



**ADDIS ABABA UNIVERSITY**  
**SCHOOL OF GRADUATE STUDIES**

**Determinants of Commercial Banks' Lending: The Case of  
Selected Private Commercial Banks in Ethiopia**

**By: Yared Bekele**

**A Thesis Submitted to the Department of Accounting and Finance, College of Business and  
Economics, Addis Ababa University, In Partial Fulfillment of the Requirement for Degree  
of Masters of Accounting and Finance**

**Addis Ababa University**

**Addis Ababa, Ethiopia**

**March, 2020**

**ADDIS ABABA UNIVERSITY  
COLLEGE OF BUSINESS AND ECONOMICS  
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## **Statement of Declaration**

This is to certify that the thesis prepared by Yared Bekele, entitled: Determinants of Commercial Banks' Lending: on the selected private Commercial Bank of Ethiopia and Submitted in partial fulfillment of the requirements for the Degree of Master of Science (Accounting and Finance) complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

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## **Approval**

### **Addis Ababa University School of Graduate Studies**

This is to certify that the thesis prepared by Yared Bekele Girmu, entitled: Determinants of Commercial Banks' Lending: on the selected private Commercial Bank of Ethiopia and submitted in partial fulfillment of the requirements for the degree of Masters of Science in Accounting and Finance complies with the regulations of the university and meets the accepted standards with respect to originality and quality.

Signed by the Examining Committee:

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Chair of Department of Graduate Program Coordinator

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## List of Acronyms

<b>AIB</b>	Awash International Bank SC
<b>DB</b>	Dashen Bank SC
<b>UB</b>	United Bank SC
<b>BOA</b>	Bank of Abyssinia SC
<b>NIB</b>	Nib International Bank
<b>LIB</b>	Lion International Bank SC
<b>CBO</b>	COOPERATIVE Bank of Oromia
<b>OIB</b>	Oromia International Bank
<b>BIB</b>	Bunna International Bank
<b>BBI</b>	Birhan International Bank
<b>ZB</b>	Zemen Bank
<b>NBE</b>	National Bank of Ethiopia
<b>VOD</b>	Volume of deposit
<b>CAA</b>	Capital adequacy
<b>NPL</b>	Non performing loan
<b>CAR</b>	Cash reserve
<b>EQI</b>	Equity investment
<b>LQ</b>	Liquidity
<b>LER</b>	Legal reserve

## **ABSTRACT**

*The study was aimed to investigate the determinants of commercial banks' lending on the selected private commercial banks in Ethiopia based on Bank specific, regulatory and macro-economic factors of the country. In order to achieve research objective the researcher used quantitative research approach. The analyses were performed using panel data derived from the financial statements of sampled Ethiopian commercial banks and macro-economic data from National bank of Ethiopia. Ordinary least square (OLS) technique was applied to determine the impact of those predictor variables on commercial bank lending. In the study volume of deposit, cash reserve requirement, legal reserve requirement, non-performing loan, liquidity ratio, capital adequacy ratio, equity investment, and GDP of the country were considered as independent variables whereas commercial banks' lending or loan and advances was considered as dependent variable. The result of the regression analysis reveals that Ethiopian commercial banks' lending is determined by volume of deposit, non-performing loans, legal reserve requirement and GDP growth, positively. On the other hand capital adequacy, legal reserve requirement, equity investment and liquidity have insignificant impact on Ethiopian commercial banks' lending or loan and advances. The study suggests that Ethiopian commercial banks should enhance their strategies in mobilizing deposits from the public and have to strive to strength their asset quality. In addition commercial banks' should administer their lending activity by considering internal factors, existing economic situation, competitive environment, regulatory measures and their target customers.*

**Key words:** *lending, legal reserve requirement, volume of deposit, non-performing loans, GDP*

# CHAPTER ONE

## INTRODUCTION

### 1.1. Background of the study

Commercial banks are financial service providers to the general public, companies and business units and their by ensure social and economic stability and facilitate sustainable economic growth of a country. Among others, credit creation is the most significant function of commercial banks (Brooks, 2008).

Banking sector is the backbone of any economy and plays an important role in the economic development of a country (Barth et al., 2006). It plays a vital role in the economic resource allocation of countries (Ongore, 2013). They contribute to economic growth of the country by making funds available for investors to borrow as well as financial deepening in the country (Otuori, 2013). They engaged in the business of accepting deposits from depositors and channeling the resources to those who needs them. They are also engaged in the areas like money transfer and international banking operations i.e. import and export businesses through their financial intermediation role. Beyond the intermediation function, the financial performance of banks has critical implications for economic growth of countries. Good financial performance rewards the shareholders for their investment. This, in turn, encourages additional investment and brings about economic growth. In order to provide a sustainable intermediation services in the economy and reasonable reward for the shareholders, banks need to be profitable. They can do so, if they generate necessary income to cover their operational cost. Then again, poor banking performance can lead to banking failure and crisis which have negative repercussions on the economic growth (Ongore and Kusa, 2013).

The credit facilities are the most important source of financing the investors to complete projects, investors depend on the credit facilities to establish their projects granted by the commercial banks, credit facilities have several forms and most accepted one is the direct credit facilities, it is known as “those facilities that pay for the customer in cash or credited to their account with the bank, including the current account debtor, bills discounted and loans” (Tarawneh, 2002), and

here it must be noted that the most important and dangerous for achieving profit (Firas Mohammed Al-rawashdeh, 2013).

According to previous studies (Kanwal, 2013; Pan and Pan, 2014; Ongore and Kusa, 2013; Kiganda, 2014) and banking literature, determinant of commercial banks' lending is categorized into two main groups: external and internal. The internal determinants are sometimes called microeconomic determinants or inherent performance which are specific to each bank and that, in many cases, are the direct result of managerial decisions, so such management effects will definitely affect the operating result of banks. External determinants, on the other hands, are variables that reflect economic and legal environment which are out of the control of the management of the banks. They are again grouped in to two Parts as factors relating to the industry structure and to the macroeconomic environment which the banking system operates.

Financial crises in 2007 which began from United State subprime mortgage crisis create a big recession in the world economy. At that time financial institution write-off losses of worth billions of dollars which forced them to decrease their employees and the government also incurred a loss in subsidizing these financial institutions. In addition, this crises show there was a financial risk created in the banking sector. The bankruptcy in the financial sector has a contagion effect that can lead to overall financial crisis and economic tribulation. Moreover, the financial crisis incurred in the banking sector transmits from one country to another country (IMF, 2008).

Today's banks seek to earn income by lending money out at a higher interest rate than they pay depositors for use of their money. Banks usually make loans up to the point where they can no longer do so because of the reserve requirement restriction. The banks required amount of reserves is equal to the required reserve ratio times the total deposits in the bank (Case, 2007). The banking industry considers lending as their most important function for utilization of funds. Since the major portion of gross profit of the industry is earned from loans; the administration of loan portfolios seriously affects the profitability of banks (Wei-shong and Kuo-chung 2006, cited in Zewdu). Loan is equally important for borrowers (the private sector in particular) as it remains to be the most important external financing source. Hence the availability or constraint as well as restriction on free access to loan affect both banks and borrowers.

Banks restrict or limit their loan rendering because of many reasons. These create problem to investors and business people in accomplishing their business plans. On the other hand, from the banks side, loan is one of the principal sources of income. If banks give limited or reduced loans to their customers, their income will be reduced and the overall performance may be negatively affected. Theoretically, there are many reasons why banks reduce or limit lending. Some of these include liquidity problem, capital position, government fiscal and monetary policies, and bank health (non-performing loans).

In Ethiopian context, according to National Bank of Ethiopia latest report, the economy registered 9 percent growth in 2018/19, faster than the 7.7 percent expansion recorded in the previous year. This growth was attributed to 12.6 percent rise in industrial output, 11 percent increase in service sector and 3.3 percent expansion in agriculture which shows a slight declination from previous year. Besides, the country financial sector has remained safe, sound, well capitalized and profitable. As a result, commercial banks opened 807 new branches in 2018/19 alone which increased the total number of branches to 5,564 from 4,757 a year ago. The banks also increased their deposit mobilization by 23.2 percent, loan collection by 18.1 percent and loan disbursement by 42.5 percent which shows a great improvement compared with the previous same period. Their non-performing loan was within the required ceiling of 5 percent as per NBE report.

A number of studies have attempted to identify the effect of a particular variable on the commercial banks' lending activities. It should be noted that very often, the authors found different results even contradictory (Sintayehu, 2016; Zelalem, 2015; Aderajew, 2017; Berhanu, 2016; Berhanu, 2015; Dereje, 2018; Habtamu, 2019).

This paper has used historical formation and/or years of existence in the industry so as to systematically analyze the effects of bank specific factors over profitability. According to the information from the NBE (regulatory organ) Ethiopian commercial banks can be broadly categorize into three major strata's: Large, long stayed commercial banks that have existed long before the financial sector reform measures are introduced (CBE and CBB), Medium: banks that are established immediately after the financial liberalization, banks that have existed above a decade are found in this category. Hence, all the target banks selected for this particular study are those banks which stay in the business ten and more years. To be specific, Awash International

Bank (AIB), Bank of Abyssinia (BOA), Dashen Bank SC (DB), Nib International Bank SC (NIB), United Bank SC (UB), Wegagen Bank SC (WB), Cooperative Bank of Oromia (CBO), Lion International Bank (LIB), oromia International Bank (OIB), Zemen Bank (ZB), Bunna International Bank (BIB), and Berhan International Bank (BBI) are the banks that were selected for the desired end and/or study incorporating the variables which are not used on the previous studies.

## **1.2. Statement of the problem**

It is crucial for bank management and regulators to know the drivers of the lending activities of commercial banks in Ethiopia to sustain the existing uninterrupted financial growth of the sector and the success of newly implemented “Home Growth Economic Reform Program”. This is because commercial banks can create strategies to enhance their lending activities as well as improving their interest income. While, the regulator can formulate effective policies to ensure that the bank lending can continuously support the growth of Ethiopian economy.

There are number of studies that have examined the determinants of commercial bank lending in various countries around the globe (Sarath & Pham, 2015; Tomak, 2013; Rabab'ah, 2015; Amidu, 2014; Chernykh & Theodossiou, 2011; Imran & Nishat, 2013). Previous studies investigate the determinants of bank lending from the perspective of bank-specific characteristic and macroeconomic determinants. Sarath & Pham (2015) utilize bank specific determinants which include non-performing loan, volume of deposits, and liquidity to investigate the determinants of bank lending in Vietnam. Chernykh & Theodossiou (2011) employ bank size and non-performing loans as variables to examine the bank lending in Russia. Tomak (2013) employs macroeconomic determinants like gross domestic product and lending rate as the explanatory variable to examine the determinants of bank lending in Turkey from year 2003 to year 2012. While, Olokoyo (2011) uses gross domestic product, lending rate, and cash reserve requirement as variables to investigate the determinants of bank lending in Nigeria. Although there are many studies investigate the determinants of bank lending across countries around the globe, whereas, there are limited studies investigating the determinants of commercial bank lending in Ethiopia.

The literatures that relates closely with the study on bank lending in Ethiopia is the studies done by Birhanu (2016) investigated determinates of lending decisions and their impact on financial performance of commercial banks in Ethiopia. It was conducted on bank specific factors and found that Liquidity ratio, Capital adequacy ratio, Inflation rate and gross domestic product had positive and statistically significant effect on banks' lending. On the other hand nonperforming loans, Cash reserve requirement and lending interest rate also had negative and statistically significant effect on banks' lending. Volume of deposit had positive but insignificant effect on banks' lending. Therefore, he concluded that banks' lending had an impact on the financial performance of private commercial banks in Ethiopia.” But it opposed the finding of Aderajew (2017).

Amano G (2014) also investigated the effect of bank specific and macroeconomic factors on bank lending behavior of commercial banks. He found that volume of deposit and bank size had positive and significant impact on loan and advance. Liquidity ratio and interest rate had negative and significant impact on loan and advance. Cash reserve requirement, and inflation rate had positive and significant impact on loan and advance but the coefficient sign was not as expected. Real GDP growth rate had statistically insignificant impact on banks' loan and advance which contradicts the study result of Birhanu (2016) stated there is significant effect.

Referring the above mentioned studies, the researcher learnt, the determinants of bank lending yet not covered adequately due to the role which play on the country economic fate. In addition to the above facts, this study tries to incorporate additional macro-economic variable which are legal reserve together with other bank specific and macro-economic factors such as capital Adequacy, cash reserve requirement, Equity investment, liquidity ratio, volume of deposit, Non-performing loan and gross domestic product and also checks the consistency of the result of the above study on systematic selected commercial private banks operated on the country for the last ten and above years out of the total sixteen private commercial banks in Ethiopia excluding two state owned banks which are not affect most of the variables used here in the study. Finally this study was designed to contribute to the current literature by providing some evidence on the factors of Commercial banks' lending of private commercial banks in Ethiopia.

### **1.3. Objective of the study**

#### **1.3.1. General Objective**

The general objective of this study is to examine the determinant of Bank lending on the commercial banks in Ethiopia.

#### **1.3.2. Specific Objectives**

Having the aforementioned problem and general objective in mind, the researcher addressed the following specific research objectives:

1. examining the impact of volume of deposit, liquidity ratio, and credit risk on lending behavior of Ethiopian commercial banks;
2. analyzing the significance of bank specific determinants of lending behavior of Ethiopian commercial banks;
3. Examining the impact of cash reserve requirement, legal reserve requirement, capital requirement, equity investment and Gross Domestic Product on lending behavior of Ethiopian commercial banks; and
4. analyzing the significance of macroeconomic determinants of lending behavior of Ethiopian commercial banks;

### **1.4. Hypothesis of the Study**

In line with the broad purpose statement the following hypotheses was also formulated for investigation. Hypotheses of the study stands on the different theories related to banks' lending decision as well as banks' financial performance that has been developed over the years by banking area researcher's and past empirical studies of related to banks' lending decision Birhanu (2016), Amano G (2014), Aderajew (2017). The results from the literature review to be established in the next chapter were used to establish expectations for factors determine banks' lending decision using bank-specific and macroeconomic variables. Hence, based on the objective, the present study seeks to test the following eight hypotheses:

- ✘ Hypothesis 1: Volume of deposit has positive and significant impact on Ethiopian commercial banks' lending or loan and advances.
- ✘ Hypothesis 2: Liquidity ratio has positive and significant impact on Ethiopian commercial banks' lending or loan and advances.
- ✘ Hypothesis 3: Non performing loan has negative and significant impact on Ethiopian commercial banks' lending or loan and advances.
- ✘ Hypothesis 4: Legal reserve requirement has negative and significant effect on bank lending of commercial banks in Ethiopian.
- ✘ Hypothesis 5: Equity investment has negative and significant effect on bank lending of commercial banks in Ethiopian
- ✘ Hypothesis 6: Cash Reserve requirement has negative and significant effect on bank lending of commercial banks in Ethiopian
- ✘ Hypothesis 7: Capital adequacy has positive and significant effect on bank lending of commercial banks in Ethiopian
- ✘ Hypothesis 8: GDP growth of the country has positive and significant impact on Ethiopian commercial banks' lending or loan and advances

### **1.5. Significance of the study**

The study will have a numerous advantages for different organs such as policy makers, companies and other stakeholders: Besides, National Bank of Ethiopia can use the study or the recommendations included in this paper as a base to improve its policy or regulation related to the restriction of allocating the mobilized funds by private commercial banks after carefully evaluating its effect. And also, the results of this study will create improvement for banks about the clearly identify the factors of bank lending and give the opportunity to influence NBE by providing feedback during policy formulation and implementation.

