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FINANCIAL DEEPENING AND ECONOMIC GROWTH IN ETHIOPIA

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A THESIS SUBMITTED TO THE SCHOOL OF GRADUATE STUDIES, ADDIS ABABAUNIVERSITY COLLEGE OF BUSINESS AND ECONOMICS DEPARTMENT OF ECONOMICS IN PARTIAL FULFILLMENT OFTHE REQUIREMENT FOR THE DEGREE OFMASTERS OF SCIENCE IN ECONOMICS (ECONOMIC POLICY ANALYSIS)

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Abstract

This paper focus on examining the effect of financial deepening on economic growth in Ethiopia for the period ranges from 1980-2019. This paper used time series econometrics model which was estimated by Autoregressive Distribute Lag (ARDL) to analysis the presence of both long-run and short-run effect of financial deepening on economic growth in Ethiopia. The financial deepening proxies used in this study is broad money to GDP ratio, private sector credit to GDP ratio, bank asset to GDP ratio and bank deposit to GDP ratio and labor, saving, trade openness and dummy variable for regime change as control variable. The empirical investigation shows that among the financial proxy used in this study broad money and private sector credit positively and significantly affect economic growth whereas bank asset and bank deposit negatively and significantly affect economic growth of Ethiopia. In addition, except the regime change labor force, domestic saving and trade openness has a positive and significant impact on economic growth. The result of the study shows that all financial deepening proxy's which includes broad money, private sector credit, banks asset and bank deposit has a significant influence on economic growth with different sign. Finally, this study recommends that the control imposed on the private sector should be relaxed, deposit mobilized should canalized to their most productive and profitable project, financial sector should focus on technological advancement, innovation and product variety. Secondary market should also be given more attention carefully in order to increase financial intermediaries.

***Keywords**: Financial Deepening, Economic Growth, Ethiopia, Autoregressive Distributed Lag, co-integration, granger causality.*

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DECLARATION

I Sisay Wami Begna I. D. number GSE/0337/11 do hereby declare that I have not submitted this material to, either in full or in part, for a degree in this or any other university/institution. The work presented in this paper is to the best of my knowledge, belief and my original work.

Submitted by:

Sisay Wami _____ _____ _____

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Approved by:

This thesis has been submitted for examination with my approvals.

Zerayehu Sime (PhD) _____ _____

Name of Advisor: Signature Date

APPROVAL

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This is to certify that the thesis paper presented by Sisay Wami, entitled: FINANCIAL DEEPENING AND ECONOMIC GROWTH IN ETHIOPIA in partial fulfillment of the requirement for the degree of Master of Science (MSc.) in Economics (Economic Policy Analysis) compile with the regulation of the university and confirms to the acceptable standards with the respect to originality and quality.

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Acronym

ADF = Augmented Dickey Fuller

AIB= Agriculture and Industrial Bank

AIC= Akaike information criterion

ARDL = Autoregressive Distributed Lag

ATM= Automatic Teller Machine

BoT= Bank of Tanzania

CBB = Construction and Business Bank

CBE= Commercial Bank or Ethiopia

CBK= Central Bank of Kenya

CLRM= Classical Linear Regression Model

CSA= Central Statistical Authority

CVAR= Co-Integrated Vector Autoregressive

DBE = Development Bank of Ethiopia

DW= Durbin-Watson

ECM= Error Correction Model

EIC= Ethiopian Insurance Corporation

EPRDF = Ethiopia People Revolutionary Democratic Front

FD= Financial Deepening

FDI= Foreign Direct Investment

GDP = Growth Domestic Product

GMM= Generalized Method of Moment

GNP = Growth National Product

GPMB = Growth per Capital Money Balance

HSB= Housing and Saving Bank

IMF= International Monetary Fund

MFI= Microfinance Institution

MOF = Ministry of Finance

NBE = National Bank of Ethiopia

OLS = Ordinary Lest Square

PSC= Private Sector Credit

PSSA =Pension and Social Security Authority

RGDP= Real Growth Domestic Product

SAP= Structural Adjustment Program

SBC= Schwarz Bayesian Criterion

SSA= Sub-Saharan Africa

UNDP= United Nation Development Program

VAR = Vector Autoregressive

WDI= World Development Indicator

WEO= World Economic Outlook

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CHAPTER ONE

1. INTRODUCTION

1.1 Background of the Study

The development of financial sector plays a vital role in economic growth and development process of any countries (Johannes, 2011). Financial sector development and domestic capital formations are the main energetic force in influencing any countries sustainable economic growth, also effective financial institutions are key facilitators (Abdi, 2012).It is crucial in channeling between saving and investment, and the efficiency of financial institution is key determinant of country's economic growth. In addition, efficient and vibrant financial system is essential to facilitate the economic transactions, specialization in production and a competitive market system (Khan, 2007).

Financial sector mobilize saving and allocate credit across space and time by providing different important products which helps the households and firms to handle with economic uncertainty (Hering and santomero, 1970). Well-developed financial system is crucial in mobilizing saving, providing symmetric information, facilitate different transaction and reduce risk (Acemoglu and Zilibotti, 1997). Diversification of risk and accumulation of capital help to eliminate the bottleneck imposed on the growth of finance industry. Countries with strong financial system underpin higher economic growth and have low level of income inequality and face low level of poverty (Durham, 2004; Ogunyiola, 2013; Adu, et al., 2013 and Ndubuisi, 2017).

A strong financial sector plays a key role in promoting economic growth by stimulating investment of the country through effecting its level and efficiency. When the financial sector is efficient, the regulation and reform in the financial sector safeguard transparency and appropriate reporting system inside the financial sector. This makes the investor to have a confidence so, attract domestic and foreign investor to invest more. Contrary, regulate financial system leads to underdeveloped and incompetent markets and financial sector dominated by government deters financial development and economic growth of the country (Khan, 2007).

In the last few decades in developing economies there have been development strategies which more focus on the liberalization and modernization of the financial system. The Sub-Sahara African countries are also no exemption. According to Cobbina (1999), in the 1980s most of the countries undertake the policies which lower the level of financial repression by reducing the extent of government intervention in the national financial sector, through privatization of the

banking sector. These all policies are expected to promote economic growth via financial development. This was to be realized through a general improvement in the inefficiency of resource allocation.

In addition in Ethiopian context, after the down fall of Derg-regime in 1991 successive measures are taken to liberalize and reorient the economy towards a system of economy based on commercial consideration, the financial market was relaxed (Kotiso, 2019). This reform in financial sector is made to increase the growth process of Ethiopia economy. In 1994 the government of Ethiopia legalizes domestic private investment in the financial industry and restructures the two development bank as commercial bank (Admassu and Asayehgn, 2014). However, financial liberalization is very low in Ethiopia compared with its regional peers and plays a limed role in the economy. Because, the Ethiopia financial system is characterized by the underdevelopment of banking system, cash follow financial sector and foreign investment and this all is controlled by government.

On the other hand, recently Ethiopian economy shows an inspiring performance over the last decades with an average GDP growth rate of 11% which is twice the average growth rate of Sub-Saharan African countries and also triple of the world average growth over this period and has leads to Ethiopia being rated as one of the fastest growing economies in the world (UNDP, 2014). Furthermore, The Ethiopian economy has recorded 9% growth in 2018/19, faster than the 7.7 % expansion in the previous year. This growth was attributed to 12.6 % growth in industrial output, 11 % increase in service sector and 3.3 % expansion in agriculture (NBE, 2019).

In general, in Ethiopia financial sector development is overdue by the government interference and the share of financial sector is controlled by government (Getnet, 2013). Commercial bank of Ethiopia accounts about 90 percent of total banking sector deposit (Alemayehu, 2006). In addition, this bank controls 2/3 of the entire banking system total asset (NBE, 2019). Opposing this application of reform such as privatization of state owned financial sector; the entry of foreign bank and insurance increase credit accessibility and reduce cost of transaction and they improve reliability and consistency (Berlin, 2009). From this, we understand that financial sector depth plays a key role to provide efficient financial system to endorse growth and development of the economy. Therefore, the main purpose of this study is to examine the effect of financial sector depth on economic growth in Ethiopia.

1.2 Statement of the Problem

The Ethiopian financial sector shows some improvement but the deepening of financial sector is still underdeveloped compared to its peer countries in the region. So, understandings the relationship between financial deepening and economic growth is very crucial for policy making purposes. It helps the government to identify the level of intervention required to achieve anticipated level of economic growth, among other things. There are different empirical studies conducted on the relationship between financial deepening and economic growth. These studies can be broadly classified as demand leading hypothesis and supply leading hypothesis based studies. The findings of these studies are not conclusive on the direction and magnitude of relationship between financial deepening and economic growth.

Ireland, (1994), Levine (2005), Demirguc-Kunt, (2008), Quartey and Prah, (2008) conducted studies on the issue by focusing on the point that shows the demand for financial service depend on economic growth and transformation of primary sector to industrial sector. That means financial development depends on economic growth which is a demand-leading hypothesis. In contrary, the studies conducted by McKinnon, (1973), Shaw, (1973), king and Levine (1993) and Kots (2018) analysis the importance of financial sector deepening to economic growth and also the relationship between the two variables which is the supply-leading hypothesis. This hypothesizes the importance of financial development in promoting economic growth.

The Ethiopian financial sector witnessed significant growth during the last decade. This can be attested by expansion of banking system in terms of branch, total assets, capital and loan disbursed (NBE, 2019). However, the deepening of financial sector in Ethiopia is still lags behind peer countries in terms of technological advancement, product verities, and innovations (Admassu and Asayehgn, 2014). Low level of private sector credit by finance system is also blamed as a challenge for the private sector growth and then sustainable economic growth of the country. Moreover, the banking sector is dominated by a state owned bank which could be a source of inefficiency (La Porta et al., 2002). The Ethiopian financial development was delayed by the government intervention Getnet (2013). The reason for the delayed financial sector deepening is the monopoly of state owned commercial banks and the absence of capital market in Ethiopia and the presence of limited informal investment in the share of private companies. Thus, it requires empirical evidence to uncover the effect of financial sector deepening on the economic growth of Ethiopia.

In spite of numerous efforts made to develop the country's financial system, until now the financial system is too fragile and inefficient to support private sector growth (Abdi, 2000). The development of Ethiopian financial sector as measured by different financial depth indicator such as the ratio of private sector credit to GDP, narrow money to broad money and broad money to GDP, is well below than that of its peers (Abdi, 2000; WBES, 2015; IMF 2019). According to the data from IMF, broad money to GDP ratio for Ethiopia stood at 32.9% in 2019, which is slightly lower than the 36.3% for Sub-Saharan Average. This may give a wrong impression that the Ethiopian financial development is in bar with the Sub-Saharan African countries average. However, if we look at the ratio of private sector credit to GDP it stood at 11.9% in 2019 for Ethiopia compared to 24.3% for Sub-Saharan Africa. This tells us that the use of different ratio to measure financial deepening may give totally different results. Thus, including as much as possible many indicators for measuring financial deepening in analyzing the effect of financial deepening on economic growth is important.

The inefficiency of the financial sector deepening increases transaction cost and channel savings of the household into physical asset and high number of uninsured asset which sequentially reduces investment and diminishes economic growth (Abdi, 2000). Accounting 46% of GDPs total asset, the financial system of Ethiopia is shallow and does not help well the requirements of transforming the economy (WBES, 2015). In addition, the access to finance is the main obstacle to the business by 40% of the firm in Ethiopia (WBES, 2015). The Ethiopia Private sector credit is very low compared to sub-Saharan Africa. This creates miss much between saving and requirement of investment which makes the Ethiopian financial sector to be incapable to link saver and investor. This reflects that there is no efficient provision of credit to the private sector.

A number of studies conducted on the link between financial deepening and economic growth in case of Ethiopia. Dagim (2015) studies the impact of financial sector development on economic growth in Ethiopia using credit to private sector as proxies of financial sector development and found the existence of positive relationship between two variables. Some researcher such as Tesfaye, (2012), Meron (2016) and Neway (2017) disclosed the presence of positive and significant effect of financial deepening on economic growth in Ethiopia. Fozia (2014) and Abdulahi (2017) investigate the causal relationship between financial deepening and economic growth in Ethiopia and they founds that financial deepening proxy they use in the study has a negative and significant impact on economic growth.

There are little studies done on the effect of financial deepening on economic growth in Ethiopia. The existing studies only use few measures to proxy financial deepening despite the availability of a number of financial deepening proxies. In addition, perhaps there exists a gap in a finding of the study. Therefore, this study tries to narrow this gap by using different measures of financial deepening proxies for Ethiopia. The finding of this study is expected to give insight on the issues that can be used as a reference for further studies and also to guide a policy decision. Among other variables, the following measures of financial deepening-the ratio of credit to private sector to GDP, broad money to DGP, the ratio of bank asset to GDP, bank deposit to GDP and other control variables are expected to be utilized to uncover the effect of financial deepening on economic growth in Ethiopia.

1.3 Objective of the Study

The main objective of this study is to examine the effect of financial deepening on economic growth in Ethiopia from macroeconomic prospective.

1.3.1 Specific objective

- To evaluate the trend and pattern of financial deepening in Ethiopian economy
- To examine the short-run effect of financial deepening (broad money, private sector credit, bank asset and bank deposit) on economic growth in Ethiopia
- To assess the long-run effect of financial deepening (broad money, privates sector credit, bank asset and bank deposit) on economic growth in Ethiopia

1.4 Scope of the study

This paper has been restricted on investigating the impact of financial deepening on Ethiopian economy. The study has used annual data of 40 years which include the year from 1980-2019.The study has employed the following variable; Economic Growth, Financial Deepening Variable, Trade Openness, labor, saving and Regime Change. Real GDP growth have been used as dependent variable and financial deepening is proxied by the ratio of private sector credit to GDP, broad money to GDP, bank asset to GDP and bank deposit to GDP. Other variable such as, labor, saving, trade openness and regime change have also used to augment the model. This study is not a comparison of Ethiopian financial sector deepening and economic growth with those of other countries and it focus on the growth effect of liquidity providing role of financial system, resource allocation in the form of credit provision, saving mobilizing of financial system using

the ratio of bank deposit to GDP, bank sector development effect on economic growth using bank asset to GDP ratio, regime change and other selected augment variable only.

1.5 Significance of the study

The objective of this study is to examine the impact of financial deepening on Ethiopian economy. The result of this paper is very relevant for policy maker, development planers, finance expert and also researchers. Knowing the effect of financial deepening on economic growth can be the main interest of the government and also business planning. So that, it will help stakeholder to formulate different policies which can be cable in enhancing the development and effectiveness of financial system. In addition to this, the result of the study will serve as a guide to build up appropriate financial sector reform and evaluating the effectiveness of this reform, because countries undertaking reforms expect to achieve more competitive, healthier, efficient and deeper financial system.

1.6 Organization of the Paper

This paper is organized in to five chapters. Chapter two presents the review of related theoretical and empirical literature concerning financial deepening and economic growth and presents the overview of Ethiopian economy and financial system and also the conceptual framework. Chapter three gives insight on the research design and methodology used to undertake the study. Chapter four provides the analysis and presentation of regression result and finally chapter five provides conclusion and policy implication based on the finding.

CHAPTER TWO

2. LITERATURE REVIEW

2.1 Introduction

The finance-growth nexus has entertaining disagreement view between researchers. The main disagreement issue between researchers is the direction of causality. Means, some researcher argue that there is finance lead growth paradigm. While, the other argues that finance is just a significant side shadow of economic growth. There is also a general consent which proposes the existence of significant and positive relationship between financial deepening and economic growth. Therefore, in this chapter I present some background concept in the relation to the topic of the relationship between financial deepening and economic growth.

