Determinants of private banks lending Behaviour in Ethiopia, a case of selected private banks

A Thesis Submitted to the School of Graduate Studies of Jimma University in Partial Fulfilment of the Requirements for the Award of the Degree of Masters of Science in Accounting and Finance (MSC)

BY:

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JIMMA UNIVERSITY

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CERTIFICATE

This is to certify that the thesis entitles "**Determents of private banks lending Behaviour in Ethiopia, a case of selected private banks**, submitted to Jimma University for the award of the Degree of Master in accounting and finance and is a record of bonafide research work carried out by Mr. Semeredin Shifalo Sirrwana, under our guidance and supervision.

Therefore, we hereby declare that no part of this thesis has been submitted to any other university or institutions for the award of any degree or diploma.

Main Adviser's Name   Date   Signature

Abel Worku (Assistance Professor

Co-Advisor's Name   Date   Signature

Hayatu Heyru (Lecturer)

DECLARATION

I hereby declare that this thesis entitled "**Determents of private banks lending Behaviour in Ethiopia, a case of selected private banks**", has been carried out by me under the guidance and supervision of Abel Worku (Assistance Professor)and Hayatu Heyru (Lecturer)

The thesis is original and has not been submitted for the award of any degree or diploma to any university or institutions.

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ABSTRACT

This study investigated main determinants of commercial banks' lending behavior in Ethiopian by using panel data of ten banks over the period 2009 to 2019. In order to achieve research objective the Study has been used quantitative research approach. The analyses were performed using panel data derived from the financial statements of sampled private commercial banks and macro-economic data from National bank of Ethiopia and ministry of finance and economic development. 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 and based on the Hausman Specification test the random effect model was preferred. Ten explanatory variables that affect banks' lending were selected and analyzed with STATA 16 econometrics software package. Result of the study reveals 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'. The study suggests that Ethiopian commercial banks should enhance their strategies in mobilizing deposits from the public and have to strive to strength their market share. And also the banks' should manage their liquidity and administer their lending activity by considering internal factors, existing economic situation, competitive environment, regulatory measures and their target customers.

Key word: Lending Behavior, Market share, profitability, volume of deposit.

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List of acronyms and abbreviations

AIB: Awash International Bank S.C

BOA: Bank of Abyssinia S.C

BA: Bank size

CBO: Cooperative Bank of Oromia

CRR: Reserve Requirement

DB: Dashen Bank S.C

GDP: Gross Domestic Product

INFR: Inflation Rate

LIR: Lending Interest Rate

LQR: Liquidity Ratio

MoFED: ministry of finance and economic development

MKS: Market share

NBE: national bank of Ethiopia

NIB: Nib International Bank S.C

NPL: Nonperforming Loans

OIB: Oromia International Bank S.C

OLS: Ordinary Least Square

ROA: Return on Assets

TL: Total Loans

UB: United Bank S.C

VIF: Variance Inflation Factor

VoD: Volume of Deposit

WB: Wogagen Bank S.C

ZB: Zemen Bank S.C

CHAPTER ONE

INTRODUCTION

1.1. BACKGROUND OF THE STUDY

The growth and development of a country's economy depend largely on the funds available in the financial market. Besides raising capital through the stock market, business firms also obtain the funds by borrowing from the financial institutions particularly banks. The expansion and productive investments in manufacturing, construction, property development, retailing and other economic sectors is boosted by Availability of funds through bank credit. The business's efficiency, profitability and future growth will positively affected by the banks' ability in providing credit to the business firms(Hasan et al., 2014).

Financial institutions are firms and their behavior can be analyzed in much the same way that economists analyses any other type of firm. Thus, we can think of them institutions as producing various forms of loans out of money which people are willing to lend (Howells & Bain, 2007). Financial institutions facilitate the flow of funds between ultimate lenders and borrowers. They perform various functions that are part of intermediation process (Faure, 2015). Furthermore, we can assume that they are profit maximizes and that the profit arises from charging interest to borrowers at a rate which exceeds that paid to lenders (Howells & Bain, 2007).

According to(Malede, 2014), lending plays a primary role in commercial bank daily banking activities where loan and advances is the largest component in the bank's asset portfolio and it is also the predominant sources of revenue for the bank. As bank lending is the major source of generating earnings and it involves remarkable amount of risk, banks should be careful in analyzing the various determinants of bank lending decision. The lending of banks has generate the sustainable profit and liquidity sources (Timsina, 2016) .The banks' lending decision has shed more light in the economic development and sustainable environment of the developing countries (Alkhazaleh, 2017).

As a result, loans are one of the most important long-term financing sources in many countries and banks are the most important savings mobilization and financial resource allocation

institutions. Consequently, these roles make them an important phenomenon in economic growth and development. In performing this role, it must be realized that banks have the potential, scope and prospects for mobilizing financial resources and allocating them to productive investments, (Olokoyo, 2014).

Like other country's banks, Ethiopian commercial banks' lending behaviour is affected by bank specific, industry related and macroeconomic factors. (Malede, 2014) conducted study by including variables that are: volume of deposits, bank size, gross domestic product, credit risk, liquidity ratio, cash reserve ratio, investment portfolio and interest rate. The results of this study showed that bank size, credit risk, GDP and liquidity ratio have a positive and statistically significant influence on banks' loan and advances. On the other hand cash reserve ratio, commercial banks 'lending rate, volume of deposit and investment portfolio have positive but statistically insignificant impact on lending behavior of Ethiopian commercial banks.

In Ethiopia as far as researcher's knowledge concerned, some studies are conducted with regard to determinants of commercial bank lending behavior on public as well as private owned commercial banks together in the sample. Most of the above researchers were incorporated government Commercial Bank (Commercial Bank of Ethiopia) in the sample. But incorporating of government Commercial Bank (Commercial Bank of Ethiopia) in the sample may leads to the biased conclusion of the study result. as we know Commercial Bank of Ethiopia is a huge in asset amount, capital accumulation, amount of deposit, number of customer and number of branch, and this bank is government owned bank, so it may be difficult to compare this huge, large and government owned bank with emerging private commercial banks in the country.

In addition, on their study some of them did not considered market share, non-performing loan, cash reserve requirement bank size and return on asset (profitability) as factors that affects the bank's loan and advance. Furthermore, there are inconsistencies of results among these researches, example: on the study that conducted by Amano(2014) Lending interest rate have negative and significant impact on lending behavior of commercial banks, but on the study that conducted by Zelalem(2016) Lending interest rate have Negative and insignificant impact on lending behaviour of commercial banks. In addition, the study result of impact of Gross Domestic Product on lending Behaviour was inconsistencies, Amano (2014) found Positive &

insignificant, Aytenew (2016) found negative and insignificant, and Zelalem (2016) found Positive and significant impact on lending behavior of commercial banks. Just like the above discussed variable the impact of Inflation Rate on lending Behaviour was inconsistencies, Amano (2014) found Positive & significant but Zelalem (2016) found Positive and insignificant impact on lending Behaviour of commercial banks. Because of inconsistencies of results among these researches, a detailed investigation by excluding the huge government commercial bank from the sample was required. Therefore this study is aimed to investigate determinants of commercial banks' lending Behaviour; and thereby, to provide empirical evidence about the impact of the selected variable on lending Behaviour of private commercial banks in Ethiopia.

1.2. STATEMENT OF THE PROBLEM

Banks are globally known as major actors in lubricating the economy through their intermediation role. Interestingly, this role constitutes a major source of their income and a means of distributing income and facilitating the payment system. According to (Ladime et al., 2014) banks' income is generated from the spread between lending and deposit rates relative to the volume of loans granted. The volume of loans granted by a bank at any point in time is a function of its internal characteristics such as size, deposit base, liquidity, and credit policy.

The lending behaviours of commercial banks is influenced by different internal and external factors. According to (Richard, E. & Okoye, 2014) internal factors of lending behaviours of banks are established by their directors while external factors arise from the regulatory actions of national (central) banks, other regulatory authorities in the financial sector of the economy and from the general macroeconomic event. Scrutinizing these major factors that affect the lending behaviours of commercial banks is the critical task of different parties including board of directors and government body's. In different countries of the world, several studies were conducted to investigate the determinants of lending behaviours of commercial banks.

For instance, (Olokoyo, 2011b) utilized explanatory variables such as volume of deposits, investment portfolio, interest rate, cash reserve requirement, liquidity ratio, foreign exchange and gross domestic product to determine their influence on commercial banks' lending behaviours but some basic explanatory variables such as market share, profitability are not included in his study.

(Olusanya et al., 2012), on their study takes a look at determinants of lending behaviours of commercial banks in Nigeria. The study result reveals that there is positive relationship between loan and advances and volume of deposits, annual average exchange rate of the Naira to Dollar, gross domestic product at current market price and cash reserve requirement ratio except Investment portfolio and Interest rate (lending rate) that have a negative relationship.

(Tomak, 2015) studied the bank level (size and access to funds) and market based (interest rate, inflation rate, GDP) variables impact on bank lending behaviours and Mukhanyi (2016) study the determinants of lending behaviours among commercial banks in Kenya by employing secondary panel data of Bank size, Cash reserve ratio, Interest rate spread, Bank capitalization, Volume of deposits and Economic growth were taken as independent variables that affect lending behaviours of commercial banks. The result shows that Bank size had a positive and statistically non-significant effect on bank lending behaviours.

On the other hand, some scholars try to address and emphasize in examining macro-economic factors of loans and advances (He, D. & Wang, 2013). Some researchers examine single explanatory variables in depth rather than scrutinize all in one; (Gambacorta, L. & Mistrulli, 2003) studied the influence of bank capitalization on banks channelling in Italy case.

According to (Jeoitta, 2007) currently the banking business is so sensitive the loan they garneted to their customer because more of their income is generated from credit (loan) given to their customers. This credit creation process exposes the banks to high credit risk which leads to loss. Therefore, without understanding determinants of lending behaviours, good bank performance or profit would be unthinkable.

The banking industry in Africa and Ethiopia in particular forms a strategic hub of the financial system. Lending decisions by banks cannot be overlooked as they are the principal providers of funds to governments, corporate bodies and individuals as a whole. Existing literature provides paucity of empirical evidence on bank lending behaviour in emerging markets like Ethiopia (Ayitenew T, 2016).

From time to time fund mobilization and service providing capacity is increased, as result of this, there are several factors that determine the lending behaviour of commercial banks in Ethiopian

banking industry. In developed countries there are many empirical studies on the determinant of lending behaviour of commercial banks. But in our country there are few studies on the determinant of lending behaviours of commercial banks.

In Ethiopia as far as researchers knowledge concerned, the only studies conducted with regard to determinants of commercial bank lending behaviours are (Amano, 2014) (Malede, 2014), (Ayitenew T, 2016)(Ayitenew T, 2016) and (Zelalem, 2016) on public as well as private owned commercial banks together in the sample. But incorporating of government Commercial Bank (Commercial Bank of Ethiopia) in the sample may leads to the biased conclusion of the study result because, as we know Commercial Bank of Ethiopia is a huge in asset amount, capital accumulation, amount of deposit, number of customer and number of branch, and this bank is government owned bank, so it may be difficult to compare this huge, large and government owned bank with emerging private commercial banks in the country.

In addition, on their Studies some of them did not considered a variable that may have significant power on determining the lending Behaviour of private commercial banks, those variables includes: market share, Non-performing loan, cash reserve requirement bank size and return on asset (profitability). Furthermore, there are inconsistencies of results among these researches, example: on the study that conducted by Amano(2014) Lending interest rate have negative and significant impact on lending behaviours of commercial banks, but on the study that conducted by Zelalem(2016) Lending interest rate have Negative and insignificant impact on lending behaviours of commercial banks. In addition, the study result on impact of Gross Domestic Product on lending Behaviour was inconsistencies, Amano (2014) found Positive & insignificant, Aytenew (2016) found negative and insignificant, and Zelalem (2016) found Positive and significant impact on lending behaviours of commercial banks. Just like the above discussed variable the impact of Inflation Rate on lending Behaviour was inconsistencies, Amano (2014) found Positive & significant but Zelalem (2016) found Positive and insignificant impact on lending Behaviour of commercial banks. Because of inconsistencies of results among these researches, a detailed investigation by excluding the huge government commercial bank from the sample was required. Therefore, the main purpose of this study was to examine determinants of lending behaviours of Ethiopian private commercial banks and to fills gap that were discussed in the above.

1.3. OBJECTIVE OF THE STUDY

1.3.1. General Objective

The main objective of the study was to investigate the determinants of private commercial banks' lending Behaviour in Ethiopia.

1.3.2. Specific objectives

Having the aforementioned problem and general objective in mind, the study addresses the following specific research objectives:

1. To examine the effect of volume of deposit on lending Behaviour of private commercial banks in Ethiopian
2. To examine the effect of liquidity ratio on lending Behaviour of private commercial banks in Ethiopian
3. To examine the effect of lending interest rate on lending Behaviour of private commercial banks in Ethiopian
4. To examine the effect of Non-performing loan on lending Behaviour of private commercial banks in Ethiopian.
5. To examine the effect of profitability (ROA) on lending Behaviour of private commercial banks in Ethiopian.
6. To examine the effect of bank size on lending Behaviour of private commercial banks in Ethiopian.
7. To assess the effect of, cash reserve requirement ratio on lending behaviours of Ethiopian private commercial banks
8. To assess the effect of market share on lending behaviour of Ethiopian private commercial banks
9. To examine the effect of inflation rate on lending Behaviour of private commercial banks in Ethiopia.
10. To examine the effect of economic growth rate (GDP) on lending Behaviour of private 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 behaviour. The results from the literature review are used to establish expectations for the relationship of the different determinants. Hence, based on the objective, the present study seeks to test the following ten hypotheses.

H_1: Bank size has a positive and statistically significant Effect on private commercial banks' lending Behaviour in Ethiopia.

H_2: Non-performing loan has a negative and statistically significant Effect on private commercial banks' lending Behaviour in Ethiopia.

H_3: Volume of deposit has positively and statistically significant Effect on lending Behaviour of private commercial banks in Ethiopia.

H_4: Lending interest rate has negative and statistically significant Effect on private commercial banks' lending Behaviour in Ethiopia.

H_5: Liquidity ratio has a negative and statistically significant Effect on private commercial banks' lending Behaviour in Ethiopia.

H_6: Cash reserve requirement has negative and statistically significant Effect on Ethiopian private commercial banks' lending Behaviour.

H_7: Return on asset has a positive and statistically significant Effect on private commercial banks' lending Behaviour in Ethiopia.

H_8: Market share has a positive and statistically significant Effect on private commercial banks' lending Behaviour in Ethiopia.

H_9: Inflation rate of the country economy have negative and statistically significant Effect on private commercial banks' lending Behaviour in Ethiopia.

H_{10}: GDP has a positive and statistically significant Effect on private commercial banks' lending Behaviour in Ethiopia.

1.5. SIGNIFICANCES OF THE STUDY

- First and foremost, the findings of the study will be tremendously beneficial to the academicians, as well as the commercial banks to understand the factors which affect commercial banks' lending behaviours.

- Also, it will help management of banks to make them aware and to give due attention about the factors that affect bank lending behaviours'. The findings of this study will be important to understand the behaviours and tendencies of commercial banks in distributing loans and credits to the public.

- The findings of the study will immense benefit to private commercial banks in terms of using them as inputs in formulating guidelines with which to effectively manage their lending activities in the economy.

- The outcome of the study will identify the relevant factors influencing the lending behaviours of private commercial banks in Ethiopia. This helps private commercial banks, National Bank of Ethiopia and Government (monetary and fiscal policymakers) in formulating appropriate policies that could enhance effective administration and management of loans, advances and other forms of lending by private commercial banks in the Ethiopian economy.

- To other researchers: Besides, scholars and researchers will find this study useful if they wish to use the findings as a basis for current and further research on the subject. This research is also expected to add to the existing literature on Determents of private banks lending Behaviour in Ethiopia, a case of selected private banks.

- To the researcher: At last the research will serve the researcher to gain better knowledge on research work and on the issue of banks' lending Behaviour.

1.6. SCOPE OF THE STUDY

The scope of the study is restricted to Examine Determinant of lending behaviours of private commercial banks 'which are found in Ethiopia. The study's period is designed to have coverage on relevant data of eleven years between the years 2009-2019. The study is concentrated to a sample of ten private commercial banks that are in operation up to 2008 G.C. As a result, the sample has 10 private commercial banks out of 16 private commercial banks for the sample period of eleven years.

1.7. ORGANIZATION OF THE STUDY

In the introductory part the study idea that are related to introduction are presented. It contains background of the study, statement of the problem, objective of the study, research hypothesis, significance of the study, and scope of the studies, than discussed on review of related literature and it includes theoretical, empirical and the conceptual framework. Under this section relevant published and unpublished literatures, journals and other researcher's work that is previously done on similar areas were carefully discussed in the way that help to achieve the objective of the study. In the third chapter of the study, information about the methodology used in this study's would be addressed. It includes the research design and approaches that were used, data collection methods and models that are employed for the purpose of the study. The fourth chapter of the study contains data presentation, analysis and interpretation. Finally, in the fifth chapter conclusion and forwarded recommendations were presented.

CHAPTER TWO

2. REVIEW OF RELATED LITERATURE

2.1. Background of banking industry in Ethiopia

As a result of the agreement reached between Emperor Minilik II and Mr.Ma Gillivray, representative of the British owned National Bank of Egypt; modern banking in Ethiopia began in 1905 with the Bank of Abyssinia, a private company controlled by the Bank of Egypt. In 1931. It was liquidated and replaced by the Bank of Ethiopia which was the bank of issue until the Italian invasion of 1936. During the Italian occupation, Bank of Italy banknotes formed the legal tender. Under the subsequent British occupation, Ethiopia was briefly a part of the East Africa Currency Board (Alemayehu, 2006).

 In 1943; the State Bank of Ethiopia was established, with two departments performing the separate functions of an issuing bank and a commercial bank. In 1963, these functions were formally separated and the National Bank of Ethiopia (the central and issuing bank) and the Commercial Bank of Ethiopia were formed. In the period to 1974, several other financial institutions emerged including the state owned: The Agricultural and Industrial Development Bank (established largely to finance state owned enterprises); The Savings and Mortgage Corporation of Ethiopia; The Imperial Savings and Home Ownership Public Association (which provided savings and loan services) (Gedey, 1990).

