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**ADDIS ABABA UNIVERSITY**  
**COLLEGE OF BUSINESS AND ECONOMICS**  
**DEPARTMENT OF ACCOUNTING AND FINANCE**

## **DETERMINANTS OF BANK LENDING: THE CASE OF PRIVATE COMMERCIAL BANKS IN ETHIOPIA**

THESIS SUBMITTED TO ADDIS ABABA UNIVERSITY DEPARTMENT OF  
ACCOUNTING AND FINANCE IN PARTIAL FULFILLMENT OF THE REQUIREMENTS  
FOR THE DEGREE OF MASTERS OF SCIENCE IN ACCOUNTING AND FINANCE

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**June 2023**

## Declaration

I, Askalemariam Abera Fenta confirm that the research work titled “*Determinants of bank lending in the case of private commercial banks in Ethiopia*” which I have submitted for the degree of masters of Science in accounting and finance is my original work. I have appropriately acknowledged all sources of materials used in the study and I have received guidance and feedback from my advisor Dr. Alem Hagos.

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### Statement of certification

This is to confirm that Askalemariam Abera`s thesis titled: “*Determinants of bank lending the case of private commercial banks in Ethiopia*” which has been submitted in partial fulfillment of the requirements for the degree of Masters in accounting and finance complies with the regulation of the University and meets the accepted standard with respect to originality and quality.

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## **Acronyms and Abbreviation**

CLRM- Classical Linear Regression Model

CRR- Cash Reserve Requirement

FEM- Fixed Effect Model

GDP- Gross Domestic Product

NBE- National Bank of Ethiopia

NPL – Non-performing Loan

OLS- Ordinary Least Square

REM- Random Effect Model

## **Abstract**

*Lending is a major service rendered by banks as a result Loan and advance is the largest income-generating asset of banks. The main objective of the study was to examine determinants of bank lending in Ethiopia private commercial banks. The study addressed the knowledge gap by focusing on private commercial banks. This study used secondary data which was collected from annual reports and audited financial statements of private commercial banks and annual reports of national bank of Ethiopia (NBE). Explanatory type of research design was employed because of the nature of research problem and issues to be addressed. The data used for this study was seven years' panel data which was collected from 2015-2021 of ten private commercial banks. Purposive sampling technique was applied to select samples to help the researcher to identify those banks based on time and availability of data. The study applied quantitative approach to understand the relationship of variables, which affect bank lending. Variables included in this study was volume of deposit, liquidity, credit risk, lending interest rate, bank concentration, GDP, inflation and exchange rate as independent variables and the dependent variable is total loan and advance. Fixed effect regression model was used to investigate how those predictor variables affect bank lending. The result of fixed effect regression model revealed that volume of deposit, GDP, inflation and exchange rate have positive and significant effect on bank lending. On the other hand, credit risk has negative and significant effect on lending. Liquidity has negative but insignificant effect on lending. The remaining variable bank concentration has positive and insignificant effect on banks' lending. The study recommends that Ethiopian private commercial banks accounts to work more to enhance themselves in collection of huge deposits, and minimize credit risks. Furthermore, banks give concern for the macroeconomic variation in the country.*

**Key words: lending, private commercial banks, determinants**

# **CHAPTER ONE**

## **Introduction**

### **1.1 Chapter Introduction**

This chapter tried to sketch out the motivation for this study. It provides some background information on bank lending. The chapter also described the research problem, purpose of the research, scope of the study, research questions raised and the key research objectives. Moreover, it gives a brief delineation of the study limitation and organization of the paper.

### **1.2 Background of the study**

The banking industry is one important component of the financial system in developing countries capable of facilitating capital accumulation and economic processes. This is possible through efficient financial intermediation. The banks mobilize funds from the surplus spending units in order to bring financial costs down. Banks mostly transform liquid assets like deposits into illiquid assets called loans (Diamond and Rajan, 1998).

The role of credit is considered the key to economic growth and financial stability of the economy. Credit is the aggregate amount of funds provided by commercial banks to individuals, business organizations and government. Commercial banks perform the act of financial intermediation that collect money from the surplus sector in the form of deposits and lend it to various sectors of the economy. As Commercial banks constitute a major chunk of total assets in the banking system and extension of credit is one of the major functions of banking institution (Amidu M., 2014).

In the view of Nwankwo (2000), credit constitutes the largest single income-earning asset in the portfolio of most banks. This explains why banks spend enormous resources to estimate, monitor and manage credit quality. The major function of commercial banks is to provide credit. Loan and advances constitute the highest portion of the total assets of banks. It is the main source for generating profit. Therefore, the study of the determinants of banks' lending is very crucial for banks to make more sustainable and reputable profit from lending. In addition, Kashyap and Stein (2000), find a strong case that in situations where a bank is handicapped in terms of credit, it will only take the bank capital to measure its ability of lending. This shows that only bank capital is not enough to provide loan and there are other factors weaken the ability of lending.

Additionally, Khan et al. (2011) state that the banking sector has an important role in strengthening economic activity and growth. Countries that have a favorable banking system play an important role in the stability of the financial system and can easily overcome financial difficulties though facilitating the financial flow in the economy.

According to June 30,2021 banks performance report, the industry outstanding loan and advances, the state owned bank accounts 36.13%, and the remaining 63.87% retained by private banks. Based on the report, private banks cover higher portion of loan and advances. So the motive of this research is to investigate factors that influence private banks' lending to provide immense concern to lending and increase bank profitability. Moreover, loan is the major source of revenue for banks but factors that influence lending are limited study in Ethiopia.

As a result, it is important to identify factors that influence bank lending. These can be categorized as bank specific or internal factors, industry specific factors and macroeconomic factors. Internal factors are within the control of bank management and external factors that affect lending out of the control of banks (Raza et al., 2013).

This study examined bank specific, industry specific and macroeconomic determinants of private commercial banks' lending. It was employed Internal factors include, volume of deposit, credit risk, liquidity ratio and lending interest rate. Bank concentration was taken as industry specific determinant. Finally, macroeconomic factors are GDP, inflation and exchange rate.

### **1.3 Background of the organization**

In Ethiopia, the revenue sources of banks are mainly composed of interest income received from loans and bonds, as well as non-interest income from various services such as opening import letters of credit, guarantee services, foreign trading, revaluation gains, and fees for services like chequebooks, ATM cards, and money transfers. According to data from the fiscal year 2017-18, net interest income accounted for 62% of banks' revenue, while non-interest income amounted to 38%. Over time, the revenue base of private banks has shifted towards interest income as opposed to non-interest sources. This trend can be attributed to the rapid growth in loan balances, which has led to a corresponding increase in interest income. Despite a moderate decline in effective lending spreads on loans, which have dropped from about 12% to 7.4% at private banks, the growth in the volume of loans has offset this decline. NBE Bills, which earn a

relatively low interest rate of 5%, now account for 20% of private banks' total assets, primarily as interest-earning assets. The Commercial Bank of Ethiopia (CBE) remains the dominant player in the Ethiopian banking sector, with a 62% market share in terms of assets and deposits, according to a 2019 report. However, the market share of CBE's profits fell below 50% for the first time in 2018. Among private banks, Awash is currently in first place, followed by Dashen, Abyssinia, Cooperative Bank of Oromia, and United, making up the top five banks in terms of assets. The private banking sector has become more competitive and less concentrated over time, as evidenced by market share shifts for various metrics such as deposits, loans, capital, and profits.

The report also found that banks' contribution to Ethiopia's GDP has doubled from 1.5% to 3.1% over the past decade, surpassing sub-sectors such as education (2.5% GDP contribution) and hotels and restaurants (2.6%). While banking is not far from sub-sectors like real estate/renting (4.3%) and public administration (4.5%) in terms of GDP contribution, it is still a significant player in the Ethiopian economy. Overall, these findings suggest that the Ethiopian banking sector has undergone significant changes and growth in recent years, with increased competition and a greater contribution to the country's GDP.

#### **1.4 Statement of the problem**

Banks play a crucial role in the economic development of many developing countries, as they are a primary source of financing for firms. Access to bank financing enables firms to undertake investment projects that promote economic growth. However, the level of bank financing is influenced by various factors. The bank-lending channel of monetary policy suggests that a contraction in monetary policy impedes bank access to loanable funds, resulting in a decrease in banks' loan supply. This means that monetary policy can have a significant impact on the availability of bank financing, which in turn affects economic development. As such, it is essential to understand the factors influencing bank lending and the role of monetary policy in promoting sustainable economic growth (Bernanke & Blinder, 1988).

According to Khangalah (2016), lending is the primary service provided by banks and is a significant source of revenue generation. Loans can be offered in various forms, such as short-term, medium-term, or long-term, depending on the nature of the need being addressed. Khangalah emphasizes that banks should pay close attention to the factors that hinder the

expansion of lending to achieve high profitability. This suggests that banks should focus on identifying and addressing any obstacles that may impede their ability to expand lending activities, which can ultimately lead to increased revenue and profitability.

Loans are importance to the financial wellbeing of banks as they generate significant interest income earnings, making them the most valuable assets of banks. In fact, bank loans are typically the largest asset and the primary source of income for banks. Commercial banks in Ethiopia perform a range of banking activities, including attracting all types of deposits and granting loans and advances to borrowers, aimed at enhancing their investment capacity. In this manner, commercial banks play a pivotal role in promoting the growth of the economy by adhering to three key operating principles - profitability, liquidity, and solvency. Profitability is crucial for banks as it enables them to generate sufficient income to cover their costs and provide reasonable returns to their shareholders. Liquidity is also essential as it ensures that banks have sufficient funds to meet their obligations and support lending activities. Finally, solvency is critical as it ensures that banks maintain a healthy financial position, with adequate capital to absorb potential losses. By adhering to these guiding principles, commercial banks in Ethiopia can contribute to the growth and development of the economy while also ensuring their own financial stability (Mitku, 2014).

According to the researcher knowledge studies conducted with regard to determinants of commercial bank lending in Ethiopia are Malede (2014), Amano (2014), Taye (2020) and Zelalem (2017). These studies provide a great insight to make inquiries but it is not much studied area. Those authors in their study did not investigate industry specific determinants on commercial banks and they focus mostly on bank specific factors and macroeconomic factors. In this study bank concentration takes as industry specific factor and in addition to variables used by those researchers, exchange rate is included as macroeconomic factor on bank lending. Whereas those authors except zelalem (2017) and Taye (2020) studies conducted in all banks including government owned bank. Moreover, the reason to focus on bank lending is the result of variables is inconsistent among those studies and even if loan is the major source of income for banks, Studies exploring the determinants of bank lending in Ethiopia are limited and this issue needs high level of attention. Therefore, this study was try to address determinants that affect private commercial banks' lending in Ethiopia.

## **1.5 Objective of the study**

### **1.5.1 General objective**

The general objective of this study is to examine the determinants of bank lending in the case of private commercial banks of Ethiopia.

### **1.5.2 Specific objective**

The specific objective of the study was:

- 1 To examine the effect of volume of deposit on private commercial banks' lending.
- 2 To investigate how credit risk has an effect on private commercial banks' lending.
- 3 To investigate the effect of liquidity on private commercial banks' lending.
- 4 To examine the effect of lending interest rate on private commercial banks' lending.
- 5 To investigate the effect of bank concentration on private commercial banks' lending.
- 6 To examine the effect of GDP on private commercial banks' lending.
- 7 To investigate the effect of inflation on private commercial banks' lending.
- 8 To examine the effect of exchange rate on private commercial banks' lending.

## **1.6 Hypothesis**

Based on the reviewed theoretical and empirical studies, the researcher developed the following research hypotheses to answer the specific research questions and to achieve the study objective.

Rose & Hudgins (2013). Customer's deposits are crucial for bank lending as they supply most of the raw materials for banks to grant loan and generate profits for the bank. When the demand for withdrawal is higher at a particular point in time, banks may face temporary liquidity crisis, which prompts them to borrow from other banks in overnight markets to meet the demand of depositors (Mistrulli, 2011; Fouque & Ichiba, 2013).

H1: Volume of deposits has positive and significant effect on private commercial banks' lending.

Amidu (2014) suggests that high portion of non-performing loan on the bank balance sheet will discourage the credit delivery of the bank, thus it reduce the lending volume of the bank. When the NPL volume held is excessive, it will impose a barrier to bank liquidity, which would subsequently reduce credit offerings.

H2: Credit risk has negative and significant effect on private commercial banks' lending.

Chen et al, (2018) suggested that bank with higher liquidity are more willing and able to create liquidity and lend to customers. Therefore, banks prefer to hold liquid assets such as cash, short-term securities because they can be easily converted in to cash to meet unexpected demands for funds or to take advantage of profitable lending advantage of profitable lending opportunities.

H3: Liquidity has positive and significant effect on private commercial banks' lending.

Mishkin (2015) suggested that higher expectations of future interest rates reduce credit demand. Similarly, (Hubbard 2007) said that higher lending rate increases the burden on the public in repaying loans thus inducing credit demand to decrease. This suggests that high credit interest rates will constrain the public from applying for credit from the banks.

H4: Lending interest rate has negative and significant effect on private commercial banks' lending.

Olivero et al. (2011) presents the significance of bank concentration in the banking industry is revealed in its influence on rivalry, competence, and success. Additionally, an increased level of concentration in the banking industry will raise the level of competition and reduce the lending activity of monetary policy as well as related with reductions in the flow of bank capital to construction and land development loans, the highest-risk group of commercial bank loans which in turn can disturb the growth rate of loans.

H5: Bank concentration has negative and significant effect on private commercial banks' lending.

Dell'Ariccia and Marquez (2006) find that a high rate of growth in GDP tends to induce a high rate of growth in bank credit. This is because in the period of economic boom, banks reduce their criteria and lend to both worthy and useless projects, then in times of economic recession, most loans become non-performing and the source of credit dries up, rationing out even good projects.

H6: GDP has positive and significant effect on private commercial banks' lending.

Boyd, Levine and Smith (2001) claimed that higher inflation implies less long-run financial activity. In economies with high level of inflation, financial institutions will lend less and allocate capital less effectively.

H7: Inflation has negative and significant effect on private commercial banks' lending.

Emmanuel et al (2013) depreciation of the domestic currency against a foreign currency tends to reduce the volume of loans banks make. This is because banks tend to invest more in foreign currency if they expect the domestic currency to depreciate hence reducing the amount available for loans and advances. Excessive exchange rate variation weakens economic and financial growth in a country and is seen to be the most significant cause of the banking crises in many countries.