Moreover, to the above benefit there is no sufficient research in Ethiopia with the objective of investigating the determinants of bank lending on the private commercial banks in Ethiopia. As a result, this study makes a number of contributions to other researchers as a source of reference and as a stepping one for those who want to make further study on the area afterwards. Furthermore, the findings of the study are of immense benefit to management of commercial banks in terms of

using them as inputs in formulating strategies, policies, and guidelines with which to effectively and efficiently manage their credit activities in the economy.

## **1.6. Scope and limitation of the Study**

The study was limited to determine the independent variables of bank lending are on Ethiopian commercial banks and this study was focuses only on private commercial banks in Ethiopia which include twelve private commercial banks. In this study the researcher consider ten fiscal years i.e. from 2010 to 2019 for twelve banks those start operation before 2010 namely Awash International Bank (AIB), Bank of Abyssinia (BOA), Dashen Bank SC (DB), Nib International Bank SC (NIB), United Bank SC (UB), Wegagen Bank SC (WB), Cooperative Bank of Oromia (CBO), Lion International Bank (LIB), Oromia International Bank (OIB), Zemen Bank (ZB), Bunna International Bank (BIB), and Berhan International Bank (BBI); were considered in this study with unbalanced panel data. The study didn't include state owned bank due to their unique features. Such as Development bank of Ethiopia have unique business motive than other commercial banks and commercial bank of Ethiopia which has long history and outstanding performance in Ethiopian banking industry and some of NBE directives are exclude both banks. In addition, since it is not possible to incorporate all factors that determine bank lending in one study, only three bank-specific and five macroeconomic determinants are included in this study.

## **1.7. Organization of the study**

The research paper was organized in to five chapters. Chapter one contained an introduction part where back ground of the study, statement of the problem, objectives of the study, hypothesis, scope, significance and limitation of the study were presented. Chapter two reviewed literatures in which theories, empirical evidence and conceptual frame work were identified. Chapter three contained research methodology where research design, research approach, population, sampling method, sample size, sources of data, instruments, data analysis technique, model specification, variable definition and hypothesis development were covered. Chapter four focused on the results and discussion in which the findings results that were interpreted. Finally, Chapter five were brought of research to an end with conclusion and possible recommendation.

## **CHAPTER TWO**

### **REVIEW OF LITRATURE**

The focus of this chapter is review of the development of commercial banks in Ethiopia, the theoretical and conceptual literatures related to commercial banks' lending decision. It also incorporates the empirical studies on commercial banks' lending decision and reviews of related studies that have been carried out on the determinants of lending behavior of Ethiopian commercial banks. Finally, the last section provides the conclusion and shows the knowledge gap in Ethiopia context and present the conceptual framework for the study.

#### **2.1. Origin and Development of Banking Industry in Ethiopia**

The history of modern banking in the Ethiopia traced back to 1905, when the Bank of Abyssinia established based on a fifty year franchise given to the British-owned National Bank of Egypt (Alemayehu, 2006). A significant feature of the commercial banking in the country then was innovative nature rather than its contribution to growth and its competitive nature. As the society was new for the banking services, banks had faced difficulty in familiarizing the public and they faced considerable cost of installation (Zarayehu et al., 2013).

Within a century operation, the banking sector has passed four distinct phases. The first phase is the period of introduction of modern banking, started with the establishment of Bank of Abyssinia in 1905. In 1908 a new development bank (Societe Nationale "Ethiope Pour le Developement del" Agriculture et du Commerce) and two other foreign banks (Banquedel "Indochine and the Compagniedel" Afrique Orientale) were also established (Degefe, 1995 cited in Alemayehu, 2006). As noted in Alemayehu (2006) these banks were criticized for being wholly foreign owned. In 1931 the Ethiopian government purchased the Abyssinian Bank, which was the dominant bank, and renamed it the Bank of Ethiopia i.e., the first nationally owned bank on the African continent (Gedey, 1990 cited in Alemayehu, 2006).

During the five-years of Italian occupation (1936-1941) banking activity of the country was relatively expanded. In that time, the Italian banks were particularly active. As a result, most of the banks that were in operation during this period were Italian banks namely, Banco di Italy, Banco di

Roma, Banco di Napoli, Banco Nazionale, Casa de Creito and Society Nazionale di Ethiopia. After independence from Italy's brief occupation, where the role of Britain was paramount owing to its strategic planning during the Second World War, Barclays Bank was established and it remained in business in Ethiopia between 1941 and 1943 (Degefe, 1995 cited in Alemayehu, 2006).

This era lasted up to 1963 when the functions of Central Bank and Commercial Banks separated and private banks and insurance companies started to emerge.

The second phase of development is (1964-1974) referred as a takeoff stage which accelerated growth until it was hampered by the nationalization measure of the socialist government. The establishment of privately owned Addis Ababa Bank in 1964 and its growing branch network created relatively better banking service among commercial banks, with concentration of their branch offices in big towns and trade routes in the country. The then monetary and banking system gave at most emphasis to stability and balanced growth of the economy.

Following this, like the rest of economic sector, the banking sector too entered its third phase (1975-1991) which was referred as the stagnation period. During this period all the banks emerge in the second phase was merged and the government left with only three banks namely: the National Bank of Ethiopia (NBE), the Commercial Bank of Ethiopia, and Agricultural and Industrial Development Bank.

The fourth phase is after the fall of the Derg regime in 1991 when the liberalization policy introduced by the Federal Democratic Republic of Ethiopia (FDRE) in 1992 was new era for banking sector in the country (EEA, 2011). Currently, there are eighteen banks in the country comprising one state owned Development Bank and one state owned commercial banks. The remaining sixteen banks are privately owned commercial banks.

The National Bank of Ethiopia, in order to protect depositors and stabilize macroeconomic conditions of the country, issues different regulations and directives and undertakes monitoring and controlling activities on commercial banks operating in the country. These regulations and supervisions are intended to stabilize the country's economic environment. Thus, the researcher was interested to examine the effect of these bank regulations on the lending activities of private commercial bank with other bank specific commonly used variables in different studies.

## **2.2. Theoretical aspects of bank lending behavior**

The primary role of a bank is intermediation by way of collecting savings from depositors and making these savings available as loans to borrowers. In performing this function, banks are regulated often by the environment within which they operate. It is argued that banks cannot compensate an increased failure risk by charging higher interest rates (Blinder, 1983). This therefore prompts any financial institution to request for collateral from the borrower to minimize losses that might occur from loan defaults.

However, there are challenges experienced for banks to experience growth. This is because of exposure to risks while performing their roles. By solving the problem of asymmetric information among agents and by diversifying risks, Banks manage to reduce costs that would be incurred on the exchange of financial funds. This therefore enables their efficient allocation of financial resources within the economy (Levine K. a., 1993). Economic decisions related to consumptions and investments are thus made possible through the financial system since it is aimed at increasing productivity growth of the economy (Karimi, 2006).

As posited by different theories, bank's lending behavior is a culmination of a number of factors both external and internal to the bank. However, each theory addresses effects of a certain identical variables on lending behavior by banks (Ewert et al., 2000). For instance, bank lending channel theory only looks at the effects of reserve requirements while pro-concentration theory focuses on how bank capitalization affects the bank's lending behavior. Alternatively, Kashyap, et al., (1993) argues that bank lending reduces through monetary contraction as posited by the Keynesian theory. This implies credit available from the banks is reduced. Further, within finance literature, there exists several theories with regard to banks' lending behavior. In this study, the theories reviewed are summarized as follows:

### **The financial intermediation theory of banking**

One of the major functions of any commercial bank is providing loan to the business society. Banks collect money from those who have excess money and lend it to others who need money for different purpose. Therefore, banks intermediary function play vital role in the economic activity. (Athavale, 2004) In the words of recent authors, "Banks create liquidity by borrowing short and

lending long” (Dewatripont, 2010), meaning that banks borrow from depositors with short maturities and lend to borrowers at longer maturities.

On the study of Athavale, (2004) made in the U.S using firm growth model classified different theories related to banks roles, the first theory assigns banks a unique role in the resolution of information asymmetry means banks help financial market to overcome asymmetric information by screening, contracting with and monitoring borrowers. The second theory, monetary theory, assigns banks a unique role in money creation and the transmission of monetary policy. In addition, they showed banks willingness and ability to lend.

According to Athavale, (2004) 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 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, 2010). It follows that customers’ deposit is the primary source of bank loan and hence, increasing or guaranteeing deposits directly has a positive effect on lending.

The principal profit- making activity of commercial banks is making loans to its customers. In the allocation of funds to earn the loan portfolio, the primary objective of bank management is to earn income while serving the credit needs of its community (Reed and Gill, 1989, mentioned on Amano, 2014). Lending represents the heart of the industry. Loans are the dominant asset and represent 50-75 percent to total amount at most banks, generate the largest share of operating income and represent the banks greater risk exposure (Mac Donald, 2006).

Cicfa and Hincu (2009) after analyzing different performance evaluation methods and risks in Romania presented the usefulness of commercial banks. Bank represents the core of the credit for any national economy. In turn, the credit was found to be the engine that put in motion the financial flows that determine growth and economic development of a nation. As a result, any efficiency in the activities of commercial banks has special implication on the entire economy of any country.

M.H.Riordan (1993), hold that “Banks serve as financial intermediaries between borrowers and lenders. More precisely, banks borrow from depositors and lend to investors...In a capitalist

economy most investment project are owned and managed by private entrepreneurs and firms. Generally these investors lack enough equity fully to finance their projects and consequently seek loans to complete financing. Banks, on the other hand, aggregate deposits to make these loans”

To create sustainability on deposits and alternative sources of loans, banks created different solutions. The first method is using insurance guarantee for deposits and second method is selling securities. Opiela (2000) showed that banks with partial guarantees have a stronger loan response to monetary policy than banks with full guarantees. Furthermore, the weak response of the fully guaranteed banks attributed to their ability to raise low-reserve, uninsured time deposits relative to partially covered banks in Poland. Keeton (1993), indicated that the willingness of banks to fund loans by selling securities or issuing large certificate of deposits (CDs) insulates bank lending from changes in deposits.

A lot has been reviewed in terms of lending activities of various commercial banks. Some opinions deliberated on the factor responsible for banks willingness to extend much credit to some sector of the economy, while some discussed effect of such extension of credits on productivity and output. Most of these earlier studies agreed on the fact that it is logical for banks to have some basic lending principles or consideration to act as a check in their lending activities. It is imperative to highlight and consider some factor that economist and professionals alike have proposed as virtually significant in explaining the determinants of commercial banks’ lending behavior (Athavale, 2004)

In the view of Nwankwo (2000), “credit constitutes the largest single income-earning asset in the portfolio of most banks. This explains why banks spend enormous resources to estimate, monitor and manage credit quality”. This is understandably, a practice that impact greatly on the lending behavior of banks as large resources are involved.

As posited by different theories, bank’s lending behavior is a culmination of a number of factors both external and internal to the bank. However, each theory addresses effects of a certain identical variables on lending behavior by banks (Ewert et al., 2000). For instance, bank lending channel theory only looks at the effects of reserve requirements while pro-concentration theory focuses on how bank capitalization affects the bank’s lending behavior. Alternatively, Kashyap, et al. (1993) argues that bank lending reduces through monetary contraction as posited by the Keynesian theory.

This implies credit available from the banks is reduced. Further, within finance literature, there exists several theories with regard to banks' lending behavior. In this study, the theories reviewed are summarized as follows:

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

This theory of banking also argues that each bank is a financial intermediary. However, it disagrees with the former theory concerning the collective, macroeconomic role of banks: it argues that, together, the banking system creates money, through the process of 'multiple deposit expansion'. Thus when Gurley and Shaw (1955) argued that banks and non-bank financial institutions are largely similar in that they were both financial intermediaries able to 'create financial claims', they were challenged during the 1950s and 1960s in influential.

Wikipedia, fractional reserve banking is the most common form of banking practiced by commercial banks worldwide. It involves banks accepting deposit from customers and making loans to borrowers, while holding in reserve an amount equal to only a fraction of the bank's deposit liabilities. Bank reserves are held as cash in the banks or a balance in the bank's account at central bank. The minimum amount that banks are required to hold in liquid assets is determined by the country's central bank, and is called the reserve requirement or reserve ratio. Banks usually hold more than this minimum amount, keeping excess reserves.

### **Theory of multiple lending**

It is found in literature that banks should be less inclined to share lending (loan syndicate in the presence of well-developed equity markets and after a process consolidation. Both outside equity; and mergers and acquisition increases banks' lending capacity, thus reducing that need of greater diversification and monitoring through share lending (Carletti et al, 2006; Ongene & Smith, 2000; Karet et al, 2004; Dgreyse et al, 2004).

### **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.<sup>1</sup> 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; Padilla and 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.

But according to Carletti (2006), when one considers explicitly banks' incentives to monitor, 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. Thus, differently from the classical theory of banks as delegated monitors, their paper suggested that multiple-bank lending may positively affect overall monitoring and increase firms' future profitability.

### **Credit Market Theory**

The neoclassical credit market model suggests that the terms of credits clear the market. In this model, the interest rate is the only price mechanism that can clear the credit market given that the loan collateral remains constant. With a growing demand for credit and a given loan and advances supply by the banks, the interest rate can only rise if the credit market is clear, and the reverse is true. The higher the default risks of the borrower, the higher the interest premium (Ewert et al., 2000) so as to compensate against any possible losses. The increase in demand for credit brought about by low interest rates eventually may lead to depreciation of currency. Central bank therefore must adjust the interest rate to increase the cost of borrowing. Commercial banks in their turn must increase their rates and therefore thus contracting their lending activities in the long run. Although, central bank requires banks to deposit a certain amount of money with them, increased cash requirement ratio also acts as a mechanism of restricting credit available taking consideration of

macro-economic environment (Vazakidis, 2009). According to Bolton and Freixas (2001), this leaves commercial banks with close to no alternative other than lowering lending volumes.

### **Quality Uncertainty Theory**

The idea of quality uncertainty in financial works was introduced by Leland and Peyle (2012) and Ramakrishnan and Takor (1984). According to their representations, they give evidence that quality uncertainty also occurs on financial markets and has an effect on the market partakers. There exists information asymmetry where the participants are unsure of the quality of the service or product being offered. According to a 1970 paper by Economist George Akerlof, he points out that information asymmetry between buyers and sellers may exist in the market leading to quality of goods traded in the market diminishing thus leaving low quality goods in the market. When there is existence of quality uncertainty, there is bound to be adverse selection leading to a situation where high quality performance or products in this case loans, to deteriorate due to comparably low pricing or lending levels. Kierner (1990) points out that provision of quality loans by financial institutions may decline due to comparably low rating or lending levels.

### **Moral Hazard Theory**

Moral hazard occurs when a contract is executed among two parties. The two types of moral hazard are hidden information and hidden action (Arrow, 1985). Hidden information occurs when one contract party does not unveil the full range of his or her options and the consequent risk factors. Hidden action occurs when one contract party chooses options that are not in the interest of the counterparty and cannot be observed and managed thus moral hazard may arise. In relation to credit markets and analyzing the lender-borrower relationship in more detail, the financial institutions may not have the capacity to ensure that the borrower invests the borrowed loan in productive investments and as a result of this information asymmetry, the borrower may decide to invest in risky projects leading to defaulting (Diamond, 1984; Breuer, 1995).

### **Signaling, Bankruptcy and Risk Return Theories**

These theories were proposed by Berger (1995). Under the signaling hypothesis Trujillo-Ponce (2012) note that private information on whether there are future prospects that are good is signaled by bank management. According to signaling hypothesis, the higher the capital and volume deposited in banks, there will be a positive sign for the bank (Ommeren, 2011; Tomola, 2013).

