



**MACROECONOMIC, SECTOR-SPECIFIC AND INSTITUTIONAL  
DETERMINANTS OF BANKING SECTOR DEVELOPMENT IN  
ETHIOPIA**

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**JANUARY, 2021**

**ADDIS ABABA, ETHIOPIA**

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SCHOOL OF COMMERCE  
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A Thesis Submitted to the Economics program unit for Partial Fulfillment for the  
Requirements for the **DEGREE OF MASTER OF SCIENCE IN DEVELOPMENT  
ECONOMICS**

JANUARY, 2021

ADDIS ABABA, ETHIOPIA

**ADDIS ABABA UNIVERSITY**  
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This is to certify that the thesis prepared by Mulugeta Admasu Getahun, entitled: “MACROECONOMIC, SECTOR-SPECIFIC AND INSTITUTIONAL DETERMINANTS OF BANKING SECTOR DEVELOPMENT IN ETHIOPIA” and submitted in partial fulfilment of the requirements for the Degree of Master of Science in Development Economics complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

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## **ACKNOWLEDGMENTS**

First and foremost thanks to the Almighty God Who gave me for his power and patience in every endeavor of my life. Next, I would like to express my deepest gratitude to my advisor Dr.Berhanu Denu for his professional guidance, constructive comments and valuable suggestions. Finally, my great thanks go to all my friends who provided me all the necessary assistance in finishing my thesis.

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## ACRONYMS AND ABBREVIATIONS

EIB = European Investment Bank

GDP= Gross Domestic Product

NBE = National Bank of Ethiopia

SMEs = Small and Medium Enterprises

STATA = Statistics and Data

NPLs= Non-performing loans

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## ABSTRACT

*This paper aims at investigating the macroeconomic, sector-specific and institutional determinants of banking sector development in Ethiopia using fixed effect model. Using yearly quantitative panel data from 2014 to 2018, the study found real GDP growth rate has insignificant effects on both banks private sector credit to GDP and banking stability. The regression result shows that inflation has a positive significant effect on private sector credit, and negative relationship with the banking soundness. Further, trade openness, reserve requirement and rule of law index have found significant but negative effect on private sector credit, and significant and positive influence on banking soundness. It is therefore recommended that government of Ethiopia ensures maintain low inflationary and high economic growth in order to stimulate financial development. Moreover, national bank of Ethiopia should consider adjusting the cash reserve ratio of banks downwards.*

*Keywords: panel data, banking development, fixed effect model*

# I. INTRODUCTION

## 1.1 Background of the study

The banking sector in Africa and the rest of the developing world has experienced major transformation in its operating environment. In many countries, financial sector reforms have been implemented. The Ethiopian financial sector went through reform periods. In the pre-reform period the Derg regime (1974 to 1991) the financial sector was repressed. In the post-1991 reform period, the economic policy changed from the previous Socialist system to a market-oriented economic policy. Since 1992 Ethiopia has been engaged in liberalizing its financial sector and new private banks emerging (Geda, 2006). Despite different sector reform has taken, the financial sector in Ethiopia is still undeveloped.

The financial system is predominantly closed to foreign investment and is dominated by banks of which government owned commercial bank holds the disproportionate share of the market with majority of assets and deposits. Currently the government of Ethiopia passed a proclamation allowing foreign investors of Ethiopian origin to invest in banks. Despite a remarkable growth in Ethiopian banking sector, the sector led mainly by state banks which dominate the sector. Competition is limited as shown by the high concentration ratio and spread between lending and deposit rates. The crowding out of private financing is evident by the low level of private sector credit to GDP ratio which stands at just 11 percent, half the average seen among the largest African economies( 20% ) indicating a level of intermediation that does not meet the needs of the real economy in any significant measure (world bank,2019).

Banks are considered as one of the largest and most important types of financial institutions, and the most efficient in practicing the role of financial intermediation (Banga, 2013). The banking system injects fuel in the economic system in the form of fund flow which impels economic efficiency. Banks by intermediary activity play a significant role in the optimal and well-organized allocation of funds of an economy by mobilizing resources for productive activities. This makes commercial banks to be considered as the lifeblood of economy.

Because, the financial system based on banks provides information regarding the investment opportunities and it directs resources to productivity channels resulting in facilitating the process of the economic growth (Beck et al., 2001). Effective process of economic development and the health of the economy are closely related to the soundness of banking system. Hence, the countries that possess an advanced banking system grew faster than those whose banking system was weak (Levine, 1997).

In studies on finance and development relationship countries with better developed financial systems experience faster economic growth than those with less developed systems (King and Levine 1993). There is consensus on countries should adopt appropriate macroeconomic policies, encourage competition within the financial sector, and develop a strong and transparent institutional environment for financial system.

(McKinnon and Shaw, 1973) coined the term financial repression for policies that distort the allocation of capital by draining financial resources toward the government. Financial repression is defined through policies that depress financial systems (such as interest rate ceilings, high reserve requirements and credit control) retard financial development, and therefore economic growth. On the contrary, financial liberalization and financial development can stimulate investment and its productivity, and ultimately foster economic growth.

Theoretical and empirical studies investigated the effects of inflation on financial development and conclude that economies with higher inflation rates are likely to have smaller, less active and less efficient banks and equity markets (Huybens and Smith, 1999). Studies supported the view that policies which encourage openness to external trade tend to boost financial development (Do and Levchenko, 2004).

(Levine, 2012) studied that sound financial regulatory framework is vital for banking sector development by enabling timely and easily accessible and comprehensible disclosure of information, removal of barriers to competition. The banking sector regulation played a crucial role on banking sector development indicators like depth, stability and efficiency. But certain regulations have either negative or no effects on financial deepening. Stringent regulatory and supervisory requirements reduce financial depth.

(Acemoglu et al., 2001) identified institutions have a crucial role in banking sector development. Empirical studies supported that improving the quality of institutions promote banking sector development. The supply side of financial sector development tends to be greatly influenced by institutions (Huang, 2010). The quality of banks in the financial sector is dependent on the quality of institutions.

Due to multidimensional nature of banking sector development there is no consensus among researchers on the banking sector development indicators. Many empirical studies have used a single measure, commonly private sector credit to Gross Domestic Product (GDP). But this single measure would not be sufficient to provide comprehensive information on banking sector development. (Cihak, DemirgucKunt, Feyen and Ross Levine, 2013) found four dimensions of banking sector development which include depth, access, efficiency, and stability. But these dimensions may not wholly show the characteristics of the banking sector development, rather to reflect what majority of empirical studies have focused on. This study used depth and stability dimensions of banking sector development because these two measures are the dominant and broader acceptance in the literatures.

## 1.2 Statement of the problem

Modern banking in Ethiopia started in 1905, and over the last three decades different deregulation, structure and gradual liberalization has been taken. Despite the country has reformed its financial sector following the economic policy change in 1991; the banking sector is still undeveloped, weak in competition and characterized by a large share of state ownership (Bezabih and Desta, 2014). No foreign banks and the system remained isolated from the impact of globalization. The policy measures implemented so far are not fully adequate improving the banking sector. It is not yet competitive and capable of accelerating the economic growth process of the country. The financial sector regulatory measures influence banking sector development through controlling credit allocation, and activity restriction, interest rate control in saving deposit rate and high reserve requirement in each deposit by commercial banks (World Bank, 2019).

(Gashayie and Singh, 2016) empirical evidence suggested that financial development in Ethiopia is generally low. Both credit and deposit to GDP ratio, which is a measure of banking

development is comparable to some low income African countries. But, it is far lower than those mid and high income countries, suggesting the undeveloped nature of financial sector in Ethiopia. Still the banking industry provides traditional commercial business and there is no secondary market. Even though few studies undertaken in banking sector development in Ethiopia, it only showed the banking development trends. However, it cannot examine what factors drives for banking development. This study tries to fill the gap and motivates to study the determinants of banking sector development in Ethiopia.

Ethiopian banking sector seems to be at a crossroads (downloaded from [www.marcopolis.net](http://www.marcopolis.net), 2014). The sector has to choose whether to remain competitive within an untapped sector or open up the space for the international banking community. The international organizations influenced the Ethiopian government to open the financial sector for foreign banks. The country is currently striving for its accession to the world trade organization with this closed sector. The government's concern in Ethiopia that financial liberalization may lead to a banking crisis and into an economic crisis. But empirical evidence provides that as regulatory tools are upgraded, the probability of a banking crisis significantly diminishes. As far as the researcher is concerned, there is no researcher tried to deal with macroeconomic, sector-specific and institutional determinants of banking sector development in Ethiopia. Then, the question of what determines financial development in banking sector becomes important. Thus this study seeks to investigate the macroeconomic factors, sector-specific and institutional determinants of financial sector development particularly banking sector in Ethiopia.

