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COLLEGE OF BUSINESS AND ECONOMICS

DEPARTMENT OF ACCOUNTING AND FINANCE

DETEMINANTS OF SELECTED COMMERCIAL BANKS LENDING DECISION IN ETHIOPIA

A THESIS SUBMITTED TO DEPARTMENT OF ACCOUNTING AND FINANCE

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BY: TSEGABRHAN TAJEBE SHESHAY

IDNO: (CBE/PE/062/12)

ADVISOR: BEREKET ZEREAY (PhD)

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DECLARATION

I, the undersigned, declare that this study entitled "Determinants of Selected Commercial Banks Lending Decision in Ethiopia" is my own work. I have conducted the research work independently with the guidance and support of my principal research advisor. This study has not been submitted for any degree or diploma program in this or any other educational institutions and that all sources of materials used for the thesis have been properly or correctly acknowledged.

Declared by

Tsegabrhan Tajebe Sheshay	_____	_____
Name:	Signature	Date
Area: Mekelle, Ethiopia		
Bereket (PhD)	_____	_____
Advisor:	Signature	Date

ENDORSEMENT

The undersigned certify that they have read and here by recommend to Mekelle University College of Business and Economics Department of Accounting and Finance to accept the final thesis submitted by Tsegabrhan Tajebe and entitled "Determinants of Selected Commercial Banks Lending Decision in Ethiopia" in partial fulfillment of the requirement for the degree of Master of Science in Accounting and Finance.

Approved By:

Internal Examiner Abeba _____ Signature_____ Date _____

External Examiner Haylay Aregawi _____ Signature_____ Date _____

Advisor: Bereket Zereay(PhD) _____ Signature_____ Date _____

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ACRONYMS AND ABBREVIATIONS

BLD-Bank Lending Decision

CLRM- Classical Linear Regression Models

FE-Fixed Effect

GDP-Gross Domestic Product

NBE-National Bank of Ethiopia

NIM-Net Interest Margin

NPL-Non-Performing Loan

OLS- Ordinary Least Square

RE-Random Effect

ROA-Return on Asset

ROE-Return on Equity

TABLES OF CONTENT

Contents **Page**

LIST OF TABLES

LIST OF FIGURES

ABSTRACT

The main objective of this study was to investigate the determinants of lending decision of commercial banks in Ethiopia. In order to achieve the research objectives, the study used secondary data of 14 state owned and private commercial banks of Ethiopia from 2014 to 2023. The study also used quantitative research approach, descriptive and explanatory type of research design by adopting purposive sampling technique. Bank specific; industry specific and macroeconomic variables were analyzed by using the balanced panel random effect regression model. Eleven variables that affect banks' lending decision were selected and analyzed. The results showed that bank size, real GDP growth rate, volume of deposit, Return On Asset, Bank concentration were positive and statistically significant while liquidity ratio, exchange rate of birr to dollar, lending interest rate, cash reserve requirement ratio and inflation rate were found to be statistically significant with negative effects respectively on total loans and advanced by commercial banks in Ethiopia. However, credit risk ratio was statistically insignificant with negative effects on commercial banks' lending decision. Therefore, commercial banks should adjust their lending decision in response to the signals from these factors, such that positive signals like bank size , real GDP growth rate, volume of deposit, Return on Asset and Bank concentration in this study make banks become more favorably disposed to lending.

Key Words: *Bank lending decision, bank specific, industry specific, macroeconomic factors, commercial banks in Ethiopia*

CHAPTER ONE
1. INTRODUCTION

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1.1. Background of the Study

Due to a notice of understanding between the National Bank of Egypt and the then-king Menelik-II, managing an account history started to advance in Ethiopia in 1905 with the creation of Bank of Abyssinia. Afterward, in 1963, an announcement with the number 206/1963 built up the National Bank of Ethiopia as the Central Bank. In 1964, the National Bank of Ethiopia (NBE) was opened for trade. The Ethiopian central bank oversees the accessibility, supply, and fetched of the nation's cash and credit, as well as the administration of its outside saves and the setting and control of its outside trade rates. It too gives keeping money licenses and manages banks in Ethiopia. Right now, 30 private banks and three government-owned banks, counting the National Bank of Ethiopia, are dynamic in Ethiopia (NBE, 2024).

The private segment was permitted to take part within the managing an account industry through Announcement No. 84/1994. The managing an account industry in Ethiopia entered a modern time as a result of this. Taking after this announcement, Ethiopia saw a development in nearby private banks. In 2010 Ethiopia's private banks had critical development in each of its three essential keeping money exercises raising stores, disbursing advances, and taking care of outside trade. (Abdu, 2018) and (NBE, 2024).

Commercial banks' primary objective is to maximize their profits. Even though they have other objectives, all of the plans created and activities carried out as a result are intended to achieve this magnificent objective. Return on asset, net interest margin, and return on equity are the three most important ratios that can be used to assess the profitability of commercial banks (Murthy and Sree, 2003; Alexandru, 2008 as cited on the study of Ongore and Gemechu (2013) as cited in (Abdu, 2018).

Moreover, lending decision of commercial Banks may also depends on type of bank, the capital base, the deposit base and density of the deposit, the credit guidelines issued from time to time by the controlling authority and internal policies of the banks since loans and advances accounts for the highest percentage of the total assets of the banks. Though these factors or policies are internal, they, however, to a large extent mimic the general macroeconomic environment, such

that the general loan behavior of banks will be a reflection of the signals from the aggregate economy (Dereje Tsegay, 2018)

The laws of many nations define loans and advances differently. Loans and advances are described in Ethiopia as follows: "Any financial asset of a bank arising from direct or indirect advances (i.e. unplanned overdrafts, participations in loan syndication, the purchase of loans from another lender, etc.) or commitment to advance funds by a bank to a person that are conditioned on the person's obligation to repay the funds, either on a specified date or dates or on demand, usually with interest (Hussen and Habtamu, 2023).

The volume of loans that make up commercial banks' assets and the significant increase in loans given to borrowers in both the public and private sectors of the economy each year demonstrate that lending is their primary business. For the majority of commercial banks, lending is their main activity. As a result, banks' greatest asset and revenue source is their loan portfolio (Comptroller, 1998). These assets are regarded as the most valuable assets of banks because of the substantial contribution that loans provide to their financial well-being through interest revenue earnings.

Ethiopian commercial banks have carried out a variety of banking operations, such as drawing in deposits of all kinds and giving borrowers' advances and loans to help them increase their capacity for investment. Because of this, commercial banks contribute significantly to economic growth by upholding the three primary operating tenets of profitability, liquidity, and solvency cited as (Mitiku, 2014). However, a number of elements, including the current interest rate, deposit volume, amount of domestic and international investment, bank liquidity ratio, prestige, and public recognition, are taken into consideration when commercial banks decide to make loans (Olokoyo 2011) and cited in (Dereje, 2018). The banks must manage lending efficiently and act in a way that attracts and retains potential clients if they are meeting their primary goals of liquidity, profitability, and solvency.

Therefore, the study has been carried out to examine the determinants of lending decisions of selected commercial banks in Ethiopia from 2014 to 2023.

1.2. Statement of the Problem

Banks perform the role of financial intermediation by mobilizing savings from the public in the form of deposits and then lend to borrowers. Therefore, banks act as an intermediary to channel credits on behalf of the depositors. Banks are supposed to do this job better than the public as they specialize in the lending business. (Okoye, 2014)

Lending is the principal business activity for most commercial banks, makes the loan portfolio is typically the largest asset and the predominate source of revenue for commercial banks. Thus, the major portion of gross profit of the banking industry is earned from loans in the form of interest income and contributes the lion share of commercial banks earnings (Vong, 2009). But, on the other hand, it is also one of the greatest sources of risk to a financial institutions safety and soundness. Whether due to lax credit standards, poor portfolio risk management, or weakness in the economy, historically loan portfolio problems have been the major cause of losses and failures for commercial banks (Vong, 2009).

The researcher was motivated on the challenges of regulatory framework of the National Bank of Ethiopia which held 500 billion cash reserve requirement for every banks at its inceptions and the swing of foreign exchange rate of birr to dollar induced the value of domestic currency and resulted the fall of purchasing power of citizens. By and large, the inflation rate is significantly affected the running price of goods and services which added fuel to diminish the living standards of individuals. In turn, banks refrain themselves from extending loans to their customers since they could afraid of non-return of their capitals including of interest revenue- the main sources of their income.

Numerous internal and external factors impact commercial banks' lending operations. The regulatory body of central banks and other regulatory authorities in the financial sector of the economy, as well as general macroeconomic factors, are the sources of external factors affecting commercial banks' lending, while bank management controls internal factors (Olokoyo, 2011; Olumuyiwa, 2012; Malede, 2014). Investigating these key elements that affect commercial banks' lending practices is therefore a crucial task for various scholars cited in (Abay, 2021).

As a result, numerous studies have been conducted to investigate the factors that influence commercial banks' lending decisions in various nations across the globe. For instance, Commercial bank that holds High liquidity will reduce the banks capacity to extend loan and advance to customers (Rababah, 2015). Amidu (2014) and Daniel (2021) looked into how a large percentage of non-performing loans (NPLs) on banks' financial statements may discourage banks from making loans and, as a result, lower the amount of money that banks lend. According to Imran and Nishat (2013), banks with large deposit volumes would have more liquidity and loan-making capacity.

In the study of Mitku (2014), Olusanya et al. (2012), and Amano (2014) investigated the factors influencing commercial banks' lending decisions in Ethiopia and discovered that deposit volume had a favorable and significant impact on these decisions. Zelalem (2017) and Aytenew (2016) discovered a negative correlation between loan interest rates and advances. Nonetheless, Taye (2020) and Malde (2014) discovered a strong positive correlation. According to Olokoyo (2011), commercial banks benefit from adherence to the norms and regulations issued by the National Bank, and liquidity ratios have no detrimental effects on banks' lending practices. However, according to Taye (2020), and Abay (2021), there is a negative correlation between the liquidity ratio and loans and advances. Among macroeconomic factors, the lending interest rate has a significant and adverse impact on commercial bank loans, according to Helina (2017), Tsegay (2020), Semirdin (2021), and Yitayew (2021).In contrast, the interest rates of Abay (2021), Zelalem (2019), and Hussen and Habtamu (2023) have no impact on bank lending activity.While Dereje (2018) and Girma (2020) verified a negative but insignificant effect, Yitayew (2021), Semeredin (2021), and Zelalem (2019) assert that the cash reserve requirement has a negative and significant influence on bank lending. Nevertheless, those research' findings were inconsistent.

On the other hand, quantitative research methods and explanatory research designs were used in the studies of Berhanu (2016) and Semeredin (2021), while Tadiyos (2018), Zelalem (2019), Misganu (2021), Hussen, and Habtamu (2023) used both quantitatice and explanatory. While Biniam (2018) used both descriptive and analytical research design, Tsegay (2021) used both qualitative and quantitative research approach as well as explanatory research design, Abay (2021) used only explanatory research design, and Ahmed (2024) used only quantitative

research approach. In contrast, Amano (2014) and Dereje (2018) used quantitative research approach in their other studies. But the researcher was both quantitative research approach, descriptive and explanatory research design was employed.

Besides, there has not been much research which is carried out to date on the determinants private commercial banks' lending decision in Ethiopia except the study undertaken by Dereje (2017), Biniam and Dereje (2018), Taye (2020) and Abay (2021) studied the determinants commercial banks' lending behaviors in Ethiopia. In those studies, variables return on asset, bank concentration, and exchanger rate were not included, though it is very important determinants lending decision of commercial banks. So the researcher was mainly identified based on the above empirical review, methodological and variable gaps, inconsistent result and time horizon of the study. In light of the above the research gaps, the objectives of this study was to examine the determinants of lending decision of selected commercial banks in Ethiopia from the period of 2014 to 2023 consecutive years.

1.3. Objective of the Study

1.3.1. General Objective of the Study

The general objective of the study was to investigate the determinants of selected commercial banks' lending decision in Ethiopia

1.3.2. Specific Objectives of the Study

- To determine the effect of bank specific factors on lending decision of selected commercial banks in Ethiopia.
- To find out that affects industry specific factors on lending decision of selected commercial banks in Ethiopia.
- To discover macro-economic factors that affects on lending decision of selected commercial banks in Ethiopia.

1.4. Hypothesis of the Study

In line with the broad purpose statement the following hypotheses were also formulated for investigation. Hypotheses of the study stands on the theories related to loan and advances ,has been developed over the years by different researchers' and past empirical studies related to commercial banks' lending decision. The results from the literature review were used to establish expectations for the relationship of the different determinants.

Malede (2014) and Amidu (2014) studied that determinants of bank lending in the context of Africa countries and they claim that bank size positively influences bank lending. Rabab'ah (2015) who investigates the commercial bank lending in Jordan concludes that the bigger banks tend to provide higher credit facilities to the public. On the contrary, Podpiera (2007) examines the characteristics of bank's loan supply in Czech and the findings of the study contends that the bank size tend to negatively influence the growth rate of loans. Generally, empirical evidence from the earlier studies indicates that bank size can positively influence commercial bank lending.

- According to the study of Mekonnen (2021) and Zelalem (2019) bank size had a positive effect on private commercial banks' lending in Ethiopia.

Thus, this study hypothesizes that:

- **H1: Bank size has a significant positive relationship with the commercial bank lending in Ethiopia.**

(Rabab'ah, 2015) Investigates the factors affecting the bank lending in Jordan and concludes that high proportion of credit risk will decrease the credit facilities granted by the commercial bank in Jordan. In the context of Europe, (Tomak, 2013;3(8)concludes that the credit risk tend to negatively influence the lending capacity of commercial bank in Turkey. Thus, the hypothesis is as follows:

- Zelalem (2019) found that credit risk had negatively insignificant relationship on the lending practices of Ethiopian commercial banks. However, Alkhazaleh (2017) found a negative effect, but significant on bank lending on bank lending.

- **H2: Credit risk has a significant negative relationship with the commercial bank lending in Ethiopia.**

Sarath & Pham (2015) investigate the determinants of commercial bank lending in Vietnam and conclude that higher liquidity held by the bank will negatively affect the bank lending. Furthermore, studies in Africa also provide substantial evidence that liquidity will influence bank lending negatively (Moussa & Chedia, 2016; Amidu, 2014).

- Semeredin (2021) and Mohamed (2022) found that liquidity ratio had negatively and significantly affect private banks lending behavior. While Misganu (2021) liquidity ratio had a negative correlation but statistically insignificant with private commercial banks' lending in Ethiopia.

Therefore, hypothesis will be as follows:

- **H3: Liquidity has a significant negative relationship with the commercial bank lending in Ethiopia.**

Karim (2011) conclude that the lending rate tend to negatively affect the bank lending in Malaysia. In summary, empirical evidence from existing studies show that lending rate can influence the commercial bank lending negatively. Based on the economic theory, the lending rate tends to negatively affect the commercial bank lending due to higher lending rate charged by the bank on borrower's loan will increase the financial cost of the borrower, so it will reduce the desire of the public to borrow money from the commercial banks.

- Bishnu Prasad Bhatpara (2019) and Mohamed (2022) the findings showed interest rate spread negatively and significantly on total loans advanced to individual and institutions. However, Semeredin (2021), lending interest rate positively and significantly affect private banks lending behavior'

Thus, this study hypothesizes that:

- **H4: Average lending rate has a significant negative relationship with commercial bank lending.**

The empirical evidence from the previous study finds that cash reserve requirement can affects the commercial bank lending negatively. According to the economy theory, cash reserve requirement tends to influence commercial bank lending negatively as the commercial bank in

Malaysia are require to reserve some proportional of its eligible liabilities with Bank Negara Malaysia, hence it will restrict the credit creation of the commercial bank in Malaysia.