Therefore, a lesser leverage shows that banks perform better compared to other market as well as participants who cannot raise their equity without weakening commercial banks' productivity maybe through defaulting.

Berger (1995) posits that according to the bankruptcy theory, more equity is held by a bank to avoid distress periods where bankruptcy costs are all of a sudden high. In this case, both the signaling and bankruptcy cost hypotheses maintain existence of a positive relationship between capital and resources (assets) owned by commercial bank (Ommeren, 2011; Tomola, 2013). According to Olokoyo (2011) lending behavior is significantly influenced by deposits. Thus to enhance the lending activities, the study suggests that commercial banks should pay attention to increase mobilization of more deposits.

According to the risk-return hypothesis, higher expected returns are as a result of cumulating risks through increasing leverage of the firm. Following this theory, there is a need to take up more risks by increasing leverage and consequently increase the amount of loans to the general public (credit) if commercial banks expect increased returns. This action is expected to lower the bank capital. Based on this theory, a negative relationship is predicted between capital and return on equity (Ommeren, 2011; Sharma and Gounder, 2012; Tomola, 2013).

### **Market Power (MP) Theory**

This theory describes the relationship between the bank size and profitability. Olweny and Shipho (2011) observe that the market power posits that performance of banks is influenced by the market structure of the sector. These authors claim that market power hypothesis assumes that the profitability of a commercial bank is a function of exogenous market factors. Within the market power theory, there are two different approaches that are; Structure-Conduct-Performance (SCP) and the Relative Market Power hypothesis (RMP). Following the SCP approach, the level of concentration in the banking market leads to higher potential market power by commercial banks due to increased volumes of deposits. This may raise their profitability. Commercial banks located in more intense markets are most likely to make unusual returns by their ability to lower deposits rates and to charge higher loan rates as a results of collusive or monopolistic reasons, than firms operating in less concentrated markets, irrespective of their efficiency (Tregenna, 2009). In our case, banks will also have to determine different types of loans to be advanced to this heterogeneous

population in concentrated markets. On the other hand, RMP theory postulates that market share influences bank profitability. Further, only large commercial banks characterized by differentiated products can influence interest rates, lending volumes and consequently returns earned. Therefore, commercial banks in this case are able to practice market power and earn non-competitive returns.

### **Efficiency theory**

The efficiency hypothesis, on the other hand posits that banks earn high profits because they are more efficient than others. There are also two distinct approaches within the efficiency; the X-efficiency and Scale–efficiency hypothesis. According to the X-efficiency approach, more efficient firms are more profitable because of their lower costs. Such firms tend to gain larger market shares, which may manifest in higher levels on market concentration, but without any causal relationship from concentration to profitability (Athanasoglou et al, 2006). The scale approach emphasizes economies of scale rather than differences in management or production technology. Larger firms can obtain lower unit cost and higher profits through economies of scale. This enables large firms to acquire market shares, which may manifest in higher concentration and then profitability.

### **Portfolio theory and bank lending**

Financial portfolio theory provides practical insights into how a bank should structure a loan portfolio in light of its goals. At the risk of oversimplification, a bank's goals can be seen as threefold:

*Earn strong profits.* A bank's profitability is ultimately derived from its ability to add economic value for its customers.

*Avoid large losses.* A bank's economic value as an ongoing franchise is at stake if poor lending threatens the organization with failure. Careful loan underwriting and effective risk diversification help keep the likelihood of failure.

*Maintain high shareholder value.* Here, portfolio theory makes an interesting contribution.

The theory emphasizes that the market value of an asset cannot be determined in isolation based on its risk-and-return features. Rather, the real issue faced by bank owners is how their shares in the bank will affect risk and return in their own portfolios.

The third goal puts a different twist on risk and return. A classic example from portfolio theory is a stock that is “risky” in the specific sense that its price fluctuates widely. However, if these movements have low correlation with the overall stock market, then within a larger portfolio they should tend to wash out due to a law-of-large-numbers effect.

In contrast, another stock might appear less volatile, but if it is highly correlated with the overall market, then adding it to the investor’s portfolio would raise its volatility disproportionately.

Portfolio theory predicts that investors seeking stable portfolio values will bid up the prices of low-beta stocks (stocks that are less correlated with the market) relative to high-beta stocks.

It is important for lenders to know how portfolio theory, introduced in the third goal, helps reconcile the apparent tension between the first two goals – that is, the trade-off between profitability through specialization and the need to spread risk through diversification. (Smith, 2005)

### **2.3. Empirical Studies on bank lending determinants**

#### *2.3.1. Empirical Studies on bank lending in countries of Emerging Economies*

Guo and Stepanyan (2011) examines determinants of bank credit in emerging market economies using pool of data from 38 emerging countries, during the period from the first quarter of 2001 to the second quarter of 2010, using a pooled estimation technique to run a regression on a large set of micro and macro-economic variables. The result of the study shows that domestic & foreign funding and economic growth positively affect credit growth. It also indicates that high inflation, while increasing nominal credit, is detrimental to real credit growth. Loose monetary conditions of both domestic and global result in more credit, and that the health of the banking sector also matters. Hussein (1985) studied growth drivers of bank credit in Pakistan using data serious of 26 commercial banks from 2001 to 2010. The result of the study indicated that past credit growth, bank soundness, relative bank size, spread ratio, employees’ incentives, private and domestic bank ownership, real depreciation, budget deficit, GDP growth and growth of industry have significant and positive impact on growth of bank credit. Bank liquidity, however, has positive but insignificant impact. Higher per capita income a proxy for self-finance capabilities, high real cost of

debt reflective of tight monetary conditions; inflation and public and foreign bank ownership are detrimental to credit growth.

Tomak (2013) studied commercial banks' lending behavior in Turkey using quarterly bank level data of 15 private commercial banks and 3 state-owned banks for the period of 2003-2012 by using pooled data regression method. They found out that bank lending depends on its size, total liabilities, nonperforming loans to total loans (NPL) and inflation rate. In relation to ownership structure the result indicated that private banks loans performance is better than the state-owned commercial banks.

### **2.3.2. Empirical Studies on bank lending in different parts of Africa**

Ladime<sup>1</sup>, Sarpong-Kumankoma & Osei (2013) studied the determinants of bank lending behavior in Ghana, using the GMM-System estimator and secondary data of seventeen years period from 1997 to 2006. The study examined impact of lending behavior of banks (proxied by level of commercial banks loan advances) and assumed the determinants as bank specific variables; bank past lending experience, bank size and capital structure; banking industry specific characteristic of competition and concentration and macroeconomic variables of central bank lending rate, exchange rate and economic growth Rate. The result of the study indicated that good relationship among banks and borrowers could be further reinforced by previous lending relationship giving high likelihood that banks will lend more in a current period. Bank size and capital structure have a statistically significant and positive relationship with bank lending behavior. They also found evidence of negative and significant impact of some macroeconomic indicators (central bank lending rate and exchange rate) on bank lending behavior. Again, competition in the industry was found to have a positive and significant impact on bank lending behavior. Relationship banking was found to have a positive correlation with bank lending behavior in Ghana. Authors recommended that policies aimed at maintaining stable macroeconomic fundamentals would greatly accelerate bank lending decision.

Olusanya (2012) take a look at determinants of lending behavior of commercial banks in Nigeria: a Co-integration analysis (1975 to 2010). i.e. for the period of thirty-seven years, using pooled data regression methods. The model tested explanatory variables such as volume of deposits, annual

average exchange rate of the naira to dollar, Investment Portfolio, Interest rate (lending rate), Gross domestic product at current market price and Cash reserve requirement ratio. 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 behavior.

Moussa & Chedia (2016) cited on Azira Abdul Adzis (2018) takes a look at determinants of lending behavior of commercial banks in Tunisia: through panel data regression model using data over an eighteen year's period, 2000- 2013 .In the study they found out that return on assets, net interest margin, liquidity has a significant impact on bank loans while external factors of inflation rate and GDP has a significant impact on bank loans. Amidu (2014) cited on Miyajima (2017) “ What Influences Bank's Lending in Sub-Saharan Africa ” using panel data regression model and data over an eight-year period, 2000-2007,covering 264 banks from 24 SSA countries, investigated on whether bank lending in SSA is influenced by bank-specific characteristics, the monetary policy stance, macroeconomic variables, and legal and financial structure. The result of the study indicated that in all the sampled countries, bank-specific variables i.e. size of the bank, the liquidity position of such bank, the growth level as well as the efficiency of the management of the banks influence bank credit to private sector. The coefficient of bank size, its growth variable and efficiency are positive, demonstrating that, in SSA, bigger and most growing banks provide credit to the private sector. Furthermore, the lagged dependent variable of last year volume of credit positively influences credit delivery to the private sector, suggesting that, in Sub Saharan Africa, the current year banks' finance to private sector is influenced by the previous year's results. Cihak and Podpiera (2005) analyzed structure, performance and role of banking system in Eastern Africa of Kenya, Tanzania and Uganda, against the backdrop of recent financial sector reforms. Their result indicates that there is no support for the argument that the presence of large international banks would have an adverse effect on the effectiveness and efficiency of banking sectors in developing countries. And international banks are more efficient and active in lending than domestic banks except in the case of Kenya where the presence of international banks may not lead to increased

competition and provisioning of banking services as weak institutions are permitted to operate in the financial system.

### **2.3.3. Related Empirical Studies in Ethiopia**

Empirical researches in Ethiopian context have been done to identify determinants of lending behavior of banks. Amano (2014) using balanced fixed effect panel regression for the period 2001 - 2013, identified and analyzed determinates of lending behavior of Ethiopian Banks. Factors of Deposit, liquidity ratio, interest rate, bank size, Cash reserve requirement, inflation and GDP were analyzed. The results showed that volume of deposit and bank size had positive and significant impact on loan and advance. Liquidity ratio and interest rate had negative and significant impact on loan and advance. Cash reserve requirement, and inflation rate had positive and significant impact on loan and advance. Real GDP growth rate had statistically insignificant impact on bank's loan and advance. The study then suggests that commercial banks should focus on mobilizing more deposits as this will enhance their lending performance and should formulate critical, realistic and comprehensive strategic and financial plans. Again another study Malede (2014) was done on lending behavior of commercial banks in Ethiopia by using panel data of eight commercial banks using Ordinary least square (OLS) in the period from 2005 to 2011. Selected Variables were bank size, credit risk, gross domestic product, investment, deposit, interest rate, liquidity ratio and cash required reserve. The result suggests that, there is significant relationship between commercial bank lending and its size, credit risk, gross domestic product and liquidity ratio. But deposit, investment, cash required reserve and interest rate does not affect Ethiopian commercial bank lending for the study period. The study suggests that commercial bank have to give more emphasis to credit risk and liquidity ratio because it weakens banks' loan disbursement and leads a bank to be insolvent. Same result was shown on the studies of Birhanu (2014) and Aderajew (2017) which was the effect deposit on the lending behavior of commercial banks in Ethiopia were insignificant.

### **2.3.4. Summary and Knowledge Gap**

In general, the empirical studies suggest that lending behavior determinants vary across countries and regions. Besides, some of those studies argue that the main determinants of lending behavior are bank-specific factors, whereas others claim that the industry-specific factors are more important.

On the other hand, others believe that the macroeconomic factors are the most important factors that determine level of loans and advances particularly in developing countries like Ethiopia.

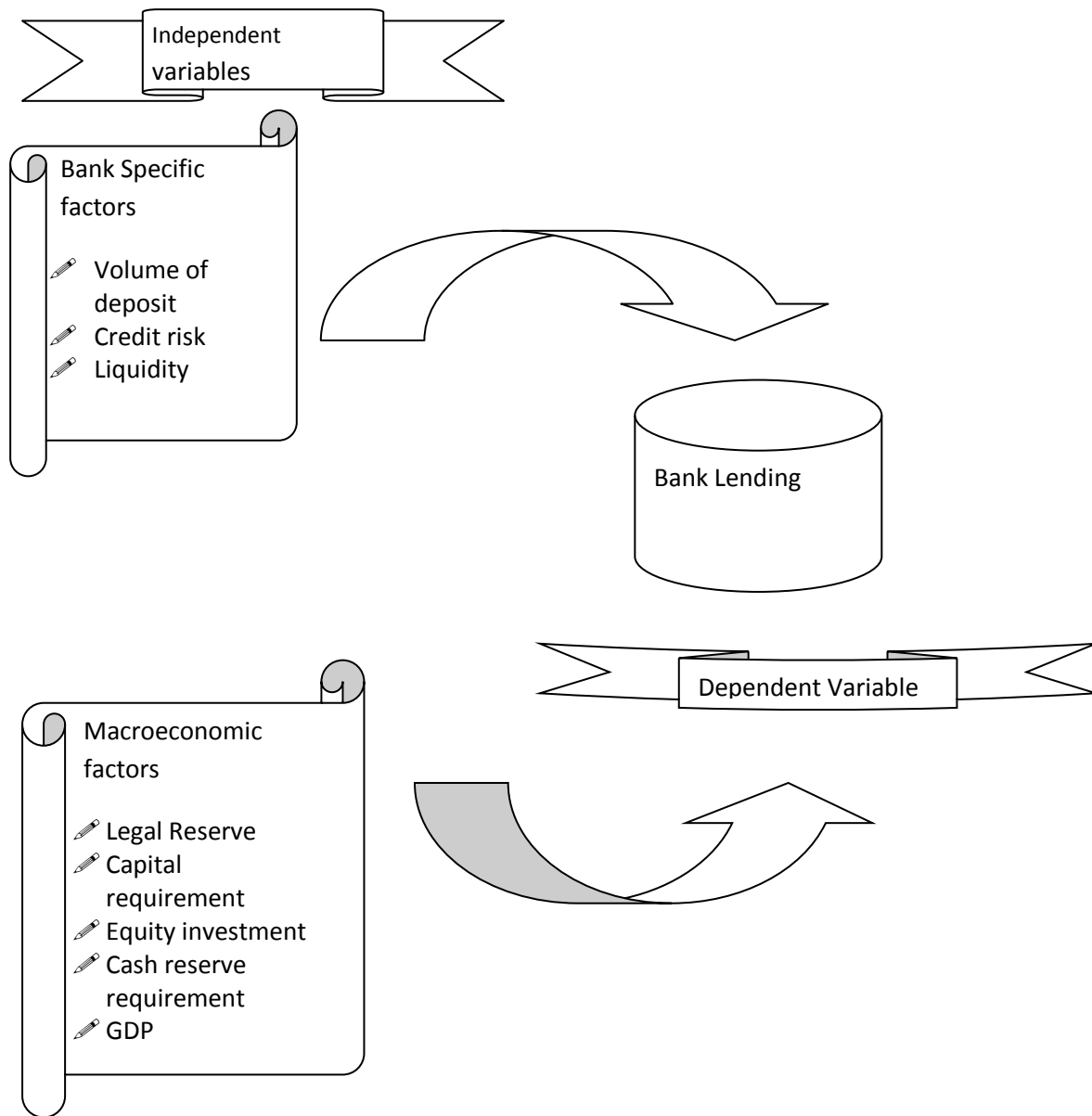
In Ethiopian context empirical evidence is not obtained so far on bank lending and financial performance factors though such issues are significantly essential that numbers of studies of both theoretical and empirical are done in different part of the world. Also, impact of obligatory requirement imposed on the banking sector is not well studied. I.e. capital requirement on lending behavior of banks, legal reserve requirement and impact of equity investment has no sufficient studies as per the researcher knowledge. Besides, legal reserve yet not studied earlier in any research paper which tries to review in the country of Ethiopia. Financial soundness is so crucial to the health of the financial sector and to economic stability as well. To this end regulatory factor such as liquidity requirement, equity investment requirement and capital adequacy requirements were the interests of researchers Birhanu (2016); Amano (2014); Mercy (2016) and Zelalem (2014) especially following Basel capital accord and also the financial crisis. Hence, this study would fill the gap in literature by incorporating variables which were not well studied in previous researchers that imposed by regulatory organ, such as capital adequacy, cash reserve, capital adequacy with the newly adding an additional variable of legal reserve which are not studied earlier as per the researcher knowledge and believe to have an effect on bank efficiency and investment portfolio on bank lending capabilities in Ethiopia.