#### Research Questions

- i. What are macroeconomic factors impact banking sector development?
- ii. How financial regulatory measures can influence banking sector development?
- iii. How do institutional factors impact banking sector development in Ethiopia?

### 1.3 Objective of the Study

#### 1.3.1 General Objective

The overall objective of the study is to provide better insight on the effects of macroeconomic, sector-specific and institutional factors on financial development in the banking sector.

#### 1.3.2 Specific Objectives

The specific objectives of the study are:

- ✚ To determine the effects of macroeconomic environment (real GDP growth rate, Trade Openness, inflation) on banking sector development.
- ✚ To assess sector-specific determinant (reserve requirement) of banking sector development.
- ✚ To examine the institutional factor (rule of law) that determines banking sector development.

### 1.4 Research hypothesis

Hypothesis 1: Macroeconomic environment (real GDP growth rate, Trade Openness, low inflation) leads to positive impact on banking sector development;

Hypothesis 2: Institutional factor (rule of law) leads to positive for banking sector development;

Hypothesis 3: sector-specific (reserve requirement) significant relationship on banking sector development;

### 1.5 Significance of the research

The study investigated the leading factors in macroeconomic, sector-specific and institutional environment that has an impact on financial development in banking sector. The study played a vital role to policy makers to confirm the need for further financial reforms and taking into consideration the quality of institutional environment and the soundness of macroeconomic factors for banking sector development.

## 1.6 Scope and Limitations of the study

This study bound to macroeconomic, sector-specific and institutional determinants of financial sector development particularly banking sector in Ethiopia. The study focused on the potential determinants in each dimension depending on the past literature while not capture all factors. Due to data, time and budget limitations the study did not compare the performance parameters of public and private sector banks in Ethiopia.

## 1.7 Definition of basic terms

**Banks:** 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 and other debt instruments; are some of them.

**Non-performing loans:** Under the Ethiopian banking business directive, non-performing loans are defined as “loans or advances whose credit quality has deteriorated such that full collection of principal and/or Interest in accordance with the contractual repayment terms of the loan or advances in Question (NBE, 2008).” It further provides that:

..., loans or advances with pre-established repayment programs are nonperforming when principal and/ or interest is due and uncollected for 90(ninety) consecutive days or more beyond the scheduled payment date or maturity (NBE, 2008).

**Reserve requirements:** Reserve Requirement: is the percentage of deposit held as a reserve by commercial banks in order to protect depositors from unexpected losses. The rate for the reserve requirement is determined by The National Bank of Ethiopia (National Bank of Ethiopia).

## 1.8 Organization of the paper

The organization of the rest of the paper follows as; the next section 2 presents review of literature and theoretical framework. Section 3 explains the data and model specification along with detailed econometric methodology. Section 4 discusses the estimation, results and findings. The last section 5 concludes the paper by presenting a summary of findings and policy recommendations.

## II.LITERATURE REVIEW

### 2.1 Chapter Overview

In this chapter of the study, an overview of existing literature (theoretical and empirical) is explored on the topic of macroeconomic, sector-specific and institutional determinants of banking sector development from a comprehensive perspective moving to more specific studies. In the first part, function of financial system (banking sector), in the second part finance-growth nexus, in the third section banking sector development indicators and in the fourth section determinants of banking sector development will be addressed.

The final section presents empirical studies on the subject matter of the study and will conclude by explaining literature gap.

### 2.2 The Functions of Financial Systems

The financial system is a wider concept and complex in both structure and function throughout the world. It embraces banks, insurance companies, mutual funds, stock and bond markets, which are regulated by government (Mishkin and Eakins, 2018).

The cost of acquiring information and making transactions create incentives for the emergency financial markets and institutions. The most important role of financial sector in facilitating growth is to reduce information, enforcement, and transaction costs. Levine (2004) has identified the following five key functions that a financial system provides in facilitating growth.

- 1) Mobilizing and pooling savings.
- 2) Product information ex ante about possible investments and allocating capital.
- 3) Monitoring investments and exerting corporate governance.
- 4) Facilitating the trading, diversification, and management of risks.
- 5) Facilitating the exchange of goods and services.

The financial sector development facilitates economic growth through these functions not only by promoting private sector development, but also by supporting the public sector to invest in infrastructure.

Thus, studies demonstrate how strong financial system can improve the prospects of growth by efficiently performing the above functions. What matters the development of a financial system and banking in particular to efficiently perform these functions was the concern of the paper.

### 2.3 Nexus between financial sector development and economic growth

Economists hold different points of views regarding the relationship between financial development and economic growth. Generally, they have classified into four perspectives.

i) The supply-side perspectives: Financial development has a positive effect on economic growth. (Joseph Schumpeter, 1912) argues that well-functioning banks spur technological innovation by identifying and funding those entrepreneurs with the best chances of successfully implementing innovative products and production processes. (John Hicks, 1969) contends that financial development played a critical role in igniting industrialization by facilitating the mobilization of capital. (Goldsmith, 1969) argues that financial intermediation raises the efficiency of capital accumulation and in turn maximizes the marginal productivity of capital. By raising the savings rate it can increase the investment rate (McKinnon and Shaw, 1973; and Fry, 1997). According to these views, increasing the size of savings and improving the efficiency of investment, financial development leads to higher economic growth.

According to supply-side believer financial liberalization enhances economic efficiency and growth. An improved financial system fosters the efficient mobilization of domestic savings and allocates resources to their optimum usage. Also, a higher degree of competition and efficiency in the banking sector can contribute to greater financial stability, product innovation, and access of households and firms to financial services, which in turn can improve the prospects for economic growth.

In contrast, financial repression discourages savings and contributes to misallocation of credit. When governments set interest rates below the free-market rate, the public sector and well-connected customers tend to receive credit at more favorable terms than small-scale entrepreneurial firms that have to obtain funds in expensive informal credit markets. The state-dominated, monopolistic banking sector is inefficient and thus a major hindrance to economic growth.

**ii) Demand-Side Perspective:** (Robinson,1952) views that where enterprise leads finance follows. According to this view, as the economy expands, its demand for financial services increases, leading to the growth of these services.

**iii) Bidirectional causality:** this perspective postulates that the relationship between financial development and economic growth are mutually causal. (Greenwood and Smith, 1997) contends that the two variables have bidirectional causality.

**iv) Not-causally related:** Finally, the fourth perspective though not as widely held as the other views, states that financial development and economic growth are not causally related (Lucas ,1998).

The empirical work linking financial development and economic growth has been extensive. (King and Levine, 1993) show a strong positive link between financial development and economic growth based on their study covering a cross section of 80 countries. McKinnon (1973) studied the financial system and economic development in several countries and concluded that better functioning financial systems support faster economic growth.

Although the debate regarding causality between financial development and economic growth continues, (Levine, 1997), based on many of theoretical reasoning and empirical evidence, concluded that a positive relationship exists between financial development and economic growth. In fact a growing study provides evidence that the development of financial markets and institutions is a critical and one driver part of the growth process. The level of financial development is a good predictor of future rates of economic growth, capital formation and technological change. Based on cross-country analysis, (Levine, 1997) has investigated that financial development affects the speed and pattern of economic development.

It is therefore important to identify the macroeconomic, sector-specific factors, and institutions that can improve the efficiency of the banking sector and promote its competitiveness to accelerate Ethiopia's economic growth.

#### 2.4 Banking Sector Development Indicators

The concept of the development of the banking sector is a multi-dimensional concept and it is difficult to find a single indicator because it includes improvements in the quantity and quality of financial services. Some of these dimensions are related to deposit mobilization, loan granting and risk management. (Cihak, DemirgucKunt, Feyen and Ross Levine, 2013) found four dimensions of banking sector development which include depth, access, efficiency, and stability. Many empirical studies widely used those banking sector development indicators.

- Banking depth (size) indicators

In financial institutions (banks) development indicators, private credit, defined as deposit money bank credit to the private sector as a percentage of GDP has common in many empirical literature. To measure banking development depth various number of indicators have used. Some of the measures are: financial institutions asset to GDP, broad money supply (M2) to GDP, deposits to GDP, gross value-added of the financial sector to GDP.

- Banking Access( Inclusion ) Indicators

A well-functioning financial system provides financial services to a wide range of firms and households, not only large companies and rich individuals. Financial depth is not the only development indicators and financial inclusions are the other measures. A common proxy variable of access to banking are: accounts per thousand adults (commercial banks), branches per 100,000 adults (commercial banks), % of people with a bank account, % of firms with line of credit (all firms), % of firms with line of credit (small firms).

