



The Relationship Between Bank Sector Development and Economic Growth: THE case of Ethiopia

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This is to certify that the thesis prepared by ABREHAM BELEW, entitled: The relationship Between Bank Sector Development *and Economic Growth in Ethiopia* and submitted in partial fulfilment of the requirements for the degree of Master of Science (International Economics) complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

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ACRONYMS

ARDL	Autoregressive Distributed Lag
ADF	Augmented Dickey Fuller
AIC	Akaike Information Criterion
CR	Concentration Ratio
DC	Developed Countries
EPRDF	Ethiopian People’ s Revolutionary Democratic Front
FDI	Foreign Direct Investment
FDIGDP	Foreign Direct Investment Percentage of Gross Domestic Product
FPE	Final Prediction Error
GTP	Gross and Transformation Plan
HHI	Herfindahl-Hirschman Index
HQIC	Hannan-Quinn Information Criterion
LDCs	Least Developing Countries
NBE	National Bank of Ethiopia
OLS	Ordinary Least Square
OPN	Openness
PSCR GDP	Private Sector as Credit percent of Real Gross Domestic Product
RGDP	Real Gross Domestic Product
SIC	Schwarz Information Criterion
UNDP	United Nation Development Program
VAR	Vector Autoregressive
VEC	Vector Error Correction

Abstract

The relationship between bank sector development and economic growth: in case of Ethiopia

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This study examines the short run and long run relationship between bank sector development and economic growth in Ethiopia. It covers the annually time series data from 1981-2018 and it used Vector Error correction Models for estimation technique and Granger Causality test check the direction of causality. The finding supports that there is no significant relationship between bank sector development and economic growth in short run, but in long run bank sector development has significant negative effect on economic growth. This result is different from theoretical expectation, but it turns out the current situations and inefficiency of banking sector in providing loans to private sector. This is evidenced by the State-owned banks have on average of 46 percent of total loan disbursed by banking industry in the year 2014/15-2018/19. The ganger causality result shows unidirectional causality from bank sector development to economic growth. It recommends to the government to increase the monitoring and supervisor role of monetary authority (National Bank of Ethiopian), should liberalize the sector, create favorable banking environment to bring competition between them.

Key word: Bank Sector, Economic Growth, Vector Error Correction, financial development

CHAPTER ONE: INTRODUCTION

1.1 Background

Ethiopian economy registered 9 percent increase in the year 2018/19 which was less than 9.1 percent average annual growth during 2014/15-2018/19(National Bank of Ethiopia annual report, 2018/19). Expansion in 2018/19, showing improvement relative to the 7.7 percent growth of the preceding year, although it was 2 percentage point lower than the base case scenario of GTP II target set for the year. It was also significantly higher than the 3.1 percent average growth rate of Sub-Saharan Africa (World Economic Outlook Update, October 2018). The growth in real GDP was mainly attributed to 11 percent growth in services, 3.8 percent in agriculture and 12.6 percent in industrial sectors. Nominal GDP per capita rose to USD 985, which showed 11.6 percent improvement over the previous year. The Ethiopian economy is projected to grow 10.8 percent in 2019/20 (NBE annual report, 2018/2019), compared to 3.3 and 3.5 percent growth forecast for the world and Sub-Saharan Africa (SSA), respectively (WEO, April 2019), but this projection is different from the projection by IMF which is 6.2 percent (IMF country report, 2020), however this projection has revised to 6 percent and 3.2 percent by Ethiopian government and IMF respectively due to the negative impact of COVID-19 pandemic. Study by Alemayehu shows that Ethiopian economy will register 11.1 percent (220 billion birr) contraction due to COVID-19. Based on this study. Alemayehu forwarded that COVID-19 have negative impact on service sector specially hotel and tourism, this will have impact on banking sector as well because the biggest hotels are indebted to banking sector.

Banking in Ethiopia is operated since 1905 by bank of Abyssinia and later in 1942 well-structured bank was developed as state bank of Ethiopia which was owned by the central government. During 1960 banking in Ethiopia reach astonishing level due to competition of foreign banks and other domestic private banks with the government owned bank until they were nationalized and merged into one government owned bank in 1976 (Aderaw Gashayie and Manjit Singh, 2016). After the downfall of Derg regime, EPRDF came to power and done different reforms in 1991 and formulate market-oriented policy Alemayehu Geda (2006). Alemayehu G. clearly defines the reform agenda which was focused on reconstruction of financial sectors and the two strategies to achieve those agendas. The first agenda was

Gradualism which states gradually opened private bank and insurance companies' side by side with the public. The second was strengthening domestic competitiveness before full liberalization of financial sector. In line with the proclamation no. 84/1994 a number of private banks and insurance companies were established.

According to national bank of Ethiopia annual report 2018/2019 the total number of banks is 18 of which 2 are state-owned and the rest 16 are private banks. The total number of bank branch reached 5,564 and one bank branch will serve estimated number of 17 thousand peoples. The share of private banks from total branch network was 69.7 percent; the total capital of banking industry reached 101.5 billion Birr. Regarding lending activities commercial banks and Development Bank of Ethiopia (DBE) disbursed Birr 164.5 billion in fresh loans which was 42.5 percent higher than that of a year ago. The sectoral distribution indicated that nearly 25.3 percent of the loans went to finance industry sector followed by domestic trade (20 percent), international trade (16.8 percent), other sectors (10.5 percent), housing and construction (11.9 percent), and agriculture (10.9 percent) the remaining balance went to personal loan.

The relationship between financial development (usually bank sector) and economic growth attract the attentions of researchers. The causality between these variables were complex and depends on the country situation. Researchers like Maria Carkovic and Ross Levine (2002) identified that there is no strong relationship between financial development and economic growth in Chile. According to them Chile registered rapid economic growth, even though the country has less developed banking system and highly illiquid capital market. Saeed Rasekhi and Zeinab Seyedi (2010) stated that peoples in least developing country suffer from chronic poverty as a result of sufficient education, low national income, low level of national saving and the low capital accumulation vicious circle of poverty repeats once again, so financial sector should develop and liberalized to encourage investment which is important to tackle this capital problem and bring economic growth.

The causality between financial development and economic growth is clearly identified by *Hugh T. Patrick*, (1966) who stated that there are two patterns. The first pattern is that economic growth brings financial development called it “demand-following”; in this case low level of financial development is the manifestation of weak economy. According to him if there is economic growth in the country there is demand for different financial services and this demand

brings financial system sophistication and development. The second pattern of causality is the inverse of the first and called it “supply-side “, in this pattern financial development leads efficient allocation of limited resources from small savers to large investors lastly these investments brings economic growth. The causality pattern may change over development journey.

In our country case Sheilla Nyasha, et.al (2016) indicated bank-based financial development and economic growth have bidirectional causality in short run and unidirectional causality from bank-based financial development to economic growth in long run. Athambawa Jahfer and Tohru Inoue (2014) addressed that countries with excess investment demand over their saving can fill the gap by attracting foreign capital through FDI, but the positive effect on economic growth depends on the host country level of financial development. Inefficient and inflexible banking sector, high banking cost or high level of service charge, limited access to foreign currency permit for import of raw materials and delay in project implementation due bureaucratic systems and lack of coordination among regional and federal government organs challenges foreign investor in Ethiopia Mulu . et.al (2017).

GönülYüce Akinci, et.al (2014) conducted their researches on the nexus between financial development and economic growth on OECD member countries and found that there is relationship between financial development and economic growth in the long run. According to them there was a dominant unidirectional relation from economic growth to financial development (demand-following pattern).

