DETERMINANTS OF NON PERFORMING LOAN: THE CASE OF COMMERCIAL BANKS IN ETHIOPIA

HAWASSA UNIVERSITY

SCHOOL OF GRADUATE STUDIES

COLLEGE OF BUSINESS AND ECONOMICS

DEPARTMENT OF ACCOUNTING & FINANCE

MSC Thesis Summited to Hawassa University Post Graduate School College of Business and Economics Department of Accounting for Partial Fulfillment of the Requirements for the Award of MSC in Accounting and Finance.

.

BY:-Netsanet Engida (*ID. No.:- PGSWHU-0023/2014)*

Major advisor :- Obsa Teferi .(Ass. Proffessor.)

Co-advisor :- Dilayehu D.(MSC)

MARCH,2024

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Approval Sheet

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By

Netasnet Engida

Advisor :- Obsa Teferi .(Ass. Prof.)

Approved by Board of Examiners

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Advisor **Signature** **Date**

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External Examiner **Signature** **Date**

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Internal Examiner **Signature** **Date**

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Chairman **Signature** **Date**

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DECLARATION

I, Netsanet Engida Agonafir, the undersigned person declare that the thesis entitled “Determinants of NonPerforming Loans in Ethiopian Commercial Banks” is my original and submitted for the award of MSC in Accounting and Finance, Hawassa university and it hasn‟t been presented for the award of any other degree. Under this study, fellowship of other similar titles of any other university or institution of all sources of material used for the study has been appropriately acknowledged and notice.

Candidate	Signature	Date
Netsanet Engida	_____	_____

CERTIFICATION

This is to certify that Mr Netsanet engida Agonafir has properly completed his research work entitled "Determinants of Non-Performing Loans in Ethiopian Commercial Banks" with my guidance through the time. In my suggestion, his task is appropriate to be submitted as a partial fulfillment requirement for the award of Msc in Accounting and Finance.

Research Advisor

Obsa Teferi .(Ass. Prof.)

Signature

_____

Date

_____

Co- Advisor

Dilayehu D(MSC)

Signature

_____

Date

_____

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Contents

LIST OF ACRONYMS/ ABRIVATION

CAR -Capital Adequacy Ratio

GDP- Gross Domestic Product

NBE -National Bank of Ethiopia

NPLs- Non-Performing loans

OLS- Ordinary Least Square

ROA -Return on Asset

ROE- Return On Equity

CBE -Commercial Bank of Ethiopia

LR -Lending Rate

INF -Inflation Rate

BS-Bank Size

LGR-Loan Growth Rate

Abstract:

Non-performing loans (NPL) are a critical issue for the banking sector in Ethiopia. NPLs can have a significant negative impact on a bank's profitability, stability, and overall financial health. As such, understanding the determinants of NPL in Ethiopian commercial banks is essential for effective risk management and regulatory oversight. Ethiopia has a rapidly growing economy, with a banking sector that has seen significant expansion in recent years. However, this growth has also brought challenges, including an increase in NPLs. Identifying the key factors that contribute to NPLs in Ethiopian commercial banks is crucial for developing strategies to mitigate these risks and ensure the long-term sustainability of the sector. This study aims to contribute to the existing literature on NPLs by examining the key determinants of NPL in Ethiopian commercial banks. To achieve this objective, ten banks with ten years of data ranging from 2013-2022 were selected for analysis. A positivism knowledge claim was adopted, along with a quantitative research approach and an explanatory research design. The results of the OLS regression analysis revealed that five variables, namely loan growth rate (LGR), bank size (BS), return on assets (ROA), interest rate (IR), and inflation rate (INF), have a statistically significant effect on NPL in Ethiopian commercial banks. This implies that factors such as loan portfolio quality, bank size, profitability, and macroeconomic conditions play a crucial role in determining the level of NPLs in the banking sector. On the other hand, variables such as return on equity (ROE), capital adequacy (CA), and gross domestic product (GDP) were found to have a statistically insignificant effect on NPL. These findings provide valuable insights for policymakers, regulators, and bank management in Ethiopia to develop effective strategies for managing NPLs and promoting a sound and stable banking sector.

Keywords: Non-performing loans, Ethiopian commercial banks, determinants

Chapter-One

INTRODUCTION

The banking sector's pivotal role in facilitating economic growth through deposit acceptance and lending sets it apart as a critical financial intermediary. However, lending activities also expose banks to credit risk, where borrowers may fail to meet their obligations, leading to non-performing loans (NPLs). NPLs, when left unchecked, can undermine banks' financial health and trigger economic crises. To mitigate these risks, banks adopt various risk management practices, but their effectiveness varies across different countries and institutions. This study focuses on the Ethiopian commercial banking sector, aiming to uncover the major determinants of NPLs. By examining macroeconomic and banking-specific factors, the research seeks to provide valuable insights for policymakers, banks, and researchers to enhance financial stability and stimulate economic growth.

In a rapidly evolving financial landscape, understanding the intricacies of NPLs and their underlying causes is crucial. This study's exploration of the factors contributing to NPLs within Ethiopian commercial banks not only sheds light on the unique challenges faced by the sector but also offers potential solutions. By investigating macroeconomic influences and internal bank practices the study contributes to the broader understanding of NPL dynamics. This research holds significance for policymakers seeking to bolster the banking system's resilience, commercial banks aiming to refine their risk management strategies, and the academic community aiming to expand their insights into the complex relationship between non-performing loans and financial stability.

1.1 Background of the study.

A bank is a financial institution that accepts deposits from the public and provides loans to individuals, businesses, and other entities. This primary function of accepting deposits and issuing loans sets banks apart from other financial institutions. The term "banks" encompasses various

types of financial institutions, such as commercial banks, merchant banks, finance houses, building societies, savings banks, and credit unions. Each type of bank may have specific functions and target different customer segments, but they all operate under the basic principle of accepting deposits and extending credit (Viswanadham, 2015).

A healthy and vibrant economy relies on an efficient financial system that facilitates the flow of funds from savers to productive investments. Banks play a pivotal role in this process as financial intermediaries that accept deposits from individuals and businesses and channel those funds to borrowers with productive investment opportunities. The types of financial institutions included under the term "banks" are diverse, ranging from commercial banks, savings and loan associations, and mutual savings banks, to credit unions. Each type of bank serves various customer segments and has specific functions, but the core function remains the same: accepting deposits and providing loans ((Mallick, 2020).

However, lending activities come with inherent credit risk, which arises from the possibility of borrowers failing to fulfill their contractual obligations. Banks are exposed to such risks due to their lending operations. The failure of borrowers to repay loans can lead to non-performing loans, negatively impacting the bank's profitability and overall financial health. To mitigate credit risk, banks employ various risk management practices, including thorough credit assessment, collateral requirements, and monitoring of borrowers' financial conditions. Effective risk management is crucial for maintaining stability and ensuring the resilience of the banking sector, which, in turn, supports economic growth and development (Bedasa, 2017).

Non-performing loans (NPLs) are loans that are in default or near default. This occurs when borrowers have not made payments for three consecutive months or according to the terms of the loan agreement. According to the IMF, a loan is classified as non-performing when interest and principal payments are overdue by 90 days or more, or when at least 90 days of interest payments have been delayed, capitalized, or refinanced. In some cases, even if payments are less

than 90 days overdue, there may still be concerns about the borrower's ability to repay the loan in full (Jemal, 2019).

The high level of Non-Performing Loans (NPLs) in the banking system can be attributed to several factors, including weak credit procedures, inadequate credit specialists, high markup spreads, low credit standards, and a lack of borrower monitoring policies. NPLs are a significant indicator of credit risk, and their increase can lead to banking crises, negatively impacting economic growth by reducing credit availability and development. A low level of NPLs signifies a strong monetary system, while a high level indicates a weak financial position. The rise in NPLs first affects commercial banks and then impacts the overall economy, leading to reduced banking efficiency and crises. NPLs block interest revenue, limit investment opportunities, and create liquidity crises, which can result in bankruptcies and a weakened economic system(Khan et al., 2020).

To ensure financial stability and achieve economic goals, it is crucial to identify the factors affecting NPLs and work towards reducing their levels. High NPLs can threaten the overall functioning of the banking sector and directly affect banks' financial performance. In some African countries, the high level of NPLs has been identified as a leading cause of economic crises. In Pakistan, the increasing NPLs ratio, as reported by the State Bank of Pakistan, has negative effects on dividend payments, interest rates, and investments, leading to lower economic development in the country (Cvetković et al. 2021).

The reasons for loan default differ from country to country and are complex, affecting both emerging and industrialized nations. There are several potential factors contributing to loan failure, including bank-specific issues like aggressive lending practices, lack of integrity among bankers, and excessive trading or lending. Additionally, borrower-specific problems, such as fund diversion, business failure, and poor management, can also lead to loan defaults. External factors, like a weak credit culture, limitations in supervisory capacity, lack of blacklisting for defaulters, and macroeconomic considerations such as weak economic conditions, high real interest rates, inflation, flexible credit terms, credit direction, high credit growth, and risk appetite, can further impact loan performance. Poor monitoring and other related macroeconomic challenges may also play a role (Lorenzoni et al. 2018).

According to a World Bank report (2022), Ethiopian banks and the economy suffer from NPL year to year by increasing rate. Depressed economic conditions, high real interest rates, inflation, lenient terms of credit, credit orientation, high credit growth, risk appetite, and poor monitoring among others are provided theoretical explanations. However, this research attempts to examine the determinants of NPLs in selected Ethiopian commercial banks by including both bank-specific and macro-economic variables.

The existing literature highlights the impact of NPLs on the banking sector and the economy, as well as the factors contributing to loan defaults. However, there is a gap in research focusing specifically on the determinants of NPLs in selected Ethiopian commercial banks, taking into account both bank-specific and macro-economic variables. This study aims to address this research gap and provide valuable insights into the factors influencing the level of NPLs in the Ethiopian banking sector.

1.2 Statement of the Problem

Banks serve as intermediaries, facilitating financial transactions while aiming to optimize profits and shareholder value. Among their core functions, lending stands out as pivotal for fund utilization, constituting a significant portion of their income and assets. However, lending is inherently risky, making credit risk management crucial in the financial sector. Among various risks, credit risk is particularly perilous, as defaults could undermine bank profits. Notably, credit risk emerges from uncertainties surrounding a counterparty's ability to fulfill obligations.(Negera and Geletta, 2012)

Non-performing loans (NPLs) pose a significant challenge to the banking sector worldwide, with potential implications for financial stability and economic growth. In Ethiopia, both development banks and commercial banks are grappling with the issue of NPLs, necessitating in-depth research to identify the underlying factors influencing their occurrence. High levels of nonperforming loans (NPLs) have significant implications for the financial sector, including potential bank failures, financial crises, and macroeconomic issues. The failure of one bank can trigger a domino effect, leading to runs on other banks and spreading financial distress throughout the industry and beyond borders.

To safeguard against such risks, regular monitoring of loan quality is essential, and an early warning system capable of notifying regulatory authorities of approaching bank stress is crucial. By proactively addressing NPLs and implementing effective risk management measures, a healthy financial system can be maintained, reducing the likelihood of systemic catastrophes and promoting stability in the banking sector and the broader economy.(Andarge, 2022)

There have been very few scholarly works undertaken in the Ethiopian banking business in this regard. Namely, Lemma-Lalisho (2022), Abebe (2021), Jemal (2019), and Asfawesen (2017). By exploring the key findings and methodologies employed by each study, the research aims to gain valuable insights into the factors driving NPLs in Ethiopian banks. The research papers under consideration adopt different methodologies to explore the determinants of NPLs in Ethiopian banks.

The studies by Lemma (2022), Abebe (2021), Jemal (2019), and Asfawesen (2017) explore a variety of factors influencing non-performing loans (NPLs) in Ethiopian banks, including both bank-specific and macroeconomic variables. While Lemma emphasizes the significance of Return on Asset (ROA) in reducing NPLs, Abebe finds a conflicting and insignificant relationship between ROA and NPLs. Jemal's mixed methods approach delves into the detailed intricacies of loan growth, credit monitoring, and macroeconomic indicators on NPLs, while Asfawesen focuses more on specific bank parameters and only includes two macroeconomic factors. These studies collectively underscore the complex and multifaceted nature of NPL determinants in Ethiopian banks, revealing gaps in the understanding of how these factors interact and influence NPLs over time. Further research could benefit from integrating both bank-specific and macroeconomic variables comprehensively to provide a more holistic understanding of NPL dynamics in the country's banking sector.

Additionally, the significance and direction of the impact of other variables, such as Capital adequacy ratio, Liquidity, and GDP, differ between the two studies. Jemal (2019) identifies inadequate manpower and lack of comprehensive credit applicant studies as internal factors contributing to NPLs, which are not examined in Asfawesen (2017). Moreover, Asfawesen (2017) emphasizes the importance of efficient management practices, with higher capital adequacy protecting banks from risky lending.

The existing literature presents conflicting results on the impact of various factors such as Capital adequacy ratio, Liquidity, and GDP on non-performing loans (NPLs). Furthermore, there are discrepancies in the identification of internal factors contributing to NPLs, such as manpower and credit applicant studies. The role of efficient management practices and the significance of capital adequacy in protecting banks from risky lending also vary between studies. This mixed and inconclusive evidence highlights the need for further research to explore and clarify the relationship between these variables and NPLs.

The aforementioned facts and inferences, as well as the research gap identified above, need a study to completely comprehend the major drivers that determinants of non-performing loan in Ethiopian commercial banks .

1.3. OBJECTIVES OF THE STUDY

1.3.1. General Objective

The main objective of this study is to examine the determinants of non-performing loans in commercial banks in Ethiopia .

1.3.2. Specific Objectives

1. To evaluate the impact of Loan Growth Rate (LGR) on the level of Non-performing Loans (NPL) in commercial banks in Ethiopia.

2. To assess the relationship between Bank Size (BS) and the level of Non-performing Loans (NPL) in commercial banks in Ethiopia.

3. To examine the effect of Return on Asset (ROA) on Non-performing Loans (NPL) of commercial banks in Ethiopia.

4. To investigate the influence of Return on Equity (ROE) on the level of Non-performing Loans (NPL) in commercial banks in Ethiopia.

5. To analyze the relationship between Capital Adequacy (CA) and the level of Non-performing Loans (NPL) in commercial banks in Ethiopia.

6. To study the impact of Gross Domestic Product (GDP) on the level of Non-performing Loans (NPL) in commercial banks in Ethiopia.

7. To assess the effect of Interest Rate (IR) on the level of Non-performing Loans (NPL) in commercial banks in Ethiopia.

8. To examine the relationship between Inflation Rate (INF) and the level of Non-performing Loans (NPL) in commercial banks in Ethiopia.

1.4. The significance of the study.

The study holds significant importance for various stakeholders in the banking and financial sector. Firstly, policy makers can benefit from the insights provided by the research. Understanding the factors influencing non-performing loans (NPLs) can help them design effective regulatory measures and interventions to improve the stability of the banking sector. By identifying key determinants of NPLs, policy makers can create targeted strategies to address the issue and enhance overall financial health.

Secondly, commercial banks stand to gain from the study's findings. With a clearer understanding of the factors contributing to NPLs, banks can develop informed management strategies. This can lead to better risk management practices, improved credit assessment processes, and more prudent lending decisions. Consequently, the banks' financial position can strengthen, and their performance can be optimized.

Overall, the research also contributes to the existing literature on NPLs in Ethiopian commercial banks. It serves as a foundation for future studies in the field of banking and finance, guiding researchers to explore related aspects and potentially uncovering new insights. By addressing this crucial area of concern, the study aims to contribute to the financial stability and growth of the Ethiopian economy, benefiting various stakeholders, including policy makers, commercial banks, and future researchers.

1.5. Scope and limitation of the study.

The scope of the study was focused on investigating the causes and effects of non-performing loans (NPLs) in Ethiopian commercial banks. The research considered a total of 10 commercial

banks, selected based on their loan disbursement share and capital, over a period of 10 years from 2013 to 2022.