- Banking Efficiency Indicators

Efficiency is the other main financial sector development indicator primarily constructed to measure the cost of intermediating credit. A proxy efficiency measures for banks include

indicators such as overhead costs to total assets, net interest margin, lending-deposits spread, on-interest income to total income, and cost to income ratio.

- Stability/Soundness Indicators

Financial stability is a part of the broader financial development measures. The stability of the banking system is one of the development indicators that can be manifest whether the banking sector is exposed larger shocks and risk exposures or its development in managing such risks. The proxies that measures stability are: Z-score (or distance to default) capital adequacy ratios, asset quality ratios, liquidity ratios, percentage of non-performing loans to total loan portfolio.

## 2.5 Determinants of banking Sector Development

The potential determinants of banking sector development as identified from past literature studies include but not limited to these discussed in the following section. These determinants can be focused primarily on macroeconomic, sector-specific and institutional factors.

### 2.5.1 The Macroeconomic determinants

Depending on the past literature studies the macroeconomic factors that have been widely identified as determinants of banking sector development are openness to trade, economic growth and inflation.

Openness is the extent to which an economy allows trade and capital across its borders. In different studies in factors influencing financial development, trade openness identified as a key determinant of banking sector development. There is a debate in researchers in sequencing process of openness trade and financial openness determinants. (Chinn and Ito, 2006) found that trade openness needed before financial openness. (David et al., 2014) studies supposed that trade openness plays a greater role in financial sector development than financial openness in countries with better institutions. Openness enhanced banking sector development when the economy does not choose trade openness or financial openness in isolation of each other (Rajan and Zingales, 2003). The question of the sequence is not the issue of the study but the aim is confirming the determinant of trade openness is theoretically supported by the past studies. Thus the theoretical study already supports the proposed hypothesis.

The endogenous growth models argue that financial sector development is crucial for economic growth. However, the economic growth is important for financial sector development (Robinson, 1952). This view in finance-growth relationship theory is widely referred as the demand-following hypothesis. This hypothesis counters (Schumpeter, 1911) earlier view that real sector growth is led by financial sector development. It argues that real sector growth would make enterprises demand for more and improved financial services, hence leading to financial sector development. The implication of this argument is that economic growth is a potential determinant of banking sector development.

Inflation is the sustained and persistent rise in the general price level in an economy and it indicates the level of macroeconomic stability. An increase in inflation rate tends to reduce financial sector activity (Huybens & Smith, 1999). Inflation has a negative effect on banking sector development. Inflation adversely impacts on banking sector development.

#### 2.5.2 Sector-specific determinants

The (McKinnon and Shaw, 1973) hypothesis contributed the emergency of financial liberalization theory and in the current periods the theory is still the issue and supported by different international financial organization. This hypothesis postulates that policies/regulations directed to the financial system in developing countries can be characterized by financial repression that is restrictions on the allocation of credit, legal ceilings on bank deposit rates, high reserve rate. So the adoption of financial liberalization would be a policy-induced innovation in financial intermediation to removal such type of regulations. It argues that banking sector development is enhanced by financial liberalization. A financial sector is said to be liberalized when government restrictions on financial activities are relaxed or eliminated, cross-border capital flows are permitted, and the interaction between the forces of demand and supply acts as the mechanism for price determination of financial services.

Financial liberalization can stimulate financial sector development by increasing the efficiency of the financial sector. However, some evidence shows that higher levels of financial liberalization tend to make the banking sector likely to crises (Ahmed, 2013; Demirgüç-Kunt & Detragiache, 1998; Fowowe, 2010). (Beck, Demirgüç-Kunt and Levine, 2006) postulate

that countries with lesser regulatory restrictions on banking activities are less prone to crises. It also shows that financial liberalization stimulates banking sector development subject to quality of institutions, human capital, and trade openness.

Sound and appropriate regulatory measures taken by the government is important for banking sector development. More stringent regulatory and supervisory requirements reduce financial depth (Detragiache, Gupta and Tressel, 2008). The studies also postulate that in low-income countries the larger the foreign presence in the banking system tends the less deep the banking sector.

The extent of government ownership in the financial sector is associated with lower efficiency. (La Porta, Lopez de Silanes and Shleifer, 2002) studied that overhead costs and net interest margins increase in response to an increase in government ownership. The higher the share of assets owned by the government banks, the less deep the financial sector. (Demirguc-Kunt, Laeven and Levine, 2004) found that more concentrated banking systems happen to be more inefficient ones as well.

### 2.5.3 Institutional Determinants

Institutions are the rule of the game in a society or, more formally, are the humanly devised constraints that shape human interaction. Institutions determine the costs of acting in different ways in political and economic contexts (North, 1990).

A study by (Djankov, McLeish and Shleifer, 2007) reveals that institutions are important for determinants of financial sector depth.

Creditors that know that they are protected in case of default, to a certain extent, are willing to extend more credit to enterprises. In addition, having access to information regarding the financial history of firms and households helps contain the negative effects of asymmetric information and moral hazard.

(Levine, 1998) argues that the effect of creditor rights, contract enforcement, and rule of law on banking sector depth and found that an improved in these rights and institutions leads to an increase in financial depth.

(Rajan and Zingales, 2003; Acemoglu and Johnson, 2005; Haber, North and Weingast, 2008) argue that institutions that ensure: respect of the rule of law, make sure property rights are protected, contracts are enforced and constrain those in power are shown to have achieved higher levels of financial development.

Countries that have information-sharing credit bureaus have a higher financial depth than those without any such institutions (Japelli and Pagano, 2002). Countries with greater degree of information sharing have lower credit risk which in turn reduce default rate.

(Roe and Siegel, 2009) argue that political stability is important in financial sector development. Their studies link political stability to economic growth and financial development in exploring political economy determines financial development. (Acemoglu and Johnson,2005) contend that countries that greatly limit the powers of the government will guarantee greater protection of property rights which ultimately lead to more efficient banking and market financial system.

(Daude and Stein,2007) argue that corruption related to rent seeking activities of public agents or influential interest groups can lead to a waste of resources and might lower economic growth and stability. In a corrupt environment, investors might obtain credit only through bribery, thereby limiting financial development.

## 2.6 Empirical Evidence

Studies have shown that developed financial system is important for the economy by mobilize domestic savings and allocate credit to productive investment. Empirical evidence revealed

that stable macroeconomic environment, light regulatory burden and strong institutional environment promote financial sector development. Empirical studies on macroeconomic, sector-specific and institutional determinants on the banking sector which are discussed as follows.

### 2.6.1 Macroeconomic Factors and Banking Sector Development

A well-functioning financial system requires a stable macroeconomic environment. Several studies have given support that macroeconomic stability important for the development of financial institutions. Empirical studies were more concentrated in the following macroeconomic factors that determine financial development.

Empirical evidence by (Huang, 2010) suggests that in studies in developing countries trade openness have a positive impact on financial intermediary development.

Inflation have negatively related with banking sector development. (Ayadi, Arbak, Naceur and De Groen, 2013) empirical studies in northern and southern Mediterranean countries found that inflation have significant for bank deposits than private sector credit. Inflation appears to be positively related to banks' efficiency, which is surprising because a more stable macroeconomic environment should result in lower cost efficiency. This result could explain how banks strive to strengthen their cost efficiency when inflation is high and investment is low, so as to compensate for lower revenues stemming from fewer opportunities.

(Liang and Reichert, 2006) suggested results for the Emerging/Developing countries Strong evidence of causality is found between growth and financial sector development. That causality runs from economic development to financial sector development, evidence of a demand-following relationship. Evidence of reverse causation or of a possible supply-following relationship is much weaker. Also, in advanced country the causality not as strong as in developing countries the result provides evidence of a demand-following relationship.

### 2.6.2 Sector-Specific Factors and Banking Sector Development

A study by (Barth, Caprio, and Levine, 2001) using data on the regulations and supervision of banks in 107 countries reveal that countries with policies /regulations that not restricting bank activities is positively related with bank performance and stability. Countries in which that

encourage banks to diversifying their income streams and portfolios domestically and internationally suffer fewer crises. The most restricted bank activity among countries is real estate and the least restricted is securities.

Empirical study by (Takyi and Obeng, 2013), shown that reserve requirement is important determinant of financial development. The study suggested that reserve requirement has negative impact on financial development both in the long-run and in the short-run.

State ownership in the banking industry can have an impact on financial development. Empirical evidence by (Barth et al., 2004) found that government owned banks is negatively correlated with favorable banking outcomes and positively linked with corruption, does not retain an independent. The study also reveals that barriers to foreign-bank entry are positively associated with bank fragility.

### 2.6.3 Institutions and Banking Sector Development

A study by (Huang,2010) using cross-sectional data found empirical evidence in developing countries (East Asian countries, Middle Eastern and North African countries and South Asian countries) that financial intermediary development enhanced good rule of law performance.

