.

(GEZU, 2014) Researched the relationship between NPLs and the bank-specific and macro-economic determinants in case of commercial banks in Ethiopia. A quantitative approach and secondary data were used. The major outcome was return on ROE, capital adequacy ratio lending rate were significant and negatively related to the banks' NPLs. whereas return on asset ROA were significant and positively related to the banks' NPLs. The study didn't consider the influence of some bank specific variable like cost efficiency, loan growth and size of the bank on NPL. Also suggested that well management of current assets and loans than fixed assets for bank managers so the banks level of NPL decreases.

(UMER, 2015) Researched determinates of NPLs in Ethiopian Commercial Banks. The study covered the period 2004 to 2013. Fixed effect panel regression was used. The major outcome was deposit rate, loan to deposit ratio and lending interest rate were significant and positively related to the banks' NPLs. cost efficiency was significant and negatively related to the banks' NPLs. However, the study fails to see some bank specific variables like financial performance and capital adequacy ratio.

(Meshesha, 2015) Researched determinates of NPLs. The study covered the period of 2009 to 2014 in Ethiopian commercial banks. The study used structured questionnaire from twelve banks. The major outcome was that poor credit analysis and unsound lending practices, lack of

focused loan monitoring and follow-up, lenient credit terms and conditions, compromised integrity, and fund diversion were significantly related to Bank's NPL.

(ABATE, 2015) Researched the relationship between NPLs and bank-specific determinants in Ethiopian private commercial banks. Quantitative research approach was adopted and survey conducted in these private commercial Banks of credit departments. The major outcome was poor credit risk assessment, underdeveloped credit culture/orientation, poor understanding of credit terms and conditions, imposing highest interest rate on loan, poor credit monitoring and rapid credit growth or greater risk appetite were significantly related to Bank's NPL. Whereas banks size was not significantly related to Bank's NPL. The study then suggested that banks should put in place appropriate terms and conditions, impose moderate lending rate, put in place efficient credit process, give due emphasis in developing the competency of credit operators, restrain from engaging in aggressive lending, proactive monitoring; organizational capacity enrichment of banks with exerted effort to develop culture of the community towards credit and its management.

(G/MEDHIN, 2015) Researched determinates of NPLs. survey conducted in these private commercial Banks of credit departments. The major outcome was that uncollateralized lending, under developed credit culture; lenient credit terms, Rapid credit growth and greater risk appetite were significantly related to Bank's NPL. Whereas interest rate was not significantly related to Bank's NPL. The study then suggested that banks should put in place a vibrant credit process that ensures proper customer selection, ethical standard and check and balance in credit process, organizational capacity enhancement of banks, robust credit analysis private monitoring and clear policy frame work that addresses issues of conflict of interest, deliberate effort to develop culture of the public towards credit and its management by banks and ensuring prudent policies that govern bank loans.

(BEJU, 2016) Researched the relationship between NPLs and the bank-specific and macro-economic determinants in case of commercial banks in Ethiopia. The study covered the period from the year 2007 to 2014 for ten commercial banks in Ethiopia. It is an explanatory research and used quantitative method research approach and fixed effect model. The major outcome was that, return on equity, average lending rate and inflation rate were significant and negatively related to Bank's NPL. Also, Loan to deposit ratio was positively related to Bank's NPL.

Whereas gross domestic product was not significantly related to Bank's NPL. The study then suggested that commercial banks to possess updated a detailed credit procedure which considers the current macroeconomic factors and therefore the market circumstances overall.

(Aynalem, 2016) Researched factors affecting Non-Performing Loans of Commercial Bank of Ethiopia. The study covered the period from the year 2002 to 2015 of commercial banks in Ethiopia. It an explanatory research and Secondary time series data and mixed research approach was used. The major outcome was loan to deposit ratio; return on equity and capital adequacy were significantly related to Bank's NPL. Whereas loan growth, cost efficiency and bank size were not significantly related to Bank's NPL. The study then suggested that focusing on these NPL indicators could further reduce the probability of default while extending credit in the future. Further studies were recommended by including macroeconomic and other bank specific variables; and by increasing the sampled periods.

(Tamiru, 2017) Researched determinates of NPLs. The study covered the period from the year 2000 to 2015 for six of private commercial banks in Ethiopia. A mixed methods research approach was used by combining documentary analysis (structured review of documents) and in-depth interviews. The major outcome was business profit margin, deposit interest rate, loan growth rate, loan to deposit ratio, credit monitoring and follow-up and nature of business were significantly related to Bank's NPL. Whereas exchange rate and inflation rate were not significantly related to Bank's NPL. The study then suggested focusing and engendering the institution alongside these indicators could reduce the probability of NPL in Ethiopian private commercial banks.

(BEDASA, 2017) Researched determinates of NPLs. The study covered the period from the year 2007–2016 for eight of private commercial banks in Ethiopia. Purposive sampling and secondary data were used. The major outcome was Real interest rate was significant and positively related to Bank's NPL. Whereas ROA and ROE were significant and negatively related to Bank's NPL. The study then recommended political stability, competition in banking industry, foreign currencies availability, Import & export of the country and Government Expenditure for further studies.

(Asfawesen, 2017) Researched the relationship between NPLs and the bank-specific and macro-economic determinants in case of commercial banks in Ethiopia. The study covered the period from the year 2006 to 2016. A quantitative research approach and Descriptive and multiple regression analysis were used to analyze the data. The major outcome was return on equity and capital adequacy was significant and negatively related to Bank's NPL. Whereas, loan loss provision and loan to deposit were significant and positively related to Bank's NPL. The study then suggested as bank managers' better underline the management of current assets specially loans. Moreover, best for commercial banks to concentrate or differentiate their credit portfolio by figuring risk comparative with its return so as to increase return on equity and to reduce the level of NPLs.

(ABEBE, 2018); Researched the relationship between NPLs and the bank-specific and macro-economic determinants in case of commercial banks in Ethiopia. The study covered the period from the year 2007 to 2016 of seven commercial banks in Ethiopia. A mixed methods research approach was used. The major outcome was lending rate, inflation rate and gross domestic product were significant and positively related to Bank's NPL and Return on Asset and Return on Equity and banks' capital adequacy ratio were significant and negatively related to Bank's NPL. Whereas Effective Tax rate was not significantly related to Bank's NPL. The study then suggested as bank managers should emphasize the management of current assets and loans than fixed assets in order to reduce the level of NPLs. Besides, it is better for the loan officers to provide financial counseling to the borrowers on the wise use of loan and also to make decision on timely fashion to meet their need.

(Fekadu, 2018) Researched determinates of NPLs. The study covered the period from the year 2006 to 2016. A quantitative research approach and Descriptive and random effect multiple regression analysis was used to analyze the data. The major outcome was return on equity and capital adequacy were significant and negatively related to Bank's NPL and loan loss provision and loan to deposit were significant and positively related to Bank's NPL. Whereas GDP, NIM were not significantly related to Bank's NPL.

(BEYENE, 2019) Researched determinates of NPLs. The study covered the period from the year 2009 to 2018. A quantitative research approach, explanatory research design and multiple regression analysis were used to analyze the data. The major outcome was inflation operational

efficiency return on asset; loan to deposit and capital adequacy ratio were significantly related to Bank's NPL. Whereas loan loss provision GDP growth rate, lending interest rate, and exchange rate and bank size were not significantly related to Bank's NPL. The study then suggested Banks shall search an investment opportunity in order to diversify its source of revenue and deliberately shift its source from the traditional income (interest) to different sources of income in a bid to decrease non-performing loans of the banks.

2.3 Variables of the study

Literatures set different determinant factors to explain the evolution of NPLs relying upon multidimensional angles like economy and countries circumstance overtime. Likewise give more underlined for two factors bank specific and macroeconomic factors. Macroeconomic factors on external events such as the overall macroeconomic conditions which are probably going to influence the borrowers' ability to repay their loans while the Bank specific internal factor which attributes for the amount of NPLs.

Bank specific factors or internal factors are arising from inside of bank represents individual bank characteristics that affect bank performance and can be controlled by managerial decisions. These components are affected by the internal decisions of management and board. Bank specific factor are brought by internal functions and exercises of bank can be impacted by managerial decisions and normally connected with the particular policy choices of a specific bank so as to its efforts to maximize efficiency and improve its risk management.

These factors also are within the extent of the bank to govern them and they differ from bank to bank are controllable within which the manager can prevent them through using appropriate strategy, determination and elimination of weakness and improvement of process.

The following part of this specific segment clearly presents the bank-specific variables that are employed in this study. Even though many factors have been identified and tested as bank specific factors to NPL all over the world, their significance is different from one country to another country. Also, in Ethiopia some factors have been identified. From these factors the researcher believed that these six variables are most significant factors that affect NPL in case of private commercial banks of Ethiopia from the previous studies that has been studied on the area.

1. Return on Asset

The return on assets ratio, is a profitability ratio that measures the net income produced by total assets during a period by comparing net income to the average total assets. It is an important indicator of the performance of a bank since it determines the profitability of the bank based on its assets. (Godlewski C. , 2008) investigated the association between NPLs and return on assets (ROA), and he stated that the lower the rate of ROA, the higher would be NPLs and vice versa. (Boudriga, 2010) confirmed from their study that there is a negative association between ROA and NPLs. They concluded that when the ROA decreases, then the bank starts to make investments in high-risk projects, and as a result the level of NPLs increases (Makri, 2014) showed that there is a negative affiliation between ROA and NPLs, while (Ahmad, 2015)stated that there is a positive association between ROA and NPLs. (Berger, 1997) concluded that banks with a high level of income are less involved in risky investments that can lead to loan nonpayment in the future, thus concluded that there is a negative association between NPLs and bank profitability. (Rajan, 1994) stated that credit policy is not made to make a profit but also to make good reputation; therefore, the managements of the banks try to make such credit policy from current earning to cover the loan defaults in following periods. Thus, it makes a positive relationship between NPLs and the profitability of the banks.

2. Loan to Growth Rate

Loan growth refers to an increase in the amount of loan. Loan growth examines the lending behavior of the bank at different economic situation and period of time. Excessive lending by commercial banks is recognized as an important determinant of NPLs.

(Clair, 1992) analyzes loan growth and loan quality on the sample of Texas banks for 1984 through 1990. The study finds that relationship between loan growth and loan quality depends on bank capital level. Namely, rapid loan growth reduces loan quality with highest effect on banks with low capital adequacy ratio.

The evidence of the relationship between loan growth and loan losses of US banks in the period from 1982 to 1996 is also provided by Keeton's (Kenton, 2019) later study suggests that rapid growth of loans can be triggered by return maximization strategies. Particularly, during periods

of economic growth, the financial institutions engage in market share conquest campaigns discarding the necessary assessment of credit quality of borrowers.

(Santiago Fernández de Lis, 2000). The search for rapid growth of loans is achieved by either reducing interest rate charged to borrowers or by lending to lower credit quality borrowers. This will lead, through adverse selection reasoning in which banks lend to lower credit quality borrowers and ultimately increase the probability of NPLs. (Jimenez, 2006) The sample covers both commercial and savings banks that represent 95 percent of credit institutions' assets in the period from 1984 to 2002. The results show that a positive, but quite lagged, credit growth during boom periods, lower credit standards and lower interest rates are associated with higher loan losses.

3. Loans to Deposit Ratio

Loan to deposit a ratio that is used in determining the amount of loans that a bank has utilize from the number of current deposits on hand at that same time. This ratio is determined by dividing the bank's loan amounts by its total amount of deposits. It is used to measure the liquidity size of the bank and demonstrates the relationship between loans and deposits.

Loan to deposit ratio is the ratio between the total amounts of credit provided the bank with funds received by the bank to measure the ability of bank to repay the withdrawal of funds by depositors by relying loans as source of liquidity. It measures the funds that a bank has employed into loans from the collected deposits. (Suryanto, 2015)

(Khafid, 2020) The greater the amount of credit given; the more consequences the risk should be borne by the bank concerned. It means that the higher the LDR of a bank, the higher the chance of credit risk that will occur, and vice versa.