2.2 Theoretical literature

2.2.1 Definition of financial deepening and development

As first articulated by Gurley and Shaw (1955, 1967) financial deepening indicates a wide array of changes in financial structure accompanying economic development. The change in financial structure includes relaxing credit constraint, intensive use of external finance, less distortions in the credit market and increase in financial movement. It refers the increased provision of financial services with a broader choice of services geared to all levels of the society. Financial deepening is measured as a ratio of broader monetary aggregates to the growth domestic product and it refers the greater financial resource mobilization in the formal financial sector and comfort in liquidity constraint of banks and enlargement of funds available to finance projects (Fisher, 1993).

Furthermore, it represents the macro effect of financial sector on the superior economy. Financial deepening involves the introduction and exhaustive or concentrated use of new financial product. Higher financial deepening generates a favorable environment for expansion of resource placement in the economy of the country. This action in turn can leads to an enhanced economic growth. The economic activity of one country can be significantly smoothed by modern financial services (Akinboade, 2000).

On the other hand, financial development is defined as the factors, policies and the institution that leads to the efficient intermediation and effective financial markets. It can be measured by different factors including the size, access, depth and also soundness of the financial system. Financial development can be measured by examining the performance activities of the financial

markets, banks, financial institution and bond markets. The higher degree of financial development in a country the wider will be the availability of financial services and a developed financial system offers higher returns with less risk (Noureen, 2008).

A strong financial system suggests risk diversification and effective allocations of capital. According to Levine (1997) financial development is the process whereby the quality and quantity of financial services provided by the financial structure and the mix of financial instruments, markets and institutions have increased to improve the problems modeled by market frictions. It involves the enhancement in producing information ex-ante about possible investment opportunity and allocating capital, monitoring firms and exerting corporate governance function, facilitating the trading, diversification and management of risk, mobilizing and pooling of saving and facilitating the exchange of goods and service. Providing this financial system captures the real variable status in economic growth models.

2.2.2 Concept of financial system

Financial system plays a crucial role in promoting economic growth. Theoretical study on financial development and economic growth process postulate different but, mutually non-exclusive effect of financial sector development and economic growth (Mishkin and Eikens 2006). They argue that strong financial sector provide cost efficient and dependable payment mechanism while improving the volume of financial transaction and resource allocation in which financial activity increase resource that could be channeled in to investment. Balanced and energetic financial systems contribute to the economic growth and the stability of the economy. Contrary, financial system dominated by the government or regulated financial system guide us to undeveloped and uncompetitive markets which imposes constraints on economic growth (Khan, 2007).

Moreover, financial liberalization which is the deregulation of foreign sector capital account, domestic financial sector and stock market sector in separation from domestic financial sector is a key point for financial sector development (Kaminsky and Schmukler, 2003). It requires reducing liquidity and reserve requirement and removal of administrative control on pricing and credit allocation. It is simply freeing financial sector from government intervention and letting the market to determine the price and allocation of credit (McKinnon, 197; Shaw, 1973; and Weller, 2001). However, in transition economies the institutional and legal frameworks are too weak to serve and support the improvement of the financial sector through supervision,

regulation and enhancing competition. It is important to insure whether the financial sector is healthy or not (Roubini and Sala-I- Martin, 1992;Khan and Senhadji, 2000; Favara, 2003).

Some theory identifies two channels through which financial sector might affect a long-term economic growth. The first channel is through increasing in the saving rate and its impact on capital accumulation which include human and physical capital (Shaw, 1973; McKinnon, 1973; Grossman, 1991; Rebelo, 1991; Pagano, 1993). The second channel is through the improvement of the efficiency of financial intermediation (Boyd and Prescott, 1986; King and Levine, 1993). These occur from the intermediation role of financial institution which enable the financial sector to mobilize saving for investment and facilitate and promote inflow of foreign capital including foreign direct investment which is very significant for developing country by encouraging bond, portfolio investment and remittance.

King and Levine (1993) introduce the view that financial intermediaries help to increase the rate of technological progress by identifying and thus allocating capital towards those innovations with the greatest probability of succeeding. Additionally, well-developed financial sector contributes to the growth of income by reducing market frictions and combining risk and facilitating trade (Levine, 1997). Financial market and institution occupies a key position in the economy as mediator in channeling saving and other fund to borrower and investor. Here the main role of financial market and institution is to resolve the different obligation for saver and borrower, thus facilitating a high level of saving and investment in the economy (Levine, 2000).

The other most important role of financial sector in facilitating growth is to reduce information asymmetry, enforcement and transaction costs. This is achieved through a number of specific functions that the financial sector performs. On the basis of extensive survey of the literature, Levine (2004) recognized and sum up five key functions that a financial system provides in facilitating growth. Those five key functions of financial system are: (1) mobilize saving (2) creating information about potential investment and capital allocation (3) monitor investment and exert corporate governance (4) facilitate trading, diversification and management of risk (5) facilitating the exchange of goods and service. Each of this function can influence the decision of saving and investment and consequently economic growth.

Asymmetric information exist and also pervasive in financial market and its transaction. These information asymmetries occur when the borrower and lender in financial system do not have equal information with respect to the credit worthiness of a potential borrower (Stiglitz, 1994,

2000). As a result, in discriminating against competing project the market system does not essentially choose borrowers with the uppermost returns, neither does it essentially stop the allotment of resource to the lowest yield investment. In addition, Stieglitz (1994) proposes that the subject with the financial liberalization as well. He put forward many market failures are all-encompassing in financial market. Out of this monitoring financial system as a public good and failure to meet the information criteria for efficient competitive markets is the main point. From this we understand that numerous kind of government interference in the financial sector could be Pareto improving.

The above argument propose that financial development occur when there is enhancement in mobilization of saving; when the service provided by financial sector increase; smooth movement in exchange of goods and service exist; better allocation of capital to the private sector thus encourage investment; diversification and management of risk and also improvement in the regulation and stability of financial sector.

2.2.3 Theory of financial deepening

The evaluation of the relationship between financial deepening and economic growth was first introduced by Patrick (1966) and he proposes two competing hypotheses. Those are the supply-leading and demand-leading hypotheses. Patrick points them to specific and precise phase of development process. He also declared that the direction of causality change over the course of development, and argues the early stage of economic development depicted that finance cause economic growth through improvement of real per capital formation. Which means the supply-leading hypothesis dominate the process and then slowly but surely shifts its principal role to demand-leading hypothesis. Patrick proposes that when there is a real economic growth process the supply-leading hypothesis momentum gradually become less important and financial response on economic development be dominated by demand-leading hypothesis.

Gurley and Shaw (1955) hypothesize the theory which is commonly referred to as supply-leading hypotheses which challenges or contend the expansion of financial system precede and encourage the demand for its service. This means that financial deepening is the engine for real economic growth. Supporting this Darrat, (1999) argues the formation and development of effective market-oriented financial intermediation is an essential pre-condition for real and sustained economic development in any country. He assume that well implementation of this financial system can promote overall economic effectiveness, generate and enlarge liquidity,

mobilize saving, enhance capital accumulation, transfer resource from non-growth sectors to the modern growth sector.

McKinnon (1973) and Shaw (1973) proposes that financially repressive policies in the form of nominal interest rate ceiling or caps, controlling credit allocation, exchange rate control, non-market re-allocation of resource and high reserve requirement were not only inefficient and incompetent but also the source of unnecessary economic and financial market distortion that reduce the volume of financial saving, the rate of real economic growth and the real size of the financial system and it create a shallow financial market. They argue that financial liberalization encourage and accelerate economic development and also economic growth.

According to McKinnon (1973) the general outcome of financial repression is a reduction in quantity of money in the financial system and suggesting that it causes a fall in the supply of investable finances or fund under the market demand. Shaw (1973) also suggests that low amount of loanable funds, bring about an effective ceiling on loan interest, and elevate risk aversion and also liquidity preference on the fraction of organization. In such circumstances, risk-averse financial organization can only but dedicates a superior portion of their collection and portfolio to set up borrower. On the other hand, McKinnon (1973) and Shaw (1973) highlights the ultimate instrument in monetary policy which is real deposit rate of interest was extremely vital for financial deepening. Policies which encourage the accumulation of real money balance direct to high level of financial saving, total saving and investment in relation to total production. The advantage of high real deposit rate would be the diversion of resource from asset with low rate of return to asset with higher rate of return which guides to an increase in general productivity of resource or capital.

According to DeGregorio and Guidotti, (1995) the McKinnon-Shaw model supports the supply-leading hypothesis by memorizing that financial deepening entails or represent not only higher productive of capital but also a high saving rate. This explains that, a higher volume of investment leads to a higher economic growth. The implication of McKinnon–Shaw model centers on the effect of public policy concerning financial market on saving and investment. Based on this model Fry (1998) proposes four ways how interest rate ceiling distort the economy. Those are it create unfairness in current consumption and against future consumption which diminish saving below socially optimal level; the engagement in comparatively low-yielding project; bank borrowers are able to obtain all the funds they want at low interest rate and will

choose relatively capital-intensive projects and pool of potential borrowers enclose entrepreneurs with low yielding projects who would not want to borrow at the higher market cleaning interest rate.

The effort of McKinnon (1973) and Shaw (1973) to protect and defend their proposition was through the complementarily and debt intermediation theory. McKinnon (1973) proposes on the complementarily between money balances and physical capital, and he believes an outside model of money demand. He propose that in developing country financial market is underdeveloped because of this there is limited opportunity for external finance and all investors and firms were largely constrained to self-finance, at similar occasion that indivisibilities at physical capital required the accumulation of saving prior to physical capital accumulation. This shows that investment expenditures are bumpier than consumption expenditure which means the potential investor must collect money before they start the investment projects.

Moreover, Shaw (1973) argued that financial intermediation provide the momentum for growth more directly. He argued that financial liberalization would result in an expanded, enhanced and also incorporated financial sector. This expanded, enhanced and incorporated financial sector would lead to an increase in the saving rate from the diversion of potential saving from inflation hedges and capital flight; an increase in the rate of investment by facilitating more lumpy investment and a direct improvement to growth via improved financial technology.

The argument of McKinnon and Shaw school which propose that financial liberalization increase the total credit available to the private sector through different channel such as reserve requirement and credit ceiling also criticized by neo-structural economist which is led by Taylor (1983) and Wijnbergen (1983). They argued that financial development reduce total real credit supply and thus, avoid economic growth. The neo-structural economist argued that even if financial sector reform leads to an increase in mobilization of saving, it may not facilitate economic growth. When the growth in saving is channeled to more productive activity the economic activities would be encouraged.

On the other side, Wijnbergen (1983) proposes that higher rate of interest related with financial liberalization could draw markets assets from the informal sector to financial institutions in the formal sector. This activity is more visible in developing countries where large informal sector is available and the formal financial sector provides only a portion of the intermediation. In this case, the magnetism of resource by the formal financial sector crowds out the supply of financial

resource to the informal sector, and this is typically not included into formal financial system. In addition, in the formal financial sector, there is a terms such as higher reserve requirement highly reduces the quantity of loanable funds disparate the limit market which is not topic to such regulation. This implies that the net consequence on investment and economic growth would be negative.

Endogenous growth-finance theory was emerged around 1980s. This theory was highly supported by Romer, (1986) and Lucas, (1988). The equilibrium model of endogenous technological change, dispute that the long-run growth of the economy first and for most is determined by the accumulation of knowledge. This thought does not stress or emphasis the idea of convergence and it is designed based on either constant or increasing returns to scale in capital, which postulates a growth in the gap between poor countries and rich countries (Romer, 1986). This model treats both financial deepening and economic growth as endogenous. The model developed by Greenwood and Jovanovich (1990) shows that how both financial development and economic growth are endogenous. They argue that growth provided a resource to develop the financial sector and the financial sector in turn allowed for a higher growth of the economy through investment. In this case both the financial intermediation and the rate of growth are endogenously determined.

Generally, the endogenous growth theorists argue that the financial sector contributes to economic growth by affecting the efficiency of investment. They affect investment by allocating credit to its highest productive use; enabling technological advancement; by transforming the composition of saving to suit investment; by collecting and analyzing costly information on entrepreneur project and financing of human capital formation. Sometimes economic growth also influences the development of financial system by creating the demand for financial services by allowing the formation of new financial product and deepening of the financial system.

In conclusion, the growth hypotheses by (Goldsmith, 1969, and Levine, 1997) argue that the lack of developed financial infrastructure slow down economic growth. They propose that this development hypothesis does not focus on narrow idea such as bank or single financial instrument, to the interaction between the combination of institutions, instruments, and markets. On the other hand, Levine (1997) propose that bank based system be inclined to have closer binds to industry and are better able to diminish the cost of generating information about firms

thereby banks may be better able to distinguish more effectively, apply corporate management and banks are more efficient in intermediation.

The different debate presented above in theoretical literature leftover unresolved. Conversely, there appears to be a growing consensus on the long-term significance on the financial sector and the reimbursement or benefits that exist in improving the function of financial sector. The points of view in the theoretical literature do not reflect the need to return to interventionism, neither is it an importance or emphasis on one types of financial system such as bank or stock market as against another. Rather, it harps on the need for a more carefulness and bright or intelligent regulations of the financial scheme as well as its appropriate positioning to overcome the agency confront or challenges.

2.3 Empirical literature

Many studies have shown that strong and efficient financial system is very crucial to mobilize domestic saving and also foreign resource in order to allocate them to a high return project. Additionally, financial intermediary provide different channel to expand the risk of holding financial asset and permit investors to access financial resource that would otherwise be not available. As a result, strong and well developed financial sector helps economic growth by facilitating economic competition and also integrated or incorporated commodity/product market.

On the other side, some study exposed that economic growth can inspire and stimulate the development of financial intermediaries. There are many empirical literatures on finance and growth in both developing and developed country using time series analysis, cross-section growth regression and panel studies. This shows that the result of empirical literature have been mixed with much of the difference happening from different definition, period under investigation and econometric methodology. It is decomposed to cross-section, time series and panel data analysis because it helps to identify weakness of one types of analysis and choose the appropriate one and also if it is not decomposed it became boring to the reader. First, let’s begin with cross-country data analysis.

2.3.1 Cross-section analysis

Starting with cross-country regression analysis, Roubini and Sal-I-Martins (1992) examined the effect of financial repression using data of 98 countries for the period of 1960-1985. They use proxies of a composite index of weighted average distortion measure. The results of the study demonstrate that, if the other determinants of the growth are controlled for a maximum level of

financial repression this leads to lower economic growth. The evidence of the study also proposes that the degree of financial development could be the explanation for stark dissimilarity in economic growth between countries and that oppressive or repressive intervention in financial market was not attractive or desirable.

Carlin and Mayer, (2003) examine the interrelation between structure of a country‘s financial systems and industrial growth using data from the OECD countries over the period 1970 to 1995. They employ the investment of 27 industries as the proxy for industrial growth. They report a strong relation between the structure of countries financial systems and growth of industries in these countries. In addition, they found particularly a strong relationship between the structures of countries financial systems and the growth of industries that are dependent on external equity and skilled labor.

King and Levine (1993a) use the data of 77 countries for the period of 1960-1989 to analyze the relationship between financial deepening and economic growth. The author uses different measurement of financial depth which includes liquid liabilities as percentage of GDP, domestic private credit as percentage of GDP, bank credit relative to central bank asset, and also credit to non-financial private sector as percentage of GDP, though this all variables demonstrate to affect growth of the economy. The model used by this author depends on previous work by Goldsmith (1969) and also developed further to control the variables that affect economic growth in the long-run. Likewise, the study is grounded on an extensive selection of countries and it does not differentiate between diverse sub-groups of countries at their level of economy development.