- Misganu (2021) and Semeredin (2021)found that Cash reserve requirement, had a negative and statistically significant effect on private commercial banks' lending in Ethiopia. Whereas Girma (2020)concluded that reserve requirement ratio had negative but insignificant effect on lending behavior of banks under the investigation

Therefore, the hypothesis 7 is as follow:

- **H5: Cash reserve requirement ratio has a significant negative relationship with commercial bank lending.**

GDP growth is one of the most vital and consistent factors to define a bank's propensity to lend long term business loan. Amidu (2014) claims that when the gross domestic product increases, it will lead to the increment of bank lending in Sub-Saharan Africa countries. Moreover, Olokoyo (2011) also discovers that gross domestic product in Nigeria have a positive and significant relationship with the bank lending.

- According to Misganu (2021) and Girma (2020), gross domestic product had a positive and negative correlation but statistically insignificant with private commercial banks' lending in Ethiopia respectively. Thus, hypothesis will be as follows:

- **H6: Gross Domestic Product has a significant positive relationship with commercial bank lending.**

Studies in Africa find that volume of deposit will influence bank lending positively. For instance, Olokoyo (2011) and Olumuyiwa *et al.,* (2012) find that volume of deposit has a positive and significant relationship with the bank lending. They suggest that bank should put more effort to attract more deposit to enhance their bank lending. Generally, previous studies indicate that volume of deposit will affect the bank lending positively.

- According to Abay (2021), Misganu (2021) and Semeredin (2021), the finding of the study indicates that volume of deposit have positive and significant effect on lending decisions of private commercial banks in Ethiopia, Thus, the hypothesis is as follow:

- **H7: Volume of deposit has a significant positive relationship with the commercial bank lending in Ethiopia.**

➢ Misganu (2021) Inflation had a negative and statistically significant effect on private commercial banks' lending in Ethiopia. Conversely, according to Bishnu Prasad Bhatpara (2019) and Mohamed (2022) Inflation has a positive and significant influence on lending volumes among commercial banks in Nepal and Ethiopia respectively. Thus, the hypothesis is as follow:

- **H8: Inflation has a significant negative relationship with the commercial bank lending in Ethiopia.**

➢ According to Mekonnen (2021) Amidu (2014) bank concentration has a negative and statistically significant effect on bank lending. Thus, the hypothesis is as follow:

- **H9: Bank Concentration has a negative relationship with the commercial bank lending in Ethiopia.**

➢ Bishnu Prasad Bhatpara (2019) exchange rate were negatively significant in determining lending behavior in Nepal's commercial banks.

➢ Girma (2020) exchange rate has found to have positive but statistically insignificant effect on lending behavior. Thus, the hypothesis is as follow:

- **H10: Exchange rate has a positive relationship with the commercial bank lending in Ethiopia.**

➢ Alkhazaleh (2017) found that a significant positive effect of the return on assets on banks' lending. Thus, the hypothesis is as follow:

- **H11: Return on Asset has a significant positive relationship with the commercial bank lending in Ethiopia.**

1.5. Significance of the study

This study is significant because it aims to investigate the determinants of lending decisions made by commercial banks in Ethiopia, a topic that has been the subject of much debate and inconsistent findings in prior research. Understanding these determinants is crucial for several reasons:

1. **Informing Policy-Making**: the study aims to support the Ethiopian government's efforts to improve the administration and management of commercial bank loans and advances. By

identifying the key factors affecting lending decisions, policymakers can implement targeted policies to promote efficient lending practices and stimulate economic growth.

2. **Improving Bank Management**: by highlighting the significant determinants of their lending decisions, the study aims to help Ethiopian commercial banks improve their lending policies and attract and retain potential clients. This improved understanding can lead to more efficient lending practices, better risk management, and ultimately, increased profitability for banks.

3. **Benefiting Borrowers and the Economy**: more efficient lending practices can benefit borrowers by increasing access to loans that can improve their standard of living and contribute to the overall health of the Ethiopian economy.

4. Finally, this study aims to increase future academics' comprehension of academicians' research on the connection between lending decisions and their factors which would serve as a springboard for their investigation. Therefore, the major beneficiaries from this study will be commercial banks, regulatory bodies, the academic staff of the country and the society as a whole in the country.

1.6. Scope of the Study

The study's focus was limited to examining the elements that affect the lending decisions made by Ethiopian commercial banks. Commercial banks play a critical role in determining the growth and development of an economy in any given country by mobilizing savings and distributing financial resources. The study used 10 consecutive years of data from the period 2014–2023 of the selected state owned and private banks annual financial report and NBE annual financial report, focusing only on fourteen selected state owned and private banks in Ethiopia based on their establishment and expertise.

The study concentrated on the several elements that affected the lending decision of commercial banks. Thus, variables such bank size, volume of deposit, profitability, liquidity ratio, credit risk, cash reserve requirement, average lending rate, bank concentration, gross domestic product, inflation rate and annual exchange rate of the birr to dollar variables were presented with dependent variable of bank lending decision. Additionally, this study's methodological approaches distinguished between a quantitative research approach, descriptive and explanatory (causal relationship) research design.

1.7. Limitation of the Study

The study of the lending decisions of fourteen selected commercial banks in Ethiopia, consisting of thirteen private commercial banks and one state-owned bank, has certain limitations that may affect the generalizability and validity of its findings:

The study's sample is relatively small, with only fourteen banks, which may not fully represent the entire banking sector in Ethiopia. Since the sample is skewed towards private commercial banks, the findings may not be applicable to other banks in the country, especially those with different ownership structures or those not included in the study. This limitation raises concerns about the external validity of the study.

The study focuses on certain determinants related to bank characteristics, industry trends, and macroeconomic factors. However, it acknowledges that there are additional variables not considered in the current research.

The current study emphasizes the demand side of lending, which typically involves factors like borrower preferences, economic needs, and creditworthiness. However, lending decisions are also influenced by the supply side. This includes factors like: the bank's willingness and capacity to lend, which is affected by its own liquidity, capital, and risk appetite and as well as bank policies, interest rates, and the availability of credit.

1.8. Organization of the Paper

This paper composed of five chapters. The first chapter is the introductory part, which deals with the background of the study, statement of the problem, objectives of the study, hypothesis of the study, significance and scopes of the study. The second chapter is about the review of related literature. The literature about the theoretical and empirical framework of profitability was included in this part. The third chapter presents research design and methodology. The fourth chapter is offerings the result analysis and discussion of the study and finally in the fifth chapter was include the conclusion and recommendations of the study.

CHAPTER TWO

2. REVIEW OF THE LITERATURE

2.1. Overview of Loans and Advances

One of the most significant roles of banks is lending. In addition to taking deposits, it is one of a bank's primary duties. The primary functions of the bank are essentially the acceptance of deposits and the advancement of loans and advances. Deposits are accepted in order to provide borrowers with loan able funds. As such, they are a bank's auxiliary functions. In reality, the bank is lending depositors' money rather than its own as it makes loans and advances on deposits received from the general public in the form of savings. In order to ensure that advanced funds are repaid, the bank should take all appropriate measures before making a loan. If the funds are unavailable and the loan is not retrieved in his possession to honor customer checks, it will be closed (Abay, 2021).

Therefore, banks create loan regulations and processes to prevent this issue. This reduces the anticipated faults when lending and allows them to adhere to regularity.

The laws of many nations define loans and advances differently. Loans and advances are described in Ethiopia as follows: "Any financial asset of a bank arising from direct or indirect advances (i.e. unplanned overdrafts, participations in loan syndication, the purchase of loans from another lender, etc.) or commitment to advance funds by a bank to a person that are conditioned on the person's obligation to repay the funds, either on a specified date or dates or on demand, usually with interest (Hussen and Habtamu, 2023).

The volume of loans that make up commercial banks' assets and the significant increase in loans given to borrowers in both the public and private sectors of the economy each year demonstrate that lending is their primary business. For the majority of commercial banks, lending is their main activity. As a result, banks' greatest asset and revenue source is their loan portfolio (Comptroller, 1998). These assets are regarded as the most valuable assets of banks because of the substantial contribution that loans provide to their financial well-being through interest revenue earnings. The biggest asset and main source of revenue for banks is usually bank loans. Since 1963, Ethiopian commercial banks have carried out a variety of banking operations, such

as drawing in deposits of all kinds and giving borrowers' advances and loans to help them increase their capacity for investment. Because of this, commercial banks contribute significantly to economic growth by upholding the three primary operating tenets of profitability, liquidity, and solvency cited as (Mitiku, 2014).

2.2. Theoretical Review

It is common practice to express the availability of bank loans as a function of both internal and external factors. While the external determinants are macroeconomic factors that are unrelated to bank management but represent the monetary, economic, and legal environment that influences the functioning and performance of financial institutions, the internal determinants are referred to as micro or bank-specific factors that influence bank lending (Peek and Rosengreen, 1995) and cited as (Berhanu, 2016). Many theories seek to explain the behavior of commercial banks in their lending activities in various economies around the world. For this study, the theories that are considered relevant are included.

2.2.1. Loan Pricing Theory

Banks are not always able to set high interest rates to maximize interest income. Because it is very hard to forecast the sort of borrower at the beginning of a banking relationship, banks need consider things like moral hazard and adverse selection. Yimer, M.M. (2018). High-risk borrowers are prepared to tolerate outrageous interest rates if banks set them too high. According to loan pricing theory, setting an interest rate that is too high raises the probability of loan default and, consequently, the percentage of nonperforming loans (Romanove and Okamoto, 2010; referenced in Abay2021, Husen and Habtamu, 2023).

2.2.2. Multiple Lending Theory

According to existing research, banks ought to be less likely to exchange loans when stock markets are well-established and after a process of consolidation (credit syndication). Mergers and acquisitions as well as outside equity increase a bank's lending capacity, which lessens the need for further diversity and oversight through share lending (Kothari, R. C., 1995) and cited by Habtamu and Husen (2023).

2.2.3. Loan able Funds Theory

The loan able funds concept states that since the bank system may provide credit and interest rates are determined by supply and demand for loans, the total amount of credit available in an

economy can surpass individual savings. If supply stays the same, an increase in demand for loan able funds will lead to an increase in interest rates, and vice versa. Conversely, the interest rate would decrease if the amount of loan able funds increased. Should the supply and demand of loan able funds fluctuate, the ultimate interest rate would be extremely reliant on the amount and direction of movement of both (Bhattarai, B. P., 2019). The loan able funds hypothesis of interest states that investments and savings ultimately affect interest rates. On the other hand, short-term interest rates are determined by the financial circumstances of a particular economy. According to the Loan able Funds Theory of Interest, the most important factor affecting interest rates is the availability of loan amounts. The availability of such loans is influenced by a number of factors, such as the amount saved, the readiness to increase cash holdings, the net increase in currency deposits, and the availability of new chances for capital development cited by (Hussen and Habtamu, 2023).

2.3. Determinants of Commercial Banks Lending Decision

Determinants of banks' lending Decision refer to the factors affecting the credit provision of commercial banks. Banks always consider many factors in determining the lending decision which relates to the sector of economy to lend out, the type of firms to take risks and the amount to be granted. Factors that influence lending decisions include:

2.4. Operational Definition and Measurement of Variables

2.4.1. Definition of Variables

1. Definition of Dependent Variable

The dependent variable is the variable being predicted or explained, while the independent variable is the one that is believed to cause or influence the dependent variable (Brook, 2008). Profitability ratios such as net interest margin, return on assets (ROA), and return on equity (ROE) are commonly used to measure a bank's financial performance. In this study, the bank lending decision (BLD**)** serves as the dependent variable, as it is the outcome being analyzed. The BLD may be influenced by various profitability indicators, which act as the independent variables that explain or predict the lending behavior of banks.

- **Bank Lending Decision:** Lending which may be on short term, medium or long term basis is one of the services that commercial banks usually render to their customers. In other words, banks do grant loans; overdrafts and advances to individuals, business organizations as well

as government in order to enable them embark on developmental activities as a means of aiding their growth in particular or contributing towards the economic development of a country in general. The customer may be in need of the fund for the various purposes which may spread through new capital venture bridging loan, farming, contract jobs, and business expansion among others (Iwedi & Onuegbu,2014) and cited in (Zelalem, 2019).

2. Definitions of Independent Variables

The independent variables which was used the econometric model to estimate the dependent variable. To measure the predictor variables of both public and private commercial banks of Ethiopia lending decisions, eleven variables were used as independent variables, which were identified by the researcher. These were:

- **Bank Size:** Bank size is commonly measured by the size of the total asset of a bank. The bank size is used to measure commercial bank lending as it shows the economics of scale enjoyed by the bank (Chernykh & Theodossiou, 2011) and cited in (Misganu, 2021).
- **Liquidity Ratio (LQR):** Liquidity refers to a state in which an asset can be readily converted into cash. A bank might be solvent by having enough assets to cover its liabilities but may remain illiquid. This may be due to a mismatch between its assets and liabilities (Kasman, Tunc, Vardar, & Okan, 2010) and cited in (Misganu, 2021)
- **Profitability (ROA):** Profitability is the capacity of a firm to make a profit, and profit is what is left over from income earned after all costs and expenses related to earning the income deducted. Thus, the profitability ratio is considered a good indicator to evaluate the profitability of a bank (Mekonnen, 2021). the return on assets has been calculated as the net income of total assets. Net profit divided by average assets is referred to as the return on assets ratio. It is also a profitability indicator. Banks' ROA performance is expected to improve due to efficient fund allocation (Wu et al. 2007) and cited in (Abdullahi, 2023).
- **Volume of Deposit (VOD):** All Banks thrive on their ability to generate income through their lending activities. The lending activity is possible only if the banks can mobilize enough funds from their customers. Since commercial banks depend on depositor’s money as a source of funds, it means that there are some relationships between the ability of the banks to mobilize deposits and the amount of credit granted to the customers (Obamuyi, 2013) and cited in (Mekonnen, 2021).

- **Credit Risk (CR):** Credit risk is defined as the potential that a borrower or counterparty will fail to meet its obligations in accordance with agreed terms (Zelalem, 2019). On the other hand, credit risk is the probability that a borrower may be less likely to satisfy its commitment entirely or partially on the stipulated date. Thus, credit risk includes the probability that counterparty may entirely default on its commitment and will only make payments in part or beyond the scheduled period (Abdullahi, 2023).
- **Cash Reserve Requirement (CRR):** Reserve requirements are requirements regarding the amount of cash a bank must hold in reserve against deposits made by customers (Dereje, 2018). On the other hand, the reserve requirement (or cash reserve ratio) refers to the central bank regulation that sets the minimum reserves each commercial bank must hold (rather than lend out) of customer deposits and notes (Getahun, 2014) and cited in (Misganu, 2021).
- **Bank Concentration (BC):** Concentration is a measure of subject participation in cumulative sales, assets, or market share and it is usually determined by the number of companies in an industry and by their relative size (Zingales & Rajan, 2003) and cited in (Mekonnen, 2021).
- **Average Lending Rate (ALR):** The lending rate refers to the interest rate charged by the banks to its customers and it provides the most significant sources of income for the banks (Moussa & Chedia, 2016) and cited in (Mekonnen, 2021).
- **Gross Domestic Product (GDP):** The real gross domestic product is the measure of total economic activity within the economy and it is commonly used economic indicator (Zelalem, 2019).
- **Inflation Rate (INFR):** inflation is a sustained increase in the general price level of goods and services in an economy over a period of time (Dereje, 2018).
- **Annual Exchange Rate of the Birr to Dollar (EXR):** exchange rates are by definition the relative prices of currencies and are endogenous variables in which their value gets determined within a general equilibrium context, alongside other asset prices (Blundell and Bond, 1998) and cited in (Dereje, 2018).