When the banks are more liquid, they can reduce risk of insolvency. Loan to deposit ratio have positive impact on non-performing loan as stated by. (Kumar, 2019)

4. Equity to asset ratio

The equity to asset ratio is an investment leverage or solvency ratio that measures the amount of assets that are financed by owners' investments by comparing the total equity in the company to

the total assets. In other words, after all of the liabilities are paid off, the investors will end up with the remaining assets. It is widely accepted in literature that low EAR is associated with higher probability of loans default, because it induces the bank managers to involve in riskier projects. The confirmation of this statement was found in (Berger, 1997) banks analysis result of thinly capitalized banks takes increased portfolio risk, which results in higher levels of problem loans in the future, which supports moral hazard theory developed by them.

In particular, banks with relatively low capital in the form of a smaller equity-to-assets ratio tend to have higher NPLs, holding other factors constant. This supports the moral hazard hypothesis as in (Klein, 2013) and discussed in (Morris W. R., 1987). According to the hypothesis, low capitalized banks respond to moral hazard incentives by increasing risk appetite in their loan portfolio, thereby increasing NPLs. (Makri, 2014) also stated that there is a negative association between EAR and NPLs. (Constant, 2012) stated that NPLs and EAR are having a positive association with each other. (Amuakwa–Mensah, 2015) studied the various banking factors that effected the NPLs in Ghana and revealed that microeconomic factors have a negative impact on NPLs while EAR has a positive impact on NPLs. (Kumar, 2019) stated that concerning banking factors, the NPLs and EAR are having a negative association in the banking sector. (Koju, 2018) conducted a study on the banking sector of Nepal and concluded that EAR has a negative relationship with NPLs. Keeping in view the diverse views and disagreements among researcher, we suppose that:

5. Net interest margin

.Net interest margin is a measurement comparing the net interest income a financial firm generates from credit products like loans and mortgages, with the outgoing interest it pays holders of savings accounts and certificates of deposit (CDs).

(Angbazo, 1997) showed that banks with more risky loans and higher interest rate risk exposure would select loan and deposit rates to achieve higher net interest margins. The research results done by (Abid, 2016) show that Net Interest Margin has a positive relationship with NPL. It happens because a higher NIM will increase interest expense. It is in line with (Macit, 2012) which states that Net Interest Margin has a positive relationship to Non-Performing Loans

(NPL). It means that cooperatives with higher net interest margins are thought to have a higher NPL ratio. Cooperatives with higher interest margins generally charge a higher interest rate. Therefore, it is very normal that these cooperatives tend to have higher Non-Performing Loans.

Research by (Shingjergj, 2013) shows that Net Interest Margin (NIM) has a significant positive impact on Non-Performing Loans (NPL) which proves that when banks tend to have high NIMs, it will cause a decrease in asset quality. It is in line with, the results of Panta's research (Panta, 2018) show that Net Interest Margin has a positive effect on Non-Performing Loans. It is possible because creditworthiness of debtors has deteriorated, thereby increasing NPL. It is supported by the results study of Laryea, et. al. (2016) (Laryea, 2016), and (Kumar, 2019)

6. Bank size

Bank size is measured as the natural logarithm of the value of total assets in birr. With the liberal credit policy with the assumption of “TO BIG TO FALL”, big banks might involve in loose credit monitoring activity. their experience, management capability and diversification, big banks have the ability to reduce their credit default rate. This shows that the relationship between these two variables depends on the trait of the management of the banking industry. Bank size negatively affected the NPLs as stated by (Wairimu, 2017)

(JIN-LI HU Y. L.-H., 2004) large banks have more resources and are more experimented for efficient information gathering, processing and analyzing to tackle moral hazard and adverse selection and ultimately better deal with bad borrowers. Small banks, on the contrary, may be exposed to the adverse selection problem because of the lack of sufficient competencies and experience to effectively assess the credit quality of borrowers. In addition, Cole et al. (2004) suggested that, smaller banks adopt small business loan underwriting practices. Hence, the extents that the failure rates of small businesses are higher than those of larger and established firms.

(Poposki, 2013) Bank size could reflect bank strength and ability to cope with the problem of information asymmetry, resulting in lower level of non-performing loans. Contrary, smaller banks have fewer resources to realize credit analysis efficiently. Moreover, bank size may be an indicator of diversification opportunities increasing of which should lower bank risk.

Consequently, we expect negative relationship between bank size and non-performing loans.

(Salas, 2006) found a negative relation between bank size and NPLs and argued that bigger size

allows for more diversification opportunities. (Rajha, June 2017, Vol. 5, No. 1) The coefficient of bank size which represents the bank's total assets, is positive but insignificant. this finding can be explained by the fact that large banks are not necessarily more effective in screening loan customers when compared to their smaller counterparts.

2.4 Conclusions and knowledge gap

In accordance with the above theoretical just as empirical review there's no worldwide standard to define NPLs characterize level. NPL is loan either in default or near being in default. NPL isn't just harm to banks, yet in addition it is danger for the overall economy. Studies conceptually showed that macroeconomic and bank specific factors determined for the occurrence of NPLs. Despite the fact that, the determinants of NPLs are as yet disputable among different researchers that may be expected to situational factors like nation level factors, bank level factors and the condition of legal and regulatory framework of the country.

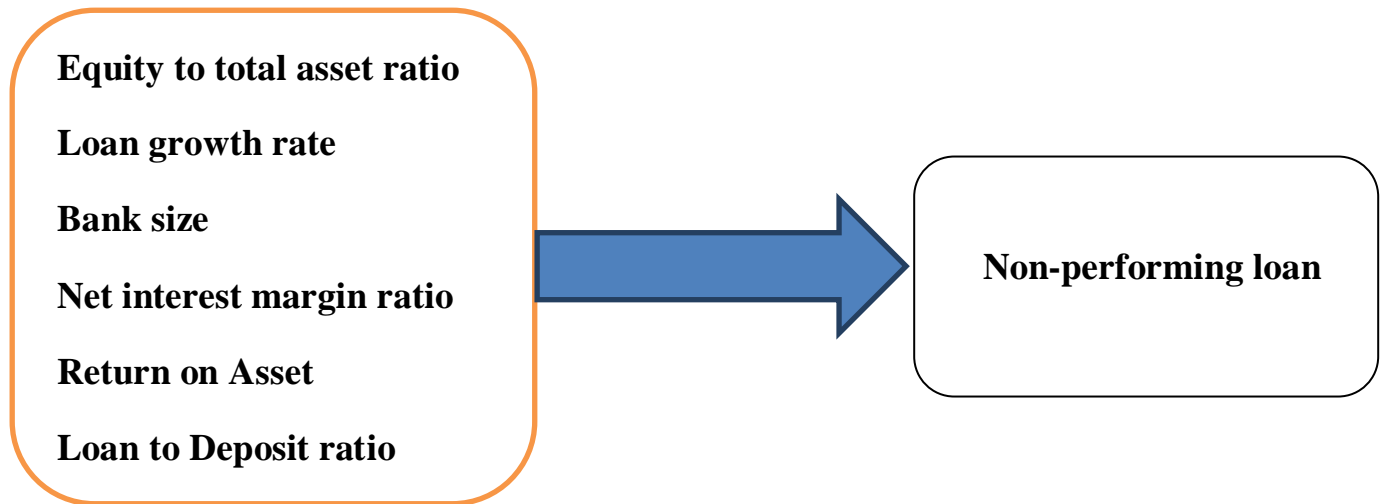
It has seen that in the previous studies the bank specific factors associated with the occurrence of NPL varies across countries. There is no as such study that indicates the most crucial bank specific factors for NPL and Studies were done on the determinants of NPLs all over the world. In Ethiopia case literatures indicate bank specific factors affects NPLs. However, the result of the variables differs. Since the findings of the different studies conducted on the determinant of NPL are inconsistent each other this study is performed by increasing the number of banks under the study to check whether increasing in a number of observation changes previously established finding similar factors. Hence; the inquiry that this study tries to answer is the thing that the main determinants of non-performing loans are in the Ethiopian banking sector.

2.5 Conceptual framework

The main objective of this study is to examine the bank specific determinants of NPLs of private commercial banks in Ethiopia. Based on the objective of the study as a result of the empirical review and theoretical assumptions, the following conceptual model is framed. As previously discussed in the related literature review parts; NPLs are affected by bank specific factors. For this reason, the data for determining the most important variables that should have to be included

within the study were picked by according to the characteristics that they create more impact on the non-performing loan and therefore the result of empirical reviews.

Figure: 2.1: Conceptual framework of dependent and independent variables



Source: The conceptual framework of the study adopted from (BEDASA, 2017) and (Berger, 1997)

CHAPTER THREE

RESEARCH METHODOLOGY

This chapter of the study focuses on the research design and methodology that was applied in this study. It includes the study design, sampling design, sources of data, methods of data collection & analysis, description of the dependent and independent variables, research hypothesis, and model specification.

3.1 Research Design and Approach

3.1.1. Research Design

Research design is the outline for fulfilling research targets and responding research questions. As such it is a master plan specifying the methods and procedures for collecting and analyzing the required information. The choice of research design depends on objectives that the researchers want to achieve. (John Adams, 2007)

As noted by (C R Kothari, 2004) explanatory research design examines the cause-and-effect relationships between dependent and independent variables. Explanatory research is devoted to discovering causal connections among dependent and independent variables. It suggests how and why variables factors ought to be connected and therefore presence of or an adjustment of one variable or cause results change in another variable.

This study used explanatory research design to clarify the importance of loan to deposit ratio, Net interest margin, Equity to asset ratio, loan growth rate, and return on asset and Bank size on NPLs in private commercial banks in Ethiopia. Towards the end, the researcher set up whether the independent factors determine the NPL and makes conclusions supported by the relationship established.

3.1.2 Research Approach

As indicated by (Creswell, 2013) there are three kinds of research approach which are recognizable to business and social science research; those are quantitative, qualitative and mixed methods approach.

In this study quantitative research approach is used. The rational explanation behind for using of quantitative research approach is it incorporates to develop knowledge of cause and effect thinking, reduction to specific variables and hypotheses and questions, use of measurement and observation, and the test of theories, employee strategies of inquiry like experiments and surveys. (Creswell, 2009)

3.2 Populations of the study

The study populations are all private commercial banks in Ethiopia enlisted by NBE. Currently, there are eighteen banks in Ethiopia. These are commercial bank of Ethiopia (CBE), Awash international bank (AIB), bank of Abyssinia (BOA), Wegagen bank (WB), United bank (UB), Nib international bank (NIB), Dashen bank (DB), Development bank of Ethiopia (DBE), Cooperative bank of Oromia (CBO), Lion international bank (LIB), Zemen bank (ZB), Oromia international bank (OIB), Buna international bank (BIB), Berhan international bank (BIB), Abay bank S.C(AB), Addis international bank S.C (AdIB), Debub Global bank S.C (DGB) and Enat banks (EB). However, from all the above listed banks, Development bank of Ethiopia and commercial bank of Ethiopia are not private Commercial banks in Ethiopia, only sixteen private commercial banks are used in this study.

3.3 Data Type and Source

The most desirable approach with regard to the selection of the method depends on the nature of the particular problem and on the time and resources (money and personnel) available along with the desired degree of accuracy. The method selected should be such that it suits the type of enquiry that is to be conducted by the researcher. This factor is also important in deciding whether the data already available (secondary data) are to be used or the data not yet available (primary data) are to be collected. (Kothari, 2004)

There are mainly two sources of data, namely; primary and secondary sources. In light of types there are three types of data, namely; time-series, cross-sectional and panel or pooled data. As indicated by (Gujarati D. N., 2009) panel data has the mixture of both cross-sectional and time-series, it is more helpful data as it captures individual variability (cross-sectional information)

and dynamic nature of the data (time-series information) and furthermore it ensures more variability or more degree of freedom, more efficiency and less collinearity among the variables.

To achieve the stated objectives, this study utilizes secondary data sources which are panel data gathered through structured document review. Panel data can better detect and measure the effects that just can't be seen in pure cross-section or pure time series data (Gujarati D. N., 2004). The secondary source of data for this study was the previous seven years (2013 - 2019G.C) financial data, for example balance sheet and income statement of each bank. In this manner, the data were obtained from the National Bank of Ethiopia and the respective commercial banks' annual reports.