H8: exchange rate has negative and significant effect on private commercial banks' lending.

### **1.7 Significance of the study**

The aim of this study was to investigate determinants of lending in Private Commercial Banks of Ethiopia over a period of seven years (2015-2021). The study was made because of the main source of revenue for bank is lending and to provide focus for this area. The study finding would serve as the basis for possible recommendations and provides policy measures to the various stakeholders to give insight for factors that affect lending growth. This study will provide information for policy makers to achieve financial stability by taking into account the determinants of banks' lending activities. Moreover, it provides insight in to the local context by considering similar researches made in different countries and hence help fill gap in the literature.

### **1.8 Scope of the study**

#### **1.8.1 Conceptual scope**

This study examines determinants of lending in private commercial banks of Ethiopia using the independent variables called volume of deposit, credit risk, bank liquidity, interest rate, bank concentration, GDP, Exchange rate, and inflation. The dependent variable was loan and advance. Though there are other determinants of bank lending such as regulations of government, monetary authorities' guidelines and factors in the demand side are excluded due to data availability and time constraints.

#### **1.8.2 Geographical**

According to NBE 2021/2022 fourth quarter report, twenty-one commercial Banks operate presently in Ethiopia, out of which a sample of ten banks was drawn. The sampled banks was selected primarily by Banks data availability that means year of establishment and take in to account their profitability over the year. Besides, the study focused on private commercial banks. However, the study excluded government owned banks and recently established Banks to avoid bias related to limited observations.

### **1.8.3 Time scope**

The purpose of this study was to examine the determinants of bank lending among ten banks in Ethiopia from 2015-2021 which is Seven years data collected from annual report of sampled private commercial banks and national bank of Ethiopia. The time scope of the study was chosen to analyze the factors that influence bank lending including bank specific, industry specific and macroeconomic variables. By analyzing a panel data of ten private commercial banks over this period, the study aimed to provide a comprehensive understanding of the determinant of bank lending in Ethiopia.

### **1.9 Limitations of the study**

One of the major limitations of the study was the fact that the study only focuses on the supply side factors by excluding demand side determinants using ten private commercial banks as a sample. The study was representative that means using a sample of ten private banks, it excluded the remaining commercial banks registered to operate in Ethiopia banking sector including government owned banks. The study findings may change if the data from the other seven private banks those have the data used for this study and state owned banks are included in the research. The research was used seven years data, which is from 2015 to 2021. This means that the data used as representative sample for that period and therefore taking a different set of period might also present a different result.

### **1.10 Organization of the study**

This study was incorporated into five chapters. The first chapter of the study includes the introductory part, which covered the background of the study as well as background of the organization, problem statement, specific and general objectives, the research objectives developed for the purpose of the study, hypothesis developed and scope and limitation of the

study. The second chapter contains the theoretical aspects related to the research paper, empirical reviews and the conceptual framework. The third chapter contains the research methodology that employed throughout the research preparation, the research design and the sampling method. The fourth chapter mostly emphasized on the research results or findings by examining the different variables listed. Finally, the last chapter contains conclusion and possible recommendations addressed based on the finding.

## **CHAPTER TWO**

### **REVIEW of LITRATURE**

#### **2.1 Introduction**

This chapter tried to give insight to the theoretical contribution with regard to private bank's lending determinant, empirical review of other literatures, the gap that will address by the study and at last a conceptual framework is presented as well. The major literature related to the present study has been reviewed as follows.

#### **2.2. Theoretical review of lending**

Commercial banks play a crucial role in mobilizing savings and allocating financial resources within the economy. They are also responsible for facilitating the flow of money in the country. This makes them a significant factor in driving economic growth and development. To fulfill these functions, it is important to recognize that banks have the capacity, range, and opportunities for financial intermediation. In simpler terms, banks are able to connect savers and borrowers, and use their resources to fuel economic growth and development. (Olokoyo 2011).

Nwankwo (2000) states that credit is the most significant income-earning asset for most banks. As a result, banks invest a significant amount of resources in estimating, monitoring, and managing the quality of their credit. Therefore, it is essential for banks to study the factors that determine their credit behavior in order to make sustainable and reputable profits from their credit portfolio. In simpler terms, banks' profits are heavily reliant on their credit portfolio, and to ensure long-term success, they need to understand and manage the factors that affect their lending behavior.

##### **2.2.1 Loanable fund theory**

This theory suggests that in the past, banks primarily acted as intermediaries, collecting savings and channeling them to businesses. This system eliminated the need for economic operators to hold cash to finance their transactions. As a result, money became an endogenous variable, meaning that anyone who wanted to purchase goods could obtain money by borrowing from banks. In a credit-based economy, the price levels were not influenced by the gap between money demand and supply but rather by the price of money, which was determined by the rate of

interest required to borrow it. Changes in the interest rate were likely caused by variations in the demand for loans. It emphasizes the role of banks in facilitating the flow of money in the economy and highlights how interest rates affect the demand for loans (Wicksell, 1898).

### **2.2.2 Moral hazard theory**

Moral hazard is a phenomenon that arises in contractual relationships between two parties. There are two types of moral hazard such as Hidden information and hidden action as described by (Arrow, 1985). Hidden information arises when one party fails to disclose the full range of his or her options and the associated risks. Hidden action on the other hand occurs when one party choice that is not in the best interest of the counterparty and which cannot be observed or managed leading to the potential moral hazard. In the context of credit markets, the lender-borrower relationship is particularly susceptible to moral hazard due to information asymmetry. Financial institutions may lack the ability to insure that the borrower invests the borrowed funds in productive ventures. This information asymmetry can lead to the borrower investing in risky projects ultimately resulting in loan default (Diamond, 1984; Breuer, 1995).

### **2.2.3 The financial intermediation theory**

The financial intermediation theory proposes that banks create liquidity by borrowing money for short periods and lending it out for longer periods. This theory views banks as financial intermediaries, similar to other non-bank financial institutions, in their behavior regarding deposit and lending activities. Banks do not have the ability, either individually or collectively, to create money. Instead, they collect deposits from those with surplus funds and lend to those who need funds for longer periods. The transformation process involves borrowing from those with surplus funds and lending to those who have a deficit. According to Sealey and Lindley (1977), banks play a crucial role in the economy by taking deposits and making loans. While both activities are important, deposit-taking is unique to banks. Banks are able to make loans due to their ability to assess the creditworthiness of applicants and monitor their performance. Banks tend to focus on lending due to the ready availability of funds from deposits. In summary, the financial intermediation theory emphasizes the role of banks in mobilizing funds from savers and channeling them to borrowers while highlighting the importance of deposit-taking and credit assessment in the lending process

### **2.2.4 The fractional reserve theory of banking**

The fractional reserve theory of banking suggests that a bank must gather funds from depositors before it can extend loans. In aggregate, the banking system creates money, and banks are required to hold a portion of their deposits as required reserves to guard against liquidity problems. Each bank has a limit on how much it can expand its loans and investments, as it cannot lend or invest more than it has received from depositors minus the reserve requirement. According to the theory, new loans are granted based on new deposits, and a bank must receive additional deposits before it can extend a loan, given the reserve requirement of some percentage. The bank's balance sheet must reflect an increase in deposits sufficient to cover the loan amount and the reserve requirement (Richard, 2016). In summary, the fractional reserve theory emphasizes the importance of banks having sufficient funds from depositors and holding required reserves to ensure liquidity and stability in the banking system.

### **2.2.5 Credit creation theory**

The credit creation theory of banking suggests that each bank has the ability to create money out of nothing through accounting operations when it extends a loan. Banks are characterized as negotiators of credit, lending borrowed money. They engage in the negotiation of credit between those who grant credit and those who receive it. Banks borrow money in order to lend it out, and only those who lend the money of others are considered to be banks. In summary, the credit creation theory emphasizes the unique role of banks in creating money through lending and highlights the importance of banks borrowing funds in order to lend to others (Tobin, 1963).

### **2.2.6 Liquidity preference theory**

The concept of liquidity preference arises from the fact that there is always uncertainty about future financial needs and opportunities. Holding liquid assets provide a means of meeting unexpected demands for funds or taking advantage of profitable opportunities that may arise. In addition, holding liquid asset provides a sense of security and confidence, which is important during times of economic uncertainty. In the context of bank lending, banks with high level of liquidity are more willing and able to lend money to borrowers because they have a greater capacity to meet unexpected demands for funds. Conversely, banks with lower level of liquidity are more reluctant to lend and they may require high interest rates to compensate for the

increased risk of not able to meet unexpected demands (Ewert et al., 2000) as he referred (Keynes, 1936).

## **2.3 Determinants of Banks' Lending**

Banks play a crucial role in the economy by collecting deposits from individuals and using those funds to provide loans to borrowers. Banks have an advantage in gathering information and making loans to reduce the risk of lending and protect customers from potential abuse. Determinants of bank lending are the factors that influence the decision to grant credit and extend loans for commercial banks. Banks consider various factors when making lending decisions, such as the economic sector to lend to, the type of clients to take risks on, and the amount of the loan to be extended. Understanding the determinants of loan growth is important because it is a key driver of economic growth in many emerging markets. This study focuses on the factors that affect bank lending on the supply side, specifically bank-specific, industry-specific, and macroeconomic factors (Suwanaporn, 2003).

Determinants of bank lending refer to the factors affecting the credit granting, extension and growth of commercial banks. Banks usually consider a number of factors in determining the lending decision which relates to the sector of economy to provide loan to the type of clients to take risks on and the amount to be extended. It is important to know determinants of loan growth since it has been a serious driver of the economic growth in many emergent economies. As a result, there are so many determinants that affect bank lending specially supply side and demand side determinants. However, in this study only the supply side factors such as bank specific, industry specific and macroeconomic factors are addressed.

### **2.3.1 Bank-Specific Determinants of Lending**

Bank-specific factors are those that are primarily influenced by the bank's management decisions and policy objectives. These factors include the bank's size, credit risk, volume of deposits, liquidity, and profitability, which have been widely used in previous studies to investigate the determinants of bank lending. Essentially, these factors are under the control of the bank's management, and decisions related to them can significantly impact the bank's lending activities. For example, a bank's decision to increase its lending may be limited by its liquidity position or

credit risk appetite. Therefore, understanding these bank-specific factors is important for analyzing the lending behavior of commercial banks (Sufian, 2009).

### **2.3.1.1 Volume of Deposit**

The primary function of a bank is to act as an intermediary between depositors who have excess funds and borrowers who need those funds in the form of loans. Banks are efficient in gathering information and producing loans, which helps to reduce the risk of asymmetric information.

According to Rose and Hudgins (2013), customer deposits play a critical role in bank lending as they provide the primary source of funds for banks to grant loans and generate profits. Commercial banks act as a bridge between depositors, who have a surplus of funds, and borrowers, who have a deficit of funds in the money market. Banks collect funds from individuals who have excess capital and channel those funds to individuals who need them.

In essence, banks play a pivotal role in facilitating the flow of funds in the economy. They collect deposits from individuals who have surplus funds and use those funds to lend to individuals who need them. By doing so, banks enable economic agents to invest in productive activities, which contributes to overall economic growth. As stated before, banks' have not own capital that forms their primary source of funding. Rather, it is the deposit that constitutes the major share of banks' funding. Hence, banks that can secure an augmented number of deposits are financially more capable of expanding loans at a greater scale. When the demand for withdrawal is higher at a particular point in time, banks may face temporary liquidity crisis which prompts them to borrow from other banks in overnight markets to meet the demand of depositors (Mistrulli, 2011; Fouque & Ichiba, 2013).

### **2.3.1.2 Credit risk**

Credit risk refers to the risk of financial loss that a bank may face if a customer or counterparty fails to fulfill their financial obligations. This risk is primarily related to the bank's loans and advances to customers and other financial assets. When a loan becomes non-performing, it means that the scheduled repayment is overdue for more than 90 days and the bank no longer earns interest income from it.

According to Amidu (2014), a high proportion of non-performing loans on a bank's balance sheet can discourage the bank from granting credit, thereby indirectly reducing its lending volume. If the volume of non-performing loans held by a bank becomes excessive, it can create a barrier to its liquidity, which would subsequently reduce its credit offerings. Banks are required by regulatory bodies, such as the National Bank of Ethiopia, to hold a portion of non-performing loans based on provision requirements, which can affect their liquidity and credit-granting potential.

Non-performing loans can have a significant impact on a bank's liquidity, as noted by Kauko (2012) and Ghosh (2015). When borrowers are unable to repay their loans, it can create a liquidity problem for the bank, which in turn can affect its ability to make new loans and provide credit to its customers. Thus, managing credit risk and non-performing loans is critical for banks to maintain their liquidity and credit-granting potential.

Besides banks' capital base and deposit funding, credit risk measured by the ratio of non-performing loan to total asset, it has a bearing on lending activity. Banks' credit risk increases if a borrower fails to meet payment commitment to the bank. For such unanticipated payment defaults from borrowers, banks have to maintain adequate provision as a buffer against customers' default risks. Credit risk happened because of information asymmetry, adverse selection and borrower's business failure or unable to settle their loan through different reason. According to directive of national bank of Ethiopia banks must hold specific percentage of their non-performing loan as provision. This affects the liquidity, capacity and frequency of disbursing new loans

### **2.3.1.3 Liquidity**

Liquidity is a crucial factor that determines the level of bank lending. It refers to the bank's ability to meet its obligations, particularly to depositors. As demonstrated during the global financial crisis, liquidity is vital for the proper functioning of the financial market and the banking sector. In other words, liquidity is the backbone of banking operations, enabling banks to grant loans and handle customer withdrawals. Maintaining adequate liquidity is essential for banks to meet their financial obligations as they come due. To ensure this, banks must carefully manage their assets and liabilities to remain liquid at all times. Liquidity is the foundation of

confidence in the banking business, and it has significant implications for analyzing bank-lending behavior in response to monetary policy actions. (vodova, 2013)

In essence, the availability of liquidity is a key determinant of a bank's ability to extend credit and support economic growth. It is therefore crucial for banks to maintain adequate liquidity levels and manage their assets and liabilities effectively to ensure their continued ability to provide credit to borrowers.