Major private commercial institutions, many of which were foreign owned, included the Addis Ababa Bank, the Banco di Napoli, the Banco di Roma. However, the banking business could not move further because of the nationalization of private investments by the Socialist regime (the Dergue regime) that came into power leaving only three government banks; the National Bank of Ethiopia, the Commercial Bank of Ethiopia and agricultural and Industrial Development Bank.

This was reversed when the Socialist regime was overthrown in 1991. Following the overthrown of the Dergue regime in 1991, the EPRDF declared a liberal economic system. In line with this, Monetary and Banking proclamation of 1994 established the National Bank of Ethiopia (NBE) as a judicial entity, separated from the government and outlined its main function. Monetary and

Banking proclamation No.83/1994 and the Licensing and Supervision of Banking Business No.84/1994 laid down the legal basis for investment in the banking sector (Alemayehu, 2006).

After the proclamation of 1994, the first private bank, Awash International Bank was established in 1994 by 486 shareholders paving a way to the establishment of related private banks such as Dashen Bank (1995), Abyssinia Bank (1996), Wegagen Bank (1997), United Bank (1998), Nib International Bank (1999), Cooperative Bank of Oromia (2004), Lion International Bank (2006), Oromia International bank (2008), Zemen Bank (2008), Buna International Bank (2009), Birhan International Bank (2009), Abbey bank (2010), Addis international bank (2011), Debub global bank (2012) and Enat bank (2012).

2.2.   Theoretical framework on loan

A loan is a debt provided by an entity (organization or individual) to another parties (organization or individual) at an interest rate, and that is evidenced by a promissory note which specifies, the (initial) principal amount of money that borrowed by the entities, the rate of interest that lender needs to charging, and the maturity date of repayment. A loan entails the re-allocation of some parts of assets for a period of time between the lender and the borrower.

In a loan, the borrowers initially receives or borrows an amount of money, called the principal, from the lender, and pays back or repay an equal amount of money plus interest charged to the lender at a later time. The loan is generally provided at a cost which provides an incentive for the lender to engage in the loan, referred to as interest on the debt. In a legal loan, each of these obligations and restrictions is enforced by contract, which can also place the borrower under additional restrictions known as loan covenants(Mukhanyi, 2016)

According to Athavale et al. (undated) banks willingness depends on the project's payoffs and a moral rectitude of borrowers, while bank ability to lend depends on the adequacy of banks 'capital and monetary policy. Banks use a deposits accepted from customer and use those funds to give loans to other customers or to invest it in other assets that will yield a return higher than the amount that bank pays to the depositor (McCarthy et al., 2010). It shows that customers deposit is the primary source of bank loan and hence, increasing or guaranteeing deposits directly has a positive effect on lending.

There are many theories which seek to explain the behaviours of commercial banks in their lending activities in various economies around the world. For the purpose of the study, the theories that are considered relevant are included.

Loan Pricing Theory

Banks cannot always set high interest rates, e.g. trying to earn maximum interest income. Banks should consider the problems of adverse selection and moral hazard since it is very difficult to forecast the borrower type at the start of the banking relationship (Stiglize, E., & Andrew, 1981). If banks set interest rates too high, they may induce adverse selection problems because high-risk borrowers are willing to accept these high rates. Once these borrowers receive the loans, they may develop moral hazard behaviours or so called borrower moral hazard since they are likely to take on highly risky projects or investments (Chodechai, 2004). From the reasoning of Stieglitz and Weiss, it is usual that in some cases we may not find that the interest rate set by the banks is commensurate with the risk of the borrowers. Loan Pricing Theory is related to lending interest rate of banks.

Hold-up and soft budget constraint theories

Banks' choice of multiple-bank lending is in terms of two inefficiencies affecting exclusive bank firm relationships, namely the hold-up and the soft-budget-constraint problems. According to the hold-up literature, sharing lending avoids the expropriation of informational rents. This improves firms' incentives to make proper investment choices and in turn it increases banks' profits (Von-Thadden, 2004) and (Padilla, A., & Pagano, 1997). As for the soft-budget constraint problem, multiple bank lending enables banks not to extend further inefficient credit, thus reducing firms' strategic defaults. Both of these theories consider multiple-bank lending as a way for banks to commit towards entrepreneurs and improve their incentives. None of them, however, addresses how multiple bank lending affects banks' incentives to monitor, and thus can explain the apparent discrepancy between the widespread use of multiple-bank lending and the importance of bank monitoring.

Nevertheless, when one considers explicitly banks' incentives to monitor (Carletti et al., 2006), multiple-bank lending may become an optimal way for banks with limited lending capacities to commit to higher monitoring levels. Despite involving free-riding and duplication of efforts, Sharing lending allows banks to expand the number of loans and achieve greater diversification.

This mitigates the agency problem between banks and depositors, and it improves banks' monitoring incentives.(Carletti et al., 2006).

Credit Market Theory

The model credit market theory postulates that the terms of credits clear the market. In a market where collateral and other restrictions remain unchanged, then lending rate becomes the only price mechanism (Ewert, R. et al., 2010).

Given an increasing demand for credit and a given credit supply, the lending rates rises and if the demand lowers thus higher supply of credit, lending rates decline. Any incremental risk in a project being undertaken is reflected through a risk premium. Therefore, there exist a positive correlation between the probability of default and the lending rate charged on a loan. Thus a conclusion is made that the higher the risks failure of the borrower, the higher the interest premium (Ewert, R. et al., 2010).

The theory creates an impression that a borrower who has a high risk will require to provide more collateral so as to be charged the same lending rate as a borrower who has a low risk profile as he will enjoy a low risk premium. This brings the "moral hazard'' and adverse selection phenomena brought about by information asymmetry existing between the lender and the borrowers (Moussa, M. A. B., &Chedia, 2016). The borrower has a more accurate assessment of the risk profile of his investment that's not known by the lender and hence may perform secret actions to increase the risk of the investment without the realization of the lender. The adverse selection problem comes forth when lenders raise lending rates to shield themselves from default and on the other hand attract high risk borrowers and eliminate low risk borrowers) (Moussa, M. A. B., &Chedia, 2016).

The signaling arguments theory

The signalling argument states that good companies should provide more collateral so that they can signal to the banks that they are less-risky type of borrowers and then they are charged lower interest rates. Meanwhile, the reverse signalling argument states that banks only require collateral and or covenants for relatively risky firms that also pay higher interest rates (Chodechai, 2004) and (Ewert, R. et al., 2010).

The new theory of commercial banking and bank lending

Ahtiala, (2008) have developed a model of bank lending behaviours in the presence of Customer-specific capital and the critical nature of the loan decision, which are mainly due to

joint production in information and transactions. Therefore, if the profits are independent across customers, the bank maximizes the expected present value of its profits by maximizing the product of the probability of the customer staying with the commercial bank and the specific capital of each customer.

The bank's loan decision was shown to be asymmetrical. On the one hand, there is the marginal gain in the probability of the customer staying times all of the specific capital and on the other the expected net marginal interest cost of the average loan stock, which does not include non-interest profits and is zero if the loan is not expected to increase the long-run stock. It improves the customer's loan terms, reallocating resources to profitable customers' projects.

It can be optimal to extend loans to a valuable customer at an interest rate loss. Cutting the loan rate is not always possible, however, partly because of the non-negativity of the interest rate and the prime rate convention, which accentuates the role of specific capital. Loyalty increases a customer's value to the bank but improves the customer's loan terms only to the extent that the customer makes it conditional on the loan extended. There is no mechanism bringing about equilibrium where the bank is indifferent, at the margin, between lending to different customers. Therefore, banks are in the corner solutions that may be the rule rather than the exception in bank-customer relations. The best customers are immune to monetary policy if they are in a corner solution and the interest rate floor is binding. They can thus get all the loans on preferential terms in all conceivable situations, as is well known to practical bankers.

Finally, the harsh judgment on banks" lending to present problem debtors does not appear to be entirely justified when viewed in the light of the present approach. If non-interest earnings on the loans are taken into account in addition to net interest earnings and credit losses, the picture changes substantially Moreover, a potential or actual problem debtor can take advantage of the decision asymmetry when asking for a loan: it can force the bank to choose between making one more risky loan even with an expected loss in the hope of saving the entire specific capital, whereas by refusing the request the bank takes a high probability of losing much of the loan capital and all of the rest of specific capital (Zelalem, 2016).

On the whole, these theories suggest that the contribution of the banking system to the efficiency of resource allocation is likely to be smaller than has commonly been perceived. The banking

services priced on the basis of risk. However, the locative effects of non-interest earnings on loan terms are likely to be a source of serious inefficiency, which can be expected to persist into the future. The economies of joint production are substantial, and recent product innovations in banking services have enhanced the significance of specific capital on resource allocation, whereas the switch to cost-based pricing has weakened it (Ahtiala, 2008).

The bank lending channel theory

The bank lending channel theory thought that during macroeconomic monetary policy action banks will restrict some loans for their customers, thus decline their need for investment independently of interest rates.

Money creation theory

In this theory, credit money is created by a loan extension such loan needs to be backed by central bank money but it is created from the promise embodied in the loan, not from the lending or lending of central bank money. When the loan is repaid, with interest the credit money of the loan is destroyed but reserves have created the profit from the loan. In practice, commercial banks extend the time of credit to companies a promise to make a loan. This promise is not considered money for regulatory purposes, and banks need not hold reserves against it, but when the line is tapped (and a loan extended). Then credit money is created, and reserves must be found to match it, in this case, credit money precedes reserves. In other words, making loans pulls reserves in instead of reserves being pushed out as loans which are assumed by the mainstream model.

Loan able funds theory

According, to the loan able funds doctrine, the total amount of credit available in an economy can exceed private savings because the bank system is in a position to create credit: the interest rate is calculated on the basis of loan demand and supply. Keeping the same level of supply, an increase in the demand for loan able funds would lead to an increase in the interest rate and vice versa is true. Conversely, an increase in the supply of loanable funds would result in a fall in the rate of interest. If both the demand and supply of the loanable funds change, the resultant interest rate would depend much on the magnitude and direction of movement of the demand and supply of the loanable funds (Ewert, R. et al., 2010).

2.3. Determinants of commercial banks' lending behaviours

Reserve, deposits and capital are the main sources of fund for lending. All these sources may be influenced by different factors and would have direct influence on lending. Since lending is the principal function of banking industry, the management of banks should give due attention, analyse and take the necessary measures on time on internal and external factors that affect lending. Without lending banks" incomes especially interest income would highly deteriorate and affect the overall performance of banks. Most literatures divide these factors in to two major categories that are: internal (microeconomic or bank-specific) and external (macroeconomic) factors (Peek, J., &Rosengren, 1995). The internal factors (determinants) are within the control of the bank management whereas external factors (determinants) are variables that are not related to bank management but reflect the monetary, economic and legal environment that affect the operation and performance of financial institutions.

Volume of deposits

Collecting funds from savers in the form of deposit and supplying it's to borrowers as loans is a main function of banks that enable them to act as financial intermediaries. Thus, banks accept customer deposits and use those funds to give loans to other customers or invest in other assets that will yield a return higher than the amount bank pays the depositor (McCarthy et al., 2010). (Olokoyo, 2011a) conduct study on determinants of lending behaviours in Nigeria and found that, volume of deposit has the highest impact and influence on the lending of commercial banks and a change in it will yield the highest change in banks' loans and advances.

If the banks mobilize sufficient funds from their depositing customers, the lending activity is easily possible. Since commercial banks rely on depositor's money as a source of funds, it means that there is relationships between the ability of the banks to mobilize deposits and the amount of credit available to customers (Tomola, 2013).

Therefore, banks should strive hard to manage their deposits efficiently so that their objective of profitability can be achieved and the multiplier effects maintained to the maximum. According to (Haron and Azmi, 2006) most business organizations, especially in developing countries are highly dependent on bank loans as a source of capital and the ability of banks in giving loans depends much on their ability to attract deposits. Because an increasing trend in deposit

mobilization implies more liquidity for the banks and more funds would be available for lending, thereby increasing the ability of the banks to make more profits.

Banks, all over the world, thrive on their ability to generate income through their lending activities. The lending activity is made 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. Thus, the main function of financial institutions of mobilizing funds from the surplus economic agents to the deficit economic agents is put to test in order to generate economic growth. As total deposit increase the total advance and loan increases proportionally (Ajay, 2007). An increase in deposit of a bank will improve its ability to lend more funds to its customers.

Non-performing Loans:

Non-performing loans is defined as the failure of the borrowers to repay their debt under the schedule and agreements of the commercial banks and borrower. It is the loans that are outstanding in both principal and interest for a long time contrary to the terms and conditions contained in the loan contract (Afza and Nazir, 2009). NPLs are loans that are outstanding both in its principal and interest for a long period of time contrary to the terms and conditions under the loan contract. In additional that loans and advances comprise the huge share of banks any loan facility that is not up to date in terms of payment of principal and interest contrary to the terms of the loan agreement is NPLs. Thus, the amount of non-performing loan likely measures the quality of bank assets. It follows that any loan facility that is not up to date in terms of payment of both principal and interest contrary to the terms of the loan agreement, is non-performing. Therefore, the amount of non-performing loans measures the quality of bank assets (Chakra borty, 2008).

The loan amount recorded as non-performing should be the gross value of the loan as recorded on the balance sheet, not just the amount that is overdue. Non-performing Loans is measured by the ratio of non-performing loans over the Total Loan (Bloem&Gorter, 2001).

Bank size

According to (Berger & GF., 2015) Bank size considered as an important determinant of bank lending Behaviour and it measures general capacity of banks to undertake intermediary function. Provide that large and complex banks tend to lend few loans to small scale firms. Also, (Stein, 2012) explains that small banks have comparative advantages in producing soft information whereas large banks also have comparative advantages in lending based on hard information.

According to the "too big to fail" argument, large banks would benefit from an implicit guarantee, thus decrease their cost of funding and allows them to invest in riskier assets (Iannotta et al., 2017). Therefore, "too big to fail" status of large banks could lead to moral hazard behaviours and excessive risk exposure. If big banks are seeing themselves as "too big to fail", their motivation to hold liquid assets is limited and illiquid asset which is loan increases. Hence, there can be positive relationship between bank size and illiquidity.

On the other hand, when large and complex banks are able, through technical expertise, to process soft information about small scale firms then there would be positive relationship between bank size and lending. When large banks process soft information about small scale firms there is direct relationship between banks size and loan and advance.

Liquidity ratio

Liquidity can be referred to as a state in which an asset can be readily converted into cash. A bank may 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, 2010). This occurred due to the fact that banks transform the customers deposit to long term loans and advances. Thus, the transformation function and the demands by customers in terms of withdrawals from their deposits have to be met instantaneously (Kasman, 2010). As such, it is one of the greatest sources of risk to a bank's safety and soundness. Since loans are illiquid assets, increase in the amount of loans means increase in illiquid assets in the asset portfolio of a bank. If demand for loans is weak, then the bank tends to hold more liquid assets ,whereas if demand for loans is high they tend to hold less liquid assets since long term loans are generally more profitable.

Lending Interest Rate

Lending rate refers to the interest rate charged by the banks to its customers who request financing from the banks. The lending rate charged on the customer's loan is important for the bank as it provides the most significant sources of income for the banks (Moussa & Chedia, 2016). Interest rate can be defined as the premium received by the lender after stated period of time but from the borrowers' point of view; it is a cost of capital at the time of obtaining the loan. Bank lending rates are mostly seen as being rigid for the reason that they do not move in tandem with the markets.

Moreover, the lending rate is also one of the monetary policy instruments used by the Central Bank to control the liquidity in the financial market. Richard & Okeye (2014) examine factors that affect lending behaviours of deposit money banks in Nigeria and the study recommends that higher interest rate tends to increase the volume of loan and advances grant by the bank. In the context of Asia countries, Swamy (2012) investigates bank lending behaviours by using a sample of commercial banks in India from year 2006 to year 2011. The findings indicate that the lending rate has a positive and significant relationship with the commercial bank lending during pre-recession period and recovery period of economic, but it tend to negatively influence the commercial bank lending during the period of recession.

On the other hand, Karim et al. (2011) concludes that the lending rate tend to negatively affect the bank lending in Malaysia. 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.

Cash reserve requirement

The liquidity of banks could be controlled by the minimum reserve requirements given by each respective countries central bank in order to protect the bank against liquidity rush from its depositors in certain economic conditions. (Goldfield, M & Chandler, 1986) support this assumption by stating: "Commercial banks must pay more attention to liquidity than many other types of financial institution such as life insurance companies. This results from the high turnover of their debt liabilities. A large part of the gross out payments by a bank is met from

current gross receipt of funds in the normal course of business." The reserve requirement ratio also plays an important role in a banks capacity to give out loans and credit. The assumption here is that the higher the reserve requirements from the central bank, the lower the amount of credits and loans a bank is willing to give to the public.

Gross Domestic Product

The gross domestic product is one of the crucial factors that influence the bank lending due to the pace of the economy activity might indirectly influences the preference of the bank to grant loan to the public.

According to (Kashif & Mohammed, 2008) a strong economic condition measured by GDP, as motivating factor to banks has statistically significant impact on issuance of more private credit to businesses and also, creates more demand for goods and services which lead to more investment in different sectors hence increase the per capita income as well as the savings, collectively these factors convince to banks to issue more private credit.

Inflation

Inflation is generally the persistent increase of price level of goods and services in an economy over a period of time. When price level rises, each unit of currency buys fewer goods and services. Consequently, inflation results into a reduction in the purchasing power per unit of money, a loss of real value in the medium of exchange and unit of account within the economy (Boyd, J. & Champ, 2004)

The study of (Naceur, 2009) offered the following explanation: the main activity of banks (mostly commercial) is lending and the market is therefore based on an offer of credit (provided by banks) and demand (the individuals and companies). Inflation reduces the demand for credit because it increases uncertainty about the future. However, it has been proven that for individuals and businesses, if their level of risk aversion varies widely it increases uncertainty (ambiguity-aversion). This drop in demand would lead to a decline in lending and therefore a decrease in performance. This variable is expected to have a negative relationship with lending of commercial banks (Baum et al., 2005) and (Naceur, 2009).