2.4.2. Summary of Variables and their Expectation Relationships

Variables	Notation	Measurement/Proxies	Expected sign

Bank Lending Decision	BLD	Natural Logarithm of Loans and Advances	NA
Independent Variables (Bank Specific Factors)			
Bank Size	BS	Natural Logarithm of Total Asset	+
Liquidity Ratio	LQR	Liquid Asset/Total Asset	-
Profitability	ROA	Net Income/Total Asset	+
Volume of Deposit	VOD	Deposit/Total Asset	+
Credit Risk Ratio	CR	Nonperforming loan /Total loan and advances	-
Independent Variables (Industry Specific Factors)			
Cash Reserve Requirement	CRR	Cash Required Reserve/Total Asset	-
Bank Concentration	BC	Total Asset of **i**th Bank/ Total Asset of Banking Industry	-
Average Lending Rate	ALR	National Bank Reference Average Lending Rate	-
Independent Variables (Macroeconomic Factors)			
The Real Gross Domestic Product Growth Rate	GDP	The annual real Growth rate of gross domestic product	+
Inflation Rate	INFR	The annual general consumer price index	-
Independent Variables (Other Factors)			
Annual Exchange Rate of the Birr to Dollar	EXR	Annual Average Exchange Rate of the Birr to US Dollar	+

Source: Developed by the researcher by reviewing previous research works, 2024

2.5. Model Specifications

The formulation of an econometric model involves establishing a mathematical or statistical relationship between two or more variables that capture the essential features of an economic phenomenon. These models are designed to serve as representations of real-world economic processes and help in achieving research objectives, such as understanding how variables are interrelated or forecasting future outcomes. According to William (2013), model building

involves specifying relationships between two or more variables; perhaps extending to the development of descriptive or predictive equations.

$$Y = \beta 0 + \beta 1X1 + \beta 2X2 + \beta 3X3 + \beta 4X4 + \beta 5X5 + \beta 6X6 + \beta 7X7 + \beta 8X8 + \beta 9X9 + \beta 10X10 + \beta 11X11 + €$$

Where:

Y= Dependent Variables , β0 = constant (y-intercept)

β 1- β 11= Coefficient parameter

X1-X11 = Independent variables

€ = Error term or disturbance

$$BLD = \beta 0 + \beta 1BS + \beta 2LQR + \beta 3ROA + \beta 4VOD + \beta 5CR + \beta 6CRR + \beta 7BC + \beta 8ALR + \beta 9GDP + \beta 10INFR + \beta 11EXR + €$$

Where:

BLD- Bank Lending Decision (Dependent Variable)

BS- Bank Size

LQR- Liquidity Ratio

ROA-Return on Asset

VOD- Volume of Deposit

CR- Credit Risk Ratio

CRR- Cash Requirement Ratio

BC- Bank Concentration

ALR-Average Lending Rate

GDP-Gross Domestic Product

INFR-Inflation Rate

EXR-Exchange Rate of the birr to dollar

2.6. Empirical Review

The study by Amidu (2014) examines the key elements affecting bank lending in the region using data from 264 banks spread across 24 Sub-Saharan African (S.S.A.) countries. The primary conclusion is that the banking market structure has an impact on the distribution of credit in South Africa, and the financial sector has undergone transformation in an atmosphere

where banks are allowed to operate freely. Furthermore, there is proof that bank loans and banks' financial soundness are related. He also finds that bank loans to the private sector influence the bank-specific variables sampled statistically; thus bank size, management efficiency, activity restrictions, growth of bank assets, entry restrictions, the central bank's regulatory capacity, and G.D.P. growth are all factors to consider. Excess liquidity, market concentration ratios, credit risk, initial capital requirements, and contractionary monetary policy, however, show statistically negative on bank loans.

Ngata & Njeru, (2015) investigated how lending rates were affected by Basel Liquidity Accords in Kenya's banking system. The World Bank and CBK provided data for this study. The target demographic in Kenya was defined as all commercial banks. Using regression and correlation approaches, the link between the dependent variable and the independent variables—core capital requirement, liquidity ratio, reserve requirement, and loan to deposit ratio requirement—was assessed. The study's findings demonstrated that there was a substantial correlation between the liquidity ratio requirement and interbank lending rates, but not between the core capitals need and reserve ratio requirement. Lastly, the results show that there is a substantial correlation between loans and deposits.

According to Timsina (2016), the model employed interest rates, the mandated cash reserve requirements ratio, the liquidity ratio, the volume of deposits, inflation, the currency rate, and the gross domestic product as independent variables in their study titled "Determinants of Bank Lending in Nepal." He discovered that banks' GDP and liquidity ratio have the biggest effects on lending practices. GDP is the economy's gauge, according to the study, and when commercial banks are making lending decisions, they should consider the macroeconomic climate of the nation as a whole, the variables that impact GDP generally, and their liquidity ratio specifically. In the other study of Alkhazaleh (2017) examined factors that may drive the Jordan commercial banks’ lending and he found a negative effect of credit risk and liquidity on bank lending and a positive effect of the return on assets, bank size, inflation, money supply, and growth in the gross domestic product on bank lending.

According to the study of Mohamed (2022) studied the Tunisian instance in relation to factors influencing bank lending. This article seeks to identify the variables influencing bank lending in Tunisia. During the study's 2005–2020 timeframe, a sample of 11 banks were subjected to the

GLS methodology .According to the study, the only factors that significantly and positively affect bank lending are net interest margin, loans and deposits, and inflation. The study also discovered that bank lending is negatively impacted by liquidity, financial costs operations cost and return on equity. On the other study of Makanile and Pastory (2020) were assessed the determinants of the lending of six commercial banks in Tanzania from 2015 to 2019 using a quantitative research design. The data were collected from Annual Reports of the six commercial banks. The results show that liquidity and capital adequacies have a significant relationship with lending, whereas interest rate and management efficiency have no statistically significant influence on lending.

Similarly, Bishnu Prasad Bhatpara (2019) examined on the determinants of Commercial Banks' Lending Behavior in Nepal. Secondary panel data was used that covered a period of six years (2012/13-2017/18) of the major ten commercial banks to examine factors associated with lending behavior of in Nepal. From the estimation results, it was found that liquidity ratio, interest rate spread and exchange rate were significant in determining lending behavior in Nepal's commercial banks. Inflation maintained by the central economic policy has a positive and significant influence on lending volumes among commercial banks in Nepal. Likewise, the findings showed interest rate spread negatively and significantly on total loans advanced to individual and institutions.

Regarding to Ethiopian empirical studies of Dereje (2018) was examined factors that influence commercial banks' lending decisions in Ethiopia's private commercial banks. According to the regression analysis, private commercial banks in Ethiopia made lending decisions based on a number of factors, including bank size, investment portfolio, deposit volume, liquidity ratio, GDP, inflation rate, and exchange rate. However, asset quality and cash reserve requirement ratio did not play a significant role. On the other stud of Zelalem (2019) was examined on the factors that influence Ethiopian commercial banks' lending decisions. The study's findings show that while cash reserve requirements and liquidity ratios have a negative impact on commercial banks' lending in Ethiopia, bank size, deposit volume, and GDP growth have a favorable impact. However, credit risk, inflation, and average lending interest rates have little bearing on the lending practices of Ethiopian commercial banks.

In the study of Semeredin (2021), conducted on the determinants of private banks lending behavior in Ethiopia using of quantitative research approach and Ordinary least square (OLS) technique was applied to determine the impact of those predictor variables on commercial bank lending behavior. The collected balanced panel data was analyzed with descriptive statistics and multiple linear regression analysis of the ten explanatory variables that affect banks' lending were employed. The result revealed that, volume of deposit; market share and lending interest rate positively and significantly affect private banks lending behavior' but liquidity ratio, and cash reserves requirement and non-performing loan negatively and significantly affect private banks lending behavior. On the other hand, Abay (2021), examined the determinants of lending decisions of private commercial banks in Ethiopia from year 2011 to 2020.The study used panel data of eight private commercial banks of Ethiopia selected purposively techniques and was using explanatory research design and the data were analyzed through multiple linear regression models of the bank's lending decision; loan and advance. The finding of the study indicates that volume of deposit, liquidity, capital adequacy, money supply and asset quality have significant effect on lending decisions of private commercial banks in Ethiopia, Whereas, return on equity and interest rate have insignificant effect on lending decisions of private commercial banks in Ethiopia.

According to the study of Mekonnen (2021) examined that the bank specific, industry specific and macroeconomic determinants of commercial bank lending in Ethiopia using balanced panel date of 15 commercial banks form (2011-2019). The model result of the study indicated that bank specific factors such as volume of deposits; capital adequacy; bank size have a positive and statistically significant effect on bank lending. Industry specific factors such as cash reserve requirements; bank concentration and average lending of rate have a negative and statistically significant effect on bank lending. On the other study of Misganu (2021) examined the determinants of private commercial banks' lending in Ethiopia. His study used secondary sources of data, which is panel data in nature, over the period 2006-2020.These data were collected from audited annual financial statements of private commercial banks, the National Bank of Ethiopia, and the Ministry of Finance to examine the bank-specific determinants as well as the macroeconomic determinants of private commercial banks' lending in Ethiopia by using explanatory and descriptive research design The results of panel data regression analysis revealed that bank size and volume of deposit had a positive effect on private commercial banks'

lending in Ethiopia. Cash reserve requirement, lending interest rate, management efficiency, and inflation had a negative and statistically significant effect on private commercial banks' lending in Ethiopia. liquidity ratio and gross domestic product had a negative correlation but statistically insignificant with private commercial banks' lending in Ethiopia.

According to the study of Girma (2020) was examined the determinants to lending behavior in commercial banks of Ethiopia from 2010- 2017. The findings revealed that from bank specific factors, deposit ratio and bank ownership have positive and significant effect on lending behavior of banks under the investigation. On the other hand, liquidity ratio, bank size and efficiency ratio have negative but statistically insignificant effect on lending behavior. The finding also shows that from macroeconomic factors, exchange rate, lending rate and gross domestic product have found to have positive but statistically insignificant effect on lending behavior. Result on macroeconomic factors also shows that reserve requirement ratio and inflation rate have negative but insignificant effect on lending behavior of banks under the investigation. Finally, the study revealed existence of statistically significant disparity between CBE and other banks under the investigation in terms of lending behavior. Similarly, in the study of Tsegay (2020) was examined the determinants of commercial banks‟ lending behavior for selected commercial banks‟ in Ethiopia by using cross sectional explanatory research design and quantitative research approach. he study used secondary data from the selected audited annual reports of the commercial banks as well as the yearly financial reports of National bank of Ethiopia from 2011 to 2017 using of correlation and regression analysis to examine the relationship between the dependent and independent variables. The correlation results suggest that there was linear relationship between Volumes of Deposit, Interest/Credit Rate, liquidity ratio, asset quality and capital adequacy ratio with lending behavior of the selected commercial banks. Furthermore, the regression result revealed that the factors; liquidity ratio , Credit Rate and asset quality have significant effect on lending behavior; whereas, two factors; capital adequacy ratio and volume of deposits have insignificant effect on lending behavior of the selected commercial banks

2.7. Summary and Knowledge Gap

The theoretical and empirical literature assessment above leads us to the conclusion that a robust banking system is essential to a nation's financial stability and development. This activity is a component of banks' existence as financial system intermediaries, transferring

limited resources from the surplus economic units to the deficit economic units in the form of credit. For this reason, the majority of researchers found that lending is the main business activity for the majority of commercial banks, meaning that the loan portfolio is usually the greatest asset and the largest source of income. In addition, it is one of the biggest threats to the stability and safety of a financial institution.

Therefore, it will be challenging to have a good understanding of the lending determinants of bank performance. The majority of relevant research shows that both internal and external factors influence banks' loan supply. The external factors are macroeconomic elements that are unrelated to bank management but represent the monetary, economic, and regulatory environment that influences bank operations, whereas the internal factors are referred to as micro or bank-specific drivers of bank lending.

Based on the above reviews of theoretical and empirical studies, such Zelalem (2019), Girma (2020), Yitayew (2021), Abay (2021), and Semeredin (2021) found that the volume of deposits had a favourable and noteworthy influence on lending decisions.Nonetheless, Tsegay (2020), and Dereje (2018) discovered a negative and substantial correlation between deposit volume and loans. Additionally, .According to Helina(2017), Tsegay(2020), Semirdin(2021), and Mekonnen (2021), among macroeconomic variables, lending interest rate has a large and negative influence on commercial bank loans.The interest rates of Hussen and Habtamu (2023), Abay (2021), and Zelalem(2019) have minimal effects on bank lending activity, in comparison. According to Mekonnen (2021), Semeredin(2021) and Zelalem (2019), the cash reserve requirement has a negative considerable impact on bank lending, while Dereje (2018) and Girma (2020) confirmed a negative but negligible effect. Return on Assets (ROA) has been included by Helina (2017) and Semeredin (2021) as an independent variable, with a favourably significant and an insignificant impact on bank lending decisions, respectively, whereas Hussein and Habtamu (2023) state that it has a negatively insignificant impact. However, the results of those studies were inconsistent.

In the main, inconsistent results among the researchers one basic rationale for doing this study. In addition to the above, adding the new variables one rationale behind conducting this study. Consequently, the researcher adds additional variables such as bank concentration, annual exchange rate birr to dollar and credit risk variables that had been excluded in most pervious researchers in Ethiopia. Moreover, the other motives of the researcher to choose this title that, to

identify the private and public banks which compare and contrast the market share among those. Then, the researcher includes both public and private commercial banks of Ethiopia. Genially, the researcher was identifying the gaps such inconsistence of the studies of the result, methodological and variable gaps as well as time frame of the study. Therefore, the objective of this study is to fill the above knowledge gaps.

2.8. Conceptual Framework

The commercial banking industries lending decision is subjective by both bank specific, industry specific, macroeconomic and other factors. The bank specific factors bank size, liquidity ratio, profitability, volume of deposit and credit risk factors. Industry specific variables cash reserve requirement, bank concentration and average lending rate factors. Macroeconomic factors, gross domestic product and inflation rate as well as annual exchange rate of the birr to dollars is as other factors were taken independent variables in the study. The objective of this study was to determine the effect of lending decisions on selected commercial banks in Ethiopia.