(Ayadi, Arbak, Naceur and De Groen, 2013) using a sample of both northern and southern Mediterranean countries for the years 1985 to 2009 reveal that Strong legal institutions and good democratic governance have a substantial positive impact on both private credit and deposits.

(Arias, Maqueira and Jara, 2019) using panel data for the period 2005-2014 in countries belong to emerging economies and advanced economics shown that greater degree of legal protection allows banking systems to improve the quality of the collaterals, improve debt recovery rates in the event of borrower default and even force the payment of debt, which positively affects banking sector performance. Furthermore, more legal protection can impose a greater degree of discipline on the borrower, that is, the administration of the company, which is then reflected in less willingness to take risks when faced with the possibility of a change of administration in the event of default. Additionally, a legal framework that favors

legal protection of both creditors and borrowers also provide the necessary conditions to facilitate the enforcement of laws and/or contracts.

(Anayiotos and Toroyan,2009) studies in 37 sub-Saharan Africa countries using Data Envelopment Analysis empirically suggested institutions play a more critical role in financial development. Institutional factors affect financial depth and access to financial services more than asset quality and profitability and return on equity. The results also suggest that depth of credit information has the strongest influence on non-performing loan (NPL), and political stability affects access the most. The Depth of Credit Information has the strongest impact on NPL. This implies that countries willing to reduce NPL with the help of institutional changes should consider setting up credit registries, increase transparency and amount of shared information. Credit quality of banks is affected by the scope, accessibility and quality of credit information.

(Demetriades and Fielding,2009) using a panel data for banks in eight West African countries empirically shows that control of corruption have effective for promoting the growth of banks. It is most effective for promoting the growth of young privately owned domestic banks. It also discourages the growth of foreign or government owned banks. This suggests that control of corruption creates a more level playing field which encourages the emergence and growth of new banks. In general, Control of Corruption has beneficial effects on the growth of the banking system.

#### 2.6.4 Banking Sector Development in Ethiopia

##### A) Overview of Banking Sector in Ethiopia

Before reviewing the banking sector development indicators it is better to slightly overview the trends of financial sector in Ethiopia. In general the Ethiopian financial sector is bank dominated thus the study exclude the characteristics of insurance companies and micro financial institutions. The financial sector policies have evolved mainly two stages: the first stage, financial repression that is financing the government and fostering state-led industrial and agricultural development in the socialist regime regardless of private sector. The second stage, the transitional government of Ethiopia post 1991, changed the system to a market-based economy, and in 1994, allowed the private sector engaged in the banking business.

During the pre-reform period 1974-1991 (Derg regime) all financial institutions (banks) were nationalized and characterized by financial repression ( Geda,2006).The nationalized banks were restructured as one commercial bank (the commercial bank of Ethiopia),a national bank (recreated in 1976),two specialized banks-the agricultural and industrial bank(AIB),renamed later as the development bank of Ethiopia (DBE) and a housing and saving bank (HSB),renamed later as the construction and business bank (CBB),were in operation during this period. CBE is the dominant bank accounting for more than 90 per cent of the total deposit mobilized in the country in the pre-reform period. The sector mainly served the state (financing the government) and the development of the socialized sector (the state enterprises).

The introduction of private banks in the country gradually led to enhance banking services and promote economic growth. But the Ethiopian banking industry is still small in size; in addition despite the bank branches are expanding at a good pace, banks are not still accessible to most of the rural area. Overall, the Ethiopian financial system is bank dominated with underdeveloped money and security market which characterizes the inefficiency of financial intermediation. There is no foreign bank in the country and the system remains isolated from the effects of globalization.

The government has taken step by step reform in the financial sector and creating conducive environment for the private bank business. Despite the efforts undertaken by the government in sector reform in different periods, still there is lack of competition among the banking industry, highly concentrated market in state banks, private banks are disadvantages in credit allocation and in foreign currency, state banks are better benefited in different schemes taken by the government. This may not bring competition among the banking sector.

#### B) Banking Sector Development

Banking sector development is a compressive term. Ethiopian banking sector development studied through examining its structure, depth (size), soundness, concentration, accessibility and efficiency. But the study manly focus on what the banking sector contribute to the economy by mobilizing resource and financing the private sector and stability of the sector. However, the accessibility and efficiency indicators are not the least banking sector development indicators.

The structure of financial institutions operating in the country consists of the (1) National Bank of Ethiopia, which is a regulatory body of the financial institutions as a whole, (2) Two state owned and sixteen private owned banks, (3) 17 insurance companies and 38 micro-finance institutions.

In general, in last periods the government owned banks dominate the banking industry in Ethiopia. The commercial bank of Ethiopia, the largest bank in the industry, accounts 62 per cent proportion in terms of resource mobilization (NBE, 2017/18). Highly concentrated banking system dominated by the state bank lowered competition in the banking industry. In the last periods the public banks contain a higher proportion than private banks in terms of various banking performance indicators like in percentage share of loans and advances granted due to limiting the lending capacity by requesting higher reserve requirement in private banks. However, the good progress in expanding network branches, increasing in capital, deposit, lending and loan collection.

Accessibility of the banking sector measured through their geographic and demographic dispersion. It is measured through the division of the total number of bank branches per km<sup>2</sup> and populations. In current periods both state and private banks have expand their branches. Both state and private banks have 2,208 branches on June, 2014 (Belda, 2016). But, the demographic and geographic penetrations of bank's branches were uneven. Access to finance remains a bottleneck for investment particularly for micro-enterprises, individuals and firms in Ethiopia. Micro-firms face the largest difficulties, 70% of these businesses report difficulties in accessing credit, whereas only 40% of SMEs report the same impediment (EIB, 2018). Access to financial services for individuals in Ethiopia stood lower even among many East African countries. In Kenya, more than 80% of the population older than 15 years has an account at a bank or at another kind of financial institution and uses mobile payment systems, but in Ethiopia this share is much lower.

Ethiopian financial sector characterized by lack of diversification of products and services provided and it is the dominancy of deposit taking financial institutions. They are the only formal source of investment funds for large and small private sector projects. Also there is no financial market that let equity and stock market exchange important to generate cash for investors. From the total outstanding credit of the banking system the private sector credit

showed an increasing rate. It showed a 23 percent year-on-year growth from 2016/17 to 2017/18 fiscal year (NBE, 2017/18).

Financial development in Ethiopia is generally underdeveloped. Based on different measure of financial development (credit and deposit to GDP ratio) while it is comparable to low-income African countries it is far lower than middle income and high –income countries. Also in access indicator of banking development that is access of the population to financial services is limited. When it compared to neighboring Kenya it has a far bank per capita. In addition when looked in the perspective of the number of formal bank’s customers( in loan and deposit customers) is less than 2% of the total population, suggesting that the majority of the population is outside the formal banking sector (Gashayie and Singh,2016).

## 2.7 Literature Gap

Understanding the drivers of financial development in general, banking in particular is crucial because an improved financial sector contribute to economic growth. The status of banking sector varied globally depending on country specific factors. There is no empirical evidence regarding macroeconomic, sector-specific and institutional factors that determine development of the banking sector in Ethiopia. In addition, the banking sector in Ethiopia is isolated from globalization and less developed compare to other countries. Therefore, this study will fill the gap by contributing to the literature.

## 2.8 Conceptual Frame Work

Theories and empirical study supports a stable macroeconomic environment, financial liberalization and strong institutional environment promote financial sector development.

Openness is the extent to which an economy allows trade and capital across its borders. In different studies in factors influencing financial development, trade openness identified as a key determinant of banking sector development and a positive impact on financial intermediary development. Inflation negatively related with the banking sector development, and strong causality is found between growth and financial sector development. Also real interest rates have positive effect on the development of the banking sector.

Regulations that set on the financial activity can be characterized by financial repression that is high reserve requirement for each commercial bank must hold of each customer deposits. More stringent

regulatory requirements reduce financial depth and lesser regulatory restrictions on banking activities are less prone to crises. Theories suggested that reserve requirement has negative impact on financial development both in the long-run and in the short-run. Reserve requirement are expected to be negatively linked to banking development.