Inflation is a key determinant of commercial banks' lending rates globally. Inflation depreciates the value of money such that a percentage increase in inflation results into a similar percentage fall in value of the country's currency. Broadly, inflation theorists attribute inflation to monetary causes and mal adjustments in economic system (Chand, 2008).

Bank Market Share

O'Regan (2002) defines market share as a company's sales in relation to total industry sales for a certain period. Pearce and Robinson (2003) also use the same definition that market share is sales relative to those of other competitors in the market. Market share is usually used to express competitive position. It is also generally accepted that increased market share can be equated with success, whereas decrease market share is a manifestation of unfavourable actions by firms and usually equated with failure.

The most common explanation as to why market share leads to higher profitability are higher economies of scale, experience and market power (Buzzel, 2004). Economies of Scale provide larger firms with cost advantages (Sharp et al., 2002). However, most studies indicate that economies of scale dissipate at a small percentage of the market. According to the efficiency hypothesis, market share is the consequence of efficiency rather than its cause. Differences in profitability among firms are due to higher efficiency. Efficient firms obtain a large market share and earn high profits to induce a causal association between size and profitability. Firms offering products that offer customers greater value enjoy gains in market share. Better managed firms that have a competitive advantage grow faster than rival firms.

Firms with superior skill and foresight gain market share through lower prices or through better products. Market share is measured as the total deposits of bank as a percentage of all bank's total deposits. This ratio may be calculated using total assets or loan. However, since both deposits and loans can be considered as bank output, there is a need to make a choice between a deposit or asset measure of market share. In view of the fact that the asset components may include investment in securities and subsidiaries, which certainly would not be homogenous across firms' banks market share can be measured by the amount of capital they hold, loans they disbursed and deposits they received from the public. In a nut shell, it is related with the level of competition that exists in the banking industry among banks. The more a bank has larger amount

of capital, deposits and loans as compared to competitors, the more it controls the markets (Tamiru, 2003).

Profitability

Profitability of banks can be measured by return on its asset ratio and return on its equity ratio. These measures provide evidence on the performance of banks.

More profit generating commercial banks can assist more credit to its customers. According to (Alper, D. & Anbar, 2011), in measuring the profitability of commercial banks there are a variety of ratios used of which Return on Asset (ROA), Return on Equity (ROE) and Net Interest Margin (NIM) are the major ones as described below.

Return on Asset (ROA): following (Golin, 2001) study, ROA has become the key ratio for measuring bank profitability in recent literature. It gives an idea as to how efficient management is using its assets to generate earnings and reflects the ability of a bank's management to generate profits from the bank's assets. It presents the return on each Birr of investing assets and can be measured simply by net profit after tax over total assets.

2.4. Review of related empirical studies

2.4.1. Empirical studies around the world

A lot of studies have been carried out in attempts to determine the significant influencing factors on lending behaviours of commercial banks around the world. Developed countries have conducted a lot of research related to this context. Since there are varied studies on lending behaviours of banks, it is only pertinent that some inquiry on such studies is considered in terms of highlighting the influencing factors on bank lending.

As literature suggests determinants of commercial bank lending behaviours may be classified into internal and external factors: named as liquidity ratio, interest rate, gross domestic product, cash reserve requirement, deposit, interest rate as (Olokoyo, 2011a). (Olusanya et al., 2012) also examines the determinants of commercial bank lending behaviours in Nigeria case and found that, deposits and liquidity ration have positive impacts on commercial bank lending volumes, while the coefficients of lending interest rate and minimum cash reserve ratio were negative.

(Wan Ngah et al., 2010) investigated the relevance of bank lending channel (BLC) of monetary policy in a small-open economy, i.e. Malaysia by using disaggregated bank level data set. A dynamic panel data method namely GMM framework have been used in estimating the dynamic of banks' loan supply function. The empirical evidence has stated that monetary policy shocks is significantly and negatively influenced the bank Sloan supply, and therefore has supported the existence of BLC in Malaysia. In addition, the study found that bank characteristics variables namely bank liquidity and bank capitalization are statistically significant in influencing the banks' loan supply. The study concludes that the implementation of monetary policy is effective in influencing economic activity via bank balance sheet position, in particular bank loans.

On their study of industry specific effect of reserve requirement, (Glocker, C. & Towbin, 2011) states that in order for reserve requirement changes to have a real effect, two conditions need to be fulfilled: The first condition is that deposits cannot be substituted easily as a funding source. Otherwise, banks could compensate the higher deposit funding costs by other financing means such as wholesale funding. The second condition is that firms cannot substitute bank credit with other financing sources easily. If bank lending could be substituted easily, a reserve requirement increase would lead to a decrease in bank credit that would be compensated by an increase in other types of liabilities, for example capital market funding, leaving investment decisions and private sector assets unaffected.

(Ladime et al., 2013) investigates the determinants of bank lending behaviours in Ghana. Using the GMM estimator developed by Arellano and Bover (1995), Blundell and Bond (1998), they find that bank size and bank capital structure have a statistically significant and positive relationship with bank lending behaviours they also find evidence of negative and significant impact of some macroeconomic indicators (central bank lending rate and exchange rate) on bank lending behaviours.

(Rabab'ah, 2015) examine the determinants of commercial bank lending in Jordan. He studies 10 Jordanian commercial banks during the period (2005-2013). He used the ratio of credit facilities to total assets as a dependent variable and 11 independent variables, including the ratio of deposits, ratio of nonperforming loans, capital ratio, liquidity ratio, deposit rate, window rate, legal reserve ratio, inflation and economic growth. The results showed that the ratio of non-

performing loans, liquidity ratio and window rate have a negative and significant impact on the ratio of credit facilities, while he found that the bank size and the economic growth have a positive and significant impact on the ratio of credit facilities granted by commercial banks in Jordan.

(Ngomsi, 2012) analysed the determinants of bank long-term lending behaviours in the Central African Economic and Monetary Community using data from 35 commercial banks of six African countries of the CEMAC over the period 2001-2010 using a regression analysis. In this study they use two dependent variables: these are the ratio of bank long-term business loans to total assets and the second is the ratio of bank business loans to total assets. As explanatory variables they use: bank size, NPLs, ownership type, inflation and GDP growth.

According to (Ransford, 2014) Investigating the impact of macroeconomic instability on banking sector lending behaviours in Ghana using data on commercial banks and macroeconomic instability from 1992 to 2009. The results under the Co-integration and Vector Error Correction Modelling framework show that bank lending has a long-run relationship with macroeconomic instability. The study, therefore, recommends that while banks should pay adequate attention to the consequences of their firm specific characteristics in their lending activities both in the short-run and long-run, their worries about macroeconomic instability should be limited to the long-run consequences of their lending behaviours. It is also pertinent that appropriate measures be taken to curtail inflation and sporadic money supply growth, making banks become unfavourably disposed to lending given the attendant negative consequences of loan curtailment on economic growth in the long run.

The study by (Ngomsi, 2012) investigated the determinants of banks long term lending behaviours of Central African Economic and Monetary Community (CAEMC) for the period of 2001-2010. This study tries to test common bank level and macroeconomic determinants of bank long term loan behaviours. The panel data of six central African countries sample banks used and 9 independent variables included in the study. The result of the study showed that bank size, GDP growth and capitalization continue to play an important role in determining the bank's willingness and ability to lend to businesses long term. The coefficients on these explanatory variables remain positive and highly statistically significant, indicating that larger banks and

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better capitalized banks tend to extend more long-term credit to firms than smaller and less capitalized banks.

(Olumuyiwa et al., 2012) takes a look at determinants of lending behaviours of commercial banks in Nigeria: a Co-integration analysis between 1975 and 2010. The study used secondary data and series of econometrics techniques to justify the long run relationship between Commercial bank and its lending behaviours over the period of analysis.

Moreover, the study investigates the level of commercial banks loan advances in Nigeria and to also examine those various determinants of commercial banks' lending behaviours in Nigerian. More so, the model used is estimated using Nigerian commercial bank Loan and advances (LOA) and other determinants such as Volume of deposits (Vd), annual average exchange rate of the naira to dollar (Fx) for the period of thirty seven (37) years, Investment Portfolio (Ip), Interest rate (lending rate) (Ir), Gross domestic product at current market price (GDP) and Cash reserve requirement ratio (Rr).

However, the model result reveals that there is positive relationship between Loan and advances and Volume of deposits, annual average exchange rate of the naira to dollar, Gross domestic product at current market price and cash reserve requirement ratio except Investment portfolio and Interest rate (lending rate) that have a negative relationship. It was also revealed from the result that there is a long -run relationship between Loan and advances and all the explanatory variables in the model and this shows that commercial bank has a lot of impact of their lending behaviours.

(Jonas et al., 2013) investigated the determinants of bank lending behaviours in Ghana. Using the GMM-System estimator developed by Arellano and Bover (1995) and Blundell and Bond (1998), found that bank size and capital structures have a statistically significant and positive relationship with bank lending behaviours. Also find evidence of negative and significant impact of some macroeconomic indicators (central bank lending rate and exchange rate) on bank lending behaviours. Again, competition in the industry was found to have a positive and significant impact on bank lending behaviours. Finally, relationship banking was found to have a positive correlation with bank lending behaviours in Ghana. Thus, policies aimed at maintaining stable macroeconomic fundamentals would greatly accelerate bank lending decision.

(Ladime et al., 2013) on his study titled Determinants of Bank Lending Behaviour in Ghana found that bank size and capital structure have a statistically significant and positive relationship with bank lending behaviours and also found evidence of negative and significant impact of some macroeconomic indicators (central bank lending rate and exchange rate) on bank lending behaviours. Again, competition in the industry was found to have a positive and significant impact on bank lending behaviours. Finally, relationship banking was found to have a positive correlation with bank lending behaviours in Ghana. Thus the authors argued that, policies aimed at maintaining stable macroeconomic fundamentals would greatly accelerate bank lending decision.

Glemza (2013), Banks 'Lending and Investment Behaviour During and Post Financial Crisis: This study aimed to investigate banks' investment behaviours mainly focusing on the amount of loan issuance and investments in securities. The results of this paper suggest the following. Firstly, a decreasing interest in loan granting and an increasing attraction towards investments in government bonds. Secondly, government bond holdings are mainly influenced by risk taking and loans. Thirdly, crisis has had a negative impact on liquid asset holdings. Crisis effect is clearly visible in banks' lending behaviours, the amount of loans granted reduced during the distress period for both retail and corporate clients. The effect is stronger for smaller banks with lower accessibility to deposit financing and lower liquidity position

According to (Khangala, 2016) on their MSc thesis entitled "Determinants of commercial banks" lending behaviours in Kenya: case of state-owned banks in Kenya" he found that liquidity ratio and capital adequacy positively affected credit extension significantly whereas interest rate and asset quality inversely affected credit creation of the state-owned commercial banks. The effect of loan pricing (denominated in interest rate) on lending behaviours was found to be statistically significant whereas asset quality was found to be statistically insignificant.

According to, (Timsina, 2016) in their research called "Determinants of Bank Lending in Nepal" the model used volume of deposits, interest rate, stipulated cash reserve requirements ratio, liquidity ratio, inflation, exchange rate, and gross domestic product as independent variables. He found that the GDP and liquidity ratio of banks have the greatest impacts on lending behaviours. The study implies that GDP is the barometer of the economy and commercial banks should pay

their attention to the overall macroeconomic situation of the country, factors affecting the GDP in general and their liquidity ratio in particular while taking the lending decisions.

2.4.2. Related empirical studies in Ethiopia

Some related studies were conducted by different researchers in Ethiopia. As far as researcher's knowledge concerned, there are limited work on the area of determinants of commercial banks' lending behaviours and a few works on the impact of reducing or restricting loan disbursement on the performance of commercial banks. Thus, this section provides a review of the related studies conducted in Ethiopia.

Amano (2014) in his study examined the determinants of commercial banks' lending behaviours in Ethiopia. The study applied the balanced fixed effect panel data of eight commercial banks in Ethiopian that covers the period 2001-2013. The study used Ordinary Least Square (OLS) technique to investigate some internal as well as external variables that determine the lending behaviours of commercial banks' in Ethiopia and use loans and advances as dependent variable. The estimation results showed that volume of deposit, bank size, cash reserve requirement, and inflation rate had positive and significant impact on loan and advance while liquidity ratio and interest rate had negative and significant impact on loan and advance. Nevertheless, real GDP growth rate had statistically insignificant impact on bank's loan and advance.

But on his study the following important explanatory variable are not included, such as profitability of the bank, market share of the banks and Non-performing loan. In the study the researcher miss the above variable and incorporating huge government Commercial Bank of Ethiopia (Commercial Bank of Ethiopia) in the sample may leads to the biased conclusion of the study result. So this study would try to fill this gap.

(Malede, 2014) examined the main determinants of commercial banks' lending in Ethiopia by using panel data of eight commercial banks in the period from 2005 to 2011. He tested the relationship between commercial banks' lending and it's some determinant (bank size, credit risk, gross domestic product, and investment portfolio, volume of deposit, interest rate, and liquidity ratio and cash reserve required). Seven years financial data of eight purposively chosen commercial banks were used for analysis purpose.

To determine the impact of those predictor variables on commercial banks' lending, ordinary least square (OLS) technique was applied. The result suggests that, there is positive and statistically significant relationship between commercial bank lending and its size, liquidity ratio, credit risk, and gross domestic product. But, there is a positive but insignificant relationship between commercial bank lending and deposit, investment portfolio, cash reserve required and interest rate for the study period.

Just like others researcher, the following important explanatory variable are not included, such as profitability of the bank, market share of the banks and inflation rate of the country economy. In the study the researcher miss the above variable, the result of the study also inconsistent with related study and incorporating huge government Commercial Bank of Ethiopia (Commercial Bank of Ethiopia) in the sample may leads to the biased conclusion of the study result. So this study would try to fill this gap.

Similarly, (Ayitenew T, 2016) investigated main determinants of commercial banks' lending behaviours in the Ethiopian context by using panel data of eight banks over the period 2004 to 2013. It tested and confirmed the impact of internal and external factors on Ethiopian commercial banks' lending behaviours. Hence, explanatory research design was considered. The study measured bank loans and advances as the outcome variable and bank specific factors (liquidity ratio, volume of deposit, credit risk and bank capital) as internal explanatory variables, and monetary policy instruments (cash reserve requirement and lending rate) and macroeconomic factors (GDP and the annual foreign exchange rate of birr to USD) as explanatory variables.

The results of fixed effect regression show that, except liquidity ratio and lending rate, which are significant at the 5 % level of significance, all bank specific factors are significant at 1% significance level. Thus, they influence the lending behaviours of commercial banks in Ethiopia. On the other hand, macroeconomic variables (GDP and the annual foreign exchange rate of birr to USD) and cash reserve requirement ratio does not influence the lending behaviours of Ethiopian commercial banks. But on his study the following important explanatory variable are not included, such as profitability of the bank, market share of the banks, banks size and inflation rate of the country economy. In the study the researcher miss the above variable, the result of the

study also inconsistent with preceding study and incorporating huge government Commercial Bank of Ethiopia (Commercial Bank of Ethiopia) in the sample may leads to the biased conclusion of the study result. So this study would try to fill this gap.

According to (Zelalem, 2016) on their MSc thesis entitled "The determinants of commercial bank's lending: Evidence from Ethiopia" In the study bank size, the volume of deposit, cash reserve requirement, credit risk, liquidity ratio, lending interest rate; GDP and inflation are the independent variables. The result shows that bank size, the volume of deposit and GDP growth positively affect Ethiopian commercial bank's lending behaviours however, cash reserve requirement and liquidity ratio negatively affect Ethiopian commercial bank's lending. On the other hand, credit risk, lending interest rate and inflation have an insignificant impact on Ethiopian commercial bank's lending.

However, on his study the following important explanatory variable are not included, such as profitability of the bank, and market share of the banks. Just like the above researcher in this study the researcher miss the above variable, the result of the study also inconsistent with related study and incorporating huge government Commercial Bank of Ethiopia (Commercial Bank of Ethiopia) in the sample may leads to the biased conclusion of the study result. So this study would try to fill this gap.

2.5. Summary and Knowledge gap

In line with the above theoretical as well as empirical review, lending is important to banking industry since lending is undoubtedly the heart of banking business. It also revealed that banks' lending can be affected by different factors such as bank specific, industry and macroeconomic factors while this study is focused on some of the bank specific industry and macroeconomic factors that are not included by the above listed researcher but them affecting lending behaviours of commercial banks in Ethiopia.

In Ethiopia as far as researchers knowledge concerned, the only studies conducted with regard to determinants of commercial bank lending behaviours are (Malede, 2014), (Amano, 2014), (Aytenew, 2016) and (Zelalem, 2016) on public as well as private owned commercial banks together in the sample. Most of the above researchers were incorporated government

Commercial Bank (Commercial Bank of Ethiopia) in the sample. But incorporating of government Commercial Bank (Commercial Bank of Ethiopia) in the sample may leads to the biased conclusion of the study result. as we know Commercial Bank of Ethiopia is a huge in asset amount, capital accumulation, amount of deposit, number of customer and number of branch, and this bank is government owned bank, so it may be difficult to compare this huge, large and government owned bank with emerging private commercial banks in the country.

In addition, on their study some of them did not considered market share, non-performing loan, cash reserve requirement bank size and return on asset (profitability) as factors that affects the bank's loan and advance. Furthermore, there are inconsistencies of results among these researches, example: on the study that conducted by Amano(2014) Lending interest rate have negative and significant impact on lending behaviours of commercial banks, but on the study that conducted by Zelalem(2016) Lending interest rate have Negative and insignificant impact on lending behaviours of commercial banks. In addition, the study result of impact of Gross Domestic Product on lending Behaviour was inconsistencies, Amano (2014) found Positive & insignificant, Aytenew (2016) found negative and insignificant, and Zelalem (2016) found Positive and significant impact on lending behaviours of commercial banks. Just like the above discussed variable the impact of Inflation Rate on lending Behaviour was inconsistencies, Amano (2014) found Positive & significant but Zelalem (2016) found Positive and insignificant impact on lending Behaviour of commercial banks. Because of inconsistencies of results among these researches, a detailed investigation by excluding the huge government commercial bank from the sample was required. Therefore, this study tries to fill this gap and find evidence of the factor that affect lending behaviours of private commercial banks in Ethiopia.