1.2 Statement of the Problem

The nexus between financial development and economic growth remain a central issue of debate. Several studies were conducted on the relationship between financial development and economic growth. There were two groups debates regarding directional causality that whether financial development cause growth rate or vice versa, but they share in common that these causalities will change over economic growth stage of the country (De Gregorio and E. Guidotti, 1995). Well-developed financial system contributes to economic growth by exerting corporate control; mobilizing savings; reducing risk; allocating resources; monitoring managers; and facilitating the exchange of goods and services (Levine 1997). The work of (*Jeremy Greenwood and Boyan Jovanovic*, 1990) emphasize that how the creation and growth of financial institutions lead to

economic growth. (Nouriel, R. & Xavier, S.M, 1992) analyze the relationship between financial intermediation and growth by emphasizing the role of government policy. In particular, they develop a model in which financial repression becomes a tool that governments may use to broaden the base of the inflation tax that yields higher seigniorage to finance government expenditures, but inflation tax and an income tax that will be subject to tax evasion. Roubini and Sala-i-Martin show that high income tax evasion induces policy makers to repress the financial system and set a high inflation rate in an attempt to generate higher revenues from the inflation tax, but it hampers growth since financial repression reduces the productivity of capital and lowers savings.

The study by (Roman, T., 2012) and (Sheilla, N. & Nicholas, M. O., 2016) found that financial development has positive and significant effect on economic growth, but regarding to directional causality Roman's finding supports demand-following while Nyasha and Odhiambo supply-leading patterns, even though they used different financial development indicators. The work of (Hailay, T., 2013) states that in the long run the economy grows slowly due to inefficient banking sector to minimize transaction cost and mobilizing saving for investment.

Although the banking sector of Ethiopia has showed growth following implemented reform measures of 1994, however the sector still remains monopolistic, inefficient and is incapable of improving the intermediation of private sector savings. As a result, the contribution of the banking system to facilitating the economic growth is marginal (Admassu, B. & Asayehgn, D., 2014). The current financial system of Ethiopia is highly dominated by banking system; no capital market, few micro-finance institution and small share of insurance companies. Currently, the banking sector in Ethiopia is elementary and brittle. It is small, relatively undeveloped, closed and characterized by a large share of state ownership. The state- owned commercial banks account for nearly two-thirds of the banking sector assets.

There were 2 state owned and 16 is private banks, 17 insurance companies and 38 micro-finance institution (NBE annual report, 2018/2019). The total capital of the banking industry increased by 18.4 percent and reached Birr 101.5 billion and number of banks branches increased to 5564 by the end of June 2019 and one branch is estimated to serve 17 thousand people, even if 34.6 percent of branches were located in Addis Ababa. State owned banks have 56.6 percent capital

and 30.3 percent share of total bank branch network. By the year 2018/19 the total amount of loan disbursed by banks stood at 164.49 billion Birr of which 77 percent was to private sector.

The horn of Africa is characterized by low level of financial development, this is evidenced by different financial indicators (like domestic credit to private sector, domestic credit by bank) the horn of Africa registered lower level as compared to east Asia and pacific and sub Saharan African countries (Ali I. Abdi and Emerta A. Aragie, 2012). As measured by the financial indicators such as private credit to GDP ratio, the ratio of narrow to broad money and the ratio of broad money to GDP, Ethiopia's financial sector development, is well below that of other African countries, and is even more undeveloped when compared to the financial systems of the industrial countries (Abdi, 2000, cited by Roman Tesfaye, 2012). Plenty of studies were conducted on financial development and economic growth in the world, Africa, Sub-Saharan Africa and particularly in Ethiopia, but the issue is debatable, very sensitive to shocks, sophisticated technological development in the financial sector year to year. Most of studies conducted in Ethiopia were dated back five years and this paper will fill this time gap and will take credit to private sector by bank as percent of GDP as banking sector development which is different from financial sector indicator taken by earlier studies.

1.3 Objective of the Study

1.3.1 General Objective

The general objective of this thesis to identify the linkage between Bank sector development and economic growth of Ethiopia.

1.3.2 Specific Objective

- 1) To identify the effect of bank sector development for country economy growth.
- 2) To investigate the effect of other macroeconomic determinant like foreign direct investment and openness on economic growth.
- 3) To identify directional causality between banks based financial development and economic growth.

1.4 Research Questions

In doing this research the following questions will be addressed:

- 1) Does bank sector development have positive effect on economic growth in short run?
- 2) Does bank sector development have positive effect on economic growth in long run?
- 3) Is the causality between bank base financial development and economic growth bidirectional or unidirectional?
- 4) What are the effects of foreign direct investment and openness on economic growth?

1.5 Hypothesis Testing

In this study we employ operational hypothesis that

- 1) H₀: Bank sector development does have positive effect on economic growth in short run.
- 2) H₀: Bank sector development does have positive effect on economic growth in long run.
- 3) H₀: Other macro-economic variables like FDI and openness does have effect on economic growth.
- 4) H₀: Bank sector development does granger cause economic growth.
- 5 H₀: Economic growth does granger cause bank sector development.

1.6 Scope and Limitation of The Study

This study will analyze the relationship between bank sector development and economic growth in Ethiopia from 1981/82 to 2018/19. Using Vector Error Correction Model (VECM) model which usually involves 50-year data, but this study used 38 years data constrained by the availability of data. The indicators which is taken to measure bank sector development (credit provided to private sector by bank as percent of GDP) is not enough, and ignore other components like the share of employment creation in banking industry to the whole economy, the factor income generated by banking industry to GDP and the number of banks and branches per capita which measure the degree to which a country's population has access to financial service. Additionally, due to lack of organized data for the variables I choose to use World Bank & IMF data sourced from National Bank of Ethiopia.

1.7 Significance of the Study

This study contributes to the existing body empirical studies regarding the effect of bank sector development on economic growth in Ethiopia. In addition, this research contributes to newly established banks or banks under establishment by forwarding information regarding already existing banking sector potential and competition that they will face, since it is the environment in which they operate in the future. This research is also important for government and responsible stakeholder to design policy that will encourage domestic banking industry

1.8 Organization of The Paper

The rest of the paper is organized as follows. Chapter two is about literature reviews; both theoretical and empirical literatures are well reviewed. Chapter three is about economic growth and bank sector overview followed by chapter four it is about methodology. Chapter five is about discussion of results & analysis and lastly chapter six is about conclusion and policy recommendation.

CHAPTER TWO: LITERATURE REVIEW

2.1 Theoretical Literature

2.1.1 Economic Growth Theory

From Mercantilism growth concept to Endogenous growth theory many scholars gave attention to growth of economy in different times and proposed their own theories. Under Mercantilism economic growth can be achieved through accumulation of precious metals especially gold. Having sufficient amount of this precious metal gave access to credit facilities with relatively low level of interest rate and economic power of a nation. Later on, the Physiocrats thinking came to replace mercantilists. This ideology comes from the Greek word Physiocracy which means “Government of Nature “and in this theory the wealth of a nation comes solely from highly priced products of land agriculture. Physiocrats considered labor as the only factor of production and the productivity of agricultural labor as source of wealth. They believed that economic life as natural process that have its own natural law and opposed government intervention.

Neo-classical growth theory: From Neo-classical schools the famous work of Adam Smith, David Ricardo, Thomas Malthus, Jon Stuart Mill and others were mentioned (*Ilkhom Sharipov, 2015*). Adam Smith in his book *wealth of nations* stated that the wealth of nations was not based on gold, but on trade (*Ayhan Ucaka, 2015* “Adam Smith: The Inspirer of Modern Growth Theories.”). Smith believed that productivity of factor of production (labor, land and capital) and division of labor could bring wealth of nation. Technology would increase productivity; and population as source of labor would endogenously depend on varies means of subsistence. Investment also endogenously depends on hard working and saving to industrial development. Finally, trade can benefit both trading parties and could achieve higher level of wealth of nations. The work of Thomas Malthus (1766-1834) differs from Smith that the pessimistic view of describing the growth of population and its relation with increase in output. If the growth proportion between population growth rate and means of subsistence is not in a good proportion, there will be scarcity of resource, with scarcity of resource fulfill means of subsistence will lead depletion of nature. Despite the fact that the calculations of Malthus did not consider the migration of people as population growth in USA and problems in prediction of scientific and technological growth in agriculture his concept of diminishing returns in factor of production

was used in 20th century. David Ricardo (1772-1823) in his theory of comparative advantage suggests countries should focus on industries where it is internationally competitive and trade with other country to obtain goods which is not produced nationally. Introduction of new technology will improve production as long as proportional combination of labor and capital achieved. Jon Stuart Mill (1808-1873) completes the classical theory of economic dynamics that considers the long run growth trend. Continuous accumulation of capital is very important for long run economic growth, however, this accumulation of capital brings demand for labor which leads to increase in real wage and population. The increased work force further increases consumption goods of agricultural products, but by nature production of agriculture experienced diminishing marginal returns.