Similarly, King and Levine (1992, 1993b) adopted a more decomposed measure of financial development from the period of 1960 for over 80 countries. The disintegrated measures capture the comparative importance of diverse financial intermediaries and the distribution of financial asset by the financial system. They proposes that the ability of financial sector to deliver liquidity which was proxied by the ratio of liquid liability to the GDP and private credit supplied for the financial system as a ratio of GDP was used to measure the financial system ability to monitor and screen the borrowers and expand and diversify the risk. The output of the study shows that the relationship between the variable were both statistically and economically significant, even after controlling other determinant of economic growth.

Using data of 42 developing countries for the period of 1980-1989;Rajan and Zingales (1998) proposes that the measures of financial deepening in the country are vital for firms to finance

their growth. In addition to this the components of financial deepening can foster the growth of the industries and the growth of the economy in general.

Demirguc-Kunt and Levine (1996) examine the structural issue in financial system. The study cover the period from 1986-1996 by using data of 44 countries which disclose the structure of financial system is not only different across countries it can also change from time to time. This shows that when the countries become richer and richer the asset holding of financial intermediaries also increase. This implies banking sector grow in terms of allocating the credit whereas the other nonbank financial institution such as insurance and microfinance companies start to play a vital part in the economy. Also the stock markets grow significantly and become more energetic of active.

Ndebbio (2004) in his study on financial deepening, economic growth and development: evidence from selected Sub-Saharan African countries, provide that low or stagnant economic growth of any countries is caused because of shallow financial depth, means that the range of financial asset for that country is narrow. In this study he tried to explain the reason which causes that why most of Sub-Saharan African countries have low or negative per capital growth rate. He tries to identify a range of financial asset that could adequately approximate financial deepening, which means that increase in financial asset in the economy. A cross-country regression was usedfor34 Sub-Saharan African countries. He concludes that financial deepening as represented by the growth rate of per capital real/nominal money balance and also degree of financial intermediation was positively influence per capital growth of the economy.

Khan and Senhadji (2000) propose the evidence on the finance-growth nexus for a 159 countries using the dataset covering the period from 1960-1999. He uses four proxies for financial deepening which include the growth rate of population, investment as a share of GDP, log of initial income and growth rate of term of trade. To estimate growth equation they use both cross-country sample and five year average panels in order to reduce the defects in cross-section methodology. The result of the study explains the existence of positive effect of financial development on the growth of the economy. The author found that the size of the effect diverse with different indicators of financial development, technique of estimation, the frequency of data and the functional form of the relationship.

From the above cross-country literature we confirm that there is positive relationship between financial depth and economic growth. However, some indicator of financial deepening is insignificant when the equations of growth are assessed with panel.

2.3.2 Time series analysis

Apart from the above discussed cross-section analysis, the relationship between financial deepening and economic growth has been analyzed using time series data for individual and group of countries in time series analysis. Quah (1993) says that it is difficult to interpret the result of cross-sectional data analysis. It does not differentiate between statistical and action/causation and also it fails to address country-specific effect of financial deepening on economic growth. Because, it groups the countries with different economic development together and only refers to the average effect of selected variable across the countries.

Pritchet (2001) also writes that the cross-sectional measure structural difference between countries because of this it can only measure for between countries effects of the relationship in a selected point of time. It fails to account the time effect of the relationship which may not be stable over time in some countries. The Cross-country data was also vulnerable to measurement errors and omitted variable bias and also the result become associative rather than causative because the ability to unambiguously control for endogenity is limited.

Muse, (2017) investigate the causal relationship between financial development and economic growth in Ethiopia for the period of 35 years. By employing ARDL approach he conclude that from the variable he use the ratio of gross national saving to GDP has a positive and significant impact on economic growth in the long-run. The monetization variable he use shows that a positive coefficient but insignificant for the long-run which implies that broad money has exerted a positive effect on economic growth but it does not reach a threshold level to answer significantly on the growth.

Waqabaca, (2004) examines the relationship between financial sector development and economic growth in Fiji from 1970-2000 using time-series data analysis. The result of the study shows the existence of positive relationship between financial sector development and economic growth in Fiji. The directions of causality run mainly from economic growth to financial sector development.

Aderaw, (2012) analysis empirically the relationship between insurance and economic growth in Ethiopia from 1981 to 2010 using time-series data and using 2000 as a base year for the growth domestic product (GDP). The output of the study demonstrates that insurance development and growth of economy in Ethiopia are not causally related. He concludes that insurance is not as much important precondition to stimulate economic growth and also vice-versa. Guryay et al. (2007) also examine the link between financial development and economic growth for the period of 1976 to 2004 in northern Cyprus using ordinary least square (OLS) method. The result shows that there is insignificant and positive relationship between financial development and growth of the economy.

Atif et, al. (2010) examine the impact of financial development and trade openness on GDP growth in Pakistan using annual data over the period 1980–2009 by employing the ARDL bound test by (Pasaran, 2001). They found evidence of long-run relationship among the variables financial development, trade openness and economic growth. The study also found that FD and trade openness to Granger cause economic growth over the period of study.

Oniore, (2014) also examine the impact of financial deepening; FDI on economic growth in Nigeria from 1981-2012. He concludes private sector credit, liquidity ratio and foreign direct investment have a significant influence on economic growth. However, the ratio of broad money to GDP which indicates the overall size of financial intermediary of the country employs a negative impact on economic growth. Nwakobi et al. (2019) also examines the effect of financial deepening on economic growth in Nigeria from 1986-2018. Using ARDL model they found that in Nigeria economic growth is not affected by financial deepening. The result also states that the level of growth in the economy is what influences the level of development in the banking sector.

Haile and Kassahun, (2011) used data of Ethiopia from 1971-2010 to analysis the relationship between financial deepening and economic growth. By applying the Stock Watson Dynamic OLS method using the ratio of liquid liability of commercial banks to GDP as a financial development indicator. The result of the study suggests that financial development and economic growth have a positive relationship and test of granger causality demonstrates a bi-directional causality between financial development and economic growth as cited in Tesfaye, (2012).

Tesfaye, (2012) examines the link between financial deepening and economic growth in Ethiopia from 1980-2010 by employing CVAR approach to evaluate how financial sector contributes to economic growth. The finding supports the presence of unidirectional causality from economic

growth to financial development. In addition to this the result shows the existence of positive and significant long-run correlation between financial development and economic growth and has insignificant effect in the short-run.

Dejene (2016) empirically investigate the relationship between financial sector development and economic growth in Ethiopia using VAR approach and Johnson co-integration and found financial development indictors are insignificant and has negative sign in long-run. But in the long run degree of openness and government spending are the most important forces behind economic growth in Ethiopia. However, in the short-run there is strong evidence which shows that domestic credit to the private sector, degree of openness, broad money or monetization, inflation rate and government spending are the major or main sources of economic growth. He concludes that financial sector development has a growth inspiring effect on Ethiopia. He also proposes that the financial sector development in Ethiopia didn't reach the minimum level needed to support the long-run growth of the economy.

2.3.3 Panel data analysis

Panel data has the advantage of taking into account the nature relationship of both over time and between countries while minimizing the problems associated with cross-section analysis. Caldron and Liu, (2002) analysis the link between financial development and economic growth using the ratio of broad money to GDP and the ratio of private credit to GDP as proxies for financial development. The result suggests that the existence of positive relationship between financial development and economic growth for the sample of 109 countries for the period spanning from 1960-1994. Grouping the countries in to developing and developed countries, he find bi-directional causality between financial development and growth of the economy and also he propose that on the longer sample interval the effect is also large and stronger in developing countries than that of developed countries.

Bist, (2018) investigates the presence of long-run relationship between financial sector development and economic growth of 16 selected low-income countries from 1995-2014 using panel unit root and panel co-integration analysis. To estimate the result he uses fully modified and dynamic OLS techniques. He concludes that there exists a cross sectional dependence across the countries and there is a long-run co-integration relationship between financial sector development and economic growth which concludes that financial development has a positive and important effect on economic growth.

Acaravci, et al, (2009) investigate the causal relationship between financial development and economic growth in Sub-Saharan African countries for the period of 1975-2005 using panel co-integration and panel GMM estimation. The output of panel co-integration analysis provides evidence of no long-run relationship between financial deepening and economic growth. The empirical finding shows a bi-directional causal relationship between real GDP per capital growth and the domestic credit provided by the banking sector for the panels of the selected 24 sub-Saharan African countries.

Likewise, Levine et al, (2000) assessed the impact of financial development on economic growth using the GMM estimator and instrumental variable for over 70 countries from 1960-1995. The result of the study shows the exogenous components of financial development have a positive and significant effect on capital accumulation and economic growth. The output is robust for requirement or specification and also a succession of sensitivity test. The result suggests that the legal environments, which defend creditor right and enforce contract encourage the level of financial development and economic growth.

Gezer, (2018) investigates the causal relationship between financial deepening and economic growth for 14 upper middle income countries for the period range from 1987-2015. He uses broad money supply, private credit, financial system deposit liability and deposit money banks' asset as proxies of financial deepening, the empirical finding indicates that countries can be clustered according to supply-leading and demand following approach. In addition to this, there is also the evidence of bidirectional causality for some countries. By adopting the Johansson co-integration regression procedure Koose at al. (2016) undertake the study on financial deepening and economic growth in Ghana. The result of the study suggests that financial deepening has a substantial impact on economic growth and also there is bi-directional causality between the official exchange rate and credit to the private sector to the investment.

To sum up, the empirical evidence on financial development and economic growth provides different result from one research to the other. This is maybe due to the methodology used, the financial development proxies used, the development level of countries and the other reason. But, most of the studies have found the presence of long-run relationship between financial development and economic growth. This links may run from financial sector development to economic growth or from economic growth to financial sector development. In addition, the

general body of the literature suggests the presence of positive link between financial development and economic growth.

2.4 Other Country Experience

2.4.1 Kenya

The Kenya economy experienced mixed economic system with the first decade of independence which is from 1964 to 1973 facing inspiring performance (Andele, 2013). At the time of independence in Kenya the commodity prices were generally high and the country enjoyed important foreign exchange reserve which was left by the colonialists after the independence and this stabilizes the economy of Kenya (Magahema, 2015). In addition to this he identifies that the GDP grew by 6.6% per year over the period, which compared favorably with some of the newly industrialized countries of East Asia. Related to its per capital income the saving and investment were comparatively higher. This notable performance was qualified to the consistency of economic policy, high domestic demand, emphasis on the importance of smallholder agricultural farming and also the expansion of market for domestic output within the east African region. In 1973 the reckless monetary and fiscal policy management resulted into slow and persistent economic decline (Rono, 2002). In this year there is increase of oil price, the living condition of the Kenyan people, as those of most African countries, have moved from bad to worse. In addition increase in oil price the 1970s obtainable Kenya's economy with challenges and hardships as a result of the world recession that followed the economic crisis of 1970s. The action include the fluctuating prices of the country's major export, drought and famine, high population growth, increased debt, disease, the collapse of the east African community and high rates of urbanization and ignorance (Magahema, 2015).This had a negative impact on the country's economy the GDP per capital decrease to 5.2% over the period, followed by food shortages and declining standards of living.

The implementation of structural adjustment program (SAPs) changes the Kenya's economy which was introduced in 1980/81 fiscal year. But, this program or (SAP) did not become an important part of economic management until after the publication of the session paper No. 1 of 1986 (Rono, 2002).Even with the presence of changes in the economic policies, the performance of the economy is very deprived. The budget deficits continued to increase, import and export decline and the average real GDP felling to below 4.2% over the period. This descending spiral continued to early 2000. Internal shook with poor monetary and fiscal policy regime resulted in

the worst economic performance in the short history of Kenya independency. The average RGDP decline to a low 2.2% and 1.4% in 1990 and 2001 respectively (Odero, Reeves &kipyego, 2015).

The Kenya government makes a reform to its fiscal policy reform aimed at strengthening the financial sector performance in the country. As a result, there has been increased growth in the economy in the last decade increasing to near 7% in 2007. Because of post-election violence in 2007/8 the economic growth of Kenya decline. The GDP growth robust in 2013 at 5.7% based on rebased statistics and stood at 4.4%, 5.8% and 6.2% in the first three quarters of 2014 compared with 6.4%, 7.2% and 6.2% in comparable quarter of 2013.The Kenya's economy recovered from drought and extended campaigning for election period in 2017 to a robust growth of 6.3% in 2018 compared to 4.9% in 2017 (CBK, 2018).

2.4.1.1 Banking industry in Kenya

Kenya is one of the countries in African continent having a well-developed financial system based on the ground. According to Bakang (2015), in the past two decade many reform translated by the development and innovation have taken place in the Kenyan banking sector that have led to the increase the sector's asset. These kinds of development have mainly been driven by financial innovations in the sector. Particularly, the reduction of the retention ratio from 6 to 5.25% by CBK made loans more affordable to the public; the transformation of Non-Bank financial institution into commercial bank (e.g. equity and family bank); the introduction of new products and financial service delivery channels (e.g. M-pesa, Islamic banking, mobile banking, agency banking and the integration of Automated Teller Machines (ATMs) by microfinance institution) is few of them.

According central bank of Kenya (CBK) the Kenyan banking sector comprised of 43 commercial bank, 1 mortgage finance company, 6 deposits taking microfinance institution, 2 credit reference bureaus, 3 representative offices and 124 foreign exchange bureaus (CBK, 2014).But, in 2019 there were about 42 commercial banks, 1 mortgage finance company, 13 microfinance banks, 9 representative office of foreign banks, 70 foreign exchange bureaus, 19 money remittance providers and 3 credit reference bureaus. From 1990-2010 the Kenyan financial sector has undergone marvelous change. Misatiet al. (2010) for example, articulates that financial products were increased, the activities and organizational or structural forms have also improved and the general efficiency of the financial system has improved(CBK, 2010).Currently commercial bank branch, the number of ATMs, the number of deposit account and total assets is increasing.

2.4.2 Tanzania

After its independency from British in 1961 the government of Tanzania set up the Bank of Tanzania in June 1966, by the bank of Tanzania act in 1965, with the order of implementing the primary roles of the central bank (BoT, 2011). In 1967 all private banks become nationalized (Nyerere, 1977).In addition to this in 1967 the interest rate were administratively fixed throughout to the 1970(Odhiambo, 2011).

In 1970 the Tanzania economy faced a number of economic shocks both internally and externally. These shocks include the oil crisis1973/74; coupled with drought; global recession of 1974/75; increment of coffee price 1975/76 and also the second oil crisis in 1979 (Mchallo, 1994).The internal shock includes the collapse of the east African community in 1977 and war with Uganda in 1978/79 (Mchallo, 1994).This was demonstrated by the deteriorating economic performance in terms of worsening the terms of trade, double-digit inflation, and the slow growth rates (Ndulu, 1987).In late 1990s financial deepening is decelerated, but it picked up again in the 2000s to match the levels achieved in the early 1990s. Additionally, the domestic credit to private sector as a share of GDP increased from 6.7% in 1995 to 16% in 2010. But, whereas broad money (M2) as a share of GDP stood at 25% in 2010 compared favorably to the 1995 share of GDP, it is much less than the annual average of 38% a decade before 1995 (BoT, 2011).

Since early 2000s the growth of Tanzanian economy has been strong and medium-term prospects remain favorable. The Tanzanian economy benefited from the market-oriented reforms and practical macroeconomic policies which are supported by consecutive fund programs (IMF, 2018). This activity contributed about 6% to the real GDP growth in recent years, poverty reduction and improvements in social indicator. According to IMF (2018) report the government has an ambitious agenda of development aiming to close infrastructure gaps and supporting human capital development.