2.6. Conceptual framework

Based on the theoretical and empirical study's, discussed above, the conceptual framework of the study's (determinant of commercial banks' lending behaviour) can be diagrammatically depicted in the below figure

Independent variables

Dependent variable

- Bank size
- Volume of deposit
- Market share
- Liqudity ratio
- Lending interest rate
- Return on asset
- Cash reserve requirement
- Non-performing loan
- Grosse domestic product
- Inflation rate

Lending behavior
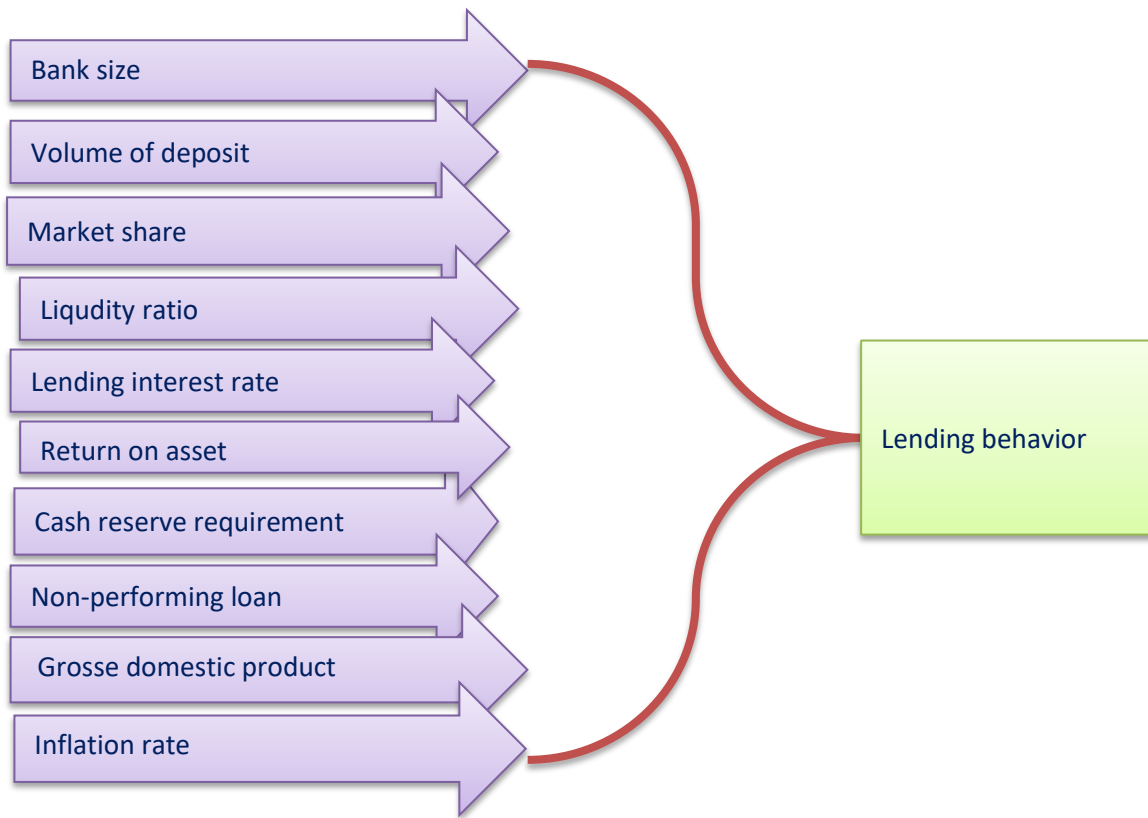
Source: adapted from previous literature

Figure 2.1 conceptual framework

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1. Research Design and approaches

Research design provides the framework for the collection and analysis of data (Bryman & Bell, 2011). It helps to attain the objectives of the study and to test the formulated hypothesis of the studies. It involves the intersection of philosophy, strategies of inquiry and specific methods.

This study explanatory type of research design would be used, because the study aims to examine the impact of independent variables on the lending behaviours private commercial banks'. This is believed appropriate because the study is involved in studying the impact of internal and external factors on banks' lending behaviours. From three common approaches to business and social research namely qualitative, quantitative and mixed methods approach, quantitative research approach would be employed, because it would uses the quantitative data and involves the generation of data in quantitative form which can be subjected to rigorous quantitative analysis in a formal and rigid fashion.

3.2. Sources of data

There are three types of data available for empirical analysis. These are; time series, cross-section, and panel or pooled (i.e. Dimension of both time series and cross section) data, (Gujarati, 2004). In this study panel or pooled data of sampled private commercial bank would be used.

Basically there are two main sources of collecting data; the primary and secondary source. Primary data source is when the researcher collects new information either through observations, interviews, questionnaires and then uses this data for analysis (Saunders et al., 2012). Secondary data is data that exists somewhere having been collected and used for some other purposes (Gupta, 2012).

3.3. Data collection method

In this study, secondary data would be collected from ten private commercial banks for the sample period. The secondary data collection constitutes an extensive survey of different sources including, Audited financial statements, official documents, websites, and annual reports basically from the National Bank of Ethiopia (NBE) for internal factors and Ministry of Finance and Economic development (MoFED) for macroeconomic factors.

3.4. Study Population and Sample Design

3.4.1. Target population

Population is the list of elements from which the sample may be drawn (Admas et al., 2007). The study population for this study includes all private commercial banks in Ethiopia. According to NBE annual report 2019-2020, the number of banks is 18. Of the 18 banks 17 are Commercial banks and the remaining one is development bank.

Table 3.1 list of private commercial bank in Ethiopia

No	Bank	Year	No	Bank	Year
1	Awash International Bank	1994	9	Oromia international bank	2008
2	DashenBank	1995	10	Zemen bank	2008
3	Bank of Abyssiniya	1996	11	Bunna international bank	2009
4	Wegagen Bank	1997	12	Birhan international bank	2009
5	United Bank	1998	13	Abbey bank	2010
6	Nib international bank	1999	14	Addis international bank	2011
7	Cooperative bank of Oromia	2004	15	Debub global bank	2012
8	Loin international bank	2006	16	Enat bank	2012

3.4.2. Sample design

Sample design deals with sample frame, sample size and sampling techniques. Sampling is a technique of selecting a suitable sample for the purpose of determining parameters of the whole population. A sample is drawn to overcome the constraints of covering the entire population with the intent of generalizing the findings to the entire population. As stated in NBE 2018/19 annual reports there are 17 Commercial Banks (16 private and 1 public) in the country excluding the Development Bank of Ethiopia which provides banking service to the selected priority sectors by government.

The sample drawn to this study is from those private commercial banks having at least eleven years working experience (from 2008 to2019). The criteria set by the researcher for selecting the sample is; first, the required banks are only private Commercial banks operating in Ethiopia. Second, those private commercial banks should have started operation before 2009 G.C, so that the data is available for consecutive eleven years from 2009 to 2019 G.C. The reason of making the sample period of eleven year is to increase the number of observation by incorporating more commercial banks. Here, commercial bank of Ethiopia is excluded since it is public and huge that is incomparable with private commercial.

Therefore, from 16 private commercial banks operating in the country the study was taken. The reason of making the sample of ten banks is to increase the number of observation by incorporating more commercial banks. The following list of ten private commercial banks: These are, Awash International Bank S.C (AIB), Dashen Bank S.C (DB), Bank of Abyssinia S.C (BOA), Wogagen Bank S.C (WB), United Banks (UB), and Nib International Bank S.C (NIB), Cooperative Bank of Oromia S.C (CBO) and Lion International Bank S.C (LIB), Oromia International Bank S.C (OIB), Zemen Bank S.C (ZB). To draw the required sample of banks from the above listed banks, the purposive sampling technique would be used.

3.5. Methods of Data Analysis

According to (Mugenda & Mugenda, 2003) the data collected must be cleaned, coded and analysed from the results of which the researcher is able to make sense of the data. After relevant data regarding the study area are collected, the study analysed and interpreted those data based

on their nature. Considering that, in this study two type of statistical analysis was used to test the proposed hypotheses (descriptive and inferential).

Descriptive statistics was used to convert the raw data in to more meaning full form which enables the researcher to understand the ideas clearly and interpret with statistical description including standard deviation, mean, and minimum & maximum.

Inferential statistics is used to see the effect of explanatory or independent variables on the dependent variable. The study used *STATA* V.16 to analyse the data obtained from secondary source. Quantitative techniques also adopted to analyse the gathered data. A Multiple linear regression model which best fits the analysis of determinant of private commercial bank lending Behaviour were employed.

3.6. Model Specification

To test the hypotheses of the study multiple regression models would be formulated. As it is explained previously, the dependent variable of the study is lending Behaviour of banks and the explanatory variables i.e. bank size, volume of deposit, Non-performing loan, and Cash reserve requirement ratio, liquidity ratio, lending interest rate, gross domestic product, inflation rate, market share and profitability. The study used Ordinary Least Square (OLS) method of estimation to estimate the parameters or regression coefficients. Therefore, to test the determinant factors on lending Behaviour of private commercial banks, the researcher would estimate a linear regression model in the following form.

TL = f (BAs, VoD, NPL, LQr, IR, CRR, GDP, IFR, MKS, ROA)…………..……..…. (1)
LogTLit = f (α0+ β1BAsit, β2VoDit, β3NPLit, β4LQrrit, β5IRit, β6CRRit, β7GDPrit, β8IFRit, β9MKSit, β10ROAit, + μit) …………………………………………..…………..…. (2)
Where:
LogTLit: Natural logarithm of Total Loan of banks i at time t.
BAs: bank size of bank banks i at time t.
VoD: volume of deposit of banks i at time t.
 NPL: non-performing loan of banks i at time t.
LQr: liquidity ratio of banks i at time t.

IR: lending rate of banks i at time t.

CRR: cash reserve ratio of banks I at time t.

GDP: gross domestic product of the country at time t.

IFR: inflation rate of the economy at time t

MKS: market share of banks i at time t.

ROA: profitability of banks i at time t.

μit: error term of the model

α: Intercept of the regression line

β (1-10) parameters or coefficients to be estimated

Finally, the Ordinary Least Square (OLS) regression approach including all of its assumptions was conducted using *STATA16* econometric software package, to test the causal relationship between the private commercial bank's lending behaviours and their potential determinants.

3.7. Description and Measurement of Variables

Dependent Variable

Lending behaviours of private commercial bank that have today is explained by past lending experience or by past lending amount that is supplied to different group of borrowers. Past Total loan of bank is serving as a dependent variable. As result of Loan is crucial for investment and long term economic growth of a given country so, conducting studies on the determinant of lending Behaviour is the hot issue. On the other hand, Loans and advances is the main source of income (Nwankwo, as cited in Olokoyo, 2011) and primary functions of commercial or deposit banks.

Despite its importance to the bank and to the economy, the credit decision is influenced by different bank specific and macro-economic factors. As result many researches were conducted to identify the determinants and their effect on loans and advances of banks by several scholars in different country of the world. Different studies state that, the degree of influence of the same variable on lending Behaviour is different from country to country.

Therefore, the study would take net loans of banks as a dependent variable to conduct the study.

Independent Variables

Bank Size

According to Bashir, (2016) large-sized banks have the advantage of providing a larger menu of financial services to their customers and there by mobilize more funds. Cole et al. (2014) also suggest that, smaller banks adopt small business loan underwriting practices that are riskier than those of larger banks. More over Salas and Saurian (2012) assert that, a big balance sheet allows managers to invest in different geographical or business segments to deal with asymmetric shocks. Researcher whose finding a positive relationship between the bank size and lending behaviours are Rabab'ah (2015), Amano (2014), Olokoyo (2011), Cole et al. (2004), Andreas & Gabrielle (2009), Mitku (2014).

H1: Bank sizes have a positive and statistically significant impact on private commercial banks' lending Behaviour in Ethiopia.

To measure bank size natural logarithm of total assets of the bank would be used.

Non-performing loan

Non-performing loan is the major important factor which affects the bank lending behaviours among various risks (credit risk, liquidity risk, market risk, foreign exchange risk, etc.) Non-performing loan is measured by evaluating the probability of default by a particular borrower after taking into account various risk diversification and hedging arrangements (He, D. & Wang, 2013). It is the potential of a particular borrower or a counterparty default or failure to meet its obligation in accordance with contracts. Loans and advances are the main source of credit risk for commercial banks (Kaaya & Pastory, 2013). Banks should critically approve the risk premium charged from the borrower before granting the loan. Commonly the loan granting is dependent on the size of the premium which can be calculated by considering different factors. Non-performing loan commonly measured by using provision for loan loss (Non-performing loan) to the gross loan amount (Tehulu, T. & & Olana, D., 2014); and (Bologna, 2011) .Some researcher who found there a negative relationship Ayitenew, (2016), AL Hassan et al., (2013), Djiogap and Ngomsi,(2012), Rabah, (2015) and Tomak, (2013) but Malede, (2014) result show a positive relationship.

H2: Non-performing loan has a negative and statistically significant impact on private commercial banks' lending Behaviour in Ethiopia.

To measure Non-performing loan uses provision for loan loss (Non-performing loan) to the gross loan amount

Volume of Deposit

Deposits from the majority of banks liabilities and play an important role in the intermediation activities of banks. The decisions of banks management to lend are greatly influenced by the volume and cost of deposits to the banks. A positive relationship is thus expected between the volume of deposits and bank lending decisions. The deposits ratio is measured as the ratio of customer deposits to banks total liabilities. Volume of deposit has positive but insignificant effect on bank's lending (Malede, 2014) but volume of deposits had positive and significant impact on bank's lending (Olokoyo, 2011))(Temesgen, 2016); (Zelalem, 2016); (YazanQudah, 2017), (Amano, 2014), Ajayi (2007), Ituwe (1985) and Ojo (1978)), Olusanya et al (2012), and Onyango (2015).

H3: Volume of deposit has positively and statistically significant impact on lending Behaviour of private commercial banks in Ethiopia.
To measure the effect of deposit total customer deposit to total asset ratio would be used.

Lending Interest rate

The lending rate is the amount of bank rate that usually meets the short term and medium term financing demand of the private investment sector. This rate is differentiated based on the credit worthiness of borrowers and the objectives of the financing sector s. Lending interest rates is one of strong independent variable affecting commercial bank's loan and advances. As a result, the direct interest rate did not impact commercial banks' loan supply negatively. Interest rate had negative and significant impact on loan and advance (Amano, 2014), (Maurice OpiohKhangalah, 2013) and Zelalem, (2017). Inversely interest rate had positive and significant impact on lending (Malede, 2014), (Ayitenew, 2016), Olokoyo, (2011), and Usman, (1999) .

H4: Lending interest rate has negative and statistically significant impact on private commercial banks' lending Behaviour in Ethiopia.
To measure the interest rate effect annual average lending interest rate would be used.

Liquidity Ratio

Commercial banks are required by central (national) banks to be always liquid to meet the demands of depositors. Thus, maintaining a certain level of liquid asset is essential for each bank before entering to lending activity. Liquidity ratios are explained by various balance sheet ratios used to identify the liquidity trend of that particular bank. These ratios can be used to measure the liquidity risk of the bank. The ratio of liquid asset to total deposits would be used for this study as a measure of liquidity ratio. A positive relation will be expected depending on the state of the policy (Olokoyo, 2011b); (Olusanya et al., 2012),(Malede, 2014), (Maurice OpiohKhangalah, 2013) and (YazanQudah, 2017), Ajayi (2007), (Ituwe, 1985) and (Ojo, 1978), However, the following are found the negative relationship Amano, (2014), Benjamen and Onyeuchi, (2015) and Rabah, (2015) .

H5: Liquidity has a negative and statistically significant impact on private commercial banks' lending Behaviour in Ethiopia.
To measure liquidity ratio total current asset to current liability would be used.

Cash Required Reserve

Cash reserve requirement is a monetary policy tool for central banks of nations that is used to balance the circulated currency and to correct various issues of the economy. Every bank is required by the central bank of the country to maintain certain percentage of its deposit liabilities held in the form of demand (current) deposits, saving deposits and time deposits.

The required ratio reserve is sometimes used as a tool in monetary policy for influencing the borrowing and interest rates of the country by changing the number of funds available for banks to make loans. Cash reserve requirement had positive and significant impact on loan (Amano, 2014), Olusanya et al., (2012), and Ayitenew, (2016) , on other hand Cash reserve requirement had negative and significant effect on bank's lending (Berhanu, 2016), (Christian & Pascal, 2012), (Cargill and Mayer, 2006), and (Zelalem, 2017); cash reserve requirement ratio does not influence the lending behaviours of Ethiopian commercial banks (Malede, 2014);

H6: Cash reserve requirement has negative and statistically significant impact on Ethiopian private commercial banks' lending Behaviour.
To measure cash reserve effect annual cash reserve requirement rate would be used.

Profitability

Return on Assets (ROA): following (Golin, 2001) study, ROA has become the key ratio for measuring bank profitability in recent literature. It gives an idea as to how efficient management is using its assets to generate earnings and reflects the ability of a bank's management to generate profits from the bank's assets. It presents the return on each Birr of investing assets and can be measured simply by net profit after tax over total assets. According to (Wan Ngah et al., 2010)a higher ROA shows that the company is more efficient in using its resources.

(Laidroo, 2012) investigated the determinants of lending growth of banks in 15 central eastern European countries for the period 2004-2010. The study found that there is significant and positive impact between profitability of bank and lending. (Ayman Mansour & Alkhazaleh, 2017) investigated factors may drive commercial banks' lending in Jordan by using panel data of thirteen banks for the year 2010-2016 and found that return on asset of the banks has a positive and significant impact on lending of commercial banks

H7: Return on asset has a positive and statistically significant impact on private commercial banks' lending Behaviour in Ethiopia.
To measure return on asset effect net income to total asset ratio of the bank would be used.