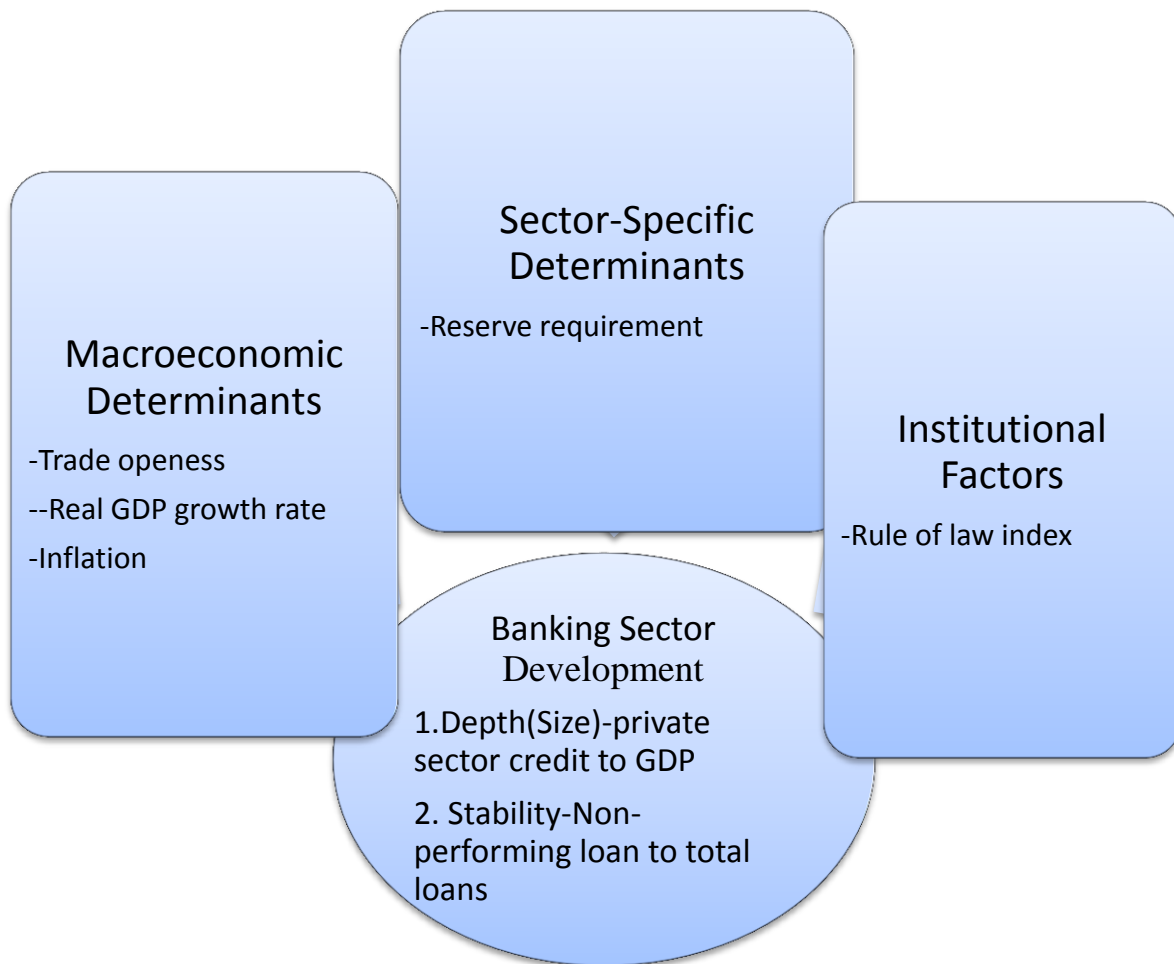
Strong institutional environment improve credit process and hence banking outcomes. It effectively facilitates with granting and recovery of credits. Having access to information regarding the financial history of firms and households helps contain the negative effects of asymmetric information and moral hazard. Depth of credit information has the strongest influence on non-performing loans. Banks that know that they are protected in case of default, to a certain extent, are willing to extend more credit to enterprises. Financial intermediary development enhanced by improvement of rule of law. Hence, have a substantial positive impact on both private credit and deposits. Based on the literature surveyed above, the study will use the following dependent and explanatory variables in the regression analysis.

Table 2.1: Conceptual framework

<i>Variable</i>	<i>Definition</i>	<i>Unit of Measurement(Proxy)</i>	<i>Expected sign</i>
<u><i>Banking Development Indicators</i></u>			
<i>Private credit</i>	<i>Domestic private credit to the real sector by deposit money banks as a share of GDP.</i>	<i>% of GDP</i>	
<i>Stability/soundness</i>	<i>It is the development indicator in banking system that can be manifest whether the banking sector is exposed larger shocks and risk exposures or its development in managing such risks.</i>	<i>% of non-performing loans to total loan portfolio.</i>	
<u><i>Macroeconomic variables</i></u>			
<i>Economic growth</i>	<i>Annual percentage growth rate of GDP</i>	<i>% in real GDP</i>	<i>+</i>
<i>Inflation</i>	<i>Annual percentage change in consumer prices</i>	<i>Annual percentage inflation rate</i>	<i>-</i>
<i>Trade openness</i>	<i>Calculated as the sum of exports and imports of goods and services as a percentage of GDP.</i>	<i>% of GDP</i>	<i>+/-</i>
<u><i>Sector-Specific variables</i></u>			
<i>Reserve requirement</i>	<i>The central bank Regulation that sets the minimum reserves each commercial bank must hold of each deposit.</i>	<i>Reserve amount deposit money banks hold for each deposit.</i>	<i>+/-</i>
<u><i>Institutional variables</i></u>			
<i>Rule of Law</i>	<i>Reflects perceptions of the extent to which agents have confidence in and abide by the rule of society, the quality of contract enforcement, the police and the courts, as well as the likelihood of crime and violence.</i>	<i>Rule of law index for a country</i>	<i>+</i>

Figure1. Summarizes how macroeconomic factors, regulatory and institutional environments jointly influence banking sector development.

Figure1. Macroeconomic effects, sector-specific and institutional factors; and banking sector development



Source: From the Literature

### III. METHODOLOGY

#### 3.1 Research design and approach

The study used descriptive design. The study mainly employed quantitative research approach using sample data of all commercial banks in Ethiopia.

#### 3.2 Study Population and Sampling Technique

The target population is described universal set of study of all members of people, events or objects to which an investigator generalized the result. In this case the target population is all banks operating in Ethiopia. The sample of this study covers all commercial banks business (except development bank and national bank of Ethiopia).

#### 3.3 Types & Sources of data, and Method of Data Collection

The study used secondary source of data. The panel data set use for the analysis that comprises all banks (except development bank and national bank of Ethiopia) of the banking industry operating in Ethiopia.

The nature of data used in this study is panel data which comprises of both cross-sectional and time-series units; the cross-sectional unit is reflected by the banking sector structure (state and private banks) and the time dimension is reflected in the period of study that is from (2014-2018). The advantage of panel data in question is because it contains more information; it incorporates variability among cross-section units and across time (Gujarati, 2004).

The advantage of using panel data is to address a broader range of issues and tackle more complex problems than would be possible with pure time series or pure cross-sectional data alone (Brooks, 2014). It has also advantage of giving more informative data as it consists of both the cross-sectional information which captures individual variability and the time series information that captures dynamic adjustment.

The data are annual and cover the period of 2014 to 2018 fiscal year. The particular time period was chosen because it offers recent time series data for all sample banks, and data for all the variables included in the study. The data collected from different sources. The macroeconomic and sector-specific determinants of banking sector development collected

from national bank of Ethiopia. The institutional factors collected from worldwide governance indicators.

### 3.4 Data Analysis Techniques

After the data have been collected, the researcher turns to the task of analyzing them. The analysis of data requires a number of closely related operations such as establishment of categories, the application of these categories to raw data through coding, tabulation, and then drawing statistical inferences (Kothari, 2004).

Thus, in this study the collected data were analyzed using descriptive analysis for trend analysis using the STATA (statistics and data) software, and econometric tools using panel regression models. The econometrics method used in the study basically involves assessing the impact of selected macroeconomic, sector-specific and institutional variables on the development of banking sector. Basically, descriptive statistical tools were used to analyze the mean, standard deviation, minimum and maximum values of the study. On the other hand, an Econometric tool particularly panel data model assisted the researcher to verify causes of changes within banks' of the study matter beyond descriptive statistical tools. Moreover, such model was very important in controlling for unobserved heterogeneity when this heterogeneity is constant over time and correlated with independent variables.

### 3.5 Model Specification and selection

The aim of this study is to investigate the influence of macroeconomic, sector-specific and institutional factors on banking sector development measured across as two dimensions: depth (size) and stability/soundness. Depending on data availability and financial sector development measures of banks in Ethiopia banks Private credit as a percentage of GDP used as the indicator for depth, and non-performing loans as a percentage of total gross loans as the indicator for stability. The study employed a panel regression on banking industry in Ethiopia for the period 2014-2018.