According to McCarthy et al. (2010), Banks rely on customer deposits to provide loans to borrowers and invest in assets that generate a higher return than what they pay depositors. While deposits are, the primary source of lending that banks must keep a certain percentage of the total collected funds as reserves to ensure they have enough liquidity to meet their obligations.

Dang (2011) suggests that an adequate level of liquidity is positively correlated with bank profitability. To assess a bank's liquidity position, various financial ratios can be used, such as the customer deposit to total asset ratio and the total loan to customer deposit ratio. Other scholars use different financial ratios to measure liquidity, such as the total loans to total customer deposit ratio. Additionally, major liquidity indicators for banks include the cash reserve ratio, current assets ratio, quick assets ratio, and liquid assets to deposit ratio.

In this study, the liquid assets to deposit ratio is considered the key liquidity-related indicator. This ratio measures the liquid assets, such as cash and government securities, held by a bank as a percentage of its total deposits. A higher ratio indicates that a bank has a higher level of liquid assets to meet its obligations, which is crucial for maintaining confidence in the bank and ensuring its ability to grant loans. Therefore, monitoring the liquid assets to deposit ratio is important for assessing a bank's liquidity position and its ability to support economic growth through lending.

#### **2.3.1.4 Lending interest rate**

The lending interest rate plays a crucial role in the provision of bank credit to businesses, as it has a significant impact on the allocation of loans. High interest rates can create a burden for borrowers, making it difficult for them to repay their debts. Several studies have shown that an increase in lending rates can significantly affect the distribution of credit, including research by

Holmstrom and Tirole (1997), Crouhy et al. (2000), and Bellini (2013). When lending rates rise, especially in the investment sector, loan demand tends to decrease, as noted by Hubbard.

In essence, the interest rate charged on loans is a critical factor in determining the level of credit demand from businesses. Higher interest rates can discourage borrowing and reduce the amount of credit available to support economic growth. Therefore, it is essential for banks and policymakers to carefully manage interest rates to ensure that they facilitate, rather than hinder, the provision of credit to businesses.

Several studies have provided evidence that lending interest rates play a significant role in determining the level of credit demand from businesses. For instance, Laidroo (2010) found that in a highly competitive banking sector, lower interest margins could result in higher loan growth. Mishkin (2015) suggested that higher expectations of future interest rates could reduce credit demand, while Hubbard (2007) argued that higher lending rates increase the burden on borrowers and reduce credit demand. Banks also face the risk of potential losses and depletion of equity capital due to unpredictable adverse changes in interest rates. This risk is particularly significant for banks with a high interest rate risk profile.

Borio and Fritz, (1995). Banks are cautious about the potential losses and depletion of equity capital that could arise from high interest rate risk in the environment of unpredictable adverse change in interest rates. The transmission mechanism of monetary policy through the central banks rate affects interest rate in the financial market. However, bank lending rates are typically inflexible and do not move in tandem with market rates. This rigidity in lending rates has been attributed to the rationing of credit to borrowers due to problems of asymmetric information as suggested by Blinder and Stiglitz (1983). As result, the lending interest rate is a critical factor in the provision of credit by banks, and it is influenced by various factors, including market competition, expectations of future interest rates, and monetary policy. Understanding these factors is essential for banks and policymakers to manage interest rates effectively and ensure that they facilitate, rather than hinder, the provision of credit to businesses.

## **2.3.2 Industry specific determinant**

### **2.3.2.1 Bank concentration**

Concentration in the banking industry refers to the degree of involvement of individual banks in cumulative sales, assets, or market share. It is usually determined by the number of companies in the industry and their relative size. The market share of each bank is measured by the ratio of its total assets to the total assets of the banking industry.(Zingales &Rajan,2003)

The significance of bank concentration in the industry lies in its influence on competition, competence, and success. An increased level of concentration in the banking industry can raise the level of competition and reduce the effectiveness of monetary policy in stimulating lending activity. This can be observed in reductions in the flow of bank capital to high-risk commercial bank loans, such as construction and land development loans, which in turn can hinder the growth rate of loans.(gajurel &Pradhan, 2012)

Moreover, a higher concentration in the banking industry can limit the central bank's ability to affect the growth rate of bank loans, as the shock wave of monetary policy becomes less effective in larger banks. This means that the size of banks can limit the effectiveness of monetary policy in stimulating lending activity and supporting economic growth. concentration in the banking industry has significant implications for competition, competence, and success, and can affect the effectiveness of monetary policy in stimulating lending activity and promoting economic growth. Policymakers should carefully consider the impact of bank concentration when formulating policies to ensure a healthy banking industry and support economic growth.

### **2.3.3 Macroeconomic determinants**

Amidu. (2014) defines that Macroeconomic determinants are variables that are not under the control of bank management but reflect the monetary, economic, and legal conditions of a country that influence the lending activities of banks. These determinants are significant factors that affect the ability of banks to provide credit to the private sector. Macroeconomic stability is widely regarded as a crucial condition for the flow of credit to different sectors of the economy. However, the World Bank (2008) has noted that gross credit to the private sector has remained relatively stagnant and difficult to access.

Macroeconomic determinants play a significant role in shaping the lending activities of banks and the availability of credit to the private sector. The stability of the macroeconomic environment is a critical factor that affects the flow of credit to different sectors of the economy. Policymakers should focus on creating a stable macroeconomic environment to ensure that banks can provide sufficient credit to support economic growth.

### **2.3.3.1 Gross Domestic Product**

The lending activities of commercial banks are significantly influenced by the economic growth of a country. Economic growth has significant implications for monetary policy actions and bank lending behavior. When there is a remarkable increase in economic growth, investment in various sectors such as industry, agriculture, and services tends to increase, leading to higher demand for private sector credit. Economic growth is a positive change in the national income or the level of production of goods and services in a country over a particular period. While private sector credit is often considered to have a significant impact on economic growth, several studies have found evidence of a positive impact of economic growth and development on bank lending. economic growth is a crucial factor that affects the lending activities of banks, as it influences the demand for credit and the overall level of economic activity. Policymakers should focus on promoting economic growth and development to support the lending activities of banks and ensure that sufficient credit is available to support economic growth and development. (Neelam, 2015)

### **2.3.3.2 Inflation**

Inflation is defined as an increase in the general price level, usually expressed as a yearly percentage rate of change. According to Boid, Levine, and Smith (2001), higher inflation is associated with reduced long-term financial activity. In economies with high levels of inflation, financial institutions tend to lend less and allocate capital less effectively. Higher levels of long-term inflation are indicative of lower levels of real activity and/or slower long-term growth rates. This suggests that an increase in inflation can reduce the real return to banks, thereby restricting the amount of money that banks are willing to lend. Inflation has significant implications for the lending activities of banks. Higher levels of inflation can reduce the real return to banks and lead to a decrease in the amount of money they are willing to lend. Policymakers should focus on

promoting price stability and keeping inflation under control to ensure that banks can provide sufficient credit to support economic growth and development.

### **2.3.3.3 Exchange Rate**

Excessive exchange rate variation has been identified as a significant cause of poor economic and financial growth in many countries, and is often cited as a major factor in banking crises, according to research by Lindgren et al. (1996). In particular, fluctuations in exchange rates can have a significant impact on the performance of banks' borrowers, which ultimately affects the profitability of banks. This effect is especially pronounced in developing economies that are heavily dependent on foreign trade.

Furthermore, Emmanuel et al. (2013) have found that when the domestic currency depreciates against a foreign currency, banks tend to reduce the volume of loans they make. This is because banks tend to invest more in foreign currency if they expect the domestic currency to depreciate, thereby reducing the amount of money available for loans and advances.

In summary, excessive exchange rate variation can weaken economic and financial growth in a country, and is often a major cause of banking crises. Fluctuations in exchange rates can negatively affect the performance of banks' borrowers, which in turn affects the profitability of banks. Moreover, when the domestic currency depreciates against a foreign currency, banks tend to reduce their lending activities, which can further restrict access to credit and hinder economic growth.

## **2.4 Global studies**

This section reviews previous empirical studies on the determinants of private commercial banks' lending behavior in both developed and developing countries, including Ethiopia.

Isa, Latif, Zaharum, Nasrul, and Noh (2019) conducted a study on the four specific internal factors affecting commercial banks' lending behavior in Malaysia between 2009 and 2018. The study found that the volume of deposits, level of liquidity, and bank size significantly influence the lending behavior of commercial banks in Malaysia after the 2007/2008 global financial crisis. Specifically, the study found that the volume of deposits and non-performing loans have a

negative impact on banks' lending behavior, while the level of liquidity and bank size have a positive impact on lending behavior. The study highlights the importance of internal factors such as the volume of deposits, level of liquidity, and bank size in influencing the lending behavior of commercial banks. It suggests that banks with a higher volume of deposits and liquidity and a larger size are more likely to engage in lending activities. Policymakers should consider these factors when formulating policies to promote lending activities and support economic growth

Abu Bakar et al. (2018) conducted a study on the determinants of bank lending in Malaysia and found that bank size and volume of deposits have a positive influence on commercial bank lending, while liquidity has a negative influence on lending activities. However, the study did not find any conclusive evidence to support the influence of gross domestic product (GDP), lending rate, and cash reserve requirement on commercial bank lending activities in Malaysia.

Similarly, Augustin (2012) conducted a study on the determinants of bank long-term lending behavior and found that bank size, GDP growth, and capital-to-assets ratio have a positive and statistically significant impact on bank lending behavior. This suggests that larger banks and well-capitalized banks are better equipped to resist potential credit risks and allocate a higher percentage of their assets to business loans. The study also found two marginally significant associations: banks with more long-term liabilities are marginally more willing to lend to businesses, while state-owned banks are marginally less likely to do so. These studies highlight the importance of various determinants of bank lending behavior, including bank size, volume of deposits, liquidity, GDP growth, and capital-to-assets ratio. Policymakers should consider these factors when formulating policies to promote lending activities and support economic growth.

The finding of Emmanuel et al (2013) regarding to Determinants of Bank Lending Behavior in Ghana is truly remarkable. Their research reveals a statistically significant and positive relationship between bank size and capital structure with bank lending behavior, highlighting the critical role played by these factors in shaping lending decision. Additionally, their work sheds light on the negative impact of certain macroeconomic indicators such as bank lending rate and exchange rate on bank lending behavior, underscoring the complex interplay between economic conditions and lending practices. Furthermore, their study provides compelling evidence of the positive and significant impact of competition in the industry on lending behavior and emphasizing the importance of a competitive market place in promoting lending activities.

Finally, their research underscores the vital role played by relationship banking in driving bank lending behavior in Ghana, highlighting the value of strong and enduring relationships between banks and their clients.

Klolaini, Jacinta, Susana & Nuru (2021) examines the determinants of bank lending in three Pacific Island Countries Fiji, Vanuatu, and the Solomon Islands. using 15 banks and 6 credit institutions data from the period of 2000-2018. Their finding shows that capital, customer deposits, banks' profitability, size, GDP growth and inflation were positively related to bank lending. On the other hand, interbank deposits and credit risk showed a significant negative relation with the bank lending.

The study conducted by Hoang (2020) on "the determinants of loan growth in the Vietnamese banking system" is a fascinating piece of research. His findings reveal that banks facing high credit risk are less likely to engage in lending activities, highlighting the crucial role played by risk management in shaping lending decisions. Furthermore, less efficiently managed banks tend to adopt a more aggressive lending strategy, exposing the moral hazard issues that exist within the Vietnamese banking industry. Hoang's research also identifies that more profitable banks with a competitive edge are more likely to increase their lending activities, underscoring the importance of profitability in driving lending decisions. Liquidity is another key factor identified in his study, with a positive relationship observed between liquidity and loan growth. However, interest rate risk poses a significant concern for banks, as they are sensitive to the adverse effects of unpredictable changes in interest rates in the future. Additionally, his research highlights the significant impact of bank profitability on loan growth, with higher returns linked to increased lending activities. In essence, Hoang's study suggests that banks tend to disburse a significant amount of loans when they are more profitable, a finding that has significant implications for the banking industry in Vietnam.

Olivero et al. (2011) examine "competition in banking channel evidence from bank level data" using 10 year's panel data of commercial banks in 10 Asian and 10 Latin American countries. They also find that the lending channel of monetary policy is affected as the level of competition is grow up. Research has shown mixed evidence regarding the impact of banking sector concentration on bank lending behavior. While Thi (2015) found that bank concentration has a negative effect on bank credit, Laidroo (2012) and Aisen and Franken (2010) found a positive

association between banking sector concentration and lending growth. Moreover, these studies suggest that the lending channel of monetary policy can also be affected by the level of competition in the banking sector. Policymakers should consider the impact of market structure and competition on bank lending behavior when formulating policies aimed at promoting lending activities and supporting economic growth. The relationship between banking sector concentration and lending growth is complex and may depend on various factors, including the level of competition in the banking sector and the impact of monetary policy on lending activities. Policymakers should aim to strike a balance between promoting competition in the banking sector and ensuring that sufficient credit is available to support economic growth and development..

Dell'Ariccia and Marquez (2006) have found that high rates of GDP growth tend to lead to a high rate of growth in bank credit. This is because during periods of economic expansion, banks may lower their lending standards and extend credit to both viable and non-viable projects. However, during economic downturns, many loans become non-performing and the availability of credit decreases, resulting in even worthy projects being denied access to credit.

The study highlights the cyclical nature of bank lending behavior, which tends to follow the ups and downs of the overall economy. During periods of economic boom, banks may become more relaxed in their lending criteria, which can lead to an increase in the number of non-performing loans when the economic tide turns. Policymakers should keep a close eye on bank lending behavior and take steps to ensure that lending standards remain reasonable and in line with the overall health of the economy.

### **2.4.1 Local studies**

Malede (2014), addressed in his study “Determinants of Commercial Banks’ Lending: Evidence from Ethiopian Commercial Banks”. The study tried to examine the correlation between Ethiopian commercial banks’ lending with bank size, credit risk, gross domestic product, investment, liquidity ratio, interest rate, cash required reserve and deposit from 2005 up to 2011 by using Ordinary Least Square (OLS). He finds that Bank size, liquidity ratio, Gross domestic product had positive and statistically significant influences on commercial bank lending. He finds Credit risk is statistically significant factor of bank lending. Investment, lending interest

rate had positive statistically insignificant relationship with Ethiopian commercial bank lending. Deposit and Cash required reserve have positive and statistically insignificant relationship with commercial bank lending.