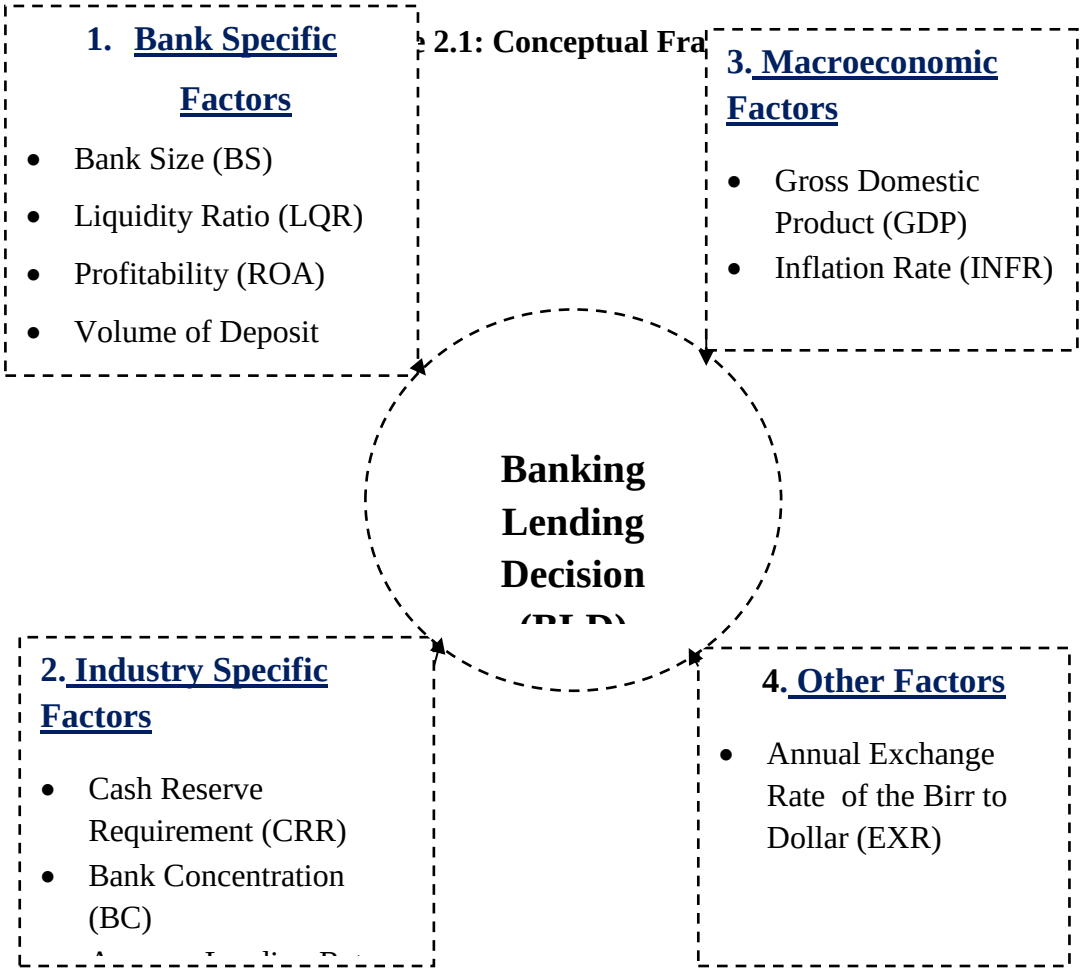


Figure 2.1: Conceptual Fra

Source: Developed by the researcher and review of previous researches, 2024

CHAPTER THREE

3. RESEARCH DESIGN AND METHODOLOGY

The researcher outlines the study's research methodology in this part. Based on the goals of the study, the methodology for this research was developed. This section was divided into the following sub-sections: research methodology, research design, data source, sampling size, sampling technique, and data collection tool, method of data analysis, definition and measurements of variables, model specification of the study, model validity, and assumptions for diagnostic test.

3.1. Research Design

A research design is a plan, structure, and investigational technique that are carefully thought out in order to find solutions to research questions or issues. The plan is the entire strategy or schedule for the study ((John, 2007) and Kumar, 2011). As noted by Kothari (2004), explanatory research design examines the cause and effect relationships between dependent variables and independent variables. Therefore, this study examine the cause and effect relationships between bank lending decision and its determinant, therefore it is an explanatory research.

So the study was employed both a descriptive and an explanatory (causal) research approach to meet its objectives. The justification for employing a descriptive research design should aid in properly and methodically defining a population, situation, or phenomena. It should also provide numerical descriptions that define the characteristics of the thing being examined, such as size, location, and frequency. Explanatory research designs were utilized to establish the cause-and-effect relationships between variables and to produce certain findings that could address the study challenge. Therefore, explanatory research must be conducted if the goal is to identify which variable may be driving a particular behavior, i.e. whether there is a cause and effect link between variables (Shields, 2013).

3.2. Research Approaches

According to Creswell (2003), the objective to be achieved in the study is a base for determining the research approach for the study. In case, if the problem identified factors affecting the outcome having numeric value, it is quantitative approach. Therefore the researcher had employed quantitative research approach and techniques an econometric model and descriptive

quantitative analysis in order to address the research questions. Multiple regression model using OLS (Ordinary Least Square) estimates of the dependent (bank lending decision) and independent eleven bank specific, industry specific, macroeconomic and other variables volume of deposit, liquidity ratio, bank size, profitability, credit risk, cash reserve requirement, bank concentration, average lending rate, GDP, Inflation rate, and annual exchange rate of the birr to dollar were employed. It uses panel data covering the period from 2014 through 2023.

The reason behind of using quantitative research approach was in order to analyzing the relationship between variables; quantitative research can be used to test unbiased ideas (Creswell, 2009). Additionally, quantitative research is founded on the measurement of quantity or amount, claims Kothari (2004). It is applied to phenomena that have a quantitative form.

3.3. Population of the Study

Population is defined as the entire set of materials from which conclusions are drawn and includes all potential examples that could be relevant to a particular study (Sekaran, 2008). Currently, there are thirty private commercial banks and three government owned one commercial bank one development bank and one national bank operating, according to the National Bank of Ethiopia's 2024 first quarter report. This led to the population of the study being determined to be all thirty three commercial banks including DBE and NBE in Ethiopia.

3.4. Sampling Frame

A sampling frame is the actual list or representation of the population from which a sample is drawn. It includes all the elements or units in the accessible population that could potentially be selected for the sample. The "accessible population" refers to the portion of the population that is available or can be reached for sampling.

The following is the list of all elements in the population from which a sample will be selected. It’s a comprehensive list that ideally represents the whole population or the part of it that is accessible to the researcher.

Table 3.1: Total Banks in Ethiopia

S.No	Name of Banks	Date of Establishment
1	Commercila Bank of Ethioopia	1963
2	Awash International Bank S.C	1994

3	Sidama Bank S.C	1994
4	Dashen Bank S.C	1995
5	Bank of Abyssinia	1996
6	Omo Bank S.C	1996
7	Wegagen Bank S.C	1997
8	Hibret Bank S.C	1998
9	Nib International Bank S.C	1999
10	Cooperative Bank of Oromia S.C	2005
11	Lion International Bank S.C	2006
12	Oromia International Bank S.C	2008
13	Buna International Bank S.C	2009
14	Zemen Bank S.C	2009
15	Berhan International Bank S.C	2010
16	Abay Bank S.C	2010
17	Addis International Bank S.C	2011
18	Global Bank S.C	2012
19	Enat Bank S.C	2013
20	Tsehay Bank S.C	2018
21	Shabelle Bank S.C	2021
22	ZamZam Bank S.C	2021
23	Hijra Bank S.C	2021
24	Siinqee Bank S.C	2021
25	Ahadu Bank S.C	2021
26	Goh Betoch Bank S.C	2021
27	Amhara Bank S.C	2022
28	Tsedey Bank S.C	2022

29	Gadaa Bank SC	2022
30	Rammis Bank S.C	2022
31	Siket Bank S.C	2023

Source: Website of NBE: 2024

3.5. Sample Size Determination

The study includes a sample size of fourteen commercial banks, selected from the thirty-three public and private commercial banks operating in Ethiopia. This sample of fourteen banks was chosen for several key reasons, including their history, level of experience, and access to reliable operational data. The banks included in the sample were considered representative enough to provide a solid foundation for the analysis.

These fourteen banks collectively provide a total of 140 observations, as the study covers ten consecutive years, from 2014 to 2023. This observation count allows the study to draw reliable conclusions based on a historical view of the financial performance and operations of these banks. In terms of the sample size, the inclusion of 140 observations, representing 45% of the total number of commercial banks in Ethiopia (since the total number of state owned and private commercial banks is 31), is in line with established research guidelines. According to Yates (2004), a sample size consisting of 10% to 30% of the target population is generally sufficient to reflect the overall population. Additionally, a sample size of 100-200 observations is considered adequate for ensuring the reliability and accuracy of the study's results. Thus, this selection is considered appropriate and adequate for the study’s objectives.

By choosing the sample based on banks’ historical experience and data availability, the study aims to increase the accuracy of its findings, ensuring that the results are representative of the broader Ethiopian banking sector. The focus on both private and public commercial banks ensures that the analysis is balanced and reflective of the diverse banking landscape in the country. The sample size of the study were include such Commercial Bank of Ethiopia, Awash International Bank S.C, Dashen Bank S.C, Bank of Abyssinia S.C, Wegagen Bank S.C, Hibret Bank S.C, Nib International Bank S.C, Cooperative Bank of Oromia S.C, Lion International

Bank S.C, Oromia International Bank S.C, Bunna International Bank S.C, Zemen Bank S.C, Berhan International Bank S.C, Abay Bank S.C,

3.6. Sampling Techniques

Purposive or judgmental sampling is a strategy in which specific contexts, individuals, or events are purposefully chosen in order to offer significant information that cannot be obtained from other options (Maxwell, 1996). Singh (2006) added that the non-probabilistic purposive sampling method is more effective than the other methods if the cross sectional units utilized in the sample are homogeneous or uniform. So this study was 14 public and private commercial banks that were founded before the Gregorian calendar year 2011 were specifically chosen for the investigation using of purposive sample technique. Because purposive sampling is an affordable, practical, quick, and perfect method for explanatory study design. The private bank's service year and annual report served as the criteria for selecting a sample from the available listings. As a result, the selections of sample public and private commercial banks were based on the availability of operating data on the NBE website. Fourteen public and private commercial banks that were founded before 2011 had ten years' worth of complete and sufficient audited financial accounts, according to the lead investigator's possible searches.

3.7. Data Sources and Collection Instrument

The National Bank of Ethiopia's website and the websites of the entire selected sample both public and private commercial banks were used by the researcher as published secondary sources of data. The suitability of secondary sources of data to the objectives of the study is the main justification for choosing them over primary sources of data. Second, it is cost-effective since it saves time, money, and effort. Thirdly, by utilizing secondary sources of data, researchers are able to identify any gaps and weaknesses as well as what extra data has to be gathered. A greater level of data quality and increased study accuracy are the final benefits of employing secondary data over primary data.

3.8. Methods of Data Analysis

With the use of STATA V.14, the data that was acquired from secondary sources was analyzed and interpreted using descriptive analysis, correlation, and econometric analysis. Particular emphasis was placed on obtaining strong regression results with 0% bias in R2.

3.8.1. Descriptive Analysis

According to Hair et al. (2006), descriptive analysis primarily focuses on summarizing and presenting data through measures of central tendency and measures of dispersion**.** So the study was used descriptive analysis as a quantitative approach to analyze the data from fourteen both state owned and private commercial banks in Ethiopia between 2014 and 2023. Descriptive analysis offers a foundational understanding of the data, but for deeper conclusions or causal relationships, further statistical methods would typically be applied, such as regression analysis or hypothesis testing.

3.8.2. Correlation Analysis

Correlation analysis was essential in this study to clarify how the variables are interrelated, which is crucial for achieving the study's objectives. The findings of this analysis reveal the nature and strength of the correlation between the variables considered. According to Hair et al. (2006), a correlation coefficient below 0.9 generally does not present a significant barrier to drawing valid conclusions about the broader population based on the sample chosen.

3.8.3. Econometric Analysis

In this research, the hausman test was used as the third fundamental analysis to determine whether a fixed-effects or random-effects regression model would be more suitable. Based on the test results, the random-effects model was deemed appropriate and was subsequently employed for the study. To assess the significance and strength of the relationship between the dependent variable (bank lending decision) and various independent variables, including bank size, liquidity ratio, volume of deposits, profitability, credit risk, cash reserve requirement, bank concentration, average lending rate, gross domestic product (GDP), inflation rate, and the annual exchange rate of the Ethiopian Birr to the US Dollar, econometric analysis was conducted. The study covered data from 2014 to 2023.

3.9. Data Presentation

After data collection was undertaken, data analysis, interpretation and finally presentation were carrying out through tabulation or tables, and graphs.

3.10. Fixed Effect versus Random Effect Model

This study was used panel data, by employing a panel data model, the study can take full advantage of the variation in both dimensions (across entities and over time), leading to more robust and comprehensive insights into the behavior of commercial banks and the effects of changes in management policies. However, as the researcher correctly pointed out, a key issue in using panel data is whether the individual effects are assumed to be fixed or random**.** Fixed effects model assumes that individual-specific characteristics (e.g., bank-specific factors) do not vary over time and are correlated with the repressors in the model. This approach controls for all time-invariant differences between the entities (banks, in your case), meaning that it isolates the effect of variables that vary over time. Random effects model assumes that the individual-specific characteristics are uncorrelated with the repressors. It allows for variation across entities (banks), but treats this variation as random and not systematic, providing a more efficient estimation than fixed effects when this assumption holds true. To decide between a fixed effects model and a random effects model**,** a common statistical test is the hausman test**.** This test helps determine whether the unique individual effects are correlated with the repressors. If they are correlated, the fixed effects model is appropriate; otherwise, the random effects model would be more efficient.

Panel data models describe the individual behavior both across time and across individuals

There are three types of models:

- The pooled model,
- The fixed effects model, and
- The random effects model.

The general notation for panel data models is: $y_{it} = x_{it}'\beta + \varepsilon_{it}$

Where i denote the unit and t denotes time.

Notice that the effect of a change in x is still the same for all units and all periods.

In summary, the random effects model is ideal when aiming to generalize findings beyond the sample, especially when there is significant variability or heterogeneity between units or studies. However, if there are too few units or studies to estimate the variance reliably, the fixed effects

model may be more suitable. In this study, based on the hausman test, the random effects model was selected as the most appropriate model.

3.11. Diagnostic Tests

A diagnostic test on the assumptions of classical linear regression model was employed do to ensure that the quality of quantitative assessment is valid. This includes test of heteroscedasticity, multicollinearity, autocorrelation and the normality. Heteroscedasticity occurs when the variance of error term is not constant. The presence of heteroscedasticity makes the standard errors wrong and hence any inferences made could be misleading. The study employed the famous Breusch-Pagan / Cook-Weisberg test for heteroskedasticity. The Normality of the model was test by using kermel density estimate. Multicollinearity was conducted on the regression model so that incorrect conclusions about the relationship between dependent variable and predictor variables will to be avoided. Variance Inflation Factor (VIF) and tolerance degree are also used to indicate for presence of multicollinearity. Autocorrelation; is assumed that the distribution errors are uncorrelated with one another and that the errors are linearly independent of one another. To test this assumption this study was used Wooldridge test for autocorrelation in panel data to check for the existence of serial correlation among error terms as recommended by Brook (2008). And the panel data regression model was used and as well as a Housman specification test was employed to determine which model is appropriate estimation for the study between fixed or random effects regression model where the probability value (p-value) can show the chosen regression model between the two (Torres-Reyna, 2017) whereby, So the study was employed the random effect regression model after testing of the houseman tests.

(i.) The null hypothesis HO describes that the fixed effect model is in favor of when $p<0.05$, we reject the null hypothesis.

(ii.) The alternative hypotheses H1 also describes that the random effect model is appropriate if the result shows that $p > 0.05$, we accept the null hypothesis.

CHAPTER FOUR

4. RESULT AND DISCUSSIONS

Introduction

In this chapter presents the researcher main findings of the effect of foreign exchange rate fluctuations on financial performance of private commercial banks in Ethiopia well as this section presents with analysis and interpretation of the results and basic diagnostic testing assumptions are held.

4.1. Descriptive Analysis

To have a better grasp of the study variables under analysis, the researcher used STATA 14 software to perform descriptive statistics. According to Saswata Chatterjee (2012), descriptive

statistics are the cornerstone of all analyses because they allow the researcher to define the pertinent features of every study variable, including in-depth details about each one. The dependent variable was bank lending decision (BLD) of Ethiopian both public and private commercial banks while the independent variables includes; bank size, liquidity ratio, profitability, volume of deposit, credit risk, cash reserve requirement, bank concentration, average lending rate, gross domestic product, inflation rate and annual exchange rate of the birr to dollar during the period of 2014-2023 for selected Ethiopian public and private commercial banks.