## **2.4. Conceptual Framework**

The objective of this research is to analyze the behavior and the factors that determine lending growth of commercial banks in Ethiopia using variables. The bank specific variables are volume of deposit, liquidity and non-performing loans. The macro economic factors included Legal reserve, capital requirement, equity investment, cash reserve and growth in gross domestic Product. Moreover, special attention was given to the effect of legal reserve due to the determinant yet not seen as a variable in previous studies.

Thus Figure 1 below which is the conceptual framework summarizes the main focus and scope of this study in terms of variables and their relationship.

**Figure 1.1 Conceptual frame work of lending or loan and advances model**



**Source:** *Developed by the researcher*

## **CHAPTER THREE**

### **METHODOLOGY**

*The purpose of this chapter is to present the underlying principles of research methodology and the choice of the appropriate research method for the study. The chapter is arranged as follows: Section 3.1 deals with research design. Section 3.2 presents research approach adopted by the study. This is followed by sample design, under section 3.3. Next, the nature of the data, instrument of data collection, data analysis and presentation techniques are explained in section 3.4. Section 3.5 describes study variables, section 3.6 deals with model specification and finally section 3.7 discuss diagnostic test.*

#### **3.1. Research Design**

Research design provides the framework for the collection and analysis of data (Bryman & Bell, 2011). Or it is the plan and structure of investigation so conceived as to obtain answers to research questions (Cooper & Emory, 1995). This means it gives the procedure necessary for obtaining the information needed to solve the research problems.

In order to show the casual relationship of the variables, the researcher deploys explanatory study or in some book scaled “causal research design” (Saunders et al., 2009) and (Hair et al., 2011). In this type of research, the problems are well structured as in descriptive studies. The main task is to separate such causes and to say to what extent the selected variables lead to such effects (Ghuari & Gronhaug, 2005). In other words, it is to explain the causal relationship between variables (Saunders et al., 2009).

#### **3.2. Research Approach adopted**

As noted in Creswell (2003) in terms of investigative study there are three common approaches to business and social research namely qualitative, quantitative and mixed methods approach. Qualitative research approach is a means for exploring and understanding the meaning individuals or groups ascribe to a social or human problem with intent of developing a theory or pattern inductively (Creswell, 2009).

On the other hand, Quantitative research is a means for testing objective theories by examining the relationship among variables (Creswell, 2009). Quantitative methods are frequently described as deductive in nature, in the sense that inferences from tests of statistical hypotheses lead to general inferences about characteristics of a population and also this method is frequently characterized as assuming that there is a single “truth” that exists, independent of human perception (Guba & Lincoln, 1994). As of Morse (1991) if the problem is identifying factors that influence an outcome, the utility of an intervention or understanding the best predictors of outcomes` then a deductive (quantitative) approach is best; it is also the best approach to test a theory or explanation. Also Creswell (2003) indicated that the researcher tests a theory by specifying narrow hypotheses and the collection of data to support or refute the hypotheses.

Finally, mixed methods approach is an approach in which the researchers emphasize the research problem and use all approaches available to understand the problem (Creswell, 2003). Hence, based on the above discussions of the three research approaches and by considering the research problem and objective, in this study, the quantitative method was used.

### **3.3. Sampling Design**

#### **Study Population**

According to Sekaran (2003), Population refers to the entire group of people, events or things of interest that the researcher wishes to investigate. The study population or participants of this research are all private commercial banks in Ethiopia. As per NBE report, currently there are sixteen private commercial banks in Ethiopia (NBE, 2018). These includes: Abay Bank S.C (AB), Addis International Bank S.C (AdIB), Awash International Bank S.C (AIB), Bank of Abyssinia S.C (BOA), Berehan International Bank S.C (BBI), Buna International Bank S.C (BIB), Cooperative Bank of Oromia S.C (CBO), Dashen Bank S.C (DB), Debub Global Bank S.C (DGB), Enat Bank S.C (EB), Lion International Bank S.C (LIB), Nib International Bank S.C (NIB), Oromia International Bank S.C (OIB), United Bank S.C (UB), Wogagen Bank S.C (WB) and Zemen Bank S.C (ZB).

## **Sampling Technique**

Sampling involves the various procedure uses to select a part to represent a population. According to Brooks (2008) there are two main alternative procedures which could be used in the selection of an appropriate sample and these include probabilistic/random sampling and non-probabilistic/non-random sampling. The probabilistic sampling is a sample procedure which gives each one in the population non-zero probability of selection. In other words it is about giving every element in the population the same opportunity to be selected. On the other hand, non-probabilistic sample involves the selection of a sample on the basis of personal judgment or purposive sampling. Purposive sampling offers the researcher to deliberately select items for the sample concerning the choice of items as supreme based on the selection criteria set by the researcher. In order to obtain representative data, non-probabilistic or purposive sampling technique was employed in this study.

## **Sample Size**

Sample size can be defined as the number of units in a population to be studied. The study includes all private commercial banks that have at least ten and more year's data i.e., 2010-2019. Thus, the sample size is twelve Private commercial banks in Ethiopia which includes, Awash International Bank (AIB), Bank of Abyssinia (BOA), Dashen Bank SC (DB), Nib International Bank SC (NIB), United Bank SC (UB), Wegagen Bank SC (WB), Cooperative Bank of Oromia (CBO), Lion International Bank (LIB), Oromia International Bank (OIB), Zemen Bank (ZB), Bunna International Bank (BIB), and Berhan International Bank (BBI).

Therefore, the matrix for the frame is 12\*10 that includes 120 observations. A justification for this choice sample period is to capture significant economic downturns and upturns and meets two times their five years strategically plans. In addition, at the end of 2017/2018 from 44.0 billion total capital and 257.9 billion total outstanding loans and advances of private commercial banks in Ethiopia, these twelve banks shared 89% and 93% respectively (NBE, 2019). Moreover, since the sources as well as the types of loans and ways of loan supply are homogenous across private commercial banks in Ethiopia, the selected samples are sufficiently representing the population.

### **3.4. Nature of Data, Instrument of Data Collection, Data Analysis and Presentation**

#### **Nature of Data and Instrument of Data Collection**

As noted in Arellano (1995) and Blundell (1998) cited in Miyajima (2017), the advantage of using panel data is that it controls for individual heterogeneity, less collinearity among variables and tracks trends in the data which simple time-series and cross-sectional data cannot provide. Besides, by combining time series and cross-section observations, it gives more informative data. Furthermore, panel data can better detect and measure effects that simply cannot be observed in pure cross-section or pure time series data (Gujarati, 2004). Therefore, data used for this study was panel data.

Data collection method is a phrase used to describe the way or manner in which a researcher gathers relevant information which he or she is going to use to answer the research questions. There are basically two main sources by which the researcher can collect 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., 2009). Secondary data is data that exists somewhere having been collected and used for some other purposes (Gupta, 2012). After evaluating all possible data collection methods, the researcher found that the most appropriate method that provides practical answers to the research questions and the stated objectives of the study is the use of secondary data. Hence, the data used for this study is secondary in a nature which was obtained from audited annual financial reports of each purposively selected private commercial bank for bank-specific factors and publications of the National Bank of Ethiopia (NBE) and Ministry of Finance and Economic Development (MoFED) for macroeconomic factors.

#### **Data Analysis and Presentation**

The collected panel data will analyze using descriptive statistics, correlations and multiple linear regression analysis. Descriptive statistics will use to analyze the general trends of the data from 2010-2019 based on the sample of twelve private commercial banks.

Correlation matrix was used to examine the relationship between the dependent variables and explanatory variables. A multiple linear regression model is used to determine the relative importance of each independent variable in influencing lending decision and its impact on the financial performance of the banks. Finally, Ordinary Least Square (OLS) regression approach including all of its assumptions are conducted using E-views 8 econometric software package, to test the casual relationship between the commercial banks' lending and their potential determinants. The assumptions will tested to see the applicability of the regression models developed first to test the relationship between banks loans and advances and independent variables and then to see the impact of lending on financial performance through the significant factors explaining lending of commercial banks in Ethiopia.

Since this study will use a panel data, there are two types of panel estimator approaches that can be employed, namely: fixed effects models (FEM) and random effects models (REM) (Brooks, 2008). To examine whether individual effects are fixed or random, a Hausman specification test was conducted.

### **3.5. Study Variables**

The sources of fund for lending are reserve, deposits and capital. All these sources may be affected 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, analyze 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.

#### **Dependent Variable**

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

According to Adepoju et al. (2007) the loans and advances refers to the amount borrowed by one person from another. The amount is also refers to the sum paid to the borrower. Thus, from the view point of borrower, it is "borrowing" and from the view point of bank, it is "lending". Loan may be regarded as "credit" granted where the money is disbursed and its recovery is made on a later date. It is a debt for the borrower. While granting loans, credit is given for a definite purpose and for a predetermined period. Interest is charged on the loan at agreed rate and intervals of payment.

“Advance” on the other hand, is a “credit facility” granted by the bank. Banks grant advances largely for short-term purposes, such as purchase of goods traded in and meeting other short-term trading liabilities. There is a sense of debt in loan, whereas, an advance is a facility being availed of by the borrower. However, like loans, advances are also to be repaid. Thus, a credit facility-repayable in installments over a period is termed as loan while a credit facility repayable within one year may be known as advances. To proxy loan and advance, log of loan and advance were used.

## **Independent Variables**

### **1. Volume of Deposit**

Deposits forms majority of banks liabilities and plays 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. The interest paid on deposits ensures that banks should earn return over and above their cost of funds, hence the transformation of these liabilities to loan assets to generate interest income. The larger the volume of bank deposits, the more loanable funds available to the banks, hence the higher likelihood of given out more loans and advances. Olokoyo (2011) asserts that commercial banks deposits have the greatest impacts on their lending behavior. Accordingly, positive relationship is thus expected between volume of deposits and bank lending decision. The deposits ratio is measured as the ratio of customer deposits to banks total liabilities.

$$\text{Volume of Deposit Ratio} = \frac{\text{Total Deposit}}{\text{Total Liabilities}}$$

**H1:** Volume of deposit has positive effect on banks’ loan and advance

### **2. 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). Ituwe (1985) posited that on one side, banks transform customers deposit to loans and advances which is illiquid and on the other side, obliged to pays to the demands by customers in terms of withdrawals from their deposits which have to be met instantaneously. Commercial banks, therefore, have to stock reasonable quantity of cash to meet their customers’ demands. Hence, a commercial bank cannot afford to grant loans and advances in excess of its cashing ability. Moreover, the issue of liquidity in banking operations also affects the lending behavior of commercial banks. In his study, Ojo (1978) also

identified that liquidity ratio was seen as an important variable in determining the supply of loans and advances in Nigeria. In this study it is described by the ratio of liquid assets to total assets.

$$\text{Liquidity Ratio} = \frac{\text{Liquid Assets}}{\text{Total Assets}}$$

**H2:** Liquidity ratio has positive effect on banks' loan and advance

### 3. Asset Quality

A deterioration in a banks' asset quality serve as indicator of the risk levels being assumed by banks, hence tighten credit standards leading to a reduction in future banks' lending to reduce its risk levels. The impact of bank asset quality on lending decision is both direct and indirect. With the direct effect, 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 standards which will reduce the number of the whole loan applicants as well as successful loan applicants. With the indirect effect, incurring losses from nonperforming loans demands loan write-offs which deplete the equity capital of banks. This would in-turn affect the bank's ability to write more loan and advances, hence reduction in lending, called the capital crunch by Richard Syron former president of the Boston Federal Reserve (Bernanke et al., 1991).

This study use the Nonperforming loans (NPLs), as a measure of the quality of bank loans portfolio. NPL's is a sum of borrowed money upon which the debtor has not made his or her scheduled payments for at least 90 days. A nonperforming loan is either in default or close to being in default. Most of the research undertaken in this area shows that, if banks have high nonperforming loans ratios they tend to lower their credit supply in order to be more cautious. Tomak (2013) in his study on the determinants of bank lending behavior of a sample of Turkish banks, finds that a significant relationship between NPLs and bank lending behavior and NPLs show a negative impact on the growth of total loans. Hence, this study expects a negative relationship between the nonperforming loans and credit growth.

$$\text{NPL Ratio} = \frac{\text{Total Non performing loans and advances}}{\text{Total Loans and advances}}$$

**H3:** Asset quality has negative effect on banks' loan and advance

#### **4. Legal reserve requirement**

NBE proclamation No. SBB/4/95 forced every bank operated in the territory of Ethiopia shall transfer annually 25% of its annual net profit to its Legal Reserve Account until such account equals its capital. When the legal reserve account equals the capital of the bank, the amount to be transferred to the legal reserve account shall be 10% of the annual net profit. According to Eden (2014), it is a portion of bank's asset puts in national bank of Ethiopia with no interest and it will be proxy by ratio of reserve account in NBE to total assets and James (2002), high reserve requirements decrease the available deposits for investment by reducing the fraction of given volumes of deposit rate and by reducing the equilibrium volume of deposit through decreasing the profit-maximizing deposit. In this case, they are considered as a leakage in the intermediation process. Several studies such as Olokoyo (2011) cited in the studies of Rabab'ah, (2015) have indicated that the legal reserve ratio is considered an influential factor on the bank lending. It is expected that this variable has a negative effect on the proportion of credit facilities

**H4:** Legal reserve requirement has negative and significant effect on banks' loan and advance

#### **5. Capital Adequacy Ratio**

Capital adequacy is the level of capital that banks are required to hold to enable them withstand credit, market and operational risks they are exposed to. It is used to absorb the potential losses resulted from their day to day activities and protect the bank's debtors.

This is a critical factor in the sense that capital itself is the amount of the bank's own fund available to support the bank's business at all times and it also serves or acts as a buffer in strained situations. Therefore, banks' capital creates liquidity for the bank due to the fact that they cannot merely rely on deposit as they are most fragile and prone to bank runs.

Capital adequacy is evaluated on the basis of capital adequacy ratio (CAA), which demonstrates the internal strength of the bank to withstand losses when calamity strikes.

The equity ratio is an indication of the risk characteristics which is risk aversion. Bank capitalization can affect bank willingness and ability to extend long term loans in several different ways. Banks with larger capital cushion against credit risks should have higher capacity to extend risky, long-term loans. Therefore increasing bank equity enhances the bank's capacity to increase lending. In addition, better capitalized banks can attract more creditworthy borrowers that will

qualify for longer term loans. Alternatively, high levels of capital can reveal risk averse and conservatively managed banks that may be reluctant to issue risky long-term loans. Bouvatier and Lepetit (2007) and Djiogap and Ngomsi (2012) found that poorly capitalized banks are constrained to expand credit.

Generally assumed well-capitalized banks have high profitability and lower probable cost of financial distress. According to Bourke (1989), Demirguc-Kunt & Huizinga (1999), Pasiouras & Kosmidou (2007), Ben & Goaid (2008), Kosmidou (2008), banks with higher capital are more protected from insolvency. This means higher capital banks can get the high profitability. And also some empirical evidence by A & Huizinga (1999), Ben & Goaid (2008), Kosmidou (2008), revealed that high profitable banks have high level of equity relative to their assets. Bourke (1989), stated a significant positive relationship between capital adequacy and bank profitability. Similarly, the studies of Berger (1995), and Angbazo (1997), concluded that the US banks, those which are well-capitalized, are more profitable than the others.