2.4.2.1 Financial Sector Development in Tanzania

Since the inception of measures towards liberalization of financial sector in 1991, the financial sector of Tanzania has undergone considerable structural changes. The sector is comprised of mainly banks, pension funds, insurance companies and other financial intermediaries. But, the sector is dominated by banking institution which covers for about 75% of the total asset of financial system followed by pension funds which asset accounts for about 21% and the insurance sector covers 2%of total asset (BoT, 2012).The financial sector reform of Tanzania is

associated with the mobilization of financial resource as well as competition in financial markets of the country. As a result of increase in competition there is improvement in quality and efficiency credit lending in the economy (BoT, 2017).

In 2012 the common proxy of financial deepening the M2 as a share of GDP stood at 32% compared to the low-income country average of 45.8%, and the bank credit to the private sector as a share of GDP remain comparatively low. Additionally, the stocks traded and the market capitalization indicators as a percentage of GDP compare unfavorably with those in the low income countries and high income counties (Berg et al., 2013). According to IMF the Tanzanian exchange rate is classified as a floating exchange rate but, bank of Tanzania play a dominant role in the exchange rate market for liquidity management and smoothing of the exchange rate volatility. BOT announces the amount to be sold in the market via the dealing system on a monthly basis (IMF, 2013).

The financial assets in Tanzania are about 36% of GDP with bank 72% of the system asset and pension funds 26% of system asset being systemic components. In Tanzania the banking system is concentrated and dominated by privately owned commercial banks. Out of this 18 domestic and 29 majority foreign- owned banks hold about 92% of the banking assets. In supplying banking services the largest five and ten banks hold 54% and 71% of the asset. The commercial banks hold 96% of asset, with the rest contained of two development banks, seven community banks and five microfinance banks. In addition, the non-bank financial sector is comprises 31 insurance companies, 6 pension fund and 5 collective investment schemes. Pension fund sector allocates 8%share of its assets to the bank deposits and 18% credit to the government. The insurance industry, growing rapidly from a small base, allocate 30% share of its portfolio to bank term deposit and about 12% as a government security (IMF, 2018).

In general the banking industry in Tanzania can be characterized as intermediation of domestic deposit for credit provision and investment in the government security. On the asset side 51% loan and 19% government security dominate, with 14% deposit at the bank of Tanzania and other bank (9%) constituting most of the reminder. Lending is concentrated in the corporate sector and in a rare sector of the economy mainly trade, real estate and construction sector and the manufacturing sector. In addition to this, the pension fund holds about 4% of the bank deposits which establish a significant inter linkage between bank and pension fund sectors (IMF, 2018).

2.5 Overview of Ethiopian economy

The growth of Ethiopian economy has shown unusual changes in different political government. The change of regime outlines a discrepancy in the implementation of policies of the preceding government. Internal political instability of the countries in different regime, external war and the natural disaster causes intolerable/unbearable famine and drought. In modern Ethiopian political and economic history, there are three regimes that followed unique macroeconomic policies with its impact on macroeconomic growth presentation of the countries.

This are:

- The monarchy regime (pre-1974)
- The military regime (1974-1991)
- The EPRDF regime (1992 to date)

The history of economic policy in Ethiopia's was characterized by many fundamental policy changes and bluster. Pre 1974 is the monarchy regime in Ethiopian history which is the economic policy was mostly recognized to be a system of market-oriented economy. On the other hand, the period from 1974-1991 was characterized by centralized and command economic system. In 1992 the Ethiopian people revolutionary democratic fronts (EPRDF) overtake the political activity of the country and officially condemn or denounce the socialist system and supported market-oriented economic system.

Economic growth during EPRDF when compared to the growth rate during the Imperial regime and Derg regime is fairly substantial and considerable. In addition to this throughout the period of 1960 and 1970 the economy of Ethiopia experienced an annual 4.4% average growth rate in terms of per capita GDP. But, between 1974/75 and 1989/90 the economic growth was slowed to 2.3% which means that -0.4% in per capita terms. Because of uncertainty persuaded by the new policy of the regime, war with Somali and drought happened during 1983/1984 stated as the Cause of poor performance (Alemayehu, 2006).

The economy of Ethiopia is extremely susceptible or vulnerable to exogenous shocks because of its dependence on primary economic activity and also rain-fed agricultural sector. Agricultural productivity remains very low yet agricultural production has increased significantly (Mwanakatwe and Barrow, 2010). But, in current years the country has experiencing a strong economic growth. The reason is mostly because of the growing of service sector contribution and also that of industrial sector contribution to growth domestic product. Their analysis also shows

that the real growth domestic product growth average was 11.2% per annum during 2003/04 and 2008/09. This places Ethiopia among the topmost performing economies in sub-Saharan African countries. According to Mwanakatwe and Barrow (2010) the current economic activity of Ethiopia can be explained by (1) increased domestic revenue mobilization and aid (2) series investment to address infrastructure bottlenecks (3) the favorable government policies (4) increased public expenditure to improve pro-poor growth and (5) expansion of exports and remittance.

According to UNDP (2014) the Ethiopian economy shows an inspiring or a remarkable performance over the last decade with the average growth rate of GDP by 11% which is twice the average growth rate of sub-Saharan African countries and also it shows a triple world average growth rate over this period and this led that Ethiopian economy is one of a very fast growing economy in the world. During 2014/15-2018/2019 the economy of Ethiopia had exhibited 9.1% average annual growth, and it registered 9% expansion in 2018/19. This shows the improvement relative to the 7.7% growth of previous year although it was 2% point lower than the base case scenario of GTPII target set for the year. The growth of Ethiopian economy was significantly higher than the 3.1% average growth estimated for Sub-Saharan Africa (WEO, 2018). Additionally, the nominal GDP per capita growth increases to USD 985 which illustrates 11.6%improvement over previous year. The growth of Ethiopian economic was projected to grow by 10.8% in 2019/20 when compared to 3.3% and 3.5% growth which is forecast for the world and Sub-Saharan Africa respectively (WEO, 2019).

2.6 Review of Ethiopian financial system

In 1905 the modern banking system is started, with the establishment of bank of Abyssinia which was owned by the Ethiopian government in partnership with the national bank of Egypt under British rule. However, well organized banking systems begin to evolve in 1940 (Gashayia and Singh, 2016). In addition to this government owned bank which is the state bank of Ethiopia was established in 1942. At this time a number of foreign bank branch and private banks were operating in competition with the government owned commercial bank until it is nationalized and merged into one government owned mono-bank in 1976. Under Derg-regime the competitive banking situation was nipped in the bud by the command system which covers the period over 1974-1991 periods (Gashayia and Singh, 2016).

The pre-reform period here refers to the period 1974 to 1991, which is popularly known as the Derg regime. During this period all private bank were nationalized and the national bank of Ethiopia is at the apex of banking structure and engage in all the function of central banking. At this time CBE, AIB (DBE), and HSB (CBB) were in operation. Additionally, there were also two other financial institutions: Ethiopian Insurance Corporation (EIC) and the Pension and Social Security Authority (PSSA). Compared to most countries, Ethiopia has taken an alert/cautious approach toward the liberalization of its banking industry. Under Socialism state or Derg region financial institutions were basically executing the economic plans outlined by the central planning organ. At that time regulation and supervision were not critical since the national plan was believed to regulate and direct the activities of the financial institutions. Furthermore, financial institutions were directed to finance some public projects that may not pass proper financial appraisal simply based on either ideological ground or merit wants argument (Alemayehu, 2006).

Mainly during 1974-1990 the financial sector of Ethiopia was served the government or the state and the development of socialized sector. Abdi in (2000) sates that nationalization of the private sector, limitation of the credit system and also controlling the lending and saving interest rate shows the classical demonstration/manifestation of a self-conscious financial system. In this period the intermediation and development of financial sector were affected because of the poor utilization of resource by the public sector and also the performance of financial sector was at the expense of the private sector.

After the down fall of the Derg regime in 1991 the economic policy shows a noticeable departure from the previous Socialist System and the economy implemented a market oriented economic system. The new change in policy brought an important change in performing the financial sector. This helps for the emergency of new private financial sector. Since 1992 Ethiopia is engaged in financial liberalization. Restriction is removed by policy maker partially whatever it is not totally and at this time the Ethiopian government has put policy congenial for attraction of foreign direct investment (FDI). However, the commercial, financial and service sector business is protected and served only for the citizen of Ethiopia.

The dominant responsibility of financial system is to intermediate between the surplus and deficit units in the economic activity. In Ethiopia since 1992, the financial system has experienced a substantial change in terms of structure, the number of institution established, ownership, depth

and breadth/scope of available instrument and the regulatory framework in which the system operates. The exchange rate reform is one of them. The government of Ethiopia devalued the currency from 2.07 birr per dollar to 5 birr per dollar. At that time the auction based exchange rate worked side by side with the official exchange rate was initiated in 1993. But, the foreign exchange supply by national bank of Ethiopian (NBE) through the auction system was not sufficient to satisfy the demand of banks.

The Ethiopian banking industry comprised of one state owned development bank and 18 commercial banks, two of which are state owned including the dominant commercial bank (CBE), accounting the asset for approximately 70% of the industry total holding and the left sixteen is privately owned. The non-performing loan ratio of banking industry is admirably low, profitability is good, but public sector bank dominates the sector which certainly restricts financial intermediation and economic growth. It contrasts with regional and international peer countries where banking industries have a much higher share of private sector and foreign participation (Keatinge, 2014).

Currently, Banks, insurance companies and microfinance institutions were the major financial institutions operating in Ethiopia. Currently out of the 18 banks, 16 banks were privately-owned and 2 state-owned. In 2018/19, banks opened 806 different new branches thereby raising the total number of branches from 4,757 a year earlier to 5,564. This shows that one bank branch serves about 17 thousand people. Concerning this 34.6% of bank branches were located in Addis Ababa (NBE, 2019).Similarly, the number of insurance companies stood at 17 and their branch increase to 568 following the opening of 36 new branches. But, around 53.7% of the branches were located in the capital city Addis Ababa. Out of this 84.5% of the total branch exist were private. The total capital of the insurance companies rose by 49.5% to birr 8.2 billion, of which, about 68.3% was the share of private insurance companies and the left 31.7%was that of public insurance companies.

At the end of 2018/19 the number of micro finance institutions reaches 38. Based on the increment of their total capital and total asset the overall performance of micro finance institution (MFI) was inspiring. The sectors total capital and total asset meaningfully surge up by 20.3% and 24.1% and reached Birr 16.6 billion and 83.5 billion respectively. The MFI also shows a remarkable expansion of deposit mobilization and credit provision. Comparing to the last year,

the deposit of micro finance surged by around 26.1% and reached 41.9 billion and their outstanding credit went up by 30.5% and reached birr 58.7 billion (NBE, 2019).

2.7 Conceptual Framework

The conceptual frameworks shown in the figure below indicates the dependency of economic growth on the financial sector development. This conceptual framework indicates that the dependence of economic growth on financial development which is represented by financial deepening variable expressed by credit to the private sector, broad money to GDP ratio, bank asset to GDP ratio, bank deposit to GDP ratio and other control variable such as labor, saving, trade openness, and regime change have also shown. The economic growth of one country is expected to be enhanced when the financial system of the country is liberalized. So, the financial sector reform is predicted to catalyze the economic growth and this relationship is captured with the use of regime change as a dummy variable which represents the effect of the reform. Based on the theoretical and empirical review the following conceptual framework of the study was developed by the researcher.

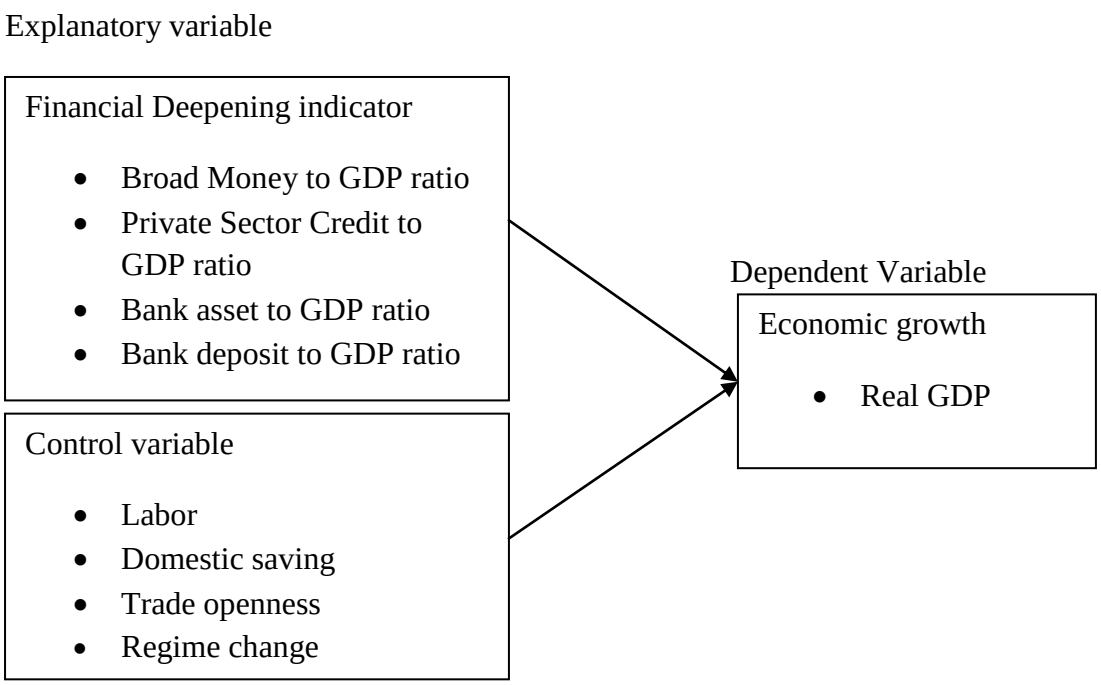


Figure 2.1: Conceptual framework constructed by researcher

CHAPTER THREE

3. RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

In the preceding section, the review of related literature helped this study to understand the problem and design an appropriate research approach to deal with. So, this section deals with the research design and the explanation of methodology selection.

3.2 Data source and type

Documentary evidence constitutes the instrument of data collection as the study primarily based on secondary data. These means the study is based on secondary source of data. The annual time series data which covers the period from 1980 to 2019 have been used. Time series data were collected from national bank of Ethiopian (NBE) statistical bulletin and annual report, world development indicator (WDI), central statistical authority (CSA) and ministry of finance (MoF).

3.3 Method of data analysis

The researcher uses both descriptive and econometrics analysis in order to investigate the impact of financial sector deepening on economic growth in Ethiopia. In order to provide the descriptive analysis of the multivariate time series data and variable for the study of relationship analysis between dependent an independent variable, deals with the result of the data analysis that will represent the finding of the study

3.3.1 Descriptive analysis

Christina (2013), state that the descriptive data analysis is very crucial in determining the arithmetical properties of the model in order to choose the appropriate functional form of the estimated model. The descriptive statistics analysis in this paper helps to discover and present an overview of all variable available in this paper. Under descriptive analysis section the maximum, minimum, standard deviation, mean and average of the variable under study is going to be used. In addition to this, the graphical and tabular analysis of the variable under study was conducted to capture their movement over time.

3.3.2 Econometrics Model Specification

The main objective of this study was to investigate the effect of financial deepening on economic growth. Regarding model specification there exist two main classes of studies concerning the

way the empirical models are set-up. The first approach of the study is the unrestricted neo-classical model which was developed by Solow and Swan, (1956).According to Ndebbio (2004) the unrestricted neo-classical model is the model which most economists involved in related growth studies. In addition to labor and capital, the financial deepening is going to be treated as factor of production in order to make the model consistence with the existing real life circumstance which implies that currently productive plants tends to show increasing return to scale. Even thought, this model has the strength of its orthodoxy with the existing theoretical basis, it has the incapability to comprise the broad set of the other rudimentary or a basic variable such as government expenditure, trade openness and inflation which makes it more probably that the contribution of financial sector to the growth of the economy is become unfair (Yabibal, 2007) as cited by Fozia (2014).