The study's methodology primarily analyzed the relationships between NPLs and its potential determinants. It aimed to explore three main groups of factors: external events, such as macroeconomic conditions, that could affect borrowers' ability to repay loans, and bank-specific factors that contribute to the variability of NPLs across different banks and borrower-related characteristics impact the level of NPLs .

However, it is important to note that the study's findings may be limited to the specified geographical and time scope, and caution should be exercised in generalizing the results to other contexts or time periods. Additionally, the use of secondary data might have certain limitations, and potential bias in the selection of banks or data accuracy could influence the research outcomes. Despite these limitations, the study aimed to provide valuable insights into the major factors contributing to NPLs and their implications for the commercial banking sector in Ethiopia.

CHAPTER TWO

LITERATURE REVIEW

The literature review provides an in-depth exploration of the concept of Non-Performing Loans (NPLs) and its significance in the financial sector. NPLs are loans that borrowers are unable to repay as initially agreed upon, leading to adverse effects on lenders and the overall economy. This section delves into the various theoretical perspectives and determinants that influence the occurrence of NPLs, including both bank-specific and macroeconomic factors.

Non-Performing Loans (NPLs) represent a widespread issue impacting financial markets and banking sectors globally. The absence of a universal standard for defining NPLs contributes to varying interpretations across countries. Generally, NPLs refer to loans where debtors have not made scheduled payments for at least ninety days, significantly reducing the likelihood of full repayment. This phenomenon underscores the importance of understanding the causes and consequences of NPLs.

Several theoretical models provide distinct insights into the causes of NPLs. These models shed light on various aspects, such as risk premium, the principal-agent problem, adverse selection, moral hazard, patronizing effect, die another day effect, and Petro ski effect. Each model offers unique explanations for the emergence of NPLs, including the influence of interest rates, borrower-manager relationships, information asymmetry, and borrowers' perceptions.

NPLs are influenced by a multitude of factors, including both bank-specific and macroeconomic determinants. Bank-specific determinants encompass elements such as loan growth, bank size, return on assets (ROA), return on equity (ROE), and capital adequacy. These factors interact to affect a bank's lending practices, risk management, and profitability. Additionally, macroeconomic determinants, such as real GDP growth, interest rates, and inflation rates, play a significant role in shaping the NPL landscape.

In conclusion, understanding the dynamics of Non-Performing Loans is crucial for maintaining financial stability and effective risk management within the banking sector. This literature review has explored the definition of NPLs, various theoretical perspectives on their causes, and

the determinants that influence their occurrence. By examining these factors, researchers and policymakers can better comprehend the intricate relationship between NPLs, banking operations, and broader economic conditions.

2.2 Definition and concept of NPL.

The definition of non-performing loans lacks a universal standard and varies by country due to differing appropriateness. In broad terms, it refers to borrowed funds where the debtor hasn't paid scheduled payments (principal and/or interest) for at least ninety days. Once a loan becomes non-performing, the likelihood of full repayment significantly diminishes.(Wood and Skinner, 2018)

Non-Performing Loans (NPLs) are a widespread problem that impacts the stability of financial markets and the health of the banking sector. NPLs are loans that cannot be repaid within a time frame specified by a country's laws or the agreement between the borrower and lender. In simpler terms, NPLs are loans that borrowers are unable to pay back as originally agreed upon, leading to financial challenges for both lenders and the overall economy.(Abebe, 2021)

According to (Asfaw et al., 2016) Loans are considered in default when they are either labeled as "non accrual" or when their terms are significantly changed through a restructuring. "Non accrual" means that banks remove the interest they had recorded but not received from the loans. This usually happens when loan payments are more than 90 days late. In simpler words, a loan is in trouble if the borrower hasn't paid for a while, and the bank stops counting the interest they thought they would get from the loan.

Non-performing loans are loans that are causing problems for banks because they are not being repaid as agreed. This can happen if the loans are not earning money, if payments are very late (more than 90 days), if the borrowed amount isn't enough to cover the interest for three months, or if the loan's due date has passed and no payment has been made. Different countries might have different rules about when a loan is considered overdue. The relationship between non-performing loans and interest rates is clear in the long term: higher interest rates make the problem worse. However, the link between inflation rates and non-performing loans is not so strong. Interestingly, in the short term, both interest and inflation rates don't seem to have a big effect on non-performing loans.(Asfaw et al., 2016)

2.3 Theoretical literatures.

The banking sector is a vital element of a nation's economy, playing a pivotal role in capital flow. Commercial banks primarily facilitate resource distribution through lending, aiming to earn income while addressing credit requirements. Lending is at the core of banking, with loan portfolios being a significant asset component, generating substantial interest income crucial for financial stability. Despite driving major operating income, loans also expose banks to significant risk.(“Factors Affecting NPL -sirak.pdf,” n.d.)

Loans serve as the fundamental assets responsible for generating the majority of operating income, constituting around 50-75 percent of total assets in many banks. Conversely, inadequate loan management can significantly heighten a bank's exposure to risk, as noted by (Asfawesen, 2017).

Since this study focuses on the credit risk management practices and its related issues on the development bank of Ethiopia, it is essential to describe risks related with credit and its management and thus, the under mentioned points are presented accordingly (Adamu et al (2014).

Over the decades, the financial services industry has undergone significant transformation due to internal and external factors, including business model transformation, adoption of advanced technologies, changing regulatory environments, etc. In an increasingly complex environment of the financial services industry, new complexities arise, requiring an adjustment in risk management systems and procedures. For financial institutions, expanding the array of risks that come with new types of players, new technologies, ever-growing complexities of national and international regulations, as well as changing consumer behavior, require significant resource investments to address financial and other risks naturally occurring as a result of those changes (Chareless, 2013).

More than ever, (Michel et al, 2000) chief risk and compliance officers play a critical role in monitoring and managing these risks to ensure a safe transformation of banking, and ensure continuity of their businesses. In its simplest sense, risk could be defined as the uncertainty of an event to occur in the future. In the banking context, it’s the exposure to the uncertainty of an outcome, where exposure could be defined as the position/stake a bank takes in the market. Banking risks can be broadly classified under 11 categories as:

1. Business/Strategic/ risk/
2. Compliance risk
3. Credit risk
4. Cyber security Risk
5. Liquidity risk
6. Market risk
7. Moral hazard
8. Open Banking Risk
9. Operational risk
10. Reputational risk
11. Systemic risk

⌗ Business/Strategic Risk

Business risk is the risk arising from a bank's business strategy in the long term. When a bank fails to adapt to the changing environment as quickly as their competitors, it faces the risk of losing market share, getting acquired or shutting shop(Michel et al, 2000)..

Technology is changing the banking landscape at an incredibly rapid pace. The millennial generation would need a drastic change and development in banking interfaces, which would primarily be led by four clicks on their mobile phones as opposed to long queues in the bank branches. Banks need to rethink the outdated framework of the core banking systems, rethink the design of their end to end tech stack and build upon efficient and quicker bank end systems to turn around and meet the demand of the largely impatient digital consumer(Michel et al, 2000)..

⌗ Compliance Risk

According to the Bank of International Settlements (BIS), in the banking context, compliance risk is defined as the risk of legal or regulatory sanctions, material financial loss, or loss to reputation a bank may suffer as a result of its failure to comply with laws, regulations, rules, related self-regulatory organization standards, and codes of conduct applicable to its banking activities.

It is imperative for banks to establish an infrastructure to organize and analyze data and efficiently manage legal documentation. The senior management of a bank plays the crucial role in for-

mulating, communicating and managing compliance policies across all business units of the bank to minimize compliance risk.

⌗ Credit Risk

Credit risk is the one that most would be familiar with as economies continue to recover from the more recent occurrence in the history of financial services: the subprime crisis. Both global and national banks suffered heavy losses due to incorrect evaluation and monitoring of potential default rates on mortgage payments by subprime borrowers.

Credit risk is defined as the potential that a bank borrower, or counterparty, will fail to meet its payment obligations regarding the terms agreed with the bank. It includes both uncertainty involved in repayment of the bank's dues, and repayment of dues on time.

It could occur because of the following reasons:

- Inadequate income of borrowers
- Inadequate underwriting frameworks
- Business failure of the borrowers
- The unwillingness of the borrowers to repay

⌗ Liquidity Risk

Liquidity management can be defined as the risk of a bank not being able to finance its day to day operations. Failure to manage this risk could lead to severe consequences for the bank's reputation as well as the bond pricing and ratings of the bank in the money market.

⌗ Market Risk

According to The Basel Committee on Banking Supervision, market risk can be defined as the risk of losses in on- or off-balance sheet positions that arise from movement in market prices.\

The four components of market risk are:

- Interest risk: potential losses due to a change in interest rates. Requires Banking Asset/Liability management.

- Equity risk: potential losses due to change in stock prices as banks accept equity against disbursing loans.
- Commodity risk: potential losses due to change in commodity (agricultural, industrial, energy) prices. Massive fluctuations occur in these prices due to continuous variations in demand and supply. Banks may hold them as part of their investments, and hence face losses.
- Foreign Exchange risk: potential loss due to change in the value of the bank's assets or liabilities resulting from exchange rate fluctuations as banks transact with their customers/other stakeholders in multiple currencies.

⌗ Operational Risk

Operational risk is defined as the risk of loss resulting from inadequate or failed internal processes, people, and systems or external events. All banks (full service/others) face operational risks in their day to day operational actions across all their departments including treasury, credit, investment, information technology. There are three main causes of this risk:

- Human Intervention & Error
- Failure of the IT/internal software & systems
- Failure of Internal Processes to transmit data & information accurately

⌗ Reputational Risk

Reputational risk implies the public's loss of confidence in a bank due to a negative perception or image that could be created with/without any evidence of wrongdoing by the bank. Reputational value is often measured in terms of brand value. Advertisements play a significant role in forming & maintaining the public perception, which is the key reason for banks spend millions in content marketing dollars.

Reputational risk could stem from:

- The inability of the bank to honor government/regulatory commitments
- Nonobservance of the code of conduct under corporate governance
- Mismanagement/Manipulation of customer records
- Ineffective customer service/after sales services

A risk can be defined as an unplanned event with financial consequences resulting in loss or reduced earnings (Vasavada, Kumar, 2005). An activity which may give profits or result in loss may be called a risky proposition due to uncertainty or unpredictability of the activity of trade in future. In other words, it can be defined as the uncertainty of the outcome. Risk refers to a condition where there is a possibility of undesirable occurrence of a particular result which is known or best quantifiable and therefore insurable (Periasamy, 2008).

Risk may mean that there is a possibility of loss or damage which, may or may not happen. Risks may be defined as uncertainties resulting in adverse outcome, adverse in relation to planned objective or expectations (Patwardhan 2005). In the simplest words, risk may be defined as possibility of loss. It may be financial loss or loss to the reputation/image (Sharma, 2003). Although the terms risk and uncertainty are often used synonymously, there is difference between the two (Sharan, 2009). Uncertainty is the case when the decision maker knows all the possible outcomes of a particular act, but does not have an idea of the probabilities of the outcomes. On the contrary, risk is related to a situation in which the decision maker knows the probabilities of the various outcomes. In short, risk is a quantifiable uncertainty.

The Banking sector has a pivotal role in the development of an economy. It is the key driver of economic growth of the country and has a dynamic role to play in converting the idle capital resources for their optimum utilization so as to attain maximum productivity (Sharma, 2003). In fact, the foundation of a sound economy depends on how sound the Banking sector is and vice versa. In India, the banking sector is considerably strong at present but at the same time, banking is considered to be a very risky business. Financial institutions must take risk, but they must do so consciously (Carey, 2001). However, it should be borne in mind that banks are very fragile institutions which are built on customers' trust, brand reputation and above all dangerous leverage.

In case something goes wrong, banks can collapse and failure of one bank is sufficient to send shock waves right through the economy (Rajadhyaksha, 2004). Therefore, bank management must take utmost care in identifying the type as well as the degree of its risk exposure and tackle those effectively. Moreover, bankers must see risk management as an ongoing and valued activity with the board setting the example.

As risk is directly proportionate to return, the more risk a bank takes, it can expect to make more money. However, greater risk also increases the danger that the bank may incur huge losses and be forced out of business. In fact, today, a bank must run its operations with two goals in mind as to generate profit and to stay in business (Marrison, 2005). Banks, therefore, try to ensure that their risk taking is informed and prudent. Thus, maintaining a trade-off between risk and return is the business of risk management. Moreover, risk management in the banking sector is a key issue linked to financial system stability.

According to Foundation for Development Cooperation (2015);

- Risk management is the process of managing the probability or severity of the adverse event to an acceptable range or within limits set by the financial institution.
- A risk management system is a method of systematically identifying, assessing, and managin g the various risks faced by a financial institution.
- A risk management framework is a guide for financial institution managers to design an integ rated and comprehensive risk management system that helps them focus on the most important r isks in an effective and efficient manner.

Credit risk is core components and parcel of financial intermediation. The CRM by financial intermediaries is critical to the institutional viability and sustained growth. Credit risk is vitally important to market segment when a large contributing factor to that perception may be a lack of adequate credit risk evaluation and management techniques. It means that the case with DCs development transaction weak performance to favor clients with establishing credit histories and significant collateral. As a result, a relatively small number of financial intermediaries have a presence in DCs markets, and an even smaller number have significant credit operations portfolios. This limited presence of financial intermediaries in DCs areas and the bias against financial transacting creates access and segmentation problems. Therefore, DCs CRM has insignificant economic and social consequences. Poor access to formal financial services and in particular credit, contributes to persistent poverty, lower economic growth rates, and high income and asset inequality (Michel et al, 2000).

The objective of financial institutions is to maximize shareholder value by mobilizing deposits and lending them to firms and clients with transactional operations. The financial sectors seek to

generate a profit by having interest income, fees, and investment or trading income exceed the interest paid on deposits, borrowings, and all operating costs. Even if the institution is member-owned or has a philanthropic motivation, the principle of earning a profit still applies. Obtaining a positive net income is imperative for performances and sustainability (Irena et al., 2014). The management of credit risk of credit portfolios is therefore one the most important tasks for the financial liquidity and stability of banking sector in connection with increased sensitivity of banks to the credit risks and changes in the development of prices of financial instruments (Kiseak, 2013).

The determination of each individual loan, or borrower, risk assessment techniques plays a primary role in the management and minimization of the credit risk. It is only after determining the risk represented by each individual borrower and by each individual credit service that one can begin to manage the loan portfolio as a whole. The credit risk assessment of the borrower consists in the study and evaluation of the qualitative and quantitative indicators of the economic situation of the borrower (Korobova, 2010). The assessment of the risk factors attending the granting of a particular loan and their comprehensive and systematic analysis enable the bank to take these factors into account in credit risk management and to prevent their recurrent and adverse impact on the results of the bank's future activities (Rodina et al., 2013).

The methods used to quantify credit risk are accompanied by a special transparency requirement, including a quantitative assessment of the methods' accuracy and a statistical method property known as robustness. The transparency of the credit risk methodology presents an opportunity to view a given phenomenon not only as a whole but also in detail (Dmitriadi, 2010).

Transparency has become the most important characteristic of credit risk assessment methods thanks to the need for the most thorough identification of both credit risk and the credit risk model itself. Methodological transparency refers to the precision of the employed mathematical methods, the reduction of the element of subjectivity in expert assessments, the clarity of the results of risk assessment and analysis, the bank employees' thorough understanding of these results, and the accessibility of the given methods to regulatory authorities and borrowers. In order to analyze, forecast, and manage credit risk, each bank must be able to quantify relevant credit risk factors, to analyze the risk involved, and to permanently monitor credit risk factors (Andrianova, 2013).

The bank's decisions about granting, or refusing to grant, a loan, about the interest rate, and about the level of loan default provisioning will depend on the accuracy of risk recognition and assessment. The accuracy of risk factor assessments is evaluated relative to the number of errors in the recognition of "bad" and "good" loans (i.e. borrowers) and their average number. The accuracy of risk factor assessments is determined in a similar manner when loans are classified into more than two classes. Furthermore, the stability of risk assessment methodologies is characterized by the property of statistical methods known as robustness. Different methodologies of risk assessment, or one and the same methodology used with different algorithms, yield dissimilar classifications of loans into "good" and "bad". (Solojentsev,2004).