Market share

Market share is sales relative to those of other competitors in the market. Market share is usually used to express competitive position. It is also generally accepted that increased market share can be equated with success whereas decrease market share is a manifestation of unfavourable actions by firms and usually equated with failure, Robinson (2013). O'Regan (2002) also defines market share as company's sales in relation to total industry sales for a certain period.

H8: Market share has a positive and statistically significant impact on private commercial banks' lending Behaviour in Ethiopia.
Market share is measured as the total deposits of bank as a percentage of all bank's total deposits.

Inflation

Inflation is defined as the continuous increases in the price level of goods and services in specific economy over a period of time. When the price increases the purchasing power of money also declines. Inflation was calculated on the nominal for short-run price impact and real for long-run price impact. Inflation rate had positive and significant impact on loan (Amano, 2014) *(Zelalem, 2016),*(Ayman Mansour & Alkhazaleh, 2017) and Nkusu, (2011). And inflation rate had negative impact on loan Naceur, (2009), Banm et al., (2005) and Olaiyan, (2000).

H9: Inflation rate of the country economy have negative and statistically significant impact on private commercial banks' lending Behaviour in Ethiopia.
To measure inflation effect annual inflation rises rate would be used.

Gross Domestic Product (GDP)

As many literatures state, macroeconomic situations have an effect on lending activity of commercial banks. GDP growth is one element of macroeconomic factors which is used to measure the economic growth of a country and used to control changes in a loan demand (Djiogap & Ngomsi, 2012)). According to, (Flamini et al., 2009) GDP growth is used to control cyclical output effect which, it assumes, has a positive influence on bank lending. However, when the GDP growth slows down, particularly during recessions, credit quality deteriorates, and default increases thus, reducing subsequent bank lending. Real GDP growth rate had positive impact on bank's loan (Amano, 2014); and (Zelalem, 2016). Inversely GDP had negative and statistically significant effect on banks" lending; (Ayitenew,2016),(Timsina, 2016); and (Malede, 2014).

H10: GDP has a positive and statistically significant impact on private commercial banks' lending Behaviour in Ethiopia.
To measure GDP effect annual real GDP growth rate would be used.

3.8. Variables measurement and the expected sign

Table 3.2 Variables measurement and the expected sign

Symbol	Variables	Measurement	Expected Relation
	Dependent variable		
LD	Lending decision	Log of Total Loans	
	Independent variable		
BAS	Bank Size	Log of total assets	Positive
NPL	Non-performing loan	A ratio of non-performing loan /Total loan	Negative
VoD	Volume of Deposit	The ratio of customer deposit to total assets	Positive
IR	Lending Interest rate	Annual average lending interest rate	Negative
LQr	Liquidity Ratio	The ratio of Current Asset to Current Liabilities	Positive
CRR	Cash Required Reserve	Annual cash reserve requirement rate	Negative
MKS	Market share	total deposits of bank as a percentage of all bank's total deposits	Positive
IFR	Inflation	Annual inflation growth rate	Negative
ROA	Profitability	Net Income /Total Asset	Positive
GDP	Gross Domestic Product (GDP)	The yearly GDP growth rate	Positive

CHAPTER FOUR

DATA ANALYSIS AND DISCUSSION

4.1. INTRODUCTION

In this chapter we discus about description of the collected data, test of the assumption of classical linear regression model and analysis of the effect of explanatory variables on the dependent variable are incorporated.

The study examined the determinants of private commercial banks' lending behaviours by using 10 private commercial banks that are operated in Ethiopia as a sample. The data was collected from all commercial banks that have full year data and analysed for about for more than one decade (i.e. 2009-2019) and analyses the collected data by using various statistical tools and presents the results and discussion accordingly.

4.2. DESCRIPTIVE RESULTS OF THE STUDY

The statistical description of the table 4.1 below exhibits the mean, standard deviation, minimum, and the maximum values of dependent variable, (total loans & advances (tla)) and explanatory variables (Volume of Deposit (VOD), Non-performing Loans (NPL), liquidity (LQR), Cash Reserve Requirement (CRR), lending interest rate, Inflation (INF), market share(MKS), Return on Asset (ROA), and Gross Domestic Product (GDP)) for ten private Commercial Banks from the year 2009 to 2019 G.C with a total of 110 observations. The central tendency point and the dispersion of the variables from their averages are measured by the mean and standard deviation respectively.

The researcher conducted descriptive statistic using *Stata 16* software in order to give more understanding about the study variables that are being analysed. Descriptive Statistics is the foundation stone for any type of analysis which enables the researcher to describe the relevant aspects to all the study variables that entail detailed information about each relevant variable (Saswata Chatterjee, 2012).

Table 4.1 Descriptive statistics of the dependent and explanatory variables

```
summarize
```

Variable	Obs	Mean	Std. Dev.	Min	Max
tla	110	9.459456	.6399835	8.015	10.9
bas	110	10.07642	.5253787	8.092	10.984
vod	110	.7716909	.0409226	.643	.863
mks	110	.0902091	.0504143	.018	.263
lqr	110	1.129309	.1686479	.511	1.7612
crr	110	.0727273	.0392804	.05	.15
roa	110	2.7299	.9780911	-4.717	4.455
lir	110	.1246273	.0102338	.105	.147
npl	110	.0215455	.012986	.002	.088
infr	110	.1414182	.0801824	.073	.332
gdp	110	.0898182	.0252649	.019	.114

Source: Audited Financial statements of banks, MoFED reports and own computation through STATA 16

Table 4.1 reports descriptive statistics of all variables employed in this study. The result shows that, total loan and advance value between 8.015 and 10.9, and the mean value of private commercial bank lending (tla) is 9.459. Total loan and advance value is deviates from the average value by 0.6399. The standard deviations of 0.6399% indicate lower dispersion of dependent variable from its mean for the private commercial banks in Ethiopia. The maximum and the minimum value of the dependent variable are 10.90 awash bank and 8.015 ADIB respectively.

In the aspect of bank specific factors, one of bank specific independent variable is bank sizes of sampled private commercial banks which measured by natural logarithm of total asset. It is ranges from a minimum of 8.092 AIB to a maximum of 10.984ADIB and the average bank size of sampled private commercial banks is 10.07642, and it is deviates from the average value by 0.5253.

The second bank specific explanatory variable is Volume of deposit. The average value of Volume of deposit is 0.7716 which indicates that on average customers deposit (i.e. saving deposit, demand deposit and fixed deposit) accounts 77.16% from the total assets of private

commercial banks. It deviates from the average value by 0.0409 with maximum and minimum value of (0.863, 0.643) respectively.

The third explanatory variable is market share of private commercial banks. It is measured as the total deposits of bank as a percentage of all bank's total deposits. As it is described in the table 4.1, the mean value market share of private commercial banks is 0.0902 and with the maximum and minimum value 0.263 and 0.018 respectively. It is deviates from the average value with 0.0504.

Furthermore, the outputs of the descriptive statistics indicate that, the ratio of liquid assets was 1.129 on average with a minimum of 0.511 and a maximum of 1.7612. The liquidity measure indicates that the Ethiopian commercial banks have lower liquidity position; on average for each one birr of current liability the bank have current asset of 1.129 birr. And the average cash reserve requirement ratio of selected private commercial bank in Ethiopia is 0.07272 it also deviates from average of cash reserve requirement in 0.03928

The other explanatory variably is return on asset of selected private commercial bank. The ROA of selected private commercial bank value ranges from a minimum of -4.17 to a maximum of 4.45 with a mean value and standard deviation of 2.73 and 0.978 respectively. This indicates that private commercial banks were earning average return of 2.73 on their asset during sample period under studies.

The average lending interest rate also another independent variable that was included in this study. The average lending interest rate of selected private commercial bank is 0.1246 and the minimum and maximum ratio is ranges from 0.105 to 0.147 with standard deviation of 0.01023.

The mean of non-performing loan was 0.0215 with a minimum of 0.002 and a maximum of 0.088. It deviates from the average value by 0.01298. This indicates, from the total loans and advances that private commercial banks extended, an average of 0.0215 were uncollected or not served over the sample period indicated.

From the above tabel4.1, the remaining explanatories variably are macroeconomic variables. The first macroeconomic explanatory variable is Inflation rate. It is the overall increasing level of prices for goods and services in the markets. For this study annual rate of inflation of the country

that reported by MoFED (Ministry of finance and economic development) is used. From the above table the mean of annual average inflation rate in Ethiopia for the period covering from 2009 to 2019 is 0.1414 which means around 14.14%. The minimum and the maximum annual average inflation rate is 0.073 and 0.332. From the macroeconomic variables used in this study inflation had a lower deviation which of 0.08018.

The second macroeconomic explanatory variable is Gross Domestic Product (GDP), which shows how much inflation adjusted growth rate is recorded for a country in given year and in this study measured by growth rate of real gross domestic product. In the above table 4.1 the average GDP growth rate in Ethiopia for the study period is 0.0898 and the minimum and maximum 0.019 and 0.114, with a standard deviation of 0.252.

4.3. Correlation Analysis of the Variables

Correlation is a way to index the degree to which two or more variables are associated or correlated to each other. The most widely used correlation statistics is the Pearson product-movement coefficient, commonly called the Pearson correlation which was used in this study. It measures the degree of linear association between variables. According to (Brooks, 2008), if two variable are correlated, it means they are being treated in a completely symmetrical way. Thus, it is not implied that changes in one cause changes in another's, it simply stated that there is evidence for a linear relationship between the two variables, and that movements in the two are on average related to an extent given by the correlation coefficient.

The values of correlation coefficients are always fall between - and +1. A correlation coefficient of +1 tells us there is perfect positive association between the two variables; however a correlation coefficient of -1 tells us a perfect negative association. A correlation coefficient of zero, on the other side indicates the there is no relationship (association) between two variables.

Table 4.2 Correlation Analysis of dependent and independent variables

```
.  corr tla bas vod lqr mks crr roa lir npl infr gdp
(obs=110)
```

	tla	bas	vod	lqr	mks	crr	roa	lir	npl	infr	gdp
tla	1.0000										
bas	0.5303	1.0000									
vod	0.5397	0.5708	1.0000								
lqr	0.4611	0.5557	0.3520	1.0000							
mks	0.3509	0.0888	0.0593	0.4605	1.0000						
crr	-0.5322	-0.5225	-0.5735	-0.5750	0.0833	1.0000					
roa	0.0198	0.0609	-0.0603	0.2120	0.2189	-0.0363	1.0000				
lir	0.4559	0.5417	0.3024	0.5043	-0.1527	-0.5059	-0.1398	1.0000			
npl	-0.5053	-0.2154	-0.0450	-0.0494	-0.0666	0.1373	0.0698	-0.2395	1.0000		
infr	-0.2451	-0.1244	-0.2590	-0.1177	0.0350	0.5242	0.1011	-0.0400	-0.0338	1.0000	
gdp	-0.1467	-0.4406	-0.1147	-0.4351	0.0395	0.3601	0.0299	-0.4649	0.1505	-0.1418	1.0000

Source: Source: Audited Financial statements of sampled banks, IMF reports and own computation through STATA 16.

Correlation coefficients whose magnitudes are between 0.9 and 1.0 indicate variables which can be considered very highly correlated. Correlation coefficients whose magnitudes are between 0.7 and 0.9 indicate variables which can be considered highly correlated. Correlation coefficients whose magnitudes are between 0.5 and 0.7 indicate variables which can be considered moderately correlated. Correlation coefficients whose magnitudes are between 0.3 and 0.5 indicate variables which have a low correlation. Correlation coefficients whose magnitudes are less than 0.3 have little.

As t shown in Table 4.2, Volume of deposit was positively correlated with loan and advance with the coefficient of correlation 0. Loan and advance also positively correlated with bank size with the coefficient of correlation 0.5303. Similar to Volume of deposit and bank size, Liquidity ratio, Market share, return on asset and lending interest rate were correlated with loan and advance with the coefficient of correlation (0.4611, 0.3509, 0.0198, 0.4559) respectively. And also Cash reserve requirement, Non-performing and all macroeconomic variable such as; Grosse domestic product and inflation rate ware correlated with loan and advance of private commercial banks in Ethiopia.

4.4. Testing assumptions of classical linear regression model (CLRM)

For valid hypothesis testing and to make data available for reliable results, the test of assumption of regression model is required. Accordingly, the study has gone through the most critical regression diagnostic tests consisting of errors have equal zero mean test, heteroscedasticity, normality, autocorrelation, and multicolinearity.

4.4.1. Normality Test

The first classical linear regression model assumption is concerning to the data should be normally distributed. In STATA one way of testing normality is by numerical methods. For this study Shapiro–Wilk W and histogram test for normal data was used. According to Shapiro & Wilk (1965) the null-hypothesis of the test is that the "population is normally distributed". Thus, if the p-value is less than the chosen significant level, then the null hypothesis is rejected and there is evidence that the data tested are not from a normally distributed population. On the contrary, if the p-value is greater than the chosen significance level, the null hypothesis that the data came from a normally distributed population cannot be rejected. For this study the researcher chooses 5% significant level. Below the *STATA16* output of both Shapiro–Wilk W and histogram test for normality is presented.

Table 4.3 Test for normality of residuals, Shapiro-Wilk W test for normal data

```
swilk residual
```

	Shapiro-Wilk W test for normal data				
Variable	Obs	W	V	z	Prob>z
residual	110	0.98971	0.920	-0.185	0.57347

Source: STATA 16 output, Shapiro–Wilk W test for normal data.

As shown in the above table 4.3 the error term is normally distributed, since the p-value is greater than 0.05. This indicates that there was no abnormality in the data observed. Thus, the null hypothesis that the data is normally distributed should not be rejected since the p-value was in excess of percent significance level. Moreover, it describes that the inferences made regarding

the population parameters from the taken sample parameters are tend to be valid.

```
histogram residual, frequency normal
bin=10, start=-.91554326, width=.17777358)
```

Figure 4.1 Normality assumption test graph
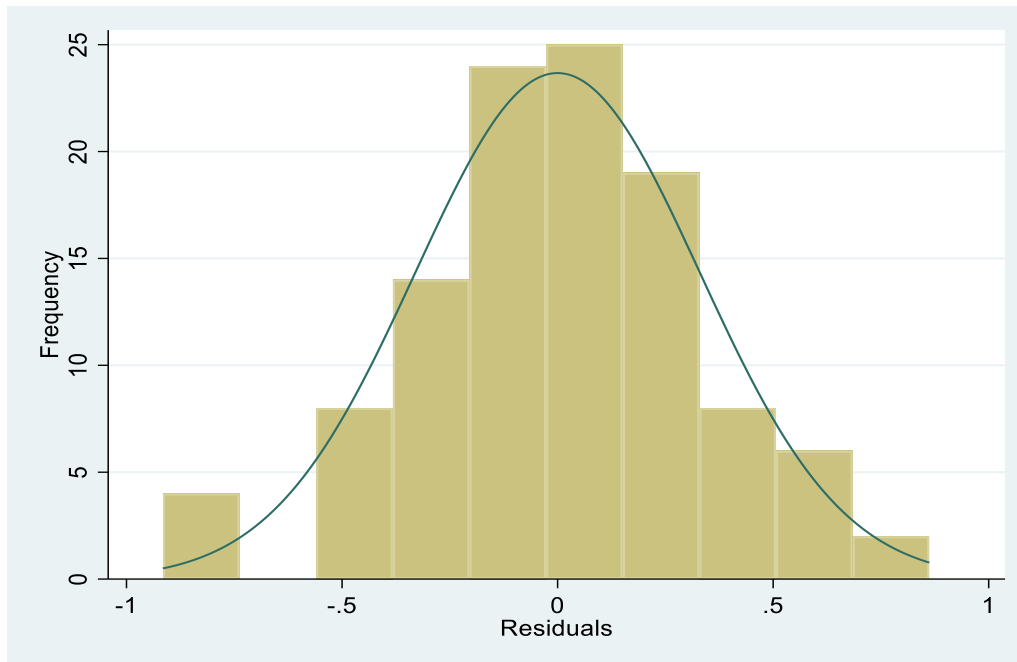
4.4.2. Multi-collinearity Test result

According to Wooldridge (2002) multicolinearity is correlation among explanatory variables in a multiple regression model. According to (Gujarati, 2004), Multicolinearity shows a linear relationship among explanatory variables. If one explanatory variable is an exact linear combination of the other explanatory variables, then it said the model suffers from perfect collinearity, and it cannot be estimated by OLS(Brooks, 2014). According to Another scholar Cooper and Schendlar, (2003) to find out the multi collinearity problem, the correlations between the explanatory variables should be examined and the correlation of about 0.8 or larger shows a problem of multi-co linearity. As stated by Hair et al. (2006) correlation coefficients below 0.9 may not cause serious multicolinearity problem. In addition to this the variance of inflation factor (VIF) was used to test for the existence of this problem.

This, assumption multicolinearity is concerned with the relationship exist between explanatory variables. If an independent variable is an exact linear combination of the other independent

variables, then we say the model suffers from perfect collinearity (Brook 2008). According to (Churchill and I acobucci 2005), when there is multicolinearity, the amount of information about the effect of explanatory variables on dependent variables decreases.

Table 4.4 Correlations matrix of explanatory variables

```
 corr bas vod lqr mks crr roa lir npl infr gdp
obs=110)
```

	bas	vod	lqr	mks	crr	roa	lir	npl	infr	gdp
bas	1.0000									
vod	0.5708	1.0000								
lqr	0.5557	0.3520	1.0000							
mks	0.0888	0.0593	0.4605	1.0000						
crr	-0.5225	-0.5735	-0.5750	0.0833	1.0000					
roa	0.0609	-0.0603	0.2120	0.2189	-0.0363	1.0000				
lir	0.5417	0.3024	0.5043	-0.1527	-0.5059	-0.1398	1.0000			
npl	-0.2154	-0.0450	-0.0494	-0.0666	0.1373	0.0698	-0.2395	1.0000		
infr	-0.1244	-0.2590	-0.1177	0.0350	0.5242	0.1011	-0.0400	-0.0338	1.0000	
gdp	-0.4406	-0.1147	-0.4351	0.0395	0.3601	0.0299	-0.4649	0.1505	-0.1418	1.0000

Source: STATA 16 output for Pearson Correlation Matrix

The results in the above correlation matrix show that the highest correlation of 0.5708 which is between VOD and BAS. Since there is no correlation above 0.8 according to Cooper and Schendlar, (2003) Hair et al. (2006) we can conclude that there is no problem of multicolinearity in this study.