The second approach of the study is simply to combine some measure of financial deepening with a comprehensive or a broad set of conditioning variable in to the equation of economic growth. Odedokun (1996) point out that, even though the second approach serves as the purpose of eradicating or eliminating the inadequacies of the first approach, it is criticized by the lack of a framework with standard theoretical underpinning or foundation. In order to include a range of different socio-economic variable that may be unique of the countries institutional structure, the second approach is more preferable for this study.

Accordingly, in order to investigate the underlying impact of financial deepening on economic growth, this research uses the second approach. Hence, the growth equation will have the following forms.

$$Y_t = f(financial\ deepening\ indicator, conditional\ variable) \dots\dots\dots\dots\dots\dots\dots\dots 3.1$$

$$Y_t = f\left(FD_{t,}L_t, K_t, X_t\right) \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots 3.2$$

Based on a detailed review of previous studies and also refining the theoretical postulate labeled in equation 3.2 above, economic growth is expressed as a function of labor (L) and growth capital formation. In equation (3.2) K is substituted with investment (I) because of the fact that the data of capital stock are usually not available for least developed country like Ethiopia. As a result (I) is used as a proxy for K and equation 3.2 can be written as follows:

$$Y_t = f\left(FD_{t,}L_t, I_t, X_t\right) \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots 3.3$$

Neo-Classical growth model considers S=I (where S is saving), is adapted to the case of Ethiopia, because, there is a vast gap between domestic saving and investment in Ethiopia. Therefore, investment encompasses saved fund (S) which originates from bank deposit (D), borrowed fund (BF) which derives from domestic credit to the private sector (C) and external resource like foreign borrowing and foreign aid.

$$Y_t = f(FD_t, L_t, S_{t,} X_t) \quad \ldots\ldots 3.4$$

Where: L, S and X represent labor, saving and other control variable respectively and FD represents financial deepening indicators which includes the ratio of domestic credit to private sector, broad money to GDP, bank asset to GDP and bank deposit to GDP.

Broad money is the major measure of financial depth because it reflects the level of monetization and the velocity of currency in economy (McKinnon, 1973).This variable measures the size, qualified to economy of financial intermediaries and it is the broadest available indicator of financial intermediaries (Beck and Dimarguc-Kunt, 2009). This variable has been employed in many studies as the standard measure of financial deepening like King and Levine (1993a&b), Levine et al. (2000) and Laing and Teng (2006).

The other most commonly used indicator of financial deepening is domestic private sector credit to GDPratio. This variable assesses the performance of financial system in terms of its credit allocation purposes. According to Demetriades and Hussein (1996) financial system provides credit to both public sector and private sector. But, credit provided to the private sector is selected over overall domestic credit because of the private sector is consider to utilize funds more efficiently than that of public sector. This variable is frequently used to assess the allocation of financial asset which was not offered by broad money to GDP ratio. This variable is used by many researchers like Demetriades and Hussein, 1996; Levine, Beck and Loayza, 2000; Demarguc-Kunt and Levine, 2008 and King and Levine, 1993a. In addition to the above two variable this paper employs the ratio of bank asset to GDP and bank deposit to GDP as an indicator of financial deepening.

Hence, the above model was re-stated as follows with some modification which is different from previous one based on variable used in this study.

$$Y_t = f(FD_t, L_t, S_t, X_t) \quad \ldots\ldots 3.5$$

Where Y_t is real GDP growth, FD_t is financial deepening indicator, L_t is labor, S_t is saving, and X_t is other conditioning variable.

$$\text{RGD}P_t = f\left(\frac{M2}{GDP}, \frac{PSC}{GDP}, \frac{BA}{GDP}, \frac{BD}{GDP}, L_t, S_t, TOPP, D1\right) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 3.6$$

Finally, the above equation can be expanded and specified as follows:

$$LRGDP_t = \beta_0 + \beta_1 LM2_t + \beta_2 LPSC_t + \beta_3 LBA_t + \beta_4 LBD_t + \beta_5 LL_t + \beta_6 LS_t + \beta_7 LTOPP_t + \beta_8 D1_t + \varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 3.7$$

Where, $RGDP_t$ = Real Growth Domestic Product

L= Labor Force

S= Saving

M2= Broad Money to GDP Ratio (M2/GDP)

PSC=Private Sector Credit to GDP Ratio (PSC/GDP)

BA= Bank Asset to GDP ratio (BA/GDP)

BD= Bank Deposit to GDP ratio (BD/GDP)

TOPP= Trade Openness ((Export + Import)/GDP)

D1= dummy variable with regime change

L=Log

ε = Error Term

3.4 Description of Variables

The variable included in the expression above will be described below:

Table 3.1: variable description and hypothesized sign

Variable	**Description**	Hypothesized sign
Real GDP growth rate	The sustained increase in the economy's national product/RGDP of one country over time.	Dependent variable
Financial Deepening Indicator		
broad money to GDP ratio(M2/GDP)	It reflects the level of monetization and the velocity of currency in economy and measures the size, qualified to economy of financial intermediaries.	+
private sector credit to GDP ratio(PSC/GDP)	This variable assesses the performance of financial system in terms of its credit allocation purposes.	+
Bank asset to GDP ratio (BA/GDP)	This variable shows the level of banking sector development and help to assess the impact of the size of banking sector on economic growth.	+
Bank Deposit to GDP ratio (BD/GDP)	This provides a proxy for the extent to which the financial system of the country succeeded in mobilizing saving.	+
Control Variable		
Labor (L)	Represents human factor in producing the good and service of an economy.	+/-
Saving (S)	Saving provides the national capacity for investment and production, which will affect the potential of economic growth.	+
Trade openness (TOPP) the ratio of (export + import/GDP)	This variable promotes the implementation of frontier knowledge as well as international division of labor through comparative advantage.	+/-
Regime change (D_1)	Dummy Variable of Pre and Post Reform	+/-

3.5 Estimation Technique

3.5.1 Unit root test

Regression of non-stationary test leads as to a spurious result and this test statistics display a significant relationship between the variables even when no such relationship exists (Gujarati and Porter, 2009). The non-stationary situation occurs when we find correlation between variable not because they are really correlated, but because they are trend together. Under this circumstance, the application of OLS is likely to yield a biased and inconsistence estimates. The empirical expression based on time-series data assumes that the fundamental time series data is stationary. Therefore, performing a unit root test is very important to correct this normality which is assumed to be present in the time-series data. So, a time-series data is considered to be stationary if its mean and variance are constant over time and the value of the covariance between the two time periods depends only on the lag between the two time periods and not on the actual time at which the covariance is computed (Agrawal, et al 2010). In order to solve this problem the Augmented Dickey Fuller (ADF) (1979) test was usually applied to check the presence of the non-stationary in the data sate.

The Augmented Dickey Fuller (ADF) test is simply the extension of Dickey and Fuller (1979) and normally used to inspect or examine the unit root. The Augmented Dickey Fuller (ADF) test takes the additional lagged term of the dependent variables to eliminate the autocorrelation in data. According to Gujarati (2009) the ADF test is complemented with that of PP test to address the possible serial correlation which may result from the lag order of the test. Thus, the time series data analysis begins with the test of stationary (weak stationary) which requires that the first two moments of the series are time invariant.

To start, let’s consider an autoregressive of order on which can be given as follows

$$y_t = \delta + \rho y_{t-1} + v_t \quad \dots\dots 3.8$$

By assuming $E[v_t|y_{t-1.}y_{t-2}\dots y_0] = 0$…………………………………………………….….3.9

Where y_0 represents initial value of the y_t series.

At this moment y_t follows a unit root process if and only if ρ is equal to one (ρ =1). But, if ρ is equal to one (ρ=1) and δ is equal to zero (δ=0) y_t is a random walk without drift. Further if δ is different from zero (δ≠0) and ρ is equal to one (ρ=1) the series of y_t follows a random walk with

a drift. To express this hypothesis more suitably it is possible to write equation (3.8) in terms of change in y_t series. Therefore the above equation can be written in the below form,

$$y_t - y_{t-1} = \delta + \rho y_{t-1} - y_{t-1} + \nu_t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots 3.10$$

$$\Delta y_t = \delta + (\rho - 1) y_{t-1} + \nu_t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots 3.11$$

$$\Delta y_t = \delta + \theta y_{t-1} + \nu_t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots 3.12$$

In this case θ is equal to ρ minus one (θ=ρ-1). And therefore the null hypothesis can be stated as H0: θ=0 which also suggests that ρ is equal to one (ρ=1) hence the term is unit root. On the other hand, the alternative hypothesis is one side and represented as follows,
H1: θ <0 which implies that ρ is less than one (ρ<1). But, when ρ is greater than one (ρ >) it is not applicable because it is considered as an explosive or short-tempered process.

For a series that exhibits a trend, the unit root test will be modified, consequently the above equation (equation 3.12) can be written in the following form

$$\Delta y_t = \delta + \beta t + \theta y_{t-1} + \nu_t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots 3.13$$

In this case the null and alternative hypothesis is remains similar and similar with previous equation. If y_t has got a unit root and also δ is different from zero (δ≠0) then mean of y_t is linear in t. where t represents a time. But, assuming that β is different from zero (β≠0), under the null hypothesis means θ is less than one (θ<1) y_t become trend stationary. In this case, the series is going to stationary by detrending it.

3.5.2 Testing for Autocorrelation

According to Wooldridge (2000), in the assumption of classical linear regression model (CLRM) we assume that the consecutive value of the random variable "U" is temporarily independent and that the value which "U" assumes in any one period is independent from the value it assume in any previous period. Means covariance of Ui and Uj is equal to zero. This represents the value of "U" in any particular period is correlated with its own value in the previous period. This action is known as the Autocorrelation or serial correlation of a random variable "U". Possibly this problem occur because of model misspecification or honest/genuine autocorrelation of the model error term. If the random term is auto-correlated the parameter estimates are statistically unbiased but the variance of the parameter estimates are likely to be larger or the variance of error term is underestimated. In such circumstances R-square maybe overestimated. Additionally, in case we

have a lagged dependent variable on the right hand side of the equation, the estimators are biased and inconsistent. There was thus every need to test for autocorrelation or serial correlation in the residuals.

To identify the presence of correlation between the errors in different time periods the Durbin-Watson statistics test is used. According to rule of thumb, if DW ≈2 there serial correlation does not exist. If DW<2 it represents the presence of positive serial correlation and if DW>2 it implies the presence of negative serial correlation. However, the DW test becomes unacceptable if there is lagged dependent variable to the right hand side of the regression and it is also dependent on the distribution of the data matrix in question. Understanding the weakness of DW test, reliance will be made to the correlogram Q-statistics as a confirmatory test to DW test. When there is serial correlation the autocorrelation and partial autocorrelation at all lags will be around zero and all the Q-statistics will be significant.

3.5.3 Co-integration Test

To analysis a time series econometrics, the linear combination of a given set of series has a long-run relationship, if the given variables co-integrated. Therefore the co-integration test is used to determine the long-run relationship between the two variables (Hwang, 1998). According to some economists such as Mukherjee (1998), Hjalmarsson and Osterholm (2007) And Asari et al. (2011) maybe the series are not all integrated of the same order. So, series with different order of integration can still be co-integrated in a multivariate time series analysis. In this case it is unlike the bivariate case which needs a series to be integrated of the same order.

Co-integration is an econometric notion that mimics or imitates the existence of a long-run equilibrium among underlying economic time series that converges over time. Therefore, co-integration set up a stronger statistical and economic basis for the empirical error correction model. Error correction model brings short-run and long-run information together in modeling the variable and this test is the necessary step to establish if a model empirically exhibits meaningful long-run relationships. If it fail to establish co-integration among underlying variable, it become imperative/very important to continue to work with variable in differences instead. However, the long-run relationship information will be missing. Therefore, we are concerned about the concept of co-integration because making the variables stationary by differencing only gives the short-run dynamics while we are interested in knowing the long-run relationship

between the variables. Many methods have been planned for the testing of co-integration in the literature.

Granger (1981), Engle and Granger (1987) where the first to formalizes the idea of co-integration by providing tests and estimation process to assess the presence of long-run relationship between set of variable within a dynamic specification framework. Other than the above method there are many tests for co-integration. Among them is: Johansen (1988), Johansen and Juselius approach (1990) to co-integration and Autoregressive Distributed Lag (ARDL) co-integration technique or the bound testing by Pesaran et al. (2001).

3.5.4 The Autoregressive Distributed Lag (ARDL)

Many past studies have used the Johansen co-integration and Engle-Granger causality technique to determine the long-run relationship between variables of interest. In fact, this is the technique of choice for many researchers who argue that this is the most accurate and precise method to apply for I (1) variables. But, studies by (Pesaran, 1999; Pesaran, 2001; and Narayan, 2004) have introduced alternative co-integration testing technique which is Autoregressive Distributive Lag (ARDL) bound test.When one co-integration vector exist the Johansen and Jusekius (1990) co-integration cannot be applied.

Therefore, it become very important to explore a model proposed by Pesaran and Shin (1995) and Pesaran et al (1996) which is Autoregressive Distributed Lag approach to co-integration procedure for long-run relationship. These model does not depend on whether the underlying variables are I (0), I (1) or mixed. In such case, the application of Autoregressive Distributed Lag approach to co-integration will give the accurate and efficient estimation. The ARDL approach to co-integration helps in classifying or identifying the co-integration vectors. If there is one co-integration vector or the underlying equation is identified the Autoregressive Distributed Lag model of the co-integration vector is re-parameterized into error correction model (ECM). The Error Correction Model gives the short-run dynamics and the long-run relationship of the variable of a single model. When there are multiple co-integration vector we cannot apply Autoregressive distributed lag approach to co-integration. For this reason, Johansen (1988) and Johansen and Juselius (1990) approach become the alternative.

There are many advantage of using the Autoregressive Distributed Lag (ARDL) model or a bound co-integration testing approach. First when the other co-integration technique require large data sample for validity the ARDL model is the more statistically significant approach to

determine the co-integration relation in the small sample as the case in this study (Pesaran, 2001; Narayan, 2004).The second is that the ECM can be derived from ARDL model throughout a simple linear re-parameterization. This action incorporates short-run adjustment with long-run equilibrium without losing the long-run information. The ECM model takes adequate number of lags to capture the data generating process in general to specific modeling framework. Thirdly when there is single long-run relationship the Autoregressive Distributed Lag procedure can differentiate between the dependent and independent variable. According to (Pesaran et al. 2001) the ARDL approach assumes that only a single reduced form equation relation exist between the dependent and explanatory variable. Forth the ARDL approach can be applied whether the regressors are purely order zero [I (0)], purely order one [I (1)], or mutually co-integrated. In addition to this in ARDL approach it is possible that different variable have different optimal number of lags which is not permitted in Johansen type model.

The order of lag in Autoregressive Distributed Lag model is selected by either the Akaike information criterion (AIC) or the Schwarz Bayesian Criterion (SBC), before the selected model is estimated by ordinary list squares (OLS). Because of its small sample size the Akaike information Criterion (AIC) in lag selection is appropriate(Tsadkan, 2013).Determination of the optimal lag length is so crucial in autoregressive distributed lag (ARDL) model, because it helps us to address the issue of over parameterizations and to save degree of freedom. In addition to this according Pesaran and Shin (1999) for annual data they recommended a maximum of 2 lags. But in general the major advantage of this approach lies in its identification of the co-integrating vectors where there are several co-integrating vectors.