Various studies indicated that there are different approaches to the determination of the credit risk posed by a particular borrower as the bank experts' subjective evaluation and automated risk assessment systems (Konovalova, 2009). Global experience shows, however, that credit risk assessment systems based on mathematical models are more efficient and reliable than any others. In order to build a credit risk assessment model, first those clients of the credit institution are selected who have already proved themselves to be either good or bad borrowers (Ralf, 2009).

Berger and DeYoung (1997) banking profitability may also reflect the risk taking behavior of managers. Banks with high profitability are less pressured to revenue creation and thus less constrained to engage in risk credit offerings. At the same time, inefficient banks are more likely to experience high level of problem loans. Poor management can imply weak monitoring for both operating costs and credit quality of customers, which will include high levels of capital losses. Under this bad management hypothesis advances by Berger and DeYoung (1997), mangers lack competencies to effectively assess and control risks incurred when lending to new customers.

Credit risk is one of the most critical risks across the world among lending institutions. In England, a study on bank failures indicated that out of the sixty-two banks that existed before 1984, there were cases of untimely repayment of loans and advances (Sabrani, 2015). Developed counties like Japan, United States and Sweden and the developing states like South East Asia and Latin America have undergone a number of crises linked with non-performing loans (Campbell, 2007).

Efficient credit management requires lending institutions to efficiently and intelligently manage the credit lines of their customers. Most lending institutions have partnered with credit reference

bureaus that share among other things, the credit histories of customers that facilitate the process of appraisal of credit to customers. This helps lending institutions to reduce exposure to bad debts in the event that customers fail to repay the advanced amount. Just like a sale, credit management starts after selling the product all extents all through to a point when payment is finally made and recorded. Technically, something is not regarded as a sale until money is collected (Ibid).

Credit risks play an important as far as performance of development banks is concerned. Credit risk is part and parcel of the loan review process among development banks. Credit risk result into maximization of the risk of the bank and the adjusted risk rate of return that shield the bank from the adverse effect of inability to repay interest and the loan (Fofack & Hippolytem, 2015). Now a day, credit risk management models have been adopted among development banks to cushion themselves against that adverse effect of credit risk. Development banks should manage their inherent credit risk in the whole loan portfolio as well as individual transactions or credits. Development banks should also consider the interrelationship existing between other risks and credit risk. Sound risk management practices play an important role in long term success and profitability of a banking institution (Ferreti, 2017).

Development banks can assess their credit risk exposures through analysis of their financial performance in order to reduce the negative effect of credit default. The future of development banks today lies in their ability to effectively manage their credit risk exposures and dynamics. As credit risk is a recurrent and persistent challenge among development banks globally, the management of banks and regulatory bodies should use past experiences to make relevant decisions with regard to credit risk in their institutions (Douglas, 2014).

Development banks should increase their skills to identification, measurement, monitoring and control of credit risk besides determining their capital adequacy requirements against their credit risks. It is also important for development banks to be sure that they receive adequate compensation for the risk incurred. The current guidelines and procedures of credit risk management among development banks are not sufficient to meet the already existing economic and financial challenges that development banks encounter. This thus raise a need for continuous analysis and studies issues with credit risk and how best to manage it (Collin-Dufresne & Goldstein, 2015).

Other than loans, development banks are also facing credit risk in other instruments like securities including shares, bonds, equities, interbank and trade financing transactions and the derivatives like swaps and options (Bikker & Hu, 2014). It is there important to carry out investigation on whether investing in credit risk management is viable opportunity for development banks. The study therefore sought to determine effect of credit risk management ion financial performance of development banks in South Sudan.

Development banks have undergone through various issues and challenges in the recent past due a number of reasons including the credit standards of counterparties and borrowers, poor strategies of managing portfolio by failing to establish the best mixture of assets in the portfolio and inability to respond to changes in economic conditions that adversely affect credit. With these challenges, development banks have formulated various ways of managing credit risk that has affected performance in one way or the other (Barth et al., 2015).

Establishment of policies and strategies mean that development banks will have to leave other clients that their new strategies and policies would not accommodate. Furthermore, inputs will be required for development banks to put in place new structures and strategies of credit risk management (DemirgüçKunt & Detragiache, 2013). All development banks have done all these; it however remains a challenge for these development banks to strike a balance between these policies and the customer needs of credit. This transpires into negative or positive performance of development banks (Berger & De Young, 2016).

According to (Dula, 2010)A proficient and skillful management approach to lending operations can mitigate potential loan risks, regardless of their level. Skillful organization and oversight are key in minimizing loan losses. The bank's loan policy should mirror both the nature and excellence of its loan portfolio. This policy delineates the bank's lending principles and outlines the methods and mechanisms for supervising lending endeavors.

2.3 Empirical Review

Various researches have analyzed the linkage between credit risk management and financial performance, and how effective credit risk management contributes to reduction of defaults by counterparty as well as restricting uncertainty of achieving the required financial performance. Otieno, Nyagol and Onditi (2016) evaluated the relationship between credit risk management

and financial performance of microfinance banks in Kenya using Pearson correlation coefficient. The study concludes that credit risk management impacts performance (Ibid).

Mulondo (2011) investigated the relationship between credit risk management and loan performance of two development financial institutions in Uganda. The study found that loan appraisal showed a very strong significant relationship as compared to other risk management techniques such as risk transfer and risk diversification. The study recommended that considering the existence of a significant positive relationship between loan appraisal and loan performance, it is important for the bank to formulate appraisal process/procedures, format that details ways of capturing all the credit risk. According to the study, the appraisal process should identify and analyze all loss exposures, and measure such loss exposures. The appraisal process should capture key issues like capital adequacy, capacity of applicant, value of collateral, and repayment history (Mulondo, 2011).

Mutangili (2011) analyzed the relationship between credit risk management practices and the level of non-performing loans for development banks in Kenya. The study documented evidence of negative linkage between the level of non-performing loans and credit risk management practices in banks. He concludes that level of nonperforming loans is inversely related to credit risk management practices. This study recommended that development banks should adopt various credit risk management practices to reduce the level of non-performing loans. In addition, the study further recommended that sustainable and reliable credit database should be established for availability of credit information needed by banks.

Ochola (2009) evaluated the relationship between credit risk management and non- performing loans. The study show that a combination of intensive credit risk management by the banks coupled with close supervision by central bank has greatly enhanced the decline of non-performing loans ratio in the banking sector. Analyzing the asset quality of financial sector for 2003 to 2008, the ratio of gross non-performing loans to gross loans declined from a high 35% in 2003 to a low of 9.23 in 2008. This decline supported evidence of close relationship of nonperforming loans and credit risk management according to the study.

According to a study conducted by Tekalagn (2015), the financial transactions in banks in Ethiopian have achieved great prominence in the developed world than developing countries. Devel-

oping Countries (DC) such as the Ethiopian economic environment has promising situations for and a predominant role in granting credit facilities. Credit functions of banks, insurance, and other financial sectors enhance the ability for investors to exploit desired profitable venture. Credit creation is the main income generating activity of financial transactions, via banking systems. As this study indicated, the DCs banking system has not given enough attentions in the past. Ethiopia banking system has not given enough attention before 2010 specially regarding to the development of modern system of assessing, controlling and managing risk in banking operation in line with the changing environment and global financial standard. Risk management guideline of 2010 paved the way for the latest development of Risk management practice in Ethiopian banking industry. However, after a decade there is a good revival and courage for local and foreign investments.

The study further indicated that, risk management guideline such as Ethiopia designed and implemented a dynamic risk management practice in its financial transactions. Risk management including trade transactions and returns are important for the sustainable profitability of financial sectors. Such as risks in banking operation credit risk which is relating to the substantial amount of income generating assets is found to be an important determinant of bank performance (Tekalagn, 2015).

The objective of risk management is to reduce the effects of different kinds of risks related to a pre-selected domain to the level accepted by society. It may refer to numerous types of threats caused by environment, technology, humans, organizations and politics. Credit risk management in a financial institution starts with the establishment of sound lending principles and an efficient framework for managing the risk. Adequately managing credit risk in financial institutions is critical for the survival and growth of the financial Institution. In the case of banks, the issue of credit risk is greater concern because of the higher levels of risks resulting from some of the characteristics of clients and business conditions that they find themselves in. On the other hand it involves all means available for humans, or in particular, for a risk management entity (Ibid).

Credit risk management is very important to banks as it is an integral part of the loan process. It maximizes bank risk, adjusted risk rate of return by maintaining credit risk exposure with view to shielding the bank from the adverse effects of credit risk. The relationship between credit risk and development banks performance has been the concerns of various studies that prove the

credit risk is among the major factors affecting profitability performance of development banks (Tefera 2011).

According to a study conducted by Rajeswari (2014), the goal of credit risk management is to maximize a bank's risk adjusted rate of return by maintaining credit risk exposure within acceptable parameters. Banks need to manage the credit risk inherent in the entire portfolio as well as the risk in individual credits or transactions. Banks should also consider the relationships between credit risks and other risks. For more banks, loans are the largest and most obvious source of credit risk. However, other sources of credit risk exist throughout the activities of a bank, including in the banking book and in the trading book, and both on and off the balance sheet. Banks are increasingly facing credit risk (or counterparty risk) in various financial instruments other than loans, including acceptances, interbank transactions, trade financing, foreign exchange transactions, financial futures, swaps, bonds, equities, options and in the extension of commitments and guarantees and the settlement of transactions. The effective management of credit risk is a critical component of a comprehensive approach to risk management and essential to the long term success of any banking organization as the researcher concluded (Rajeswari, 2014).

According to Aruwa & Musa (2014), there is a strong relationship between risk components and the banks' financial performance. They found that the effects of the credit risk, and other risk components on the banks' financial performance. Lack of effective credit risk management led to occurrence of the banking crisis, and inadequate risk management systems caused the financial crisis.

Poudel (2012) and Musyoki & Kadubo (2012) explored various credit risk management indicators that affect development banks' financial performance; they found that the default rate was the most predictor of bank financial performance, on the contrary of the other indicators of credit risk management. Capital adequacy ratios indicator affected on financial performance is less than Nonperforming loans. And also the Nonperforming loans had positive impact on banks performance as measured by return on equity (ROE) and return on assets (ROA).

Kargi (2011) evaluated the impact of credit risk on the profitability of Nigerian Banks. Financial ratios as measures of Bank performance and credit risk were collected from the annual

reports and accounts of sampled Banks for five years(2004 to 2008) and analyzed using descriptive, correlation and regression techniques. The findings revealed that credit risk management has a significant impact on the profitability of Nigerian Banks. The study concluded that Banks' profitability is inversely influenced by the levels of Loans and Advances, Non-Performing Loans and deposits thereby exposing them to great risk of illiquidity and distress.

Achou and Tenguh (2008) show that there is a significant relationship between Bank performance (in terms of return on asset) and credit risk management (in terms of loan performance). They recommended that better credit risk management results in better bank performance. Thus, it is of crucial importance that Banks practice prudent credit risk management and safeguarding the assets of the banks and protect the investors' interests.

This study has improved on some of the existing studies, in that it investigates the effect of credit risk management and its indicators on financial performance of Ethiopian banking industry; empirical evidence from private development banks.

Tekalagn (2015) studied the prevailing relationship between credit risk management and profitability performance as a specific case of development banks in Ethiopia and found that the credit risk profile for a financial transaction or development market has shown improvement. The ratio of the nonperforming loan is sharply declining as the result of the study indicated. Moreover the capital adequacy ratio of development banks was higher than regulatory requirement at local and international level indicating development transactions held excessive capital which led to a negative effect on profitability of development market and also with adverse impact on the economic growth. In summary, the regression results of the study suggested that CAR and NPLR of the banks are significantly negatively related with ROA and ROE and LPTLR, LPNPLR and LPTR significantly positively related with ROA and ROE signifying that credit risk management affects financial performances of banks.

A study conducted by Habtom (2017) concluded that the bank specific factors of Cost per Loan Asset Ratio, Deposit to Total Assets Ratio, Nonperforming Loan Ratio, Loan to Total Assets Ratio and Loan to Deposit Ratio had a statistically significant effect on the level of ROA. However, the result of Fixed Effect Regression Model revealed the insignificant effect of Loan loss Provision to Total Loan Ratio on the level of ROA of Ethiopian bank for the period under considera-

tion. According to the regression results of this study, the findings indicated that bank credit risk management measured in terms of CLA has negative and statistically significant effect on ROA. It indicated that the banks efficiency in distributing loans to customers and the banks can make a profit as far as they can minimize the credit risk. According to the result of the study, Deposit to Total Asset Ratio and the regression result showed the existence of a negative and statistically significant effect on financial performance of Ethiopian bank implying the situation if the banks heavily dependent on the funds mainly provided by the public as deposits to finance the loans being offered to customers, deposits have negative effect on banks performance (profitability) provided that demand for bank loans is very low. The findings further indicated that bank credit risk management measured in terms of NPLR has negative and statistically significant effect on financial performance of Ethiopian bank according to thee result of this study. Credit risk in the form of NPLs is one of the crucial factors that have an effect on the financial health of a development banks as well as bank and growing NPLs is a challenge to banks, which will adversely affect the performance of banks. It represents how much of the bank loans and advances are becoming non-performing which measures the extent of credit risk that the bank sustained (Habtom. 2017).

Al-Tamimi & Al-Mazrooei (2007) carried out comparative study of bank's risk management between national and foreign banks in the United Arab of Emirates through survey. The survey questionnaire mainly composed seven items clustered under Risk management practice (independent variable) and thirty three items under Understanding risk and Risk management, Risk identification, Risk assessment and analysis, Risk monitoring, and Credit risk analysis (independent variables). The regression result revealed that risk identification and risk assessment and analysis had significant positive impact on Risk management practice while other variables had insignificant positive Impact.

The researcher also found that Risk identification and Risk assessment and analysis were the most influential variables for Risk management practice of nationally owned bank. It also further concluded that there was a significant difference between nationally owned and foreign banks in the aspect of Understanding risk and Risk management (URM), Risk assessment and analysis (RAA) and Monitoring and Controlling aspects while did not with practice of Risk identification (RI), Risk management practice and Credit risk analysis. Generally reported as foreign bank

were more effective in Risk management practice then nationally incorporated bank due to quality of staffs and regulatory requirement.

Nazir, Daniel & Nawaz (2012) conducted research entitled 'Risk management practices: a comparison of conventional and Islamic banks in Pakistan using the same model suggested by Al-Tamimi & Al-Mazrooei (2007) and found positive relationship between dependent variable and explanatory variables. Hussain & Al-Ajmi (2012) also conducted research with the same instrument and found similar relationship in Bahrain. The regression result further indicates that Credit risk analysis, Risk monitoring and Understanding of risk and risk management had the most explanatory power of risk management practice in Pakistan. NBE conducted the first survey on risk management practices of Ethiopian development banks by taking sample of nine members of bank's board of directors in 2009.

It was specially aimed to identify the status of risk management practice of Development bank and to improve its strength further through providing fruitful recommendation on weakness. Inadequate risk management training , inefficient allocation of Risk management budget, lack of up to date and relevant economic and business data for decision making, lack of documented risk management strategy and program, lack of reviewing risk management document regularly, and poor internal communication and lack of comprehensive risk limits system were identified as weakness of Risk management system and practice of some Ethiopian Development banks while having qualified Risk management staffs, existence of policy and procedure of Risk management, having committed BOD, awareness of risk in banking operation, contingence plan for Operational and Credit risk were the major strength of the banks. Generally, the dominance of all those weaknesses over the strength witnesses the existence of poor Risk management system and practice in Ethiopian Development banks.