The research conducted by Zelalem (2017) on the determinants of commercial bank lending in Ethiopia provides fascinating insights into the complex factors that shape lending behavior. In this study, Zelalem explores the impact of various independent variables, including bank size, volume of deposit; cash reserve requirements, credit risk, liquidity ratio, lending interest rate, GDP, and inflation, on Ethiopian commercial banks' lending behavior. His finding reveals that bank size, deposit volume, and GDP growth have a positive impact on Ethiopian commercial banks' lending behavior, suggesting that larger banks with more deposits and a growing economy are more likely to engage in lending activities. However, cash reserve requirements and liquidity ratio were found to have a negative impact on lending behavior, highlighting the constraints imposed by regulatory measures on banks' lending activities. Interestingly, Zelalem's study shows that credit risk, lending interest rate, and inflation have no significant impact on Ethiopian commercial bank lending or loan and advances. This finding underscores the need for further research in this area to better understand the complex interplay of factors that shape lending behavior in Ethiopia.

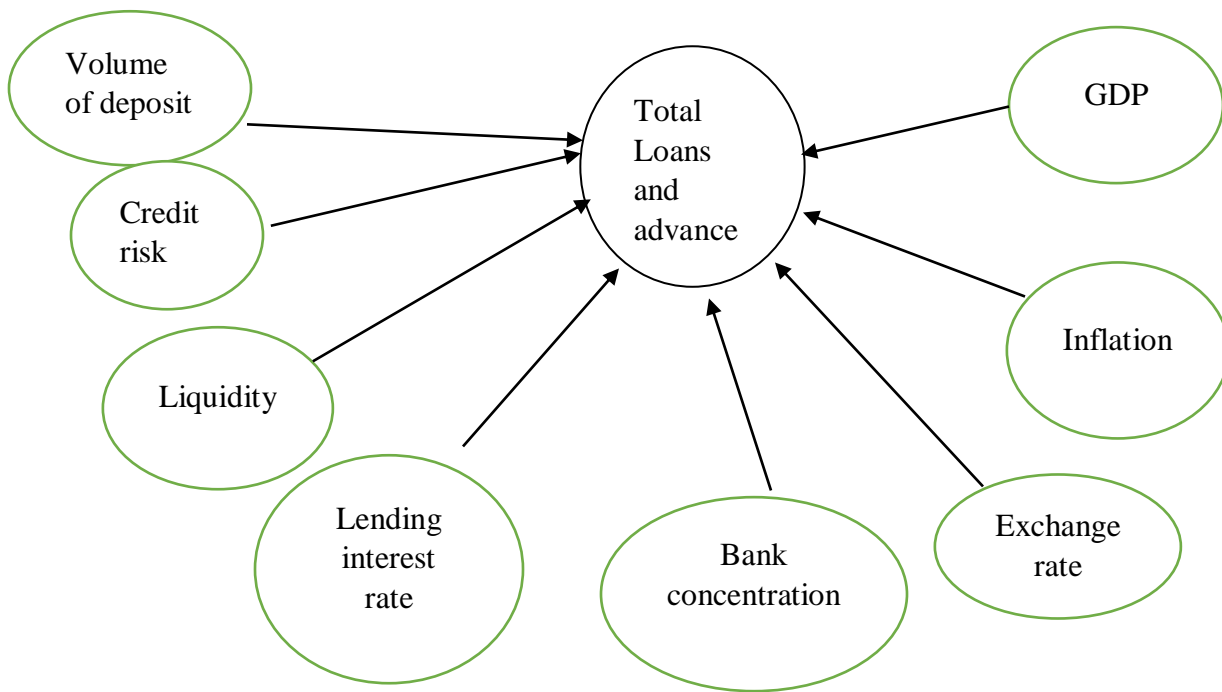
According to Amano (2014), the study entitled “Determinants of Lending Behavior of banks”, his finding reveals that volume of deposit and bank size have a positive and significant impact on bank loans and advances, indicating that larger banks with more deposits are more likely to engage in lending activities. However, the liquidity ratio and interest rate were found to have a negative and significant impact on bank loans and advances, suggesting that banks are constrained by regulatory measures and market conditions in their lending decisions. Interestingly, Amano's study shows that cash reserve requirement and inflation rate have a positive and significant impact on bank loans and advances, indicating that these factors influence lending behavior in Ethiopia. However, the real GDP growth rate was found to have a statistically insignificant impact on bank loans and advances, suggesting that other factors play a more significant role in shaping lending behavior in the country.

## **2.5 Summary of Literature and Knowledge Gap**

Most of the aforementioned studies done were in developing economies and majority of them focused on the supply side factors affecting bank lending. These studies were tailored towards finding out how bank specific and macroeconomic factors influence the lending behavior. Although Those studies evidence factors that affect lending which is internal factors and macroeconomic factors, the result of variables is contradicted and inconsistent. The field of research on determinants of bank lending in Ethiopia is relatively underdeveloped, with only a few empirical studies conducted on the topic. Malede (2014), Amano (2014), Zelelem (2017), and Taye (2021) are among the researchers who have explored this area, but their studies have certain limitations. Some of these studies have combined the commercial bank of Ethiopia with private commercial banks, which may have led to biased conclusions. Moreover, none of these studies has investigated the effect of bank concentration and exchange rate on lending, which are crucial factors in understanding the lending decisions of commercial banks. Furthermore, there are inconsistencies in the results of these studies, which highlights the need for further research to better understand the complex factors that shape lending behavior in Ethiopia. Therefore, there is a knowledge gap in the literature, and this study aims to address this gap by focusing solely on private commercial banks and incorporating new variables like bank concentration and exchange rate. Overall, this study seeks to contribute to the existing literature on determinants of lending in Ethiopia by filling the gaps in previous studies and providing new insights into the complex factors that shape lending decisions of private commercial banks.

## **2.6 Conceptual Framework**

The study adopts the following conceptual framework. Although there are other variables as demand side factors, national bank regulations and also other bank specific determinants like Management quality, money supply and capital adequacy which should be included on the conceptual framework, due to the researcher ease of work and less time to address those all the researcher only included the below variables.



*Figure 2.1 Conceptual framework of lending*

*Source: by reviewing different literatures*

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY AND RESEARCH DESIGN**

#### **3.1 Introduction**

The chapter contains, research methodology of the study highlighting the study area, research design, research method which shows the target population of the study, sample size and sampling procedure used to select a sample. Moreover, it presents the data sources, what type of data is collected in the sample and techniques of data collection. This is followed data analysis and presentation techniques are explained under this section. Additionally, diagnostic tests called heteroscedasticity test, multicollinearity test and normality tests were discussed in this chapter. Finally, the regression model that was employ for the study and expected results are discussed under this section.

#### **3.2 Research approach**

According to Creswell's (2008) perspective, quantitative research is a method used to test objective theories by analyzing the connection between variables. These variables can be measured with the help of instruments, which allow numerical data to be collected and analyzed using statistical procedures. In other words, quantitative research involves the use of numerical data and statistical analysis to examine the relationships between variables and test hypotheses. Moreover, quantitative research involves the collection of data that is typically numerical in nature, and the researcher employs mathematical models as the primary methodology for data analysis. This approach relies heavily on statistical methods to analyze and interpret data, allowing researchers to draw reliable conclusions and make objective inferences based on empirical evidence. In essence, quantitative research involves a systematic and structured approach to data collection and analysis, aimed at uncovering patterns, trends, and relationships that can be quantified and measured. As a result, this study was quantitative primarily because both the dependent and independent variables are quantifiable hence measurable over the time period to see the trend and the data collected on predetermined instruments that yield statistical data.

### **3.3 Research Design**

The explanatory research design is a basic research design that explain the cause and consequence of a well-defined problem. It is appropriate when the researcher wants to explain the relationship of variables relies on secondary data. The objective of this study was to examine the factors that influence lending by private commercial banks in Ethiopia. In order to achieve this goal, the research utilized an explanatory research design to investigate the causal relationship between bank lending and various determinant variables. In essence, the study aimed to determine the factors that cause changes in the amount of lending by private commercial banks in Ethiopia.

### **3.4 Research Method**

#### **3.4.1 Data Type and Collection Method**

The present study used secondary data of ten private commercial banks for the periods of 2015 to 2021. The data was collected from secondary sources which are obtained directly from Banks published audited financial statements which includes mainly the balance sheet and income statements of private Commercial Banks and annual report of NBE. In addition, banks performance report, various annual and quarterly publications of the NBE and various directives of the NBE was used.

#### **3.4.2 Population of the Study**

The target populations of this study was private commercial Banks operating in Ethiopia. According to NBE 2021/22 fourth quarter report, there are 21 Banks including newly operated interest free banks called Zamzam bank and Hijra bank. Among 21 Banks, 19 are private and 2 are government owned banks. Among the 20 private commercial Banks, Zamzam bank, Gohe Betocho bank and Hijra bank are newly established i.e. They were not fulfilled the data required for this study. These banks are Namely, Commercial Bank of Ethiopia (CBE), Development Bank of Ethiopia (DBI), Awash Bank S.C, Dashen Bank S.C, Wegagen Bank S.C, Bank of Abyssinia S.C, United Bank S.C, Nib International Bank S.C, Cooperative Bank of Oromia S.C, Lion International Bank S.C, Berhan International Bank S.C, Buna International Bank S.C, Oromia International Bank S.C, Zemen Bank S.C, Addis International Bank S.C, Abay Bank S.C, Enat Bank S.C, Debub Global Bank S.C, Zamzam bank, Gohe Betocho bank and Hijra bank.

### **3.4.3 Sample Size and Techniques**

The objective of the study was empirically examine determinants of bank lending in private commercial banks of Ethiopian over the period of seven years (2015-2021) to see the short-term effect of the variables for the latest period which is more favorable for private banks to avoid time bias.

According to Zikmund (2013), judgment sampling is a non-probability sampling method that involves the selection of a sample based on the judgment of an experienced individual. In this technique, the individual uses their expertise and knowledge to identify sample members who possess specific characteristics that are deemed appropriate for the study. Unlike probability sampling methods, judgment sampling does not rely on random selection to ensure a representative sample. Instead, it involves the use of subjective judgment to identify sample members who possess the desired characteristics. In this study, the researcher used judgmental sampling technique to select Banks into the sample. Ten Banks were chosen from the twenty-one existing commercial Banks. The required data was collected from the Annual Reports of Banks in the sample. The justifications for Banks in the sample is Researchers usually draw conclusions about the groups by taking a sample. Ideally, the sample should be representative and allow the researcher to make accurate estimates of the thoughts and behavior of the population (Leedy and Ormrod, 2005). Out of the twenty-one Banks operating in the country 19 are private and two are government Banks (CBE, DBE). As per NBE classification, private banks are divided as first generation, second generation and third generation banks based on their time of entry. First generation consists (AIB, DB, BOA, WB, UB, and NIB), second generation consists (CBO, LIB, ZB, OIB,) and third generation consists (BB, BIB AB, ADIB, DGB, and EB). Out of sixteen private banks in the peer group, ten Banks was selected, four from peer one (AIB, DB, BOA, and UB) and three from peer two (CBO, LIB and ZB) and three banks from peer three (BuB, BIB and AB) are selected on purposive method. Since the Banks excluded in those peers have a lifetime below seven years, which is less than the span of years used for analysis.

### **3.5 Analysis and Evaluation of Data**

Analysis and evaluation part of this study thrashes out the methods and processes of analysis of the collected data. The collected data was analyzed quantitatively based on the nature of

variables. All variables included in this study are numerically measurable and they have quantitative nature. The study used both descriptive statistics and econometric tools to analyze the data. Descriptive statistics includes mean, maximum, minimum, standard deviations and others that enable to have better understand the existing situation and analyze the general trend of the data. The study applied economic models to investigate the relation between dependent variables and independent variables. Fixed effect regression model was employed to determine the relative importance of each independent variable in influencing lending decision and its impact on banks. To explain the relationship of variables, the researcher used STATA 15 software for data analysis.

The study regression model that was applied for data analysis is shown below.

$$TLA = f ( V_{dep}, Cr, Lr, Lir, BC, GDP, Inf, Exr) \dots\dots\dots (1)$$

Equation:

$$LAD_{it} = \beta_0 + \beta_1 V_{depit} + \beta_2 Crit + \beta_3 Lrit + \beta_4 Lirit + \beta_5 Bcit + \beta_6 GDP_{it} + \beta_7 Infit + \beta_8 Exrit + \mu_{it} \dots\dots\dots (2)$$

Source: developed by researcher

Where,

$LAD_{it}$  = Loans and advances of ith bank in year t

$V_{depit}$  = volume of deposit of ith bank in year t

$Crit$  = credit risk of ith bank in year t

$Lit$  = Liquidity ratio of ith bank in year t

$Lirit$  = lending interest rate of ith bank in year t

$Bcit$  = bank concentration of ith bank in year t

$GDP_t$  = Gross domestic products growth in year t

$Infit$  =inflation rate in year t

$Exrit$  = Exchange rate in year t

$\mu$ = the error term

### 3.6 Estimation Technique

There are various techniques of estimation methods in a panel data analysis. Ordinary Least Square (OLS) is the most common technique used to estimate panel data. However, this method has its own limitations. According to Bond et al. (2002), the correlation between the lagged value of the dependent variable or any endogenous explanatory variable and the individual-specific, time-invariant effect makes the OLS estimates biased and inconsistent. Bond (2002) also noted that the inconsistency of pooled OLS still exists even if the serial correlation of the error term is assumed away. There has been much support for the use of panel estimation techniques through fixed effect model in cross-country and aid effectiveness literature. The fixed effect (FE) model measures the association between individual-specific deviations of regressors from their time-averaged values and individual-specific deviations of the dependent variable from its time-averaged value. The model allows the endogeneity of all regressors and the unobserved individual heterogeneity effects. However, the fixed effects model suffers one major setback when estimating time invariant and slow-changing variables over time. Because of averaging variables overtime  $T$ , all the time-invariant variables are eliminated. Unlike the Random effect (RE) model, FE models have the advantage of not requiring the covariance of all the independent variables and the unobserved time invariant individual heterogeneity is zero. I.e.  $\text{cov}(x_{it}, c_i) = 0$ , which is often difficult to justify. However, FE models cannot identify the effects of any variables that vary only across units which brings difficulty in identifying effects if most of the meaningful variation is across units and is difficult to estimate the coefficient of time invariant regressors (Wooldridge, 2004). Hausman test is used to determine the model that would yield consistent and most efficient estimators between fixed effects and random effects. This test evaluates whether the coefficients between the two models are statistically different from one another. The null is that the data are generated by RE (specifically it states that both RE and FE are appropriate but that RE is more efficient). The alternative is that the FE estimator is consistent while the RE estimator is not. If  $\text{Cov}(u_i, x_{it}) = 0$  is true, then  $\beta_{RE}$  and  $\beta_{FE}$  are both consistent, but  $\beta_{RE}$  will be more efficient since  $SE(\beta_{RE}) < SE(\beta_{FE})$ . But if instead,  $\text{Cov}(U_i, X_{it}) \neq 0$  is solely efficient. In a more precise way see the following two hypotheses,

H0: The unobserved heterogeneity has no systematic relationship with the regressors. In other words the random effect is the appropriate model.