3.5.5 Error Correction Model (ECM)

The error correction models (ECM) were used to measure how the variable adjusts towards the long-run equilibrium state. The philosophy of error correction model (ECM) by Granger (1986) was used to produce the short-run forecasts and provide the short-run dynamics necessary to find the long-run equilibrium. These short-run dynamics model provides information on how adjustments are taking place among the variable under study, in order to establish long-run equilibrium in response to short-run disturbance in the GDP performance of Ethiopia. Means the ECM is built to capture the short-run elasticity. The coefficient of ECM term indicates the proportion by which the long-run disequilibrium in the dependent variable is corrected in the short-term period.

3.5.6 Granger Causality Test

The idea of Granger causality test narrates whether one variable can help improve the forecast of another variable in the study. The variable X is said to be granger caused by a variable Y if change in X can be explained by past value of Y. The granger causality test is simply a test of forecast capacity. It explains to what extent does one series encompasses information about the other series. It is a healthier indicator of precedence than that of a real causal identification (Engle and Granger, 1987).

CHAPTER FOUR

4. DATA ANALYSIS AND PRESENTATION

4.1 Introduction

The previous chapter presents the research design and methodology employed to achieve the objective of the study and also to test the hypothesis of the research. This chapter analyses the effect of financial deepening on economic growth in Ethiopia using annual data from 1980-2019. All necessary data were collected from National Bank of Ethiopia (NBE), Ministry of Finance and Economic Cooperation (MoFEC) and also World Development Indicator (WDI).

4.2 Descriptive Statistics

The statistical description of the table 4.1 below shows the mean, maximum and minimum value of the observation, standard deviation value, kurtosis, skewness output of the variable used in the model. Mean is the average value of the sample used in the study and measures the central tendency used to describe the most typically value in a set of value. The stander deviation shows how far the distribution is from the central tendency/mean or the dispersion of the variable from their average. The smaller stander deviation shows that most of the sample mean will be closer to the central population mean. Thus, the sample mean has a good chance of being closes to the population mean and it became a good estimator of the population mean. Contrary, if the standard deviation is high it shows that the given samples mean will be a poor estimator of the population mean. From below table the mean value of RGDP is 378557.9 with the maximum and minimum value of 1874689.0 and 101802.6 respectively.

From table 4.1 below the mean value of Broad Money (M2) 114671.3 and the maximum and minimum is 886752.5 and 2108.8 respectively. The standard deviation of this variable is 209387.3, which shows how the observation is far from the sample average. The value of high standard deviation shows the change or variation of broad money from time to time under the period of study in Ethiopia. In addition, high value of minimum and maximum also explains the presence of high variation in the study variable. The mean of Private Sector Credit (PSC), Bank Asset (BA) and Bank Deposit (BD) is 47041.6, 164386.9 and 111069.0 respectively. Skewness measures the degree of asymmetry of the series in the model. All financial deepening indicators used in this model shows that they are positively skewed. This is happened because in table 4.1 below the mean of the entire variable is greater than that of their medians. Furthermore, kurtosis[1]

measures the flatness or smoothness of the distribution of the model. Normality is also measured by kurtosis and skewness.

There are different level measure of kurtosis which includes Pletykurtic[1], Leptokurtic[2] and Mesokurtic[3]. The kurtosis of the variable included in the study which includes RGDP, M2, PSC, TOPP, GDS, LF, BD and BA were 6.86, 7.84, 8.42, 3.9, 7.10, 2.03, 8.09 and 7.43 respectively. Except for LF the kurtosis of all variable is greater than normal value which is three (3).

Table 4.1: Results of Descriptive Statistics

	RGDP	M2	PSC	TOPP	GDS	LF	BD	BA
Mean	378557.9	114671.3	47041.61	96045.67	69921.41	30099457	111069.0	164386.9
Median	181696.7	20788.60	12766.31	15166.40	21925.61	27981970	17325.04	31080.04
Maximum	1874689.	886752.5	377632.4	496968.4	445314.5	53195214	898734.4	1239982.
Minimum	101802.6	2108.800	578.00	2111.164	4397.327	15846800	1309.500	877.16
Std. Dev.	461382.2	209387.3	85098.44	151931.8	115545.9	11239160	209586.3	292207.3
Skewness	2.246	2.361	2.424	1.549	2.324	0.505	2.401	2.255
Kurtosis	6.866	7.849	8.421	3.904	7.104	2.039	8.095	7.435
Jarque-Bera	58.57	76.353	88.18	17.37	64.10	3.240	81.719	66.69
Probability	0.000	0.000	0.000	0.000	0.000	0.197	0.000	0.000
Sum	15142315	4586853.	1881664.	3841827.	2796856.	1.20E+09	4442759.	6575476.
Sum Sq. Dev.	8.30E+12	1.71E+12	2.82E+11	9.00E+11	5.21E+11	4.93E+15	1.71E+12	3.33E+12
Observations	40	40	40	40	40	40	40	40

Source: Author's Computation of E-View Results, 2021

4.2.1 Trends of Real GDP and Broad Money Supply in Ethiopia from 1980 to 2019

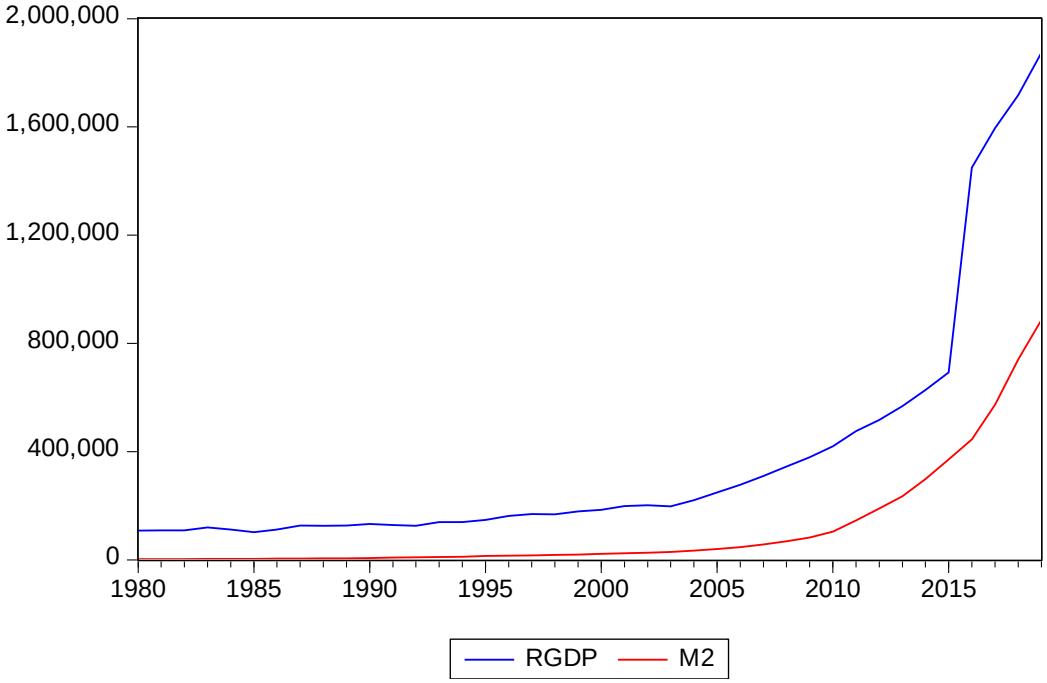
The economic growth of Ethiopia shows a consisted and little improvement until 2003. But after 2004 it shows a significant development and upraises consistently. There is a government change since 1991and economic reform is made in 1994. The two actions which are regime change and economic reform did not create a visible improvement on the country's economic growth. But in 2002 the implementation of developmental state economic growth model improves the country's economy. After 2015 the country's economic growth upsurges dramatically.

Based on the raw data the real GDP of Ethiopia grows from 108,023.1million in 1980 to 197,604.4 million in 2003 which shows 82.9% improvement and this is slow in 23 years gap. In this year the economic growth is stable somehow. Starting from 2004 the Ethiopian economy shows an enhancement consistently until 2015. The real GDP increases from 220,782.1 million

[1]If the value of kurtosis is less than three (<3) it show the distribution is pletykurtic implying the negative kurtosis.
[2]If the value of kurtosis is greater than three (>3) it shows Leptokurtic which means positive kurtosis.
[3]If the value of kurtosis is equal to three (=3) it is Mesokurtic which shows kurtosis is normally distributed.

in 2004 to 692,221.9 million in 2015. In 2019 the real GDP of Ethiopia reaches 1,874,689.3 million which is a dramatic growth.

Figure 4.1: Trend of Real GDP and Broad Money Supply in Ethiopia from 1980 to 2019



Source: Author's Computation of E-View Results, 2021

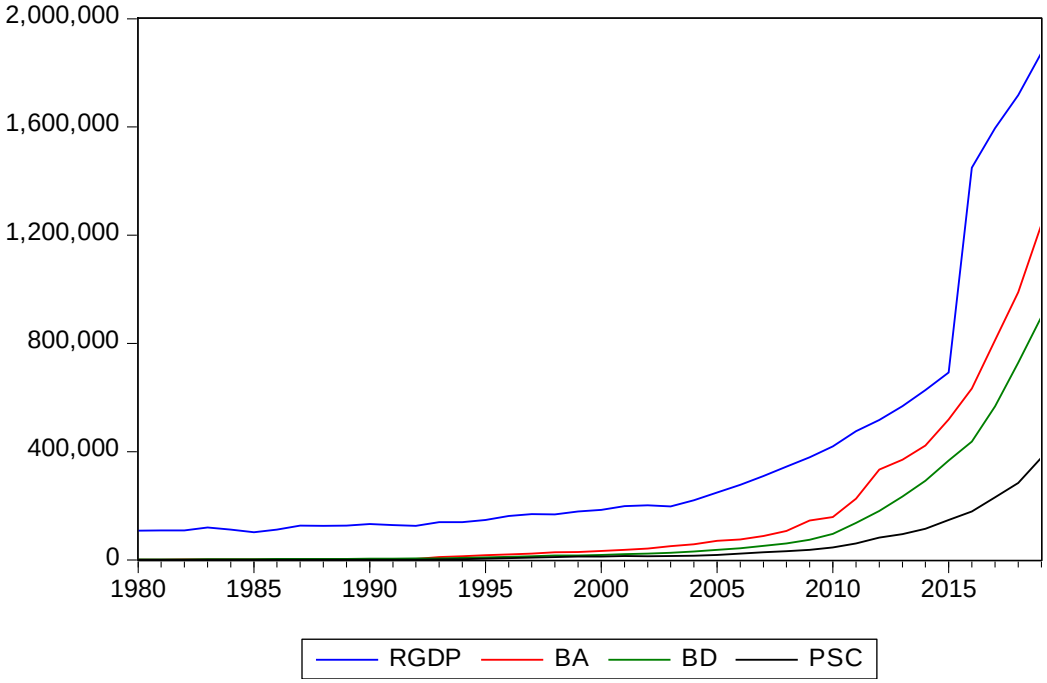
Broad money is a component of narrow money and quasi money, where quasi money is a component of time and saving deposit and narrow money includes currency outside the bank and net demand deposit. This variable is a broad measurement of financial deepening and it also indicates the degree of monetization with respect of the real economy of the country. The trend of broad money supply in Ethiopia is increasing consistently until 2002 and 2003.

Similar to GDP the growth of broad money supply in this period is actually slight. This shows the stagnant growth of broad money supply. But there is government change in 1991 and the economic reform in 1994.The two changes did not bring immediate change on the country's economy specifically on broad money supply. Broad money supply is slightly improved starting from 2004 but, beginning from 2010 broad money supply upsurges unconditionally. Broad money supply upsurges from 104,432.4 million in 2010 to 886,752.5 million in 2019 which show about 749.1% growth within ten years. This dramatic change in the variable within this period comes maybe from the country's five year growth and transformation plan (GTP II). In relation to the GTP II plan, highly increased government expenditure and stimulate every economic activities.

4.2.2 Trends of Private Sector Credit, bank asset and deposit in Ethiopia from 1980-2019

From the graph below we understand the trend and pattern of private sector credit in Ethiopia.

Figure 4.2: Trend of Private Sector Credit, Bank Asset and Deposit in Ethiopia from 1980 - 2019



Source: Author's Computation of E-View Results, 2021

The growth and trend of private sector credit is stagnant and it shows a very little growth until 1993. From 1980 to 1993 the growth of private sector is only 34.3% in fourteen years. But after 1992 the growth of private sector began to show some improvement until 2010 and it rises from 1,556.0 million in 1993 to 45,988.5 million in 2010. Starting from 2010 the growth rate of this variable is high and the growth rate it shows in ten years is about 721.2%. This significant change is maybe as a result of the growth and transformation plan proposed in 2010.

The graph above shows the trend of banking sector asset in Ethiopia. The growth and trend of bank asset is stagnant and it shows a very little growth until 1993. Little growth exists from 1994 to 2004. In 1991 there is government change and in 1994 there is economic reform. After 2005 the growth of bank asset shows some improvement until 2010. It surge up from 70,744.0million in 2005 to 157,925.8million in 2010 and the growth rate is 123.2% but, after 2010 it shows high improvement which rises to 1,239,982.0million in 2019 which shows about 685.2% improvement in ten years. Maybe the result of the change is the introduction of new government policy in 2010.

Similar to bank asset bank deposit has also a little growth until 1993.Similarly until 2005 there is no much visible change on this variable. Significant change of bank deposit starts from 2005. It shows high improvement until 2010. From 2005 to 2010 the growth of this variable is 161.9%. But after 2010 dramatic change occur in bank deposits. It reaches about 898,734.3million in 2019 and the growth in ten years is 838.3%. Alike other variable this improvement is may also because of government policy change which includes growth and transformation plan which is proposed in 2010.

4.3 Diagnostic Test

4.3.1 Test for Unit Root

The autoregressive distributed lag test for co-integration my not need a pre-testing for stationary of the variable included in to the model, but it is important to undertake the stationary test to all variable in the model. In addition the ARDL bond test to co-integration is not applicable if the order of integration is above first difference, [I (1)] of stationary test. Therefore, before proceeding to the regression analysis it is necessary to test the stationary of the variable included in the model. The stationary property of time series data are investigated by testing for unit roots. There are several methods used for testing the stationary. Therefore, this study used the commonly applied Augmented Dickey Fuller (ADF) unit root test. The results of the stationary test are presented in table 4.1 below.

The blow table shows that the unit root test result of the variable in the model at level and first difference. Based on the result of ADF test some the variable were found to be stationary at their level and the other at their first differences which suggests that all the variable used in this study are integrated of order one, I(1) except for real GDP and labor force which is stationary at level, I(0). Therefore, based on the establishment of the order of integration, the study proceeds to testing for the short-run and long-run relationship among the dependent and explanatory variable.

Table 4.2: Results of Stationary Test

Variable	Level/first difference	ADF test statistics	Critical value		
			1%	5%	10%
LRGDP	Level	-6.1658*	-4.2191	-3.5330	-3.1983
	First diff.	-6.3677*	-4.2268	-3.5366	-3.2003
LLAB	Level	-3.8399***	-4.2118	-3.5297	-3.1964
	First diff.	-6.5447*	-3.6210	-2.9434	-2.6102
LSAV	Level	-1.5337	-4.2191	-3.5330	-3.1983
	First diff.	-8.5926*	-3.6155	-2.9411	-2.6090
M2	Level	-1.5337	-4.2191	-3.5330	-3.1983
	First diff.	-8.5926*	-3.6155	-2.9411	-2.6090
PSC	Level	-2.0807	-4.2268	-3.5366	-3.2003
	First diff.	-3.5032**	-3.6155	-2.9411	-2.6090
BA	Level	-1.411	-4.2191	-3.5330	-3.1983
	First diff.	-3.8462**	-3.6155	-2.9411	-26090
BD	Level	-1.6933	-4.4211	-3.5297	-3.1964
	First diff.	-4.9673*	-3.6155	-2.9411	-2.6090
TOPP	Level	-1.9545	-4.2118	-3.5297	-3.1964
	First diff.	-5.8411*	-3.6155	-2.9411	-2.6090

(***), (**) and (*) denotes significance level at 10%, 5% and 1% respectively.