According to explained by (Gujarati, 2004), When explanatory variables have multi collinearity, there is overlap or sharing of estimating power. This may results in paradoxical effect, whereby the regression model fits the data well, but none of the explanatory variables (individually) has a significant impact in estimating the dependent variable.

The other benchmark to say there is a problem of multicolinearity among explanatory variables is when the mean value of variance inflation factor is above 10. As shown in the table 4.5 below the value of mean Variance Inflation Factor (VIF) is 2.39, which is tolerable collinearity among explanatory variables because it is below the rule of thumb (10).

Table 4.5 Variance Inflation Factor

```
. vif
```

Variable	VIF	1/VIF
crr	4.34	0.230410
lqr	4.24	0.235655
bas	2.40	0.416998
mks	2.34	0.427106
lir	2.32	0.431892
vod	2.13	0.470368
infr	1.93	0.518899
gdp	1.74	0.573557
roa	1.24	0.803309
npl	1.23	0.814309
Mean VIF	2.39	

Source: STATA 16 output for variance inflation factor

4.4.3. Heteroscedasticity Test

Homoscedasticity is another CLRM assumption which states those disturbances appearing in the population regression are homoscedastic i.e. the variance of the error term is constant across all observations. But there are many situations in which this assumption may not hold (for example the variance of the error term may increase or decrease with the dependent variable or one of the independent variables) and this called heteroscedasticity problem.

Besides, Heteroscedasticity means the variance of the error term, given the explanatory variables, is not constant. For this study Breusch–Pagan Test was used. According to Breusch & Pagan (1979) from the regressed output if the test statistic has a p – value below an appropriate significant level (0.05) then the null hypothesis of homoscedasticity is rejected and heteroscedasticity is assumed. On the other hand, if p–value is greater than 0.05, homoscedasticity is assumed. *STATA16* output for heteroscedasticity test regression is shown below.

Table 4.6 Heteroscedasticity Test

```
. estat hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
        Ho: Constant variance
        Variables: fitted values of tla

        chi2(1)      =      0.02
        Prob > chi2  =    0.8904
```

Source: STATA 16 output for heteroscedasticity test

As shown in table 4.6, there was no evidence for the presence of heteroscedasticity, hence the p-value is in excess of 5 percent level of significance, and so the hypothesis does not rejected.

4.4.4. Test for Autocorrelation

The basic assumption of regression model says that the covariance between error terms should be zero. This means that error term should be random and it should not exhibit any kind of pattern. If there exists covariance between the residuals and it is nonzero, this phenomenon is called autocorrelation (Brooks, 2008).

To test for autocorrelation three methods can be used Durbin –Watson d statistics, Woodridge and Breusch- Godfrey autocorrelation tests. This study used Durbin Watson test to check for the existence of autocorrelation among the error terms. The null hypothesis for the DW test is no autocorrelation between the error terms.

Table 4.7 Serial autocorrelation of Durbin Watson test for Serial Correlation

```
. estat dwatson

Durbin-Watson d-statistic( 11,   110) =  1.528876

.
```

Source: STATA 16 output, Durbin Watson serial autocorrelation test

According to (Hair et al. 1998) The Durbin-Watson statistic ranges in value from zero to four. A value near 2 indicates non autocorrelation, a value toward 0 indicates positive autocorrelation; a value toward 4 indicates negative autocorrelation. Having 110 observations with ten independent variables the result of DW test as shown in table 4.7 above was 1.528876 which is closer to 2 indicated that the null hypothesis cannot be rejected. Therefore, there was no evidence of autocorrelation among error terms in this study.

4.4.5. Test for average value of the error term is zero (E (ut) = 0) assumption

According to (Brooks 2008) the fifth assumption required is that the average value of the errors is zero. In fact, if a constant term is included in the regression equation, this assumption will never be violated. Since the constant term (i.e. α) is included in the regression equation, the average value of the error term in this study is expected to be zero.

4.4.6. Choosing Random effect (RE) vs. fixed effect (FE) models

The model used to examine the determinants of lending behavior of private commercial banks in Ethiopia was panel data model. As noted in Brooks (2014), panel data was developed using three approaches that can be employed in financial research: pooled OLS regression model, fixed effects models and random effects models.

The fixed effect regression model used when a researcher wants to control omitted variables that differ between cases but are constant over time. It allows for heterogeneity or individuality among companies by allowing having its own intercept value. The random effects approach proposes different intercept terms for each entity and again these intercepts are constant over time, with the relationships between the explanatory and explained variables assumed to be the same both cross-sectionally and temporally (Brooks, 2008).

The best way of choosing between the fixed effect model and the random effect models is running the hausman specification test. The hausman specification test checks a more efficient model against a less efficient but consistent model to make sure that the more efficient model also gives consistent results. If the p-value for the hausman test is less than 5%, this shows that the random effects model is not appropriate and that the fixed effects model is to be preferred. Accordingly, to choose the appropriate model the study runs hausman specification test below.

Table 4.8 Hausman specification test

```
. hausman fe re

                     ──── Coefficients ────
                    (b)          (B)           (b-B)      sqrt(diag(V_b-V_B))
                    fe           re          Difference           S.E.

        bas       .112191       .12808       -.015889           .0413464
        vod      6.771287      3.721622      3.049664           .8657227
        lqr      -.8866391     -.8258081     -.060831           .0911794
        mks      6.147557      5.970739      .1768175          1.626477
        crr     -4.079819     -5.324414      1.244595           .6871512
        roa      .0096821      .0177973     -.0081152           .004417
        lir      17.33021      20.14409      -2.81388          1.930623
        npl     -12.5182      -17.32785      4.809652           1.72608
       infr     -.181872      -.1949659      .0130939              .
        gdp      1.93393       3.286911     -1.35298              .

                          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)
                       =      3.83
              Prob>chi2 =     0.9547
              (V_b-V_B is not positive definite)
```

Source: STATA 16 output for Hausman specification test

Table 4.8 above shows Hausman specification test, the P-value of models is 0.9547, which is greater than 5% level of significance. Since, the null hypothesis of the random effect is appropriate is failed to be rejected at 5 percent of significant level. If the p-value greater than level of significance, random effect model is more appropriate than fixed effect model and gives more comfort that random effects model results are valid.

4.5. Multiple Regression Result

The Multiple Regression model was used to identify the major determinants of lending Behaviour private commercial banks in Ethiopia. The studies investigate the level of magnitude of explanatory variables over predicted variable based on the Multiple Regression model output.

Finally the finding determines which of the explanatory variable are predictive of lending Behaviour of private commercial banks.

The study used panel data from 2009- 2019 and this data can be done by random effect. To select the appropriate model, the character of individual effects was tested through the hausman specification test. Based on comparison result between random and fixed effect model through hausman specification test, an appropriate model for this study was random effect model. Thus, the cause and effect relationship between loan and advance and explanatory variables was examined by random effect model. The regression results are made by the help of *STATA version16* and the variable in the equation table gives information about the contribution or importance of each of a models predictor variable.

Volume of deposit, liquidity ratio, market share, cash reserve requirement, lending interest rate, and non-performing significantly determine lending Behaviour private commercial banks at $p < 0.05$. Other variables including Bank size return on asset, inflation rate, and gross domestic insignificant in determining lending Behaviour private commercial banks at $p > 0.05$. Below a summary of the results of the Multiple Regression model is presented.

Table 4.9 random effect panel model regression output

```
reg tla bas vod lqr mks crr roa lir npl infr gdp
```

Source	SS	df	MS		
Model	32.8051254	10	3.28051254		
Residual	11.8389683	99	.119585538		
Total	44.6440937	109	.409578841		

Number of obs	=	110
F(10, 99)	=	27.43
Prob > F	=	0.0000
R-squared	=	0.7348
Adj R-squared	=	0.7080
Root MSE	=	.34581

tla	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
bas	.12808	.0976307	1.31	0.193	-.0656405	.3218006
vod	3.721622	1.18017	3.15	0.002	1.379909	6.063336
lqr	-.8258081	.4045822	-2.04	0.044	-1.628587	-.0230293
mks	5.970739	1.005321	5.94	0.000	3.975964	7.965514
crr	-5.324414	1.756704	-3.03	0.003	-8.810096	-1.838731
roa	.0177973	.0377838	0.47	0.639	-.057174	.0927685
lir	20.14409	4.924934	4.09	0.000	10.37196	29.91623
npl	-17.32785	2.826551	-6.13	0.000	-22.93634	-11.71936
infr	-.1949659	.5734633	-0.34	0.735	-1.332842	.9429096
gdp	3.286911	1.731092	1.90	0.061	-.1479513	6.721772
_cons	3.624729	1.098969	3.30	0.001	1.444136	5.805322

Source: STATA 16 output for random effect regression analysis

The following empirical model was used to identify the determinant factors that can affect the private commercial banks' lending Behaviour in Ethiopia.

$LogTLAit$ = f ($\alpha 0$+ $\beta 1BASit$, $\beta 2VDit$, $\beta 3NPLit$, $\beta 4LQRit$, $\beta 5MKSit$, $\beta 6CRRit$, $\beta 7LIRit$ $\beta 8GDPit$, $\beta 9INFRit$, $\beta 10ROAit$, + μit) ……………………………………..………….…… (1)

Source: developed by researcher

Where:

LogTLAit: Natural logarithm of Total Loan and advance of bank i at time t.

BASit: bank size of bank time t.

VDit: Deposit ratio of bank i at time t.

NPLit: Non-performing loan of bank i time t.

LQRit: Liqudity rato of bank i time t.

MKSit: Market share of bank i time t.

CRRit: Czsh reserve requirement of bank i time t.

LIRit: lending interest rate of bank i time t.

GDPit: gross domestic product at time t.

INFit: Inflation rate at time t.

ROAit: Return on Asset of bank i at time t.

µit: is the error term for bank i at time t assumed to have mean zero.

α0: is the intercept or constant of the regression line.

t: time from 2009-2019

From β1 to β10: are parameters or coefficients of the independent variables estimated

Thus, based on the above table the following model was developed to examine the determinants of lending Behaviour of private commercial banks in Ethiopia.

LogTLAit = 3.6247+ 0.12808BAS+3.721VD- 17.33NPL-0.8258LQR+5.970MKS-5.3244CRR+20.144LIR+3.2869GDP-0.1949INFR+0.01779ROA+µit)

4.6. Discussion of Regression Results

Table 4.9 presents the estimation results of random effect regression model for146 observations, which is collected from 10 Ethiopian commercial banks from 2009 to 2019. The result has 0.7348 R square value, which shows about 73.48% of variation in the dependent variable is due to explanatory variables included in this study and the remaining 26.52% variation is due to unobserved variables or error term. The adjusted R-square result indicates that the changes in the independent variables explain 70.80% of the changes in the dependent variable. The remaining 29.20% of changes was explained by other factors which are not included in the model. Thus these explanatory variables collectively, are good explanatory variables of the dependent variable. Since the model's F-statistics tests the fitness of the model and a recommended F-statistics should be greater than 5 for it to be considered fit, the study obtained an F-statistic of 27.43 which is greater than 5 hence the model was fit for estimation.

The relationship between bank size and private banking lending behaviours

❖ To examine the effect of bank size on lending Behaviour of private commercial banks in Ethiopian

❖ Bank size has a positive and statistically significant Effect on private commercial banks' lending Behaviour in Ethiopia.

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 insignificantly related with Ethiopian private commercial banks' lending behaviours with a p–value of 0.193 and the coefficient of 0.12808. Alternative hypothesis one is about banks size, which states positive and statistically significant relationship between bank size and lending Behaviour. The random effect regression result shows bank size is positively related with but insignificant effect on lending Behaviour. So, thus alternative hypothesis is rejected

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 private commercial banks other things remain constant increasing the value of banks total asset was increase loans but statistically insignificant influence on private commercial bank lending behaviours in Ethiopia.

The relationship between Volume of deposit and private banking lending behaviours

❖ To examine the effect of volume of deposit on lending Behaviour of private commercial banks in Ethiopian

❖ Volume of deposit has positively and statistically significant Effect on lending Behaviour of private commercial banks in Ethiopia.

As we have seen from regression result of table 4.9, volume of deposit has positively and significant relationship with Ethiopian private commercial banks' lending behaviours with a p-value of 0.002 and coefficients of 3.721. This indicates that when volume of deposit increased by one percent, total lending of sampled private commercial banks would be increased by 372.1% and statistically significant.

A hypothesis about Volume of deposit states that there is positively and statistically significant relationship between Volume of deposit and lending Behaviour of private commercial banks in Ethiopia. In line with the hypothesis, the regression result shows, there was positive and statistically significant relationship between Volume of deposit and private commercial banks' lending Behaviour in Ethiopia, so the hypothesis is filed to reject.

This positive relationship between volume of deposit and lending Behaviour is consistent with prior research results of (Amano, 2014), Malede (2014), Ajayi (2007), Ituwe (1985) and Ojo (1978)), Olusanya et al (2012), and Onyango (2015) who found the positive association. Given that the relationship between banks' lending Behaviour and volume of deposit is positive and highly significant, as volume of deposit or the money collected from the customer in the form of deposit increases the ability of commercial banks to provide more loan and advances will also increase.

The positive and significant association between volume of deposit and lending Behaviour of private commercial banks in Ethiopia may be related to the factor of insignificant fluctuation in the cash reserve requirements in the country during sample period which help the banks to lend more of their deposits.

The relationship between Liquidity Ratio and private banking lending behaviours
- ❖ To examine the effect of liquidity ratio on lending Behaviour of private commercial banks in Ethiopian
- ❖ Liquidity ratio has a negative and statistically significant Effect on private commercial banks' lending Behaviour in Ethiopia.

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 Behaviour of private commercial banks with a p–value of 0.044 and coefficient of -0.8258. From this coefficient value it can be possible to say that there is negative relationship between Ethiopian private commercial banks' lending Behaviour and liquidity ratio. When liquidity (LQr) increased by one percent, total loans and advances of sampled private commercial banks would be decreased by 82.58% percent and statistically significant at 5% level of significant.

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

The coefficient signs of liquidity ratio proved negative impact of liquidity ratio on lending Behaviour of private commercial bank in Ethiopia. The negative impact of liquidity ratio on lending Behaviour of private commercial bank in Ethiopia 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, p. 42), 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 Behaviour of private commercial bank in Ethiopia.

The result of negative association between liquidity ratio and lending behaviours was consistent to the findings of Amano, (2014), Benjamen and Onyeuchi, (2015) and Rabah, (2015) 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 (YazanQudah, 2017), Ajayi (2007), (Ituwe, 1985) and (Ojo, 1978).

The relationship between Market Share and private banking lending behaviours

- ❖ To assess the effect of market share on lending behaviours of Ethiopian private commercial banks.
- ❖ Market share has a positive and statistically significant Effect on private commercial banks' lending Behaviour in Ethiopia.

The result of the model reveals that, market share of private commercial banks have positive and statistically significant impacts on the lending behaviours of private banks with p-value of 0.000 and coefficient of 5.970 and it is significant at 1% percent significant level. The coefficient on market share is positive; suggesting that the ability to exercise power in the market as measured by the market share of asset that a bank holds was significant in explaining credit facilities granted by the private commercial banks in Ethiopia. The positive relationship between the market share and credit facilities granted by the private commercial banks in Ethiopia shows that large banks in terms of deposit can use their full resources for credit facilities.

The random effect regression result of these study shows, Ethiopian commercial bank lending Behaviour is positively related with market share and it is statistically significant. On the same way, the hypothesized relationship between Ethiopian commercial bank lending Behaviour and market share was positive and significant, thus we filed to reject the hypothesis of positive and statistically significant relationship.

The relationship between Cash reserve requirement and private banking lending behaviours

- ❖ To assess the effect of, cash reserve requirement ratio on lending behaviours of Ethiopian private commercial banks
- ❖ Cash reserve requirement has negative and statistically significant Effect on Ethiopian private commercial banks' lending Behaviour.

Theories argues that there is negative and statistically significant relationship between cash reserve requirement lending behaviour and it is in line with the assumption that the reserve requirement ratio also plays an important role in a banks capacity to give out loans and credit. The higher the reserve requirements from the central bank, the lower the amount of credits and loans a bank is willing to give to the public. As it was known from the Regression result of table 4.9, coefficient of the cash reserve requirement which measured by annual reserve requirement rate is -5.3244 and its p-value is 0.003, this implies there is a negative and statistically significant relationship between private Commercial bank lending Behaviour and the cash reserve requirement ratio. When cash reserve requirement increased by one unit, total lending of sampled private commercial banks would be decreased by 5.461 units and statistically significant at 5% level of significant.

The hypothesis of the study about Cash reserve requirement states that there is negative and statistically significant relationship between Cash reserve requirement and lending Behaviour. In line with the hypothesis, The above regression result show, there was negative and statistically significant relationship between Cash reserve requirement and lending Behaviour of private commercial bank in Ethiopia, so the hypothesis is filed to reject.

The result found in this study is consistent with the result of (Christian & Pascal, 2012), (Cargill and Mayer, 2006), and (Zelalem, 2017). However, the result of this study is contrary with the findings of Olusanya et al., (2012), Ayitenew, (2016) and Amano, (2014) that reveal required

reserve has positive impact on commercial bank loans and advances (i.e. banks credit raise when cash required reserve increase).

With the objective of controlling the recurring inflationary episodes in the country, National Bank of Ethiopia increase and decreases the reserve requirement on commercial banks from time to time. The regression output implies that cash reserve requirement set by the regulatory body, NBE highly affects commercial banks' loan and advances negatively i.e. High reserve requirements decrease loanable funds available for investment.