3.4 Data Analysis

Data analysis is that the coming task following the data gathering in which the application of the statistical technique to assess data through inspecting, transforming and modeling data to draw valuable information or decision making. "The term analysis refers to the computation of certain measures along with searching for patterns of relationship that exist among data-groups". (Kothari, 2004)

The data gathered from various sources is coded, checked and entered to simple excel program to prepare the data for analysis, so as to realize the goal of the study and to test the proposed hypotheses the study for the most part centered on quantitative analysis.

Subsequently, statistical techniques for example descriptive statistics and regression were performed to examine the gathered panel data. Panel data, sometimes referred to as longitudinal data, is data that contains observations about different cross sections across time. Like time series data, panel data contains observations collected at a regular frequency, chronologically. Like cross-sectional data, panel data contains observations across a collection of individuals. (ERICA, 2019)

With repeated observations of enough cross-sections, panel analysis permits the researcher to study the dynamics of change with short time series. The combination of time series with cross-section can enhance the quality and quantity of data in ways that would be impossible using only one of these two dimensions. (Gujarati D. N., 2004)

Econometrics model used to examine the impact of Equity to total asset ratio, loan to growth rate, deposit ratio, net interest margin, return on asset and bank size of on NPLs of Ethiopia private commercial banks was panel data regression model which should be either fixed-effects or random-effect model. This study utilized the Hausman Specification Test to distinguish whether a fixed effect or random effect model is fitting for study.

The descriptive statistic used to determine the minimum, maximum, mean and standard deviation. By then, multiple linear regression analysis was used to see the overall significance of explanatory variables in affecting the dependent variable of commercial banks in Ethiopia. The researcher used econometric model to identify and measure the effect of NPLs of Ethiopian private commercial banks and used Generalized Least Square (GLS) method using STATA 14 software package for the study. Stata is a general-purpose statistical software package developed for data manipulation, visualization, statistics, and automated reporting. It is used by researchers in many fields.

Generalized Least Square (GLS) regression is a method for fitting coefficients of explanatory variables that help to predict the outcomes of a dependent variable. As its name suggests, GLS includes ordinary least squares (OLS) as a special case. GLS is also called “Aitken’s estimator,” after. A. C. Aitken (1935)

The rationale for selecting GLS is that, if the Classical Linear /Regression Model (CLRM) assumptions hold true (a problem of heteroskedasticity or autocorrelation), then the estimators determined by GLS will have a number of desirable properties (Brooks, 2008). In addition, as noted in (Aitken, 1935) the principal motivation for generalizing OLS is the presence of covariance among the observations of the dependent variable or of different variances across these observations, conditional on the explanatory variables. Both phenomena lead to problems with statistical inference procedures commonly used with OLS. Most critically, the standard methods for estimating sampling variances and testing hypotheses become biased. In addition, the OLS-fitted coefficients are inaccurate relative to the GLS-fitted coefficients. Furthermore; various diagnostic tests were coordinated to choose whether the model used within the study is fitting and meets the assumption of classical linear regression model.

3.5. CLRM Assumption and Diagnostic Methods

The accompanying sections discussed about the assumptions of classical linear regression model.

Assumption 1: Heteroscedasticity

This assumption can be utilized to check if the variance of the error is constant or not. If the belief of constant variance is violated, the standard error could not be right and any inference made from them became misleading. All in all, if the errors don't have a constant variance, they are said to be heteroscedastic. (Brooks, 2008)

Heteroscedasticity test is extremely important, supposing if the model comprises of heteroskedasticity issue, the OLS estimators are not, at this time BEST and error variances are wrong, therefore the hypothesis testing, standard error and confident level are going to be invalid.

To check heteroscedasticity there are a various method can be used, yet, Breusch-Pagan-Goldfrey Test, for checking for heteroscedasticity were applied during study.

The hypothesis of the heteroscedasticity test was detailed as shown

H₀: There is no Heteroskedasticity problem within the model.

H₁: There is a Heteroskedasticity problem within the model.

$\alpha = 0.05$

Decision Rule:

Reject H₀ if p-value less than significant level.

Otherwise, do not reject H₀

Assumption 2: Multicollinearity

Multicollinearity is used to determine existence of high correlation between variables in a multiple regression model. If there is a high correlation between the independent variables, then relation between them and dependent variable will be disrupted. As such, a good regression

model should not have a correlation between its independent variables, or may be mutually collinear but not highly correlated. (Gani, 2012)

Multicollinearity test is conducted to test whether there is a near perfect linear correlation between more than two independent variables. So basically, the comparison is the variable, not the data. This test is done by looking at the VIF (variance inflation factor) value and also the Tolerance (TOL) value every variable.

Multicollinearity means there's a linear relationship between the explanatory variables which can cause the regression model biased (Gujarati D. N., 2009). There are two classes of multicollinearity these are; perfect and near multicollinearity. Perfect multicollinearity occurs when there is an exact relationship between two or more variables and this causes trouble in clarifying which independent variables are influencing the dependent variables.

The other way is much more likely to occur in practice and would arise when there is a non-negligible, but not perfect, the relationship between the two independent variables. At that point, the best method to investigate the existence of multicollinearity is looking at the matrix of correlations between individual variables.

Assumption 3: Autocorrelation:

Autocorrelation refers to the degree of correlation of the same variables between two successive time intervals. It measures how the lagged version of the value of a variable is related to the original version of it in a time series. Autocorrelation measures the relationship between a variable's current value and its past values. In this study to test the existence of autocorrelation A Breusch Godfrey test were employed.

The hypothesis of the autocorrelation was detailed as shown

H0: There is no autocorrelation problem within the model.

H1: There is an autocorrelation problem within the model.

$\alpha = 0.05$

Decision Rule:

Reject H0 if p-value less than significant level.

Otherwise, do not reject H0

Assumption 4: Normality:

This assumption of linear regression refers to normally distributed error terms in the population. that the OLS estimator will still be the best linear unbiased estimator (BLUE) even if the error terms are not normally distributed in the population. This study used Jarque Bera Test (JBtest) to find out whether the error term is normally distributed or not.

The hypotheses of the normality test were detailed as shown:

H0: Error term is normally distributed.

H1: Error term is not normally distributed.

$$\alpha = 0.05$$

Decision Rule: Reject H0 if the p-value is less than the significant level.

Otherwise, do not reject H0

Assumption 5: Model Miss Specification Problem

Ramsey RESET tests an overall test for misspecification of functional form as per (Brooks, 2008) Specification error occurs when omitting a relevant independent variable, including unnecessary variable or choosing the wrong functional form, so that regression model will be wrongly predicted. Including irrelevant variables within the model are likewise that the estimated variances tend to be larger than necessary, in this manner making for less exact estimation of the parameters. That is, the confidence intervals tend to be larger than necessary. (Gujarati D. N., 2009)

On the off chance that the variable is correlated with the included variable, the estimators are biased and inconsistent. If the omitted variable is not correlated with the included variable, the estimators are unbiased, consistent and model specification error will not occur. Ramsey-RESET Test employed to test the developed model is correct or not. Along these lines, in order to select

an accurate estimated model, the researcher has carried out the Ramsey-RESET Test to test on the model specification.

The hypothesis of the model specification test detailed as shown,

H₀: The model is correct.

H₁: The model is incorrect.

$\alpha = 0.05$

Decision Rule:

Reject H₀ if the p-value is less than the significant level.

Otherwise, do not reject H₀

3.6. Definition of variables and their measurement

Dependent Variable

Non-Performing Loan

NPL is a loan that delays for the payment of principal and interest for more than 90 days. As per Ethiopian banking regulation, “NPL and advances are a loan whose credit quality has deteriorated and the full collection of principals and/or interest as per the contractual repayment terms of the loan and advances are in question”. For this study the measurement of NPLs is according NBE (2012) Substandard, Doubtful and Loss is measured or indicated by using the amount of NPLs to gross loans.

The NPL ratio measure how much of the bank loans and advances are turning in to nonperforming. The amount of NPL ratio will increases represents the low quality of bank asset. NPL ratio is measured by NPL to total loan.

Independent Variables

Independent variables are explanatory variables that specify the dependent variables. Accordingly, independent variable included in this study are Return on asset (ROA), Equity to

asset ratio (EAR), Loan to deposit ratio (LTD), loan growth rate (LG), Net interest margin (NIM) and Bank size (BS). These variables were modified and adopted from recently done studies primary based on the degree of their impact on NPL.

1 Return on Asset (ROA)

Addresses effectiveness in resource usage and shows what proportion of net income is generated out of assets. It demonstrates the capacity of bank management generate profits by using the accessible resources of the bank. It is estimated by the ratio of net profit to total asset.

Various researchers discovered different outcomes with respect to relationship among ROA and NPL. For example: (GEZU, 2014) analyzed that ROA had positive and statistically significant effect on NPLs whereas (ABEBE, 2018) and (BEDASA, 2017) analyzed negative and statistically significant relationships between ROA and NPLs. They justified that since as the financial performance (profitability) of Ethiopian banks increase, the probability that banks occupied with unsafe activities would decrease and eventually the likelihood that loans became NPLs will diminish with the similar manner. Along with these lines, this ratio is relied upon to have negative associations with NPLs during this study. It is measured by the ratio of net profit to total asset.'

HP1: There is a significant and negative relationship between Return on asset and bank's NPL.

2 Loan to growth rate: (LGR)

Loan growth refers to an increase in the amount of loan. Loan growth examines the lending behavior of the bank at different economic situation and period of time. The search for the speedy increase of loans is achieved by either reducing interest rates charged to borrowers or by lending to bring down credit quality borrowers. This will lead, through unfavorable selection thinking in which banks lend to lower credit quality borrowers and eventually increase the likelihood of NPLs.

Various researchers discovered various outcomes with respect to the relationship among LGR and NPLs. As an example, (Aynalem, 2016) Found that loan growth rate had statistically insignificant relationship with NPL whereas (Tsige, 2013) and (Amino, 2018) found that loan growth rate affects NPLs negatively and significant. They confirmed the existence of strong

inverse relationship between loan growth of a bank and bank's NPLs in ECBs. That means an increase in loan disbursement practice of Ethiopian banks, lead to a decrease in their volume of NPLs. In this broad setting, it can be concluded that, loan growth of a bank was key determinant of NPLs in ECBs. Along with these lines, this ratio is relied upon to have negative associations with NPLs during this study. It is measured by Current year loan minus previous year loan divided by current year loan.

HP2: There is a significant negative relationship between loan growth of a bank and the bank's NPLs.

3 Loan to deposit Ratio (LTD)

Loan to deposit Ratio shows the banks willingness to utilize depositors fund on credit activity to fulfill loan demand by reducing their cash assets. It represents a bank's preference for credit. It demonstrates the relationship between loans and deposits. Additionally, it provides a measure of income source and furthermore measures the liquidity of bank asset tied to loan. Loan to deposit (LTD) ratio Analyzes bank liquidity by estimating the assets that a bank has used into loans from the collected deposits. This ratio additionally measures customer friendliness of banks implies that generally more customer friendly bank is undoubtedly face lower defaults because the borrower will have the expectation of turning to bank for the financial requirements. (Ranjan and Chandra, 2003)

There is empirical evidence that shows as LTD has critical impact on the extent of NPLs of banking sectors in various perspectives. Different researchers discovered various outcomes with respect to the relationship among LTD and NPLs. As an example, (GEZU, 2014) found that LTD ratio had insignificant effect on NPLs whereas (BEJU, 2016) and (BEYENE, 2019) found LTD ratio had positive significant effect on NPLs. Because at the time of low loans to deposits proportion as to earn more banks begin loaning even to the low-quality borrowers and don't follow the standard loan allocation practices, which ends up in expansion in NPLs. Along these lines, this ratio is relied upon to have positive associations with NPLs during this study. It is measured by total loan to total deposit ratio.

HP3: Loan to deposit ratio has positive and statistically significant effect on banks NPL.

4 Equity to asset ratio (EAR)

The Equity-To-Asset ratio is a measure of Solvency and is determined based on information derived from a businesses or farm operations balance sheet. The term Solvency refers to the ability of a farm or business to pay all of its debt if it were to have to immediately sell the business or farming operation. The Equity-To-Asset ratio specifically measures the amount of equity the business or farm has when compared to the total assets owned by the business or farm.