H1: There is systematic relationship between the unobserved individual heterogeneity and the regressors. In other words, the fixed effect is the best model. Decision rule: If the calculated Hausman (H) is larger than the critical values, reject the null hypothesis. In other words, there is a systematic relationship between the unobserved individual heterogeneity and the regressors. Thus, we should interpret the results of the fixed effect model. Then this paper is going to run the fixed effect model analysis and use Hausman test in order to interpret the results based on the above mentioned decision rules. The reason why fixed effect model is chosen for this paper is because it enables us to obtain unbiased parameter estimates in the presence of non-zero correlation between the unobserved heterogeneity and the explanatory variables and to make precise estimation of one or more parameters (Guajarati, 2009).

### **3.7 Diagnostic Tests**

#### **3.7.1 Multicollinearity Test**

Multicollinearity refers to the existence of perfect or exact linear relationship among some or all explanatory variables in the model. When multicollinearity is present standard errors may be inflated. The existence of the problem of multicollinearity is tested using correlation coefficient test for panel data analysis. Correlation above 0.8 between independent variables indicates the existence of problem of multicollinearity (Guajarati, 2009). Multicollinearity problem can be solved by dropping or addition to variables. However, dropping variables results to committing model specification bias therefore increasing the sample size by increasing additional variable is the best remedy (Guajarati, 2009).

H0: there is no multicollinearity problem

H1: there is multicollinearity problem.

#### **3.7.2 Heteroscedasticity**

Heteroscedasticity problem is arising when the variance of the disturbance term is not constant. That is the variance of the error term is unequally spread over the model. The problem of heteroscedasticity results larger confidence interval as result t and f test are likely give inaccurate

result of the parameter and statistically insignificant coefficient. To test whether there is heteroscedasticity problem or not, panel data post estimation command "Wald test" was employed.

### **3.8 Description and measurement of variables**

#### **3.8.1. Dependent variable**

##### **Total Loans and Advances**

The study focused on loans and advances as the dependent variable. Commercial banks provide lending services to their customers, which can be on a short-term, medium-term, or long-term basis. This lending is aimed at supporting the growth of businesses and contributing to the overall economic development of a country. In this study, the logarithm of total loans and advances was used as a measure of bank lending, which has also been utilized in previous studies such as those conducted by Makanile & Pastory (2022), Malede (2014), Taye (2021) and Amano (2014).

#### **3.8.2. Independent variables**

This section outlines the explanatory variables utilized in the econometric model for estimating the dependent variable. Consistent with previous studies on the drivers of bank lending, the explanatory variables are grouped into three categories: bank-specific, industry-specific, and macroeconomic variables. To be more precise, this subsection describes the factors that were employed as independent variables in the econometric model for determining the dependent variable. The explanatory variables were classified based on their relevance to the bank, industry, or overall macroeconomic conditions.

##### **Volume of deposit**

Volume of deposit refers to the total amount of money that customers have deposited in the bank. This includes both demand deposits and time deposits such as saving account and certificate of deposit. Banks use deposits to make loans, investments and the interest income they earn on these activities is a primary drive of their profitability. In line with the existing literature, volume of deposit is measured by the ratio of total deposit to total assets. A positive relationship is expected between volume of deposits and bank lending. Malede, (2014), Taye, (2021), Nuru, et al. (2021)

*H1: Volume of deposits has positive and significant effect on private commercial banks' lending.*

### **Credit risk**

Credit risk refers to a potential loss that banks face if a borrower fails to repay a loan or meets its financial obligations. It is the risk of borrowers default on their obligations or debt. It is a key consideration for banks and financial institutions. Credit risk may arise from a variety of factors such as the borrower's credit history, financial health and ability to generate cash flows to meet its debt obligations. In this study, credit risk was measured by a ratio of nonperforming loans to total asset. Malede,(2014), Amidu (2014).however it has insignificant effect in the study of Alkhazaleh (2017)

*H2: Credit risk has negative and significant effect on private commercial banks' lending activity.*

### **Liquidity**

Liquidity refers to the ability to meet the demands of depositors for cash withdrawals and to make new loans to borrowers. Banks need sufficient liquidity to maintain their operations smoothly and to fulfill their obligations to depositors and creditors. Liquidity is expressed in percentage terms. The liquid ratio can also be interpreted as the ratio of assets that can be easily converted to money to total customer deposit. Therefore, this ratio can be used to measure bank liquidity associated with bank deposit. If the greater the ratio of liquid assets, the higher the liquidity of the bank. Liquidity ratio had negative and significant impact on loan and advance. Dang (2011), Amano, (2014); Zelalem, (2016) inversely Liquidity ratio had positive and statistically significant effect on bank's lending Malede, (2014); Timsina,(2015), Taye,(2021).

*H3: Liquidity has positive and significant effect on private commercial banks' lending.*

### **Lending interest rate**

Lending interest rate refers to the amount of money a lender charges a borrower for the use of borrowed fund. Lending interest rate varies depending on a number of factors including creditworthiness of borrower, the type of loan being offered and prevailing market conditions. In this study, lending interest rate is measured by the average lending rate of banks. In other studies, Interest rate had negative and significant impact on loan and advance Amano, (2014), inversely interest rate had insignificant impact on loan Malede, (2014) and Makanile & Pastory (2022)

*H4: Lending interest rate has negative and significant effect on private commercial banks' lending.*

### **Bank concentration**

Bank concentration refers to the degree to which, a small number of large banks dominates the banking industry within a particular market. When a small number of large banks dominate the market, they may have significant market power that allows them to charge higher interest rates and fees, leading to reduced competition and less lending activity overall. Large banks may be less willing to lend to small businesses or individuals, which can limit access to credit for these groups. The ratio of total assets of each bank to the total assets of the industry is used as a measurement of bank concentration in this study. Bank concentration has a positive and significant effect in previous studies of Emmanuel et al (2013)

*H5: Bank concentration has negative and significant effect on private commercial banks' lending.*

### **Gross domestic product (GDP)**

Gross domestic product is a measurement of the total value of goods and services produced within the country's borders during a specific period. It is used as a way to measure a country's economic output and overall economic performance. GDP can have a significant effect on lending, as it is a key indicator of a country's economic activity and overall financial health. Generally, countries with strong and growing GDP tend to have more lending activity as businesses and individuals are more likely to seek loans to fund investments and expand their operations. This is because lenders are more confident in the ability of borrowers to repay loans in a strong and growing economy. In this study, the variable GDP was measured by the annual real GDP growth rate of the country. GDP has a positive and significant effect on lending in previous studies of Malede (2014), Alkhazaleh (2017) and Nuru, et al. (2021). However, it is contradictory with the findings of Emmanuel (2013), however the result is not associated with the findings of Bhattarai (2020) and Augustin (2012)

*H6: GDP has positive and significant effect on private commercial banks' lending.*

### **Inflation**

Inflation is the rate at which the general level of prices for goods and services is increasing over time. In other words, the purchasing power of money is decreasing at the rate. Inflation occurs when the supply of money in the economy increases faster than the supply of goods and services. This happens due to various factors such as, an increase in government spending, decrease in the supply of goods and services due to different reasons. This study used the annual inflation growth rate to measure the effect of variable inflation on bank lending. Inflation has positive and significant effect on lending in former studies of Alkhazaleh (2017) and Nuru, et al. (2021) however the result is not associated with the finding of Bhattarai (2020)

*H7: Inflation has negative and significant effect on private commercial banks' lending.*

**Exchange rate**

Exchange rate is the value of one currency in relation to another currency. Exchange rate has a significant effect on bank lending in developing countries. When the exchange rate of a developing country's currency depreciates, it can make it more expensive for the country to import goods and services, which can lead to higher inflation. Higher inflation makes more difficult for banks to lend as it can lead to higher interest rate and reduced demand for credit. In addition, a depreciating currency can increase the risk of default on loans denominated in foreign currency and borrowers may find it more difficult to repay their debts if their own currency loses value relation to the currency in which the loan is denominated. This leads banks to be more cautious in their lending practices and reduce their exposure to foreign currency denominated loans. In this study, weighted average exchange rate was used to measure exchange rate variation with in the country. Exchange rate has negative and significant effect on lending in previous study of Emmanuel (2013)

*H8: exchange rate has negative and significant effect on private commercial banks' lending.*

**3.9 Expected Results**

According to the reviewed theoretical and empirical literatures, different scholars tried to study about the determinants of bank lending in different countries including in Ethiopia. Based on the review the researcher tries to predict the expected results as below.

*Table 3.1 Expected results*

<b>variables</b>		<b>Measurement</b>	<b>Expected</b>	<b>results from previous studies</b>
------------------	--	--------------------	-----------------	--------------------------------------

			sign	
LAD	Total loan and advance	Natural Logarithm of Loans and Advances		
Vdep	Volume of deposit	Deposit/Total Asset	+	- Isa et al. (2019) + Abu Bakar et al. (2018) + Klolaini, et al. (2021)
Cr	Credit risk	non-performing loan / Total Asset	-	- Hoang (2020) - Klolaini, et al. (2021)
Lr	Liquidity ratio	Liquid asset / Total Deposit	+	+ Hoang (2020) -Amano (2014),
Llr	Lending interest rate	Annual average bank lending rate	-	- Emmanuel et al (2013) + Malede(2014)
GDP	Gross domestic product	annual real Growth rate of gross domestic product	+	+Dell'Ariccia and Marquez (2006) + Klolaini, et al. (2021)
Inf	Inflation rate	annual general inflation rate	-	+ Klolaini, et al. (2021)
BC	Bank Concentration	total Asset of i th Bank / Total Asset of Banking Industry	-	- Emmanuel et al (2013) + Aisen and Franken (2010)
Exr	Exchange rate	Period weighted average rate	-	- Emmanuel et al (2013)

## CHAPTER FOUR

### DATA ANALYSIS, PRESENTATION AND DISCUSSION OF FINDINGS

#### 4.1 Introduction

This chapter focuses on the analysis and interpretation of the determinants of bank lending variables. Data analysis tools, which are introduced in chapter 3, were utilized to conduct the analysis. Firstly, the background of the data was presented to provide an overview of the chapter. Then, results obtained from factor analysis, Pearson's correlation coefficient analysis, and diagnostic tests such as normality, multicollinearity, and heteroscedasticity tests were analyzed and presented. Through these data analysis techniques, the hypotheses, which were introduced in chapter 1, were tested to determine their validity. In summary, this chapter aims to provide a comprehensive analysis of the determinants of bank lending variables through data analysis techniques.

#### 4.2 Descriptive statistics

Descriptive statistics are used to summarize and describe the central tendency, variability and distribution of the data. The below table provides descriptive statistics for variables that determine bank lending. The variables include the dependent variable called loan and advance and the independent variables are volume of deposit, credit risk, liquidity, lending interest rate, bank concentration, GDP, inflation and exchange rate. For instance, the mean, median and standard deviation of each variable provides insights in to their average values, spread and degree of variation. The minimum and maximum values show the range of each variable.

Table 4.1 Descriptive statistics of variables

Variables	Observations	mean	Std. Dev.	Min	Max
Lad	70	1.71e+10	1.71e+10	1.88e+09	8.60e+10
Vdep	70	.7824225	.0424252	.6428164	.8670641
Cr	70	.0224229	.0278467	.0035525	.1756461
Lr	70	.2324903	.0641443	.133458	.4052342
Lir	70	.1214593	.0159198	.0764199	.1654624
Bc	70	.0254286	.0166538	.01	.07

GDP	70	.08142857	1.56303	.06	.1
Inf	70	.1314286	4.946923	.07	.2
Exr	70	28.61723	7.720645	20.5659	43.691

Table 4.1 presents the descriptive statistics of the econometric model, with LaD serving as the dependent variable and Vdep, cr, lr, lir, bc, gdp, inf, and exr acting as the independent variables. The sample size consists of 70 observations spanning from 2015 to 2021, covering ten banks. The results reveal that the minimum loan granted to customers was 1.8 billion birr, while the maximum loan amount was 86 billion birr, with an average loan amount of 17 billion birr. As for the explanatory variables, the average deposit volume was 78.2%, with a range from 64.2% to 86.7%, and a standard deviation of 0.04. The average credit risk was 2.2%, with a minimum value of 0.3% and a maximum value of 17.5%, indicating a standard deviation of 2.7% from the mean. The average liquidity was 23.2%, which exceeds the requirement of 15% NBE Directive № SBB/57/2014, with a range from 13.3% to 40.5% and a deviation of 6% from the mean. The average lending interest rate was approximately 12%, with a minimum rate of 8% and a maximum of 16.5%. The average bank concentration was 2.5% with a minimum of 1% and a maximum of 7%. The average growth rate of GDP was 8.1%, ranging from 6% to 10%. The average inflation rate was 13%, with a minimum of 7% and a maximum of 20%. Finally, the study period's average exchange rate was 28.6 birr, ranging from 20.56 birr to 43.69 birr, with a deviation of 7.71 from the mean.

### 4.3 Correlation Analysis

Correlation analysis is a statistical technique that measures the strength and direction of the linear relationship between two variables. The correlation coefficient is a numerical value that ranges from -1 to +1. A correlation coefficient of +1 indicates a perfect positive association between the two variables, while a correlation coefficient of -1 shows a perfect negative association. In contrast, a correlation coefficient of zero suggests no association between the two variables. This powerful tool provides valuable insights into the degree to which variables are related, informing researchers and decision-makers about the underlying patterns and trends in the data. (Brook, 2014).