4.3.2 Test For Autocorrelation

The autocorrelation is checked by using Durbin-Watson (DW) test statistics. This correlation is usually because of model miss-specification or the presence of genuine autocorrelation of error term in the model. Therefore, test of autocorrelation in the residual is important.

Hypothesis; Ho: There is no autocorrelation problem ($\rho=0$)

H1: There is autocorrelation problem ($\rho=1$)

But, the rule of thumb hypothesizes that if the DW≈2 there is no serial correlation, if the DW<2, it implies the presence of positive serial correlation and if the DW>2 it implies the presence of negative serial correlation. The regression result of the study shows that the DW is 1.89 which is approximates to 2.

In addition in this study the Q-statistics serial correlation LM test is used and the result on appendix B shows the presence of no serial correlation because, the P-value is greater than 5% critical value as presented in figure below.

We can also use the breusch –godfrey serial correlation LM test to check for the presence of serial correlation. If the probability of chi-square (1) is lower than 5% significance level, reject the null hypothesis of no autocorrelation and then accept the null hypothesis of no autocorrelation.

Table 4.3: Breusch –Godfrey Serial Correlation LM Test

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.015441	Prob. F(1,21)	0.9023
Obs*R-squared	0.028655	Prob. Chi-Square(1)	0.8656

Source: Author's Computation of E-View Results, 2021

From the above table we understand that there is no autocorrelation problem since the probability of chi-square (1) is 86.5% which is greater than 5% so, we accept the null hypothesis of no autocorrelation problem.

4.3.3 Test For Heteroskedasticity

Heteroskedasticity test used to ensure that the standard errors are not wrong and any inferences made could not be misleading or deceptive. It is assumed that the variance of errors term is constant which means the errors are homoskedastic. In this case the null hypothesis is that the error terms are homoskedastic. Therefore, the Breusch-Pagan-Godfrey test has been made to ensure for the presence heteroskedasticity.

Hypothesis; H0: The error variances are all equal

H1: The error variances are multiplicative of functions of one or more variables

Based on the table 4.4 below the p-value of both F-and χ^2test statistics and the p-value of scaled explained SS must be greater than 0.05 to reject the null hypothesis of heteroskedasticity. Therefore, the table blow shows that the p-value of both F-and χ^2exceeds the critical value which rejects the assumption of heteroskedasticity.

Table 4.4: Heteroskedasticity Test

Heteroskedasticity Test: Breusch-Pagan-Godfrey

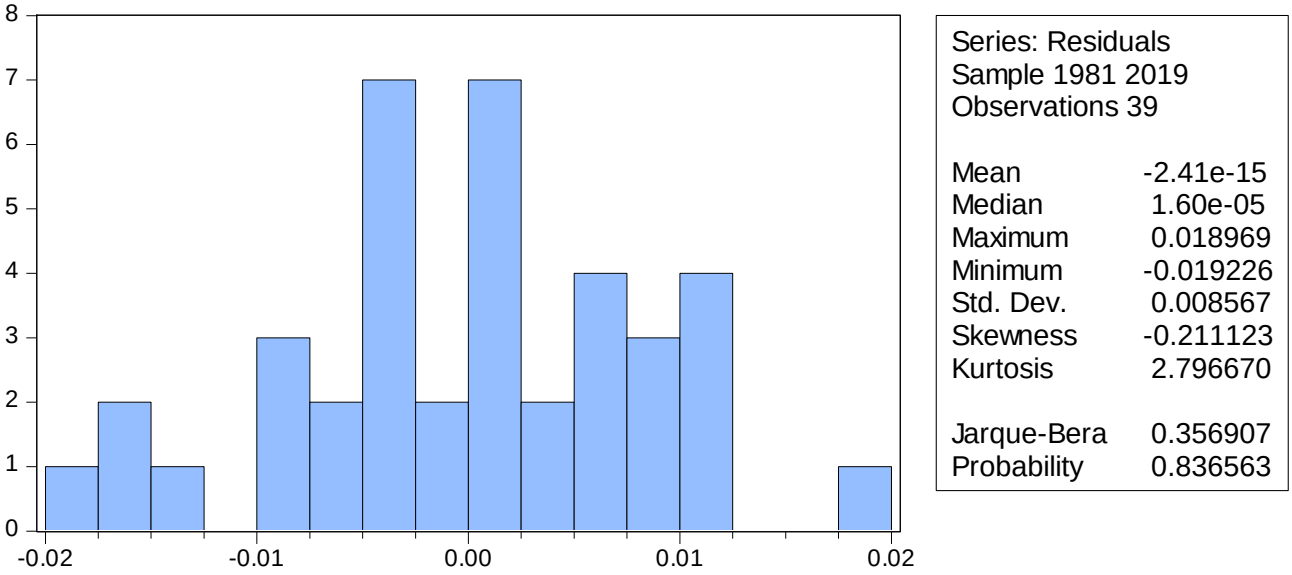
F-statistic	1.088403	Prob. F(16,22)	0.4188
Obs*R-squared	17.23133	Prob. Chi-Square(16)	0.3708
Scaled explained SS	4.925760	Prob. Chi-Square(16)	0.9961

Source: Author's Computation of E-View Results, 2021

4.3.4 Normality Test

The other econometric test is normality test, which determines whether the distribution of data is symmetric or not and the model is normal if the probability of Jerque-Bera greater than 5% and not if the probability is less than 5%. The output result shows that the model is normal because the probability of Jerque-Bera is 83.6 % as denoted in below figure.

Figure4.3: Normality Test Result

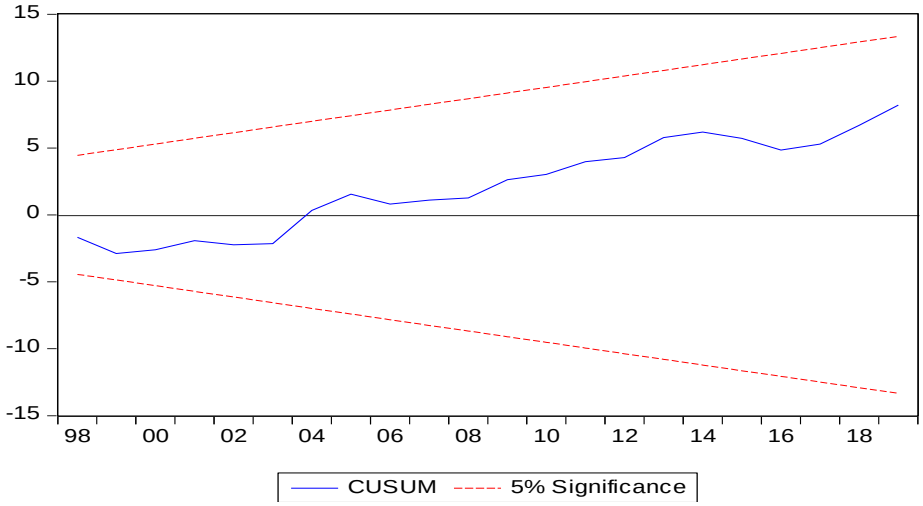


Source: Author's Computation of E-View Results, 2021

4.3.5 Test for modes stability

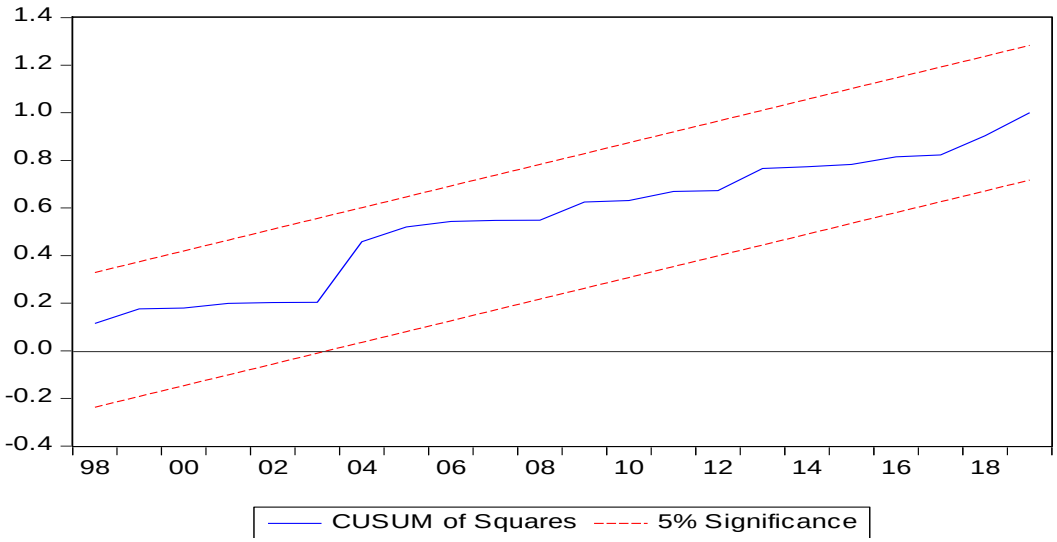
One of the diagnostic tests undertaken in this study is model stability test. In this study a number of model stability and diagnostic checking test is carried out which includes stationary, heteroskedasticity test and serial correlation test. In addition to the above diagnostic test, the stability of the model in the long run estimates has been tested by using the cumulative sum of recursive residuals (CUSUM) and the cumulative sum of squares recursive residual (CUSUMSQ) test as recommended by Pesaran, (2001). From table below both CUSUM and CUSUMSQ test indicate the model is significant at 5% critical value.

Figure 4.4: CUSUM Test



Source: Author's Computation of E-View Results, 2021

Figure 4.5: CUSUMSQ Test



Source: Author's Computation of E-View Results, 2021

Based on the above figure both CUSUM and CUSUMSQ line falls in the boundaries. Therefore, the model selected for this study is stable.

4.3.6 Long-Run ARDL Bound Test For Co-Integration

The result of the stationarity test in table 4.2 shows that some of the variable is stationary at level I (0) and some are at first difference I (1). This model does not accept the variable that become stationary after second differentiation I (2). Therefore, the application of Autoregressive Distributed Lag (ARDL) approach is appropriate in this study.

The main point of the Autoregressive Distributed Lag (ARDL) bound test analysis is to examine the existence of long-run relationship among the variable used in the model. The model uses ARDL bound test approach to estimate the presence of long-run relationship and the optimal lag length was selected by using the method of Akaike Information Criteria (AIC). The top 20 akaike info criteria was presented appendix C.

In addition, the Autoregressive Distributed Lag (ARDL) bound test is used to test the null hypothesis proposing that no co-integration exist against the alternative hypothesis proposing the presence of co-integration. In this case the computed F-statistics was compared with the critical value proposed by Pesaran et al. (2001) or Narayan (2005). In this case when the computed F-statistics greater than the upper bound (I (1)), we reject the null hypothesis. If the F-statistics is less than the lower bound (I (0)), we accept the null hypothesis but, if the computed F-statistics

falls between lower bound (I (0) and upper bound test (I (1)), our inference would be inconclusive.

Table 4.5: ARDL Bound Test

ARDL Bounds Test
Date: 03/14/21 Time: 16:42
Sample: 1981 2019
Included observations: 39
Null Hypothesis: No long-run relationships exist

Test Statistic	Value	K
F-statistic	6.391723	8
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	1.95	3.06
5%	2.22	3.39
2.5%	2.48	3.7
1%	2.79	4.1

Source: Author's Computation of E-View Results, 2021

The table 4.5 above shows the bound test to co-integration. The result demonstrates that the computed F-statistics (6.391) which is greater than the upper bound at 1 % level. This result implies a co-integration relationship exist between the dependent and independent variable.

4.4 The Key Regression Statistics

One of the key regression statistics was R-square which measures the goodness of fit statistics of the model containing the explanatory variables that was proposed actually as to explain the variation in the dependent variable. It is important to have some measure to know how well the regression model truly fits the data. R-squared is the square of the correlation coefficient between the values of the dependent variable and the corresponding fitted values from the model. The value of correlation coefficient must lie between -1 and 1 by meaning. Because of the R-square is the square of the correlation coefficient it must lies between 0 and 1. Based on the value of R-square if the correlation is high the model fits the data fine, if the correlation is low and close to zero the model does not provide a good fit to the data.

Table 4.6: The Key Regression Statistics Result

R-squared	0.989212	Mean dependent var	5.368920
Adjusted R-squared	0.983639	S.D. dependent var	0.305194
S.E. of regression	0.011259	Akaike info criterion	-5.836021
Sum squared resid	0.002789	Schwarz criterion	-5.110879
Log likelihood	130.8024	Hannan-Quinn criter.	-5.575846
F-statistic	1743.703	Durbin-Watson stat	1.887362
Prob(F-statistic)	0.000000		

Source: Author's Computation of E-View Results, 2021

The above table shows that the value of R-square is 98.9%. Which means, about 98.9% of dependent variable is explained by the explanatory variable included in the model and the other shock is because of error term.

4.5 Long-run and Short-run Relationship Estimates

4.5.1 Long-Run Relationship Estimates

In the above bound test of long-run co-integration section, it is confirmed that all variable included in the model is co-integrated in the long-run. The dependent variable is LRGDP and explanatory variables are LM2, LPSC, LBA, LBD, LLAB, LSAV, LTOPP and D1. After the presence of long-run relationship is confirmed, the estimated long-run coefficients after normalizing on real growth domestic product are reported in table 4.6 below.

Table: 4.7: Long-Run Estimate Result

Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LM2	0.936760	0.275660	3.398238	0.0026
LPSC	0.151654	0.049404	3.069641	0.0056
LBA	-0.597498	0.143046	-4.176952	0.0004
LBD	-0.760631	0.226520	-3.357895	0.0028
LLAB	2.372081	0.170634	13.901586	0.0000
LSAV	0.111660	0.032923	3.391595	0.0026
LTOPP	0.183101	0.067613	2.708067	0.0128
D1	0.066197	0.068250	0.969910	0.3426
C	-12.860385	1.131731	-11.363467	0.0000

Source: Author's Computation of E-View Results, 2021

The above table shows the result of long-run relationship estimate between dependent variable and explanatory variable.

The test statistics in table 4.7 demonstrates the presence of positive significant effect of broad money on economic growth on the study period. Keeping other thing constant 1% increase of

broad money increases economic growth by 0.93%. This variable is statistically significant at 1 % significance level. This shows that money supply has a great contribution in economic growth determination of Ethiopia. The implication is that the supply of money is consistent with the growth of the country's economy for the period under study. This result is in line with Calderon and Liu (2002), Acaravi it al. (2009), and Adelakun (2010)

The other financial deepening indicator variable was private sector credit (PSC). Table 4.7 above implies that private sector credit has a positive impact on economic growth. This variable positively affects economic growth with 1 % significance level. It shows that 1% increase in private sector credit increases economic growth by 0.15% holding other things remain constant. The conclusion from the result is that domestic credit to the private sector contributes to economic growth positively. There are similar studies which support this result which include Adelakun(2010), and Maduka and Onwuka (2013).