Table 4.1: Descriptive Statistics of Variables

Variable	Obs	Mean	Std. Dev.	Min	Max
BLD	140	16.98407	4.046251	6.75	27.98
BS	140	22.90386	.8170589	21.15	24.7
LQR	140	3.777143	1.521892	2.18	11
ROA	140	3.6855	1.08947	2.18	7.23
VOD	140	15.52029	3.069566	7.2	32
CR	140	4.340929	1.785571	1.31	10.74
CRR	140	26.917	1.009515	25.67	29.18
BC	140	12.465	.642396	11.88	13.5
ALR	140	22.88536	.8112807	21.15	24.7
GDP	140	3.9255	2.085543	1.2	11
INFR	140	23.59157	.736954	22.25	25.03
EXR	140	15.58864	3.131173	4.5	32

Source: Own Computation Using STATA 14, 2024

The dependent variable is bank lending decision (BLD) measured by Log of loan and advance. The average value of bank lending in your study sample is 16.98407, which represents the natural logarithm of the loans and advances provided by the commercial banks to their borrowers. The average logarithm of loans and advances is 16.98407, which is a transformed measure. If you were to exponentiation this value, you would get an idea of the typical loan size in its original scale. The maximum log loan value is 27.98, while the minimum is 6.75. This shows that the range of loans varies significantly across the banks in your sample. The standard deviation of 4.04625 suggests that the bank lending decisions (in terms of the size of loans and

advances) vary widely across the sampled commercial banks. A higher standard deviation indicates that there is substantial variation in the size of loans and advances among the banks in your sample.

To conclude that, this means that some banks are making very large loans (with logarithmic values closer to 27.98), while others are making smaller loans (closer to the log value of 6.75). The distribution is likely to be skewed or uneven because of the significant difference between the maximum and minimum values, indicating a degree of heterogeneity in the bank lending decisions during the study period.

The first independent variable, bank size (BS), measured by the natural logarithm of total assets, ranges from a minimum of 21.15 to a maximum of 24.7. The average bank size is 22.93, with a mean value of 22.90 and a standard deviation of 0.82. This distribution suggests that there is considerable variation in the sizes of the sampled commercial banks, which likely reflects significant growth in their assets. Such growth enables banks to expand their lending capacity, including loans and advances.

The average liquidity ratio (LQR) for the sampled Ethiopian Commercial Banks is 3.777143**,** which means, on average, these banks maintain a liquidity position higher than the required statutory liquidity ratio set by the NBE. The statutory liquidity requirement **is** 1.521892**,** according to the NBE Directive № SBB/57/2014. This directive specifies the minimum liquidity ratio that banks must maintain. The liquidity ratio of these banks ranges from 2.18 to11**,** indicating considerable variation in the liquidity positions of the banks sampled. The deviation from the mean is 1.521892**,** which reflects how far the liquidity values deviate from the average. To conclude that, the banks, on average, are in a stronger liquidity position than required by the NBE's directive.

The Return on Assets (ROA) of the selected state-owned and private commercial banks in Ethiopia ranges from a minimum of 2.18 to a maximum of 7.23, with a mean value of 3.6855 and a standard deviation of 1.08947**.** This suggests that, on average, these banks earned a return of 3.69% on their assets during the period under study. The standard deviation indicates a moderate degree of variability in the banks' returns, with some banks performing notably better or worse than the average. The average return on assets across the banks was approximately

3.69%**,** not 2.73% as you mentioned at the end. If the value of 2.73% was mentioned elsewhere, there may have been an error or a different calculation or subset involved.

Concerning volume of deposit (VOD), the average volume of customer deposits (comprising savings, demand, and fixed deposits) in state-owned and private commercial banks in Ethiopia over the period from 2014 to 2023 is 19.6%. This indicates that, on average, deposits account for 19.6% of the total assets in these banks. The data also shows considerable variation in the volume of deposits across the banks, with a minimum value of 7.2% and a maximum value of 32%. The mean deposit volume is 15.52%, with a standard deviation of 3.07%. These statistics suggest that there is a significant variation in deposit levels among the sampled banks, which points to the differing customer behaviors, bank strategies, or economic conditions influencing deposit volumes.

In summary, the findings highlight a relatively high level of variation in deposit volumes over the study period, suggesting that factors such as bank size, customer preferences, and external economic conditions could be playing a significant role in shaping the deposit dynamics in Ethiopia's banking sector.

One of the explanatory variables in the study is credit risk (CR). The average (mean) credit risk level for state-owned and private commercial banks in Ethiopia over the period from 2014 to 2023 was 4.34%, with a standard deviation of 1.79%. This indicates that, on average, these banks had a credit risk exposure of 4.34%. The maximum value recorded during the period was 10.74%, while the minimum was 1.31%. These figures suggest that the credit risk exposure varied considerably, with some periods showing notably higher credit risk levels.

As stated on the above table, discusses the cash reserve requirement (CRR) as applied by the National Bank of Ethiopia, indicating the average legal reserve required from commercial banks in relation to their total assets. The average CRR is 26.917%, which means, on average; commercial banks in Ethiopia are required to maintain a reserve of 26.917% of their total assets with the central bank. On the other hand, the cash reserve requirement fluctuates between 25.67% and 29.18%, indicating that it can vary based on regulatory decisions or other macroeconomic factors.

In summary, the CRR is a key tool used by the central bank to control liquidity in the banking system. A higher CRR typically indicates a tighter monetary policy, as it reduces the amount of money banks can lend, while a lower CRR may stimulate lending and economic activity.

Regarding bank concentration (BC), the average mean value of bank concentration is 12.465 and standard deviation is 0.642396. This typically refers to the degree to which a small number of banks dominate the banking sector in terms of total assets, deposits, or other relevant metrics. High concentration means fewer banks control a larger share of the market, while low concentration means more evenly distributed market share among many banks. On the other hand, the mean (12.465) represents the average level of concentration, while the standard deviation (0.642396) shows how much variability there is around this average. A smaller standard deviation indicates that most of the observations (in this case, probably across different banks or periods) are close to the mean, suggesting relatively low variation in the concentration.

Concerning average lending rate (ALR), the average lending rate is 22.88536%, which gives an indication of the typical interest rate that banks charge on loans, on average, across various types of loans. On the other hand, the minimum lending rate is 21.15%, and the maximum lending rate is 24.7%. This suggests that banks have some flexibility in setting rates based on factors like the loan type (personal, business, mortgage, etc.) and the perceived risk associated with lending.

The average value of the real gross domestic product (GDP) growth rate is 3.9255, and the standard deviation is 2.085543. You also mention the minimum value is 1.2 and the maximum value is 11. The average real GDP growth rate is 3.9255, meaning that, on average, the economy grew by about 3.93% during the period you're examining and the standard deviation of 2.085543 indicates how spread out the growth rates are around the mean. A larger standard deviation suggests that the growth rates varied more significantly from the average. In this case, the GDP growth rates fluctuated by roughly ±2.09% around the mean. Additionally, The GDP growth rate ranged from a minimum of 1.2% to a maximum of 11%. This suggests some years had very low or even negative growth (close to 1.2%), while other years saw substantial growth (up to 11%).

As mention on the above table an average inflation rate (INFR) of 23.59157, but also mention a "maximum value of 55.25" and a "minimum value of 25.03," an aaverage inflation rate: 23.59157% with the minimum inflation rate: 25.03% and maximum inflation rate: 55.25%. This suggests that the inflation rate fluctuated between a low of 25.03% and a high of 55.25%, with an average value of 23.59% over the study period. However, if the average inflation rate is indeed 23.59157%, it seems strange that the minimum and maximum values would be higher than the average.

Similarly, the birr to US dollar (EXR) exchange rate exhibits variability over time, with an average value of 15.58864 birr to 1 US dollar and a standard deviation of 3.131173. Furthermore, during the study period, the currency rate varied from a minimum of 4.5 birr to a maximum of 32 birr to the dollar. This suggests that the birr's exchange rate with the dollar is highly volatile. The comparatively large standard deviation and the huge range between the minimum and maximum values indicate that there were significant swings in the birr's value.

To be conclude that, the birr's exchange rate against the dollar has demonstrated significant volatility over the study period, with both sharp declines and occasional recoveries. Such fluctuations can have wide-ranging economic consequences and suggest underlying challenges in managing the currency's value over time.

4.1.1. Model Selection (Fixed vs. Random Effect Model)

By doing a hausman test, the choice between random and fixed effect models was made. A Hausman test can be used to decide between a fixed or random effects model. The null hypothesis is that the preferred model is random effects, and the alternative is fixed effects.

In order to perform the hausman test, there should be more cross sections than predicted coefficients (explanatory variables), according to Gujarati (2003). The study looked at fourteen (14) both state owned and private commercial banks in Ethiopia, and there were eleven (11) factors overall. For a choice between two options, a hausman test can be performed.

If probability chi2 is more than 0.05 we reject the fixed effects model and use the random effects. So based on the testing result the probability of chi2 is 0.9437 which is greater than of 0.05 thus the results indicates we use the random effects.

A random effects model is often the best choice when the goal is to generalize findings to a broader population, or when the data has multi-level structures. Here are some other factors to consider when deciding whether to use a random effects model:

Table 4.3: Fixed vs. Random Effect Model Specification

hausman fe re				
Coefficients ----				
(b)		(B)	(b-B)	sqrt(diag(V_b-V_B))
fe		re	Difference	S.E.
BS	5.555101	5.498015	.0570859	.1907784
LQR	-.7795843	-.7825655	.0029811	.0499449
ROA	.3643372	.3684369	-.0040997	.0481671
VOD	.4942349	.4917983	.0024366	.0362552
CR	-.1279445	-.1579446	.0300002	.0604024
BC	.6888273	.7030654	-.0142381	.0885897
ALR	-.8321158	-.7387111	-.0934047	.1042903
GDP	.4027974	.4536053	-.0508078	.0373467
INFR	-.956642	-1.111199	.1545573	.1608505
EXR	-.1617168	-.1605522	-.0011645	.0290109
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(10) = (b-B)'[(V_b-V_B)^(-1)](b-B)				
= 4.08				
Prob>chi2 = 0.9437				

Source: Own Computation Using STATA 14, 2024

The likelihood of chi2 is 0.9437, which is greater than the 5% level of significance, as indicated in table 4.3 above. The Hausman test's null hypothesis was accepted, while the alternative was rejected. In both estimated and observed econometric equations, random effect models can be applied. A random effects model is often the best choice when the goal is to generalize findings to a broader population, or when the data has multi-level structures. Here are some other factors to consider when deciding whether to use a random effects model:

4.1.2. Diagnostic Tests

I. Heteroscedasticity Test

Heteroscedasticity is to be present in a model if the variances of the error term of the different observation are not the same (Gujrati, 2004). The decision rule for heteroskedasticity is to accept the null hypothesis if the p-value from a heteroskedasticity test is greater than 0.05. This means that the residuals have constant variance and there is no heteroskedasticity. If the p-value is less than 0.05, then the data is significantly heteroskedastic. Heteroskedasticity is when the conditional variance of Y varies with X. It can be detected when the residuals have unequal variance. In contrast, homoskedasticity is when the residuals have constant variance across all the independent variables.

The Breusch-pagan test is considered to identify any linear form of heteroscedasticity. This test is an option built into STATA. This paper analyze Breuschpagan test to check if there is any problem of heteroscedasticity. The Breusch-pagan tests of the null hypothesis that the error variances are all equal versus the alternative that the error variance are a multiplicative function of one or more variables. After the heteroscedasticity test, the result is found P-value is 0.1756 which is more than 5% of level of significance. Therefore, this model does not face any heteroscedasticity problem and the null hypothesis is accepted which implies that the residuals have constant variance and there is no heteroskedasticity (Murphy, 2015).

Tabele 4.4: Test of Heteroskedasticity

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho: Constant variance
Variables: fitted values of BLD
chi2(1) = 1.83
Prob > chi2 = 0.1756

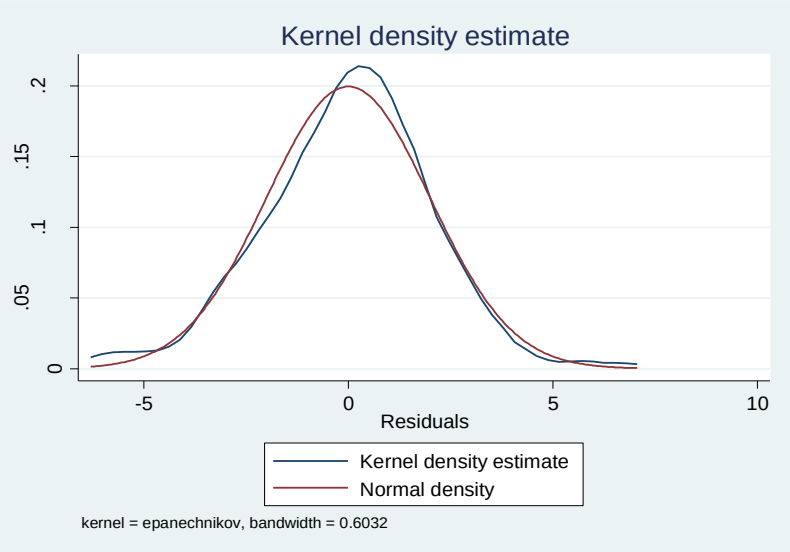
Source: Own Computation Using STATA 14, 2024

II. Normality Test

The decision rule for a normality test is to reject the null hypothesis if the p-value is less than or equal to the significance level, and to fail to reject the null hypothesis if the p-value is greater than the significance level

Graphical and statistical tests are used to determine whether a metric variable's data distribution is considered to be normal. Therefore, the histogram was utilized in this study to determine whether or not the normalcy criterion was adequately met. The histogram should have a bell shape if the residuals are normally distributed (Brooks, 2008). The histogram's shape, as shown in Figure 4.1 below, suggests that the residuals are normally distributed with the p-value of 0.6032 is greater than of 0.05 thus the null hypothesis is accepted.

Figure 4.1: Normality Test of Residual



Source: Own Computation Using STATA 14, 2024

III. Multicollinarity Test

The higher the VIF value the greater degree of multicollinearity. There is no VIF cutoff value determining a “bad” or “good” model. Nevertheless, a widely repeated rule of thumb is that a VIF value greater than or equal to ten indicates severe multicollinearity (Gujarati, 2003). The statistical software's output, shown in table 4.5 below, reveals that the average variance inflation factor (VIF) for all independent variables is 1.46. According to this number, there is generally no significant association between the independent variables. (Brooks, 2008) VIFs between 1to5 indicate a moderate association, but it isn't bad enough to call for corrective action.

As a result, the researcher has rejected the alternative hypothesis that there is an exact linear relationship between any two explanatory factors and accepted the null hypothesis that there is no such link. The model's explanatory variables do not strongly correlate with one another.

Table 4.5: Variance Inflation Factor (VIF) Test of Multicollinearity

Variable	VIF	1/VIF
CRR	2.64	0.378809
BS	2.45	0.408388
INFR	1.33	0.752412
BC	1.32	0.756245
ALR	1.28	0.779189
ROA	1.22	0.816760
EXR	1.20	0.836636
VOD	1.19	0.840485
GDP	1.18	0.848967
LQR	1.13	0.881975
CR	1.12	0.892215
Mean VIF	1.46	

Source: Own Computation Using STATA 14, 2024

IV. Autocorrelation Test

Table 4.6: Wooldridge test for autocorrelation

Wooldridge test for autocorrelation	in	panel	data
H0: no first-order autocorrelation			
F(1, 9) = 0.113			

Prob > F = 0.7447

Source: Own Computation Using STATA 14, 2024

Regarding the above autocorrelation test result, probability F 0.7447 was greater than the significance level of 0.05 level of significant. Indicates that no autocorrelation problem. Researcher has accepted the null hypothesis of no correlation problem and rejected the alternative hypothesis of correlation problem exists in the model. Conclusively, this model can be the used as best estimator of the parameter and researcher has not needed take further action.

4.1.3. Correlation Analysis

The random effect correlation coefficient, which gauges the statistical link between two continuous variables, is shown in table 4.7 below. As a result of its foundation in the covariance approach, it is referred to as the best method of determining the relationship between variables of interest. It provides details on both the size of the relationship, or correlation, and the direction of the association (Gujarati, 2004).