Bank capitalization is measured by the ratio of paid-up capital to total assets.

$$\text{Capital Adequacy Ratio} = \frac{\text{Paid up Capital}}{\text{Total Assets}}$$

**H5:** Capital Adequacy Ratio has positive effect on banks' loan and advance

## 6. Equity investment

Countries may limit banks to a specific range of activities, or allow them to engage in broad activities, because this scope of activities basically defines what the term bank, is; therefore banks may not be the same in every country around the world. With regard to the meaning of a bank the National Bank of Ethiopia issued proclamation NO. 592/2008 and define bank business as: receiving funds from the public, using the funds for loans or investment at the risk of the person undertaking banking business, buying and selling of gold and silver and foreign exchange; the transfer of funds to other local and foreign persons and the discounting promissory notes, drafts, bills of exchange and other debt instruments; are some of them.

The three main regulatory variables that significantly affect the activities of banks:

- (a) Banks engage in Securities; such as underwriting, brokering, dealing, and all aspects of the mutual fund industry.
- (b) Banks engage in insurance underwriting and selling.
- (c) Banks engage Real Estate investment, development, and management.

The national bank of Ethiopia had a regulation state that, a bank's aggregate equity investment in all non-banking business including insurance companies shall not exceed 10% of its net worth(NBE directive No SBB/60/2015).National bank of Ethiopia gave permission to commercial banks to invest their income on different non-banking companies share with limited percentage. These companies can be insurance company or other share companies. The banks invest on this business in order to collect an additional income from interest payment. It is measured by the total amount of investment on insurance company share and other share companies stock. The study was seen on the effect of amount invested on equity purchased and the bank's profitability.

**H6:** Equity investment has negative effect on banks' loan and advance

## **7. Cash Reserve Requirement**

According to the study, (Mwafag, 2015) the legal reserve ratio imposed by the Central Bank of Jordan on banks (RR): it represents the rate that banks should extract from their deposits in order to keep it at the Central Bank. Thus, the lower the legal reserve ratio, the more deposits volume that can be exploited by the Bank in lending, which increases the size of the credit facilities granted by banks. Several studies such as Olokoyo (2011) have indicated that the legal reserve ratio is considered an influential factor on the bank lending. It is expected that this variable has a negative effect on the proportion of credit facilities.

The required reserve ratio is sometimes used as a tool in monetary policy for influencing the country's borrowing and interest rates by changing the amount of funds available for banks to make loans. Montoro and Moreno (2011) shows this by stating that, central bank raise reserve requirements to contain credit growth in the boom part of the business cycle in order to counteract financial imbalances in the economy or in an economic downturn, they can lower reserve requirements to utilize reserve buffers accumulated during the boom part, having the banking sector extend more credit to non-financial businesses. In this study annual reserve requirement rate was used as proxy.

**H7:** Cash reserve requirement has negative effect on banks' loan and advance

### **8. Gross Domestic Product (GDP)**

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 (Flamini et al., 2009). Most studies, specifically, Dietrich and Wanzenried (2011), Athanasoglou et al. (2008), and Demirguc-Kunt and Huizinga (1999), postulate and show that real GDP growth is a good proxy for the business cycle because it's up and downswings influence the demand for borrowing. The study of the effect of GDP on demand for credit was carried by the assumption that better economic conditions increase the consumer and investor optimism. With higher expectations on future income, they tend to smooth consumption by increasing borrowing. This means that a GDP growth usually is followed by good macroeconomic conditions and usually is noticed an expansion of credit growth. The yearly real Gross Domestic Product (GDP) growth rate was used in this study.

**H8:** Gross Domestic Product (GDP) growth has positive effect on banks' loan and advance

### **3.6. Model Specification**

The nature of data that was used in this study enable the researcher to use panel/longitudinal data model which is deemed to have advantages over cross sectional and time series data methodology. Panel data involves the pooling of observations on the cross-sectional over several time periods. As Brook (2008) stated the advantages of using panel data set; first and perhaps most importantly, it can address a broader range of issues and tackle more complex problems with panel data than would be possible with pure time-series or pure cross-sectional data alone.

In summary, the fundamental thus, the general panel/longitudinal regression model will be as follows:

$$Y_{it} = \alpha + \beta X_{it} + u_{it}$$

With subscript  $i$  denote the cross-section and  $t$  representing the time-series dimension. The left-hand variable  $Y_{it}$  is the dependent variable,  $\alpha$  is the intercept term,  $\beta$  is a  $k \times 1$  vector of parameters to be estimated on the explanatory variables, and  $X_{it}$  is a  $1 \times k$  vector of observations on the explanatory variables,  $t = 1, \dots, T$ ;  $i = 1, \dots, N$ .

Therefore, the general models which incorporate all of the variables to test the hypotheses of the study are:

$$\mathbf{Banl}_{i,t} = \alpha + \beta_1 \mathbf{CAA}_{i,t} + \beta_2 \mathbf{CAR}_{i,t} + \beta_3 \mathbf{EQI}_{i,t} + \beta_4 \mathbf{LER}_{i,t} + \beta_5 \mathbf{LQ}_{i,t} + \beta_6 \mathbf{NPL}_{i,t} + \beta_7 \mathbf{VOD}_{i,t} + \beta_8 \mathbf{GDP} + \epsilon_{i,t} \dots \dots \dots (1)$$

Source: Developed by the researcher.

Where  $\epsilon$  contains other variables not explicitly included in the model.

The explicit form of equation (1) above was represented as follows:

Where:

- Banli,t**=Bank loan of private commercial banks in Ethiopia i at time t
- CAA= capital adequacy
- CAR=Cash reserve requirement
- EQI= Equity investment
- LER= Legal reserve;
- LQ = Liquidity;
- NPL= Non-performing loan;
- VOD= Volume of deposit
- GDP = growth rate of GDP
- $\epsilon$  =is the error component for company i at time t
- $\alpha$  = Constant
- $\beta_1 \dots \beta_8$ = coefficient of independent variables
- i = Private commercial bank i = 1 . . . 12; and t = the index of time periods and t = 1 . . . 10

### 3.7. Diagnostic Analysis

As mentioned in Chris. B (2008), there is basic assumptions required to show that the estimation technique, OLS had a number of desirable properties, and also so that hypothesis tests regarding the coefficient estimates could validly be conducted. If these Classical Linear Regression Model (CLRM) assumptions hold, then the estimators determined by OLS will have a number of desirable properties, and are known as Best Linear Unbiased Estimators. Therefore, for the purpose of this study, diagnostic tests are performed to ensure whether the assumptions of the CLRM are blue or not in the model. Consequently, the basic CLRM assumptions test in this study are errors have zero mean, homoscedasticity, autocorrelation, multicollinearity and normality. According to Chris. B

(2008) when the assumptions are satisfied, it means that all the information available from the patterns was used. But, if there is assumption violation of that data usually means that there is a pattern of data that have not included in the model, and could actually find a model that fits the data better.

### **3.7.1. The errors have zero mean ( $E(u_t) = 0$ )**

According to Chris. B (2008) if a constant term is included in the regression equation, this assumption will never be violated. Thus, since the regression model used in this study included a constant term, this assumption will not violate.

### **3.7.2. Multicollinearity**

According to Chris.B (2008), Multicollinearity will occur when some or all of the independent variables are highly correlated with one another. If the multicollinearity occurs, the regression model is unable to tell which independent variables are influencing the dependent variable. The consequences of Multicollinearity are OLS estimators still Best, Linear and Unbiased, large variances and covariance of OLS estimators, wider confidence interval, and insignificant ratio. In this case, this study chooses to use high pair-wise correlation coefficients method because it can see the correlation of independent variables between each other one by one.

There were different arguments towards the multicollinearity problem. (Gujarati D. N., 2004) stated that multicollinearity problems exist when the correlation coefficient among variables greater than 0.80. (Hair JF, 2006) also argued that correlation coefficient below 0.9 may not cause serious multicollinearity problem. In contrary to this, (Kennedy, 2008) argued that as any correlation coefficient above 0.7 could cause a serious multicollinearity problem leading to inefficient estimation and less reliable results.

### **3.7.3. Autocorrelation**

According to Chris.B (2008), when the error term for any observation is related to the error term of other observation, it indicate that autocorrelation problem exist in this model. In the case of autocorrelation problem, the estimated parameters can still remain unbiased and consistent, but it is inefficient. The result of T-test, F-test or the confidence interval will become invalid due to the variances of estimators tend to be underestimated or overestimated. Due to the invalid hypothesis

testing, it may lead to misleading results on the significance of parameters in the model. Durban-Watson Test will be used to detect Autocorrelation problem.

H0: There is no autocorrelation problem in the model.

H1: There is autocorrelation problem in the model.

**Decision Rule:** Reject H0 if DW-value of the regression is less than dl and greater than 4-dl. But do not reject H0 if DW value is between du and 4-du.

#### **3.7.4. Heteroscedasticity**

According to Chris.B (2008), Heteroscedasticity means that error terms do not have a constant variance. If heteroscedasticity occur, the estimators of the ordinary least square method are inefficient and hypothesis testing is no longer reliable or valid as it will under estimate the variances and standard errors. There are several tests to detect the Heteroscedasticity problem, which are Park Test, Glesjer Test, Breusch-Pagan-Goldfrey Test, White's Test and Autoregressive Conditional Heteroscedasticity (ARCH) test. In this case, this study chooses to use White test to detect Heteroscedasticity.

H0: There is No Heteroscedasticity problem in the model.

H1: There is Heteroscedasticity problem in the model.

**Decision Rule:** Reject H0 if p-value smaller than significance level. Otherwise, do not reject H0.

#### **3.7.5. Normality**

Normality tests are used to determine if a data set is well-modeled by a normal distribution. With the normality assumption, ordinary least square estimation can be easily derived and would be much more valid and straight forward. This study will use Jarque-Bera Test (JB test) to find out whether the error term is normally distributed or not.

# **CHAPTER FOUR**

## **RESULTS AND DISCUSSION**

In the preceding chapters, the review of relevant literature helped this study to understand the problem and design an appropriate research approach to deal with. The previous chapter also discussed the research design employed to achieve the objectives of the study and to test the research hypothesis there on. In this chapter, Summary of descriptive statistics and regression results from the EView-8 software output were presented in a tabular form, from where detailed analysis and discussion of the result was given. The chapter is organized in two sections. Finally, the results of the regression analysis were discussed by supporting empirical evidence.

### **4.1. Descriptive Data Analysis**

This section discussed the summery descriptive statistics of each variables of the study. The variables include the dependent and independent variables. The dependent variables used in this study is sampled private commercial banks' lending behavior which measured by natural logarithm of loan and advance, whereas the explanatory or independent variables volume of deposit, Liquidity, non-performing loans, cash reserve requirement ,capital adequacy ratio, equity investment, legal reserve requirement, and gross domestic product.

The researcher conducted descriptive statistic using EView-8 software in order to give more understanding about the study variables that are being analyzed.

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 will entail detailed information about each relevant variable. The major purpose of descriptive research is description of the state of affairs as it exists at present.(C.R.Kothari, 1990)

Descriptive studies produced the mean, minimum, maximum and standard deviations for each variable. Accordingly, the descriptive statistics for all variables are presented in table 4.1 here under:

**Table 4.1 Summary of descriptive statistics**

	BANL	CAA	CAR	EQI	GDP	LER	LQ	NPL	VOD
Mean	3.617524	0.155452	0.094521	0.143915	1.740204	0.027703	0.344388	0.016243	0.759680
Median	3.698535	0.135652	0.076625	0.173644	1.766825	0.026668	0.251982	0.013908	0.771100
Maximum	4.670756	0.894617	0.296399	0.307753	1.959852	0.223633	6.858876	0.130944	0.857741
Minimum	2.185242	0.030689	0.001213	0.000000	1.475962	0.000000	0.107175	0.000000	0.121723
Std. Dev.	0.504937	0.104579	0.076633	0.095678	0.160096	0.021116	0.613490	0.019345	0.075502
Skewness	-0.567799	5.969344	0.796299	-0.394670	-0.348387	6.651549	10.09753	2.826799	-5.137798
Kurtosis	2.961718	42.18179	2.687351	1.743037	1.819142	63.01025	107.7445	14.57002	43.61888
Jarque-Bera	6.455249	8388.725	13.17060	11.01507	9.399593	18891.01	56896.27	829.1423	8777.406
Probability	0.039652	0.000000	0.001381	0.004056	0.009097	0.000000	0.000000	0.000000	0.000000
Sum	434.1028	18.65423	11.34252	17.26976	208.8245	3.324363	41.32657	1.949175	91.16154
Sum Sq. Dev.	30.34042	1.301479	0.698838	1.089366	3.050061	0.053061	44.78810	0.044535	0.678367
Observations	120	120	120	120	120	120	120	120	120

**Source:** Financial statement of sampled private commercial banks and own computation through E-View8

**Bank loans (Banl):** The average proportion of loans and advances provided by Ethiopian private commercial banks during the study period (2010-2019) was about 3.617 of the total assets. The ratio ranged from 2.185 to 4.670 and the standard deviation was 5.67%. It is noted here that the proportion of the credit facilities is considered comparable between banks in general, as it enjoys a relative stability. The maximum value indicating the Awash International Bank (AIB) and the minimum value shown one of the privately owned commercial banks namely Birhan International Bank (BBI).

### **Discussion on the descriptive statistical value of explanatory variables:**

**Volume of deposit (VOD):** The mean value of volume of deposit was 75.96 % which shows that  $\frac{3}{4}$  of the asset is financed by deposit collected from customers with the maximum and minimum values of 85.77 % and 12.17 % respectively. The standard deviation for volume of deposit was 7.55%.

**Liquidity Ratio (LQ):** liquidity ratio measured by liquid asset over total assets. The ratio of liquid assets in this study was 34.4% on average, with a minimum of 10.7% and a maximum of 685%. The liquidity measure indicates that the Ethiopian private commercial banks have, on average, a higher liquidity position which was higher than the statutory requirement of 15% NBE Directive No

SBB/57/2014. In addition liquidity ratio has moderate dispersion from the mean which was 6.13%. The maximum and minimum of the result was shown on a single bank which is United Bank s.c in the year 2016 and 2019.

**Reserve Requirement (RR):** The mean value of reserve requirement was 0.94% with a maximum and minimum reserve requirement ratio of 2.96 % and 0.01% respectively during the study. The standard deviation shows 7.66%. This variation occurs by the measure taken by the regulatory body, NBE to check monetary growth, to control risk of high inflation and ensure a stable macroeconomic environment for a healthy economic growth.

**Capital Adequacy (CAA):** capital adequacy ratio measured by paid up capital over total asset shows that the mean value of 15.54 % and maximum values and minimum values of 89.46% and 3.07% respectively. The standard deviations of 10.45% show a slight dispersion of from the mean value of CAR. The maximum value was taken by Bank of Abyssinia (BOA) in the year 2014. The average value of the study stood on 13%.

**Equity Investment (EQI):** Equity investment measured by investment over total asset. The mean value of equity investment ratio was shown 14.39 % with the standard deviations of 9.57% show high dispersion of investment to total assets ratio from its mean. The maximum and minimum values of EQI were 30.77 % and 0% respectively. The maximum investment, out of the total asset, was recorded by Wegagen Bank in the year 2015 and the minimum record taken by different private commercial banks at different period of time.