Richard et.al (2008) conduct research on the Credit risk management system of Tanzanian development banks and found that checklist with the help of 5C (Character, Capacity, Condition, Credit history, and Collaterals) was used to assess borrower's Credit worthiness. Researcher also found that the quantitative Credit scoring model was not used as a result of poor record keeping and lack of effective data base system in different sectors with in the country. Researcher further noted the difficulty of using modern Credit risk management model due to lack of information and other financial infrastructure in under developed country. Even though there are different

methods of Risk identifications, Inspection by the bank's risk manager, audits or physical inspection, financial statement analysis and risk survey were the most important Risk identification methods of Development banks in United Arab of Emirates (Al-Tamimi & Al-Mazrooei, 2007).

The study of NBE (2009) identified and ranked three important types of risks in which Credit risk was ranked firstly and then followed by operational and liquidity risk. Al-Tamimi & Al-Mazrooei (2007) found three important types of risk the bank faces in United Arab of Emirates and ranked in descending order as Foreign exchange risk, Credit risk and Operational risk while Hussain & Al-Ajmi (2012) ranked as Credit risk, Liquidity risk and Operational risk were the most important risk in Bahrain. Study of Alam & Masukujjaman (2011) also found that Credit risk, Market risk and Operational risk were the major risks to the banks of Bangladesh. It is possible to conclude from those finding that Credit risk, Operational risk, Liquidity and Market risk are the major types of risks for most of Development banks. Therefore, Banks should give more emphasis on such types of risks to survive in banking sigma

2.4 Cause of Non-Performing Loan

The seven models provide distinct perspectives on the causes of Non-Performing Loans (NPLs):(Viswanadham, 2015)

1.Risk Premium

Financial decisions involve varying levels of risk, and the assessment of "perceived credit risk" is subjective and based on individual judgment. Risk and expected return are usually positively correlated, meaning that as expected return rises, so does the associated risk. Lenders often assume higher risk to achieve greater returns. This relationship between interest and risk implies that borrowers might struggle to meet obligations when interest rates are high.(Asfawesen, 2017)

2.The Principal -Agent problem

The idea underlying this model is that organization decision – taking authority lies in the hands of managers. Shareholders as owners of a company are the principals and managers are their agents. Thus there is a principal agent relationship between shareholders and managers. In theory managers should act in the best interests of shareholders, that is, their actions and decisions

should lead to shareholders wealth maximization (SWM). But in practice, managers may not necessarily act in the best interest of shareholders and they may pursue their own personal goals. This problem arises because managers are motivated by self-interest. The root cause of this self interest is jealousy. Managers work hard to make sure that companies become successful and make huge profit. But due to managers hard work only the shareholders become rich and not managers.(Viswanadham, 2015)

3. Adverse selection

Adverse selection is a problem in risk management where one side of a trade, usually buyers, has more information than the other side, often sellers. This can lead to unfair deals, as buyers with inside knowledge seek to benefit at the expense of sellers. As a result, the market becomes flooded with such opportunistic buyers, leaving sellers with mostly bad customers.

To counter adverse selection, thorough investigation and customer screening are important. In credit markets, this is known as credit appraisal and assessing credit quality. Another approach is raising prices or restricting access, but this can lead to new issues. Increasing prices might drive away good customers, leaving only the risky ones. Even if good customers stay, they'll have to pay more and receive limited benefits due to access restrictions. This shows that solutions to adverse selection can sometimes create more problems, impacting the overall market dynamics.(Thakur and Shrivastava, 2018)

4 . Moral Hazard

The Moral Hazard theory centers on a scenario where one party engages in a risky situation with the knowledge that it is safeguarded against the risks, while the consequences will affect the other party. This typically occurs due to incomplete information between both parties. In the context of borrowing, borrowers might prioritize their personal gains over ethical considerations, resorting to dishonest practices like altering documents or misrepresenting their financial situation to secure loans they cannot afford. This behavior leads to an increased likelihood of nonperforming loans. The theory highlights that changes in incentives after a contract is established can modify the level of risk involved. For instance, banks with limited capital might respond to moral hazard by taking on riskier loans, resulting in a higher average of nonperforming loans over time.(Asfawesen, 2017)

5. Patronizing effect

This model proposes that there is a possibility lenders are unwilling to collect. Unwillingness may arise from several factors such as poor policies, procedures, structure, rewards, physical setting, etc. Such internal problems weaken management and motivate borrowers not to repay the loan, because they are confident that no serious action will be taken against them.(Viswanadham, 2015)

6. Die another day effect

The idea underlying this model is that in our society, people give more importance on current consumption. So they do not mind spending the borrowed fund for consumption, if they are not strictly followed up. People hold a very short vision of thinking for today leading to sufferings tomorrow. So a significant portion of capital goes to unproductive sector that may be termed as die another day effect. So this means that if borrowers are not followed up, they get wrong perception about the management, that is, it is weak, so borrowers will squander the loan money unwisely. In brief, weak follow up weakens the system (Viswanadham, 2015)

7. Petro ski Effect

In “To engineer is human; the role of failure in successful design”, Henry Petroski, a forensic civil engineer fascinated with failure of large structures notes that each new major bridge, for example, always has to be higher, longer, stronger or cheaper than the last bridge of similar design. Something that works tends to be the subject of attempts at replication and improvement in new environments. This means that risk increases and is always to some degree unknown as the low risk situations become saturated. The idea underlying this model is that when credit managers make different types of loans, for example business loans or personal loans, they expect the same characteristics to affect other types of loans. This kind of expectation increases risk.(Viswanadham, 2015)

2.5 Determinants of Non-Performing Loan.

The different determinant factors for NPLs depending on multidimensional aspects like economy and countries situation and give more emphasized for two grand factor bank specific and macro-

economic factors Macroeconomic factors encompass broader economic circumstances that can impact borrowers' ability to meet loan obligations, including external events. Conversely, bank-specific internal factors pertain to elements intrinsic to the bank itself and contribute to the extent of nonperforming loans.(Asfawesen, 2017)

2.5.1 Bank specific determinants

Loan growth

Banks should focus on lending where they have expertise and in their local area. Prioritizing loan growth over quality can lead to risky lending. Continuous supervision of loans helps reduce risk and improve lending. Credit risk is crucial and needs careful management as it affects a bank's performance. Loan growth is linked to nonperforming loans.(Abebe, 2021)

According to (Bedasa, 2017) analyzing data from 1982 to 1996 using a vector auto regression model, it was found that there is a significant connection between credit growth and troubled loans in the US. The research revealed that fast credit expansion, often tied to relaxed lending criteria, led to increased loan losses in specific US states. The study defined loan delinquency as loans overdue for over 90 days or not earning interest.

Bank size

According to (Bhattarai, 2018) the impact of bank size on the effectiveness of screening loan customers, measured by non-performing loans (NPLs). Surprisingly, contrary to prior research, the findings show that although larger banks do not necessarily outperform their smaller counterparts in customer screening, conflicting theoretical perspectives exist. A potential positive connection between larger banks and superior risk management strategies contradicts the notion that larger institutions might engage in excessive risk-taking due to regulatory challenges and an expectation of government support in case of failure, as suggested by the "too big to fail" concept. Despite this, the study anticipates a positive influence of bank size on NPLs.

As has been indicated earlier the total assets of the banks, which indicate size of banks, have shown growth throughout the period under consideration. However, the outcome of the analysis depict that at 0.05 level of significant, there were no statistically significant relationship between

NPL ratio and total assets, which is the indicator bank's size. So the study fails to support earlier studies that indicated the relation between banks size and nonperforming loans.(Negera and Geletta, 2012)

According to (Negera and Geletta, 2012) Further, comparatively bigger banks, Commercial Bank of Ethiopia, Awash International and Dashen Banks had NPL ratios of 1.7%, 7% and 2.9% respectively during the year 2010 for example. In a similar manner other relatively midsized or smaller banks had NPL ratios of more or less similar to that of Awash Bank's or Dashen Bank. The raw data itself depict that the association between bank size and their NPL ratio is weak or rather nil.

Return on Assets (ROA)

The effect of ROA on NPLs is complex. It could lead to more NPLs if banks deceive investors and their projects don't meet expectations. On the other hand, profitable banks might avoid risky loans because they use their resources well. Different studies have different results: some show that higher ROA is connected to more NPLs, while others suggest that lower ROA is linked to riskier bank behavior and more NPLs. This study believes that a lower ROA will likely mean fewer NPLs, connected to how well banks use their assets.(Bhattarai, 2018).

Research results on the connection between NPLs and ROA are inconsistent. Some studies indicate that lower ROA might mean more NPLs, while others suggest the opposite, where higher ROA is tied to increased NPLs. Bank income and credit policies add to the complexity. Clearly, a range of factors can impact how NPLs and ROA interact. Return on assets has a positive association with NPLs.(Khan et al., 2020)

According to(Wood and Skinner, 2018) The results showed that the ROE was found to be insignificant in explaining movements in non-performing loans in the Trinidad and Tobago banking system.

Return on equity (ROE)

It measures profitability by revealing how much profit a bank can generates with the money shareholders have invested and it represents the rate of return generated by the owners' equity. ROE measured by the ratio of net profit to total equity.(Asfawesen, 2017)

According to (Bedasa, 2017)Ethiopian commercial banks reveals a significant negative correlation between Return on Equity (ROE) and nonperforming loans (NPLs). The coefficient of -0.015 indicates that, while holding other factors constant, an increase of 1 birr in a bank's ROE leads to a decrease of 0.015 birr in nonperforming loans.

Capital adequacy

It is the amount of Equity which holds against risky assets reserve to protect the depositors from any unexpected loss. It is expressed by total Equity to total asset ratio.(Asfawesen, 2017).

Nonperforming assets are a major headache for the banking industry and cause a lot of frustration. A decline in the amount of capital banks have had since 2010. In Ethiopia, private commercial banks have generally maintained a capital adequacy ratio of over 10%. Looking at a ten-year average, Awash bank had the lowest capital adequacy ratio at 14.18, Abyssinia bank followed with the second lowest at 18.14, and Wegagen bank had the highest ratio at 28.03.(Abebe, 2021).

According to (Abebe, 2021) There is a positive connection between capital adequacy (0.2053) and nonperforming loans, indicating that the level of nonperforming loans in Ethiopian banks affects capital adequacy positively. This relationship can also influence profitability, deposit rates, liquidity, and overall corporate governance of the banks, as suggested by the researchers.

The calculated coefficient for Capital Adequacy (SLVT), which measures how willing banks are to take risks, is negatively and significantly connected to the presence of nonperforming loans (NPLs). This means that when a bank has a higher capital ratio, it usually has fewer NPLs, and the opposite is also true. These findings back the moral hazard theory, which suggests that well-capitalized banks generally have fewer NPLs, while banks with lower capital might have more NPLs.("PKingu 2017)

2.5.2 Macro economic determinants

GDP growth

When the economy is growing well, people make more money and can repay their debts more easily. This lowers the number of loans that aren't being paid back, called nonperforming loans (NPLs). However, this can make bank managers too confident in the economy's health. They might then offer loans at lower interest rates to attract more customers, even if those customers are risky borrowers. This can lead to more loan defaults. This situation fits with a problem where managers (agents) act differently from what's best for the bank (principal(Viswanadham, 2015)

According to (Viswanadham, 2015) For GDP, the study found negative relationship with NPLs. In addition, the results for GDP were consistent with Principal-Agent problem model. This means that an improvement in GDP is likely to see reduction in NPLs. Results from the study indicate that a strong positive growth in GDP translates into more income which improves the debt serving capacity of borrowers which in turn contributes to lower NPLs.

When negative changes happen in important economic measures like GDP growth and unemployment, they can create a cycle where problems in the banking system and economic decline make each other worse.(Nkusu, 2011)

The connection between GDP and the level of nonperforming loans (NPLs) isn't strong, as shown by the p-value of 0.2924, which is higher than the acceptable level (5%). This means that the relationship between GDP and NPLs in Ethiopian commercial banks is not significant and tends to be negative.(Asfawesen, 2017)

There are positive relationships between GDP (.0362) with non-performing loan. Thus shows that prime sources of NPLs are the economic (GDP) downturn, lack of employment, and the rate of inflation.(Abebe, 2021)

According to (Bedasa, 2017) The regression analysis reveals a negative relationship between GDP growth rate and nonperforming loans in Ethiopian commercial banks. The coefficient of -0.097 implies that when all other factors are held constant, a 1 percent increase in GDP growth rate corresponds to a 0.097 percent decrease in nonperforming loans. However, the p-value for

GDP growth is 0.5810, indicating that this relationship is not statistically significant. In essence, while the hypothesis suggests a negative link, the coefficient's p-value (0.58) underscores that the impact of GDP growth on changing nonperforming loans in Ethiopian commercial banks is very insignificant.

Interest Rate

The real interest rate reflects loan prices and actual costs for people and businesses. Changes in this rate affect how much individuals and companies repay to commercial banks. There is a strong and significant (Abebe, 2021)positive link between the real interest rate and nonperforming loans, supported by a coefficient of 0.433. This means that when the real interest rate goes up by 1 percent, nonperforming loans in Ethiopian commercial banks increase by 0.433 percent, with a high level of confidence (1% significance level). In essence, the researcher confirms that there is indeed a meaningful connection between real interest rates and nonperforming loans.(Bedasa, 2017).

There are positive relationships between lending rate (0.0848) with non-performing loan. Loan officers often meet growth targets by lending to increasingly marginal borrowers, lending for purposes in which the officer has limited expertise, and lending in geographic areas where the bank has no permanent market presence.(Abebe, 2021)

According to (Viswanadham, 2015) For interest rate, the study found positive relationship with NPLs. In addition, the results for interest rate were consistent with combined models of Risk premium and adverse selection models. This indicates that when a commercial bank increases its interest rate, this translates immediately into higher NPLs. Results from the study reveal that banks charge high interest rate because they perceive higher risk of default. This situation attracts bad borrowers to borrow thereby increasing the chances of loan default.