Joseph A. Schumpeter (1911) innovation growth theory: introduce new theory in which economic growth results from natural equilibrium or steady state by the engine of innovation and entrepreneur's skill. Karol Śledzik (2013) in his work of Schumpeter's views on innovation and entrepreneurship; Schumpeter's concept of entrepreneur gives banking system (banks) the possibility of implanting innovation in the economy and this innovation have five types.

- 1) Launch of a new product or a new species of already known product
- 2) Application of new methods of production or sales of a product (not yet proven in the industry);
- 3) Opening of a new market (the market for which a branch of the industry was not yet represented);
- 4) Acquiring of new sources of supply of raw material or semi-finished goods;
- 5) New industry structures such as the creation or destruction of a monopoly position

Today's knowledge-based economy depends highly on dynamic technological progress, but this technological change depends on the innovative skill of entrepreneurs and this innovation requires finance from banks to practically exist. He argued that financial intermediaries provide services like; mobilizing saving, evaluating projects, managing risk, monitoring managers and facilitating transaction which are important for technological innovation and economic development. His work attracted more attention in 1980's after his death, because the contemporary world recognizes innovation as the means to project out the economy from the steady growth, so that there is an increase the demand for knowledge and intangible resources.

2.1.2 Keynesian and Neo-Keynesian Growth Theory.

Economists like John Maynard Keynes, Roy Harrod, Evsay Domar, Nicolas Kaldor, Joan Robinson and others famous economists were mentioned (Ilkhom Sharipov, 2015). Keynes believed that the 1930's economic depression was due to lack of effective demand and the solution to this depression is to stimulate the economy by reducing the interest rate at which the central bank lends money to commercial banks plus commercial banks do the same thing to their customers and the government investment in infrastructure facilitates the economy by creating business and employment opportunities, reversing imbalance between demand and supply. The central concept of Keynes theory is based on effective demand and factors affecting it contribute to economic growth. Keynes argues that investment is the main factor of production that increase output. Since Keynes theory is for short-run period, depressive economy lacks detailed analysis on improved combination of factor of production and his follower British economist Roy Harrod improves it for long term. Harrod who inspired by Keynes to develop theories assumes that there is no monetary influence and fixed technical coefficient and propensity to save to establish the famous knife-edge problem.

According to Harrod economy is stable and any negative influence on fluctuation is only comes from monetary and credit factors. He states that the equilibrium rate of growth is influenced by three different components of effective demand. This is Government sector, private sectors in the form of autonomous investment and foreign sectors. Evsay Domar in his work supports Keynes theory that investment as not only factor of growth of income, but also factor in creation of production capacities. Domar states the growth rate of investment depends on the saving growth rate. Policy makers or the state could influence the national saving rate and technological progress to determine the optimal level of investment and to maintain the dynamic balance between supply and demand in the economy.

2.1.3 Robert Solow Exogenous Growth theory

The neo- classical growth theories come to exist with some critique of Keynesian and neo-Keynesian model. The first is that capital as the only factor of production no space given to other factor of production, second the assumption of fixed proportion of capital and labor. Labor and capital should use in production process depend on the marginal productivity. Thirdly in neo-Keynesian theory the automatic power of market rebalancing gets little attention.

In Solow model the basic assumption is that the equality of aggregate demand and aggregate supply is the necessary condition for equilibrium of the economy. Aggregate supply is determined from Cobb-Douglas production function which express the interconnection between three source of economic growth such as; investment, labor and technological progress. In this model investment is determined by saving rate which is the same as Harrod-Domar growth model. Labor is also one factor of production which is determined by population growth rate that should be proportional to capital. However, if the higher population growth rate is not accompanied by the increase in investment; capital per labor would decrease then the country would experience low income. Solow determines technology exogenously. Solow model development

$$Y(t) = F(A(t), K(t), L(t))$$

where Y- output level, A is technological, K- capital, L-physical labor and t is time indicator.

$$MPK = F_K(K, AL) > 0 \text{ and } MPL = F_L(K, AL) > 0$$

Diminishing productivity of capital and labor is stated as $F_{KK} < 0$ and $F_{LL} < 0$.

Since the economy is closed economy $S=I$ where S stands for saving and I is for Investment.

Solow assumes constant returns to scale and the equation becomes

$$F(cK, cAL) = cF(K, AL) \text{ where } c \text{ is some constant number which is } c = 1/AL$$

$F(K/AL, 1) = \frac{1}{AL} F(K, AL) = Y/AL$ states that the growth rate of output (y) and the growth rate of capital (k) is determined by effective labor (AL) means that $y = Y/AL$ and $k = K/AL$

Capital accumulation is the sum of investment on specified period and depreciation where (δ) is rate of depreciation of capital on that period. Mathematically

$K_t = I_t + \delta K_t$ The closed economy assumption of Solow stipulates that the output of the country will be used either for saving or consumption. $Y = C + S$ and this saving is also a constant fraction of Y, $S = sY$ finally capital accumulation over a period was expressed as

$K_t = sY_t + \delta K_t$ The final illustration of Solow is that $Y \uparrow \rightarrow S \uparrow \rightarrow I \uparrow \rightarrow K \uparrow \rightarrow Y \uparrow$ vicious circle repeats

Solow model of economic growth was criticized due to his assumption of technology as exogenous.

2.1.4 Endogenous Growth Model

The drawback of exogenous growth model and other oldest thought of economic growth model results in the invention of the endogenous growth model. In Solow model, the state with the help of economic policy instruments (such as changes in taxation, government spending) is not able to provide long-term impact on the growth rate, but rather through the impact on the savings rate.

Endogenous growth model suggests theory, with exogenous technological change and exogenous population growth did not matter on economic growth whatever government does. In endogenous growth model there are three candidates for technological advancement and economic growth. These ideas are (profit-seeking research), international openness and human capital formation. Technological progress is not the only possible cause of economic growth in the long run. There are other factors of growth like; the quality of human capital, which depends on investment in education and health; creation of the necessary conditions and prerequisites for the protection of intellectual property rights in the conditions of imperfect competition; state support for the development of science and technology and the role of government in creating a favorable investment climate and attracting new technology.

The basic idea of the well-known endogenous theory of Paul Romer is that there is an exchange between consumption today and knowledge that can be used for the expansion of consumption tomorrow. He formulates the idea as "research technology," which produces "knowledge" from the past consumption. Thus, in Romer's theory the rate of economic growth directly dependent on the value of human capital, focused in obtaining new knowledge. The theory of Romer implies that countries with greater accumulation of human capital will have higher rates of economic growth. Therefore, according to this theory, the development of free international trade will also contribute to higher growth, since the exchange of products expands the boundaries of the economic system and thus leads to an increase in the total human capital.

In contrast to the Romer's theory, in the theory of Robert Lucas, accumulation of human capital is a strong economic process that requires certain resources, and is the cause of alternative costs. Lucas suggests that people can choose one of two ways to spend the time: to participate in

current production or to accumulate human capital. In fact, the allocation of time between these alternatives determines the rate of economic growth. For example, a decrease in time spent on production, leads to a reduction in the current product output, but at the same time with accelerated investment in human resources increases future product output growth.

M. Grossman and E. Helpman (1991) proposed R&D as a key factor of growth. Grossman and E. Helpman have shown that subsidies for R&D, in a country with a relatively scientific and technical excellence, recorded an increase in the overall rate of economic growth. The theory takes into account the possibility of inflow and outflow of capital for R & D funding and predicts under certain conditions, the formation of transnational corporation.