The equity-to-asset ratio, which is to determine what percentage of a company's assets is owned by investors and not leveraged and therefore could come under the control of debt holders (such as banks) in the event of bankruptcy. The higher the equity-to-asset ratio, the less leveraged the company is, meaning that a larger percentage of its assets are owned by the company and its investors. While a 100% ratio would be ideal that does not mean that a lower ratio is necessarily a cause for concern. Some assets, such as those that generate stable income like pipelines or real estate, tend to carry higher leverage. (Juan, 2016)

To determine the Equity-To-Asset ratio you divide the Net equity by the Total Assets. What percentage of a company's assets do investors own? The formula is: $\text{Total Equity} / \text{Total Assets} = \text{Equity-to-Asset ratio}$. There is empirical evidence that shows as EAR has critical impact effect on the extent of NPLs of banking sectors in various perspectives. Different researchers discovered various outcomes with respect to the relationship among EAR and NPLs. As an example, (Amino, 2018) examined that Total Equity/ Total Assets ratio had insignificant effect on NPL whereas (ABEBE, 2018) and (Fekadu, 2018) examined Total Equity/ Total Assets have negative and significant impact on NPLs. They confirmed that significant and negative impact of EAR on the levels of NPLs of commercial banks in Ethiopia. Along these lines, this ratio is relied upon to have negative associations with NPLs during this study.

HP4: There is a significant negative relationship between equity to total asset and bank's NPL.

5 Net interests Margin

Net interest margin is the difference between interest income and interest expenses as a level of total loans and advances which incorporates deposits with foreign banks, treasury bills and other investments.

Net interest margin is a profitability metric that measures how much a bank earns in interest compared to the outgoing expense. Interest income results from variation between charges on loans and payment for deposits. NIM measured by net interest income divided by total earning asset. A positive net interest margin indicates a bank invests efficiently, while a negative return implies investment inefficiencies.

HP6: there is a significant positive relationship between net interest margin and NPLs.

6 Bank size

Bank size is measured as the natural logarithm of the value of total assets in US dollars. Capital ratio is measured using Tier 1 ratio, which is the ratio of tier-1 capital to total risk weighted assets. On the funding side, we examine the bank's reliance on deposit funding, captured as the ratio of deposits to assets. This ratio represents the ownership of assets by banks. High asset ownership enables banks to offer more financial services at low cost. As indicated (Lu, 2005) large banks have more assets and are more experienced for efficient information operation, processing and analyzing to handle moral hazard and adverse selection and at last more ideal arrangement with terrible borrowers.

Different researchers discovered various outcomes with respect to the relationship among BS and NPLs. For instance, (Tsige, 2013) found that bank size had positive and statistically significant relationship with banks' NPLs. Whereas (ABATE, 2015) found that bank size had insignificant effect on NPLs. They confirmed that the relationship between bank size and the NPL is positive and insignificant. The result of regression analysis reveals that one percent increase in bank size causes a small unit increase in a non-performing loan. Along these lines, this ratio is relied upon to have positive associations with NPLs during this study. It is measured by the Natural log of total assets.

HP5: There is a significant negative relationship between size of a bank and the bank's NPLs.

Model Specification

The aim of this research is to analyze the relationship between loan growth (LG), Return on asset (ROA), Equity to asset ratio (EAR), Bank size (BS), Loan to deposit Ratio (LTD) and Net interest margin (NIM) with NPLs. The variables are taken from audited financial statement of commercial banks included publications of NBE. Thus, gathered data examined using descriptive statistics and multiple linear regression analysis. The descriptive statistics (Mean values and standard deviations) analyze the overall patterns of the data from (2013 to 2019). A multiple linear regression model was used to determine the relative importance of each independent variable in explaining the variation of NPLs in ECBs.

According to (Siekpeb, 2008) regression methods have become an integral component of any data analysis concerned with describing the relationship between a response variable and one or more explanatory variables. Multiple regressions used in statistics to find the best fitting and most parsimonious, yet reasonable model to describe the relationship between an outcome (dependent) variable and a set of independent (explanatory) variables. To explain the relationship between dependent and independent variable the following general multiple regression equation is adopted.

$$NPL_{it} = \beta_0 + \beta_1 ROA_{it} + \beta_2 LG_{it} + \beta_3 EAR_{it} + \beta_4 LTD_{it} + \beta_5 BS_{it} + \beta_6 NIM_{it} + U$$

i denote the cross-section,

t denotes the time-series dimension

β_0 = the intercept $\beta_1 \dots \beta_6$ = is the parameter to determine the independent variable,

NPL (non-performing loan) = the dependent variable

ROA = Return on asset

LGR = loan growth rate

NIM = Net interest margin

BS = Bank size

EAR=Equity to asset ratio

LTD = loan to deposit ratio

Symbol Explanation Measurement and Expected sign

Symbol	Explanation	Measurement	Expected sign
NPL	NPL	NPL/ Total Loan	
ROA	Return on asset	Net income /Total asset	Negative
LGR	Loan growth Rate	$\frac{\text{loan @t} - \text{loan @t-1}}{\text{loan @t}}$	Negative
LTD	Loan to deposit ratio	Total Loan/Total Deposit	Positive
EAR	Equity to asset ratio	Total equity/Total asset	Negative
NIM	Net interest margin	Net interest /Total asset	Positive
BS	Bank size	Log of Total asset	Negative

Source: Developed by the researcher 3.3.2 Model specification

CHAPTER FOUR

RESULTSP RESENTATION AND DISCUSSIONS

This chapter is coordinated into two sections. The first section presents the outcomes which include descriptive statistics, CLRM Assumptions such as multicollinearity and heteroskedasticity of the model and Diagnostic tests, correlation analysis and the regression results.

4.1. The Statistical Results of Secondary Data

Descriptive Statistics Table 4.1 provides a summary of the descriptive statistics of the dependent and independent variables for sixteen private commercial banks in Ethiopia from the year 2013 to 2019 with a sum of 112 observations. The table shows the mean, minimum, maximum, standard deviation and number of observations for the dependent variable of bank's NPL and the independent variables, ROA, EAR, BS, LG, LTD and NIM, data over the period under consideration.

Table 4.1: Summary of Descriptive statistics for dependent and independent variables

sum NPL LTD ROA BS LGR EAR NIM

Variable	Obs	Mean	Std. Dev.	Min	Max
NPL	112	.0536286	.3206269	.0214	.374

LTD		112	.6425022	.2025266	.014535	1.49516
ROA		112	.0510460	.0692244	.002453	.466774
BS		112	16.15016	1.367564	8.1361	19.2743
LGR		112	.443207	.2273032	-.30658	1.23735

EAR		112	.2763144	.3597405	.081430	.784540
NIM		112	.0984379	.0933874	.020856	.855624

Source: Developed by the researcher through STATA 14.

NPLs ratio measured by non-performing loans divided by total loan ranges from 2.1- 37.4 percent. It has a mean of 5.36 % and with standard deviation 32.6%, This shows that, from the total loans that Commercial banks in Ethiopia disbursed, a mean of 5.36% were being default or uncollected over the sample period. The difference between the minimum 2.1% and therefore the maximum 37.4% of NPLs, demonstrated the margin that NPLs ratio of Ethiopian commercial banks ranged over the sample time frame.

The mean value 5.36% indicates us from 1 birr loan 0.053 is a non performing loan on average for private commercial banks in Ethiopia, which is above the average requirement of national bank of Ethiopia (5%). When a bank has too many non-performing loans in its balance sheet, it poses cash flow problems for the bank since it is no longer earning income from its credit business. The main causes of NPL might be are high-interest rate, Low GDP, Poor credit appraisal, Inflation and unemployment.

The minimum amount 2.15 indicates from 1 birr loan 0.021 cent is non-performing loan. This shows banks whose NPL falls on this range have lower non-performing loan. A lower ratio means that the outstanding loans present a low risk to the bank. The maximum 37.4% indicates from 1 birr loan they lend 0.37 cent is non-performing loan which indicates us banks whose NPL falls on this range have higher non-performing loan. A high ratio means that the bank is at a greater risk of loss if it does not recover the owed loan amounts.

As a rule of thumb, a $CV \geq 1$ indicates a relatively high variation, while a $CV < 1$ can be considered low. A "good" SD depends if you expect your distribution to be centered or spread out around the mean.

To estimate coefficient of variation ($CV = \text{standard deviation} / \text{mean}$)

Dividing 32.6 % SD to mean of 5.36% equals to CV of 6.08, which is greater than 1. The standard deviation 0.0608% of NPLs indicates high variation of NPLs among Ethiopian private commercial banks.

LTD ratio that measured by total loans divided by total deposits, it ranges from a minimum of 14.53% to a maximum of 149%. It has a mean of 64.25% and with standard deviation 20.25%. Loan to deposit ratio shows how far the bank used the depositor's money on loan activity which is problem to default risk. By this case, from the total that private Commercial banks in Ethiopia disbursed an average of 64.25% were from deposits over the sample period.

The mean value 64.25% indicates for 1 birr loan disbursed 0.64 is from the deposit received on average for private commercial banks in Ethiopia. Scholars suggest the average for LTD should be 80%-90% according to this private commercial banks in Ethiopia are giving loan 64.57 birr for every 100-birr deposit received on average. This shows banks are not giving loans as high as the deposit they receive. It could be as a result of the low capacity of the people to borrow, a very high interest charge on loans or a depressed economic situation with no return on investments.

The minimum value 14% indicates that the bank loaned 0.14 for every one birr received in deposits. This low ratio implies that banks may not be gaining profit as much as it could be earning and relied on its own deposits to make loans to its customers, without any outside borrowing. Maximum value 149% indicates that the banks are giving loan of 1.49 for every one-birr deposit they received. With this high ratio of LTD the banks borrowed money which it reloaned at higher rates, rather than relying entirely on its own deposits. This means the banks are funding all the deposits received and substantial amount of their capital on the reserve. In this case, the bank may not have enough liquidity or cash to cover any unforeseen fund requirements by the depositors.

To estimate coefficient of variation ($CV = \text{standard deviation} / \text{mean}$)

Dividing 20.25% SD to mean of 64.25% equals to CV of 0.31, which is less than 1. The standard deviation 0.003% indicates low variation among Ethiopian private commercial banks in terms of their loan to deposit ratio.

ROA ratio measured by the ratio of net profit to total asset ranges from 0.02% - 46.67%. It has a mean of 5.1% and with standard deviation 6.92%. This tells what earnings were generated from assets, from the total assets that Commercial banks in Ethiopia have, an average of 5.1% has been generated from the asset on average for the sample period. The difference between the minimum 0.02% and therefore the maximum 46.67% of NPLs demonstrated the margin that NPLs ratio of Ethiopian commercial banks ranged over the sample time frame.

The mean value 5.1% indicates that banks 0.051 of net profit can be generated from one birr asset on average among Ethiopian private commercial banks. Return on assets gives an indication of the capital intensity of the company, which will depend on the industry; companies that require large initial investments will generally have lower return on assets. ROAs over 5% are generally considered good.

The minimum value of 0.02% shows the banks are only gaining 0.002 only from 1 birr asset they have. A low ROA is not a good sign for the growth of the company. A low ROA indicates that the company is not able to make maximum use of its assets for getting more profits. It may indicate an unwise investment on the part of management.

The maximum value of 46.67 % shows the banks are gaining 46 for 1 birr asset they have in maximum. A higher ratio is always better because it indicates that the company is using its assets effectively in order to get more net income and better performance in the management of available assets,

To estimate coefficient of variation ($CV = \text{standard deviation} / \text{mean}$)

Dividing 6.92% SD to mean of 5.51% equals to CV of 1.2, which is greater than 1. The standard deviation 0.12% indicates high variation among Ethiopian private commercial banks in term of their return on asset.

EAR ratio measured by total equity divided by total assets ranges from 8.14% - 78.04%. It has a mean of 27.63% and with standard deviation 35.97%. The equity-to-assets ratio is the value of

the corporation's equity divided by the value of its assets. This indicates how much of a company's assets have been generated by issuing equity shares rather than by taking on debt. The difference between the minimum 8.14% and therefore the maximum 78.04% of EAR demonstrated the margin that ETR of Ethiopian commercial banks ranged over the sample time frame.