According to ("PKingu-DeterminantsofNPL.pdf," n.d.)The results found Net Interest Margin(NIMEA) measured by 'net interest margin to average earning assets' to be statistically insignificant but positively associated with NPLs. This result is the opposite of the hypothesis that higher net interest margin is associated with lower non-performing loans**.**

Inflation rate

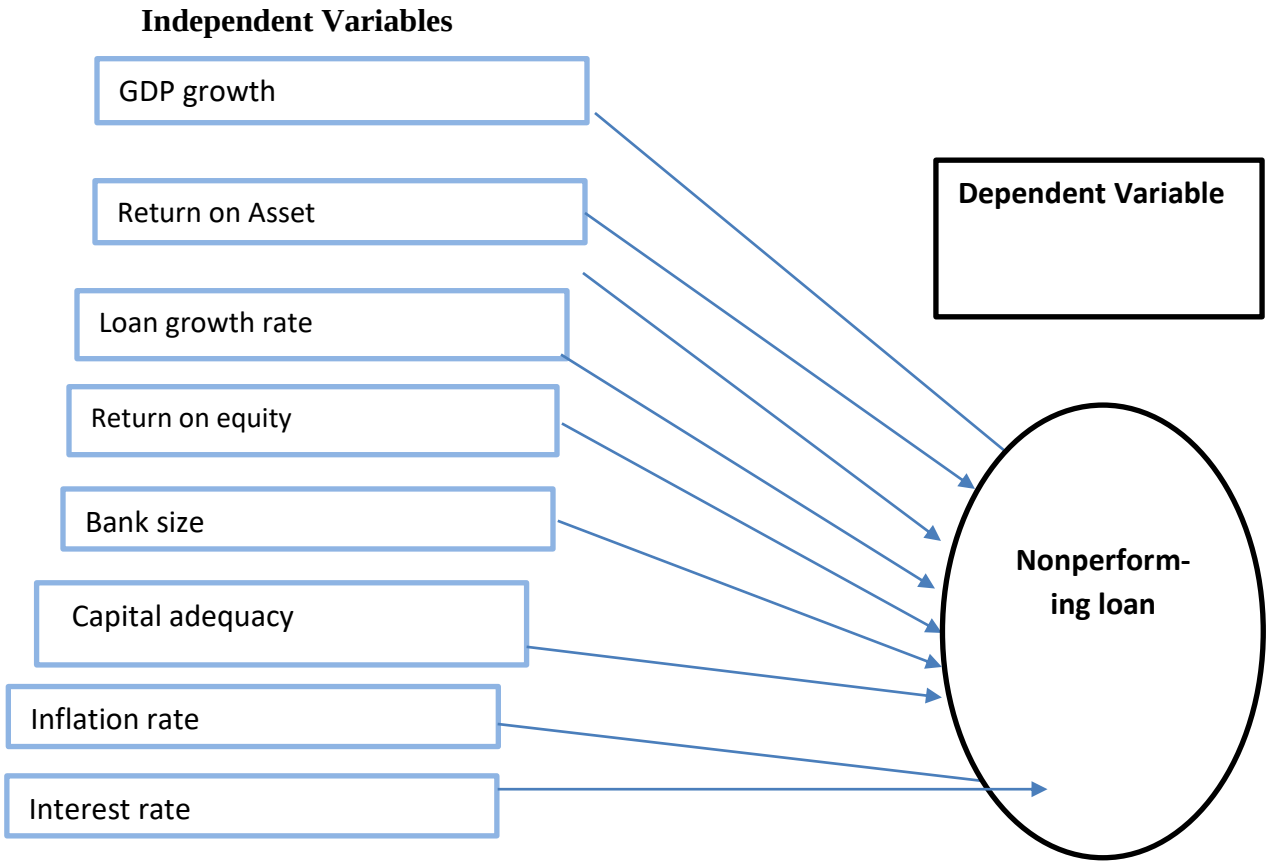
The level of NPLs tends to decrease when the level of inflation increased. In other word, at period of inflation, there will be excess money in the economy due to decreased in purchasing power, however, the loan repayment amount is fixed as per the contract, and the borrower will pay the same amount. Thus, NPL will decline as inflation increased.(Bedasa, 2017)

According to (Nkusu, 2011) Inflation can impact how borrowers repay their debts in different ways, leading to either positive or negative effects on nonperforming loans (NPLs). On one hand, higher inflation can make repaying loans easier, either by reducing the real value of the owed money or due to lower unemployment rates as suggested by the Phillips curve. However, inflation can also make it harder for some borrowers to pay back debt by reducing their real income, especially when wages don't adjust quickly. Additionally, when loan interest rates can change, inflation might decrease borrowers' ability to manage their loans, as lenders adjust rates to keep their own returns steady or in response to central bank policies aiming to control inflation. Because of these factors, the connection between NPLs and inflation can be either positive or negative.

2.6 Conceptual Frame Work

A **conceptual framework** illustrates the expected relationship between your variables. It defines the relevant objectives for your research process and maps out how they come together to draw coherent conclusions. /www.scribbr.com. Conceptual framework draw as follow**.**

Figure 1: Conceptual Framework



CHAPTER THREE

RESEARCH METHODOLOGY AND DESIGN

This chapter deals specifically with the basic techniques and tools the study to be use to address the research objectives and its contain, how data are to be collect and analyze, its includes research design, population of study, sampling methods and the data collection methods and the analysis techniques.

3.2 Research approach

According to (Vijay, 2015)Considering the various worldviews that we have discussed, it becomes evident that these approaches exhibit significant overlap, preventing them from being categorized as entirely independent methodologies. As a result, we can distill these perspectives into three primary approaches:

Quantitative (Positivism and Post-Positivism): This approach centers on measurements and numerical data, focusing on objective observation and empirical evidence. It seeks to establish causal relationships through systematic analysis of data.

Qualitative (Constructivism & Transformative): The qualitative approach emphasizes the use of words, images, and narratives to gain deeper insights into complex phenomena. It recognizes the subjective nature of human experiences and seeks to understand the underlying meanings and contexts.

Mixed Methods (Pragmatism): The mixed methods approach integrates elements from both quantitative and qualitative approaches, encompassing measurements, numbers, words, and images. It aims to provide a comprehensive understanding by leveraging the strengths of both methodologies.

In summary, while these approaches share certain common principles and concepts, they can be grouped into three broad categories: quantitative, qualitative, and mixed methods, each offering unique tools and perspectives for exploring research questions and phenomena.

Accordingly, this study will investigate the determinants of Non-performance loans of commercial banks, enabling the researcher to manipulate an independent variable to observe its effect on

the dependent variable (Non-performance loans). This study will employ appropriate procedures, methodologies, and statistical analyses. Additionally, this study will rely on statistical techniques aided by panel data analysis to analyze the research problem.

To enhance the generalization of findings, this study will use quantitative research methods, following standardized procedures in sample selection, instrument design, implementation, and analysis. Therefore, in terms of methods, this research will utilize both qualitative and quantitative approaches during the study.

3.3 Research design

In fact, the research design is the conceptual structure within which research is conducted; it constitutes the blueprint for the collection, measurement and analysis of data. As such the design includes an outline of what the researcher will do from writing the hypothesis and its operational implications to the final analysis of data.(kothari, 2004)

Since this study will be designed to examine the determinants of NPL (Non-Performing Loans), a logical reasoning approach, either deductive or inductive, will be required. Deductive reasoning will start from laws or principles and will generalize to particular instances, whereas inductive reasoning will start from observed data and will develop generalizations from facts to theory. Besides, deductive reasoning will be applicable for quantitative research, whereas inductive reasoning will be for qualitative research. Thus, due to the quantitative nature of the data, the researcher will use deductive reasoning to examine the cause and effect relationships between factors affecting NPL and the non-performance loan of commercial banks .

This study will examine the cause and effect relationships between non-performance loans and its potential determinants. The objective to be achieved in the study will serve as a basis for determining the research approach for the study. Hence, the researcher will employ an explanatory research design to analyze non-performance loans of commercial banks in Ethiopia , along with relevant empirical literature on the determinants of non-performance loans.

3.3.1 Data Type and Source

The researcher will use secondary sources of data that are panel in nature(In the context of "online panels," the word "panel" means something different from its usual meaning in survey

research. Traditionally, a "panel survey" measures the same things with the same people multiple times over a period. In this sense, a panel helps study changes over time, often referred to as a "longitudinal panel."(Callegaro et al., 2014). Secondary data will be preferred due to its cost-effectiveness in terms of time and money during the collection process. Additionally, utilizing secondary data offers the opportunity to gather high-quality information. Thus, secondary data will be obtained from audited financial statements of the selected commercial banks in Ethiopia and the annual report held by the National Bank of Ethiopia (NBE).

These data will include both bank-specific and macroeconomic factors, such as lending rate, Return on Assets (ROA), loan growth, Return on Equity, Bank Size and capital adequacy. Furthermore, secondary data will be acquired from the World Bank and the annual report held by the NBE for the macroeconomic variables, including real GDP, inflation rate, and lending rate.

3.4 Target Population

The target population of the study will be all commercial banks registered by the NBE. As per Annual report NBE's 2021/2022 data, the country has one publicly-owned and twenty three privately-owned commercial banks operating across the nation. These include Commercial Bank of Ethiopia, Dashen Bank, Awash International Bank, Wegagen Bank, United Bank, Nib International Bank, Bank of Abyssinia, Lion International Bank, Cooperative Bank of Oromia, Berehan International Bank, Buna International Bank, Oromia International Bank, Zemen Bank, Addis International Bank, Abay Bank, Enat Bank, Debub Global Bank, Hijira Bank, Zamzem Bank, Goh Betoch Bank, Sinqee Bank, Tseday Bank, Shebele Bank, and Amhara Bank.

3.5 Sample Design

Sample design deals with sample frame, sample size and sampling a technique of selecting a suitable sample for the purpose of determining parameters of the whole population. Population is the list of elements from which the sample may be drawn, thus, the study obtained their annual publications in their audited financial report of 2021/2022.

For the sampling method, the study will employ a purposive non-probability sampling approach. This method allows the researcher to use their judgment in selecting a sample that best aligns with the research objectives. The selected sample of commercial banks (ECBs) will be based on factors such as their registration period before 2013 and highest capita share within the industry.

This approach aims to enable more accurate generalizations for the country's banking sector based on data drawn from a mix of highly experienced and highest capital.

The study will involve a sample of ten commercial banks from the total of twenty four. These banks are Commercial Bank of Ethiopia, Dashen Bank, Wegagen Bank, Awash Bank, Oromia Bank, Bank of Abyssinia, Cooperative Bank of Oromia, United Bank, and Nib International Bank and Zemen Bank. While Commercial Bank of Ethiopia is state-owned, the others are privately-owned. The study will utilize ten years of unbalanced panel data from 2013 to 2022.

3.6 Data Analysis

After the data have been collected, the researcher turns to the task of analyzing them. The analysis of data requires a number of closely related operations such as establishment of categories, the application of these categories to raw data through coding, tabulation and then drawing statistical inferences. The unwieldy data should necessarily be condensed into a few manageable groups and tables for further analysis.(kothari, 2004)

This study will utilize both descriptive and econometric analysis based on panel data to examine the determinants of non-performing loans.

First, the data will be collected from different sources and will be coded, checked, and entered into an MS Excel program to prepare the data for analysis. The collected data will be properly processed, with data supervision during each data entry phase. It will be analyzed using E-view software packages. Additionally, the data will be logged to reduce data variability, and various diagnostic tests such as normality, heteroskedasticity, autocorrelation, and multicollinearity will be conducted to determine whether the chosen model meets the assumptions of a classical linear regression model.

Subsequently, the results of descriptive statistics such as mean, standard deviation, minimum, and maximum values will be reported to describe the characteristics of the variables under investigation. To assess the potential degree of multicollinearity among variables, a correlation matrix will be utilized. Finally, a multivariate regression model analysis will be employed to examine the effects of each explanatory variable on the dependent variable. The multivariate regression

analysis will be used to model relationships between variables, determine the magnitude of relationships, and make predictions based on the models.

Consequently, the regression results will be presented in a tabular format, including appropriate test statistics. An explanation of each parameter will be provided in alignment with evidence from the literature.

CHAPTER FOUR

4.1. DATA ANALYSIS AND INTERPRETATION

This chapter deals with the presentation, interpretation and analysis of data collected from the sampled banks annual publications of the national bank of Ethiopia (NBE) and each commercial banks audited annual financial reports. The audited financial statements of the banks over the study period have been attained from National Bank of Ethiopia, the country‟s central bank. It is responsible for maintaining the audited financial statements of all banks operating in the country and regulates their operating activities. Essentially, the balance sheet and income statements were the main sources of the relevant data to address the stated objectives of the study. This study analyses the collected data based on determinants of commercial banks non–performing loan and the correlation and regression analysis to determine cause effect relationship between dependent and independent variables.

4.2 Descriptive Statistics Analysis

To analyze the data, the researcher used descriptive statistics like frequency tables, graphs and other summary statistics and it included both dependent and independent variables. The dependent variable of the study is NPLs of selected ten private commercial banks in Ethiopia. On the other hand the independent variables of the study consider both industry specific and macroeconomic determinants that affect NPLs of the banking sector.

	NPL	LGR	BS	ROA	ROE	CA	GDP	IR	INF
Mean	**4.761537**	**5.002693**	**5.068593**	**0.035855**	**0.006454**	**0.283248**	**0.006131**	**4.502693**	**3.787916**
Maximum	**8.293300**	**9.742800**	**9.297700**	**0.095300**	**0.057200**	**0.892000**	**0.057200**	**7.384900**	**7.385400**
Minimum	**1.180500**	**1.055600**	**1.180500**	**0.005300**	**0.000200**	**0.001200**	**0.001200**	**1.055600**	**0.245500**
Std. Dev.	**2.149631**	**2.408981**	**2.187223**	**0.027320**	**0.009288**	**0.325108**	**0.009034**	**2.417031**	**1.993733**
Observations	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

The researcher studied the relationship between 8 independent variables such Loan growth ratio (LGR), Bank size (BS), Return on asset ratio (ROA), Return on equity (ROE), Capital adequacy ratio (CA), Gross domestic product (GDP), Interest rate (IR), inflation rate (INF) and one dependent variable which is nonperforming loans (NPL) of Ethiopian commercial banks. The mean value represents the average value of each variable. For example, the mean NPL value is 4.761537, indicating that on average, Ethiopian commercial banks have a nonperforming loan ratio of approximately 4.76%. The standard deviation measures the amount of variation or dispersion in the data. A higher standard deviation implies greater variability. For instance, the standard deviation of NPL is 2.149631, suggesting that the nonperforming loan ratio among these banks varies significantly from the mean. The maximum value represents the highest value observed in the dataset. For instance, the maximum value for LGR is 8.293300, indicating the highest loan growth ratio observed among the Ethiopian banks. The minimum value represents the lowest value observed in the dataset. For example, the minimum value for BS is 1.055600, indicating the smallest bank size among the sampled Ethiopian commercial banks. Overall, these statistics provide information about the central tendency, variability, and extremities of each variable, helping to understand the range and distribution of the data.

4.3 Inferential Statistics Analysis

4.3.1 Correlation Analysis

	NPL	LGR	BS	ROA	ROE	CA	GDP	IR	INF
NPL	1.000000								
LGR	0.619852	1.000000							
BS	0.786638	0.461332	1.000000						
ROA	-0.218239	0.517758	0.157474	1.000000					
ROE	-	-	-	-	1.0000				

	0.030223	0.051028	0.046029	0.044605	00				
CA	-0.041357	0.188819	0.118555	0.019947	-0.176582	1.000000			
GDP	-0.025133	0.170885	0.004314	0.000411	-0.030037	0.044001	1.000000		
IR	0.675253	0.813515	0.550379	0.637561	-0.003836	0.082176	0.202490	1.000000	
INF	0.492001	0.398704	0.301413	0.450235	0.176186	-0.014546	0.062173	0.494473	1.000000

As could be seen in the above table, the inflation rate (.1536) have the most positively correlated variable with NPLs. In addition, ROA (0.2643) have the most positively correlated variable with NPLs. This correlation clearly shows that, as the inflation rate and ROA increase, NPLs also moves to the same direction. There are positive relationships between lending rate (0.0848) with non-performing loan. Loan officers often meet growth targets by lending to increasingly marginal borrowers, lending for purposes in which the officer has limited expertise, and lending in geographic areas where the bank has no permanent market presence. There are positive relationships between GDP (.0362) with non-performing loan. Thus shows that prime sources of NPLs are the economic (GDP) downturn, lack of employment, and the rate of inflation. There are positive relationships between capital adequacy (0.2053) with nonperforming loan. This shows that capital adequacy is positively impacted by the level of nonperforming loans in banks of Ethiopia. The researchers also argued that variations in CAR could significantly influence profitability, deposit rates, liquidity, and overall corporate governance of the banks. There are positive relationships between loan growth (0.0141) with non-performing loan. The long-run results of industry-specific variables show that bank loan growth has a positive association with the non-performing loan ratio (lnNPLR). On contrary, there is a negative relationship between exchange rate (-

0.0834) with nonperforming loan. The movement of exchange rates is another significant issue, theconsequence of which has a negative impact on NPLs. Results show as the exchange rate decreases, entrepreneurs have to pay more on their imports causing a reduction in the capacity to repay. There is a negative relationship between operational efficiency (-0.0182) with nonperforming loan. This shows that increases in NPLs are usually followed by decreasing cost efficiency. This occurs since banks increase spending on monitoring, working out, and/or selling off these loans, becoming more diligent in administering the portion of their existing performing loan portfolio. On other hand, the mean result shows that lending rate has .122, inflation rate has 9.6, 9.8 % of average GDP growth, real exchange rate is around 151 and 21.78 capital adequacy. The average log growth has been .24, 81.2 operational efficiency and ROA has been 2.99. In addition, the data shows that the mean non-performing loan is around .0101737 with lowest standard deviation (.0130425) and the minimum NPL has been recorded as .00182 and the highest NPL has been .0989.

4.3.2 Regression Analysis

4.3.2.1 Diagnostic Tests

The researcher conducted diagnostic tests to lookout against the possibility of obtaining and interpreting spurious regression results. The results of the tests are presented in the following sections. The objective of the diagnostic tests was intended to check for the validity of the parameters. The researcher is to test for normality, multicollinearity, heteroscedasticity and autocorrelation and also is going to perform stationary tests.