On the other hand bank deposit (BD) variable is highly significantly correlated with economic growth with negative sign. In this case holding other thing remains constant 1% increase in bank deposit reduces economic growth by 0.76%. It indicates that an increase in bank deposit cause slowing of economic growth. Showing that an increase in banks deposit does not per se/by itself contributes to economic growth. This is because of low level of financial intermediation, lack of sufficient liquidity as well as the ineffectiveness of the financial sector in canalizing the mobilized saving to the area of their most productive use with full potential positive influence on the growth of economy. The implication is bank deposit is not efficiently used and allocated to finance the profitable project. Furthermore, this result shows the presence of financial repression which includes interest rate caps, exchange rate control, high reserve requirement, credit ceiling, and non-market re-allocation of source creates unnecessary distortion in financial market and result in fragile financial system (McKinnon, 1973 and Shaw, 1973). Additionally, in the presence of large informal financial sector the formal financial sector provide only part of the intermediation. In the formal financial systems the presence of stipulation such as high reserve requirement highly reduces loanable fund and the net effect result on economic growth is thus negative (winberg, 1983). However, this is compatible with the real economic situation in Ethiopia. This result is in line with that study of Panicos et al. (1996), MuhzinKar et al. (2011), Ayadiet al. (2013), Abdulahi, (2017), and Naumovskaet al. (2015).

Bank asset does have a significant impact on economic growth which is measured by real growth domestic product but with negative sign. It shows that keeping other things constant 1% increase in bank asset reduces economic growth by 0.59%. This result discloses the presence of negative relationship between bank asset and economic growth which means that the country's banking sector does not positively contribute to the country's economy. Despite the fact that in Ethiopia all of banks assets are invested domestically the economy of the country does not enough benefited from the growth of banking sector assets. This implies that the banking size is not enormous enough to support economic growth. This result may be caused by the delayed effect of financial reform undertaken in Ethiopia on economic growth, the presence of incomplete financial market, the existence of many financial constraints which are imposed on financial sector and also lack of bankers financial skill because of inadequate training that may lead to the dependence of financial system on the real side of the economy which makes the contribution of the financial sector to economic growth minor (Roman, 2012).

In addition, the negative effect of bank asset on economic growth may be because of the strong contribution of financial deepening to economic growth does not happen until the country has reached a convinced financial development level. Under this condition the contribution of financial sector to economic growth become weak (Inoubli and Khallouli, 2011). This indicates the growth and development of financial sector of Ethiopia has not reached the level where it contributes to economic growth of the country positively. This result is in line with the study of Fozia, (2014) Maduka and Onwuka (2013) and Abugamea, (2016).

The coefficient of control variable included in the model which is labor (LLAB), domestic saving (LSAV) and trade openness (TOPP) are positive and significant. But, the dummy variable is not statistically significant. This shows that all control variables except the dummy variable contributes to economic growth positively. Holding other things remains constant 1% increase in labor increases economic growth by 2.3%. Domestic saving and trade openness increases economic growth by 0.11% and 0.18%respectively.

4.5.2 Short-Run Error Correction Estimate

After the long-run coefficient of economic growth equations are accepted, the short-run equation and error correction model (ECM) are estimated. The result discloses that the coefficient of ECM term is -0.772 and highly significant with negative sign which is the correct sign. The error correction term implies that, the system adjust itself to the equilibrium by 77.2 % per year in the

long-run when there exist a disturbance/shock in the short-run. This implies that the disequilibrium in the previous year is converged in to its equilibrium by 77.2 % in the long-run per year. The estimated coefficient of short-run variable shows that bank asset, domestic saving and trade openness is the main determinants of economic growth while the rest of the variable is insignificant.

Table 4.8: Short-Run Estimate Result

ARDL Cointegrating And Long Run Form
Dependent Variable: LRGDP
Selected Model: ARDL(1, 1, 1, 1, 1, 1, 1, 0, 1)
Date: 03/19/21 Time: 14:16
Sample: 1980 2019
Included observations: 39

Cointegrating Form

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LM2)	-0.025966	0.189963	-0.136691	0.8925
D(LPSC)	0.050664	0.055799	0.907963	0.3737
D(LBA)	-0.322008	0.106704	-3.017763	0.0063
D(LBD)	0.075855	0.161677	0.469176	0.6436
D(LLAB)	0.744214	0.537684	1.384110	0.1802
D(LSAV)	0.050286	0.019380	2.594814	0.0165
D(LTOPP)	0.141457	0.054580	2.591756	0.0166
D(D1)	-0.037414	0.022639	-1.652593	0.1126
CointEq(-1)	-0.772560	0.119362	-6.472404	0.0000

Source: author's computation of E-view result, 2021

Similar within the long-run in the short-run bank asset affects economic growth significantly but with negative sign. The short-run negative effect of bank asset on economic growth may be the less concentration given to the financial sector by the country's government and in the short-run financial instability and volatility have negative occurrence on financial deepening and growth. In addition, may be this is due to the fact that in the "good times" bank relax their criteria and lend their asset to both good and bad project but when "bad times" appear the borrowers fail to pay the loan and most loan converted to non-performing loan and the source of credit dries up, rationing out even a good projects (Binam and Gianluigi, 2009). Except bank asset the other financial deepening indicator variable is insignificant in the short-run.

Some researchers like Loayza and Ranciere (2004)proposes that the negative effect of financial deepening on economic growth either in short-run and long-run is robustly bound to financial fragility, which they measure through the occurrence of systematic banking crisis and the financial volatility or instability which is the standard deviation of financial development growth.

Money supply revealed a negative impact on economic growth in short run. Gatawa, et al, (2017) proposes that increase in money supply can reduce economic growth as the commercial banks are unable to distribute the loanable fund with productive sectors in the short run. Means, in the short run increase in money supply leads to reduce in interest rate which raises the holding money in hands. Furthermore, liquidity of money leads to surge up more inflation which eventually results in fall of economic growth due to slower saving rate in the economy but, this variable is statistically insignificant which shows the presences of no impact on economic growth in short run in this paper. Bank deposit shows a positive sign in short run opposing the long run result. This seems at variation with the intuitive position that higher deposit should lead to more lending and thus exert positive effect on economic growth, but it is statistically insignificant.

4.6 Engle Granger Causality Test

The granger causality test shows the presence of granger-causality form financial deepening and other control variable to economic growth and vice-versa.

Hypothesis: H0: Financial Deepening Does Not Granger Cause Economic Growth of Ethiopia.

H1: Financial Deepening Granger Cause Economic Growth of Ethiopia.

The decision rule is that if the probability of significance level is less than 5 % we can reject the null hypothesis of no granger causalities and accept the alternative hypothesis. Based on the result we can check whether the causality run from financial deepening to economic growth or from economic growth to financial deepening or both.

Based on the table 4.9 below we conclude that out of financial deepening variable bank asset granger cause economic growth as its probability is statistically significant at 5% while the other financial deepening variable is statistically insignificant. The result of granger causality also denotes that economic growth seems not affect financial deepening measurement significantly. In addition to this from control variable labor granger cause economic growth and vice versaand also economic growth granger causes saving.

Table 4.9: Granger Causality Test Result

Pairwise Granger Causality Tests

Date: 03/22/21 Time: 16:10
Sample: 1980 2019
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
LM2 does not Granger Cause LRGDP	38	1.47676	0.2431
LRGDP does not Granger Cause LM2		0.09276	0.9116
LPSC does not Granger Cause LRGDP	38	0.41152	0.6660
LRGDP does not Granger Cause LPSC		0.59769	0.5559
LBA does not Granger Cause LRGDP	38	3.42317	0.0446
LRGDP does not Granger Cause LBA		0.24296	0.7857
LBD does not Granger Cause LRGDP	38	1.11154	0.3411
LRGDP does not Granger Cause LBD		0.29427	0.7470
LLAB does not Granger Cause LRGDP	38	8.08796	0.0014
LRGDP does not Granger Cause LLAB		4.86203	0.0141
LSAV does not Granger Cause LRGDP	38	2.65530	0.0853
LRGDP does not Granger Cause LSAV		5.35867	0.0097
LTOPP does not Granger Cause LRGDP	38	1.22526	0.3067
LRGDP does not Granger Cause LTOPP		0.75325	0.4788
D1 does not Granger Cause LRGDP	38	2.14071	0.1336
LRGDP does not Granger Cause D1		0.60787	0.5505

Source: Author's Computation of E-View Result, 2021

The finding reveals that there is unidirectional running from financial deepening to economic growth but, out of four financial deepening indicators only one granger cause economic growth. This attributed that the Ethiopia financial sector is less developed, and it also shows the presence of financial repression and the dominance of state owned financial sectors. This result is in line with the finding of (Gupta, 1984; King and Levine, 1993; Levine, 1999; Carlin and Mayer, 2003; Rajan and Zingales, 1998; De Geregori and Guidotti, 1995; Ahmed and Anseri, 1998; Akinlo and Egbetunde, 2010; Ghildiyal et al., 2015 and Gezer, 2018).

CHAPTER FIVE

5. CONCLUSION AND POLICY RECOMANDATION

5.1 Conclusion

The deepening of financial sector in Ethiopia is lags behind peer countries in terms of technological advancement, product verities, and innovations. Low level of private sector credit is the main challenge for the private sector growth and then sustainable economic growth of the country. Also the banking sector is dominated by a state owned bank which could be a source of inefficiency. The main objective of the study was to analysis the effect of financial deepening on economic growth in Ethiopia. To address the objective of the study broad money, private sector credit, bank asset, bank deposit, labor force, domestic saving, trade openness and regime change has been used as explanatory variable and real growth domestic product is used as dependent variable. The time series data from 1980 to 2019 is regressed and analyzed both by descriptive and econometrics analysis. In econometric part the study uses the Autoregressive Distributed Lag (ARDL) bound test to long-run co-integration technique to identify the presence of long-run relationship between financial deepening and economic growth in Ethiopia.

The study undertakes the regression analysis to know the level of significance of the effect of explanatory variable on the dependent variable. The result shows that there exists robust evidence on the effect of financial deepening on economic growth in Ethiopia under the study period. Thus, financial deepening has a strong effect on economic growth in Ethiopia. All financial deepening proxies used in this study are statistically significant. The ratio of broad money to GDP and the ratio of private sector credit to GDP have a positive and significant effect on economic growth while bank asset to GDP ratio and bank deposit to GDP ratio has a negative and significant effect on economic growth. These imply that financial deepening affects economic growth either positively or negatively.

This implies that by increasing the amount of money supply in the economy, improving the function of financial institution and improving financial sector intermediaries of Ethiopia enhances economic growth. In addition, improving investment environment of the country augment economic growth, which will ultimately leads to economic development.

The result of error correction model is negative and statistically significant at 1% significance level. This shows the presence of short-run relationship between financial deepening and economic growth in Ethiopia under the period of study which range from 1980 to 2019. The error

correction term implies that the system adjusts itself to the equilibrium by 77.2% per year in the long-run when there is a shock in the short-run.

The granger causality test indicates that from the four financial deepening indicator bank asset granger cause economic growth which shows unidirectional run from financial deepening to economic growth.

5.2 Policy recommendation

The result of the study reveals the existence of a link between financial deepening and economic growth in Ethiopia. Supposed most of the study shows the presence of positive effect of financial sector deepening on economic growth in Ethiopia this study shows the presence of mixed results. This might be resulted from the underdevelopment of the country's financial system, the presence of excessive control on the financial sector and the dominance of state owned financial institution specifically the bank. Therefore the study recommends that:

- In order to promote economic growth effectively improving credit to the private sector is important. The financial constraint or control imposed on the private sector should be relaxed and the attention should be given to encourage the private sector.
- Bank should canalize the deposit they mobilize to the area of their most productive use with full potential. In Ethiopia banking sector was dominated by state owned bank. The inefficient allocation of deposit mobilized to the most profitable project by state owned bank may be due to the politically preferred financing of unfeasible project and also the presence of corruption. Therefore, the role that the government play on financial sector need to be limited by regulation.
- Financial sector have required doing much in their internal ability building to enlarge their service providing ability and efficiency. The dominant financial sector banking sector should not focus only on increasing their branch, asset and capital, but they should focus on product varieties, technological advancement and innovation.
- The secondary market should be given more attention seriously in order to increase the financial sector intermediaries and improve the financial market structure to encourage the economy.
- The other researcher should give attention on the secondary market area and also it is important using diversified financial sector deepening indicator to assess more about the effect of financial deepening on economic growth in Ethiopia.

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Appendix

Appendices A: ARDL regression result

Dependent Variable: LOGRGDP
Method: ARDL
Date: 03/22/21 Time: 15:11
Sample (adjusted): 1981 2019
Included observations: 39 after adjustments
Maximum dependent lags: 1 (Automatic selection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (1 lag, automatic): LM2 LPSC LBA LBD LLAB LSAV LTOPP D1
Fixed regressors: C
Number of models evaluated: 256
Selected Model: ARDL(1, 1, 1, 1, 1, 1, 1, 0, 1)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LRGDP(-1)	0.227440	0.119362	1.905456	0.0699
LM2	-0.025966	0.189963	-0.136691	0.8925
LM2(-1)	0.749670	0.231263	3.241634	0.0037
LPSC	0.050664	0.055799	0.907963	0.3737
LPSC(-1)	0.066498	0.052751	1.260604	0.2207
LBA	-0.322008	0.106704	-3.017763	0.0063
LBA(-1)	-0.139595	0.055037	-2.536361	0.0188
LBD	0.075855	0.161677	0.469176	0.6436
LBD(-1)	-0.663488	0.202491	-3.276629	0.0034
LLAB	0.744214	0.537684	1.384110	0.1802
LLAB(-1)	1.088363	0.510246	2.133017	0.0443
LSAV	0.050286	0.019380	2.594814	0.0165
LSAV(-1)	0.035978	0.022517	1.597796	0.1244
LTOPP	0.141457	0.054580	2.591756	0.0166
D1	-0.037414	0.022639	-1.652593	0.1126
D1(-1)	0.088555	0.052861	1.675240	0.1080
C	-9.935425	1.488590	-6.674387	0.0000

R-squared	0.989212	Mean dependent var	5.368920
Adjusted R-squared	0.983639	S.D. dependent var	0.305194
S.E. of regression	0.011259	Akaike info criterion	-5.836021
Sum squared resid	0.002789	Schwarz criterion	-5.110879
Log likelihood	130.8024	Hannan-Quinn criter.	-5.575846
F-statistic	1743.703	Durbin-Watson stat	1.887362
Prob(F-statistic)	0.000000		

*Note: p-values and any subsequent tests do not account for model selection.

Appendices B: Autocorrelation Test Result

Date: 03/05/21 Time: 22:21
Sample: 1980 2019
Included observations: 39
Q-statistic probabilities adjusted for 1 dynamic regressor

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob*
		1	0.021	0.021	0.0179	0.894
		2	-0.326	-0.326	4.5972	0.100
		3	-0.036	-0.022	4.6534	0.199
		4	-0.139	-0.273	5.5384	0.236
		5	-0.217	-0.278	7.7535	0.170
		6	-0.002	-0.210	7.7537	0.257
		7	0.177	-0.070	9.3275	0.230
		8	0.050	-0.138	9.4541	0.305
		9	0.116	0.056	10.172	0.337
		10	-0.078	-0.216	10.503	0.398
		11	-0.230	-0.256	13.537	0.260
		12	0.117	0.012	14.349	0.279
		13	0.017	-0.188	14.366	0.349
		14	0.117	0.186	15.245	0.362
		15	0.100	-0.012	15.918	0.388
		16	-0.023	0.052	15.955	0.456

*Probabilities may not be valid for this equation specification.

Appendix C: *Akaike Information Criteria*