The mean value of 27.63% shows us that from 1 birr only 0.27 cents of the asset have been funded with the equity and the rest has been funded with debt. There is no ideal equity/asset ratio value; a high ratio means that the corporation is mostly owned by its shareholders, while a low ratio means that the corporation is likely burdened with high debts. An equity-to-assets ratio of below 0.70 generally makes it difficult for a corporation to borrow money,

The minimum value of 8.14 % indicates that from 1 birr only 0.0814 of the assets has been funded with the equity and the rest has been funded with debt. A low equity ratio means that the company primarily used debt to acquire assets, which is widely viewed as an indication of greater financial risk.

The maximum value of 78.04% shows us that from 1 birr 0.78 of the asset have been funded with the equity and the rest have been funded with debt. The higher the equity-to-asset ratio, the less leveraged the company is, meaning that a larger percentage of its assets are owned by the company and its investors.

To estimate coefficient of variation ($CV = \text{standard deviation} / \text{mean}$)

Dividing 35.97% SD to mean of 27.63% equals to CV of 1.30, which is greater than 1. The standard deviation 0.013% indicates high variation among Ethiopian private commercial banks in term of their equity to asset ratio.

NIM measured by the difference between interest income and interest expenses over total asset ranges over from 2.08% - 85%. It has a mean of 9.84% and with standard deviation 9.33%. (NIM) is a measure of the difference between the interest income generated by banks or other financial institutions furthermore, the amount of interest paid out to their lenders (for instance, deposits), and comparative with the amount of their (interest-earning) assets.

This indicates that the amount of money that a bank is earning in interest on loans compared to the amount it is paying in interest on deposits. NIM is one indicator of a bank's profitability and growth. The difference between the minimum 2.08% and therefore the maximum 85% of NIM demonstrated the margin that NIM of Ethiopian commercial banks ranged over the sample time frame.

The mean value indicates net income of 0.0984 has been gained from 1 birr of invested assets (loans to bank costumers) after all interest expenses had been paid. Net interest margin is a profitability metric that contrasts a bank's interest earnings with its payments to customers. A positive net interest margin indicates that the bank is efficiently investing, whereas a negative net interest margin implies inefficient investing.

The minimum value indicates net income of 2.08% for every 1 birr of invested assets (loans to bank customers) after all interest expenses has been paid. A negative NIM indicates that the lender has been unable to make good use of its assets, as returns produced by investments has failed to offset interest expenses.

The maximum value indicates 85% for every 1 birr of invested assets (loans to bank customers) the bank made 0.85 income after all interest expenses has been paid. A higher NIM would increase the profitability of the lender. The highest NIM indicates that interest income is greater than the interest expense

To estimate coefficient of variation ($CV = \text{standard deviation} / \text{mean}$)

Dividing 9.33% SD to mean of 9.84% equals to CV of 0.094, which is less than 1. The standard deviation 0.94% indicates low variation among Ethiopian private commercial banks in term of their net interest margin.

LGR measured by loan of time t minus loan of time t minus one divided by loan t ranges from 30.6% - 123%. It has a mean of 44.32% and with standard deviation 22.7%. Loan growth expresses the change in the current year's loans as a percentage of those of the previous years. The difference between the minimum 30.6 % and therefore the maximum 123% of LGR demonstrated the margin that LG ratio of Ethiopian commercial banks ranged over the sample time frame.

The mean value of 44.32% shows that the loan of Ethiopian private commercial banks has been grown, on average, at 44.32 percent per year. This indicates Ethiopian private commercial banks are managing their loan properly and the banks are getting return out of it.

The minimum value 30.6% indicates the loan of private commercial banks in Ethiopia has been grown a minimum of 30.6% per year. This also means that there are some banks whose loans had been grown only 30.6 per year this is below the average of all private commercial banks. Those banks may have loan management problem relatively than other banks.

The maximum value 123 % indicates the loan of private commercial banks in Ethiopia has been grown to maximum of 123% per year. This also means that there are some banks whose loans have been grown 123% per year this is above the average growth of all private commercial banks. Those banks are using their loan effectively and have strong loan management.

To estimate coefficient of variation ($CV = \text{standard deviation} / \text{mean}$)

Dividing 22.7% SD to mean of 44.32% equals to CV of 0.51, which is less than 1. The standard deviation 0.0051% indicates low variation among Ethiopian private commercial banks in term of their loan growth rate.

BS measured by (log of total asset) ranges from 8.13 -19.27. It has a mean of 16.15% and with standard deviation 1.36%. Bank size is what the bank possesses and it valuable to quantify the banks general capacity to undertake its delegate function. In this study, the proxy used to measure bank size was the natural logarithm of the total asset.

Bank size measured by total asset expresses the total market value of the securities in a fund. It can also be referred to as assets under management. Funds regularly report total assets which can be affected by supply, demand and market return. The difference between the minimum 8.13 % and therefore the maximum 19.27% of BS demonstrated the margin that BS ratio of Ethiopian commercial banks ranged over the sample time frame.

The mean value 16.15 indicates a transformed value of 10,325,839). This indicates that the average total asset of a bank during the study period is 10,325,839 Birr. Larger banks have the advantage of higher access to extra financing, managing liquidity problems and diversifying risk.

This is probably because of the way that larger banks benefit from a “too large to fail” policy and are believed to be more likely to survive than smaller banks.

The minimum value 8.13% indicates a transferred value of 1,128,159. This indicates that the minimum total asset of a bank during the study is 1,128,159 birrs.

The maximum value 19.27% indicates a transferred value of 31,779,308. This indicates that the minimum total asset of a bank during the study is 31,779,308 birrs.

4.2. Diagnostics test of Classical linear regression model

Before to check the regression model and discussion of its outcome, the researcher completes the diagnostic test to ensure that the data fit the basic assumption or not. There are five basic diagnostic tests conducted individually among the subsequent sections;

Table 4.2: Result of Heteroscedasticity test

```
. estat hettest  
  
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity  
  
Ho: Constant variance  
  
Variables: fitted values of lognpl  
  
chi2(1)      =      0.75  
  
Prob > chi2  =      0.3875
```

Source: Stata output, 2021

The condition of classical linear regression model implies that there should be homoskedasticity between variables. This means that the variance should be constant and same. Variance of residuals should be constant otherwise, the condition for existence of regression, homoscedasticity, would be violated and the data would be heteroskedastic. (Brooks, 2008) Heteroskedasticity is the problem of non-constant variance of error terms and this makes

estimators inefficient. To check whether this problem existed or not and if existed to take remedial action, heteroskedasticity test was conducted. The null hypothesis for this test is that residuals are homoskedastic. In this research, Breusch-Pagan test was run to test the existence of heteroskedasticity problems (See Appendix II), and the result shows that there is not existence of heteroskedasticity problems in the data as the p-value is greater than the level of significance ($0.3875 > 0.05$). Therefore, the null hypothesis which says residuals are homoscedastic is accepted.

Result of Multicollinearity test

Correlation Analysis

Correlation measures the degree of linear association between variables. Values of the correlation coefficient are always ranged between +1 and -1. A correlation coefficient of +1 show that the presence of an ideal positive association between the two factors, while a correlation coefficient of -1 shows perfect negative association.

A correlation coefficient of zero, on the opposite hand, demonstrates the absence of relationship (association) between two factors (Brooks, 2008) .The table below shows the correlation matrix among dependent and independent variables.

Table 4.3 Correlation Analysis of Variables

corre NPL LTD ROA BS LGR EAR NIM
(obs=112)

	NPL	LTD	ROA	BS	LGR	EAR	NIM
NPL	1.0000						
LTD	0.0439	1.0000					
ROA	-0.1146	-0.0942	1.0000				
BS	0.1957	0.0188	-0.4622	1.0000			
LGR	-0.2026	0.0897	0.0602	-0.0547	1.0000		
EAR	-0.1756	0.2565	0.2657	-0.3570	0.2157	1.0000	
NIM	-0.3106	-0.2174	0.6913	-0.0955	0.0369	-0.0716	1.0000

Source: Stata output, 2021

The correlation result in Table 4.3 shows equity to asset ratio, return on asset. loan growth ratio and net interest margin have negative correlation with NPLs of Ethiopian private commercial banks. However, loan to deposit ratio and bank size have positive correlation with NPLs

According to Table 4.4 above even though there are variables which have high correlation coefficient, the highest correlation is -0.4622 between Return on asset and Bank size. As noted by in Gujarati (2004), a serious problem for Multicollinearity is occurred if the correlation is about 0.8 or larger. there is no correlation value of above 0.8 in this study this Indicates that there are no multicollinearity problems among explanatory variables.

Table 4.4 Variance inflation factor (VIF)

```
.vif
```

Variable	VIF	1/VIF
ROA	3.04	0.329399
NIM	2.46	0.406380
BS	1.50	0.664925
EAR	1.42	0.703691
LTD	1.13	0.883643
LGR	1.06	0.945808
Mean VIF	1.77	

Source: Stata output, 2021

To detect Multicollinearity problem, the study employed variance inflation factor (VIF) technique. If the variance inflation factor for a given variable is greater than 10 and the Tolerance (1/VIF) for that variable is less than the level of significance (0.05), then it indicates that the variable is multi-collinear with others in the model.

Therefore, in this study there is no evidence of the presence of multi-collinearity problem since the VIF is less than 10 and 1/VIF is greater than the level of significance (0.05) for all variables of the study.

Table 4.5 Test for Autocorrelation

Autocorrelation measures the relationship between a variable's current value and its past values. In this study to test the existence of autocorrelation A Breusch Godfrey test were employed.

```
. estat bgodfrey, lag(1)Breusch-Godfrey LM test for autocorrelation
```

lags(p)	chi2	df	Prob > chi2
1	0.823	1	0.3642

H0: no serial correlation

Source: Stata output, 2021

Based on this result the null hypothesis is not rejected and the data is free from autocorrelation problem. Since the P value 0.3642 is greater than 0.05.

Table 4.6 Normality Test

```
jb myResiduals
Jarque-Bera normality test: 2345 Chi(2) 0.24
Jarque-Bera test for Ho: normality:
```

Source: Stata output, 2021

From the Table 4.5 the Jarque-Bera statistic shows a P-value of 0.24 infers that the p-value for the Jarque-Bera test is greater than 0.05, which demonstrates that there was no evidence for the presence of abnormality.

Table 4.7 Result of Model Specification Test

ovtest

Ramsey RESET test using powers of the fitted values of lognpl

Ho: model has no omitted variables

F(3, 102) = 0.44

Prob > F = 0.7269

Source: Stata output, 2021

From table 4.6 above do not reject the null hypothesis (H0) since the p value is greater than the significant value (0.05) which is 0.72.

Model Selection Test: Random versus Fixed Effect Model

The results so far indicate that all CLRM assumptions are not violated, so the generalized least squares regression can be safely applied. However, since this study uses a panel data, selection of one of the two sorts of panel estimator approaches, specifically fixed effects models (FEM) and random effects models (REM), should be done first (Brooks, 2008). The data collected from secondary sources of data were estimated supported on the panel model, including cross sectional and time series observations for 16 Ethiopian private commercial banks for the period (2013-2019). Fixed effects and random effects models are commonly used models for the panel data. As to decide on fixed or random effect model a formal test so called Hausman specification test was used. At the point the test is made it is essential to see the p-value in light of the fact that

the decision is made on the basis of this value. On the off chance that the p-value is higher than 0.05 (for example. it is insignificant), random effect is preferable whereas if p-value is lower than 0.05 (for example. it is significant), fixed effect is preferable (Gujarati D. N., 2004) . The Hausman test for this panel data shows that the p-value for the model is 98%, indicating that random effect model should be used.

Table 4. 8: Hausman Test

```
. hausman fe re

b = consistent under Ho and Ha; obtained from xtreg

B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test:  Ho:  difference in coefficients not systematic

chi2(6)      = (b-B)'[(V_b-V_B)^(-1)](b-B)
              =          1.08
              Prob>chi2 =          0.9824
```

Source: Stata output, 2021

Table 4.7 above shows Hausman specification test. The P-value of the model is 98.24%, which is greater than 5% level of significance. Consequently, the null hypothesis of the random effect model is appropriate to accepted at 5 percent of significant level. This means that, using random effect model is more appropriate than fixed effect model.