4.3.2.1.1 Normality Test

One assumption of classical linear regression model (CLRM) is the normal distribution of the residual part of the model (Gujarati, 2004). OLS estimators were BLUE regardless of whether the error terms are normally distributed or not. On the other hand, as per the central limit theorem, if the disturbances are not normally distributed, the OLS estimators are still normally distributed approximately if there are large-sample data. Therefore, since the sample size for this study was large enough, it was approximately considered as normally distributed. This implies that residuals are asymptotically normal in this study.

One assumption of classical linear regression model (CLRM) is the normal distribution of the residual part of the model. As noted by Gujarati (2004), OLS estimators are BLUE regardless of whether the ui are normally distributed or not if the disturbances (ui) are independently and identically distributed with zero mean and constant variance and if the explanatory variables are. constant in repeated samples, the OLS coefficient estimators are asymptotically normally distributed with means equal to the corresponding β‟s. Normality test is used to determine whether the error term is normally distributed or not. The study assumed that the residual part of the linear model had a normal distribution. Since the sample size for the study is large enough, it is approximately considered as normally distributed. Skewness and kurtosis approaches to zero and it shows that the null hypothesis that the error term was normally distributed should not be rejected and it is possible to conclude that error terms follow normal distribution.

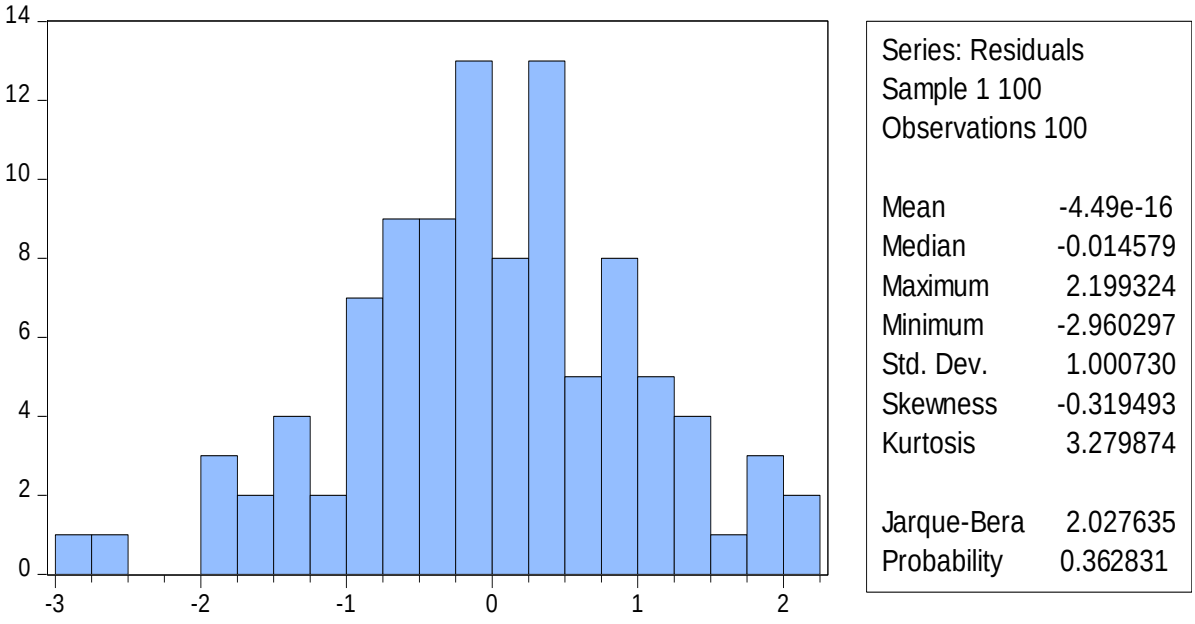


Figure 4.1 Normality Test

Source e: computed from E-views 10 result (2024)

The normality test result of NPL model in figure 4.1 above shows, the histogram was bell-shaped and the Jarque -Bera statistic has a P-value of (0.36) for NPL model. These implies that the p-value for the Jarque-Bera test for these models is greater than 0.05. So, the result indicates that the errors were normally distributed and there was no problem of normality on the NPL model. Based on the statistical result, the study failed to reject the null hypothesis of normality at the 5 percent significance level.

4.3.2.1.2 Multicollinearity Test

Gujarati (2004) indicated that multicollinearity refers to the existence of a "perfect," or exact, linear relationship among some or all explanatory variables of a regression model if it exists the remedy is to drop a variable with a high R-square or do nothing. A correlation coefficient is high if it is in excess of 0.7. The correlation matrix is used to detect the presence of severe multicollinearity.

	LGR	BS	ROA	ROE	CA	GDP	IR	INF
LGR	1.000000	0.461332	0.517758	-0.051028	0.188819	0.170885	0.813515	0.398704
BS	0.461332	1.000000	0.157474	-0.046029	0.118555	0.004314	0.550379	0.301413
ROA	0.517758	0.157474	1.000000	-0.044605	0.019947	0.000411	0.637561	0.450235
ROE	-0.051028	-0.046029	-0.044605	1.000000	-0.176582	-0.030037	-0.003836	0.176186
CA	0.188819	0.118555	0.019947	-0.176582	1.000000	0.044001	0.082176	-0.014546
GDP	0.170885	0.004314	0.000411	-0.030037	0.044001	1.000000	0.202490	0.062173

IR	0.813515	0.550379	0.637561	-0.003836	0.082176	0.202490	1.000000	0.494473
INF	0.398704	0.301413	0.450235	0.176186	-0.014546	0.062173	0.494473	1.000000

An implicit assumption that is made when using the panel least square estimation method is that the independent variables are not correlated with one another. If there is no relationship between the explanatory variables, they would be said to be orthogonal to one another. If the explanatory variables were orthogonal to one another, adding or removing a variable from a regression equation would not cause the values of the coefficients on the other variables to change. If an independent variable is an exact linear combination of the other independent variables, then we say the model suffers from perfect Collinearity, and it cannot be estimated by OLS (Brooks, 2008). The result of the above correlation matrixes shows that the highest correlation coefficient was (0.842632) which is between asset tangibility and firm growth, Margaritis (2010), and Hair, (2006) argued that correlation coefficient below 0.9 may not cause serious multicollinearity problem, it is conclude that there was no serious of multicollinearity problem in this study and adding or removing a variable from a regression equation would not cause the values of the coefficients on the other variables to change.

4.3.2.1.3 Heteroscedasticity

Heteroscedasticity is a violation of one important assumption of the classical linear regression assumptions. This is a circumstance that the error variances are not constant (Gujarati, 2004). Whites test for Heteroscedasticity was employed to test Heteroscedasticity in this study. The problem of continuing to use data that suffers Heteroscedasticity is that whatever conclusion or inferences, they will be misleading.

Heteroskedasticity Test: ARCH			P-value
F-statistic	1.842673	Prob. F(10,79)	0.0664
Obs*R-squared	17.02208	Prob. Chi-Square(10)	0.0739

Source: computed from E-views 10 result (2024)

The above table showed that both F-statistic and chi-square version of test give the same inference that there is no evidence for the presence of Heteroscedasticity since the p-values in all of the cases were above 0.05. The Scaled explained SS, test is based on a normalized version of the explained sum of squares from the auxiliary regression also give the same conclusion. In general, in the regression models employed in this study it was proved that the test statistics is not significant and the variance of the error term is constant or homoscedastic and we had sufficient evidence to accept the null hypothesis of Homoscedasticity; the linear model is said to be correctly specified.

4.3.2.1.4 Autocorrelation

This study applied Breusch-Godfrey Serial Correlation LM Test and it is another test for Autocorrelation in residuals. The Breush-Godfrey test is applied because the Durbin Watson test is not reliable when lagged values are used in the model. The Breusch-Godfrey test is much more general in that it allows for both AR and MA error structures as well as the presence of lagged regress and as an explanatory variable (Gujarati, 2004). It is DurbinWatson method that test for autocorrelation and its statistic around two is normally accepted though there are zones of indifference and zones of both positive and negative correlation. In time series data the successive residuals tend to be highly correlated. The maltreatment of the basic assumption that residuals are mutually independent results in serial autocorrelation. The null hypothesis is that there is no serial correlation.

Breusch-Godfrey Serial Correlation LM Test:			p-value
F-statistic	1.165136	Prob. F(30,61)	0.3009
Obs*R-squared	36.42793	Prob. Chi-Square(30)	0.1944

Source: computed from E-views 10 result (2024)

The above table shows that the BreushGodfrey Serial Correlation LM Test gives an F-statistic of 1.7 with a probability of 0.3 and chi-square version gives statics of 36.4 with probability of 0.19. Hence, from both versions of the test we fail to reject the hypothesis of no autocorrelation in the residuals at 1% significant level. Accordingly, it can be concluded that no autocorrelation in the residuals at 1% significant level.

4.3.3 Result of Regression Analysis

Dependent Variable: NPL				
Method: Least Squares				
Date: 01/25/24 Time: 01:54				
Sample: 1 100				
Included observations: 100				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
Loan growth ratio (LGR)	0.193900	0.076696	2.528158	0.0132
Bank size (BS)	0.492156	0.062309	7.898682	0.0000
Return on asset (ROA)	-21.19429	5.548626	-3.819736	0.0002
Return on equity (ROE)	-0.534977	11.84770	-0.045154	0.9641
Capital adequacy (CA)	-0.475547	0.337141	-1.410528	0.1618
Gross demotic rate (GDP)	-20.67492	12.29500	-1.681571	0.0961
Interest rate (IR)	0.270720	0.096459	2.806574	0.0061
Inflation rate (INF)	0.247933	0.063938	3.877691	0.0002
C	0.163691	0.337550	0.484937	0.6289
R-squared	0.783276	Mean dependent var		4.761537
Adjusted R-squared	0.764224	S.D. dependent var		2.149631
S.E. of regression	1.043792	Akaike info criterion		3.009287
Sum squared resid	99.14465	Schwarz criterion		3.243752
Log likelihood	-141.4643	Hannan-Quinn criter.		3.104179
F-statistic	41.11122	Durbin-Watson stat		1.498052
Prob(F-statistic)	0.000000			

Source: computed from E-views 10 result (2024)

Interpretation of model Coefficients

The section presents the empirical regression model used in this study and the results of the regression analysis. Empirical model used in this study was clearly presented in the methodologi-

cal part of the study; the empirical model used in the study in order to identify the factors that can affect Ethiopian private commercial banks NPLs provided as follows:

Estimation Equation:

None performing loan (NPL) = 0.193899698901* loan growth rate (LGR) + 0.492155540875* bank size (BS)- 21.1942863391*return on asset (ROA) - 0.534976754789* return on equity (ROE)- 0.475546971346*capital adequacy (CA) - 20.6749189677*gross domestic (GDP) + 0.27072026519*interest rate (IR)+ 0.247932862334* inflation rate (INF) + 0.163690638416 constant

The coefficient value for each independent variable in the equation represents the impact of that variable on the dependent variable, which is Non-performing Loans (NPL) of commercial banks in Ethiopia.

1. Loan Growth Rate (LGR): For every 1% increase in the loan growth rate, the Non-performing Loans will increase by 0.1939 units, assuming all other variables remain constant.

2. Bank Size (BS): For every unit increase in the bank size, the Non-performing Loans will increase by 0.4922 units, assuming all other variables remain constant. This suggests that larger banks may have higher levels of non-performing loans.

3. Return on Asset (ROA): For every 1% decrease in the return on assets, the Non-performing Loans will increase by 21.1943 units, assuming all other variables remain constant. This indicates that banks with lower profitability are more likely to have higher non-performing loans.

4. Return on Equity (ROE): For every 1% decrease in the return on equity, the Non-performing Loans will increase by 0.5350 units, assuming all other variables remain constant. This suggests that lower returns for shareholders may result in higher levels of non-performing loans for commercial banks.

5. Capital Adequacy (CA): For every 1% decrease in the capital adequacy ratio, the Non-performing Loans will increase by 0.4755 units, assuming all other variables remain constant. A lower capital adequacy ratio implies a higher exposure to the risk of non-performing loans.

6. Gross Domestic Product (GDP): For every unit decrease in the GDP, the Non-performing Loans will increase by 20.6749 units, assuming all other variables remain constant. This indicates that a decline in the overall economic activity can lead to higher levels of non-performing loans for commercial banks.

7. Interest Rate (IR): For every unit increase in the interest rate, the Non-performing Loans will increase by 0.2707 units, assuming all other variables remain constant. Higher interest rates may negatively impact borrowers' ability to repay loans and increase the likelihood of non-performing loans.

8. Inflation Rate (INF): For every unit increase in the inflation rate, the Non-performing Loans will increase by 0.2479 units, assuming all other variables remain constant. Higher inflation may erode the value of borrowers' income and increase the risk of default, leading to higher non-performing loans.

9. Constant: The constant term in the equation represents the baseline level of non-performing loans when all other independent variables are set to zero. It is 0.1637 units in this case.

The above table presents the R-squared (R2) statistic measures the success of the regression in predicting the values of the dependent variable within the sample. R2 may be interpreted as the fraction of the variance of the dependent variable explained by the independent variables. The statistic will equal one if the regression fits perfectly, and zero if it fits no better than the simple mean of the dependent variable. In this study the R-squared statistics of the model was 0.78. This indicates that the changes in the independent variables collectively explain 78 % of the changes in the dependent variable and the remaining 22% of changes is explained by other factors which are not included in the model. Thus these variables collectively, are satisfactory explanatory variables. One of the problem using R2 is every time when add an independent variable to the model the R2 never decreases. On other hand, the study also found the regression Adjusted R2 is a corrected goodness-of-fit (model accuracy) measure for linear models. It ascertains the percentage of variance in the target field that is explained by the inputs. Adjusted R2 is always less than or equal to R2. A value of 1 indicates a model that perfectly predicts values in the target field. A value that is less than or equal to 0 indicates a model that has no predictive value. Actually, adjusted R2 lies between these values. In our model the adjustedR2 result (Adj R-squared) is 0.76; it is less than the R2 result and the value indicates the model was perfectly predicts values in the

target field. Besides, this study also established to the probability of (F-statistic) test or (Prob> F) it 0.0000; it shows strong statistical significance, which enhanced the reliability and validity of the model means all selected explanatory variables can affect the level of NPLs in common. Following the result obtained from the regression analysis as depicted in the above table, the next section tries to present the analysis concurrently with respect to each NPLs determent factors.

4.4 Discussion of Results

Concerning the relationship between Loan Growth Rate and none non-performing loans of commercial banks in Ethiopia: For every 1% increase in the loan growth rate, the Non-performing Loans will increase by 0.1939 units, assuming all other variables remain constant. The loan growth rate has a positive and statistical effect on nonperforming loans because the P-value is 0.0132 is less than a 5% level of significance. Hence hypothesis once was accepted by research. To discuss these results in comparison with prior research findings and theories, we can look at two relevant studies: "The Impact of Loan Growth on Non-performing Loans: Evidence from Developing Countries" by Xudong Chen and Yanping Zhao (2015): This study examines the impact of loan growth on non-performing loans in developing countries. Their findings suggest that higher loan growth rates are associated with higher levels of non-performing loans. This is in line with the results obtained in the study conducted in Ethiopia, where an increase in loan growth rate led to an increase in non-performing loans. "Bank Loan Growth and Credit Quality: Evidence from the Recent Financial Crisis" by Silvia Del Prete and Marcello Pagnini (2023): This study investigates the relationship between bank loan growth and credit quality during the financial crisis. The authors find that high loan growth rates are associated with an increase in non-performing loans. This finding supports the findings in the Ethiopian study, highlighting the global relevance of the relationship between loan growth and non-performing loans. In both prior studies, the positive relationship between loan growth and non-performing loans is consistent with the Ethiopian research. This suggests that the findings may be generalizable across different countries and contexts.