Table 4.2 correlation analysis of variables

	ln_lad	Vdep	Cr	lr	Lir	bc	gdp	Inf	exr
ln_lad	1.0000								
Vdep	0.3588	1.0000							
Cr	-0.1224	0.0937	1.0000						
Lr	-0.6304	-0.2039	0.0845	1.0000					
Lir	0.1484	-0.0104	0.0985	-0.1189	1.0000				
Bc	0.7910	0.2324	-0.1844	-0.4471	-0.0916	1.0000			
Gdp	-0.5708	-0.2594	-0.1068	0.3574	-0.2497	-0.1861	1.0000		
Inf	0.6590	0.2553	0.0953	-0.4116	0.3195	0.2086	-0.9398	1.0000	
Exr	0.7016	0.2523	0.1404	-0.4596	0.2043	0.2377	-0.8371	0.9201	1.0000

Source: own computation through STATA 15.

Base on the above table the correlation of variables is loan and advance is positively correlated with volume of deposit, lending interest rate, bank concentration inflation and exchange rate. However, it is negatively correlated with credit risk, liquidity and gross domestic product. These coefficients indicate the strength and direction of linear relationship between variables. A correlation coefficient of 0.3588 between loan and advance and volume of deposit (vdep) indicates that a moderate positive correlation between the two variables meaning that as volume of deposit increases; loan and advance also tend to increase. A correlation coefficient of -0.1224 between loan and advance and credit risk (cr) indicates that a negative correlation between the two variables meaning that as credit risk increases; loan and advance also tend to decrease slightly.

A correlation coefficient of -0.6304 between loan and advance and liquidity indicates that a moderate negative correlation between the two variables meaning that as liquidity increases, loan and advance tend to decrease. A correlation coefficient of 0.1484 between loan and advance and lending interest rate indicates that a positive correlation between the two variables meaning that as lending interest rate increases, loan and advance also tend to increase. A correlation coefficient of 0.7910 between loan and advance and bank concentration (bc) indicates a strong positive correlation between the two variables meaning that as bank concentration increases, loan and advance also tend to increase

A correlation coefficient of -0.6590 between loan and advance and GDP indicates that a strong negative correlation between the two variables meaning that as GDP increases, loan and advance tend to decrease. A correlation coefficient of 0.6590 between loan and advance and inflation indicates a strong positive correlation between the two variables meaning that as inflation increases, loan and advance also tend to increase. A correlation coefficient of 0.7016 between loan and advance and exchange rate (exr) indicates that a strong positive correlation between the two variables meaning that as exchange rate increases; loan and advance also tend to increase

#### **4.4 Testing Assumptions of Classical Linear Regression Model (CLRM)**

In order to ensure the validity of the results obtained from a regression analysis, it is crucial to test and satisfy the basic assumptions of the classical linear regression model (CLRM). Failure to do so may lead to incorrect conclusions and undermine the quality of the research. In this study, various CLRM assumptions were tested to identify any misspecifications and correct them to improve the research quality. The CLRM assumptions that were tested in this study include the errors equal zero mean test, heteroscedasticity, autocorrelation, normality, multicollinearity, and model specification test. Each of these assumptions was tested to determine whether the data fits the basic assumptions of the CLRM. The results of these tests were carefully analyzed, and decision rules were formulated to determine whether the assumptions were met or violated. The implications of the test results were discussed, and any necessary corrections were made to ensure the validity of the regression analysis. Testing and satisfying the CLRM assumptions is a critical step in conducting a regression analysis. By doing so, researchers can ensure that their results are reliable and valid. The findings of this study demonstrate the importance of carefully testing and correcting any misspecifications in the CLRM assumptions to produce accurate and trustworthy results.

##### **4.4.1 Test for average value of the error term is zero ( $E(u_t) = 0$ )**

According to Brooks (2008), if a constant term is included in the regression equation, this assumption will never be violated. Thus, in this study since the regression model included a constant term, the average value of the error term is expected to be zero. Therefore this assumption was not violated.

#### 4.4.2 Test for Heteroscedasticity

Heteroscedasticity problem is arising when the variance of the disturbance term is not constant. That is the variance of the error term is unequally spread over the model. The problem of heteroscedasticity results larger confidence interval as result t and f test are likely give inaccurate result of the parameter and statistically insignificant coefficient.

This study uses panel data post estimation commands called “Wald test” in order to test whether there is heteroscedastic problem or not in the error term for the regression model used for this study. If the problem exists in the result, the P-value less than significance level, robust standard error is used to correct this problem.

Table 4.3 Heteroscedasticity Test

Modified Wald test for GroupWise heteroscedasticity in fixed effect regression model

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H0: $\sigma^2(i) = \sigma^2$ for all i
chi2 (10) = 350.64
Prob>chi2 = 0.0000

---

*Source: computed from STATA 15*

The above output provides the result of a modified Wald test for GroupWise heteroscedasticity in fixed effect regression model. The null hypothesis (H0) being tested is that the variance of the error term for each group (i) is equal to the overall variance of the error term ( $\sigma^2$ ). In other word, the error variance is assumed constant across all groups. The p-value associated with the chi-square value is 0.000 (Prob > chi2 = 0.000), which is less than the conventional threshold of 0.05. This indicates strong evidence against the null hypothesis and suggests that the error variances are not equal across all groups. In summary, the modified wald test for group wise heteroscedasticity in the fixed effect regression model provides evidence of significant heteroscedasticity in the error term. As a result, the researcher used robust standard error to correct heteroscedasticity problem in the model. Which means to make the model suitable with the input data.

### 4.4.3 Multi-collinearity Test

Multicollinearity refers to the existence of perfect or exact linear relationship among some or all explanatory variables in the model. When multicollinearity is present standard errors may be inflated. The existence of the problem of multicollinearity is tested using correlation coefficient test for panel data analysis. Multicollinearity problem can be solved by dropping or addition to variables. However, dropping variables results to committing model specification bias therefore increasing the sample size by increasing additional variable is the best remedy (Guajarati, 2009). Multicollinearity can be a serious issue in econometric models, as it can lead to inefficient sample parameter estimates and large standard errors. This, in turn, renders the coefficient values and signs of the variables unreliable. To detect the presence of multicollinearity in this study, we utilized the Pearson correlation coefficient to examine the relationships between independent variables. If the correlation coefficient is below 0.9, or less than this value, it is unlikely to cause a serious multicollinearity problem. By using this method, we can identify and mitigate the potential issues stemming from multicollinearity, ensuring the reliability and accuracy of our model's results. (Anderson, et al, 2008). The Pearson correlation test for panel data estimation result is presented below.

Table 4.4 Multicollinearity Test

	Vdep	Cr	Lr	Lir	Bc	GDP	Inf	Exr
Vdep	1.000							
Cr	-0.0337	1.0000						
Lr	-0.0004	-0.1955	1.0000					
Lir	-0.0854	-0.0090	0.0197	1.0000				
Bc	-0.0971	0.1447	-0.0587	0.4203	1.0000			
GDP	0.0975	0.0727	0.0432	-0.3021	-0.1389	1.0000		
Inf	0.0509	0.1234	-0.0113	-0.4686	-0.1474	0.800	1.0000	
Exr	-0.0422	-0.2522	0.3084	0.1869	-0.2795	-0.2182	-0.6512	1.0000

Source: computed from STATA 15

To assess the presence of multicollinearity in the model, examined the correlation coefficients between the predictor variables, as presented in Table 4.4. The results indicate that there is no strong pairwise correlation between the explanatory variables, with the highest correlation

coefficient being 0.8 between GDP and inflation. According to Hair et al. (2006), correlation coefficients below 0.8 are unlikely to cause serious multicollinearity issues. As such, since our model has a correlation coefficient of 0.8, which is below the threshold, it can be concluded that multicollinearity is not a significant concern in this study. This finding enhances the reliability and validity of our model's results, as we can be confident that the independent variables are not unduly influencing one another.

#### 4.4.4 Normality Test

Normality test is a statistical test used to determine whether a given set of data or sample follows a normal distribution. It is also known as Gaussian distribution or bell curve which is a common probability distribution that is symmetric around the mean and characterized by its mean and standard deviation.

The hypothesis for the normality test was formulated as follows:

H0: the data is normally distributed

H1: the data is not normally distributed

Decision Rule: Reject H0 if p-value of skewness and kurtosis test is less than significance level. Otherwise, do not reject.

Table 4.5 Normality test

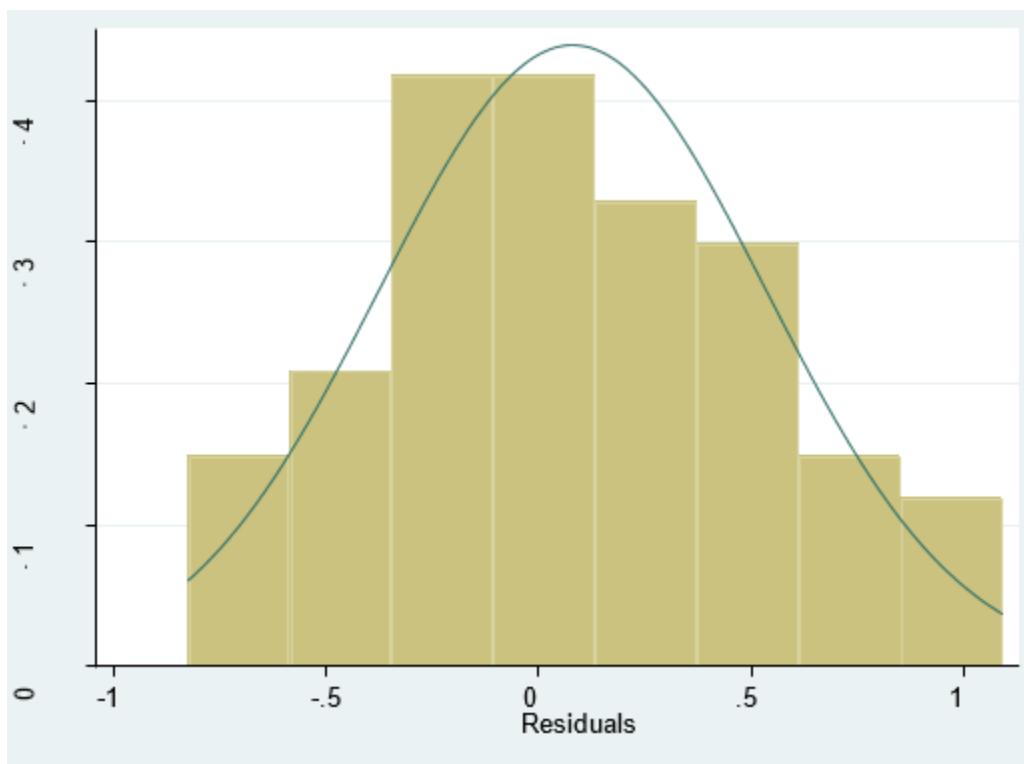
Skewness/Kurtosis tests for Normality					
Variable	Obs	Pr(Skewness)	Pr(Kurtosis)	adj chi2(2)	Prob>chi2
Resid	70	0.6797	0.2810	1.38	0.5024

The table shows the output result of a skewness and kurtosis test for normality for the variable loan and advance. The first column indicates the number of observations for the variable loan and advance. The second and third column shows the p-values for skewness and kurtosis tests respectively. The fourth column shows the adjusted chi-square test statistic based on the joint distribution of the skewness and kurtosis statistics. Lastly, the fifth column shows the p-value for this joint test.

Based on the table result, the p-value for skewness test is 0.6797, which is greater than the usual significance level of 0.05. This indicates that there is no evidence to reject the null hypothesis. Therefore, it is possible to conclude the variable is normally distributed based on the skewness test. Similarly, the p-value for the kurtosis test is 0.2810, which is also greater than the usual

significance level of 0.05. This indicates that there is no evidence to reject the null hypothesis that the variable loan and advance is normally distributed based on the kurtosis test. The joint test of skewness and kurtosis (adj-chi2 (2)) also provides evidence in favor of normality with a chi-square test statistic of 1.38 and a p-value of 0.502.

Additionally, it is important to visualize the distribution of the data using histogram to consider the context of the data being analyzed when making decisions about the appropriate statistical method. Therefore the below graph strengthens the skewness and kurtosis tests result and the conclusion is the variable is normally distributed.



Source: STATA output

#### **4.5 Choosing random effect (RE) vs. fixed effect (FE) models**

The results of the analysis indicate that all of the assumptions of the classical linear regression model (CLRM) have been met, and therefore, the ordinary least squares (OLS) estimation can be applied. However, since this study involves panel data, there are two types of panel data estimator approaches that can be used: fixed effects models (FEM) and random effects models (REM).

Fixed effects models allow for the intercept value in the regression model to differ across entities, but not over time. On the other hand, all slope estimates are fixed both cross-sectionally and over time. Random effects models, on the other hand, propose different intercept terms for each entity, which are assumed to be constant over time. In addition, the relationships between the explanatory and explained variables are assumed to be the same both cross-sectionally and temporally. To determine whether individual effects are fixed or random, a Hausman specification test was conducted. This test provided evidence in favor of a particular model. The Hausman test is used to decide between fixed and random effects models. The test determines whether the random effects model is better than the fixed effects model by comparing the estimated coefficients of both models. If there is a significant difference between the coefficients of the two models, then the random effects model is preferred. The choice between fixed and random effects models depends on the specific research question and the nature of the panel data being analyzed. The results of the Hausman specification test can provide valuable insights into which model is most appropriate for the given research question.

#### 4.5.1 Hausman Test

The Hausman test is a statistical method used to determine the most appropriate model between the random effects and fixed effects models. The researcher formulated alternative and null hypotheses, and the resulting data was used to compare the p-values for each model. If the p-value for the fixed effects model is less than 0.05, then the fixed effects model is deemed to be more appropriate. Conversely, if the p-value for the random effects model is greater than 0.05, then the random effects model is deemed to be more appropriate. In this study, the Hausman test was conducted to select the most suitable model for the data, ensuring that the chosen model accurately captures the underlying relationships between the variables.