4.1.2. Results of Regression Analysis

Regression analysis could be a statistical process for estimating the relationships among factors. It incorporates numerous techniques for modeling and analyzing several variables, when the main focus is on the connection between a dependent variable and one or more independent variables. More specifically, regression analysis helps one understand how the ordinary value of

the dependent variable changes when any one of the independent variables is varied, while the other independent variables are held fixed.

Most commonly, regression analysis estimates the conditional expectation of the dependent variable given the independent variables that is, the average value of the dependent variable when the independent variables are fixed. In chapter three the researcher specified the regression model as to explain the relationship between dependent and independent variable the following general multiple regression equations adopted

$$NPL_{it} = \beta_0 + \beta_1 ROA_{it} + \beta_2 LGR_{it} + \beta_3 EAR_{it} + \beta_4 LTD_{it} + \beta_5 BS_{it} + \beta_6 NIM_{it} + U$$

i denote the cross-section,

t denotes the time-series dimension

β_0 = the intercept $\beta_1 \dots \beta_6$ = is the parameter to determine the independent variable,

NPL (non-performing loan) = the dependent variable

ROA = Return on asset

LGR = loan growth rate

NIM = Net interest margin

BS = Bank size

EAR = Equity to asset ratio

LTD = loan to deposit ratio

Table 4.9: Random Effect Regression Result

xtreg NPL LTD ROA BS LGR EAR NIM, re

```

Random-effects GLS regression           Number of obs   =       112
Group variable: id                     Number of groups =       16
R-sq:                                  Obs per group:
    within = 0.2599                    min =           7
    between = 0.4288                   avg =          7.0
    overall = 0.2962                   max =           7
                                         Wald chi2(6)    =       40.99
corr(u_i, X) = 0 (assumed)             Prob > chi2     =       0.0000

```

	NPL	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
LTD		.0207304	.0098943	2.10	0.036	.0013379	.0401229
ROA		-.1042705	.0444919	-2.34	0.016	-.191473	-.017068
BS		.0057046	.0016677	-3.42	0.001	-.0089732	-.002436
LGR		-.0191783	.0076057	-2.52	0.012	-.0340853	-.0042713

EAR		-.0104279	.0059696	-1.75	0.081	-.0221281	.0012723
NIM		-.1245786	.0288313	4.32	0.040	.0680703	.181087
_cons		.1072367	.027721	3.87	0.000	.0529045	.161569

-----+-----

sigma_u | .00625786

sigma_e | .01711758

rho | .11789292 (fraction of variance due to u_i)

Source: Stata output, 2021

The above Table 4.8 presented econometric regression result of NPL as dependent variable and six bank specific independent variables from sample of sixteen private commercial banks in Ethiopia. Using the result above, the researcher is able to rewrite the model by including the coefficients of the outcome as follows:

$$NPL = 0.107 - 0.104ROA - 0.019LGR - 0.124NIM + 0.005BS - 0.010EAR + 0.020LTD + \hat{U}_t$$

Goodness of fit (R2) and adjusted (R2)

reg NPL LTD ROA BS LGR EAR NIM

Source		SS	df	MS	Number of obs	=	112
					F(6, 105)	=	7.40
Model		.013550013	6	.002258336	Prob > F	=	0.0000
Residual		.032055523	105	.000305291	R-squared	=	0.2971
					Adj R-squared	=	0.2569
Total		.045605536	111	.000410861	Root MSE	=	.01747

NPL		Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
-----+-----						
LTD		.0207304	.0098943	2.10	0.036	.0013379 .0401229

ROA		-.1042705	.0444919	-2.34	0.016	-.191473	-.017068
BS		.0057046	.0016677	-3.42	0.001	-.0089732	-.002436
LGR		-.0191783	.0076057	-2.52	0.012	-.0340853	-.0042713
EAR		-.0104279	.0059696	-1.75	0.081	-.0221281	.0012723
NIM		-.1245786	.0288313	4.32	0.040	.0680703	.181087
_cons		.1072367	.027721	3.87	0.000	.0529045	.161569

Source: Stata output, 2021

P-value indicates at what percentage or precession level of each variable is significant. The R squared value measures how well the regression model explains the actual variations in the dependent variable. (Brooks, 2008) An R² of 0.29 indicates R²=0.29. From the regression result above, the R² of 0.29 suggested that 29% of changes in NPLs of commercial banks are because change in the explanatory variables identified by the researcher. R² = 0.29. This indicates that 25% of the variance in the number of NPL can be explained by the variables.

Adjusted R² indicates how well terms fit a curve or line, but adjusts for the number of terms in a model. It also compares the goodness-of-fit for regression models that contain differing numbers of independent variables. If you add more and more useless variables to a model, adjusted r-squared will decrease. If you add more useful variables, adjusted r-squared will increase. Adjusted R² will always be less than or equal to R². From the result Adjusted R² value 0.25 shows the variation in the NPL can be explained by adding variables on the model.

$$\text{NPL} = 0.107 - 0.104\text{ROA} - 0.019\text{LG} - 0.124\text{NIM} + 0.005\text{BS} - 0.010\text{EAR} + 0.020\text{LTD} + \hat{U}_t$$

the p value of F statistic is 3.28, which is greater than significance level of 0.05. Thus, it can be concluded that the model specification is correct from year 2013 to 2019. Overall reliability and validity of the model was enhanced further by the Prob (F-statistic) value of 0.000000.

4.1.3. Discussion of relationship between dependent and independent variables in the study

This part discusses about the analysis of the outcomes for each explanatory variable and their significance in deciding financial performance. Besides, the discussion compares the statistical findings of the study comparable to the previous empirical evidences.

4.1.3.1. Return on Asset (ROA)

The results found Return on Asset measured by the ratio of net profit to total asset' to be statistically significant and negatively associated with NPLs. Table 4.8 shows the regression coefficient of Return on Asset is -0.1042705 and its P- value is 0.016. This implies that where other explanatory variables remain constant ROA have a negative influence on NPL. The coefficient (-0.104) shows the effect of ROA is negative within the sample period,

The interpretation of the outcome is that where other things remain constant an increase in ROA by one birr in private commercial banks in Ethiopia will decrease non-performing loans of Ethiopian private commercial banks by 0.10 birr which is statistically significant at 1% level of confidence. The p-value of 0.016 has justified the significance of the relationship.

Loan is typically the biggest asset and the predominant source of income for banks. Bank accepts customer deposits and the use that funds to grant loans to borrowers or invest in other assets that will yield a return higher than the amount of bank pays the depositor as the result when banks return on asset increase mean the loan they disbursed is performing and the banks are getting profit this lead a decrease in NPL of the banks. it can be concluded that The higher non-performing loans, the lower asset quality, leads to the lower return on equity and return on asset, and the lower non-performing loans, the higher asset quality, leads to the higher return on equity and return on asset.

From the results Return on asset of banks is a vital determinant of NPLs in ECBs. Therefore, the researcher accepted the formulated hypothesis, since ROA and NPL has negative and significant relationship. These results are consistent with the findings of, (ABEBE, 2018) who suggested ROA had negative and statistically significant effect on NPL, but inconsistent with the findings of (GEZU, 2014) who suggested ROA had positive and statistically significant effect on NPLs.

4.1.3.2. Loan Growth Rate (LGR)

The results found Loan Growth Rate measured by loan of time t minus loan of time t minus one divided by loan t to be statistically significant and negatively associated with NPLs. Table 4.8 shows the regression coefficient of Loan Growth Rate is -0.0191783 and its P- value is 0.012. This indicates that where other explanatory variables remain constant LGR has a negative influence on NPL. The coefficient (-0.012) shows the effect of LGR is negative within the sample period, which also implies a one percent increase in loan growth rate would result a decrease by 1.91% in NPL. The interpretation of the result is that where other things remain constant an increase in LGR by one birr in private commercial banks in Ethiopia will decrease non-performing loans of Ethiopian private commercial banks by 0.0119 birr which is statistically significant at 1% level of confidence. The p-value of 0.012 has justified the significance of the relationship.

An increase in the Average lending rate of Ethiopian Commercial Banks, ultimately decrease the size of their NPLs. This could be due to the more banks manage their loan well and collect the loan well, it shows us they have less amount of non-performing loan for the period this motivates them to increase their loan in size and amount for next year. When the bank loan growth rate increases from previous year it shows that the loan, they dispersed last year performed well. This means they had good loan management as well high-quality borrowers and because of that their level of NPL will decreases. When the banks' loan performed well for the period in another word their level of NPL is low then they will be motivated to increase their loan.

From the results Loan to Growth Ratio is a vital determinant of NPLs in ECBs. Therefore, the researcher accepted the formulated hypothesis, since LGR and NPL has negative and significant relationship. These results are consistent with the findings of (Tsige, 2013) and (Amino, 2018) that loan growth affects NPLs negatively and significantly, they confirmed the presence of strong inverse relationship between loan growth of a bank and bank's NPLs in EPCBs but inconsistent with the findings of (Aynalem, 2016) who suggested that loan growth were statistically insignificant in affecting NPL.

4.1.3.3. Loan to deposit Ratio (LTD)

The results found Loan to Deposit Ratio measured by total loan to total deposit to be statistically significant and positively associated with NPLs. Table 4.8 shows the regression coefficient of Loan to Deposit Ratio is .02073 and its P- value is 0.03. This implies that where other explanatory variables remain constant LDR has a positive influence on NPL. The coefficient (.020) shows the effect of LTD is positive within the sample period, which also implies a one percent increase in loan to deposit rate would result increase by 2 % in NPL. The interpretation of the result is that where other things remain constant an increase in LTD by one birr in private commercial banks in Ethiopia will increase non-performing loans of Ethiopian private commercial banks by 0.02 birr which is statistically significant at 5% level of confidence. The p-value of 0.03 has justified the significance of the relationship. An increase on the banks Loan to deposit ratio of Ethiopian Commercial Banks, ultimately increase the size of their NPLs. This could be the result of when the banks use high amount of their deposit to give loan this shows the weakness of the banks providing much amount of loan without balancing with its deposit and its loan management is poor and could have lend the money to low quality borrowers without screening them this leads the bank to face high amount of non-performing loans.

When a bank disbursement loan with respect to deposit is high this means that the banks utilized much amount of its deposit amount to loan purpose. This could be due to aggressive lending behavior of the banks and providing loans without proper screening of the borrowers. As the result their levels of NPL also increase.

Therefore, the researcher accepted the formulated hypothesis, since LDR and NPL has negative and significant relationship.

From the results Loan to Deposit Ratio of banks is a vital determinant of NPLs in ECBs. Therefore, the researcher accepted the formulated hypothesis, since LTD and NPL has positive and significant relationship. These results are consistent with the findings of (BEJU, 2016) and (BEYENE, 2019) who suggested LTD ratio had positive significant effect on NPLs. but inconsistent with the findings of (GEZU, 2014) who suggested LTD ratio had positive insignificant effect on NPLs

4.1.3.4. Equity to Asset Ratio (EAR)

The results found Equity to Asset Ratio measured by Equity to Asset Ratio to be statistically insignificant but negatively associated with NPLs. Table 4.8 shows the regression coefficient of Equity to Asset Ratio is -0.0104279 and its *P*-value is $.08$. The *P* value ($p=0.08$) just very slightly missed the significance level ($p=0.05$), which means that the proportion of the Equity does not affect the ratio of NPL granted in Ethiopia private commercial banks.

Equity to asset (ETA) was not statistically significant, which means that the proportion of the Equity does not affect the ratio of NPL granted in Ethiopia private commercial banks. This implies that whether the bank's capital is more from equity or from debt it has nothing to do with non-performing loan. From the results ETA is not a determinant of NPLs in ECBs. Therefore, the researcher rejected the formulated hypothesis, since there is insignificant relationship with non-performing loan. The possible reason for this is because Equity-To-Asset ratio specifically measures the amount of equity the bank has when compared to the total assets owned by the bank which doesn't relate with any NPL bank determinants.