A statistical method called correlation can be used to determine if and how strongly two variables are related to one another. The correlation coefficient between two variables, according to Yilma (2009), spans from +1 (indicating a perfect positive association) to -1 (indicating a perfect negative relationship). It is sometimes described as the relationship between two variables. Correlation coefficients between 0.7 and 0.90 show a very high link, 0.5 to 0.69 shows a significant association, 0.3 to 0.49 shows a moderate association, 0.10 to 0.29 show a low association, and 0.01-0.09 show no association at all.

Table 4.7: Correlation Coefficient Matrix

	BLD	BS	LQR	ROA	VOD	CR	CRR	BC	ALR	GDP	INFR	EXR
BLD	1											
BS	0.3930	1										
LQR	-0.1918	0.0662	1									
ROA	0.0829	0.0829	0.0224	1								
VOD	0.2286	0.0994	-0.0036	0.1590	1							
CR	0.0519	-0.0903	0.0754	-0.1023	0.0410	1						

CRR	-0.0770	0.7324	0.0098	0.1772	0.2496	-0.1767	1					
BC	-0.0118	-0.0036	-0.0276	-0.3402	-0.0233	-0.0761	-0.0342	1				
ALR	-0.0384	0.4259	-0.0485	0.0105	0.0340	-0.0625	0.3699	0.0389	1			
GDP	0.2439	0.0417	0.2807	0.0206	-0.0430	0.1852	-0.0564	-0.1458	-0.1281	1		
INFR	-0.2012	0.1385	0.1335	-0.1122	0.2321	-0.1450	0.2204	0.2850	0.1671	-0.1012	1	
EXR	-0.0008	-0.0686	0.0014	-0.0590	-0.2122	-0.0189	-0.2354	0.1970	-0.0437	0.0150	-0.1702	1

Source: Own Computation Using STATA 14, 2024

Based on the table 4.7, shown above bank size, return on asset, volume of deposit, credit risk, and gross domestic product were positively correlated with bank lending decision (BLD) and they increases the volume of loans indicators of lending decision. On the other hand, liquidity ratio, cash reserve requirement, average lending rate, bank concentration, inflation rate and annual exchange rate of the birr to dollar were negatively correlated with the bank lending decision.

4.1.4. Random Effect Model Regression Results and Analysis

A. Test for Overall Significance of Random Effect Model

From the results in table 4.8, the within R-squared is 0.7035 which indicates that 70.35% of the variations within the variables were explained by the model. The overall R-squared is 0.7560 which indicates overall 75.60% of the variations in bank lending decision were explained by the independent variables, the remaining 24.4% of variation in lending decision performance of both state owned and private commercial banks was explained by factors not included in the random effects model. F (test) is included in the model to see whether all the coefficients in the model are different than zero.

Table 4.8: Summary of Overall Random Effect Model

Random-effects GLS regression	Number of obs	=	140
Group variable: Year	Number of groups	=	10
R-sq:	Obs per group:		
within = 0.7035	min	=	14
between = 0.9583	avg	=	14.0
overall = 0.7560	max	=	14
	Wald chi2(11)	=	396.56

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

Source: Own Computation Using STATA 14, 2024

As shown in the above table 4.8, the overall random-effects regression model's R-squared value was 0.7560. This value indicates that the explanatory factors for all banks included in the regression model, throughout the period from 2014 to 2023, explained 75.60% of the variability in the lending decision performance of chosen state owned and private commercial banks in Ethiopia. Hence, this suggests that the independent variables have a maximum percentage explanation value of 75.60% for variations in the lending decision performance of thestate owned and private commercial banking sector in Ethiopia. On the other hand remaining 24.4% of variation in lending decision performance of commercial banking sector was explained by factors not included in the random effects model.

The p-value for the test statistic in table 4.8 above is 0.0000, which indicates that the null hypothesis that all of the coefficients are zero collectively should be rejected. The model's independent variables must have been able to account for variations in the dependent variable, according to the inference. This can be understood to mean that at least one variable included in the random effect model was a significant predictor of the dependent variable's bank lending decision (BLD).

B. Hypothesis Test for Individual Significance of Variables

As shown table 4.9 below, fixed effect regression results of relationship between the dependent variable (BLD) and independent variables such as; bank size, liquidity ratio, return on asset, volume of deposit, credit risk, cash reserve requirement, bank concentration , average lending rate, gross domestic product, inflation rate and annual foreign exchange rate of the birr to dollar. Coefficients indicate influence of explanatory variables on dependent variable, standard error implies a measure of the statistical accuracy of an estimate, and p-value implies significance level of each explanatory variables.

Table 4.9: Random-Effects within Regression

BLD	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
BS	5.498015	.3383478	16.25	0.000	4.834866	6.161165

LQR	-.7825655	.1236065	-6.33	0.000	-1.02483	-.5403011
ROA	.3684369	.1794282	2.05	0.040	.0167641	.7201098
VOD	.4917983	.0627786	7.83	0.000	.3687545	.614842
CR	-.1579446	.104747	-1.51	0.132	-.363245	.0473557
CRR	-3.699881	.2843349	-13.01	0.000	-4.257167	-3.142594
BC	.7030654	.3162419	2.22	0.026	.0832428	1.322888
ALR	-.7387111	.2466953	-2.99	0.003	-1.222225	-.2551972
GDP	.4536053	.0919367	4.93	0.000	.2734127	.6337979
INFR	-1.111199	.2763664	-4.02	0.000	-1.652867	-.5695312
EXR	-.1605522	.0616848	-2.60	0.009	-.2814522	-.0396523
_cons	20.37782	8.568845	2.38	0.017	3.583193	37.17245
sigma_u 0						
sigma_e	2.1060999					
rho 0 (fraction			of variance due to u_i)			

Source: Own Computation Using STATA 14, 2024

- **Estimated Equation**

$$\text{BLD} = \beta 0 + \beta 1BS + \beta 2LQR + \beta 3ROA + \beta 4VOD + \beta 5CR + \beta 6CRR + \beta 7BC + \beta 8ALR + \beta 9GDP + \beta 10INLR + \beta 11EXR + €$$

- **Fitted Equation**

$$\text{BLD} = 20.37782 + 5.498015 - 0.7825655 + 0.3684369 + 0.4917983 - 0.1579446 - 3.699881 + 0.7030654 - 0.7387111 + 0.4536053 - 1.111199 - 0.1605522$$

As shown in table 4.9 coefficient of constant term or β0 is 20.37782 is pretty straightforward. Implying it is the average value of the dependent variable Y when the independent variable X is set to 0.

Measures of variables like bank size, liquidity ratio, return on asset, deposit volume, cash reserve requirement, bank concentration, average lending rate, gross domestic product, inflation rate, and annual birr to dollar exchange rate were found to have statistically significant relationships with bank lending decisions of a subset of Ethiopia's state-owned and private commercial banks between 2014 and 2023, as indicated by the regression results in table 4.9

above. However, it has been determined that credit risk is not a statistically significant predictor of bank lending decisions.

4.2. Discussion of Random Effect Regression Result

As table 4.9 presents the estimation results of random effect regression model for140 observations, which is collected from 10 Ethiopian state owned and private commercial banks from 2014 to 2023. The result has 0.7560 the overall of R square value, which shows about 75.60% of variation in the dependent variable is due to explanatory variables included in this study and the remaining 24.4% variation is due to unobserved variables or error term. The within R-square result indicates that the changes in the independent variables explain 70.35% of the changes in the dependent variable. The remaining 29.65% of changes was explained by other factors which are not included in the model. Thus explanatory variables collectively, are good explanatory variables of the dependent variable.

The model result of the study indicated that bank-specific factors such as; bank size, liquidity ratio, profitability and volumes of deposit have a positive and statistically significant effect on commercial bank lending while credit risk is negative and statistically insignificant on bank lending. On the other hand, industry-specific factors such as; cash reserve requirement and average lending rate have a negative and statistically significant effect on commercial bank lending while the bank concentration has positive and statistically significant on bank lending. Moreover, one of the macroeconomic variables gross domestic products has a positive and inflation rate has negative statistically significant effect on the commercial banks lending. The other variables of annual exchange rate of the birr to dollar has negative and statistically significant on bank lending as to the model result in Table 4.9.

I. Bank Size:

Bank size is one of bank specific explanatory variable, which is measured by natural logarithm of banks total asset. Referring to Table 4.9, Bank size was positively but significantly related with Ethiopian state owned and private commercial banks‟ lending decision with a p–value of 0.000 and the coefficient of 5.498015. Alternative hypothesis one is about banks size, which states positive and statistically significant relationship between bank size and lending decision. The random effect regression result shows bank

size is positively related with and significant effect on lending decision. So, thus alternative hypothesis is accepted. The coefficient of bank size is positive that means the direction of increasing or decreasing between bank size and Ethiopian commercial banks loan and advance going in a similar way, positively related. So, in Ethiopian state owned and private commercial banks other things remain constant increasing the value of banks total asset was increase loans and statistically significant influence on private and state owned commercial bank lending decision in Ethiopia. This study consistent with the previous study of

II. Liquidity Ratio:

Liquidity ratio is taken in this study as the ratio of banks current asset to its current liability. The result for the study shows there is a negative and statistically significant relationship between liquidity ratio and lending decision of both state owned and private commercial banks with a p–value of 0.000 and coefficient of -0.7825655. From this coefficient value it can be possible to say that there is negative relationship between Ethiopian state owned and private commercial banks lending decision and liquidity ratio. When liquidity increased by one percent, total loans and advances of sampled state owned and private commercial banks would be decreased by 78.3% percent and statistically significant at 5% level of significant.

The hypothesized relationship between Liquidity ratio and lending decision is filed to reject because the hypothesis states that there was negative and statistically significant relationship between liquidity ratio and lending decision and also the above regression result show, there was negative and statistically significant relationship between liquidity ratio and lending decision of state owned and private commercial bank in Ethiopia.

The coefficient sign of liquidity ratio shows negative impact of liquidity ratio on lending decision of state owned and private commercial bank in Ethiopia. The negative impact of liquidity ratio on lending decision was in line with the hypothesis, which is based on the argument of taking loans as illiquid assets of banks. According to this argument when the amount of loans provided by banks increase, the amount of illiquid assets in the total assets portfolio of banks increase and lead to the reduction in the level of liquid assets held by banks. Also, according to Pilbeam (2005) and cited as Semeredin, (2021) if demand for loans is weak, then the bank tends to hold more liquid assets (i.e. short term assets), whereas if demand for

loans is high they tend to hold less liquid assets since long term loans are generally more profitable. Consistent with these evidences, this study also confirmed a negative relationship between liquidity ratio and lending decision of state owned and private commercial bank in Ethiopia. Amano, (2014), Benjamen and Onyeuchi, (2015) and Rabah, (2015) Semeredin (2021), Misganu (2021) who finds the negative relationship. However, it is inconsistent to the findings of Olokoyo, (2011b); Olusanya et al., (2012), Malede (2014), Maurice OpiohKhangalah (2013) and Yazan Qudah, (2017).

III. Return on Asset:

As shown in the above table 4.9, the estimation coefficient of return on asset is 0.3684369 with its p--value of 0.040. This indicates that return on asset ratio is positively related with lending of state owned and private commercial banks in Ethiopia and significant at 5% significance level, as the study expected the return on asset has positively and statistically significant relationship with the dependent variable. The hypothesis states that there is positive and statistically significant relationship between return on asset and lending decision. As result, developed hypothesis is accepted.

Profitability which is peroxide by return on average assets (ROA) is computed as net income divided by average total assets. This is generally considered as a good indicator to evaluate the profitability of the assets of a bank in comparison to other banks in the same industry. The coefficient of the return on average assets (ROA) has been positive and has a statistical significance at 5 % which means one unit increase in ROA, results in 36.84% increase in banks' loan and advance facility. This positive association and significant level between profitability and bank lending is supported by prior research results of Jin (2016) and Semeredin (2021) and consistent positive result with the study of Muluken (2019) and the finding of the result similar from the investigation of Mohamed (2016) as well as Muluken (2019) and divergent from Helina (2017) and Mekonnen (2021).

IV. Volume of Deposit:

As we have seen from regression result of table 4.9, volume of deposit has positively and significant relationship with Ethiopian private and state owned commercial banks lending decision with a p- value of 0.000 and coefficients of 0.4917983. This indicates that when

volume of deposit increased by one percent, total lending of sampled state owned and private commercial banks would be increased by 49.18% and statistically significant. In line with the hypothesis, the regression result shows, there was positive and statistically significant relationship between volume of deposit and state owned and private commercial banks lending decision in Ethiopia, so the hypothesis is accepted.

This positive relationship between volume of deposit and lending decision is consistent with prior research results of Amano (2014), Mitiku (2014), Onyango (2015), Semeredin (2021), Misganu (2021) and Mekonnen (2021) who found the positive association and as well as in the level of significance consistent with Semredin (2021) and Mekonnen (2021).

V. Credit Risk:

As shown in the above table 4.9, the result of the study reveals that credit risk has statistically insignificant negative relationship with commercial banks' lending decision with p value of 0.132 and coefficient of –0.1579446. The statement suggests that credit risk has a statistically insignificant negative relationship with commercial banks' lending decisions, based on the following statements. The P-value of the result was 0.132**; t**his indicates that the relationship between credit risk and lending decisions is not statistically significant at the typical 5% significance level. In hypothesis testing, a p-value greater than 0.05 (often used as a threshold) means you fail to reject the null hypothesis, which assumes no effect or relationship. Since the p-value is 0.132, you would not conclude that credit risk significantly impacts lending decisions. On the other hand, the coefficient of -0.1579446**,** this negative coefficient suggests that, in theory, an increase in credit risk leads to a decrease in the bank's lending decisions by approximately 0.158 units. However, since the p-value is high (indicating statistical insignificance), this relationship is weak and not statistically meaningful.

Moreover, the negative sign of the coefficient implies that banks might reduce their lending decisions as credit risk increases. But because this relationship is statistically insignificant, we cannot confidently say that credit risk has any real effect on lending decisions. Statistical

insignificance (p-value > 0.05) means that the observed relationship could be due to random variation, and we cannot conclude that credit risk influences lending behaviour in a meaningful way from this data.

Thus, although there is a negative coefficient, the lack of statistical significance means that credit risk likely does not have a substantial or reliable impact on lending decisions in this case. This study consistent with the previous studies such Zelalem (2019) and Dereje (2018) but his study is positive association.

VI. Cash Reserve Requirement:

As shown in the above table 4.9, the result of the model reveals that, cash reserve requirement ratio has statistically significant and highly negative relationship with Ethiopian commercial bank lending decision with p- value of 0.000, and coefficient of -3.699881. The result indicated that holding all the other variables constant, an increase in cash reserve requirement by one unit causes decreased bank lending by 3 birr and 69 cents. Based on the findings, the study failed to reject hypothesis number six namely cash reserve requirement has a negative effect on bank lending. The result is similar to the findings of Koray et al. (2016), Amano (2014), Glocker & Towbin, 2012), and Montoro and Moreno (2011) Zelalem (2019) and Mekonnen (2021) who concluded that an increase in cash reserve requirement decreased bank credit. However, Richard and Okoye (2014), Olumuyiwa et al. (2012), and Olusanya et al. (2012) established a positive relationship between cash reserve requirement and bank lending. The regression output implied that the cash reserve requirement set by the regulatory body, NBE affects commercial bank's loans and advances negatively.

VII. Bank Concentration:

The coefficient of bank concentration and p-value for the random effect regression are 0.703065 and 0.026, respectively.The coefficient of 0.703065 for bank concentration means that for each unit increase in bank concentration (for example, a measure of how concentrated the banking market is), the dependent variable (which could be something like bank lending, financial performance, or market share, as you mentioned) is expected to increase by 0.703 units, holding other factors constant. There is a positive and statistically significant relationship between bank

concentration and the dependent variable bank lending decision is specifically, for each unit increase in bank concentration, the outcome is expected to increase by 0.703 units, assuming that other factors in the model are held constant. Since the p-value is below 0.05, this result is statistically significant, suggesting that the observed relationship is unlikely to be due to random chance.