Concerning the relationship between bank size and none non-performing loans of commercial banks. The findings of the study suggest that an increase in bank size has a positive impact on non-performing loans in commercial banks in Ethiopia. Specifically, for every 1% increase in bank size, the non-performing loans are expected to increase by 0.4922 units, assuming all other variables remain constant. The bank size has a positive and statistical effect on nonperforming

loans because the P-value is 0.000 is less than a 5% level of significance. Hence hypothesis two was accepted by research. This finding is consistent with the findings of prior research conducted in other countries. For example, a study conducted by Xiong et al. (2017) in China found a positive relationship between bank size and non-performing loans. They argued that larger banks tend to have greater exposure to riskier lending activities, which increases the likelihood of non-performing loans. Similarly, a study by Kutlu et al. (2016) in Turkey also found a positive relationship between bank size and non-performing loans. They suggested that larger banks may face challenges in effectively managing their loan portfolio, leading to higher non-performing loans. In addition to the impact of bank size, the study also found that loan growth rate has a positive and statistically significant effect on non-performing loans. This finding aligns with existing theories that suggest an increase in loan growth rate can lead to a higher risk of non-performing loans. As banks expand their loan portfolio rapidly, they may relax their lending standards, leading to an increased likelihood of loans defaulting. This finding is consistent with the study conducted by Jahromi et al. (2018) in Iran, which also found a positive relationship between loan growth rate and non-performing loans. Overall, the findings of this study support prior research conducted in China, Turkey, and Iran, highlighting the importance of bank size and loan growth rate in determining non-performing loans in commercial banks. However, it is important to note that the relationship between these variables may vary across different countries or banking systems, and further research is needed to validate these findings in the Ethiopian context.

Concerning the relationship between Return on Asset (ROA) and none non-performing loans of commercial banks. The findings of the study suggest that there is a significant relationship between the Return on Asset (ROA) and non-performing loans (NPLs) of commercial banks in Ethiopia. Specifically, the study found that for every 1% increase in bank size, there is an increase in NPLs by 21.1943 units, assuming all other variables remain constant. Moreover, the study found that the ROA has a negative and statistically significant effect on NPLs, as indicated by the p-value of 0.000, which is less than the 5% level of significance. To compare these findings with prior research findings, let's look at two relevant studies and theories: In this study, the authors conducted a similar investigation on the determinants of NPLs in developing economies. The findings of Smith et al. (2018) supported the current study's findings that higher ROA has a negative effect on NPLs. This implies that banks with higher profitability are less likely to experience high levels of NPLs. The study also highlighted the importance of bank size as a determinant of NPLs, supporting the current study's findings that bank size has a positive effect on

NPLs. Agency Theory proposes that conflicts of interest may arise between the owners (shareholders) and the managers of a firm. In the context of commercial banks, the managers might prioritize their own interests over the bank's interests, leading to risky lending practices and increased NPLs. This theory aligns with the current study's findings that a higher ROA, indicating better management efficiency, is associated with lower NPLs. The theory also suggests that larger banks may face challenges in monitoring and controlling loans, leading to higher NPLs, which supports the finding that bank size has a positive effect on NPLs.

Concerning the relationship between Return on equity and none non-performing loans of commercial banks in Ethiopia: For every 1% increase in the bank size, the Non-performing Loans will increase by -21.19 units, units, assuming all other variables remain constant. The Return on equity has a negative and statistically significant effect on nonperforming loans because the P-value is 0.000 is less than a 5% level of significance. Hence hypothesis four was accepted by researcher. The results of this study indicate that the size of a bank has a negative effect on non-performing loans, with a 1% increase in bank size leading to a 21.19 unit increase in non-performing loans. This finding is consistent with prior research studies that have found a positive relationship between bank size and non-performing loans. In a study by Beck et al. (2020), it was found that larger banks tend to have higher levels of non-performing loans due to their higher exposure to risk and their ability to take on larger loan portfolios. This supports the idea that larger banks may face challenges in effectively managing their loan portfolios, leading to higher levels of non-performing loans.

Concerning the relationship between Capital Adequacy (CA and none non-performing loans of commercial banks in Ethiopia: For every 1% decrease in the capital adequacy ratio, the Non-performing Loans will increase by 0.4755 units, assuming all other variables remain constant. A lower capital adequacy ratio implies a higher exposure to the risk of non-performing loans. The Capital Adequacy has a negative and statistically insignificant effect on nonperforming loans because the P-value is 0.1618 is more than a 5% level of significance. Hence hypothesis five was accepted by researcher. On the other hand, the study found that the capital adequacy ratio has a statistically insignificant effect on non-performing loans. This finding contradicts prior research studies that have found a negative relationship between capital adequacy and non-performing loans. In a study by Demirguc-Kunt and Huizinga (2020), it was found that higher capital adequacy ratios are associated with lower levels of non-performing loans, indicating that banks with

stronger capital positions are better able to absorb losses and mitigate the risk of non-performing loans. This discrepancy in findings could be attributed to differences in the banking industry and regulatory environment in Ethiopia compared to other countries where prior studies were conducted.

Gross Domestic Product (GDP): For every unit decrease in the GDP, the Non-performing Loans will increase by 20.6749 units, assuming all other variables remain constant. This indicates that a decline in the overall economic activity can lead to higher levels of non-performing loans for commercial banks. The Gross Domestic Product has a negative and statistically insignificant effect on nonperforming loans because the P-value is 0.0961 is more than a 5% level of significance. Hence hypothesis six was accepted by researcher. The study also examined the relationship between gross domestic product (GDP) and non-performing loans. The findings suggest that a decrease in GDP leads to an increase in non-performing loans. This aligns with prior research studies that have found a positive relationship between GDP and non-performing loans. In a study by Minkka (2016), it was found that a decline in economic activity, as measured by GDP, is associated with higher levels of non-performing loans as individuals and businesses face financial difficulties and struggle to repay their debts. This finding highlights the importance of a strong and growing economy in reducing the risk of non-performing loans.

Interest Rate for every unit increase in the interest rate, the Non-performing Loans will increase by 0.2707 units, assuming all other variables remain constant. Higher interest rates may negatively impact borrowers' ability to repay loans and increase the likelihood of non-performing loans. The interest rate has a positive and statistical effect on nonperforming loans because the P-value is 0.000 is less than a 5% level of significance. Hence hypothesis seven was accepted by researcher. Furthermore, the study found that both the interest rate and inflation rate have positive effects on non-performing loans. These findings are consistent with prior research studies that have similarly found positive relationships between interest rates, inflation rates, and non-performing loans. In a study by Dell'Ariccia and Marquez (2024), it was found that higher interest rates and inflation rates increase the risk of default, leading to higher levels of non-performing loans. This suggests that banks need to carefully consider the impact of interest rates and inflation rates when assessing the creditworthiness of borrowers and managing their loan portfolios.

Concerning the Inflation rate for every unit increase in the inflation rate, the Non-performing Loans will increase by 0.2479 units, assuming all other variables remain constant. Higher inflation may erode the value of borrowers' income and increase the risk of default, leading to higher non-performing loans. The interest rate has a positive and statistical effect on nonperforming loans because the P-value is 0.000 is less than a 5% level of significance. Hence hypothesis 8 was accepted by researcher. In summary, the findings of this study provide valuable insights into the relationship between various factors and non-performing loans in the commercial banking sector in Ethiopia. While some of the findings are consistent with prior research studies, such as the positive relationship between bank size, GDP, interest rates, and inflation rates with non-performing loans, the contradictory findings regarding the relationship between capital adequacy and non-performing loans call for further investigation and analysis. These results have implications for policymakers and banking institutions in Ethiopia to effectively manage and mitigate the risk of non-performing loans.

Chapter Five

Conclusion and Recommendations

5.1 Conclusion

Based on the findings, it is evident that several variables have a significant impact on the Non-performing Loans (NPL) of commercial banks in Ethiopia. The coefficients provide insights into the magnitude and direction of these impacts.

Loan Growth Rate (LGR): The positive coefficient suggests that an increase in the loan growth rate will lead to a higher level of non-performing loans. This indicates that banks need to carefully manage their loan portfolio and ensure responsible lending practices to mitigate the risk of non-performing loans. The positive coefficient suggests that an increase in the loan growth rate can be a sign of a booming economy, leading to higher non-performing loans. Banks need to closely monitor their loan portfolio and ensure that they are not taking excessive risks in lending during periods of high loan growth.

Bank Size (BS): The positive coefficient implies that larger banks tend to have higher levels of non-performing loans. This suggests that bigger banks may face challenges in managing their loan portfolios effectively. The positive coefficient implies that larger banks may have a more diverse and complex loan portfolio, leading to higher non-performing loans. These banks may need to implement stricter risk management practices and improve their loan monitoring systems to mitigate the risk of non-performing loans.

Return on Asset (ROA): The negative coefficient indicates that a decrease in the return on assets leads to higher non-performing loans. Banks with lower profitability may have difficulty in servicing their loan obligations, resulting in a higher likelihood of non-performing loans. The negative coefficient indicates that banks with lower profitability are more likely to have higher non-performing loans. This suggests that banks need to focus on improving their financial performance, such as by increasing their net income or reducing their operating expenses, to reduce the risk of non-performing loans.

Return on Equity (ROE): The negative coefficient suggests that lower returns for shareholders are associated with higher non-performing loans. This implies that banks with lower profitability may face challenges in repaying loans and meeting their financial obligations. The negative coefficient suggests that banks with lower returns for shareholders may have limited resources to allocate towards loan repayment, increasing the likelihood of non-performing loans. Banks should aim to improve their profitability and shareholder returns to reduce the risk of non-performing loans.

Capital Adequacy (CA): The negative coefficient indicates that a lower capital adequacy ratio is associated with higher non-performing loans. This implies that banks with limited capital may face difficulties in absorbing losses from bad loans, increasing the risk of non-performing loans. The negative coefficient indicates that banks with lower capital adequacy ratios may have insufficient funds to absorb losses from bad loans, leading to higher non-performing loans. Banks should strive to maintain adequate capital levels to strengthen their ability to withstand economic shocks and reduce the risk of non-performing loans.

Gross Domestic Product (GDP): The negative coefficient suggests that a decline in GDP leads to higher non-performing loans. This implies that economic downturns can result in increased default rates and higher non-performing loans. The negative coefficient suggests that economic downturns can result in higher default rates and non-performing loans. During periods of economic instability, banks should adopt stricter credit assessment procedures and closely monitor their loan portfolio to mitigate the risk of non-performing loans.

Interest Rate (IR): The positive coefficient implies that higher interest rates are associated with increased non-performing loans. This suggests that borrowers may struggle to repay loans when interest rates are high. The positive coefficient implies that higher interest rates can increase the burden on borrowers, making it more difficult for them to repay loans and increasing the risk of non-performing loans. Banks should consider offering flexible repayment options or adjusting interest rates during periods of high interest rates to reduce the risk of non-performing loans.

Inflation Rate (INF): The positive coefficient indicates that higher inflation rates are linked to increased non-performing loans. This implies that borrowers may struggle to repay loans due to the erosion of their income's purchasing power. The positive coefficient indicates that higher inflation rates can reduce the purchasing power of borrowers' income, making loan repayment

more challenging and increasing the likelihood of non-performing loans. Banks should take into account inflation rates when setting loan terms and consider adjustments to repayment schedules in periods of high inflation to mitigate the risk of non-performing loans.

In conclusion, the above findings highlight the importance of prudent lending practices and effective risk management strategies for commercial banks in Ethiopia. Based on the variables examined, it is recommended that banks focus on maintaining a balanced loan growth rate, improving profitability, ensuring sufficient capital buffers, closely monitoring the economic environment, managing interest rates effectively, and considering inflation rates when assessing borrower's repayment capacity. By adopting these recommendations, banks can mitigate the risk of non-performing loans and contribute to their overall financial stability and sustainability.

5.2 Recommendations

Based on the findings, it is evident that several variables have a significant impact on the Non-performing Loans (NPL) of commercial banks in Ethiopia. The coefficients provide insights into the magnitude and direction of these impacts. The recommendations are provided based on statistically significant variables such as Loan growth ratio (LGR, Bank size (BS), Return on asset (ROA), Interest rate (IR), and Inflation rate (INF) rate.

Loan Growth Rate (LGR): The positive coefficient suggests that an increase in the loan growth rate will lead to a higher level of non-performing loans. This indicates that banks need to carefully manage their loan portfolio and ensure responsible lending practices to mitigate the risk of non-performing loans. Banks should assess the creditworthiness of borrowers thoroughly before approving loans and closely monitor the loan growth rate to avoid excessive lending that could potentially result in higher NPL.

Bank Size (BS): The positive coefficient implies that larger banks tend to have higher levels of non-performing loans. This suggests that bigger banks may face challenges in managing their loan portfolios effectively. Large banks should implement robust risk management practices and diversify their loan portfolios to reduce their exposure to non-performing loans.

Return on Asset (ROA): The negative coefficient indicates that a decrease in the return on assets leads to higher non-performing loans. Banks with lower profitability may have difficulty in ser-

vicing their loan obligations, resulting in a higher likelihood of non-performing loans. Banks should focus on improving their profitability by implementing efficient operational processes and reducing cost inefficiencies to mitigate the risk of non-performing loans.

Interest Rate (IR): The positive coefficient implies that higher interest rates are associated with increased non-performing loans. This suggests that borrowers may struggle to repay loans when interest rates are high. Banks should carefully consider the interest rates they charge to borrowers and assess the borrower's ability to service the loan under different interest rate scenarios. Offering flexible repayment options or lower interest rates during periods of economic stress can help minimize the risk of non-performing loans.

Inflation Rate (INF): The positive coefficient indicates that higher inflation rates are linked to increased non-performing loans. This implies that borrowers may struggle to repay loans due to the erosion of their income's purchasing power. Banks should consider the inflation rate while assessing the repayment capacity of borrowers and applying risk management measures accordingly. Implementing effective loan monitoring mechanisms and offering inflation-indexed loan products can help mitigate the risk of non-performing loans during periods of high inflation.

As overall, the above findings highlight the importance of prudent lending practices and effective risk management strategies for commercial banks in Ethiopia. Based on the variables examined, it is recommended that banks focus on maintaining a balanced loan growth rate, improving profitability, ensuring sufficient capital buffers, closely monitoring the economic environment, managing interest rates effectively, and considering inflation rates when assessing borrower's repayment capacity.

Besides, by adopting the following recommendations, banks can mitigate the risk of non-performing loans and contribute to their overall financial stability and sustainability.

Strengthen Loan Monitoring: Banks should implement robust loan monitoring mechanisms to closely track the performance of their loan portfolios. This includes conducting regular credit assessments, continuously monitoring borrower financials, and promptly addressing any signs of deterioration in loan quality. By proactively identifying and addressing potential issues early on, banks can minimize the risk of non-performing loans.

Develop Risk Management Frameworks: Banks should establish comprehensive risk management frameworks to identify, assess, and mitigate various risks associated with lending activities. This includes setting prudent lending limits, diversifying loan portfolios across different sectors and borrower types, and regularly stress-testing the loan portfolio to assess its resilience to adverse economic conditions. By adopting a proactive and systematic approach to risk management, banks can effectively minimize the likelihood and impact of non-performing loans.

Enhance Credit Evaluation Processes: Banks should strengthen their credit evaluation processes to ensure that loans are granted only to creditworthy borrowers. This includes conducting thorough credit assessments, verifying borrower information, analyzing repayment capacity, and considering the borrower's financial track record. By enhancing credit evaluation processes, banks can reduce the probability of extending loans to borrowers who may have a higher risk of default.

Implement Effective Collection Strategies: Banks should develop and implement effective collection strategies to minimize the likelihood of loans becoming non-performing. This includes establishing clear communication channels with borrowers, offering flexible repayment options during times of financial difficulty, and promptly initiating recovery measures for delinquent loans. By proactively managing loan collections, banks can improve the recovery rate and minimize the impact of non-performing loans on their overall financial position.