The possible argument of negative relationship indicates that high cash reserve requirement ratio of commercial banks may necessarily translate into poor lending performance; it reduces amount of commercial banks' funds available for lending.

The relationship between Non-performing loan and private banking lending behaviours

❖ To examine the effect of Non-performing loan on lending Behaviour of private commercial banks in Ethiopian.

❖ Non-performing loan has a negative and statistically significant Effect on private commercial banks' lending Behaviour in Ethiopia.

As shown in the table 4.9 the ratio of non-performing loan of banks which measured by non-performing loan to total loans has negative and statistically significant relationship with lending behaviours of private commercial bank in Ethiopia with (p-value of 0.000, beta -17.23). It is significant at 1% significance level and it can be concluded that non-performing loan is highly good explanatory variable of lending behaviours. The beta value indicates that non-performing loan have an inverse relationship with lending Behaviour of Ethiopian private commercial banks. The regression coefficient shows, every 1 unit increase in non-performing loan, on average, leads commercial banks' lending decrease by 17.23 units. This negative association between non-performing loan and private commercial banks' lending Behaviour could be attributed to the fact that, the impact of nonperforming loans on lending. The first effect is that, the deterioration in bank loan assets indicates that banks are taking on high risks and hence banks cannot build up its risk at minimum levels, they tighten credit principles which will decrease the number of loan applicants. The other effect, is incurring losses from non-performing loans by provision expense and loan write-offs which reduce the equity capital of banks. This would in-turn affect the banks, ability to extend more loans to their customers, hence leads to reduction in lending.

In line with the above regression result (the relationship between Non-performing loan and lending Behaviour of private commercial banks' Ethiopia is negative and statistically significant) the hypothesized relationship between lending Behaviour of private commercial banks in Ethiopia and Non-performing loan is negative and significant, so we fail to reject the hypothesis.

The result is similar with the previous studies of Ayitenew, (2016), AL Hassan et al., (2013), Djiogap and Ngomsi, (2012), Rabah, (2015) and Tomak, (2013) who founds that a significant negative relationship between NPLs and bank lending behaviours However, it is contrary with the studies of Malede, (2014) that founds a positive association between NPLs and lending Behaviour of private commercial banks' Ethiopia.

The relationship between Return on Asset and private banking lending behaviours

- ❖ To examine the effect of profitability (ROA) on lending Behaviour of private commercial banks in Ethiopian.
- ❖ Return on asset has a positive and statistically significant Effect on private commercial banks' lending Behaviour in Ethiopia.

As shown in the table4.9 above the estimation coefficient of return on asset is 0.01779 with its value of 0.639. This indicates that Return on asset ratio is positively related with lending of private commercial banks but insignificant 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 Behaviour. As result, developed Hypothesis is rejected.

The relationship between Lending Rate and private banking lending behaviours

- ❖ To examine the effect of lending interest rate on lending Behaviour of private commercial banks in Ethiopian.
- ❖ Lending interest rate has negative and statistically significant Effect on private commercial banks' lending Behaviour in Ethiopia.

The result of the regression of interest (lending) rate shows a p-value of 0.000, and this value shows that it is statistically significant at 1% level of significance. This revealed that Ethiopian private commercial banks are highly influenced by interest (lending) rate. Hence, it

can be concluded that lending interest rate is a good explanatory variable for Ethiopian commercial banks lending's.

On the other hand the coefficient value indicates that commercial bank lending and lending rate are positively related. It reveal that a one unit change in lending rate will cause their loan and advance to change by 20.14 units in the same direction. This positive sign of the coefficient indicates that high lending rate of commercial banks may not necessarily translate into poor lending performance or even if the amount of interest that charged on loan increase, the demand for loan also increasing. This may be due to the borrower need the loan to make a more profitable investment that compensate for the amount charged by private banks. On the other hand they may be lending out for people who have not enough collateral and due to this on average may set high interest rate. Consequently, during the study period Interest rates have not negative relationship with lending Behaviour of private commercial banks in Ethiopia.

The random effect regression result of this study shows there was positively and statistically significant relationship between Lending interest rate and lending Behaviour of private commercial bank in Ethiopia. On the other hand, the hypothesized relationship between Lending interest rate and lending Behaviour is negatively and statistically significant. Thus we reject the alternative hypothesis of negative and significant relationship.

The finding is similar with Olokoyo, (2011) Aytenew, 2016, Usman, (1999) and Malede, (2014).However; it is contrary to the findings of Amano, (2014), Zelalem, (2017) who founds the negative relationship.

The relationship between Gross domestic product and private banking lending behaviours

- ❖ To examine the effect of economic growth rate (GDP) on lending Behaviour of private commercial banks in Ethiopia.
- ❖ GDP has a positive and statistically significant Effect on private commercial banks' lending Behaviour in Ethiopia.

The regression result shows that the coefficient of GDP is 3.2868 and p-value is 0.061 which was insignificant at 5% significance level. The result of this study reveals that GDP has a positive relationship with lending behaviours of private commercial banks' but statistically significant.

Gross domestic product affect bank loans positively, since an increase in GDP causes raises in both supply and demand for loans. An increase in GDP means more funds are available for banks to make loans since deposits are more likely to increase.

The country's growth is positively related with the banks' lending behaviours as well as their performance. 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.

The, hypothesis related to gross domestic product was there is positive and statistically significant relationship between GDP and lending Behaviour of commercial banks in Ethiopia, as the empirical finding show, positive but insignificant relationship, so the hypothesis is rejected.

The result of this study is contrary to the findings of Aytenew, (2016) who states that there was negative relationship between gross domestic product and lending behaviours of commercial banks in Ethiopia.

The relationship between Inflation Rate and private banking lending behaviours

- ❖ To examine the effect of inflation rate on lending Behaviour of private commercial banks in Ethiopia.
- ❖ Inflation rate of the country economy have negative and statistically significant Effect on private commercial banks' lending Behaviour in Ethiopia.

The regression output of the study in Table 4.9 above shows that the coefficient of Inflation rate (INFr) measured by annual inflation rate is-0.1949 and its P-value is 0.735. It is statistically insignificant and negatively related with Ethiopian private commercial banks' lending behaviours. The coefficient of the variable inflation rate is -0.1949 that shows the relationship between inflation rate and lending behaviours is negative that means if inflation rate increases in Ethiopia, then Ethiopian private commercial banks' lending will decrease.

The hypothesis of the study was: positive and statistically significant relationship between Inflation rate of the country economy and lending Behaviour of commercial banks in Ethiopia. But the actual result is not related with the developed hypothesis, so the hypothesis is rejected.

The result this study is contrary to the study result of Amano, (2014) and Nkusu, (2011) who founds positive association between inflation rate and loan and advances. According to these researchers higher inflation can improve the loan payment capacity of borrower by reducing the real value of outstanding amount.

Table 4.10 Comparison of test results with expectation

No.	Hypothesis	Expected results	Actual results	P - value	Significance level
1.	Bank size has a positive and statistically significant Effect on private commercial banks' lending Behaviour in Ethiopia.	Positive	Positive	0.193	statistically insignificant
2.	Non-performing loan has a negative and statistically significant Effect on private commercial banks' lending Behaviour in Ethiopia.	Negative	Negative	0.000	statistically significant
3.	Volume of deposit has positively and statistically significant Effect on lending Behaviour of private commercial banks in Ethiopia.	Positive	Positive	0.002	statistically significant
4.	Lending interest rate has negative and statistically significant Effect on private commercial banks' lending Behaviour in Ethiopia.	Negative	Positive	0.000	statistically significant
5.	Liquidity ratio has a negative and statistically significant Effect on private commercial banks' lending Behaviour in Ethiopia.		Negative	0.044	statistically significant
6.	Cash reserve requirement has negative and statistically significant Effect on Ethiopian private commercial banks' lending Behaviour.	Negative	Negative	0.003	statistically significant

No.	Hypothesis				
7.	Return on asset has a positive and statistically significant Effect on private commercial banks' lending Behaviour in Ethiopia.	Positive	Positive	0.639	statistically insignificant
8.	Market share has a positive and statistically significant Effect on private commercial banks' lending Behaviour in Ethiopia.	Positive	Positive	0.000	statistically significant
9.	Inflation rate of the country economy have negative and statistically significant Effect on private commercial banks' lending Behaviour in Ethiopia.	Negative	Negative	0.735	statistically insignificant
10.	GDP has a positive and statistically significant Effect on private commercial banks' lending Behaviour in Ethiopia	Positive	Positive	0.061	statistically insignificant

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1. SUMMARY OF MAJOR FINDINGS

Bank size is one of bank specific explanatory variable, which is measured by natural logarithm of banks total asset. Bank size was positively but insignificantly related with Ethiopian private commercial banks' lending behaviours.

Volume of deposit has positively and significant relationship with Ethiopian private commercial banks' lending behaviours with a p-value of 0.002 and coefficients of 3.721.

This indicates that when volume of deposit increased by one percent, total lending of sampled private commercial banks would be increased by 372.1% and statistically significant.

The result for the study shows there is a negative and statistically significant relationship between liquidity ratio and lending Behaviour of private commercial banks

The result of the model reveals that, market share of private commercial banks have positive and statistically significant impacts on the lending behaviours of private banks with p-value of 0.000 and coefficient of 5.970 and it is significant at 1% percent significant level.

Theories argues that there is negative and statistically significant relationship between cash reserve requirement lending behaviours and it is in line with the assumption that the reserve requirement ratio also plays an important role in a banks capacity to give out loans and credit.

Non-performing loan to total loans has negative and statistically significant relationship with lending behaviours of private commercial bank in Ethiopia with (p-value of 0.000, beta -17.23).

The estimation coefficient of return on asset is 0.01779 with its value of 0.639. This indicates that Return on asset ratio is positively related with lending of private commercial banks but insignificant at 5% significance level, as the study expected the return on asset has positively and statistically significant relationship with the dependent variable.

The result of the regression of interest (lending) rate shows a p-value of 0.000, and this value shows that it is statistically significant at 1% level of significance. This revealed that Ethiopian private commercial banks are highly influenced by interest (lending) rate.

The result of this study reveals that GDP has a positive relationship with lending behaviours of private commercial banks' but statistically significant.

The coefficient of Inflation rate (INFr) measured by annual inflation rate is-0.1949 and its P-value is 0.735. It is statistically insignificant and negatively related with Ethiopian private commercial banks' lending behaviours.

5.2. CONCLUSIONS

By providing loans to individuals or companies contributing to economic development is the main objective behind establishments of commercial bank. This service is the main means by which the bank can obtain returns for profit and to continue its operations in the future.

The role of credit is considered to be the key to economic growth especially in developing countries as it stimulate the economy. As Commercial banks constitute a major portion of total assets and total deposits in the banking system in Ethiopia and extension of credit is one of the major functions of banking institution, the study attempts to capture the determinants of lending behaviours of private commercial banks Ethiopia.

As result, identifying and understanding the determinants of banks' lending Behaviour is essential, since provision of loan and advance is the base for existence of the banking business. The main objective of this study was investigating factors that determine the lending Behaviour of private commercial banks in Ethiopian.

Accordingly, and in recognition of the importance of lending to banks to enable them to continue to support the economy with the necessary needs of funds, it is necessary and important to know the factors governing the bank lending.

The study examined a sample of 10 banks they have been established before 2008. Many empirical literatures identified different variables as an influential factor of lending. However, based on the realistic context of Ethiopian commercial banks the researcher selected ten

variables namely: Volume of Deposit, Non-performing Loans, liquidity ratio, Cash Reserve Requirement, lending interest rate, market share return on asset, bank size, inflation rate and gross domestic product and To attain the objectives of the study and to test the formulated hypothesis, the study would use explanatory type of research design.

The regression result revealed that about 73.48% of the variation in the dependent variable is explained by independent variables that are included in this study's. The F- statistics is significant at the 5% level showing that there is a linear relationship between lending Behaviour and the whole independent variables used in the regression.

From the regression, it is found that, non-performing loan, liquidity ratio, volume of deposits, lending interest rate, market share and cash reserve requirement have statistically significant relationship with lending behaviours of private commercial banks. Among these variable, volume of deposit, liquidity ratio, market share and lending interest rate have a positive and statistically significant relationship with lending Behaviour of private commercial banks, other variable: cash reserve requirement, and non-performing loan have an negative and statistically significant relationship with Ethiopian private commercial banks' lending behaviours over the study period.

Market share influences the commercial bank lending Behaviour in Ethiopia positively and this implies that, if the banks have larger market share tends to grant more loans to the public. This is because larger market share banks are more diversified and they have a larger pool of funds available to support loan demand from the public. Similar to the market share, volume of deposit also has a positive relationship with the commercial bank lending. This implies that the bank with high volume of deposit will have more available fund to grant loan to the public. Therefore, the higher the capabilities of commercial banks to attract more deposits from their customers, the higher will be the ability for the commercial banks to grant loan to the public.

Even if the amount of interest that charged on loan increase, the demand for loan also increasing. This may be due to the borrower need the loan to make a more profitable investment that compensate for the amount charged by private banks or it may be lend out for a person who have not enough collateral and due to this on average may set high interest rate.

Another remaining variable: size of the bank, return on asset, and gross domestic product have a positive but insignificant relationship with lending Behaviour of private commercial bank except inflation rate of the country's economy which have negative and insignificant relationship with the lending Behaviour of private commercial banks..

Generally, the study found that non-performing loan, liquidity ratio, volume of deposits, lending interest rate, market share and cash reserve requirement are the main determinants of lending behavior of private commercial banks in Ethiopia. As well Gross domestic product has relatively insignificant with compared to the above significant factors. However, size of the bank, return on asset, and inflation rate did not have statistically significant relationship with lending behaviours of private commercial banks' in Ethiopian during the study period.

5.3. RECOMMENDATIONS

Based on the finding of this study the following suggestions were recommended to Ethiopian private commercial banks and to any regulatory bodies.

In order to obtain more funds and to facilitate their lending activities, it is better if, private commercial bank in Ethiopia creates effective strategies to attract and retain more deposit from depositors.

It is attractive if, Private Commercial banks in Ethiopia evaluate their customer's loans application mostly based on the repayment capacity of the borrowers as well as establish applicable credit policies and arrangements, and critically consider the performing ability of their debtors.

The negative sign of cash reserve requirement ratio shows negative relation between cash reserve ratio and lending's of the banks. In order to fulfil the reserve requirements without reducing credit extended, banks may attract more deposits, by driving up more deposit.

Authorized official should formulate policies that attract savings because saving the main source of investment, which enhance the lending position of the private banks and their lending performance.

Based on the results regarding the negative impact of non-performing Loan on bank lending, it is possible to recommend that any responsible parties (board of directors, bank credit controllers, and any responsible staff from bank president to customer service officers) work to encourage

the assets of the bank that will increase the ability to provide and to create loans with relatively low credit risk.

Suggestion for Further Research

For future research, it is recommended to test other internal factors as well as external factors. Further study could also include qualitative factors such as the government monetary and fiscal policies tools, the central bank's rules and regulations and the commercial banks' policies.
Other test techniques or methodologies such as logistic or probity regressions model in future study.
It is better if, the sample include the banks from different regions or countries either from east African, developing or developed countries to see whether the influence of variable on banks' lending behaviours is consistent or conflicting among the regions.

This study concentrated on exploring the determinants of lending Behaviour of private commercial banks in Ethiopia with a focus on bank and external factors. There is need for consideration of more other factors in future studies like political environment as well as other socioeconomic environment.