According M. Grossman and E. Helpmans studies, firms have invested in new technologies when they have seen an opportunity to earn profits. For example, $Y = AK^{\alpha}L^{\beta}$, where Y is output, K is capital, L is labor and A represents the state of technology. As a matter of calculation, it is true that the percentage growth in Y will be equal to the sum of the percentage growth in A, α times the percentage growth in K, and β times the percentage growth in L. In fact, a large proportion of the scientific research conducted in the OECD countries is financed by private industry. In such a setting, the institutional, legal, and economic environments that determine the profitability of these investments must surely affect the pace and direction of technological change. As per the view of M. Grossman and E. Helpman the real-world economic growth truly sustained by improvement in technology. Story of growth that neglects technological progress is both a historical and implausible and they suggest innovation as engine of economic growth.

The eclectic model of recent LDCs by Richard C. Porter and Susan I. Ranney (1982) advocates that the standard macroeconomic analysis of Most Developed Countries (MDC) does not fit Least Developing Countries (LDCs), so they develop their own models for LDCs. Production of output depends on three main factors (1) product and labor market structure (2) production relationship (3) entrepreneurial behavior. In LDCs product market was characterized by oligopoly structure due to two reasons. First for non-tradable goods small economic size of that economy prevents the appearance of sufficient number of firms to ensure competition. Second for tradable goods the government strategy of import-substitution and the policy designed to discharge this strategy combined with motives for protecting domestic firms from foreign

competition leaves the product market oligopoly. The government legislation of minimum wage and civil servant pay scale with the wage payment of multinational corporations which is copied from their home payment system leaves the labor market also imperfect. The imperfect nature of labor market leads urban labor force unemployed or employed at low level of wage in informal sector.

Regarding production factor relationship eclectic model of porter and Ranney differ by labor can produce without its diminishing returns because of the idle capacity nature of small economy as long as exchange rate was assigned to import raw materials and intermediate inputs, since the economy is small in size, import of raw material or intermediate input covers some portion of output (Y). Entrepreneurs in LDCs do not focus on the normal assumption of profit maximization, but rather they follow variable-cost-markup pricing technique and they borrow from the curb market at high interest rate level to finance their innovation and pricing to their product by considering this high interest rate. Production (Y) is the function of price of the product (p), interest rate (i), wage rate (w) and exchange rate (e).

2.1.5 Finance and Economic Growth Theory

The theoretical literature on financial intermediation in economic growth has focused on two important questions. Why do financial markets and institutions exist? And what is their impact on savings, investment, and economic growth? (Thorsten Beck, 2011). According to him Financial institution and Markets exist due to market frictions and their role is to minimize the asymmetric information between contractual partners to reduce problems like liquidity and default. The theoretical argument on the emergence of financial institutions and markets inconsistent with the historical observance that financial institutions and markets have arisen at early stage of human history and especially as exchange of goods and services across larger geographical distances and within larger societies or between societies has become more prominent, but its emergence does not imply positive impact on economic growth, however financial systems can contribute to economic growth through different ways (Beck, T. H. L., 2011).

Firstly, financial systems can sustain the efficient exchange of goods and services by providing payment services and thus reducing transaction costs. Secondly By pooling savings of patient and impatient agents, financial institutions can transform short-term liabilities into long-term

assets, enabling long-term investment and ultimately economic growth. Third financial institutions and markets can help monitor enterprises and reduce agency problems within firms between management and majority and minority shareholders, again improving resource allocation. Fourthly by economizing on screening and monitoring costs and thus allowing more investment projects to be financed and, increasing the aggregate success probability, financial institutions and markets can ultimately have a positive impact on investment and resource allocation. Financial intermediaries can also boost the rate of technological innovation and economic growth by identifying the entrepreneurs with the most promising technologies.

Fifthly pooling savings from many individual savers, financial institutions can help overcome investment indivisibilities and allow exploiting scale of economies and this is necessarily if financial institutions are privatized and if there are local coalitions of investors not national financial institutions, as was the case in the early days of the Industrial Revolution for infrastructure projects. Lastly financial institutions and markets allow cross-sectional diversification across projects, allowing risky innovative activity while guaranteeing an ex ante contracted interest rate to savers. Beyond theoretical models, economists have explained the take-off of the Industrial Revolution in some countries earlier than others to the availability of finance. The work of (Ross Levine, 1997) supports the above-mentioned roles that financial system played in economic growth. (John Hicks, 1969 *cited by Ross Levine, 1997*) argued that the Industrial Revolution in the United Kingdom was possible due to the developing of British financial system. Although many inventions were made before the industrial Revolution, liquid capital markets enabled investment into long-term projects that could use these inventions. Similarly, the Netherlands and the United States experienced financial deepening before their economic and political rise in the seventeenth and twentieth centuries, respectively.

The relationship between finance and growth is not a one-way street; rather, higher growth induced by financial deepening increases demand for financial services. The extent of financial inter-mediation and the rate of economic growth are endogenously determined. Financial intermediation promotes growth because it allows a higher rate of return to be earned on capital, and growth in turn provides the means to implement costly financial structures (Greenwood and Jovanovic, 1990). Greenwood and Jovanovic illustrates the Kuznets dynamism between economic development and financial development that financial development follows the

economic growth path. In the early stages of economic development, an economy's financial markets practically do not exist or it grows slowly. Financial structure begins to form as the economy approaches at the intermediate stage of the growth cycle. At this stage economy's growth and savings rates both increases, and the distribution of income across the rich and poor widens. By maturity, the economy has developed an extensive structure for financial intermediation. In the final stage of development, the distribution of income across agents stabilizes, the savings rate falls, and the economy's growth rate converges to a higher level than that prevailing during its early stage.

Financial development responds positively to economic growth and industrialization, it is also the true predictor of future growth and technological change (Ross Levine, 1997). The (Hugh T. Patrick, 1996) demand following phenomena states that the emerging financial system is shaped by objective opportunity (economic environment and institutional framework) and subjective response (individual motivation, test, preference and attitude towards finance). Financial intermediation or the need for financial service is highly determined by the growth of national income, but these demand-following phenomena is not automatic specially in developing country where the restrictive banking legislation, religious barriers against loans and interest charges, hand to mouth life of majority citizen together with imperfections in the operation of the market mechanism, may decree an inadequate demand-following response by the financial system (Patrick, 1996). These demand-following phenomena was supported by Robinson, (1952, *cited by Ross Levine, 1997*) who states that economic development creates demands for particular types of financial arrangements, and the financial system responds automatically to these demands. The studies by (Robert G. King and Ross Levine, 1993) identified that policies that reduce the cost and increase the efficiency of financial intermediation have direct impact on economic growth.

The supply- leading phenomena of Patrick states that the establishment of financial institution and financial services in advance to encourage entrepreneur's skill and innovation promotes economic growth. By transferring resources from traditional or non- growth sector to modern sector and promoting and stimulating entrepreneurs in this sector financial institution contributes for economic growth (Patrick, 1996). This supply-leading hypothesis is convenient with the Joseph Schumpeter (1912) theory that financial intermediaries play a crucial role in economic

development because they choose which firms should get to use society's savings (cited by Beck, T. H. L. (2011)). This hypothesis is supported by the empirical work of (Jose, D. G & Pablo E. G., 1995), (César, C. & Lin, L., 2002), (Dimitris, K. C. & Efthymios, G. T., 2004), (Jeremy, G. & Boyan, J., 1990), (Philip, A. et al., 2005), (Nahla, S., Jan, F. & Sugata, G., 2015).

According to Patrick in the real world the supply-leading and demand-following does not exist separately. Countries or industries at their lower stage of development supply-leading may be prevailed, when they grow demand-following becomes more dominant, and other infant industries or developing countries will enter in place of those who develop. Patrick intuition is that from the two phenomena supply-leading pattern will be very costly because this pattern exists at the establishment of financial system. There are also economists who stands with the nexus between finance and economic growth is not significant. Economists like (Robert Lucas, 1988) "the importance of finance on growth is very badly over stressed." And he focuses on the real determinant of growth and Nicholas Stern's (1989) illustrate that the relation between finance and economic growth is negligible.