The result is consistent with the findings of Laidroo (2014) and Aisen and Franken (2010) who established a positive relationship between the ban concentration and bank lending. However, the result is against the findings of Ciro and Hincapia (2018), Mekonnen (2021) and Pham (2015) who established a negative relationship between the lending rate and bank lending. Hence, it can be concluded that a high bank concentration positively affects the demand of the public to borrow as it concentrated bank lending because it increases the financial cost of the borrowers.

VIII. Average Lending Rate:

According to the model's findings, commercial banks' lending is negatively and statistically significantly impacted by the average lending rate. According to the findings, a one-unit rise in the lending rate results in a 73 birr and 87 cent drop in bank lending when all other factors are held constant. The results are consistent with previous expectations, and the study was unable to disprove hypothesis number eight, which states that bank lending is negatively impacted by the average lending rate. The result is consistent with the findings of Berhanu (2016), Amano (2014), Semeredin (2021) and Mekonnen (2021) who established a negative relationship between the lending rate and bank lending. However, the result is against the findings of Assefa (2014) and Richard and Okoye (2014) who established a positive relationship between the lending rate and bank lending. Hence, it can be concluded that a high interest rate negatively affects the demand of the public to borrow as it reduced bank lending because it increases the financial cost of the borrowers.

IX. Gross Domestic Product:

Furthermore, real gross domestic product as a measure of total economic activity within the economy has a positive and statistically significant effect on bank lending. The coefficient of 0.4536053 with 0.000 significant level. The result portrayed that an increase in GDP leads to increase bank lending, which is similar the prior expectation. Based on the findings, the study

accepts hypothesis number nine namely real gross domestic product has a positive effect on bank lending, which means that data support the hypothesis. To conclude that, a strong economic condition creates more demand for goods and services which lead to more investment in different sectors hence increase the per capital income as well as the savings, collectively these factors convince to banks to issue more private credits. This result is consistent with the previous study of Dereje (2018) and Zelalem (2019). However, the result is against the finding of Mitiku (2014), Misganu (2021) negative associational and insignificant factor and Mekonnen (2021) his study was significance.

X. Inflation Rate:

The random effect regression result indicates that inflation has negative significant relationship with Ethiopian commercial banks' lending decision with a p-value of 0.000, coefficients of -1.111199. This implies holding other explanatory variables constant at their average value, when inflation increased by one percent, total loans and advances of sampled Ethiopian commercial banks in Ethiopia would be decreased by 1.11 and statistically significant at 1 percent. Therefore, the researcher failed to reject the hypothesis that states inflation has a negative impact on loans and advances.

Since banks' primary business is lending, the market is built on bank credit offers and demand from both consumers and businesses. This could be the cause of the unfavorable relationship. Because inflation raises doubts about the future of the business market, it lowers the supply and demand for credit. Lending would decrease as a result of this drop in demand. The commercial banks' real lending interest revenue declines as a result of rising inflation, which lowers the banks' incentive to lend. This outcome is in line with earlier research by Dereje (2018), Misganu (2021), and Haile (2020). However, the result is against the finding of Zelalem (2019). .

XI. Annual Exchange Rate of the Birr to Dollar:

According to the result, The Annual exchange rate of the birr to US dollar was with coefficient of -0.1605522 and p value 0.009 respectively. This means that for every 1-unit increase in the exchange rate of the Birr to US Dollar (i.e., the exchange rate gets stronger), the bank lending decision (the dependent variable) tends to decrease by 0.1605522 units. Since the coefficient is negative, it suggests an inverse relationship between the exchange rate and bank lending decisions. On the other hand**,** P-value of 0.009**;** the p-value is less than the typical significance level of 0.05, indicating that the relationship between the exchange rate and the bank lending decision is statistically significant. This means there is enough evidence to conclude that the exchange rate has a significant effect on bank lending decisions.

To be conclude that, the exchange rate between the Birr and the US dollar is negatively correlated with bank lending decisions. When the exchange rate strengthens (i.e., the value of the Birr rises relative to the US dollar), banks tend to reduce their lending decisions. This relationship is statistically significant, as indicated by the p-value of 0.009. The result is against the finding of Dereje (2018 and Muluken (2019).

Table 4.10: Summary of Hypothesis Testing

S.No	Alternative hypothesis	Result	Beta and P-Value	Decision
1	Bank size has a significant positive effect on bank lending	Supported	5.498015,P<0.05	H_1 accepted H_0 rejected
2	Liquidity has a significant negative effect on bank lending	Supported	-0.7825655,P<0.05	H_1 accepted H_0 rejected
3	Profitability has a significant positive effect on bank lending	Supported	0.3684369,P<0.05	H_1 accepted H_0 rejected
4	The volume of deposits has a significant positive effect on bank lending	Supported	0.4917983,P<0.05	H_1 accepted H_0 rejected
5	Credit risk has a significant negative effect on bank lending	Supported	-0.1579446,P<0.05	H_1accepted H_0 rejected
6	Cash reserve required has a significant negative effect on bank lending	Supported	-3.699881,P<0.05	H_1 accepted H_0 rejected
7	Bank concentration has a significant negative effect on bank lending	Not Supported	0.7030654,P<0.05	H_0 accepted H_1 rejected

8	Average lending rate has a significant negative effect on bank lending	Supported	-0.7387111,P<0.05	H_1 accepted H_0 rejected
9	Real gross domestic product has a significant positive effect on bank lending	Supported	0.4536053,P<0.05	H_1 accepted H_0 rejected
10	Inflation rate has a significant negative effect on bank lending	Supported	-1.111199,P<0.05	H_1 accepted H_0 rejected
11	Annual exchange rate of the birr to dollar has a significant positive effect on bank lending	Not Supported	-0.1605522,P<0.05	H_0 accepted H_1 rejected

Source: Own Computation Using STATA 14, 2024

CHAPTER FIVE

5. CONCLUSIONS AND RECOMMENDATIONS

5.1. Conclusions

The general objective of the study was to investigate the determinants of selected commercial banks' lending decision in Ethiopia and the main objectives of the study was to identify the bank-specific, industry-specific and macro- economic factors that affect Ethiopian commercial bank lending during the period from 2014 to 2023. Based on the findings from the descriptive analysis, the average value of bank lending in your study sample is 16.98407, which represents the natural logarithm of the loans and advances provided by the commercial banks to their borrowers. On the other hand, some banks are making very large loans (with logarithmic values closer to 27.98), while others are making smaller loans (closer to the log value of 6.75). The distribution is likely to be skewed or uneven because of the significant difference between the maximum and minimum values, indicating a degree of heterogeneity in the bank lending decisions during the study period.

The study employed a panel data random effect regression model, in the model result of the study of overall R-squared is 0.7560, which indicates overall 75.60% of the variations in bank lending decision were explained by the independent variables, the remaining 24.4% of variation in lending decision performance of both state owned and private commercial banks was

explained by factors not included in the random effects model. The liquidity ratio (LIQ) was negative and has a statistical significance at 1 percent, i.e. a one unit increase in LIQ, results in a-0.78 percent decrease in banks' loan and advance facility which means that the high liquidity ratio reduces the proportion of the credit facilities granted by the private commercial banks in Ethiopia. This implies the high portion of liquid assets held by the commercial banks, the lower the funds are available for commercial bank to grant loan to the public. Therefore, the higher the LQR, the lower will be the LOA.

The inflation rate has significantly negative relationship with lending decision at one unit increase in inflation rate, results in a-1.11 percent decrease in banks' loan and advance facility which means a reduction in the purchasing power of a currency resulted from a general and sustained increase in the general price level of all goods and services in an economy usually expressed as a annual percentage change of consumer price index.

The increase of economic growth has a significant positive effect on bank lending at 1 percent, i.e. a one unit increase in GDP, results in a0.454 percent increase in banks' loan and advance facility which means that This result is similar to result found by (Alkhazaleh (2017); Rizky (2020). Good conditions will certainly increase economic growth. With good economic conditions; banks tend to provides loans to the community as working capital. Logically a strong economic conditions creates more demand for goods and services which leads to more investments in different sectors; hence increase the per capital income as well as the savings.

The Bank size has a positive and statistical significance at 1 percent, i.e. a one unit increase in bank size, results in a 5.5 percent increase in banks' loan and advance facility which means the bank size tends to positively influence the commercial bank lending as larger bank have more accessibility and have larger fund to grant loan to the public.

The Annual exchange rate of the birr to US dollar was with coefficient of -0.1605522 means that for every 1-unit increase in the exchange rate of the Birr to US Dollar (i.e., the exchange rate gets stronger), the bank lending decision (the dependent variable) tends to decrease by 0.1605522 units. This implies the depreciation of the domestic currency associated with increased price of goods and services.

Cash reserve requirement ratio has statistically significant and highly negative relationship with Ethiopian commercial bank lending decision at -3.699881 means that for every 1percent increase in the cash reserve requirement ratio of the Birr to US Dollar the bank lending decision (the dependent variable) tends to decrease by 3.7 birr. The higher Cash reserve requirement ratio constrains lending practices.

In addition to the primary analysis, several diagnostic tests were conducted to assess potential issues related to heteroscedasticity, multicollinearity, normality, and autocorrelation. The test results indicate no evidence of heteroscedasticity, as the p-value for the Breusch-Pagan test (Prob > chi^2 = 0.1756) is greater than the conventional significance level of 0.05, suggesting that the variance of the residuals is constant. To examine multicollinearity, the study used the Variance Inflation Factor (VIF). According to Gujarati (2003), multicollinearity is generally considered problematic if the VIF exceeds 10. The results from the VIF test show that the tolerance level for all variables is well below 10, with an average VIF of 1.46. This indicates that multicollinearity is not a concern in this model, as the level of correlation between the independent variables is low. The distribution of residuals was visually assessed and found to be approximately bell-shaped, suggesting that the variables follow a normal distribution. This supports the assumption of normality and implies that the model is likely free from major distributional issues. And no issues with autocorrelation were detected in the model, further suggesting the absence of problematic patterns in the residuals.

5.2. Recommendations

Based on the findings, the study forwarded the following operational and policy recommendations to enhance commercial bank lending.

To increase their deposit base, Ethiopian commercial banks must adopt a multi-pronged approach. This includes leveraging new technology, expanding their reach, offering customer-centric services, and creating financial awareness. With a strong deposit base, banks will be better positioned to grant loans and advance credit to individuals and businesses, which in turn will help drive the country's economic development. By focusing on these strategies, banks can become more competitive and strengthen their position within the growing Ethiopian economy.

The negative relationship between the cash reserve requirement and lending is that higher reserve requirements can reduce the funds available for loans. To offset this, banks may seek to increase their deposit base, enabling them to continue lending while meeting the reserve requirements. This process can involve offering better interest rates to attract more deposits.

By strengthening capital, diversifying revenue streams, and adopting new technologies are all essential components for commercial banks to increase their lending capabilities and grow their business. The combination of increased capital and innovative products not only supports loan growth but also boosts profitability and financial stability, positioning banks for long-term success.

Decreasing the supply of broad money could be seen as a way to mitigate inflationary pressures, prevent excessive speculative investment, and promote long-term stability in the banking sector. However, this needs to be carefully balanced. Tightening the money supply too quickly or too drastically can lead to recessionary pressures, lower economic growth, and disruptions in the financial system. Policymakers must weigh the risks of both inflation and deflation and adjust monetary policy accordingly to maintain economic stability and growth.

Moreover, for regulatory measures to be effective, they need to be designed and implemented with a full understanding of how they affect the lending capacity of commercial banks. This requires close consultation and cooperation between banks and the regulatory authorities, especially in the policy formulation stage. A well-designed regulatory framework should strike a balance between ensuring financial stability and supporting the flow of credit to the economy.

5.3. Suggestions for Future Research

To achieve the objective of the study, the researcher concentrated on three main variables such bank specific, industry specific and macroeconomic determinants. The variables was such included bank size, liquidity ratio, return on asset, volume of deposit, credit risk, cash reserve requirement, bank concentration, average lending rate, gross domestic product, inflation rate and annual exchange rate of the birr to US dollar. But not sufficient to the entire phenomenon, so additional variables such as other bank specific, market capitalization, and others non-financial variables should be investigated in future studies that affect commercial bank lending decision.

Incorporating these political and socioeconomic factors in future research could provide a more holistic view of the determinants of lending decision in Ethiopia. This would allow for a deeper understanding of how banks navigate not only financial and market risks but also broader contextual risks.

To determine whether a variable's impact on banks' lending decisions is consistent or inconsistent across regions, it is preferable for the sample to contain banks from various nations, whether they are developed, developing, and countries in Africa.