This study uses panel data regression because several advantages could be attained from regression that runs independently cross-sectional or time series. (Gujarati, 2002) mentioned three kinds of advantages in using panel regression. Firstly, panel data make the data more

informative with variability, reduce collinearity among the variables, and give more degree of freedoms to the data. Secondly, panel data could construct better detection and measurement of effects that simply could not be observed in pure cross-sectional or pure time series data thirdly, panel series provide the data to be available into several thousand units and this can minimize the bias that might result if individuals or firms level data are divided into broad aggregates.

The panel data regression model can be estimated by either fixed effects model (FEM) or random effects model (REM). In fixed effects model, the intercept in the regression model is allowed to differ among individuals in recognition to the fact that each individual or cross sectional unit may have some special characteristics of its own, and assumed correlated with the independent variables. REM assumed that the intercept of an individual unit is a random drawing from a much larger population with a constant mean value, and assumed the individuals are uncorrelated with the independent variables.

Hausman test can be used to differentiate between FEM and REM. The null hypothesis underlying the Hausman test is that the FEM and REM estimators do not differ significantly. The test statistics developed by Hausman has an asymptotic Chi-Square( $X^2$ ) distribution. If the null hypothesis is rejected (at 5% significant level), the FEM may be more appropriate to be used compared to the REM. But, if null hypothesis is failed to reject the REM is more suitable to be used.

For this study, fixed effect model is selected. It is one of panel model which control for unobserved heterogeneity among cross sectional units. The following equation indicates the general model of the study. The purpose of the model is to measure the effect of determinants on banking sector development. Based on such framework; the model that estimate the effect takes the following form.

$$\text{Banking sector development indicator } it = \alpha i + \sum \text{macroeconomic indicator } t + \sum \text{sector – specific indicator } t + \sum \text{institutional indicator } t + \epsilon it \quad (1)$$

Where  $i$  represent the cross sectional units (in this case, the cross sections are banks grouped in terms of state and private banks and  $t$  the yearly time periods (the time -series dimension);  $\alpha_i$  is the intercept for each cross section units;  $\varepsilon_{it}$  represent the error term.

$$\gamma_{it} = \alpha_i + \sum_{k=1}^3 \beta_k macro_{,t} + \sum_{L=1}^1 \beta_L securi_{,t} + \sum_{M=1}^1 \beta_M ins_{,t} + \varepsilon_{it} \quad (2)$$

Where  $\gamma_{it}$  represents the banking development index  $i$ , in year  $t$ , the variable  $macro_{,t}$  represents the macroeconomic factors (trade openness, real GDP growth rate, inflation). The second set of variables, denoted by  $secri_{,t}$ , represents sector-specific determinant (reserve requirement). The last set of variables,  $ins_{,t}$ , includes determinants of institutional environment (rule of law index).  $\alpha_i$  Is the intercept, "b" represents the coefficients for the explanatory variables. Finally,  $\mu_{it}$  represent the error term.

### 3.5.1 Econometrics model

This section describes an econometric model which examines the explanatory power of macroeconomic, sector-specific and institutional related attributes on banking development.

It is difficult to precisely measure the development of the banking sector as it is a wide concept and has several dimensions. But previous studies mainly depended on some quantitative indicators such as private sector credit to GDP ratio and non-performing loans to total loans, and credit to the private sector as a measure of financial deepening, and the private sector credit to GDP that reflects how commercial banks are able to identify profitable investments, facilitate risk management, and mobilize savings. Non-performing loan as a percentage of total loans portfolio is used as the stability/soundness indicators in the banking industry.

The study by (Touny, 2014; chin and Ito, 2005; Anayiotos and Toroyan, 2009) used bank credit to private sector to GDP and quality of loans (ratio of NPLs to total loans) as a proxy of to analyze banking sector development. Private sector Credit by banks to GDP, which indicates the depth of banking sector allocating financial resource to the private sector, and the quality of loans (ratio of NPLs to total loans) as a measure of asset quality which indicates the soundness of the banking system used as a banking development proxies in Ethiopia. Thus the

use of these two models gives full picture of the banking sector in depth and stability dimension point of view. Therefore, the study econometric model specified as:

$$BDI_{i,t} = (MSt + SSit + INST) \dots \dots \dots (1)$$

Where  $BDI_{i,t}$  represents banking development index (used grouped level data as state and private banks) during period t,  $MSt, SSit, INST$  are macroeconomic, sector specific and institutional determinants at time t respectively.

Thus, the regression equation for this study becomes;

$$BDI_{i,t} = \alpha_i + \beta_1RGDPt + \beta_2INFt + \beta_3opennesst + \beta_4reserve_{i,t} + \beta_7RULt + \epsilon_{i,t} \quad (2)$$

Where:

$BDI_{i,t}$ : Development indicator of banks (i in this case indicates banks because used categorical data as one state & 16 private banks) at time t, the model is specified with the means of within estimators. Two approaches for the measurement of banking development are being followed. The first one regards banks private sector credit to GDP as the dependent variable (eq.3), and the second one regards NPLs to total loans as the dependent variable (eq.4).

$$CPS_{i,t} = \alpha_0 + \beta_1RGDP,t + \beta_2INF,t + \beta_3openness,t + \beta_4reserve_{i,t} + \beta_5RUL,t + \epsilon_{i,t} \dots \dots \dots (eq. 3)$$

$$NPLs_{i,t} = \alpha_0 + \beta_1RGDP,t + \beta_2INF,t + \beta_3openness,t + \beta_4reserve_{i,t} + \beta_5RUL,t + \epsilon_{i,t} \dots \dots \dots (eq. 4)$$

Where,  $CPS_{i,t}$  is banks private sector credit to GDP at time t,  $NPLs_{i,t}$  is non-performing loans to total loans by banks (as state and private) at time t,

$RGDP,t$  = real GDP growth rate at time t,

$INF,t$  =inflation rate at time t

$openness,t$  = trade openness at time t

$reserve_{i,t}$  = banks reserve requirement at time t

$RUL,t$  = rule of law index

$\alpha_0$  , is the intercept,  $\beta_1$ - $\beta_5$  coefficient of variables or parameters while  $\epsilon_i$   $t$  is the residual error of regression.

### 3.6 Tests for the Classical Linear Regression Model (CLRM) Assumptions

For valid hypothesis testing and to make data available for reliable results, the test of regression model is required. Accordingly, the study has gone through the most critical regression diagnostic tests consisting of normality, multicollinearity, heteroscedasticity, and autocorrelation and model specification accordingly.

#### 3.6.1 Test of normality

In order to test the normality of the study variable sktest have been applied. The result indicates almost all of the variables except one variable are normally distributed. Probability of chi square ( $p > 0.05$ ) on which the null hypothesis is rejected as the variable are normally distributed.

Table 3.1: tests for normality

Skewness/Kurtosis tests for Normality					
Variable	Obs	Pr(Skewness)	Pr(Kurtosis)	chi2(2)	Prob>chi2
Credit to GDP	10	0.3106	0.2727	2.68	0.2620
Bank Stability	10	0.3994	0.6211	1.06	0.5889
RGDP growth rate	10	0.4683	0.0102	6.28	0.0434
Inflation	10	0.0364	0.4795	4.84	0.0889
Trade openness	10	0.8825	0.0274	4.85	0.0885
Reserve requirement	10	0.3438	0.8737	1.02	0.6010
Rule of law index	10	1.0000	0.2459	1.55	0.4610

Source: Own calculations

#### 3.6.2 Test of multicollinearity

There are different methods that will be applied by researchers in order to see if there is multicollinearity problem in the study variable. This study has used VIF (variance inflation factors) test. VIF indicates whether a predictor has a strong linear relationship with the other

predicator(s). As there is no hard and fast rule about what value of the VIF should be cause for concern, according to Andy Field (2006) suggests the value of 10 is a good value at which to worry.

Related to the VIF tolerance statistic is its reciprocal (1/VIF) and values below 0.1 indicate serious problem as stated by Andy Field (2006). Based on the finding in table below, the study variable have no a multicollinearity problem as the VIF value is below 10 and the tolerance is above 0.1.

Table 3.2: Test of multicollinearity

Variable	VIF	1/VIF
Trade openness	6.75	0.148111
Rule of law index	5.28	0.189253
Reserve requirement	2.18	0.459666
Inflation	2.03	0.493564
RGDP growth rate	1.89	0.528730
Mean VIF	3.63	

Source: Own calculations

### 3.6.3 Test of heteroscedasticity

One of the important assumptions of the classical linear regression model is that the variance of each disturbance term  $u_i$ , conditional on the chosen values of the explanatory variables, is some constant number equal to  $\sigma^2$ . This is the assumption of homoscedasticity, or equal spread, that is, equal variance (Gujarati, 2004).