2.2 Empirical Literature

Different studies have been done on the nexus between financial sector development and economic growth cross- country, a country level (time series), industry and firm level. Studies by Robert G. King and Ross Levine (1993) inform on various measure of financial development greatly linked with the current and also future growth rate, accumulation of physical capital and improvement in economic efficiency. Studies also by (Gönül Yüce Akinci, Merter Akinci and Ömer Yilmaz, 2014) shows that financial development and economic growth have long run relationship in OECD member countries. The results of studies by (Ross Levine 1997), (Philip Arestis and Panicos Demetriades, 1997), (Jose De Gregorio and Pablo E. Guidotti, 1995), (Thorsten Beck Ross Levine Norman Loayza, 2000) illustrates the long run relationship between financial development and economic growth and depicts that countries with better financial development grows better than countries with less developed financial system. Levine (1997) bespeak that countries with larger banks and more active stock markets grow faster over subsequent decades and also industries and firms that rely heavily on external financing grow unduly faster in countries with well-developed banks and securities markets than in countries with poorly developed financial systems. The work of Hshin-Yu Liang, Alan Reichert (2006)

also supports the importance of financial sector development for economic growth. In their studies the supply-leading relation between financial sector development and economic growth existed in both developing and advanced economies, even though this pattern experienced more in developing countries.

There are also studies on relationship between banking sector development and economic growth. For instance, NM. Odhiambo and SY Ho (2013) takes domestic credit provided by banks as percent of GDP and banks deposit as indicator of bank sector development and they identified that; bank sector development is very important for economic growth. Banking sector development improves economic growth of country in Palestine and Bangladesh (Mohammed T. Abusharbeh, 2017& Raju Ahmed et.al, 2019) respectively. Studies by X. Cheng & H. Degryse 2009 shows that bank development has direct positive relation with economic growth in china, while non-bank financial institution did not.

Aurangzeb (2012) also acknowledged the contribution of banking sector development to economic growth in Pakistan. In his finding there is unidirectional causality from banking sector development to economic growth over a time. The causality of financial sector development and economic growth discloses demand-following also in Russia (by Shigeki Ono), Ethiopia (by Roman Tesfaye 2012), Zimbabwe (by Athenia Bongani Sibindi and, Alfred Bimha, 2014). Attempt is made to put some practical studies in table form below.

Table 2.1 short summery of empirical studies

Author	Title of study	Method of analysis	Finding
Athenia Bongani Sibindi and, Alfred Bimha (2014) (Case of Zimbabwe)	Banking sector development and economic growth: Zimbabwe	Vector error correction	Supply leading phenomena (Economic growth suppers banking sector development)
Meron endris (2016) (Ethiopian case)	Nexus between financial sector development & economic growth in Ethiopia	ARDL bound test	Economic growth improves financial development (supply leading phenomena)
Nahla Samargandi, et.al. (2015) (selected middle-income countries)	Is the Relationship Between Financial Development and Economic Growth Monotonic? Evidence from a Sample of Middle-Income Countries.	Dynamic heterogeneous panel testing	Insignificant relationship between financial development and economic growth in short run and Inverted “U” shape relation in the log run
Sheilla Nyasha, et.al. (2016) (Ethiopian case)	financial development and economic growth in Ethiopia: a dynamic causal linkage.	ARDL bound test and VEC	Bidirectional relation in short run and supply-leading phenomenon (financial development triggers economic growth)
Roman Tesfaye (2012) (Ethiopian case)	The link between financial development and economic growth in Ethiopia	Co integrated vector autoregressive	Supply leading phenomenon (unidirectional relation from economic growth to financial development)
Sy Hu and Nm Odhiambo (2013) (case of Hong Kong)	Bank sector development and economic growth in Hong Kong	ARDL -bound test	Bidirectional relation between bank sector development and economic growth
Alhassan Musah, et.al (2018)	Foreign Direct Investment, Economic Growth and Bank Performance in	Correlation and panel regression	Foreign direct investment has positive effect on economic growth as well as improve bank

(Case of Ghana)	Ghana.		performance
Robert King and Ross Levine (1993)	Finance and growth Schumpeter might be right		Financial development associated with economic growth, rate of physical capital accumulation and efficiency of investment
Ali Awdeh (2012) (case of Lebanon)	Banking Sector Development and Economic Growth in Lebanon.	OLS	Supply-leading phenomenon (unidirectional relation from economic growth to bank sector development)
Elena Naumovska, et.al. (2015) (case of mecedonia)	The influence of banking sector function on economic activity in Macedonia	Vector error correction model	Mobilization of saving has negative effect on economic growth, but other function of bank has positive effect.
Aurangzeb (2012) (In case of Pakistan)	The contribution of banking sector in economic growth: A Case of Pakistan.”	OLS	Regression results indicate that deposits, investments, advances, profitability and interest earnings have significant positive impact on economic growth of Pakistan Bidirectional causality between bank sector indicators and economic growth.
Shigeki Ono (2017) (Case of Russia)	Financial development and economic growth nexus in Russia	VAR	Demand-following phenomenon (Economic growth has significant effect for financial development)
Chee-Keong Choong, et.al. (2004) (The case of 37 selected countries)	Foreign Direct Investment, Economic Growth, and Financial Sector Development A Comparative Analysis.	Multivariate co integration test	Foreign direct investment did not have direct co integration with economic growth, but though with financial sector.
Mohammed T.Abusharbeh. (2017) (Case of Palestine)	The Impact of Banking Sector Development on Economic Growth: Empirical Analysis from Palestinian Economy	OLS	bank credit has positive impact on economic growth, however interest rate, customer deposit and number of branches did not have significant impact.
Dimitris K. Christopoulos and Efthymios G. Tsionas (2004) (The case of 10 selected developing countries)	“Financial development and economic growth: evidence from panel unit root and co integration tests.	Panel cointegration analysis	Demand -following phenomenon there is unidirectional causality from financial development to economic growth
Hshin-Yu Liang, Alan Reichert (2006) (The case of some selected developing and advanced economies)	the relationship between economic growth and banking sector development.	Univariate and multiple regression	In single equation estimate the is demand-following phenomenon while in pooled model there is supply-leading relationship.
Khalil Mhadhb, et.al. (2017) (the case of selected developing countries)	“Banking sector development and economic growth developing countries:	A bootstrap panel Granger causality analysis.	Limited support of demand-following, supply-leading or complementary hypothesis between bank sector development and economic growth relationship.
Raju Ahmed et.al (2019) (the case Bangladesh)	Banking Sector Development and Economic Growth in Bangladesh: An Empirical Analysis.	VEC	Bidirectional causality between bank sector development and economic growth in long run, but in short run there was unidirectional causality from finance to economic growth.
César Calderón and Lin Liu (year os study)	The direction of causality between financial development and economic growth	Geweke decomposition test	Bidirectional causality between financial development and economic growth.
Thorsten Beck, et.al (2000) (The case of selected 63 countries)	Finance and source of growth	Dynamic panel technique and Pure cross sectional instrumental variable estimators	Financial intermediary has impact on total factor productivity and over all GDP Higher level of financial intermediary induces higher level of real per capita GDP and total factor productivity
Philip Arestis, et.al. (2005) (Review of different theoretical literature)	Financial structure and economic growth	Dynamic heterogeneous panel approach	**Financial structure has significant effect on real per capita out put ***bank-based financial structure for LDC’s and market-based structure for DC’s were experienced
Philip Arestis and Panicos Demetriades. (1997)	Financial development and economic growth. empirical assessment	VAR	Bidirectional causality from banking system and capital market development to economic growth
Woo S. Jung (1986.) (The case of 56 selected countries)	Financial Development and Economic Growth: International Evidence.	Panel regression	**there was causal direction from financial development to economic growth in LDC’s and vice versa in DC’s

2.3 Evaluation of Literatures and Conceptual Framework

From the theories and empirical evidences on the nexus between financial system and economic growth there are debatable issues. The first issue is what role finance play for economic growth? Regarding the importance of finance for economic growth scholars like; Schumpeter (2011), Hamilton (1781) cited by Beck, T. H. L. (2011), Goldsmith (1969), McKinnon (1973), and Shaw (1973) argued that finance plays important role for growth, while economists such as Lucas (1988), Robinson (1952) cited by Beck, T. H. L. (2011) the role of finance is over-worried and financial development follows economic growth. In the real-world finance would play pivotal role for economic growth and this would be indicated by the following evidences. Firstly, there is technological innovation and sophistication of financial operation from year to year which means different technologies were innovated to sophisticate financial operations and to connect the world by financial network. If finance is not much important why countries invested billions of dollars in this sector? Secondly there were evidence that financial structure and services provided by them changes its shape and number throughout the year. Bank-based or Market-based financial structure were entertained in different countries in different time and differentiated products and services delivered by those financial institution was increased in number over a time. Thirdly financial institutional procedures act as the tool to implement different policies and control political power. Different government macroeconomic policies (like; policies for employment, inflation, investment etc...) were carried out by financial institutions and financial markets. Lastly financial procedures used as the means to amity between countries and used as high-handed treatment of one country over other country.