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Appendex

Banks	Year	Panel	BS	LQR	ROA	VOD	CR	CRR	BC	ALR	GDP	INFR	EXR	BLD
CBE	2014	1	23.62	4.1	4.2	14.43	3.56	29.18	11.88	23.62	3.1	23.31	13	10.25
CBE	2015	1	21.73	4.1	3.36	14.91	5.47	25.67	11.88	21.73	4.2	24.13	15	12.98
CBE	2016	1	21.86	3.2	3.2	11	2.29	25.96	13.5	21.86	3.6	23.08	16	9.56
CBE	2017	1	22.22	2.3	6.36	15.19	2.97	26.18	11.88	22.22	10.3	22.82	14	19.85
CBE	2018	1	22.34	3.95	3.68	16.74	3.46	26.41	12.75	22.34	3.95	23.51	18	19.27
CBE	2019	1	22.54	3.36	4.2	15.69	3.57	26.63	11.88	22.54	3.36	22.6	14.91	20.97
CBE	2020	1	22.81	2.18	3.36	13.91	7.47	26.82	11.88	22.81	2.18	22.83	11.72	19.57
CBE	2021	1	22.9	3.68	3.2	13.84	5.29	26.99	13.5	22.9	3.68	24.48	15.2	16.71
CBE	2022	1	22.99	2.91	2.91	13.64	3.25	27.16	11.88	22.99	2.91	24.99	17	12.25
CBE	2023	1	23.26	3.2	3.36	15.88	3.46	28.17	12.75	23.26	3.2	23.6	14.5	12.25
AIB	2014	2	23.5	4.1	3.6	14.25	3.23	29.18	11.88	23.5	3.1	23.45	15	6.75
AIB	2015	2	23.14	4.1	2.18	15	2.77	25.67	12.75	23.5	2.91	24.34	16	17.29
AIB	2016	2	23.22	3.2	3.1	13	6.31	25.96	13.5	23.56	3.2	23.35	17	21.25
AIB	2017	2	23.3	2.3	3.95	11.7	3.4	26.18	11.88	23.62	10.3	22.82	14.5	24.25
AIB	2018	2	23.41	3.95	2.91	13.2	3.74	26.41	12.75	21.73	10.2	23.86	20	20.2
AIB	2019	2	23.5	3.36	3.6	14.2	6.32	26.63	11.88	21.86	3.6	22.83	11.72	20.26
AIB	2020	2	23.62	10.2	2.18	15.2	8.77	26.82	12.75	22.22	6.36	23.93	15.19	16.17
AIB	2021	2	23.84	11	3.1	16.4	3.31	26.99	13.5	22.34	3.95	24.58	16.4	15.65
AIB	2022	2	24.17	2.91	3.2	17	4.5	27.16	11.88	22.54	3.36	22.66	13	27.98
AIB	2023	2	24.58	3.2	2.18	13	3.74	28.17	12.75	22.81	9.2	23.71	14.2	26.98
DB	2014	3	24.7	4.1	6.36	17	3.2	29.18	11.88	22.9	3.68	23.79	11.7	21.25
DB	2015	3	21.88	4.1	3.68	13	3.46	25.67	12.75	22.99	2.91	24.76	12	13.29
DB	2016	3	21.89	3.6	4.2	17	4.57	25.96	11.88	23.26	3.2	23.41	13	15.29
DB	2017	3	21.91	2.2	3.36	14.2	6.47	26.18	11.88	23.5	8.5	22.91	13	23.22
DB	2018	3	22.25	3.95	3.2	17	6.29	26.41	13.5	23.14	2.3	24.12	18.4	14.89
DB	2019	3	22.5	3.36	6.36	15	6.97	26.63	11.88	23.22	3.6	23.93	15.19	16.38
DB	2020	3	22.8	2.18	3.68	16	9.46	26.82	12.75	23.3	6.36	23.04	16.74	15.9
DB	2021	3	23.36	3.68	2.18	16.2	4.57	26.99	11.88	23.41	3.95	24.79	17	16.98
DB	2022	3	23.6	2.91	3.1	14.2	3.47	27.16	11.88	23.5	3.36	22.76	19	18.98
DB	2023	3	23.62	3.2	3.68	16.4	3.29	28.17	13.5	23.62	2.2	23.85	15.2	13.98
BOA	2014	4	23.79	4.1	3.95	17	3.4	29.18	11.88	23.84	11	24.08	13.2	15.25
BOA	2015	4	21.15	4.5	2.91	13	3.74	25.67	12.75	24.17	2.91	24.97	14.2	7.25
BOA	2016	4	21.33	3.6	3.6	19	3.32	25.96	11.88	24.58	3.2	23.37	17	9.89
BOA	2017	4	21.48	2.2	2.18	14	5.77	26.18	12.75	24.7	8.5	23.25	14.5	14.32
BOA	2018	4	21.66	3.95	3.1	15	5.31	26.41	13.5	21.88	2.3	24.27	19.23	11.25
BOA	2019	4	21.9	3.36	3.95	18	3.4	26.63	11.88	21.89	3.6	23.04	16.74	15.7
BOA	2021	4	22.37	3.68	3.68	32	2.5	26.99	11.88	22.25	3.95	24.86	13	23.03
BOA	2022	4	22.65	2.91	3.95	17	2.77	27.16	12.75	22.5	3.36	22.83	14	18.55
BOA	2023	4	22.82	3.2	2.91	16	1.31	28.17	13.5	22.8	2.18	24.05	16.4	14.25
WB	2014	5	23.15	4.1	3.36	17	3.5	29.18	11.88	23.36	3.68	24.23	14.2	10.96
WB	2015	5	22.56	4.5	3.2	13	2.29	25.67	13.5	23.6	2.91	24.98	26.5	12.29
WB	2016	5	22.8	3.6	6.36	17	2.97	25.96	11.88	23.62	3.2	23.49	16.2	21.55
WB	2017	5	22.88	2.3	3.68	16.2	3.46	26.18	12.75	23.79	2.1	23.62	17	20.35
WB	2018	5	22.97	3.95	4.2	14.5	3.57	26.41	11.88	21.15	10.2	22.53	16.59	23.03
WB	2019	5	23.15	3.36	3.36	14.2	8.47	26.63	11.88	21.33	3.6	23.18	15.69	20
WB	2020	5	23.25	2.18	3.2	15.2	3.29	26.82	13.5	21.48	6.36	23.26	13.91	24.94
WB	2021	5	23.6	3.68	2.91	16.4	3.25	26.99	11.88	21.66	3.95	25.03	17	23.03
WB	2022	5	23.86	2.91	3.36	12	3.2	27.16	12.75	21.9	3.36	22.89	15	23.25
WB	2023	5	24.2	3.2	3.2	13	2.57	28.17	11.88	22.24	2.18	24.31	13.5	19.23

HB	2014	6	24.46	4.1	7.23	17	2.67	29.18	12.75	22.37	3.68	24.48	15.2	19.55
HB	2015	6	21.69	4.5	3.1	12	3.5	25.67	13.5	22.65	2.91	24.99	17	12.23
HB	2016	6	21.86	3.6	3.95	13	3.4	25.96	11.88	22.82	3.2	23.6	14.5	12.25
HB	2017	6	22.22	2.3	2.91	14	5.74	26.18	12.75	23.15	1.2	23.8	15.9	13.67
HB	2018	6	22.36	3.95	3.6	14.5	6.32	26.41	11.88	22.56	2.2	22.63	19.22	14.48
HB	2019	6	22.53	3.36	2.18	13	9.77	26.63	12.75	22.8	3.6	23.26	13.91	13.13
HB	2020	6	22.75	2.18	3.1	12.5	6.31	26.82	13.5	22.88	6.36	23.34	13.84	15.48
HB	2021	6	23.09	3.68	3.2	17	4.4	26.99	11.88	22.97	3.95	23.77	13	16.25
HB	2022	6	23.33	2.91	2.18	15.9	3.5	27.16	12.75	23.15	3.36	22.25	18	20.55
HB	2023	6	23.68	3.2	3.1	17	3.32	28.17	11.88	23.25	2.1	24.52	12.5	16.25
NIB	2014	7	23.78	4.1	6.3	15	3.36	29.18	12.75	23.6	3.68	24.58	16.4	12.3
NIB	2015	7	21.91	4.5	4.2	13	3.2	25.67	11.88	23.86	2.91	22.66	13	15.23
NIB	2016	7	22.13	3.6	3.36	16	6.47	25.96	11.88	24.2	3.2	23.71	14.2	17.05
NIB	2017	7	22.25	2.3	3.2	15	3.29	26.18	13.5	24.46	1.2	23.84	17	18.03
NIB	2018	7	22.33	3.95	6.36	17	3.97	26.41	11.88	21.69	3.6	22.76	17.61	19.02
NIB	2019	7	22.65	3.36	3.68	16	2.46	26.63	12.75	21.86	3.6	23.34	13.84	20.09
NIB	2020	7	22.86	2.18	4.2	19	6.57	26.82	11.88	22.22	6.36	23.37	13.64	17.98
NIB	2021	7	23.22	3.68	3.1	18	6.47	26.99	11.88	22.36	3.95	23.86	17	17.69
NIB	2022	7	23.44	2.91	3.68	20	6.29	27.16	13.5	22.53	3.36	22.38	19	21.55
NIB	2023	7	23.8	3.2	4.2	18.4	3.97	28.17	11.88	22.75	10.2	24.7	16.5	20.52
CBO	2014	8	24.04	4.1	2.91	19	3.64	29.18	12.75	23.09	3.68	24.79	18	13.25
CBO	2015	8	23.14	4.5	3.6	13	3.32	25.67	11.88	23.14	4.2	22.76	23	18.89
CBO	2016	8	23.22	3.6	2.18	15	6.77	25.96	12.75	23.22	3.6	23.85	15.2	20.98
CBO	2017	8	23.3	2.2	3.1	11.7	2.31	26.18	13.5	23.3	2.2	24.13	14	20.55
CBO	2018	8	23.41	3.95	3.95	13.2	5.4	26.41	11.88	23.41	3.6	22.91	18.6	20.2
CBO	2019	8	23.5	3.36	2.91	14.2	1.74	26.63	12.75	23.5	3.36	23.37	13.64	20.26
CBO	2020	8	23.62	10.2	3.6	15.2	9.32	26.82	11.88	23.62	10.2	23.47	15.88	17.25
CBO	2021	8	23.84	11	4.2	16.4	4.77	26.99	12.75	23.84	11	23.95	14.2	18.98
CBO	2022	8	24.17	2.91	2.91	17	5.31	27.16	13.5	24.17	2.91	22.56	32	23.98
CBO	2023	8	24.58	3.2	3.6	13	3.4	28.17	11.88	24.58	2.2	22.65	16	20.52
LIB	2014	9	24.7	5.1	3.2	17	3.19	29.18	13.5	24.7	3.1	24.86	12	21.33
LIB	2015	9	21.88	4.5	6.36	7.5	3.25	25.67	11.88	21.88	4.2	22.83	21	10.89
LIB	2016	9	21.89	3.6	3.68	17	2.46	25.96	12.75	21.89	2.6	24.05	16.4	16.25
LIB	2017	9	21.91	6.36	4.2	14.2	3.57	26.18	11.88	21.91	1.5	22.53	13	14.32
LIB	2018	9	22.25	3.95	3.36	17	3.47	26.41	11.88	22.25	3.95	23.19	16.5	15.98
LIB	2019	9	22.5	3.36	3.2	15	3.29	26.63	13.5	22.5	3.36	23.47	15.88	16.38
LIB	2020	9	22.8	2.18	6.36	16	3.97	26.82	11.88	22.8	2.18	23.57	14.25	16.9
LIB	2021	9	23.36	3.68	3.6	16.2	3.46	26.99	12.75	23.36	3.68	24.04	17	17.98
LIB	2022	9	23.6	2.91	3.2	14.2	4.57	27.16	11.88	23.6	2.91	22.74	17	17.98
LIB	2023	9	23.62	3.2	6.36	16.4	5.47	28.17	11.88	23.62	2.2	22.73	15	13.26
OIB	2014	10	23.79	4.01	3.1	17	4.21	29.18	13.5	23.79	3.1	25.03	12	12.33
OIB	2015	10	21.15	4.5	3.95	7.5	3.4	25.67	11.88	21.15	4.2	22.89	15	10.23
OIB	2016	10	21.33	4.5	2.91	19	2.74	25.96	12.75	21.33	2.6	24.31	12	12.25
OIB	2017	10	21.48	6.36	3.6	14	3.32	26.18	11.88	21.48	6.36	22.63	16	13.87
OIB	2018	10	21.66	3.95	2.18	15	2.77	26.41	12.75	21.66	3.95	23.33	15.37	13.26
OIB	2019	10	21.9	3.36	3.1	18	2.31	26.63	13.5	21.9	3.36	23.57	14.25	15.7
OIB	2020	10	22.24	2.18	3.95	19	9.4	26.82	11.88	22.24	2.18	23.31	13	16.85
OIB	2021	10	22.37	3.68	6.36	32	5.74	26.99	12.75	22.37	3.68	24.13	15	23.25
OIB	2022	10	22.65	2.91	3.1	17	3.32	27.16	11.88	22.65	2.91	23.08	16	16.89
OIB	2023	10	22.82	3.2	3.95	16	3.77	28.17	12.75	22.82	2.2	22.82	15	10.25

BIB	2014	11	23.15	4.01	4.2	17	2.57	29.18	11.88	23.15	3.1	23.77	13	7.99
BIB	2015	11	22.56	4.5	3.36	13	3.47	25.67	11.88	22.56	4.2	22.25	18	18.35
BIB	2016	11	22.8	2.6	3.2	17	3.29	25.96	13.5	22.8	2.6	24.52	13	22.55
BIB	2017	11	22.88	6.36	6.36	16.2	4.97	26.18	11.88	22.88	6.36	22.76	15	21.35
BIB	2018	11	22.97	3.95	3.68	14.5	3.46	26.41	12.75	22.97	3.95	23.51	13.97	22.03
BIB	2019	11	23.15	3.36	4.2	14.2	6.57	26.63	11.88	23.15	3.36	23.86	14.42	20
BIB	2020	11	23.25	2.18	3.36	15.2	2.47	26.82	11.88	23.25	2.18	23.45	15	20.94
BIB	2021	11	23.6	3.68	3.95	16.4	3.29	26.99	13.5	23.6	3.68	24.34	16	23.25
BIB	2022	11	23.86	2.91	4.2	12	3.97	27.16	11.88	23.86	2.91	23.35	17	19.98
BIB	2023	11	24.2	3.2	3.36	13	3.46	28.17	12.75	24.2	2.2	22.82	16	16.9
ZB	2014	12	24.46	6.02	3.6	17	4.32	29.18	11.88	24.46	3.1	23.86	4.5	14.85
ZB	2015	12	21.69	3.2	2.18	12	5.77	25.67	12.75	21.69	4.2	22.38	19	15.23
ZB	2016	12	21.86	5.5	3.1	13	6.31	25.96	13.5	21.86	2.6	24.7	17	11.25
ZB	2017	12	22.22	6.36	3.95	14	7.4	26.18	11.88	22.22	6.36	22.91	17	13.98
ZB	2018	12	22.36	3.95	2.91	14.5	3.74	26.41	12.75	22.36	3.95	23.86	14.42	15.48
ZB	2019	12	22.53	3.36	3.6	13	2.32	26.63	11.88	22.53	3.36	24.12	13.24	13.13
ZB	2020	12	22.75	2.18	2.18	12.5	6.77	26.82	12.75	22.75	2.18	23.79	11.7	14.56
ZB	2021	12	23.09	3.68	3.36	17	5.31	26.99	13.5	23.09	3.68	24.76	16.2	15.98
ZB	2022	12	23.33	2.91	3.6	15.9	6.4	27.16	11.88	23.33	2.91	23.41	13	17.98
ZB	2023	12	23.68	3.2	3.1	17	2.74	28.17	12.75	23.68	2.2	22.91	16	19.2
BEIB	2014	13	23.78	5.1	6.36	14	2.97	29.18	11.88	23.78	3.1	23.95	14.2	12.84
BEIB	2015	13	21.91	3.2	3.68	7.2	3.5	25.67	12.75	21.91	4.2	22.56	32	14.26
BEIB	2016	13	22.13	5.5	4.2	16	4.57	25.96	11.88	22.13	2.6	22.65	12	17.25
BEIB	2017	13	22.25	6.36	3.36	15	3.47	26.18	11.88	22.25	6.36	23.19	16	18.03
BEIB	2018	13	22.33	3.95	3.2	17	3.29	26.41	13.5	22.33	3.95	24.12	13.24	19.02
BEIB	2019	13	22.65	3.36	6.36	16	6.97	26.63	11.88	22.65	3.36	24.27	14.43	20.09
BEIB	2020	13	22.86	2.18	3.68	19	3.46	26.82	12.75	22.86	2.18	24.08	13.2	17.68
BEIB	2021	13	23.22	3.68	2.18	18	4.5	26.99	11.88	23.22	3.68	24.97	14.2	14.55
BEIB	2022	13	23.44	2.91	6.36	20	3.47	27.16	11.88	23.44	2.91	23.37	17	22.98
BEIB	2023	13	23.8	3.2	4.2	18.4	3.29	28.17	13.5	23.8	2.2	23.25	17	19.25
AB	2014	14	24.04	5.1	3.95	19.23	3.4	29.18	11.88	24.04	3.1	24.04	17	12.98
AB	2015	14	21.71	3.2	2.91	11	5.2	25.67	12.75	21.71	4.2	22.74	17	17.56
AB	2016	14	21.98	2.2	3.6	19.22	3.32	25.96	11.88	21.98	2.6	22.73	13	16.25
AB	2017	14	22.45	6.36	2.18	17.61	6.77	26.18	12.75	22.45	6.36	23.33	19	15.2
AB	2018	14	22.91	3.95	3.1	18.6	5.31	26.41	13.5	22.91	3.95	24.27	14.43	14.59
AB	2019	14	23.11	3.36	3.95	16.5	5.4	26.63	11.88	23.11	3.36	22.6	14.91	14.6
AB	2020	14	23.22	2.18	2.91	15.37	4.74	26.82	12.75	23.22	2.18	24.23	14.2	19.03
AB	2021	14	23.37	3.68	3.68	13.97	3.32	26.99	11.88	23.37	3.68	24.98	16.4	13.55
AB	2022	14	23.5	2.91	3.95	14.42	3.77	27.16	12.75	23.5	2.91	23.49	16.2	15.74
AB	2023	14	23.56	3.2	3.6	13.24	2.31	28.17	13.5	23.56	2.2	23.62	17	14.46