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APPENDIXES

List of private commercial bank in Ethiopia

No	Bank	Year	No	Bank	Year
1	Awash International Bank	1994	9	Oromia international bank	2008
2	DashenBank	1995	10	Zemen bank	2008
3	. Bank of Abyssiniya	1996	11	Bunna international bank	2009
4	Wegagen Bank	1997	12	Birhan international bank	2009
5	United Bank	1998	13	Abbey bank	2010
6	Nib international bank	1999	14	Addis international bank	2011
7	Cooperative bank of Oromia	2004	15	Debub global bank	2012
8	Loin international bank	2006	16	Enat bank	2012

Appendix- I: Descriptive Statistics of Data

```
summarize

    Variable |        Obs        Mean    Std. Dev.        Min         Max
-------------+--------------------------------------------------------------
         tla |        110    9.459456    .6399835       8.015        10.9
         bas |        110    10.07642    .5253787       8.092      10.984
         vod |        110    .7716909    .0409226        .643        .863
         mks |        110    .0902091    .0504143        .018        .263
         lqr |        110    1.129309    .1686479        .511      1.7612
-------------+--------------------------------------------------------------
         crr |        110    .0727273    .0392804         .05         .15
         roa |        110      2.7299    .9780911      -4.717       4.455
         lir |        110    .1246273    .0102338        .105        .147
         npl |        110    .0215455     .012986        .002        .088
        infr |        110    .1414182    .0801824        .073        .332
-------------+--------------------------------------------------------------
         gdp |        110    .0898182    .0252649        .019        .114
```

Appendix- II: Correlation Analysis of dependent and independent variables

```
.  corr tla bas vod lqr mks crr roa lir npl infr gdp
(obs=110)
```

	tla	bas	vod	lqr	mks	crr	roa	lir	npl	infr	gdp
tla	1.0000										
bas	0.5303	1.0000									
vod	0.5397	0.5708	1.0000								
lqr	0.4611	0.5557	0.3520	1.0000							
mks	0.3509	0.0888	0.0593	0.4605	1.0000						
crr	-0.5322	-0.5225	-0.5735	-0.5750	0.0833	1.0000					
roa	0.0198	0.0609	-0.0603	0.2120	0.2189	-0.0363	1.0000				
lir	0.4559	0.5417	0.3024	0.5043	-0.1527	-0.5059	-0.1398	1.0000			
npl	-0.5053	-0.2154	-0.0450	-0.0494	-0.0666	0.1373	0.0698	-0.2395	1.0000		
infr	-0.2451	-0.1244	-0.2590	-0.1177	0.0350	0.5242	0.1011	-0.0400	-0.0338	1.0000	
gdp	-0.1467	-0.4406	-0.1147	-0.4351	0.0395	0.3601	0.0299	-0.4649	0.1505	-0.1418	1.0000

Appendix- III: Test for normality of residuals, Shapiro-Wilk W test for normal data

```
swilk residual
```

Shapiro-Wilk W test for normal data

Variable	Obs	W	V	z	Prob>z
residual	110	0.98971	0.920	-0.185	0.57347

Appendix- IV: Normality assumption test graph

```
histogram residual, frequency normal
bin=10, start=-.91554326, width=.17777358)
```
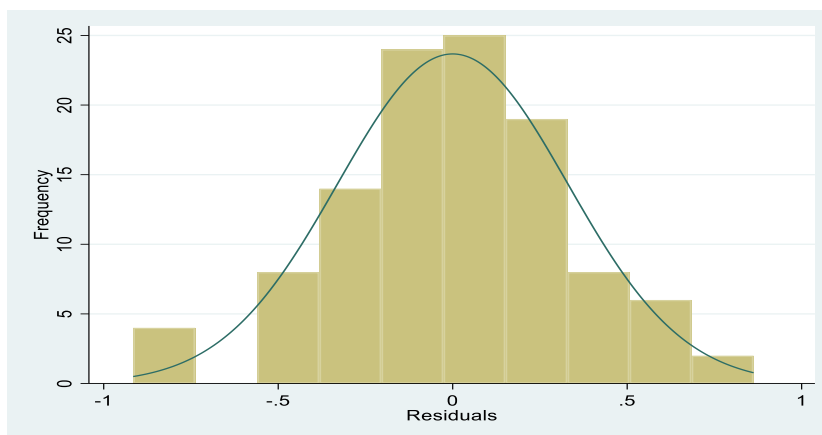
Appendix- V: Correlations matrix of explanatory variables

```
 corr bas vod lqr mks crr roa lir npl infr gdp
obs=110)

               bas      vod      lqr      mks      crr      roa      lir      npl     infr      gdp

       bas   1.0000
       vod   0.5708   1.0000
       lqr   0.5557   0.3520   1.0000
       mks   0.0888   0.0593   0.4605   1.0000
       crr  -0.5225  -0.5735  -0.5750   0.0833   1.0000
       roa   0.0609  -0.0603   0.2120   0.2189  -0.0363   1.0000
       lir   0.5417   0.3024   0.5043  -0.1527  -0.5059  -0.1398   1.0000
       npl  -0.2154  -0.0450  -0.0494  -0.0666   0.1373   0.0698  -0.2395   1.0000
      infr  -0.1244  -0.2590  -0.1177   0.0350   0.5242   0.1011  -0.0400  -0.0338   1.0000
       gdp  -0.4406  -0.1147  -0.4351   0.0395   0.3601   0.0299  -0.4649   0.1505  -0.1418   1.0000
```

Appendix- VI Serial autocorrelation of Durbin Watson test for Serial Correlation

```
. estat dwatson

Durbin-Watson d-statistic( 11,    110) =   1.528876

.
```

Appendix- VII: Variance Inflation Factor

```
. vif

     Variable  │        VIF        1/VIF

          crr  │       4.34      0.230410
          lqr  │       4.24      0.235655
          bas  │       2.40      0.416998
          mks  │       2.34      0.427106
          lir  │       2.32      0.431892
          vod  │       2.13      0.470368
         infr  │       1.93      0.518899
          gdp  │       1.74      0.573557
          roa  │       1.24      0.803309
          npl  │       1.23      0.814309

     Mean VIF  │       2.39
```

Appendix- VIII: Heteroscedasticity Test

```
. estat hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
        Ho: Constant variance
        Variables: fitted values of tla

        chi2(1)      =      0.02
        Prob > chi2  =    0.8904
```

Appendix- IX: Hausman specification test

```
. hausman fe re

                 ———— Coefficients ————
              |    (b)         (B)          (b-B)      sqrt(diag(V_b-V_B))
              |     fe          re        Difference          S.E.
--------------+----------------------------------------------------------------
          bas |  .112191      .12808      -.015889          .0413464
          vod | 6.771287     3.721622     3.049664          .8657227
          lqr | -.8866391   -.8258081     -.060831          .0911794
          mks | 6.147557     5.970739     .1768175          1.626477
          crr | -4.079819   -5.324414     1.244595          .6871512
          roa | .0096821     .0177973    -.0081152          .004417
          lir | 17.33021     20.14409     -2.81388          1.930623
          npl | -12.5182    -17.32785     4.809652          1.72608
         infr | -.181872    -.1949659     .0130939             .
          gdp | 1.93393      3.286911     -1.35298             .

               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)
                    =           3.83
           Prob>chi2 =         0.9547
           (V_b-V_B is not positive definite)
```

Appendix- X: Random effect panel model regression output

```
reg tla bas vod lqr mks crr roa lir npl infr gdp

    Source |       SS           df       MS            Number of obs   =     110
-----------+----------------------------------           F(10, 99)       =   27.43
     Model | 32.8051254         10   3.28051254          Prob > F        =  0.0000
  Residual | 11.8389683         99   .119585538          R-squared       =  0.7348
-----------+----------------------------------           Adj R-squared   =  0.7080
     Total | 44.6440937        109   .409578841          Root MSE        =  .34581

-------------+----------------------------------------------------------------
       tla |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       bas |    .12808    .0976307     1.31   0.193    -.0656405    .3218006
       vod |  3.721622    1.18017      3.15   0.002     1.379909    6.063336
       lqr | -.8258081    .4045822    -2.04   0.044    -1.628587   -.0230293
       mks |  5.970739    1.005321     5.94   0.000     3.975964    7.965514
       crr | -5.324414    1.756704    -3.03   0.003    -8.810096   -1.838731
       roa |  .0177973    .0377838     0.47   0.639     -.057174    .0927685
       lir |  20.14409    4.924934     4.09   0.000     10.37196    29.91623
       npl | -17.32785    2.826551    -6.13   0.000    -22.93634   -11.71936
      infr | -.1949659    .5734633    -0.34   0.735    -1.332842    .9429096
       gdp |  3.286911    1.731092     1.90   0.061    -.1479513    6.721772
      _cons |  3.624729    1.098969     3.30   0.001     1.444136    5.805322
```

Appendix- X: Summary of Secondary Data

tlo	roa	gdp	mks	lqr	lir	crr	infr	npl	bas	vod
8.9	3.446	0.106	0.158	1.1	0.115	0.15	0.081	0.047	9.9	0.751
9.6	3.994	0.114	0.154	1.109	0.115	0.15	0.332	0.036	10.005	0.769
9.74	3.577	0.087	0.154	1.133	0.115	0.1	0.241	0.027	10.077	0.786
9.89	3.131	0.099	0.164	1.153	0.115	0.05	0.081	0.023	10.172	0.806
9.96	3.423	0.103	0.163	1.166	0.115	0.05	0.074	0.023	10.302	0.81
10.1	2.94	0.104	0.158	1.201	0.115	0.05	0.101	0.017	10.378	0.821
10.19	2.782	0.08	0.157	1.217	0.12	0.05	0.073	0.015	10.471	0.829
10.35	2.803	0.109	0.154	1.235	0.14	0.05	0.099	0.015	10.623	0.839
10.49	3.069	0.077	0.156	1.451	0.14	0.05	0.146	0.008	10.742	0.863
9.46	3.756	0.09	0.166	1.655	0.14	0.05	0.126	0.007	10.873	0.766
9.46	3.17	0.019	0.159	1.7612	0.14	0.05	0.2016	0.035	10.951	0.766
8.43	2.392	0.106	0.133	1.1	0.105	0.15	0.081	0.032	9.092	0.78
8.9	2.669	0.114	0.121	1.104	0.115	0.15	0.332	0.033	9.166	0.796
9.02	2.788	0.087	0.113	1.108	0.115	0.1	0.241	0.026	10.984	0.808
9.29	2.878	0.099	0.111	1.115	0.115	0.05	0.081	0.02	10.87	0.81
9.57	2.526	0.103	0.099	1.129	0.115	0.05	0.074	0.018	9.342	0.812
9.7	2.339	0.104	0.095	1.137	0.115	0.05	0.101	0.015	10.394	0.817
9.77	2.365	0.08	0.094	1.154	0.122	0.05	0.073	0.014	10.456	0.821
10.9	2.706	0.109	0.104	1.206	0.145	0.05	0.099	0.013	10.539	0.837
10.44	1.964	0.077	0.093	1.221	0.145	0.05	0.146	0.012	10.657	0.844
10.66	2.18	0.09	0.089	1.2931	0.145	0.05	0.126	0.013	10.75	0.766
9.46	1.775	0.019	0.107	1.3213	0.145	0.05	0.2016	0.012	10.834	0.766
9.46	2.798	0.106	0.036	0.926	0.115	0.15	0.081	0.025	10.798	0.754
8.904	1.215	0.114	0.039	0.975	0.115	0.15	0.332	0.02	9.862	0.76
9	3.306	0.087	0.047	1.052	0.115	0.1	0.241	0.014	9.916	0.766
9.04	3.701	0.099	0.058	1.071	0.115	0.05	0.081	0.017	10.006	0.776
9.062	3.942	0.103	0.059	1.107	0.115	0.05	0.074	0.018	10.052	0.78
9.087	3.322	0.104	0.063	1.14	0.125	0.05	0.101	0.026	10.136	0.792
9.267	0.352	0.08	0.058	1.137	0.132	0.05	0.073	0.053	10.226	0.807
9.386	1.463	0.109	0.072	1.169	0.132	0.05	0.099	0.032	10.404	0.822
10.168	1.845	0.077	0.093	1.206	0.132	0.05	0.146	0.024	10.505	0.835
9.461	1.835	0.09	0.101	1.3125	0.135	0.05	0.126	0.034	10.594	0.766
9.461	2.509	0.019	0.103	1.3321	0.135	0.05	0.2016	0.028	10.755	0.766
9.703	2.934	0.106	0.263	1.124	0.112	0.15	0.081	0.022	9.759	0.739
9.785	3.337	0.114	0.236	1.139	0.112	0.15	0.332	0.02	9.906	0.75
9.91	4.052	0.087	0.236	1.156	0.112	0.1	0.241	0.021	9.922	0.761
9.948	3.256	0.099	0.207	1.158	0.112	0.05	0.081	0.022	10.017	0.773
9.974	3.416	0.103	0.192	1.166	0.112	0.05	0.074	0.019	10.051	0.772
10.062	3.121	0.104	0.169	1.198	0.112	0.05	0.101	0.017	10.137	0.792

10.104	2.726	0.08	0.156	1.203	0.125	0.05	0.073	0.017	10.209	0.803
10.257	2.393	0.109	0.14	1.228	0.125	0.05	0.099	0.02	10.321	0.813
10.367	2.321	0.077	0.129	1.236	0.125	0.05	0.146	0.01	10.438	0.823
9.461	2.001	0.09	0.124	1.245	0.125	0.05	0.126	0.006	10.474	0.766
9.461	2.47	0.019	0.121	1.2635	0.125	0.05	0.2016	0.002	10.582	0.766
8.766	3.451	0.106	0.026	0.565	0.108	0.15	0.081	0.016	9.771	0.744
8.83	2.759	0.114	0.026	0.709	0.121	0.15	0.332	0.014	9.888	0.757
8.987	3.531	0.087	0.029	1.005	0.121	0.1	0.241	0.015	9.944	0.771
9.12	4.122	0.099	0.027	1.025	0.121	0.05	0.081	0.013	9.999	0.777
9.188	2.946	0.103	0.029	1.066	0.121	0.05	0.074	0.013	10.075	0.781
9.452	3.179	0.104	0.038	1.096	0.121	0.05	0.101	0.017	10.157	0.8
9.634	2.807	0.08	0.043	1.11	0.121	0.05	0.073	0.02	10.237	0.808
9.739	2.812	0.109	0.044	1.132	0.128	0.05	0.099	0.02	10.341	0.818
9.868	3.09	0.077	0.042	1.146	0.128	0.05	0.146	0.025	10.448	0.823
9.461	3.106	0.09	0.046	1.21	0.128	0.05	0.126	0.019	10.553	0.766
9.461	2.465	0.019	0.059	1.2223	0.128	0.05	0.2016	0.024	10.633	0.766
8.406	3.728	0.106	0.107	1.084	0.11	0.15	0.081	0.039	9.776	0.691
8.442	3.768	0.114	0.103	1.095	0.12	0.15	0.332	0.033	9.852	0.705
9.569	3.72	0.087	0.098	1.107	0.12	0.1	0.241	0.027	9.918	0.725
9.657	3.437	0.099	0.087	1.111	0.125	0.05	0.081	0.025	9.961	0.734
9.733	2.99	0.103	0.086	1.132	0.125	0.05	0.074	0.021	10.031	0.762
9.838	2.809	0.104	0.083	1.143	0.127	0.05	0.101	0.015	10.122	0.799
10.076	2.68	0.08	0.085	1.153	0.123	0.05	0.073	0.018	10.199	0.791
10.33	2.407	0.109	0.082	1.196	0.138	0.05	0.099	0.016	10.323	0.813
10.513	2.158	0.077	0.078	1.205	0.138	0.05	0.146	0.015	10.426	0.823
9.461	2.386	0.09	0.077	1.226	0.138	0.05	0.126	0.01	10.528	0.766
9.461	2.74	0.019	0.076	1.2287	0.138	0.05	0.2016	0.008	10.628	0.766
8.567	2.671	0.106	0.021	0.511	0.121	0.15	0.081	0.011	9.248	0.683
8.821	2.887	0.114	0.03	0.627	0.121	0.15	0.332	0.011	9.398	0.69
9.008	2.085	0.087	0.035	1.024	0.121	0.1	0.241	0.013	9.565	0.705
9.21	1.998	0.099	0.04	1.068	0.121	0.05	0.081	0.015	9.815	0.72
9.403	3.058	0.103	0.054	1.083	0.121	0.05	0.074	0.013	9.866	0.728
9.673	2.828	0.104	0.062	1.119	0.121	0.05	0.101	0.013	10.059	0.749
9.713	1.491	0.08	0.064	1.131	0.122	0.05	0.073	0.018	10.029	0.771
10.256	2.092	0.109	0.067	1.145	0.13	0.05	0.099	0.019	10.249	0.785
10.599	3.63	0.077	0.072	1.184	0.13	0.05	0.146	0.018	10.475	0.803
9.461	2.684	0.09	0.074	1.21	0.13	0.05	0.126	0.016	10.621	0.766
9.461	2.623	0.019	0.063	1.2318	0.13	0.05	0.2016	0.013	10.72	0.766
8.417	3.308	0.106	0.123	1.087	0.118	0.15	0.081	0.036	9.135	0.643
8.515	3.404	0.114	0.121	1.103	0.118	0.15	0.332	0.028	9.257	0.686
8.611	3.608	0.087	0.113	1.109	0.122	0.1	0.241	0.023	9.391	0.718
9.173	3.004	0.099	0.105	1.117	0.122	0.05	0.081	0.019	9.469	0.728

9.705	2.545	0.103	0.097	1.13	0.122	0.05	0.074	0.014	9.558	0.741
9.836	2.144	0.104	0.1	1.143	0.132	0.05	0.101	0.012	9.768	0.776
9.931	2.144	0.08	0.089	1.157	0.14	0.05	0.073	0.013	9.91	0.784
10.079	1.949	0.109	0.083	1.199	0.121	0.05	0.099	0.012	10.04	0.802
10.172	2.298	0.077	0.083	1.215	0.139	0.05	0.146	0.013	10.156	0.813
9.461	2.36	0.09	0.081	1.2354	0.139	0.05	0.126	0.017	10.309	0.766
9.461	2.27	0.019	0.078	1.2451	0.139	0.05	0.2016	0.016	10.502	0.766
8.393	2.113	0.106	0.102	1.083	0.118	0.15	0.081	0.019	9.049	0.652
8.464	2.684	0.114	0.119	1.097	0.118	0.15	0.332	0.035	9.293	0.684
8.552	2.099	0.087	0.097	1.105	0.118	0.1	0.241	0.024	8.445	0.716
9.671	3.664	0.099	0.099	1.112	0.118	0.05	0.081	0.022	8.092	0.721
9.663	2.905	0.103	0.091	1.112	0.118	0.05	0.074	0.017	10.089	0.726
9.783	2.793	0.104	0.084	1.139	0.118	0.05	0.101	0.016	10.179	0.737
10.175	2.512	0.08	0.076	1.15	0.123	0.05	0.073	0.014	10.152	0.755
10.315	2.866	0.109	0.07	1.194	0.147	0.05	0.099	0.014	10.212	0.769
10.417	3.283	0.077	0.074	1.212	0.147	0.05	0.146	0.012	10.377	0.778
9.461	2.173	0.09	0.066	1.2234	0.147	0.05	0.126	0.022	10.502	0.77
9.461	2.449	0.019	0.068	1.2354	0.147	0.05	0.2016	0.02	10.529	0.77
8.584	-4.717	0.106	0.018	0.531	0.115	0.15	0.081	0.016	9.024	0.744
8.81	2.348	0.114	0.023	0.608	0.115	0.15	0.332	0.018	9.208	0.749
8.015	2.31	0.087	0.03	1.008	0.115	0.1	0.241	0.018	9.379	0.765
8.137	3.337	0.099	0.033	1.026	0.115	0.05	0.081	0.085	9.512	0.771
8.155	2.127	0.103	0.033	1.054	0.115	0.05	0.074	0.088	9.594	0.785
8.334	3.484	0.104	0.033	1.079	0.122	0.05	0.101	0.055	9.688	0.801
8.112	3.311	0.08	0.038	1.102	0.122	0.05	0.073	0.044	9.868	0.805
8.399	2.927	0.109	0.037	1.109	0.132	0.05	0.099	0.046	10.685	0.814
9.361	2.446	0.077	0.037	1.121	0.132	0.05	0.146	0.032	10.097	0.766
9.599	3.56	0.09	0.032	1.1325	0.132	0.05	0.126	0.022	10.167	0.822
9.5461	4.455	0.019	0.033	1.1357	0.132	0.05	0.2016	0.017	10.267	0.766