But if the variance of each disturbance term  $u_i$ , on the chosen values of the explanatory variables is not constant and equal to to  $\sigma^2$  heteroscedasticity will occur. The test statistics give us the information we need to determine whether the assumption of homoscedasticity is valid or not. The Breusch-pagan test for the heteroscedasticity test reveal that in this case as there is no evidence for the presence of heteroscedasticity, since the p-values are considerably in excess of 0.05.

Table 3.3: Breusch-Pagan / Cook-Weisberg test for heteroscedasticity

Fitted in models	Chi square (chi2)	Probability > chi2
banks private sector credit to GDP	0.03	0.8724
bank stability	0.08	0.7781

Source: Own calculations

### 3.6.4 Test for assumption of autocorrelation

For any two observations the residual terms should be uncorrelated (or independent). This eventuality is sometimes described as a lack of serial correlation. This assumption can be tested with different statistics, which tests for autocorrelation between errors. But the Durbin-Watson statistics test is the most common one used for autocorrelation test of residuals in time series data. The test statistics can vary between 0 and 4 with a value of 2 meaning that the residuals are uncorrelated. A value greater than two indicates a negative correlation, whereas a value below 2 indicates a positive correlation. To test for autocorrelation in panel data in this case, as far as the researcher applied Wooldridge test, and other test statistics technique, none of them are not working. But serial correlation might not be a great concern in small cross-sectional units that is two and short periods (five years) panel data set that this study used.

Wooldridge test for autocorrelation in panel data

H0: no first-order autocorrelation

$F(0, 1) = \dots$

$\text{Prob} > F = \dots$

### 3.6.5 Random effect Vs. Fixed effect

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. On the contrary, REM may be preferable. Since the number of time series (that is 5 years) is greater than the number of cross-sectional units (2 cross-sectional units that is grouped data of state and private banks), FEM is preferable in this case. This fact is further conformed by using Hausman test that as FEM is more appropriate on table 3.4, since p-value is less than 0.05 (that is 0.0000).

Table 3.4: Hausman specification test

Models	Chi square (chi2)	probability(chi2)
Banks private sector credit to GDP	154.90	0.0000
Bank stability	212.60	0.0000

Source: Own calculations

## IV. RESULTS AND DISCUSSION

This part of the study depicts the inferential analysis that shows the empirical evidence on the influential macroeconomic, sector-specific and institutional determinants of banking sector development particularly commercial banks in Ethiopia.

### 4.1 Descriptive statistics

The study takes into account 17 commercial banks (clustered as private and state) for five years from 2014-2018 in order to see the impact of macroeconomic, sector-specific and institutional factors on private sector credit to GDP, and ratio of non-performing loans to total loans. In this study the dependent variables are banks private credit to GDP and NPLs to total loans grouped as one state bank (commercial bank of Ethiopia) and 16 private commercial banks for five years periods. So the study total observations are ten. The table (Table 4.1) shows the characteristics of the variables used by revealing the statistical mean, minimum, maximum and standard deviation values. The total observation for each variable is 10.

Table 4.1: Descriptive statistics for the variables

Variable	Mean	Std. Dev.	Min	Max	Observations	
Private credit as % of GDP	5.7	1.56	3	7	N	10
Bank stability(% of NPLs to total loans)	4.047	1.41	1.89	6.81	N	10
Real GDP growth rate %	9.3	1.25	7.7	10.4	N	10
Inflation %	10.32	3.55	7.5	16.8	N	10
Trade openness %	27	3.80	23	32	N	10
Reserve requirement / In Mn. birr/	11907.4 2	5622.545	4613.14	22651.12	N	10
Rule of law index	-.47	.0298142	-.51	-.43	N	10

Note: Balanced panel data with 10 observations from all commercial banks in Ethiopia grouped as state and private commercial banks for five years periods.

Source: own calculations

From table 4.1, the descriptive statistics of the variables reveal the following; financial development (banking sector) for this study has been measured by using private sector credit to GDP, and stability/soundness measures in terms of percentage of non-performing loans to total loans. The average private credit to GDP is 5.7% and standard deviation 1.56%. The

average of soundness measures is 4.04 % and standard deviation 1.41%. The soundness of Ethiopian commercial banks is in a good status which is below the minimum standard set by the national bank of Ethiopia (that is 5%). The minimum private credit to GDP and bank stability is 3%, 1.89 and the maximum is 7%, 6.81% respectively ,this indicates there is gap in between Ethiopian banks (private and state ). The economic growth rate, inflation, trade openness, reserve requirement and rule of law index are explanatory variables that used in this study. The average of rule of law index which is measured according to the worldwide governance indicators estimate is (-0.47) units. The indicator ranges the rule of law governance performance from (-2.5) weak rule of law performance to 2.5 strong performance in the quality of contract enforcement, property rights protection, the police, and the courts, as well as the likelihood of crime and violence.as a result the average of rule of law index in Ethiopia is far behind the strong estimate set by worldwide governance performance.

#### 4.2 Correlation Analysis

For expressing the degree of relationship quantitatively between two sets of measures of variables we usually take the help of an index that is known as coefficient of correlation. It is a kind of ratio which expresses the extent to which changes in one variable are accompanied with changes in the other variable. It involves no units and varies from -1(indicating perfect negative correlation) to +1(indicating perfect positive correlation). In case the coefficient of correlation is zero, it indicates zero correlation between two sets of measures (Sing, 2006).

Table 3 below shows how the explanatory variable is related to the dependent variables banks credit to GDP and bank stability. According to (Andy field, 2006), state that the coefficient of the variable if it is below 0.8 or 0.9 is said the variable are not such highly related with the other variable. The study result shows the relationship between the variables is not as such high. Banks private sector credit has a positive relationship with bank stability. Banks private credit and bank soundness relationship with the independent variables depicted below.

Table 4.2: correlation analysis

	<b>Credit To GDP</b>	<b>Bank Stability</b>	<b>RGDP</b>	<b>Inflation</b>	<b>Trade Openness</b>	<b>Reserve</b>	<b>Rule Index</b>
<b>Credit To GDP</b>	1.000						
<b>Bank Stability</b>	0.3236	1.0000					
<b>RGDP</b>	-0.1919	-0.0570	1.000				
<b>Inflation</b>	0.2563	-0.2516	-0.4958	1.000			
<b>Trade Openness</b>	-0.3018	-0.1664	0.5670	-0.4900	1.000		
<b>Reserve</b>	0.7890	0.5237	-0.4688	0.5304	-0.6901	1.000	
<b>Rule Index</b>	0.2378	-0.0310	-0.3916	0.5741	-0.8616	0.5745	1.000

Source: Own computations

### 4.3 Results of regression analysis

The model used to find out and explain the association between the dependent variables and the independent variables was:

$$BDI_{it} = \alpha_0 + \beta_1 RGDP_{it} + \beta_2 INF_{it} + \beta_3 openness_{it} + \beta_4 reserve_{it} + \beta_5 RUL_{it} + \epsilon_{it} \dots \dots \dots (2)$$

This study used panel data models where the random effect and fixed effect models used to estimate the relationships among variables. An appropriate model for this analysis was selected, by testing random versus fixed effects models. To perform this comparison, the character of the individual effects is tested through the Hausman specification test. According to Hausman test results, the fixed effects were found to be more appropriate for the model. Thus, the relationship between banks private sector credit to GDP and banks soundness (NPLs to total loans), and the explanatory variables were examined by the fixed effects model in this study.

#### 4.3.1 Regression analysis of private sector credit to GDP

The estimation result of fixed effect panel regression model is presented in table 4.2 indicates that R-squared and Adjusted-R squared statistics of the model was 99.16% and 97.48%

respectively, the result indicates that the changes in the independent variables explain 97.48% of the changes in dependent variables. That is real GDP growth rate, inflation; reserve requirement, trade openness and rule of law score collectively explain 97.48% of the changes in private sector credit to GDP ratio. The remaining 2.52% of changes of private sector credit to GDP was explained by other variables which are not included in the model. Thus, these variables collectively are good explanatory variables of the private sector credit to GDP of banking sector in Ethiopia. The regression F-statistic and the P-value of 0.0146 attached to the test statistic reveal that the null hypothesis that all of the coefficients are jointly zero should be rejected. Thus, it implies that the independent variables in the model were able to explain variations in the dependent variable. The collected data was analyzed using panel fixed effect regression. Hence, its regression result is presented in table 4.2, as follows:

Table 4.3: Determinants of bank credit to the private sector (log)

variable	Coefficient	Std. Error	t-statistic	Prob.
RGDP growth rate(log)	-.0286097	.1552971	-0.18	0.866
Inflation(log)	1.033449	.1327332	7.79	0.004
Trade openness(log)	-6.594592	.7788406	-8.47	0.003
Reserve requirement	-.0001695	.0000233	-7.26	0.005
Rule of law index	-11.50896	1.644089	-7.00	0.006
Cons	-17.14556	1.799077	-9.53	0.002
R-squared	0.9916			
Adjusted R- squared	0.9748			
F-statistic	101.007			
Prob(F-statistic)	0.0146			
N(Observations)	10			

All estimates are based on fixed effect panel regression and at the 5% significance level

Source: Audited financial statements of commercial banks from NBE, international governance indicators and Stata 14 Output.