The other important issues were about the financial structure: -bank-based or market-based, and financial service: which structure is best outfit for economic growth? Studies by Philip Arestis, et.al 2005 argued that financial structures have significant effect on economic growth, while Ross Levine 2002 financial structure is extraneous for economic growth rather overall financial service matters. One important point that that can be inferred from different article is that developing countries financial structure is bank-based and changes to market- based structure when the economy transformed to developed economy. The last issues towards Supply-leading or demand-following phenomena which Pattern will exist in the country? Is the pattern will change with country growth process? Finance or growth which comes first is similar with “egg-chicken argumentation, Patrick hypothesized there is no clear boundaries between this pattern.

From different articles and books, I twig that there is macroeconomic determinant that affected economic growth of a country such as financial development, openness, foreign direct investment, inflation, external debt etc. For this study I select openness, financial development specifically banks sector development and foreign direct investment as growth factors. Studies by (Roubini and Sala-i-Martin, 1991) considered financial intermediation as part of aggregate production function because it increases marginal productivity of capital. For a given level of input countries with better financial development is more productive than countries with less developed financial system due to better allocation role played by financial system. According to Roubini and Sala-i-Martin countries more opened to the rest of the world have the probability of growing more; which means that countries that imposed restriction on trade grows less than countries that don't impose.

CHAPTER THREE

3.1 Ethiopian Economic Growth and Bank Sector Overview

3.1.1 Economic Growth Overview

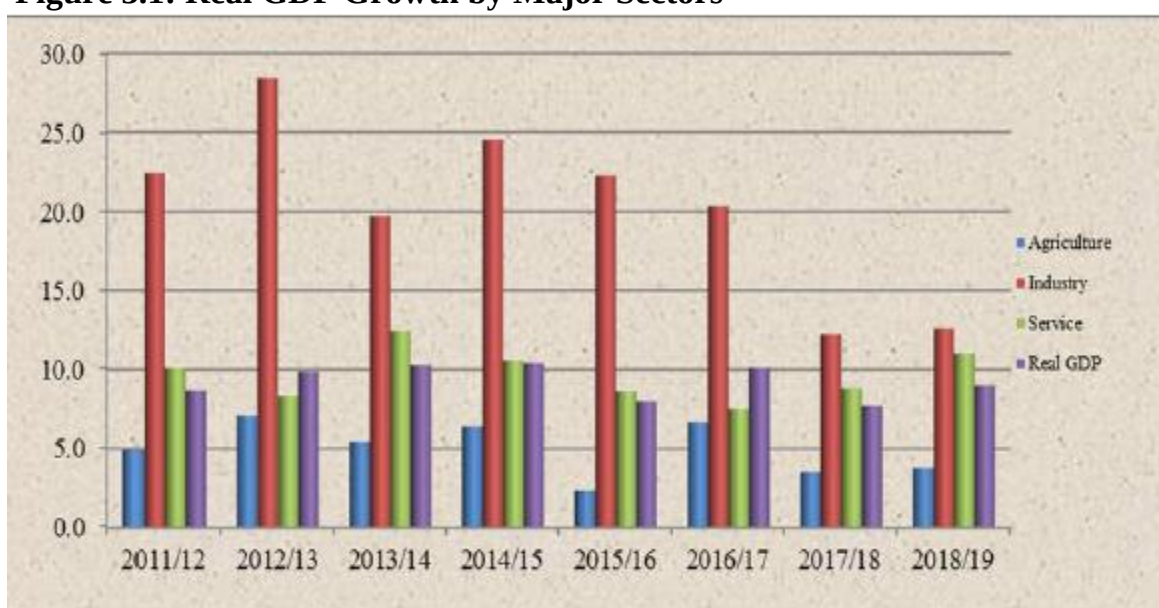
Accelerated economic progress in Ethiopia began in 1992 and shifted to a higher level in the year 2004. Econometric analysis supports a story of two growth accelerations as average growth increased from 0.5 percent in 1981–92 to 4.5 percent in 1993–2004 and to 10.9 percent in 2004–14 (World Bank group, 2016). The first gear shift took place shortly after the political and economic transition of 1991 with the downfall of the communist Derg regime and the introduction of a more market-oriented economy. The subsequent Ethiopian People's Revolutionary Democratic Front (EPRDF) government, in turn, implemented a series of structural economic reforms during the 1990s which paved the way for the second growth acceleration starting in 2004 (the subject of this report).

The Ethiopian economy has experienced impressive growth performance with average GDP growth rate of 11 %, in 2012/13, which is about double of the average growth for Sub Saharan Africa (UNDP, 2014). In terms of maintaining macroeconomic stability and fiscal management as witnessed by inflation falling to a single digit, which had been a major challenge in the past two years 2012/13 was markedly successful. UNDP lists out challenges that hamper growth and transformation agendas and the overall national vision of achieving the MDGs by 2015 and becoming a middle-income country by 2025. These challenges include:

- A possible financial risk associated with growing stock of external debt (at 24.3% of GDP for 2012/13), foreign exchange shortage and limited financing options for the growth and transformation plan.
- Low levels of domestic savings and financial intermediation aggravated by negative real interest rates which continue to act as a disincentive to savings mobilization while hampering credit access.
- A decline in export value due to vulnerability to international commodity price fluctuations and few commodity choices for export market.

- The need to nurture a competitive private sector to drive the growth and transformation agenda. With all these challenges, the economy had registered 9.1 percent average annual growth during 2014/15-2018/19, registered 9 percent expansion in 2018/19, showing improvement relative to the 7.7 percent growth of 2017/2018 although it was 2 percentage point lower than the base case scenario of GTP II target set for the year (National Bank of Ethiopia annual report 2018/19). It was also significantly higher than the 3.1 percent average growth estimated for Sub Saharan Africa (World Economic Outlook Update, October 2018)

Figure 3.1: Real GDP Growth by Major Sectors



Source: National bank of Ethiopia

This growth was attributed to 12.6 percent growth in industrial output, 11 percent increase in service sector and 3.3 percent expansion in agriculture. Consequently, the share of industry in GDP has increased to 28.1 percent in 2018/19 from 27 percent in 2017/18 while that of service sector rose slightly to 39.8 percent from 39.2 percent. In contrast, the share of agriculture to GDP dropped to 33.3 percent from about 35 percent during the same period.

The robust and sustained economic growth recorded over the last 15 years has led to improvements in income inequality and poverty reduction. Accordingly, per capita income has continuously increased and reached USD 985 in 2018/19. Poverty has declined to 22 percent in 2018/19 from 38.7 percent in 2004/05; investment to GDP ratio has increased to 35.2 percent

while that of domestic savings stood at 22.3 percent. The annual average headline inflation declined to 12.6 percent in 2018/19 from 14.6 percent a year earlier due to the rise in both food and non-food inflation. Similarly, annual headline inflation went down to 15.3 percent from 16.8 percent owing to 5.7 percentage point fall in food inflation against 9.7 percentage point increase in non-food inflation. This slowdown in annual inflation was largely aided by tight monetary and prudent fiscal policy stance.