Strengthen Internal Controls: Banks should enhance their internal control systems to detect and prevent fraud and irregularities that could lead to non-performing loans. This includes implementing robust internal control policies and procedures, ensuring proper segregation of duties, conducting regular internal audits, and providing ongoing training to staff on risk awareness and compliance. By strengthening internal controls, banks can mitigate the risk of non-performing loans resulting from internal weaknesses or fraudulent activities.

Foster a Culture of Risk Awareness: Banks should foster a culture of risk awareness and accountability throughout the organization. This includes providing training and education to staff on risk management principles, promoting open communication channels for sharing risk-related information, and establishing incentives and rewards for responsible lending practices. By instilling a strong risk culture, banks can create an environment where employees are conscious of the potential risks associated with lending and take appropriate measures to mitigate them.

Collaborate with Regulatory Authorities: Banks should actively collaborate with regulatory authorities to monitor and address systemic risks related to non-performing loans. This includes exchanging data and information on loan quality, participating in stress tests and industry-wide risk assessments, and adhering to regulatory guidelines and requirements. By working closely with regulators, banks can contribute to the development of a robust and stable banking sector that is better positioned to manage the challenges associated with non-performing loans.

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DEFINITION AND MEASUREMENT OF VARIABLE

NON PERFORMING LOAN-The IMF has defined nonperforming loans as those whose: Debtors have not paid interest or principal payments in at least 90 days or more. Interest payments equal to 90 days or more have been capitalized, refinanced, or delayed by agreement.

GDP -measures the monetary value of final goods and services—that is, those that are bought by the final user—produced in a country in a given period of time (say a quarter or a year). It counts all of the output generated within the borders of a country.

RETURN ON ASSET -Return on assets is a profitability ratio that provides how much profit a company can generate from its assets. In other words, return on assets (ROA) measures how efficient a company's management is in earning a profit from their economic resources or assets on their balance sheet.

RETURN ON EQUITY -Return on equity (ROE) is the measure of a company's net income divided by its shareholders' equity. ROE is a gauge of a corporation's profitability and how efficiently it generates those profits. The higher the ROE, the better a company is at converting its equity financing into profits.

CAPITAL ADEQUACY-The capital adequacy ratio (CAR) is an indicator of how well a bank can meet its obligations. Also known as the capital-to-risk weighted assets ratio (CRAR), the ratio compares capital to risk-weighted assets and is watched by regulators to determine a bank's risk of failure. It's used to protect depositors and promote the stability and efficiency of financial systems around the world.

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.

INFLATION -Inflation is an increase in the level of prices of the goods and services that households buy. It is measured as the rate of change of those prices.

Typically, prices rise over time, but prices can also fall (a situation c The interest rate is the amount a lender charges a borrower and is a percentage of the principal—the amount loaned.

INTEREST RATE-The interest rate on a loan is typically noted on an annual basis and expressed as an annual percentage rate (APR). alled deflation).

LOAN GROUTH RATE- Loan grouth rate the percentage change in the amount of bank i's total customer loans from the year t – 1 to year t.

Banks		NPL RATIO	LGR	LOG OF BS(T. ASSET) mill	ROA	ROE	CA	RGDPGR	IR	Inf.R
Cbe	**2013**	0.03	0.25	195,443.00	0.03	0.64	0.05	5.1	12.75	7.46
Cbe	**2014**	0.03	0.28	244,127.00	0.03	0.62	0.05	4.5	12.75	6.89
Cbe	**2015**	0.03	0.25	305,075.00	0.03	0.66	0.04	12.4	12.75	9.57
Cbe	**2016**	0.03	0.24	384,693.00	0.02	0.58	0.04	3.4	12.75	6.63
Cbe	**2017**	0.03	0.11	490,068.00	0.02	0.21	0.09	8	12.75	10.69
Cbe	**2018**	0.03	0.15	573,894.00	0.01	0.11	0.08	5	13.75	13.83
Cbe	**2019**	0.02	0.14	712,882.00	0.02	0.23	0.07	6	13.75	15.81
Cbe	**2020**	0.04	1.26	819,278.00	0.01	0.19	0.06	4	14.25	20.36
Cbe	**2021**	0.03	0.24	991,319.00	0.01	0.25	0.05	3.4	14.25	26.84
Cbe	**2022**	0.03	-0.68	999,652.00	0.01	0.00	0.06	3.1	14.25	33.8

Banks		NPL RATIO	LGR	LOG OF BS(T. ASSET) mill	ROA	ROE	CA	RGDPGR	IR	Inf.R
Awash	**2013**	0.02	0.40	17,784.00	0.02	0.21	0.12	5.1	12.75	7.46
Awash	**2014**	0.03	0.66	22,106.00	0.03	0.24	0.12	4.5	12.75	6.89
Awash	**2015**	0.01	0.36	25,140.00	0.03	0.21	0.13	12.4	12.75	9.57
Awash	**2016**	0.02	0.25	30,602.00	0.02	0.16	0.15	3.4	12.75	6.63
Awash	**2017**	0.02	0.46	40,027.00	0.02	0.18	0.14	8	12.75	10.69
Awash	**2018**	0.02	0.38	55,268.00	0.03	0.23	0.12	5	13.75	13.83
Awash	**2019**	0.01	0.51	74,635.00	0.03	0.25	0.13	6	13.75	15.81
Awash	**2020**	0.02	0.21	89,287.00	0.03	0.22	0.13	4	14.25	20.36
Awash	**2021**	0.03	-0.57	128,683.00	0.03	0.22	0.16	3.4	14.25	26.84
Awash	**2022**	0.03	0.90	183,391.00	0.03	0.22	0.09	3.1	14.25	33.8

Banks		NPL RATIO	LGR	LOG OF BS(T. ASSET) mill	ROA	ROE	CA	RGDPGR	IR	Inf.R
Abssinia	**2013**	0.02	0.35	10,160.00	0.03	0.24	0.11	5.1	12.75	7.46
Abssinia	**2014**	0.02	0.10	11,276.00	0.02	0.18	0.14	4.5	12.75	6.89
Abssinia	**2015**	0.02	0.17	13,667.00	0.02	0.16	0.13	12.4	12.75	9.57
Abssinia	**2016**	0.02	0.36	16,828.00	0.02	0.18	0.13	3.4	12.75	6.63
Abssinia	**2017**	0.01	0.74	25,324.00	0.02	0.19	0.11	8	12.75	10.69
Abssinia	**2018**	0.01	0.28	31,983.00	0.02	0.13	0.13	5	13.75	13.83
Abssinia	**2019**	0.04	0.32	39,294.00	0.02	0.16	0.13	6	13.75	15.81
Abssinia	**2020**	0.05	0.57	56,890.00	0.01	0.15	0.10	4	14.25	20.36
Abssinia	**2021**	0.03	1.05	103,850.00	0.01	0.16	0.08	3.4	14.25	26.84
Abssinia	**2022**	0.03	-0.52	149,451.00	0.01	0.16	0.10	3.1	14.25	33.8

Banks		NPL RATIO	LGR	LOG OF BS(T. ASSET) mill	ROA	ROE	CA	RGDPGR	IR	Inf.R
Dashen	**2013**	0.03	0.09	19,747.00	0.03	0.30	0.10	5.1	12.75	7.46
Dashen	**2014**	0.03	1.07	21,962.00	0.03	0.27	0.12	4.5	12.75	6.89
Dashen	**2015**	0.03	0.20	24,763.00	0.03	0.25	0.12	12.4	12.75	9.57
Dashen	**2016**	0.03	0.10	28,576.00	0.03	0.22	0.12	3.4	12.75	6.63
Dashen	**2017**	0.03	0.42	34,624.00	0.02	0.19	0.12	8	12.75	10.69
Dashen	**2018**	0.03	0.30	45,425.00	0.02	0.16	0.13	5	13.75	13.83
Dashen	**2019**	0.03	0.40	56,218.00	0.02	0.15	0.12	6	13.75	15.81
Dashen	**2020**	0.03	0.30	68,261.00	0.02	0.18	0.12	4	14.25	20.36
Dashen	**2021**	0.03	0.47	94,696.00	0.02	0.17	0.15	3.4	14.25	26.84
Dashen	**2022**	0.03	-0.59	116,036.00	0.02	0.17	0.17	3.1	14.25	33.8

Banks		NPL RATIO	LGR	LOG OF BS(T. ASSET) mill	ROA	ROE	CA	RGDPGR	IR	Inf.R
Nib	**2013**	0.04	0.23	9,144.00	0.03	0.17	0.18	5.1	12.75	7.46
Nib	**2014**	0.04	1.19	10,747.00	0.03	0.16	0.18	4.5	12.75	6.89
Nib	**2015**	0.04	0.28	13,256.00	0.03	0.15	0.16	12.4	12.75	9.57
Nib	**2016**	0.04	0.09	15,830.00	0.02	0.14	0.16	3.4	12.75	6.63
Nib	**2017**	0.04	0.43	21,019.00	0.02	0.17	0.14	8	12.75	10.69
Nib	**2018**	0.04	0.26	26,688.00	0.02	0.15	0.13	5	13.75	13.83
Nib	**2019**	0.02	0.43	33,717.00	0.02	0.16	0.13	6	13.75	15.81
Nib	**2020**	0.02	0.33	42,463.00	0.02	0.18	0.14	4	14.25	20.36
Nib	**2021**	0.02	-0.45	48,256.00	0.02	0.18	0.18	3.4	14.25	26.84
Nib	**2022**	0.02	-0.22	56,326.00	0.02	0.18	0.22	3.1	14.25	33.8

Banks		NPL RATIO	LGR	LOG OF BS(T. ASSET) mill	ROA	ROE	CA	RGDPGR	IR	Inf.R
Coop.b.oromia	**2013**	0.06	0.53	6,537.00	0.03	0.27	0.11	5.1	12.75	7.46
Coop.b.oromia	**2014**	0.06	2.19	7,350.00	0.05	0.32	0.07	4.5	12.75	6.89
Coop.b.oromia	**2015**	0.06	0.80	11,462.00	0.03	0.22	0.08	12.4	12.75	9.57
Coop.b.oromia	**2016**	0.06	-0.11	10,687.00	0.00	0.03	0.09	3.4	12.75	6.63
Coop.b.oromia	**2017**	0.06	0.62	17,766.00	0.02	0.23	0.12	8	12.75	10.69
Coop.b.oromia	**2018**	0.04	0.55	29,888.00	0.02	0.22	0.08	5	13.75	13.83
Coop.b.oromia	**2019**	0.06	0.45	41,790.00	0.02	0.20	0.08	6	13.75	15.81
Coop.b.oromia	**2020**	0.06	0.37	52,488.00	0.02	0.23	0.10	4	14.25	20.36
Coop.b.oromia	**2021**	0.06	-0.03	81,320.00	0.02	0.23	0.09	3.4	14.25	26.84
Coop.b.oromia	**2022**	0.06	0.32	114,605.00	0.02	0.23	0.10	3.1	14.25	33.8

Banks		NPL RATIO	LGR	LOG OF BS(T. ASSET) mill	ROA	ROE	CA	RGDPGR	IR	Inf.R
Hibret	**2013**	0.03	0.16	9,985.00	0.03	0.23	0.12	5.1	12.75	7.46
Hibret	**2014**	0.03	0.59	11,876.00	0.02	0.18	0.08	4.5	12.75	6.89
Hibret	**2015**	0.02	0.36	14,365.00	0.02	0.17	0.09	12.4	12.75	9.57
Hibret	**2016**	0.02	0.24	17,336.00	0.02	0.16	0.08	3.4	12.75	6.63
Hibret	**2017**	0.01	0.42	22,007.00	0.02	0.16	0.09	8	12.75	10.69
Hibret	**2018**	0.02	0.24	28,030.00	0.02	0.19	0.11	5	13.75	13.83
Hibret	**2019**	0.03	0.00	35,736.00	0.02	0.19	0.11	6	13.75	15.81
Hibret	**2020**	0.02	0.26	42,998.00	0.02	0.17	0.12	4	14.25	20.36
Hibret	**2021**	0.02	-0.56	54,094.00	0.02	0.17	0.10	3.4	14.25	26.84
Hibret	**2022**	0.02	0.12	68,258.00	0.02	0.17	0.08	3.1	14.25	33.8

Banks		NPL RATIO	LGR	LOG OF BS(T. ASSET) mill	ROA	ROE	CA	RGDPGR	IR	Inf.R
Oromia	**2013**	0.03	0.59	3,911.00	0.02	0.14	0.14	5.1	12.75	7.46
Oromia	**2014**	0.03	1.58	6,151.00	0.03	0.21	0.08	4.5	12.75	6.89
Oromia	**2015**	0.03	0.86	9,534.00	0.02	0.22	0.10	12.4	12.75	9.57
Oromia	**2016**	0.03	0.09	11,281.00	0.02	0.19	0.09	3.4	12.75	6.63
Oromia	**2017**	0.03	0.37	16,234.00	0.02	0.18	0.10	8	12.75	10.69
Oromia	**2018**	0.04	0.41	23,796.00	0.03	0.28	0.11	5	13.75	13.83
Oromia	**2019**	0.04	-1.00	31,779.00	0.03	0.28	0.12	6	13.75	15.81
Oromia	**2020**	0.04	0.20	33,831.00	0.03	0.28	0.14	4	14.25	20.36
Oromia	**2021**	0.04	0.20	38,562.00	0.03	0.28	0.14	3.4	14.25	26.84
Oromia	**2022**	0.04	0.74	48,563.00	0.03	0.28	0.12	3.1	14.25	33.8

Banks		NPL RATIO	LGR	LOG OF BS(T. ASSET) mill	ROA	ROE	CA	RGDPGR	IR	Inf.R
Wegagen	**2013**	0.04	0.32	10,393.00	0.03	0.19	0.18	5.1	12.75	7.46
Wegagen	**2014**	0.04	-0.05	11,528.00	0.03	0.15	0.05	4.5	12.75	6.89
Wegagen	**2015**	0.04	0.34	13,711.00	0.03	0.15	0.06	12.4	12.75	9.57
Wegagen	**2016**	0.04	0.24	16,189.00	0.02	0.02	0.01	3.4	12.75	6.63
Wegagen	**2017**	0.04	0.36	20,949.00	0.03	0.03	0.01	8	12.75	10.69
Wegagen	**2018**	0.04	0.44	27,390.00	0.03	0.00	0.14	5	13.75	13.83
Wegagen	**2019**	0.03	0.00	29,770.00	0.03	0.00	0.14	6	13.75	15.81
Wegagen	**2020**	0.03	0.44	38,159.00	0.02	0.16	0.13	4	14.25	20.36
Wegagen	**2021**	0.03	0.12	39,655.00	0.02	0.03	0.13	3.4	14.25	26.84
Wegagen	**2022**	0.03	-0.81	45,632.00	0.02	0.03	0.12	3.1	14.25	33.8

Banks		NPL RATIO	LGR	LOG OF BS(T. ASSET) mill	ROA	ROE	CA	RGDPGR	IR	Inf.R
Zemen	**2013**	0.01	0.26	3,248.00	0.03	0.19	0.15	5.1	12.75	7.46
Zemen	**2014**	0.01	0.20	3,924.00	0.03	0.19	0.06	4.5	12.75	6.89
Zemen	**2015**	0.02	0.65	4,874.00	0.03	0.20	0.06	12.4	12.75	9.57
Zemen	**2016**	0.05	0.51	7,374.00	0.03	0.20	0.07	3.4	12.75	6.63
Zemen	**2017**	0.05	0.22	9,669.00	0.03	0.20	0.07	8	12.75	10.69
Zemen	**2018**	0.05	-1.00	12,566.00	0.03	0.16	0.13	5	13.75	13.83
Zemen	**2019**	0.03	0.20	14,689.00	0.03	0.21	0.16	6	13.75	15.81
Zemen	**2020**	0.02	0.28	18,495.00	0.04	0.24	0.17	4	14.25	20.36
Zemen	**2021**	0.02	0.05	23,561.00	0.04	0.24	0.17	3.4	14.25	26.84
Zemen	**2022**	0.02	-0.01	29,651.00	0.04	0.24	0.16	3.1	14.25	33.8