**Legal Reserve (LER):** The average legal reserve ratio (LER) was about 2.77% during the study period, and the reserve ratio ranged from 22.36% to 0.0% with a standard deviation of 2.11%, reflecting the presence of a large fluctuation in the legal reserve ratio during the study period.

**Non-performing loan (NPL):** The average proportion of Asset quality (AQ) measured by non-performing loans / total loans and advance was about 1.62% during the study period, the ratio ranged from 13.09% to 0%, and the standard deviation was 1.93%. The average ratio of the non-performing loans is shown below the NBE requirement which is 5% and being encouraging.

**Gross Domestic Product (GDP):** At last, the mean value of real GDP during the study period was 17.4% with a standard deviation of 16%. Strong economic condition measured by GDP, as motivating factor to banks has statistically significant impact on issuance of more private credit to businesses. A strong economic condition 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. (kashif and mohammed 2008 cited on Getahun, 2014)).

## **4.2. CLRM assumptions and Diagnostic tests**

To maintain the data validity and robustness of the regressed result of the research, the basic classical linear regression model (CLRM) assumptions must be tested for identifying any misspecification and correcting them so as to augment the research quality (Brooks,2008). There are different CLRM assumptions that need to be satisfied and that are tested in this study (i.e., errors equal zero mean test, heteroscedasticity, autocorrelation, normality, multicollinearity and model specification test)that were conducted to ensure whether the data fits the basic assumptions of classical linear regression model or not. The implication of the test, decision rules therein, test results and their discussion are discussed in the upcoming sub sections.

### **4.2.1. Test for the errors have zero mean ( $E(u_t) = 0$ )**

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

### **4.2.2. Heteroscedasticity Test**

The homoskedasticity is one of the assumptions of the CLRM which states that the variance of the errors must be constant. If the errors do not have a constant variance, they are said to be heteroskedastic (Brooks, 2008). If heteroscedasticity occur, the estimators of the ordinary least square method are inefficient and hypothesis testing is no longer reliable or valid as it will under estimate the variances and standard errors.

**Table 4.2 Heteroskedasticity Test**

Heteroskedasticity Test: White

F-statistic	0.890997	Prob. F(8,72)	0.5286
Obs*R-squared	7.296611	Prob. Chi-Square(8)	0.5050
Scaled explained SS	5.242218	Prob. Chi-Square(8)	0.7314

Source: computed via E-views 8, Heteroscedasticity result.

In this study as shown in table 4.2 above both the F-statistic and Chi-Square versions of the test statistic gave the same conclusion that there is no evidence for the presence of heteroscedasticity in this models, since the p-values were in excess of 0.05 or 5%. The third version of the test statistic, “Scaled explained SS”, which as the name suggests is based on a normalized version of the explained sum of squares from the auxiliary regression, also gave the same conclusion that there is no evidence for the presence of Heteroskedasticity problem, since the p-value was considerably in excess of 0.05.

### 4.2.3. Tests for Autocorrelation

**Test for absence of autocorrelation (covariance between the error terms over time is zero  
(cov (ui,uj) = 0)**

There are three test statistics in E-Views namely the Durbin-Watson, the Breusch-Godfrey, and the Ljung-Box Q-statistic. The Breusch-Godfrey test is a more general test for autocorrelation up to the  $r^{\text{th}}$  order (Chris B, 2008).

The Durbin-Watson test statistic value in the regression result was 1.899883. Thus the null hypothesis of no autocorrelation is within the non- rejection region of the number line and thus there is no evidence for the presence of autocorrelation.

The rejection /non-rejection rule is given by selecting the appropriate region from the following table 4.3

**Table 4.3 Tests for Autocorrelation**

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.501709	Prob. F(4,66)	0.2118
Obs*R-squared	6.673630	Prob. Chi-Square(4)	0.1542

In the first table of output, E-Views offers two versions of the test – an F-version and a  $\chi^2$  version, while the second table presents the estimates from the auxiliary regression. The conclusion from both versions of the test in this case is that the null hypothesis of no autocorrelation should not be rejected.

#### 4.2.4. Multicollinearity Test

Multicollinearity means the existence of a “perfect” or exact, linear relationship among some or all explanatory variables (Gujarati, 1995). Multicollinearity in the regression model suggests substantial correlations among independent variables. This phenomenon introduces a problem because the estimates of the sample parameters become inefficient and entail large standard errors, which makes the coefficient values and signs unreliable. In addition, multiple independent variables with high correlation add no additional information to the model. It also conceals the real impact of each variable on the dependent variable Anderson R, (2010).

If multicollinearity is perfect, the regression coefficients of the explanatory variables are indeterminate and their standard errors are infinite. If multicollinearity is less than perfect, the regression coefficients, although determinate, possess large standard errors (in relation to the coefficients themselves), which means the coefficients cannot be estimated with great precision or accuracy. If there is no relationship between the explanatory variables (independent variable), they would be said to be orthogonal to one another. If the explanatory variables were orthogonal to one another, adding or removing a variable from a regression equation would not cause the values of the coefficients on the other variables to change Chris B, (2008).

There were different arguments towards the multicollinearity problem Gujarati D. N., (2004), Stated that multicollinearity problems exist when the correlation coefficient among variables greater than Schindler and Cooper, (2003) Suggested that a correlation above 0.8 between explanatory variables should be corrected for. To finish, Hair JF (2006) argued that also correlation coefficient

below 0.9 may not cause serious multicollinearity problem. In contrary to this, Kennedy (2008) argued that as any correlation coefficient above 0.7 could cause a serious multi collinearity problem leading to inefficient estimation and less reliable results. A correlation matrix used to ensure the correlation.

**Table 4.4 Multicolliniarity test**

**Multicolliniarity test:** correlation analysis of independent variables

	CAA	CAR	EQI	GDP	LER	LEV	NPL	VOD
CAA	1.000000	-0.066874	-0.133995	0.030756	-0.087137	-0.037874	-0.100264	-0.236044
CAR	-0.066874	1.000000	-0.138316	-0.825627	-0.184182	0.104330	0.264766	-0.221713
EQI	-0.133995	-0.138316	1.000000	0.136815	0.244974	0.027715	-0.206343	0.044079
GDP	0.030756	-0.825627	0.136815	1.000000	0.233150	-0.122020	-0.311638	0.279344
LER	-0.087137	-0.184182	0.244974	0.233150	1.000000	-0.042796	0.002435	0.155999
LEV	-0.037874	0.104330	0.027715	-0.122020	-0.042796	1.000000	0.047807	-0.063284
NPL	-0.100264	0.264766	-0.206343	-0.311638	0.002435	0.047807	1.000000	0.097785
VOD	-0.236044	-0.221713	0.044079	0.279344	0.155999	-0.063284	0.097785	1.000000

**SOURCE:** Computed via E-views 8, correlation matrix result

As depicted in the table 4.4 above showed that there is no strong pair-wise correlation between the explanatory variables. In this study the highest correlation coefficient is -0.087137 between legal reserve of banks and capital adequacy. Thus, it can be concluded using the rule of Hair JF (2006) argue that correlation coefficient below 0.9 may not cause serious multicollinearity problem. Thus, correlation power which is below 0.9 implies no multicollinearity problem in the explanatory variables of this study.

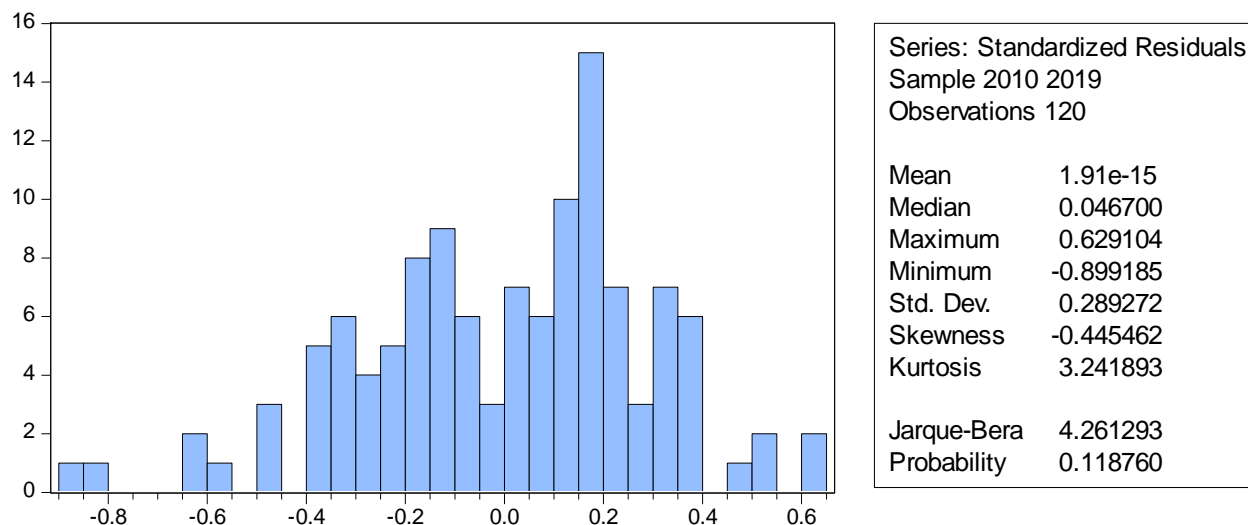
#### 4.2.5. Test for the assumptions of normality ( $ut \sim N(0, \sigma^2)$ )

According to Brooks (2008), if the residuals are normally distributed, the histogram should be bell-shaped and the Jarque-Bera statistic would not be significant. This means that the p-value given at the bottom of the normality test screen should be greater than 0.05 to support the null hypothesis of presence of normal distribution.

Theoretically, if the test is not significant, then the data are normal, so any value above 0.05 indicates normality. Jarque-Bera formalizes this by testing the residuals for normality and testing whether the coefficient of skeweness and kurtosis close are zero and three respectively.

Skewness refers to how symmetric the residuals are around zero. Perfectly symmetric residuals will have a Skewness of zero. Skewness measures the extent to which a distribution is not symmetric about its mean value. Kurtosis refers to the peakedness of the distribution. For a normal distribution the kurtosis value is 3.

**Figure 2.2 Normality test**



**Source:** Source: Own estimation via Eviews-8, Bera-Jarqu normality test

As shown in the above figure, the normality tests for the study of the coefficient of kurtosis was closer to 3, and the Bera-Jarque statistic has a P-value of 0.12 implies that the p-value for the Jarque-Bera test for models is greater than 0.05 which indicates that the errors are normally distributed. Based on the statistical result, the study failed to reject the null hypothesis of normality at the 5% significance level this implying that the data were normally distributed and we can say that there is no problem related to normality.

### 4.3. Model Selection

#### Test for Choosing fixed effect (FE) versus Random effect (RE) models

There are broadly two classes of panel estimator approaches that can be employed in financial research: fixed effects models and random effects models (Brooks, 2008). According to Gujarati (2004), if T (the number of time series data) is large and N (the number of cross-sectional units) is small, there is likely to be little difference in the values of the parameters estimated by fixed effect model/FEM and random effect model/REM. Hence the choice here is based on computational

convenience. On this score, FEM may be preferable. Since the number of time series (i.e. 10 year) is greater than the number of cross-sectional units (i.e. 12 private commercial banks), FEM is preferable in this case. According to Brooks (2008); Verbeek (2004) and Wooldridge (2004), it is often said that the REM is more appropriate when the entities in the sample can be thought of as having been randomly selected from the population, but a FEM is more plausible when the entities in the sample effectively constitute the entire population/sample frame. Hence, the sample for this study was not selected randomly and equals to the sample frame FEM is appropriate.

#### 4.4. Results of regression analysis

In the commercial banks' lending behavior model regression output the beta coefficient may be negative or positive; beta indicates that each variables level of influence on the dependent variable. P-value indicates at what percentage or precession level of each variable is significant. R<sup>2</sup> values indicate the explanatory power of the model and in this study adjusted R<sup>2</sup> value which takes into account the loss of degrees of freedom associated with adding extra variables were inferred to see the explanatory powers of the models.

#### 4.5. Operational model

In this section the hypothesis articulated in the prior chapter are tested and the results are estimated through Panel least square is presented. In private commercial banks' lending behavior model the researcher specified panel fixed effect model by which loan and advance are regressed by bank specific factors. The operational panel regression model used to examine the significant factors that affect the lending behavior of commercial banks in Ethiopia which represented by Bank Loan (BANL) was:

Estimation Equation:

=====

$$BANL = C (1) + C (2)*CAA + C (3)*EQI + C (4)*LER + C (5)*LQ + C (6)*NPL + C (7)*CAR + C (8)*VOD + C (9)*GDP$$

The estimation result of the operational panel regression model used in this study is presented in Table 4.6.

**Table 4-5 Operational panel regression model**

Dependent Variable: BANL  
Method: Panel Least Squares  
Date: 03/11/20 Time: 20:43  
Sample: 2010 2019  
Periods included: 10  
Cross-sections included: 12  
Total panel (balanced) observations: 120

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.748760	0.637834	-2.741716	0.0071
CAA	-0.091869	0.276421	-0.332350	0.7403
CAR	0.781258	0.637920	1.224696	0.2233
EQI	-0.014366	0.307054	-0.046786	0.9628
LER	5.031712	1.387530	3.626380	0.0004
LQ	-0.009604	0.045220	-0.212378	0.8322
NPL	4.919324	1.563579	3.146194	0.0021
VOD	0.753880	0.399725	1.885999	0.0619
GDP	2.597447	0.319120	8.139408	0.0000
R-squared	0.671801	Mean dependent var		3.617524
Adjusted R-squared	0.648147	S.D. dependent var		0.504937
S.E. of regression	0.299515	Akaike info criterion		0.498732
Sum squared resid	9.957705	Schwarz criterion		0.707794
Log likelihood	-20.92392	Hannan-Quinn criter.		0.583633
F-statistic	28.40114	Durbin-Watson stat		1.899883
Prob(F-statistic)	0.000000			

**Source:** own computation from sampled banks through E-views 8

\*, \*\*, and \*\*\* denote significance at 1%, 5%, and 10% levels respectively.

From regression result table the R-squared statistics and the adjusted-R squared statistics of the model was 67.2% and 64.8% respectively. The result indicates that the changes in the independent variables explain 64.8 % of the changes in the dependent variable. I.e. capital adequacy, cash reserve, equity investment, Legal reserve, liquidity, non-performing loan, volume of deposit and gross domestic product are collectively explain 65% of the changes in private commercial banks' lending behavior. The remaining 35% of changes was explained by other factors which are not included in the model. From this it can be understood that these variables are the major factors which affect Ethiopian private commercial banks' lending behavior. The null hypothesis of F-statistic i.e. the overall test of significance that the  $R^2$  is equal to zero was rejected at 1% as the p-value was sufficiently low. F value of 0.000 indicates strong statistical significance, which enhanced the reliability and validity of the model.

The above figure shows the results of the regression analysis model for the study, which connects the proportion of the credit facilities granted by the private commercial banks of Ethiopia with a number of independent variables.

**Capital adequacy (CAA)**, symbolized paid up capital to the total assets. The study found a statistically insignificant negative impact of bank capital on loans and advances. The p-value of the bank capital is 0.7403 which indicates it is statistically insignificant even at 10% significance level. Thus, we have no sufficient evidence to say bank capital is a main determinant of Ethiopian commercial banks' lending behavior. The likely justification for this result is Ethiopia commercial banks put excess capital which is more than they required to reserve statutorily. National bank of Ethiopia issues a Directive No. SBB/24/99, commercial banks capital must be at least equal to 8 per cent of the total amount of risk-weighted assets (solvency ratio). However Ethiopian commercial banks put more than the required amount and this leads their loans and advances and capital to have no significant effect on each other. This is maybe because of lack of skill and competences of treasury and credit managers of banks. However, the finding is not consistent with Mwafag (2015), Mercy (2016) and Abdul Karim, 2010.