Hypothesis 1: GDP growth rate positively affects a banking development (private sector credit to GDP)

According to the results of several previous studies, economic growth (EG) is assumed to have a positive effect on of banking sector development especially in developing countries. Economic Growth measures the overall health of the economy, and thereby it is assumed to have a positive effect on the demand for credit. The rate of change of real GDP is used as a proxy of Economic growth. An increase of the growth rate of real GDP is supposed to boost up the earnings of people and manufacturing sector as well. This in turn will be reflected in an increase of domestic deposits and consequently an increase of banks' liquidity which supports the ability of banks to lend more.

The real economic growth rate were found insignificant and does not affect banking private sector credit which is the result not in conformity with work of (Liang and Reichert,2006) who found economic growth is important determinant of banking sector development. The result is not in line with the empirical evidence that real sector growth would make enterprises demand for more and improved financial services, hence leading to financial sector development.

Hypothesis 2: inflation negatively affects a banking development (private sector credit to GDP)

Holding all other variables constant (*ceteris paribus*), for a percentage change in inflation results in 1.03 percentage increase in banks private sector credit to GDP. That is inflation were found to be positively affects banking sector development which is surprising and this result is not in line with (Ayadi, Arbak, Naceur and De Groen,2013) who found that inflation have negatively related with banking sector development.

Hypothesis 3: trade openness positively affects a banking development (private sector credit to GDP)

For a percentage change in trade openness, banking private sector credit is expected to decrease by 6.59 percent, holding all other variables constant. This result also not in conformity with work of (Huang, 2010) who found that trade openness has a positive impact on financial intermediary development.

Hypothesis 4: reserve requirement negatively affects a banking development (private sector credit to GDP)

Reserve requirement were found significantly affect private sector credit negatively. This result supports the proposed hypothesis and in line with (Takyyi and Obeng, 2013) who found

that reserve requirement is important determinant of financial development and has negative impact on financial (banking) development both in the long-run and in the short-run.

Hypothesis 5: rule of law positively affects a financial intermediary development (on private credit)

Strong institutional environment improve credit process and hence banking outcomes.it effectively facilitates with granting and recovery of credits. Financial intermediary development enhanced by institutional variables of rule of law. Hence, have a substantial positive impact on private credit.

The improvement in rule of law performance has expected to increase the banks private sector credit but the study result found negatively affects the banking sector development which is in contrary to the hypothesis and empirical evidence.

#### 4.3.2 Regression analysis of NPLS to total loans

The estimation result of fixed effect panel regression model is presented in table 4.3 indicates that R-squared and Adjusted-R squared statistics of the model was 98.89% and 96.66% respectively, the result indicates that the changes in the independent variables explain 96.66% of the changes in dependent variables. That is real GDP growth rate, inflation; reserve requirement, trade openness and rule of law index collectively explain 96.66% of the changes in banking stability measured by non-performing loans to total loan portfolio. The remaining 3.34% of changes of bank soundness was explained by other variables which are not included in the model. Thus, these variables collectively are good explanatory variables of the soundness of banking sector in Ethiopia. The regression F-statistic and the P-value of 0.0068 attached to the test statistic reveal that the null hypothesis that all of the coefficients are jointly zero should be rejected. Thus, it implies that the independent variables in the model were able to explain variations in the dependent variable. The collected data was analyzed using panel fixed effect regression. Hence, its regression result is presented in table 4.4, as follows:

Table 4.4: Determinants of bank stability /bank non-performing loan to total loans/ (log)

variable	Coefficient	Std. Error	t-statistic	Prob.
RGDP growth rate (log)	.3306299	.2084332	1.59	0.211
Inflation(log)	-2.141024	.178149	-12.02	0.001
Trade openness(log)	9.278544	1.045327	8.88	0.003
reserve requirement	.0003495	.0000313	11.16	0.002
Rule of law index	9.978519	2.206627	4.52	0.020
cons	18.06145	2.414645	7.48	0.005
R-squared	0.9889			
Adjusted R-squared	0.9666			
F-statistic	86.02			
Prob (F-statistic)	0.0068			
N(Observations)	10			

All estimates are based on fixed effect panel regression and at the 5% significance level

Source: Audited financial statements of commercial banks from NBE, international governance indicators and Stata 14 Output.

Hypothesis 1: GDP growth rate positively affects banking non-performing loans. In this study real GDP growth rate has found insignificant determinant of banking stability that is measured in terms of non-performing loans at 0.05significance level. But it affects positively.

Hypothesis 2: Inflation negatively affects banking stability. For a percentage change in inflation, results in 2.14 percentage decrease in banks non-performing loans holding all other variables constant. Higher inflation can make debt servicing easier by reducing the real value of outstanding loans. That is inflation were found to be negatively affects banking sector development which is expected and this result is in line with (Ayadi, Arbak, Naceur and De Groen,2013) who found that inflation have negatively related with banking sector development.

Hypothesis 3: trade openness positively affects banking non-performing loans. For a percentage increase in trade openness, results in 9.27 percentage is expected to increase non-performing loans to total loans in banking sector, holding all other variables constant.

Hypothesis 4: Reserve requirement positively affects banking soundness (NPLs). Reserve requirement were found significantly affect bank stability positively. This result support the proposed hypothesis and that could be an increase in reserve requirement is an increase in safe asset in the banking sector but it has no direct effect on the bank non-performing loans. However, it affects the bank lending performance or credit growth that contributes minimizing bad loans.

Hypothesis 5: rule of law index positively affects a financial stability (banking NPLs).The improvement in countries rule of law performance has expected to decrease the banks credit risk but the result found positively affects the banking NPLs ratio which is in contrary to the hypothesis and empirical evidence.

## V. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

### 5.1 Findings and Summary

Banks are considered as one of the largest and most important types of financial institutions, and the most efficient in practicing the role of financial intermediation. The banking system injects fuel in the economic system in the form of fund flow which impels economic efficiency. Banks by intermediary activity play a significant role in the optimal and well-organized allocation of funds of an economy by mobilizing resources for productive activities. This makes banking sector to be considered as the lifeblood of economy. The objective of this study was to investigate the effect of macroeconomic, sector-specific and institutional factors on banking sector development covering the period from 2014 to 2018. Quantitative research approach was used, and the secondary data was collected from NBE and institutional factors from worldwide governance indicators. The collected data was analyzed by using panel fixed effect regression model and by using Stata 14 software. The finding of the study shows that real GDP growth has insignificant and negative relationship with banks private sector credit to GDP in Ethiopia. On the contrary, inflation has significant and positive impact on private sector credit, but reserve requirement have significant and negative impact on private sector credit. Economic growth has found positive and insignificant impact, and inflation has significant & negative impact on banking stability. Besides, reserve requirement and trade openness has significant and positive impact on banking soundness in Ethiopia. Rule of law index have found significant and negative impact on depth, and significant and positive impact on soundness of banking sector in Ethiopia. Overall, the finding of this study was consistent with theory of financial development in banking sector (reserve requirement consistent with banking sector depth, and inflation, rule of law index and reserve requirement consistent with banking soundness finding).

### 5.2 Conclusion and Recommendations

Therefore, even though banking sector in general, the commercial banks in particular in Ethiopia are not in bad status in terms of soundness but it is lag behind from east African countries in financial depth indicators that is intermediary activities. So the Ethiopian banking sector should run their business in healthy way by taking into consideration external factors /or shocks.

#### Recommendations:-

- Macroeconomic policy-makers and government executives design optimal institutional and economic environment for efficient functioning of the banking sector.
- The national bank of Ethiopia needs to reduce the cash reserve ratio of banks to increase the availability of credit to the private sector to enhance in their financial activities to boost banking development.
- To ensure development in the financial sector, the government needs to maintaining macroeconomic stability.

#### Further research

This study concentrated on the macroeconomic, sector-specific and institutional determinants of banking sector development in Ethiopia. The study did not consider other factors affecting the banking sector development like ownership structure of the financial system, banking activity restriction, and financial liberalization. The banking sector development is a broader concept and alternative measure of banking development did not researched. Moreover the study did not empirically compare performance parameters of public and private sector banks in Ethiopia. Therefore, I recommend researchers to conduct on these areas to expand the level of knowledge.

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