Fiscal policy continued to focus on increasing tax revenue by strengthening tax administration and enforcement while covering a greater proportion of government expenditures from domestic resources. These government expenditures have largely been geared towards supporting capital expenditure and enhancing pro-poor social spending programs and safety nets. Thus, domestic revenue recorded a 15.5 percent annual growth while general government expenditure showed a 16.6 percent increment resulting in a budget deficit equivalent to 2.5 percent of GDP which was lower than the 3 percent of GDP target set in the GTP II plan.

The National Bank of Ethiopia (NBE), in line with its policy of maintaining inflation at low and single digit level, has kept the growth of reserve money within the target by closely monitoring movements in domestic credit, including direct advance to the government. The Bank has also ensured the stability and predictability of the interest rate by setting the minimum deposit rate of 7% while allowing the lending rate to be determined by market forces. This policy has resulted in increased saving mobilization and investment activities throughout the fiscal year. Ethiopia has maintained managed float exchange regime to ensure the competitiveness of its local currency. Accordingly, the Birr was allowed to depreciate by 7.5 percent in nominal terms against the US Dollar by end 2018/19. In contrast, the real effective exchange rate appreciated by 21.1 percent largely due to the strengthening of US Dollar against the country's trading partner currencies.

The 2018/19 has been a challenging year for the Ethiopian external sector particularly exports. Total merchandise exports showed a 6 percent contraction owing to lower earnings from export of coffee, oilseeds, leather & leather products, meat & meat products, fruit & vegetables, gold, live-animals and electricity. In the same way, total merchandize import slowed down by 0.9 percent due to lower imports of industrial and consumer goods. Hence, Ethiopia's external sector performance has exhibited declines in both current account deficit (including official transfers)

and capital account surpluses, and recorded a deficit in the overall balance of payments. Thus, the country's gross international reserve was adequate to cover 2.4 months of prospective imports.

3.2 Banking System in Ethiopia

Modern banking system in Ethiopia started in 1905 when bank of Abyssinia was established in agreement with Anglo-Egyptian national bank, even though the modern monetary system began in Axumite era (Pankhurst,1968 cited by Alemayehu, 2006). In 1908 new fully foreign owned development bank (called Societe Nationale d'Ethiope Pour le Developpement del'Agriculture et du Commerce) and two other foreign banks (Banque de l'Indochine and the Compagnie de l'Afrique Orientale) were also established. Later on, in 1931 the critique arise with regard to ownership of banks operated in the country and bank of Abyssinia was nationalized and renamed as the bank of Ethiopia and it becomes the first nationally owned bank in African continent (Belay Gedey 1990: 83, Befekadu Degefe 1995: 234 cited by Tony Addison and Alemayehu Geda,2003).

Banking activity prolonged between 1936 to 1941 due Italian occupation. Italian banks such as Banco di Napoli, Banco Nazionale (De's Voro), Casa de Creito and Society Nazionale di Ethiopia emerged with total of 10 branches in 1939 (Alemayehu Geda, 2006). Following independence from Italian occupation Barclays bank of Britain come in business activity between the year 1941to 1943. In 1943 Ethiopian government established state bank of Ethiopia, although it faces great challenges from Britain. Until reorganized to current national bank in 1963 bank of Ethiopia acts as both commercial bank and central bank. During 1960s a number of other financial institutions were established. Three commercial banks, 13 insurance companies and other non-bank financial institution was nationalized in 1 January 1975 and reorganized as one commercial bank, national bank and two other banks- Agriculture and Industrial Bank(AIB) and Housing and Saving Bank (HSB) later renamed as Development Bank of Ethiopia and Business and Construction bank, respectively (Geda A. 2006).Regarding the functionality credit allocated to private sector declines from 100 percent of total bank credit under the monarchy to 40 percent and Agricultural and Investment bank allocates 68 percent of its resource to state farms under the Derg Regime (Di Antonio 1988 cited by Tony Addison and Alemayehu Geda,2003). During the Derg Regime collateral was not required for state owned enterprise, state

bank did little financial or economic analysis of projects and inability to investigate risk leads the banks to excess liquidity.

After the down fall of Derg in 1991 market- oriented policy framework was designed and gave the chance for newly established privately owned financial institution to operate side by side with the government owned ones. In line with the proclamation no.84/1994 six private banks with 115 branches and 8 insurance companies with 79 branches were established. Commercial Bank of Ethiopia (CBE) followed by Development Bank of Ethiopia (DBE) continued as important and dominant, but the share of deposit and activities declined. As Alemayehu Geda (2006) forwarded the share of CBE deposit in pre-reform period was 100 percent demand deposit, 96 percent saving, 45 percent time and 90 percent of total deposit mobilized in the country, but this share declined to 87 percent in post reform period. In 2002/2003 the share sharply declines to 75.5 percent which is due to increase in competition from newly established private banks like Awash and Dashen bank.

The contemporary Ethiopian financial sector has been broadly safe, sound, well capitalized and profitable. Commercial banks opened 807 new branches in 2018/19 alone which increased the total number of branches to 5,564 from 4,757 a year ago. The banks also increased their deposit mobilization by 23.2 percent, loan collection by 18.1 percent and loan disbursement by 42.5 percent. Their nonperforming loan was within the required ceiling of 5 percent.

Table 3.1 Branch Network and Capital of the Banking System at the Close of June 30, 2019: (Branch in Number and Capital in Millions of Birr)

Banks	Branch Network							Capital			
	2017/18				2018/19			2017/18		2018/19	
	Regions	Addis Ababa	Total	% Share	Regions	Addis Ababa	Total	Total Capital	% Share	Total Capital	% Share
1. Public Banks											
Commercial Bank of Ethiopia	1051	324	1375	28.9	1235	343	1578	4,851.8	51.1	49,817.9	49.1
Development Bank of Ethiopia	103	4	107	2.2	103	4	107	7,676.5	9.0	7,676.5	7.6
Total Public Banks	1,154	325	1,482	31.2	1,338	347	1,685	51,528.3	60.1	57,494.4	56.4
2. Private Banks											
Awash International Bank	213	169	382	8.0	245	178	423	4,210.0	4.9	6,024.1	5.9
Dashen Bank	138	143	381		265	156	421				
Abyssinia Bank	144	140	384		195	158	353				
Wegagen Bank	174	118	292		215	140	355				
United Bank	116	117	233		151	143	294				
Nib International	101	127	228		132	148	280				
Cooperative Bank of	270	62	332		330	75	405				
Lion International	145	65	210		159	76	235				
Oromiya International Bank	171	89	260	5.5	180	97	277	1,890.0	2.2	2,851.0	2.8
Zemen Bank	12	13	25		20	24	44				
Buna International	96	80	176		106	103	209				
Berhan International Bank	96	92	168	3.5	110	107	2017	1,936.5	2.3	2,405.7	2.4
Abay Bank	109	53	162		126	74	200				
Addis International	24	35	59		27	41	68				
Debub Global Bank	22	21	43		25	28	53				
Enat Bank	15	25	40		16	29	45				
Total Private Bank	1,926										
3. Grand Total Bank	285	1400	4257		3080	1677	4757				

Source: National Bank of Ethiopia

From national Bank data we can concluded that banking industry shows continuous improvements and also the share of private banks in their branch and capital increases, these indicates the degree of privatizing banking industry in the country improved over time.