The result of the model reveals that, **cash reserve requirement ratio (RR)** it is one of the monetary policy instruments which have no statistically significant relationship with loans and advances. The beta coefficient and p-value are 0.2233 and 0.7812 respectively. This indicates that we have no evidence between cash reserve requirement ratio and commercial bank loans and advance implies that the hypothesis as commercial bank loans and advances decreases; when cash reserve requirement ratio increases not proofed in this study. The t-statistics of the parameter shows that it is statistically insignificant at all (1%, 5% & 10%) level of significance and this indicates that the parameter cash reserve requirement ratio is not a good explanatory variable. The result of this paper is in line with Olokoyo (2011); Malede (2014); Assefa (2014) and Araga (2014) which found insignificant impact.

The results showed that the coefficient of the **legal reserve ratio (RR)** has highly statistically positive significant relationship with Ethiopian commercial bank lending behavior with p- value of 0.0004, and coefficient of 5.031712, which means that the legal reserve ratio affect the ratio of credit facilities granted by the private commercial banks in Ethiopia positively. This result differs

from what is expected and with what was found by the previous studies such as Olokoyo (2011), (Mwafag, 2015), (Azira Abdul Adzis, 2018) and (Jonas Ladime, 2013). The reason for this result might be that banks do not lend the full amount of deposits remaining after excluding the legal reserve ratio, but retain a large part of the deposits in the form of liquid assets, making the change in the reserve ratio not effective on the credit facilities granted.

The results indicate that, **Equity investment (EQI)** represented investment/total assets has negative and statistical insignificance relationship with Ethiopian private commercial banks' lending activity even at ten percent significant level with a p-value of 0.9628 and coefficients of -0.014366, which means that there is no evidence on the relationship between equity investment and bank lending in Ethiopian commercial banks'. This result is inconsistent with what is expected but align with some studies such as (Malede, 2014) found that the proportion of investment portfolio doesn't affect bank lending in Ethiopia. As the regression result indication and the researcher point of view, the commercial banks in Ethiopia yet not deploy much of their resources on other investment which affected their main tasks of delivering loans to investors. In this regard the control of the governing body of National Bank of Ethiopia (NBE) play a vital role in maintaining commercial banks for exposing their fund on other investments.

The results indicate that the coefficient of the **Liquidity ratio (LQ)** of -0.0096 connotes that liquidity ratio have a negative/inverse relation with bank lending behavior of Ethiopian commercial banks over the study period. The coefficient demonstrates that every 1 unit birr increase in liquidity ratio will cause loans and advances to change by 0.0096 units in opposite direction. This relationship is statistically insignificant even at 10% significant level (0.8322) and it revealed that there is no sufficient evidence to say that, the level of liquidity ratio of a given bank has an impact on banks' lending behavior. The negative relationship between loans and advance of Ethiopian commercial banks and their liquidity ratio is possibly banks hold high amount of liquid assets, are easily converted to cash at low cost, since they are liable to meet depositors at any time. If this is the case, holding large amount above the optimum level may hide the impact on the volume of credit allowed to customers. Also it maybe it is not a good variable to determine the behavior of bank loan among its different variables. However this result is inconsistent with previous results of Olokoyo (2011); Olusanya et al. (2012); and Malede (2014) which found a significantly positive relationship.

The result of the study reveals that **non-performing loans (NPL)** measured by nonperforming loan to total loans has a beta of 4.9193 with a p-value of 0.0021. It is significant at 1% significant level and it can be concluded that credit risk is a good explanatory variable. This indicated that credit risk is statistically significant which influencing the banks' loan supply. The beta value indicates that credit risk have a direct relationship with loan and advance of Ethiopian commercial banks. The regression coefficient shows, every 1 unit increase in credit risk, on average, leads commercial banks' lending increase by 4.9193 units. This direct relationship revealed that higher nonperforming loans to total loans positively affect the total business lending capacity of Ethiopian commercial banks which means that when credit risk is high it tend to exert their effort to mobilize additional resources and tries to increase banks' income and balance sheet which then tackle the reduction of bank loans supply. It is found inconsistent result with Guo (2011), Zelalem (2014) but it agreed with Malede (2014).

The coefficient ratio of the **volume of deposits (DEP/TA)** shows 0.7538, and this revealed that there is a positive association between volume of deposits and commercial banks' lending in Ethiopia which reveals one unit increase in volume of deposit lead commercial banks loan and advance increase by 0.7538 units. This relationship is significant at 10% significant level and this portray that the amount of loans and advances granted by Ethiopian commercial banks is highly influenced by the deposit amount collected from their customers in the form of demand, saving and time deposits. This depict that the volume of deposits banks able to attract greatly impact on the banks' lending performance and behavior positively because the more deposit a bank is able to attract, the more fund would be available for lending to customers. The result of this study aligns with that of Olokoyo (2011), Zelalem (2014), Sharma and Go (2012) and Amano (2014). This result also consistent Assefa (2014) results which found volume of domestic deposit influence the growth of bank credit to private sector positively and statistically significant at 10% level. However, it is inconsistent with the result of Malede (2014) which found volume of deposits is statistically insignificant that is the opposite of this result. Moreover, the sign of volume of deposit conform to our aforementioned expectation and this shows that as a lot of customers will definitely increase their deposit in the bank, then commercial banks increase their loan and advance in the economy. Generally, the implication for the result is that as commercial banks deposit increases their assets as a result banks can increase the volume of credit grant to clients.

**Gross domestic production (GDP)** as shown from the above table, the coefficient of real GDP growth rate is 2.5974, and this revealed that GDP and commercial banks' lending have a direct relationship. This implies that for one unit change in GDP, keeping other things constant had resulted 2.5974 unit changes on volume of commercial bank loans and advances in same direction. However, the p-value of the parameter is 0.000 and this denotes that GDP is statistically significant at all 1%, 5% & 10% significance levels over the study period. Thus, GDP is a good determinant for Ethiopian commercial banks' lending in the study period. However, according to Tomak (2013) the insignificance of GDP can be explained by firms' high demand for credit or financial constraints and supply side constraints in credit to firms. The result was consistent with what is expected and with what was found by several studies such as Imran and Nishatm (2013), which reported that the economic growth has a positive impact on the bank credit Mercy (2016), Olokoyo (2011) and Malede (2014). On the other way, the result is not consistent with Amano (2014) and Azira Abdul Adzis (2018) which they concludes that there is no relationship between gross domestic product and lending behavior of Ethiopian commercial banks.

**Table 4-6 Summary and Comparison of test result with expectation for Banl model**

Dependent variable			Banl	
Explanatory variables	Expected relationship	Actual relationship	Statistical significance Test	Hypothesis status
CAA	Positive	Negative	Insignificant	Rejected
CAR	Negative	Positive	Insignificant	Rejected
EQI	Positive	Negative	Insignificant	Rejected
LER	Negative	Positive	Significant at 1%	Failed to reject
LQ	Negative	Negative	Insignificant	Rejected
NPL	Negative	Positive	Significant at 1%	Failed to reject
VOD	Positive	Positive	Significant at 10%	Failed to reject
GDP	Positive	Negative	Significant at 1%	Failed to reject

Source: Developed by the researcher.

As shown from the above summary table 4.7 the independent variables: capital adequacy, equity investment, and GDP were deviated from the expected results it implies the researcher hypothesized positive relationship among the bank lending but the finding result is negative. So, the possible reason for the negative association between capital adequacy and bank loan could be the lending appetite of the private banks are not limited by their capital and initiated to lend more when they capital increased. In additions, Cash reserve, lending reserve, non- performing loan were positive as per the researcher expectation however the result shows positive. The main reason for this deviation might become the banks yet not deploy the entire fund collected from their aggressive deposit mobilization effort to compensate the deteriorated asset quality and to tackle the governing organ restrictions which limit their lending capabilities.

## **Chapter Five**

### **Summary, Conclusions and Recommendations**

The preceding chapter presented the results and discussion, while this chapter deals with Conclusions, recommendations and suggestion for further research based on the findings of the study. Accordingly this chapter is organized into three subsections. Section 5.1 presents the conclusions, section 5.2 presents the recommendations and at last Section 5.3 presents suggestion for further research.

#### **5.1. Summary**

From the estimation results, it was found that non-performing loan, legal reserve and gross domestic product (GDP) growth were significant in determining lending behavior in Ethiopian's private commercial banks whereas capital adequacy, cash reserve, equity investment, liquidity and volume of deposit was not significant at all levels. Cash reserve and volume of deposit had a positive and statistically non-significant effect on bank lending behavior. It can be deduced that cash reserve and volume of deposit does not contribute significantly to bank lending behavior. The positive effect of non-performing loan infers that private commercial banks in Ethiopia have sufficient deposit that was readily covered to the deteriorated assets. Legal reserve has a positive and significant influence on lending volumes among private commercial banks in Ethiopia. Finally, the study revealed a significant and negative relationship between real GDP growth rate and total loans advanced by private commercial banks in Ethiopia.

#### **5.2. Conclusion**

The main objective of this study was to investigate most important determinants of bank lending in Ethiopian commercial banks'. According to previous studies made on the determinants of bank lending in Ethiopian commercial banks', lending activities are affected by both bank specific factors and macroeconomic or external factors. Bank specific factors commonly known as internal factors are those factors which are under the control of the management of the organization and also called company specific factors. There are different factors which might affect the banks' specifically and they are under the control of the management include Volume of deposit, equity investment and capital adequacy. Furthermore, macroeconomic factors which is out of the control

of the companies control are called external factors which is composed of industry specific and macroeconomic factor like market share, growth rate of GDP, regulatory requirement and inflation. In this study four internal and four external in aggregate eight variables selected to test their relation with the lending activities of the bank.

The empirical analysis of investigating the determinants of the bank lending in Ethiopian commercial banks was conducted using a panel data set consisting of financial data of ten private commercial banks which stays ten and more period of time 2010 to 2019, which were analyzed using descriptive statistics, and multiple linear regression analysis. The analyses were made in line with the specific research objectives and stated hypotheses formulated in the study. Thus, panel data of twelve commercial banks for ten years was used for the analysis purpose. Data used for the bank specific and external factors were obtained from each companies audited financial reports, NBE and MoFEC. Before making regression analysis, the study goes through all diagnostic tests, including the errors have zero mean, multicollinearity, heteroscedasticity; normality and autocorrelation were made for the classical linear regression model by using E-views 8 software. Regression Analysis was identified as the most appropriate tool for econometric analysis of the data. The assumptions needed to be fulfilled for OLS were tested; the data was found to be homoskedastic, free of autocorrelation, free of Multi-collinearity and normally distributed.

In relation to the regression result measured by Bank loan (Bankl): legal reserve requirement, non-performing loan, volume of deposit and gross domestic product have positive significant impact on the growth of bank lending activity in Ethiopian commercial banks, on the other hand capital adequacy ratio, equity investment and liquidity have negative insignificant impact on bank lending activity. When we see the cash reserve requirement has positive and insignificant impact on bank lending (Bankl). Generally, except Capital adequacy ratio, cash reserve ratio, equity investment and liquidity all independent variables were in agreement with the research hypothesis. The explanatory variables included in this study jointly explain about 64.8% of the determinant of bank lending on Ethiopian commercial banks.

### **5.3. Recommendations**

Commercial banks remain dominant in the banking system in terms of their shares of total assets and deposit liabilities. Their total loans and advances, a major component of total credits to the

private sector are still on the increase in spite of the major constraints posted by the government regulations, institutional constraints and other macro-economic factors. However, both government and commercial banks should be mindful of the facts that the environments in which they operate are important factors in the bank performance and behavior. Where the environment is conducive and supportive, performance is enhanced and good lending behavior guaranteed. But where the environment is unstable and harsh, the bank's performances suffer. Commercial banks should note that they need to do a lot in order to ensure good lending behavior even where a good measure of macro-economic stability is achieved. It therefore follows that effort should be made by commercial banks to enforce the most easily realizable policies and good credit management in every situation. Based on the findings in this study, the following suggestions are recommended:

- ✎ Ethiopian commercial banks' should enhance their strategies in mobilizing deposits from the public by creating awareness in the society to increase saving and they have to improve their service excellences, branch expansion, promotional effort, and using new banking technology. Because the studies indicate that deposit plays a great role as a source of funds for giving loan and advances.
- ✎ Even if the regularly measures taken by the central bank to control the economy as a whole and to maintain soundness and stability of financial sector some regulations like legal reserve requirement ratio should have managed carefully as it has adverse impact on commercial banks' lending ability.
- ✎ Even though, macroeconomic factors are not controlled by the management, companies should prepare themselves for the change in economic growth of GDP by preparing financial plans like cash budget, and pro-forma balance sheet and income statement this will help banks to easily adopt the economic changes of the country.
- ✎ There should be closer consultation and cooperation between commercial banks and the regulatory authorities so that the effect of regulatory measure on commercial banks will be taken into account at the stage of policy formulation.

- ✎ Commercial banks should develop credit procedures, policies and analytical capabilities and these efforts should be expanded into full credit management including origination, approval, monitoring and problem management tailored to the needs of each bank to improve the asset quality and maintain the governing organ requirement.

#### **5.4. Suggestion for further research**

This investigation fails to consider factors that may affect individuals demand for loan and it focus only the determinants of commercial banks' lending on supply side. So if someone investigates this issue by emphasizing both supply and demand side determinants of loan by incorporating excluded banks the finding may be relatively fruit full.