If Result: H0: Select RE ( $p > 0.05$ )

H1: Select FE ( $p < 0.05$ )

Table 4.6 Hausman test

	(b) fe	(B) re	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
vdep	.6565956	.8520362	-.1954406	.
cr	-3.688621	-2.616318	-1.072303	.
lr	-.2441444	-1.427967	1.183823	.1590103

---

lir	2.793741	4.763414	-1.969673	1.020207
bc	7.222721	32.88473	-25.66201	5.503076
gdp	13.63013	12.06774	1.562394	.
inf	5.134287	4.802982	.3313057	.
exr	.0693936	.0490478	.0203458	

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

Test: Ho: difference in coefficients not systematic  
chi2(8) = (b-B)'[(V\_b-V\_B)^(-1)](b-B)  
= 53.34  
Prob>chi2 = 0.0000  
(V\_b-V\_B is not positive definite)

---

Source: computed from STATA 15

According to hausman test the above table shows Prob>chi2 = 0.000 which means p <0.05 and fixed effect model is appropriate to estimate the effect of explanatory variables on the independent variable.so we reject the null hypothesis.

#### 4.6 Regression results analysis

This section presents the empirical findings from the econometric model used to analyze the determinants of private commercial banks' lending in Ethiopia. The model used in this study is a regression analysis that examines the factors that can influence lending by private commercial banks in Ethiopia. The empirical model used in this study includes several independent variables that are expected to affect the level of lending by private commercial banks. These independent variables include volume of deposit, credit risk, liquidity ratio, lending interest rate, bank concentration, GDP, inflation and exchange rate. The dependent variable in the model is total loan and advances of private commercial banks in Ethiopia.

$$\text{Ln\_LADit} = f(\alpha_0 + \beta_1 \text{Vdepit}, \beta_2 \text{Crit}, \beta_3 \text{Lrit}, \beta_4 \text{Lirit}, \beta_5 \text{Bcit}, \beta_6 \text{GDPit}, \beta_7 \text{Infit}, \beta_8 \text{Exrit} + \mu_i) \dots \dots \dots (2)$$

Source: developed by researcher

#### Fixed effect regression model output

Table 4.7 Fixed Effect Regression Model output

Fixed-effects (within) regression
(Std. Err. adjusted for 10 clusters in banks)
Robust

---

ln_lad	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
vdep	.6565956	.1116477	5.88	0.000	.404031	.9091602
cr	-3.688621	.7683336	-4.80	0.001	-5.426713	-1.95053
lr	-.2441444	.7721232	-0.32	0.759	-1.990808	1.50252
lir	2.793741	2.975214	0.94	0.372	-3.93666	9.524142
bc	7.222721	5.281655	1.37	0.205	-4.725212	19.17065
gdp	13.63013	2.942781	4.63	0.001	6.973097	20.28716
inf	5.134287	1.595857	3.22	0.011	1.524209	8.744366
exr	.0693936	.0044313	15.66	0.000	.0593693	.0794179
_cons	18.49802	.3898555	47.45	0.000	17.6161	19.37993
sigma_u	.48354106	R-sq:	within = 0.9362		Number of obs = 70	
sigma_e	.19670553		between = 0.9562		F(8,9) = 2621.29	
corr(u_i, Xb) =	0.2130		Overall = 0.7175		Prob > F = 0.0000	
rho	.85800972	(fraction of variance due to u_i)			Number of groups = 10	

*Source: computed from STATA 15*

Fixed effect regression analysis was conducted to establish the casual relationship between total loan and advance and the independent variables. The multiple linear regression equation is stated below:

$$\ln\_ladit = 18.498 + 0.656vdep - 3.688cr - 0.244lr + 2.793lir + 7.222bc + 13.63gdp + 5.134inf + 0.069exr + \mu$$

The above table shows the output of fixed effect regression model with robust standard error to solve the heteroscedasticity problem in the banks group variable. The within R-square of the model is 0.9362, which indicates that the group level variation in the dependent variable is well explained by the independent variable. The between R-square of the model is 0.9562, which indicates that the individual level variation in the dependent variable is well explained by the independent variable. Regarding to R-square, it is the magnitude of the influence or ability of predictor variables simultaneously in describing the response variable. The model result revealed that the overall R Square is 0.717, which means the influence of independent variables of the model can explain 71.7% of the total variation in the dependent variable. This result clearly indicates that the model adopted is reliable in the study of bank lending and factors affecting it. The remaining 28.3% of changes was explained by other factors, which are not included in the model. Furthermore, the value of Prob > F in regression results is = 0.000, which is less than 0.05, which suggests that the regression model as a whole statistically significant in explaining the variation in the dependent variable. The result show that the independent variables, which are

volume of deposit, credit risk, GDP, inflation and exchange rate, are statistically significant to predict the dependent variable of banks.

#### **4.6.1 The effect of deposit on lending**

The regression result indicated in the above table, the coefficient of volume of deposit measured by the ratio of customer deposit to total asset is 0.656 with 0.028 p-values or level of significance. This shows that when other explanatory variables remain constant, one percent increase in volume of deposit leads to an increase in total loans and advances of sampled private commercial banks by 0.656. The p-value for the coefficient is 0.000, which is less than the significant level of 0.05, indicating the strong evidence of volume of deposit is influencing loan and advance. Therefore, the researcher failed to reject the hypothesis that volume of deposit has a positive and significant effect on bank lending. This result is supported by the prior findings of Neelam T (2015) and Klolaini et al (2021) in global studies. Regarding to local studies the result was similar with Malede (2014,) Amano (2014) and Taye (2021).

The positive relationship between the volume of deposits and private commercial bank lending in Ethiopia can be attributed to the fact that deposits collected from the public are the primary source of funds for lending. The study's model results show that the volume of deposits has a positive and statistically significant impact on lending, indicating that bank lending is reliant on the volume of deposits. Therefore, deposits can significantly affect commercial banks' lending in a positive way. This implies that when private commercial banks increase their deposits, their ability to provide more loans and advances to their customers also increases. In essence, a larger deposit base allows banks to expand their lending activities and fuel economic growth.

#### **4.6.2 The effect of credit risk on lending**

The regression analysis revealed that credit risk, as measured by the ratio of non-performing loans to total assets, has a significant negative impact on bank lending. The coefficient of credit risk was found to be -3.688 with a high level of statistical significance (p-value of 0.001). This indicates that when other explanatory variables remain constant at their average values, a one percent increase in credit risk would lead to a decline of 3.688 percent in the total loans and advances provided by the sampled private commercial banks. Therefore, the null hypothesis that credit risk has a negative and significant effect on bank lending was not rejected, highlighting the

importance of managing credit risk in maintaining a healthy banking sector. This finding underscores the need for banks to take steps to mitigate credit risk through careful risk management practices, such as credit analysis and monitoring, in order to maintain a strong and sustainable lending portfolio. The findings of this study are consistent with the results of a study conducted by Arintoko (2020), Hong (2020) and Klolaini et al(2021) in global studies. Regarding to local studies the result was similar with Taye (2021). However it is contradicted with the finding of Augustin (2012) and Malede (2014,)

Credit risk has negative and significant relationship with the bank lending means higher NPL results higher default risk. If NPL increases, it will discourage banks to increase the amount of loans granted to the customer. In addition, the quality of existing credit affects lending decisions for banks. A higher NPL ratio shows that bank loans become uncollectable and bad at a higher rate. As a result, banks are required to maintain a larger number of provisions against those bad loans. Such a provisioning requirement holds in banks' scarce funds, which results in reduction of lending activities. Non-performing loans can have significant implications for banks, as they typically require larger reserves to cover potential losses. In Ethiopia, all banks follow the National Bank of Ethiopia's Supervision of Banking Business Directive SBB43/2008, which outlines the provision requirements for different loan categories. Loans and advances are classified into five categories, ranging from pass loans to loss loans, with provision requirements ranging from 1% to 100% of the outstanding loan balance. Given the importance of credit risk in determining a bank's lending activities, the study suggests that commercial banks should prioritize credit risk management to maintain a healthy lending portfolio. Lower levels of non-performing loans indicate better credit quality, which can encourage banks to increase their lending activities. By managing credit risk effectively, banks can minimize potential losses and maintain a strong financial position, while also providing more loans and advances to their customers.

#### **4.6.3 The effect of liquidity ratio on lending**

In this study liquidity ratio was measured by the ratio of banks liquid asset to customer deposits. The hypothesis on the effect of liquidity on bank lending was tested and it shows liquidity ratio has negative and statistically insignificant effect on lending of banks. The estimated coefficient of liquidity is -0.244, which implies that a unit increase in liquidity leads to a decrease of loan

and advance by 0.244. The coefficient was also supported by a p-value of 0.759, which rejects the hypothesis that liquidity ratio has positive and statistically significant effect on private commercial banks' lending. The results are consistent with Timsina (2016), Bhattarai, (2020) and Taye, (2021). However the result was not agree with the finding of Mekanile and pastoty , (2022) and Malede (2014) .

The study reveals an inverse relationship between a bank's liquid assets to deposit ratio and private banks lending. This highlights the importance for banks to maintain an appropriate balance between investing in long-term loans and keeping some of their funds in cash or reserves at the central bank to ensure adequate liquidity. Commercial banks place a higher priority on liquidity than many other types of financial institutions due to the high turnover of their debt liabilities. A significant portion of a bank's gross outflows is typically met by its current gross receipts, which are generated through its day-to-day business operations. As custodians of public deposits, commercial banks are obligated to return the money to depositors immediately upon request. Therefore, it is essential for banks to remain adequately liquid to meet these obligations and maintain public trust. By managing their liquidity effectively, banks can ensure their long-term stability and resilience, while also fulfilling their role as a reliable source of lending for businesses and individuals.

#### **4.6.4 The effect of lending interest rate on lending**

Another hypothesis related to the effect of lending interest rate on the lending of banks in Ethiopia, whereby it was found that the relationship between interest rate and lending of banks was not statistically significant. The estimated coefficient of interest rate is 2.79, which implies that a percent increase in interest rate would lead to an increasing of 2.79 in the lending of private commercial banks. The coefficient was also supported by a p-value of 0.372, indicating that the estimated coefficient is statistically different from zero. Thus, at a 5% level of significance, we conclude that interest rate contributed insignificantly to the overall lending of private commercial banks. The study finding is agree with Malede (2014) conducted a study on determinants of commercial banks' lending: in Ethiopia but it is contradict with Emmanuel et al (2013). The study found that the lending interest rate has a positive but statistically insignificant relationship with commercial banks' lending. Therefore, the researcher rejects the null hypothesis

that is lending interest rate has negative and significant effect on lending. However, Tomak, (2013) found that interest rates have a significant impact on lending.

Regarding to the positive association between lending interest rate and lending, when interest rate is very low as a result banks are not making much profit on their loans, they may be more willing to lend if interest rates rise and they can earn a higher return on their loans. Similarly, if inflation is high, interest rates are increased in response. Therefore, banks may be more willing to lend in order to take advantage of the higher interest rate.

#### **4.6.5 The effect of bank concentration on lending**

Furthermore, the study tested the effect of bank concentration on lending of banks in Ethiopia. The results showed an insignificant relationship between the bank concentration and the lending of banks in Ethiopia. The estimated coefficient of bank concentration is 7.22, which implies that a unit increase in bank concentration would lead to a change of 7.22 in the lending of the private commercial banks. The coefficient was supported by a p-value of 0.205, which rejects the hypothesis that bank concentration has negative and statistically insignificant effect on private bank lending. Thus, we conclude that bank concentration has insignificant contribution to the overall lending of private commercial banks with in the review period. The results are associated with Emmanuel et al. (2013) conducted a study on determinants of bank lending behavior in Ghana. The study found that the banking industry structure has a positive and significant effect on bank lending behavior. Additionally, they conclude that a competitive banking environment is likely to enhance bank-lending behavior. Similarly, the analysis suggests that, bank concentration has positive and statistically insignificant relationship with commercial bank lending. For that the null hypothesis, which states there is negative relationship between bank concentration and commercial bank lending was rejected. The alternative hypothesis was accepted. However, it is insignificant. Hence, Ethiopian commercial bank lending does not influenced by bank concentration with in the period from 2015 to 2021.

The possible reason for positive relation between lending and bank concentration is, a concentrated banking markets offer a more diversified range of lending products and services, which can attract more borrowers and increase lending activity. Additionally, larger banks may be better able to share risk across a wide range of assets and borrowers, which can reduce the overall risk of their loan portfolios and make them willing to lend. Concentrated banking markets

may offer stronger network effects, when banks benefit from shared infrastructure, information and relationship with customers and other financial institutions.

#### **4.6.6 The effect of Gross Domestic Product (GDP) on lending**

The study investigated the relationship between GDP and private commercial bank lending in Ethiopia and found a statistically significant positive correlation between the two variables. The estimated coefficient of GDP was 13.6, indicating that a one percent increase in GDP would result in a 13.6 percent increase in lending by private commercial banks. This coefficient was supported by a p-value of 0.001, which suggests that the estimated coefficient is statistically different from zero. As a result, the null hypothesis, which posits a positive and significant relationship between GDP and private commercial bank lending, was not rejected. Therefore, the study concludes that GDP plays a significant role in the overall lending behavior of private commercial banks in Ethiopia. This finding highlights the importance of economic growth in driving lending activities in the banking sector, as well as the role of banks in supporting economic development through their lending activities. The study finding is agree with, Bhattarai (2019), Alkhazaleh (2017)

The possible reason for positive association between lending and GDP is, GDP is the indicator for the status of the economy and every commercial bank pays attention to the overall macroeconomic situation of the country. If economy is in boom, banks provide huge amount of loan to finance infrastructure projects, businesses and consumers, which can help them to maintain investment level and spending without any hesitation and vice versa.

#### **4.6.7 The effect of inflation on lending**

The study also examined the relationship between inflation and private commercial bank lending in Ethiopia and found a statistically significant positive correlation between the two variables. The estimated coefficient of inflation was 5.13, indicating that a unit increase in inflation would result in a 5.13 percent increase in lending by private commercial banks. This coefficient was supported by a p-value of 0.011, which suggests that the estimated coefficient is statistically different from zero and rejects the hypothesis that inflation has a negative effect on bank lending. Therefore, the study concludes that inflation plays a significant role in the overall lending behavior of private commercial banks in Ethiopia. This finding highlights the importance of

managing inflation in promoting economic growth and supporting lending activities in the banking sector, while also emphasizing the need for banks to carefully monitor inflation trends and adjust their lending policies accordingly. The study finding is agree with, Bhattarai (2019), Alkhazaleh (2017)

The reason for positive relationship of bank lending with is inflation is, when there is high inflation it increases the demand for loans, as borrowers may need more money to maintain their purchasing power, which increases bank lending. Inflation creates a situation where the cost of borrowing money is lower than the rate of inflation. This means the real interest rate on loans is negative, which makes borrowing more attractive to both consumers and businesses. Additionally, in a situation when inflation is high, banks also be more willing to lend money because they can earn high interest rate on loans, which can help them to offset the effect of inflation on their profit.