These results are consistent with the findings of (Amino, 2018) who suggested EAR ratio had insignificant effect on NPLs. but inconsistent with the findings of (ABEBE, 2018) and (Fekadu, 2018) who suggested EAR ratio had significant effect on NPLs

4.1.3.5. Net interest margin (NIM)

The results found Net Interest Margin measured the difference between interest income and interest expenses to be statistically significant and negatively associated with NPLs. Table 4.8 shows the regression coefficient of Net Interest Margin -0.0124 and its *P*-value is 0.04 . This indicates that where other explanatory variables remain constant NIM has a negative influence on NPL. The coefficient (-0.124) shows the effect of NIM is negative within the sample period, which also implies a one percent increase in net interest margin would result decrease by 0.0124% in NPL. The interpretation of the result is that where other things remain constant an increase in NTM by one birr in private commercial banks in Ethiopia will decrease non-performing loans of Ethiopian private commercial banks by 0.124 birr which is statistically significant at 5% level of confidence. The *p*-value of 0.04 has justified the significance of the relationship. An increase on the bank's Net interest margin of Ethiopian Commercial Banks,

ultimately decrease the size of their NPLs. Net interest margin refers to the difference between interest received and interest paid which is the key to measure of profitability of Commercial Banks. As the result a positive net interest margin indicates that the bank is efficiently investing, whereas a negative net interest margin implies inefficient investing. The possible reasons could be, when bank's Net interest margin increases in another word the interest income, they get from loan is high this indicates us the loan they disbursed is performing and the likelihood for the banks getting NPL is low.

From the results of banks Net Interest Margin is a vital determinant of NPLs in ECBs. Therefore, the study failed to support Hypothesis 1. the researcher accepted the formulated hypothesis, since NIM and NPL has positive and significant relationship. These results are inconsistent with the findings of (Asfawesen, 2017) and (Fekadu, 2018) who suggested NIM negatively insignificant to NPL.

4.1.3.6. Bank size (BS)

The results found Bank Size measured by log of total asset to be statistically significant and positively associated with NPLs. Table 4.8 shows the regression coefficient of Bank Size is .0057 and its P- value is 0.001. This implies that where other explanatory variables remain constant BS has a positive influence on NPL. The coefficient (.0057) shows the effect of BS is positive within the sample period, which also implies a one percent increase in loan to deposit rate would result increase by 0.57 in NPL.

This result also indicates that bank size with P- value 0.001, which is the lowest P- value from all the variables, is the most important determinant factor in Ethiopian private commercial banks. The interpretation of the outcome is that where other things remain constant an increase in BS by one unit in private commercial banks in Ethiopia will increase non-performing loans of Ethiopian private commercial banks by 0.57 birr which is statistically significant at 5% level of confidence. The p-value of 0.001 has justified the significance of the relationship.

In comparison small banks has better NPLs compared to large scale banks because small banks lend to few borrowers and with a smaller amount of loan. Whereas large banks borrow to many borrowers and with a large amount of loan. As a result, bank size has significance effect on occurrence of non-performing loans. Additional reasons could be small banks survival depends

on every loan they give leading to high care on the process of selecting and approving who to lend.

From the results Bank Size of banks is a vital determinant of NPLs in ECBs. Therefore, the researcher rejected the formulated hypothesis, since BS and NPL has positive and significant relationship. These results are consistent with the findings of (Tsigie, 2013) who suggested BS had positive significant effect on NPLs. but inconsistent with the findings of (ABATE, 2015) and (BEYENE, 2019) who suggested bank size had insignificant effect on NPLs.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATION

The basic intent of this chapter is to present the summary, conclusions and recommendations based on the findings of this study. It also provides direction for further studies.

Summary

The broad objective of the study was to investigate bank specific determinants of NPLs in Ethiopian private commercial banks. To accomplish the broad objective of the study used quantitative research approach and applied descriptive statistics and multiple linear regression analysis to analyzed and identify the impacts of bank specific factors on non-performing loans of sixteen sampled Ethiopia private commercial banks.

A sample of 112 observations has been examined over the period from 2013-2019 and used balanced panel data. Regression analysis and descriptive statistics were employed on secondary data gathered from NBE, and a sample financial statement of banks.

The multiple linear regressions model was conducted by Generalized Least Square (GLS) and CLRM assumptions test of the models no evidence for the presence of normality, heteroscedasticity, multicollinearity and autocorrelation problem. The study shows the cause-effect relationship bank specific variables and non-performing loans of Ethiopian private commercial banks. The study uses six bank specific factors namely Loan to deposit ratio, Net interest margin, Equity to Asset ratio, Loan Growth, Return on Asset, Bank Size and. The findings of the study suggested the subsequent conclusions.

5.1 Conclusion

The study found that the independent variables Return on Asset, Bank Size, Loan Growth, and Loan to Deposit ratio, Net Interest Margin have statistically significant effect on the level of NPLs so that the study concluded those variables are major bank specific determinant of NPLs in Ethiopian private commercial banks. However, the regression model revealed the insignificant effect of Equity to Asset ratio on the level of NPLs of commercial banks in Ethiopia for the period under consideration.

The relationship of NIM, ROA and LGR with the volume of NPL in case Ethiopian commercial banks is negative. Those variables inversely affect the volume of NPL in case of Ethiopian private commercial banks. This indicates that an increase or decrease in NIM, ROA and LGR will decrease or increase in non-performing loan.

The relationship of LTD and BS with the volume of NPL Ethiopian commercial banks is positive. Those variables directly affect the volume of NPL in case of Ethiopian private

commercial banks. This indicates that an increase or decrease in NIM and BS will decrease or increase in non-performing loan.

The insignificant relationship between ETA and the volume of NPL indicates the variable ETA doesn't affect the volume of NPL in case Ethiopian commercial banks. An increase or decrease in ETA does not necessarily mean an increase or decrease in the level of NPL in case of Ethiopian commercial banks.

From all bank specific variables bank size is the major determinant of non-performing loan in case of Ethiopian commercial banks.

5.2 Recommendation

Based on the findings of the study the following recommendations were forwarded.

From the findings lending money is the principal business activity for banks. But it is also one of the greatest sources of risk to the bank's safety and prosperity. Commercial banks should focus on many factors when providing loans so as to decrease the amount of NPLs. Loan to deposit ratio, Net interest margin, Loan Growth, Return on Asset, Bank Size were critical driver of NPLs, consequently centering and inciting the establishment close by these indicators could reduce the likelihood of NPL in Ethiopian private commercial banks.

Banks should set up strong strategy for controlling NPL. Bank management should give consideration for bank specific factor like deposit, loan, capital and their return focusing on these NPL indicators could additionally decrease the likelihood of default while extending credit in the future. Also, banks should look to upgrade their ROA, by safeguarding that the development of asset including loans and advances growth with time. The higher ratio shows the assets are well

managed as the result level of non-performing loan will decrease. It is ideal for commercial banks to focus or diversify their credit portfolio by calculating computing risk relative to its return so as to increase return on asset and to decrease the amount of NPLs.

This study recommends that commercial banks to have updated a detailed credit procedure which considers the present bank specific factors and also the market circumstances in general. Plus, it is better for the loan officers to give financial advising to the borrowers on the wise use of loan and furthermore to make decision on choice on ideal design to address their issue.

Effective management of the loan is fundamental to a bank's safety and soundness, by strengthening the loan underwriting processes the bank can look to make loans to better quality borrowers. This will involve developing more standards when lending, getting aggressive on collections, good underwriting and sound lending policies

Developing comprehensive strategic plans detailing on how they will deal with NPLs in a systematic way would help the banks for minimizing their level of NPL. Thorough analysis of borrower's management must be conducted prior to the loan disbursement that might involves a review of the general management capabilities, crisis management capabilities, management's integrity and turnaround management capabilities

Oversight of the risk in individual loans is vital to maintaining favorable loan quality. To manage loans properly, bankers must understand not only the risk posed by each credit but also how the risks of individual loans and portfolios are interrelated. Understanding the credit culture and the risk profile of the banks is central to successful loan management.

This study recommends future researcher to approve the consistency of the outcome by including other variables; and give additional results by including different factors and also by increasing the sampled periods.

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APPENDIX

Appendix 1: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
nplratio	112	.0536286	.0202697	.021117	.374
ldratio	112	.6457022	.2025266	.014535	1.49516
returnonas~t	112	.0551046	.0692244	.002453	.466774
lnoftotala~t	112	16.15016	1.367564	8.1361	19.2743
lgratio	112	.443207	.2273032	.306583	1.23735
Earatio	112	.2763144	.3597406	.081431	.780454
netinteres~n	112	.0984379	.0933874	.020856	.855624

Source: Stata output, 2021

Appendix 2: Correlation Analysis of Variables

	nplratio	ldratio	return~t	lnofto~t	lgratio	earatio	netint~n
nplratio	1.0000						
ldratio	0.0439	1.0000					
returnonas~t	0.1146	-0.0942	1.0000				
lnoftotala~t	0.1957	0.0188	0.4622	1.0000			
lgratio	-0.2026	0.0897	0.0602	-0.0547	1.0000		
earatio	-0.1756	0.2565	0.2657	-0.3570	0.2157	1.0000	
netinteres~n	0.3106	-0.2174	0.6913	-0.0955	0.0369	-0.0716	1.0000

Source: Stata output, 2021

Appendix 3: Result of Heteroscedasticity test

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

Ho: Constant variance

Variables: fitted values of nplratio

```
-----  
chi2(1)      = 90.24  
Prob>chi2    = 0.0000  
-----
```

Source: Stata output, 2021

Appendix 4: Result of Variance inflation factor (VIF)

Variable	VIF	1/VIF
----------	-----	-------

```

-----+-----
returnonas~t |    3.04    0.329399
netinteres~n |    2.46    0.406380
lnoftotala~t |    1.50    0.664925
caratio |    1.42    0.703691
ldratio |    1.13    0.883643
lgratio |    1.06    0.945808
-----+-----
Mean VIF |    1.7

```

Source: Stata output, 2021

Appendix 5: Normality Test

```

jb myResiduals
Jarque-Bera normality test:    2345 Chi(2)    0.24
Jarque-Bera test for Ho: normality:

```

Source: Stata output, 2021

Appendix 6: Result of Model Specification Test

```

ovtest

Ramsey RESET test using powers of the fitted values of lognpl

Ho: model has no omitted variables

F(3, 102) =    0.44
Prob > F =    0.7269

```

Source: Stata output, 2021

Appendix 7: Hausman Test

```

-----
Hausman Test for NPL
-----

```

```

chi2(6) = 1.08
Prob>chi2 = 0.9824

```

Source: Stata output, 2021

Appendix 8: Random Effect Regression Result

```

R-sq:                               Obs per group:
within = 0.2599                       min = 7
between = 0.4288                       avg = 7.0
overall = 0.2962                       max = 7

Wald chi2(6) = 40.99
corr(u_i, X) = 0 (assumed)             Prob> chi2 = 0.0000

```

```

-----+-----
nplratio |          Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-----+-----
ldratio |      .0207304   .0098943     2.10   0.036   .0013379   .0401229
returnonasset | -.1042705   .0444919    -2.34   0.016  -.191473  -.017068
lnoftotalasset | .0057046   .0016677     3.42   0.001   .002436   .0089732
lgratio |     -.0191783   .0076057     2.52   0.012   .0042713   .0340853
Earatio|     -.0104279   .0059696    -1.75   0.081  -.0221281   .0012723

```

```

Netinterest.m | -.1245786   .0288313   -4.32   0.040   -.181087   -.0680703
      _cons|   .1072367   .027721   3.87   0.000   .0529044   .1615689
-----+-----
sigma_u | .00625786
sigma_e | .01711758
rho | .11789294 (fraction of variance due to u_i)

```

Source: Stata output, 2021

Appendix 9: Goodness of fit (R2) and adjusted (R2)

```
reg NPL LTD ROA BS LGR EAR NIM
```

```

Source |          SS          df          MS      Number of obs   =          112
-----+-----
Model |   .013550013           6   .002258336      Prob > F           =          0.0000
Residual |   .032055523          105   .000305291      R-squared           =          0.2971
-----+-----
Total |   .045605536          111   .000410861      Adj R-squared       =          0.2569
Root MSE =          .01747

NPL |          Coef.      Std. Err.      t      P>|t|      [95% Conf. Interval]