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# Appendices

## Appendix-1

Heteroskedasticity Test: White

F-statistic	1.974848	Prob. F(9,70)
Obs*R-squared	16.19952	Prob. Chi-Square(9)
Scaled explained SS	10.86430	Prob. Chi-Square(9)

Test Equation:

Dependent Variable: RESID^2

Method: Least Squares

Date: 03/26/20 Time: 18:51

Sample: 2011 2129

Included observations: 80

No d.f. adjustment for standard errors & covariance

Variable	Coefficient	Std. Error	t-Statistic
C	-0.000574	0.001940	-0.295659
LOG(CAA)^2	0.000214	0.000173	1.236201
LOG(EQI)^2	-8.89E-06	1.77E-05	-0.503122
LOG(LER)^2	0.000225	7.44E-05	3.019585
LOG(LQ)^2	-4.88E-05	0.000454	-0.107501
LOG(NPL)^2	-0.000121	5.80E-05	-2.087516
LOG(RR)^2	8.05E-06	3.23E-05	0.249196
LOG(VOD)^2	-0.000559	0.000488	-1.146099
LOG(GDP)^2	-0.000708	0.005862	-0.120779
LAGBANL^2	4.81E-05	8.41E-05	0.571847

R-squared	0.202494	Mean dependent var
Adjusted R-squared	0.099958	S.D. dependent var
S.E. of regression	0.002170	Akaike info criterion
Sum squared resid	0.000330	Schwarz criterion
Log likelihood	382.4708	Hannan-Quinn criter.
F-statistic	1.974848	Durbin-Watson stat
Prob(F-statistic)	0.055260	

## Appendix-2

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.501709	Prob. F(4,66)	0.2118
Obs*R-squared	6.673630	Prob. Chi-Square(4)	0.1542

Test Equation:

Dependent Variable: RESID

Method: Least Squares

Date: 03/26/20 Time: 18:09

Sample: 2011 2129

Included observations: 80

No d.f. adjustment for standard errors & covariance

Presample and interior missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.016992	0.077668	0.218771	0.8275
LOG(CAA)	0.000204	0.011858	0.017163	0.9864
LOG(EQI)	1.42E-05	0.003189	0.004465	0.9965
LOG(LER)	0.000835	0.012585	0.066334	0.9473
LOG(LQ)	0.005877	0.010556	0.556742	0.5796
LOG(NPL)	0.003153	0.008994	0.350564	0.7270
LOG(RR)	0.000128	0.005565	0.023008	0.9817
LOG(VOD)	-0.019939	0.023492	-0.848736	0.3991
LOG(GDP)	0.049454	0.098731	0.500899	0.6181
LAGBANL	-0.007197	0.011369	-0.632979	0.5289
RESID(-1)	0.349582	0.137930	2.534494	0.0136
RESID(-2)	0.147854	0.132075	1.119468	0.2670
RESID(-3)	0.079921	0.146195	0.546670	0.5864
RESID(-4)	-0.155028	0.168428	-0.920440	0.3607
R-squared	0.083420	Mean dependent var		7.85E-17
Adjusted R-squared	-0.097118	S.D. dependent var		0.041701
S.E. of regression	0.043679	Akaike info criterion		-3.266275
Sum squared resid	0.125918	Schwarz criterion		-2.849420
Log likelihood	144.6510	Hannan-Quinn criter.		-3.099146
F-statistic	0.462064	Durbin-Watson stat		1.841460
Prob(F-statistic)	0.937928			

### Appendix-3 Lists of banks operating in Ethiopia

No.	Name of Commercial Banks	Year established
1	Construction and Business Bank (CBE)	1983
2	Commercial Bank of Ethiopia (CBE)	1963
3	Awash International Bank S.C (AIB)	1994
4	Dashen Bank S.C (DB)	1995
5	Bank Of Abyssinia S.C (BOA)	1996
6	Wegagen Bank S.C (WB)	1997
7	United Bank S.C (UB)	1998
8	Nib International Bank S.C (NIB)	1999
9	Cooperative Bank Of Oromia S.C (CBO)	2005
10	Lion International Bank S.C (LIB)	2006
11	Oromia International Bank S.C (OIB)	2008
12	ZemenBank S.C (ZB)	2009
13	Bunna International Bank S.C (BIB)	2009
14	Berhan International Bank S.C (BBI)	2010
15	AbayBank S.C (AB)	2010
16	Addis International Bank S.C (AdIB)	2011
17	Debub Global Bank S.C (DGB)	2012
18	Enat Bank S.C (EB)	2013

## Appendix 4 Data used for analysis

YEAR	Bank		BANL	NPL	LER	CAA	EQI	RR	VOD	LQ	GDP
2010	AIB	1	3.50	0.05	0.03	0.12	0.00	0.21	0.77	0.51	1.48
2011	AIB	1	3.60	0.04	0.03	0.13	0.16	0.22	0.77	0.40	1.50
2012	AIB	1	3.74	0.13	0.03	0.13	0.21	0.10	0.77	0.26	1.63
2013	AIB	1	3.89	0.02	0.03	0.14	0.17	0.17	0.84	0.24	1.67
2014	AIB	1	3.96	0.02	0.03	0.13	0.21	0.21	0.75	0.25	1.73
2015	AIB	1	4.10	0.02	0.03	0.13	0.23	0.23	0.78	0.16	1.80
2016	AIB	1	4.19	0.02	0.03	0.13	0.18	0.18	0.77	0.20	1.85
2017	AIB	1	4.35	0.01	0.03	0.11	0.17	0.17	0.73	0.17	1.88
2018	AIB	1	4.49	0.01	0.03	0.12	0.16	0.01	0.79	0.21	1.90
2019	AIB	1	4.67	0.01	0.03	0.13	0.16	0.00	0.80	0.15	1.96
2010	DB	2	3.70	0.02	0.03	0.09	0.12	0.18	0.82	0.43	1.48
2011	DB	2	3.79	0.02	0.03	0.10	0.12	0.20	0.81	0.42	1.50
2012	DB	2	3.91	0.02	0.04	0.10	0.16	0.13	0.80	0.33	1.63
2013	DB	2	3.95	0.02	0.04	0.10	0.19	0.11	0.80	0.31	1.67
2014	DB	2	3.97	0.02	0.04	0.12	0.19	0.11	0.81	0.30	1.73
2015	DB	2	4.06	0.02	0.05	0.12	0.24	0.09	0.80	0.22	1.80
2016	DB	2	4.10	0.02	0.05	0.12	0.23	0.10	0.80	0.24	1.85
2017	DB	2	4.26	0.02	0.04	0.12	0.24	0.04	0.80	0.15	1.88
2018	DB	2	4.36	0.01	0.04	0.13	0.23	0.01	0.79	0.16	1.90
2019	DB	2	4.51	0.01	0.04	0.12	0.22	0.01	0.80	0.11	1.96
2010	UB	3	3.42	0.04	0.02	0.11	0.00	0.30	0.80	0.56	1.48
2011	UB	3	3.52	0.03	0.02	0.12	0.10	0.18	0.79	0.46	1.50
2012	UB	3	3.61	0.02	0.03	0.13	0.19	0.10	0.77	0.33	1.63
2013	UB	3	3.67	0.02	0.03	0.12	0.29	0.05	0.81	0.21	1.67
2014	UB	3	3.70	0.01	0.03	0.13	0.25	0.06	0.75	0.28	1.73
2015	UB	3	3.84	0.01	0.03	0.12	0.29	0.04	0.82	0.19	1.80
2016	UB	3	3.93	0.01	0.03	0.12	0.26	0.05	0.75	6.86	1.85
2017	UB	3	4.08	0.01	0.03	0.11	0.23	0.04	0.75	0.15	1.88
2018	UB	3	4.17	0.01	0.03	0.89	0.05	0.00	0.70	0.16	1.90
2019	UB	3	4.33	0.01	0.03	0.89	0.05	0.01	0.70	0.11	1.96
2010	BOA	4	3.50	0.07	0.02	0.09	0.00	0.26	0.82	0.47	1.48
2011	BOA	4	3.52	0.03	0.03	0.09	0.11	0.18	0.83	0.40	1.50
2012	BOA	4	3.59	0.03	0.03	0.11	0.18	0.11	0.82	0.31	1.63
2013	BOA	4	3.67	0.02	0.03	0.11	0.24	0.08	0.84	0.19	1.67
2014	BOA	4	3.70	0.00	0.03	0.11	0.26	0.09	0.81	0.24	1.73
2015	BOA	4	3.77	0.00	0.03	0.13	0.00	0.09	0.81	0.46	1.80
2016	BOA	4	3.90	0.00	0.03	0.13	0.22	0.10	0.81	0.18	1.85
2017	BOA	4	4.14	0.00	0.03	0.11	0.21	0.04	0.82	0.14	1.88
2018	BOA	4	4.25	0.01	0.03	0.13	0.00	0.00	0.81	0.14	1.90

2019	BOA	4	4.37	0.01	0.03	0.13	0.01	0.00	0.82	0.11	1.96
2010	WB	5	3.39	0.04	0.04	0.18	-	0.15	0.68	0.53	1.48
2011	WB	5	3.46	0.05	0.04	0.17	0.11	0.24	0.74	0.51	1.50
2012	WB	5	3.55	0.02	0.04	0.19	0.19	0.07	0.69	0.33	1.63
2013	WB	5	3.67	0.02	0.04	0.18	0.23	0.10	0.73	0.27	1.67
2014	WB	5	3.66	0.02	0.05	0.19	0.23	0.04	0.75	0.16	1.73
2015	WB	5	3.78	0.00	0.05	0.18	0.31	0.10	0.72	0.18	1.80
2016	WB	5	3.88	0.00	0.04	0.17	0.27	0.07	0.68	0.19	1.85
2017	WB	5	4.01	0.00	0.04	0.16	0.25	0.04	0.67	0.19	1.88
2018	WB	5	4.17	0.02	0.04	0.16	0.00	0.00	0.75	0.15	1.90
2019	WB	5	4.21	0.02	0.04	0.17	0.00	0.01	0.79	0.14	1.96
2010	NIB	6	3.41	0.04	0.03	0.15	0.00	0.16	0.69	0.51	1.48
2011	NIB	6	3.44	0.04	0.03	0.16	0.08	0.24	0.73	0.51	1.50
2012	NIB	6	3.57	0.03	0.04	0.18	0.15	0.12	0.71	0.36	1.63
2013	NIB	6	3.66	0.03	0.04	0.18	0.22	0.06	0.73	0.25	1.67
2014	NIB	6	3.73	0.00	0.04	0.18	0.26	0.09	0.74	0.18	1.73
2015	NIB	6	3.84	0.00	0.04	0.16	0.29	0.06	0.74	0.14	1.80
2016	NIB	6	3.88	0.00	0.04	0.16	0.27	0.07	0.78	0.19	1.85
2017	NIB	6	4.03	0.00	0.04	0.14	0.25	0.04	0.78	0.16	1.88
2018	NIB	6	4.13	0.02	0.03	0.13	0.04	0.04	0.81	0.15	1.90
2019	NIB	6	4.28	0.01	0.03	0.13	0.04	0.04	0.82	0.12	1.96
2010	CBO	7	2.86	0.03	0.01	0.11	0.01	0.24	0.78	0.48	1.48
2011	CBO	7	2.90	0.02	0.01	0.10	0.10	0.20	0.79	0.49	1.50
2012	CBO	7	3.14	0.01	0.01	0.11	0.12	0.13	0.76	0.34	1.63
2013	CBO	7	3.33	0.02	0.01	0.11	0.10	0.08	0.68	0.52	1.67
2014	CBO	7	3.56	0.00	0.02	0.15	0.12	0.06	0.74	0.25	1.73
2015	CBO	7	3.82	0.00	0.02	0.12	0.14	0.04	0.64	0.21	1.80
2016	CBO	7	3.77	0.00	0.03	0.11	0.17	0.05	0.79	0.20	1.85
2017	CBO	7	3.99	0.00	0.22	0.09	0.19	0.04	0.81	0.20	1.88
2018	CBO	7	4.17	0.02	0.02	0.09	0.00	0.00	0.85	0.26	1.90
2019	CBO	7	4.33	0.04	0.01	0.08	0.00	0.01	0.86	0.17	1.96
2010	LIB	8	2.77	0.02	0.01	0.18	0.00	0.17	0.75	0.54	1.48
2011	LIB	8	2.83	0.01	0.01	0.20	0.09	0.27	0.72	0.50	1.50
2012	LIB	8	2.99	0.02	0.02	0.18	0.14	0.12	0.71	0.42	1.63
2013	LIB	8	3.12	0.01	0.02	0.18	0.18	0.07	0.72	0.33	1.67
2014	LIB	8	3.19	0.00	0.03	0.17	0.20	0.04	0.74	0.26	1.73
2015	LIB	8	3.45	0.00	0.02	0.14	0.22	0.04	0.76	0.26	1.80
2016	LIB	8	3.63	0.00	0.03	0.13	0.21	0.09	0.78	0.23	1.85
2017	LIB	8	3.74	0.00	0.02	0.13	0.22	0.04	0.80	0.24	1.88
2018	LIB	8	3.87	0.03	0.03	0.13	0.00	0.00	0.81	0.21	1.90
2019	LIB	8	4.07	0.02	0.02	0.13	0.00	0.00	0.80	0.18	1.96

2010	OIB	9	2.57	0.01	0.00	0.19	0.03	0.18	0.73	0.56	1.48
2011	OIB	9	2.82	0.01	0.01	0.15	0.16	0.20	0.12	0.43	1.50
2012	OIB	9	3.01	0.01	0.01	0.16	0.18	0.09	0.76	0.40	1.63
2013	OIB	9	3.21	0.01	0.01	0.14	0.22	0.07	0.78	0.31	1.67
2014	OIB	9	3.40	0.00	0.01	0.12	0.19	0.11	0.81	0.30	1.73
2015	OIB	9	3.67	0.00	0.01	0.16	0.21	0.05	0.76	0.18	1.80
2016	OIB	9	3.71	0.00	0.02	0.12	0.22	0.08	0.83	0.19	1.85
2017	OIB	9	3.86	0.02	0.02	0.10	0.21	0.04	0.82	0.20	1.88
2018	OIB	9	4.00	0.01	0.02	0.11	0.00	0.01	0.71	0.24	1.90
2019	OIB	9	4.19	0.02	0.02	0.12	0.00	0.00	0.71	0.16	1.96
2010	ZB	10	2.58	0.02	0.01	0.15	0.00	0.26	0.65	0.58	1.48
2011	ZB	10	2.81	0.02	0.02	0.15	0.13	0.21	0.72	0.44	1.50
2012	ZB	10	3.01	0.02	0.02	0.12	0.16	0.10	0.75	0.38	1.63
2013	ZB	10	3.14	0.09	0.02	0.15	0.23	0.09	0.77	0.35	1.67
2014	ZB	10	3.16	0.09	0.03	0.17	0.24	0.14	0.77	0.38	1.73
2015	ZB	10	3.33	0.00	0.03	0.16	0.28	0.10	0.78	0.24	1.80
2016	ZB	10	3.51	0.00	0.03	0.15	0.25	0.04	0.82	0.23	1.85
2017	ZB	10	3.60	0.00	0.03	0.14	0.19	0.04	0.76	0.32	1.88
2018	ZB	10	3.70	0.04	0.03	0.14	0.00	0.00	0.82	0.33	1.90
2019	ZB	10	3.70	0.04	0.03	0.14	0.00	0.00	0.82	0.33	1.96
2010	BIB	11	2.28	0.00	0.00	0.35	0.00	0.12	0.65	0.52	1.48
2011	BIB	11	2.56	0.01	0.01	0.30	0.01	0.24	0.72	0.48	1.50
2012	BIB	11	2.81	0.01	0.01	0.21	0.18	0.09	0.75	0.30	1.63
2013	BIB	11	2.98	0.01	0.01	0.18	0.21	0.10	0.77	0.27	1.67
2014	BIB	11	3.13	0.00	0.02	0.17	0.20	0.11	0.77	0.30	1.73
2015	BIB	11	3.38	0.00	0.02	0.15	0.23	0.05	0.78	0.18	1.80
2016	BIB	11	3.56	0.00	0.02	0.14	0.24	0.06	0.82	0.18	1.85
2017	BIB	11	3.72	0.00	0.02	0.14	0.21	0.04	0.76	0.21	1.88
2018	BIB	11	3.84	0.01	0.02	0.15	0.00	0.00	0.76	0.21	1.90
2019	BIB	11	3.91	0.02	0.03	0.03	0.00	0.00	0.73	0.16	1.96
2010	BBI	12	2.19	0.00	0.00	0.27	0.00	0.28	0.63	0.52	1.48
2011	BBI	12	2.52	0.00	0.01	0.16	0.03	0.18	0.76	0.58	1.50
2012	BBI	12	2.70	0.00	0.01	0.18	0.14	0.10	0.73	0.44	1.63
2013	BBI	12	2.99	0.01	0.01	0.17	0.16	0.06	0.73	0.34	1.67
2014	BBI	12	3.07	0.01	0.02	0.20	0.20	0.21	0.72	0.35	1.73
2015	BBI	12	3.27	0.00	0.02	0.17	0.20	0.04	0.74	0.30	1.80
2016	BBI	12	3.57	0.00	0.02	0.15	0.22	0.05	0.74	0.22	1.85
2017	BBI	12	3.72	0.00	0.02	0.18	0.21	0.04	0.72	0.23	1.88
2018	BBI	12	3.85	0.00	0.02	0.16	0.00	0.04	0.77	0.19	1.90
2019	BBI	12	4.00	0.02	0.02	0.15	0.00	0.04	0.78	0.16	1.96