#### **4.6.8 The effect of exchange rate on lending**

The study also investigated the impact of exchange rates on private commercial bank lending in Ethiopia. The results revealed a statistically significant positive relationship between exchange rates and bank lending, as indicated by the estimated coefficient of exchange rate, which was 0.069. This coefficient implies that a unit increase in exchange rates would lead to a 0.069 percent increase in lending by private commercial banks. The coefficient was also supported by a p-value of 0.000, which rejects the hypothesis that exchange rates have a negative effect on bank lending. Therefore, the study concludes that exchange rates contribute significantly to the overall lending behavior of private commercial banks in Ethiopia. This finding underscores the importance of monitoring exchange rate fluctuations and their potential impact on lending activities, as well as the need for banks to adjust their lending policies accordingly to maintain a healthy lending portfolio. The result is not agree with the finding of Emmanuel et al. (2013).

The possible reason for direct relationship between exchange rate and loan and advance is, currency depreciation increases the cost of imports as it makes foreign goods and services more expensive in the domestic market as a result importers require bank loan to finance their activities for import purpose. On the other hand it leads to increase production and economic activity which can create opportunities for banks to lend to the business that are looking to take advantage of producing import substitution products to expand their operations and increase the

demand for their products. Moreover, it is important to note that currency depreciation also leads to inflationary pressure and increase the cost of borrowing that increases the willingness of banks to provide loan.

To summarize the regression result of the economic model, the following table shows the actual result and the expected relationship of explanatory variables with dependent variable.

Table 4.7 Comparison of test results with expectation

Variables	test results	Expected relationship with loan and advance	Hypothesis
Volume of deposit	Positive	Positive	Failed to reject
Credit risk	Negative	Negative	Failed to reject
Liquidity	Negative	Positive	Reject
Lending interest rate	Positive	Negative	Reject
Bank concentration	Positive	Negative	Reject
GDP	Positive	Positive	Failed to reject
Inflation	Positive	Negative	Reject
Exchange rate	Positive	Negative	Reject

## **CHAPTER FIVE**

### **SUMMARY, CONCLUSION AND RECOMMENDATIONS**

#### **5.1 Introduction**

This chapter presents the conclusion and recommendation from the research findings as per the objective of the study. Based on the findings of this study, suggestions for future research have been given on determinants of bank lending in Ethiopian private commercial banks. In this study, I analyzed the effect of bank specific determinants (volume of deposits, liquidity ratio, average lending rate and credit risk), industry specific determinants (bank concentration) and macroeconomic indicators called GDP, inflation and exchange rate on lending.

#### **5.2 summary**

This study investigated the determinants of bank lending in Ethiopian private commercial banks, using a panel dataset of ten banks over the period from 2015 to 2021. The study considered eight explanatory variables, including volume of deposit, liquidity ratio, credit risk, lending interest rate, bank concentration, gross domestic product, inflation, and exchange rate, and analyzed their impact on the predicted variable, loan and advance. The fixed effect regression method of estimation was used to analyze the data using the STATA 15 software. The results of the regression analysis revealed that 71% of the systematic variation in the dependent variable was explained by the independent variables. This study provides valuable insights into the determinants of bank lending in Ethiopia and highlights the importance of managing key factors such as credit risk, liquidity, and inflation in maintaining a healthy and sustainable lending portfolio. The findings of this study can be useful to policymakers, bank managers, and other stakeholders in the banking sector in developing effective strategies for promoting lending activities and supporting economic growth in Ethiopia.

#### **5.3 Conclusion**

The study identified factors that have a significant impact on bank lending in Ethiopia. Firstly, the volume of deposits was found to have a positive and significant effect on lending, indicating that banks with larger volumes of deposits are more likely to lend out money and have more loanable funds available, resulting in higher lending activities. Secondly, credit risk was found to have a negative and significant effect on lending, suggesting that banks should exercise caution

in their lending behavior when faced with higher levels of credit risk. The rise in nonperforming loans and advances can result in the loss of the bank's assets, which were receivable from borrowers, ultimately leading to a negative impact on profitability. The study also found that the liquidity ratio had a negative and insignificant effect on lending performance, indicating that this factor may not significantly impact the lending activities of Ethiopian private commercial banks. These findings provide valuable insights into the factors that influence bank lending in Ethiopia and can be useful in developing effective lending policies and strategies for promoting economic growth and financial stability in the country.

The study found that lending interest rates had a positive and insignificant effect on the lending behavior of Ethiopian private commercial banks during the study period. Regarding industry-specific determinants, the variable of bank concentration was found to have a positive and insignificant effect on lending performance, suggesting that changes in bank concentration had no significant impact on the lending behavior of Ethiopian private commercial banks during the study period, despite having a significant effect in other countries as described in the literature. The study also revealed that the macroeconomic determinants of GDP, inflation, and exchange rates had a statistically significant positive relationship with commercial bank lending during the study period, indicating that macroeconomic fluctuations can encourage banks to provide larger loans to the public. Overall, the study concluded that bank-specific and macroeconomic variables had a more significant impact on the lending behavior of Ethiopian private commercial banks during the study period, while other variables such as liquidity, lending interest rates, and bank concentration had no significant effect. These findings highlight the importance of carefully managing key factors such as volume of deposit, credit risk and macroeconomic conditions to maintain a healthy and sustainable lending portfolio in Ethiopian private commercial banks

#### **5.4 Recommendations**

The implication of this finding is important for policy makers and regulators in Ethiopia. For instance, policy makers should consider implementing policies to improve the financial health of private commercial banks such as encouraging higher level of deposits and also consider measures to reduce credit risk in the banking sector such as strengthening regulations and supervisions. The findings of this study offer important policy prescriptions. The coefficients of variables are higher for banking institutions, which validates bank policies to strengthen the

banking system of the country. First, based on the results regarding the positive impact of the deposit on bank lending private banks should continue to work on widening the deposit base by reducing the percentage of unbanked population over the country through creating awareness about banking services and using new banking technology. Moreover, commercial banks' should improve their way of advertising bank services with high level of service excellence and increase accessibility to collect and retain more deposits from customers to obtain more funds. Since the higher, the capabilities of banks to attract more deposits increase the ability to provide loan to the public. Second, credit risk constrains banks' capacity to expand loans. This requires regulatory authorities to devise policies that reduce non-performing loan ratios. In particular, banks consider to have good credit monitoring and follow-up to improve banks credit risk assessment.

Third, when macroeconomic variables such as GDP, inflation and exchange rate have positive and significant effect on bank lending which ensures the lending activity remains sustainable and beneficial to the economy. Therefore, banks should monitor lending standards, which means it is important to ensure that banks maintain appropriate lending standards to avoid excessive risk-taking and potential loan defaults. Regulators should monitor lending practices and ensure that banks are adequately assessing the creditworthiness of borrowers. Managing inflation that implies moderate inflation can stimulate lending activities. On the other hand, high inflation can lead to higher interest rates and reduced demand for credit. National bank should manage inflation by implementing appropriate monetary policy, such as adjusting interest rate and controlling the money supply.

Fourth, banks have better to manage foreign currency denominated loans and manage their risks through appropriate hedging strategies and monitoring of exchange rate fluctuations. This can help to avoid potential losses due to currency depreciation. Overall, while positive and significant effects of macroeconomic variables on bank lending can be beneficial for the economy. Therefore, it is important to ensure that lending activity remains sustainable and avoids excessive risk taking. Additionally, Effective regulation and risk management practices can help lending activities remains beneficial for the economy as a whole.

## **5.5 Suggestions for Future Research**

The study titled "Determinants of Bank Lending: The Case of Private Commercial Banks in Ethiopia" has focused solely on the determinants of bank lending from the supply side. However,

it is advisable to broaden the scope of the research by incorporating the demand side determinants as well. Furthermore, to gain a more comprehensive understanding of lending determinants, it would be beneficial to analyze the interaction between supply and demand factors and make detailed comparisons between lending determinants in commercial banks and microfinance institutions. Such an approach would provide a more nuanced and holistic perspective on the factors that influence lending in the Ethiopian banking industry.

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## APPENDIX- I: Descriptive Statistics of Data

Variable	Obs	Mean	Std. Dev.	Min	Max
lad	70	1.71e+10	1.71e+10	1.88e+09	8.60e+10
vdep	70	.7824225	.0424252	.6428164	.8670641
cr	70	.0224229	.0278467	.0035525	.1756461
lr	70	.2324903	.0641443	.133458	.4052342
lir	70	.1214593	.0159198	.0764199	.1654624
bc	70	.0254286	.0166538	.01	.07
gdp	70	.0814286	.0156303	.06	.1
inf	70	.1314286	.0494692	.07	.2
exr	70	28.61723	7.720645	20.5659	43.691

## Appendix- II: correlation analysis of variables

	ln_lad	Vdep	cr	Lr	Lir	bc	gdp	Inf	exr
ln_lad	1.0000								
vdep	0.3588	1.0000							
cr	-0.1224	0.0937	1.0000						
lr	-0.6304	-0.2039	0.0845	1.0000					
lir	0.1484	-0.0104	0.0985	-0.1189	1.0000				
bc	0.7910	0.2324	-0.1844	-0.4471	-0.0916	1.0000			
gdp	-0.5708	-0.2594	-0.1068	0.3574	-0.2497	-0.1861	1.0000		
inf	0.6590	0.2553	0.0953	-0.4116	0.3195	0.2086	-0.9398	1.0000	
exr	0.7016	0.2523	0.1404	-0.4596	0.2043	0.2377	-0.8371	0.9201	1.0000

## Appendix- III: Test of Heteroscedasticity; Wald Test

```
. xttest3
```

```
Modified Wald test for groupwise heteroskedasticity  
in fixed effect regression model
```

```
H0: sigma(i)^2 = sigma^2 for all i
```

```
chi2 (10) = 350.64
```

```
Prob>chi2 = 0.0000
```

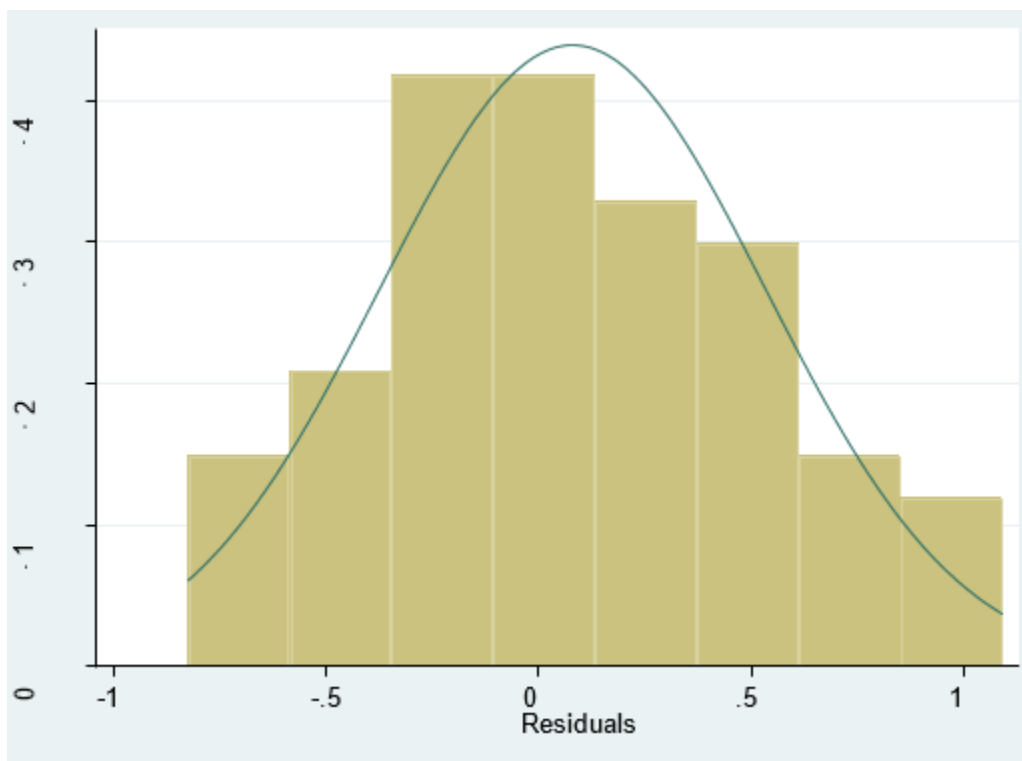
## Appendix- IV: multi-collinearity test

	<u>Vdep</u>	<u>Cr</u>	<u>Lr</u>	<u>Lir</u>	<u>Bc</u>	<u>GDP</u>	<u>Inf</u>	<u>Exr</u>
<u>Vdep</u>	1.000							
<u>Cr</u>	-0.0337	1.0000						
<u>Lr</u>	-0.0004	-0.1955	1.0000					
<u>Lir</u>	-0.0854	-0.0090	0.0197	1.0000				
<u>Bc</u>	-0.0971	0.1447	-0.0587	0.4203	1.0000			
<u>GDP</u>	0.0975	0.0727	0.0432	-0.3021	-0.1389	1.0000		
<u>Inf</u>	0.0509	0.1234	-0.0113	-0.4686	-0.1474	0.800	1.0000	
<u>Exr</u>	-0.0422	-0.2522	0.3084	0.1869	-0.2795	-0.2182	-0.6512	1.0000

### Appendix-V Normality test

#### Skewness/Kurtosis tests for Normality

<u>Variable</u>	<u>Obs</u>	<u>Pr(Skewness)</u>	<u>Pr(Kurtosis)</u>	<u>adj chi2(2)</u>	<u>Prob&gt;chi2</u>
<u>Resid</u>	70	0.6797	0.2810	1.38	0.5024





**Appendix- VIII:** list of sampled private commercial banks

No	Sampled private commercial banks
1	Awash bank
2	Bank of Abyssinia
3	Dashen bank
4	Hibret bank
5	Cooperative bank of Oromia
6	Lion international bank
7	Zemen bank
8	Berhan international bank
9	Bunna international bank
10	Abay bank