```

LTD		.0207304	.0098943	2.10	0.036	.0013379	.0401229
ROA		-.1042705	.0444919	-2.34	0.016	-.191473	-.017068
BS		.0057046	.0016677	-3.42	0.001	-.0089732	-.002436
LGR		-.0191783	.0076057	-2.52	0.012	-.0340853	-.0042713
EAR		-.0104279	.0059696	-1.75	0.081	-.0221281	.0012723
NIM		-.1245786	.0288313	4.32	0.040	.0680703	.181087
_cons		.1072367	.027721	3.87	0.000	.0529045	.161569

Source: Stata output, 2021

APPENDIX 10: Raw Data

NAME	YEAR	NPL	LDR	ROA	BS	LG	EAR	NIM
AB	2013	0.019365	0.64829	0.041016	15.96227	0.379914	0.153514	0.082618
AB	2014	0.026836	0.646773	0.040915	16.27858	0.339898	0.153124	0.083966
AB	2015	0.020857	0.655802	0.038675	15.3377	0.567612	0.116252	0.07457
AB	2016	0.024344	0.645328	0.043663	15.6379	0.312266	0.111949	0.08662
AB	2017	0.015871	0.606021	0.03888	15.978	0.370583	0.110369	0.079068
AB	2018	0.03385	0.618492	0.041809	16.3271	0.369745	0.116326	0.088015
AB	2019	0.030786	0.745806	0.042054	16.5306	0.279365	0.012676	0.084814
ADIB	2013	0.05023	0.686521	0.054515	14.82036	0.395169	0.245712	0.113381
ADIB	2014	0.019736	0.685617	0.035102	15.27579	0.362693	0.211644	0.073488
ADIB	2015	0.174	0.615387	0.145776	14.3549	0.50998	0.025952	0.324003
ADIB	2016	0.017943	0.570366	0.021495	14.9195	0.377786	0.567675	0.022436
ADIB	2017	0.014034	0.688017	0.032633	15.0515	0.487442	0.198949	0.071026
ADIB	2018	0.040079	0.60136	0.036463	15.253	0.298678	0.184414	0.07475
ADIB	2019	0.005094	0.677475	0.03621	15.523	0.301958	0.191571	0.074688
AIB	2013	0.012852	0.656982	0.042083	17.56109	0.390388	0.103401	0.076714
AIB	2014	0.01534	0.675337	0.034724	17.14851	0.299037	0.070554	0.070064

AIB	2015	0.014793	0.673959	0.032631	17.0428	0.360228	0.186337	0.065907
AIB	2016	0.015886	0.576716	0.036818	17.2542	0.237846	0.014771	0.074221
AIB	2017	0.00157	0.638007	0.039867	17.5526	0.461174	0.129221	0.074122
AIB	2018	0.018677	0.564686	0.049258	17.8277	0.382383	0.117531	0.087232
AIB	2019	0.013332	0.631541	0.051843	17.1281	0.510306	0.129147	0.08209
BEIB	2013	0.037743	0.48404	0.038092	16.53719	0.405115	0.134533	0.115306
BEIB	2014	0.024	0.379995	0.051954	15.52752	0.817569	0.157292	0.107356
BEIB	2015	0.023	0.260588	0.048527	15.3195	0.661964	0.111524	0.114406
BEIB	2016	0.025	0.699401	0.055381	15.7355	0.973174	0.113061	0.100306
BEIB	2017	0.020805	0.09969	0.032265	16.0999	0.42504	0.116992	0.159038
BEIB	2018	0.027995	0.657753	0.049434	16.4594	0.331228	0.116503	0.097342
BEIB	2019	0.091916	0.502768	0.004855	12.0716	-0.36583	0.014583	0.205436
BOA	2013	0.03515	0.568305	0.036824	16.53455	0.261339	0.143196	0.079854
BOA	2014	0.028045	0.606001	0.037585	16.70546	0.417872	0.139425	0.076641
BOA	2015	0.049398	0.538956	0.035313	16.4305	0.162744	0.13247	0.080545
BOA	2016	0.020901	0.597655	0.038334	16.6386	0.359935	0.153922	0.079162
BOA	2017	0.013835	0.681394	0.039108	17.0473	0.730936	0.131883	0.070215
BOA	2018	0.013015	0.698733	0.032032	17.7664	0.777773	0.081668	0.092387
BOA	2019	0.034741	0.739867	0.050872	17.4854	0.319616	0.126126	0.083951
BUIB	2013	0.016586	0.688866	0.047489	15.52752	0.663581	0.143523	0.087963
BUIB	2014	0.020568	0.711875	0.04451	15.71904	0.580937	0.141686	0.08295
BUIB	2015	0.000117	0.695193	0.048527	15.3195	0.817157	0.150614	0.089714
BUIB	2016	0.033055	0.682539	0.046451	15.7355	0.510005	0.136432	0.086211
BUIB	2017	0.028532	0.757894	0.038553	16.1021	0.415651	0.138011	0.072925
BUIB	2018	0.038708	0.755479	0.049393	16.3821	0.329111	0.152323	0.093007
BUIB	2019	0.037635	0.785406	0.005828	17.7888	0.192882	0.017778	0.102092
CBO	2013	0.012233	0.821138	0.052439	16.21956	0.364447	0.109299	0.09001
CBO	2014	0.027338	0.784437	0.036475	17.14485	0.448999	0.07558	0.086938
CBO	2015	0.00377	0.014535	0.049226	16.2546	0.81215	0.123094	0.083736
CBO	2016	0.020695	0.727741	0.055652	16.1846	0.983255	0.095504	0.096284
CBO	2017	0.057549	0.711037	0.004545	18.9954	0.618102	0.008143	0.080794
CBO	2018	0.035337	0.595357	0.041142	17.213	0.512421	0.009487	0.081341
CBO	2019	0.030834	0.680441	0.042551	17.5482	0.613412	0.008715	0.072907
DB	2013	0.018675	0.568322	0.028743	17.09649	0.152219	0.669696	0.063316
DB	2014	0.02398	0.595791	0.030225	17.18435	0.243279	0.496818	0.063398
DB	2015	0.00559	0.57934	0.030162	17.0249	0.199526	1.48071	0.065069
DB	2016	0.03176	0.557304	0.027324	17.1681	0.104912	0.128684	0.061563
DB	2017	0.034589	0.650729	0.033188	17.3601	0.425399	0.151061	0.063561
DB	2018	0.03449	0.641052	0.040052	17.627	0.27604	0.129739	0.078507
DB	2019	0.029908	0.629553	0.042221	17.8448	0.414285	0.121789	0.072751
DGB	2013	0.030206	0.550542	0.034489	14.01068	0.510848	0.215734	0.088561
DGB	2014	0.032166	0.541503	0.033503	14.18699	0.423996	0.206101	0.087975

DGB	2015	0.057592	0.913624	0.023321	13.9497	0.253328	0.191409	0.078695
DGB	2016	0.00282	0.68746	0.045657	14.0717	0.768368	0.240059	0.098426
DGB	2017	0.036084	0.423425	0.03153	14.5396	0.250292	0.186835	0.086805
DGB	2018	0.034063	0.7357	0.04085	14.9974	1.11424	0.209151	0.084079
DGB	2019	0.020654	0.690857	0.032359	15.518	0.558768	0.181184	0.071908
EB	2013	0.007504	0.708075	0.00264	15.95222	0.832593	0.902132	0.02709
EB	2014	0.009373	0.696542	0.008491	15.76619	0.727059	0.662986	0.031225
EB	2015	0.00936	0.831716	0.002827	14.6083	1.23735	1.78454	0.075453
EB	2016	0.005648	0.684435	0.002453	17.2962	0.427835	0.919722	0.048727
EB	2017	0.01311	0.673476	0.020194	15.3941	0.515991	0.884694	0.039493
EB	2018	0.017034	0.658007	0.027377	15.6846	0.351135	0.783095	0.052981
EB	2019	0.019533	0.692313	0.028196	16.0349	0.537975	0.666836	0.050362
LIB	2013	0.028264	0.66941	0.250094	15.74665	0.683902	0.066174	0.466075
LIB	2014	0.027544	0.658938	0.18261	15.9015	0.54771	0.086239	0.341851
LIB	2015	0.005832	0.645736	0.037592	15.5836	0.842702	0.793775	0.076526
LIB	2016	0.050697	0.693085	0.462597	15.9097	0.525102	0.728573	0.855624
LIB	2017	0.026102	0.637993	0.04764	16.2112	0.275326	0.22637	0.093403
LIB	2018	0.056047	0.649533	0.011011	16.4771	0.350464	0.126321	0.020856
LIB	2019	0.022266	0.722909	0.052108	16.8306	0.567835	0.125516	0.089642
NIB	2013	0.007015	0.578177	0.045812	16.4887	0.182025	0.161654	0.090753
NIB	2014	0.008417	0.40756	0.045918	16.61279	0.260967	0.154615	0.090187
NIB	2015	0.00556	0.716188	0.044325	16.4	0.267767	0.164249	0.083939
NIB	2016	0.00847	0.440166	0.047298	16.5774	0.796284	0.159059	0.097568
NIB	2017	0.01122	0.266326	0.046131	16.861	0.41885	0.140538	0.089054
NIB	2018	0.043808	0.633357	0.044853	15.0998	0.257549	0.126659	0.087425
NIB	2019	0.023915	0.703811	0.048732	17.3335	0.420385	0.130824	0.084484
OIB	2013	0.014397	0.324178	0.25229	15.00328	0.543553	0.629664	0.156562
OIB	2014	0.010913	0.319495	0.1801	15.5376	0.436433	0.453563	0.151008
OIB	2015	0.0216	0.284225	0.037806	16.0705	0.591259	0.104136	0.158416
OIB	2016	0.007193	0.364131	0.466774	8.1361	0.495847	1.15519	0.154708
OIB	2017	0.003945	0.310128	0.035721	16.6062	0.222193	0.10136	0.1399
OIB	2018	0.012745	0.106396	0.046174	16.9851	0.245715	0.108899	0.212028
OIB	2019	0.014966	0.346663	0.049172	19.2743	0.500704	0.116824	0.200929
UB	2013	0.020375	0.634527	0.039847	16.57225	0.298624	0.117524	0.081999
UB	2014	0.016133	0.665292	0.040478	16.68221	0.334296	0.116129	0.08007
UB	2015	0.022363	0.614457	0.03915	16.48	0.353184	0.117419	0.081957
UB	2016	0.018387	0.654597	0.040543	16.6645	0.244063	0.117629	0.082041
UB	2017	0.00765	0.726823	0.041741	16.9021	0.405641	0.113338	0.076211
UB	2018	0.040476	0.744636	0.044148	17.1488	0.226628	0.105377	0.084099
UB	2019	0.014778	0.83095	0.046908	17.3917	0.41822	0.108002	0.080325
WB	2013	0.011081	0.651601	0.040625	16.4869	0.288346	0.141412	0.085642

WB	2014	0.011625	0.68089	0.04106	16.61047	0.311806	0.145385	0.085336
WB	2015	0.00525	0.614457	0.03915	16.3739	0.339914	0.117419	0.081957
WB	2016	0.016912	0.688746	0.0421	16.5999	0.236778	0.165405	0.089327
WB	2017	0.012713	0.739467	0.04193	16.8576	0.358728	0.15333	0.084725
WB	2018	0.012995	0.749532	0.049785	17.1257	0.450543	0.1397	0.090677
WB	2019	0.005885	0.717206	0.050115	17.209	0.09747	0.144226	0.090397
ZB	2013	0.026828	1.103235	0.121619	14.4552	0.485667	1.487012	0.028446
ZB	2014	0.021709	1.062097	0.086889	14.99828	0.445313	1.037881	0.026793
ZB	2015	0.01454	1.24814	0.025821	16.9995	0.868318	1.56915	0.026402
ZB	2016	0.039115	0.958334	0.217417	12.5109	0.103016	1.40488	0.03049
ZB	2017	0.011473	0.97982	0.01743	16.9844	0.364605	0.139618	0.023486
ZB	2018	0.024668	1.13494	0.021673	15.0404	0.616096	0.139937	0.023341
ZB	2019	0.01242	1.49516	0.032937	16.5026	0.498883	0.158801	0.027835

Source: Financial Statement of Banks