Table 3.2 Share of banks in the total loan disbursed

Ro N	Name of bank	2014/15	2015/16	2016/17	2017/18	2018/19
1	Commercial Bank of Ethiopia	0.4467	0.4814	0.3928	0.3577	0.3267
2	Development Bank of Ethiopia	0.0907	0.0719	0.0511	0.0602	0.0654
	total state bank	0.5373	0.5534	0.4439	0.4179	0.3922
1	Awash International Bank	0.0493	0.0509	0.0609	0.0421	0.0555
2	Dashen Bank	0.0686	0.0610	0.0798	0.0863	0.0867
3	Bank of Abyssinia	0.0241	0.0344	0.0494	0.0406	0.0414
4	Wegagen Bank	0.0409	0.0356	0.0362	0.0537	0.0341
5	United Bank	0.0422	0.0361	0.0455	0.0418	0.0510
6	Nib International Bank	0.0613	0.0459	0.0617	0.0537	0.0558
7	Coperative Bank of Oromia	0.0230	0.0262	0.0675	0.0260	0.0885
8	Lion International Bank	0.0214	0.0262	0.0244	0.0260	0.0231
9	Zemen Bank	0.0168	0.0179	0.0167	0.0182	0.0217
10	Oromia International Bank	0.0317	0.0187	0.0302	0.0442	0.0530
11	Berhan Bank	0.0107	0.0244	0.0251	0.0308	0.0355
12	Buna International Bank	0.0192	0.0231	0.0208	0.0241	0.0188
13	Abay Bank	0.0179	0.0196	0.0175	0.0158	0.0152
14	Addis International Bank	0.0045	0.0043	0.0039	0.0047	0.0037
15	Debub global	0.0032	0.0062	0.0060	0.0117	0.0127
16	Enat Bank	0.0097	0.0072	0.0105	0.0107	0.0111
	total privet bank	0.4447	0.4376	0.5561	0.5302	0.6078

Source: owns computation from national bank data

From table 3.2 we can observe that the share of state banks from total loan disbursed declined over the year. In 2014/15 budget year state banks share is more than half (which is 53.73) percent, but 2018/19 their share declined to 39.22 percent of the total loan disbursed by banking industry. Private Banks improved in their loan disbursement from 44.47percent to 60.78 percent of loans disbursed by bank industry and this shows that privatization of banking industry improves over time in Ethiopia.

Hussein (2016) use concentration ratios and Herfindahl-Hirschman Index (HHI) to measure the level of competition between Ethiopian banks in different aspects. These concentration ratios (CR) = $\sum_{i=1}^K S_i$ where K is the three or five largest banks in Ethiopia excluding National Bank of Ethiopia (NBE) and S_i is each of the three or five bank's shares in the total assets or deposit mobilized or disbursed/outstanding loan amount of the banking industry. A high value of this ratio indicates a highly concentrated market, which lead to lack of competitive pressure. In addition to these concentration ratios the Herfindahl-Hirschman Index (HHI) was calculated using the following formula.

$$HHI = \sum_{i=1}^n S_i^2$$

where n is the number of banks in Ethiopia excluding National Bank of Ethiopia and S_i is the i^{th} bank's share from total assets or deposit amount or disbursed/outstanding loan of banking industry. Attempt is made to calculate CR and HHI for five years.

Table 3.3: Concentration of the Ethiopian Banking Industry (Total Disbursed Loans, excluding NBE)

	2014/15	2015/16	2016/17	2017/18	2018/19	Average
CR3	0.6060	0.6042	0.5048	0.4601	0.4476	0.5245
CR5	0.6794	0.6996	0.6340	0.5869	0.5757	0.6351
CR of state banks	0.5373	0.5534	0.4439	0.4179	0.3922	0.4689
HHI	0.2155	0.2444	0.1694	0.1424	0.1233	0.1790

Source: owns computation

Table 3.3 shows the concentration ratio of banks from 2014/15 to 2018/19. Even though the degree of concentration declines over time, the three largest of banks (CR3) disbursed 52.45 percent and five largest bank (CR5) disburse 63.51 percent of loan on average. The state banks disburse 46.89 percent of loan on average this may be due to state banks have the obligation to finance nations mega projects and subside public enterprises by providing loan. HHI indicates that high concentration of banks in the credit market, but relatively less concentration as compared to the year average (2008- 2014) 0.267 by Hussein Jarso (2016).

CHAPTER FOUR: METHDOLOGY

4.1 Data and Variables

In this study we will use time series data which covered a period from 1980/81-2018/19 dictated by availability of data. Data on banking sector development indicators was collected from National Bank of Ethiopia while data on FDI, openness, GDP per capita was collected from IMF world economic outlook catalog.

One of the most important issues in doing this research is how to obtain a satisfactory empirical measure of banking sector development. The existing literature for the measurement of banking sector development Private Sector Credit by Bank percentage of Real Gross Domestic Product (PSCRGDP) encompasses two different categories (Khalil et al 2017). The first category is basically based on outputs of the banking sector which captures the size, activity and efficiency of the banking sector and the second category is based on inputs on banking sector which measures baking system accessibility, the share of manpower employed in banking system Michael Graff (1999,2001) Michael Graff and Alexander Karmann(2006). The first output component of banking sector development includes Broad money supply, expressed as a percentage of GDP, is the sum of currency outside banks; demand and term deposits, including foreign currency deposits of resident sectors (other than the central bank); certificates of deposit and commercial paper. The second component is Domestic credit provided by the banking sector expressed as a percentage of GDP: It includes all credit to various sectors on a gross basis, with the exception of credit to the central government. The third component is Domestic credit to the private sector: This credit, expressed as a percentage of GDP, refers to financial resources provided to the private sector, such as through loans, purchases of non-equity securities, trade credits and other accounts receivable that establish a claim for payment.

Inputs component index of banking sector development includes the share of banking system for GDP which means the share of factor income generated in banking industry to the GDP, the number of banks and branches per capita which measure the degree to which a country's population has access to financial service and share of manpower employed in the banking system.

James Ang and Warwick J McKibben (2007) explains that there is no broad consensus among economists as to which of the proxies of financial development is the best measure and more so these proxies are highly correlated, therefore, it is really difficult to have a single measure of bank sector development that could highlight all the aspects of the banking system. In this study I used credit provided to private sector by bank as percent of GDP (DCPB) as index of banking sector development and ignore input index due to lack of data on those input indicators, GDP per capita (GDPP) as economic growth indicators, the summation of export and import divided by GDP as openness (OPN) and foreign direct investment, net inflows (BoP, current US\$) (FDI) as foreign direct investment proxy.

4.2 Indicators of financial system

Liquid liabilities to GDP: the traditional indicator of financial depth (Back et.al 2009), (*Robert G. King and Ross Levine, 1993*). It is the sum of currency, demand and interest-bearing liabilities of banks and other financial intermediaries divided by GDP. This is the broadest indicator of financial intermediation, because it includes all banks, bank-like and non-bank financial institutions.

Currency outside Banking System to Base Money: This indicator shows that the share of base money held outside the bank and non- bank financial institution and which measure degree of monetization of economy and indicates the size of the informal sector (*Schneider and Ernste, 2000* cited by *Back et.al 2009*).

Financial Systems Deposits to GDP: This shows the fund available for credit allocation by bank and non-bank financial institutions though checking, saving and time deposits, but it doesn't indicate the amount of credit provided rather simply the availability.

Private Credit by Deposit Money Banks and Other Financial Institutions to GDP is defined as the total credit provided to the private sector by deposit money banks and other financial institutions divided by GDP. It is a standard indicator of the finance and growth literature (Back et.al 2009); countries with higher levels of Private Credit to GDP have been shown to grow faster and experience faster rates of poverty reduction (Beck, Levine and Loayza, 2000; Beck, Demirguc-Kunt and Levine, 2007). Sub Saharan African has shallowest financial depth as compared to the rest of region in the continent (Eugene Bempong Nyantakyi and Mouhamadou Sy, 2015). A

somewhat narrower indicator – limited to deposit money banks – is Private Credit by Deposit Money Banks to GDP. I choose the narrow indicators of Bank sector Development; it is Private Sector Credit as percent of Real Gross Domestic Product (PSCR GDP)

Growth rate indicators: Real per capita GDP as most standard measure of economic growth (Beck, Levine and Loayza, 2000) noted by (pcGDP)

Openness: - openness is measured by the sum of export and import divided by GDP(OPN)

Foreign Direct Investment: - foreign direct investment net inflow percentage of GDP (FDIGDP)

4.3 Model Specification

From the theoretical points of scholars and empirical investigation of researchers I understand that economic growth of a country is determined by different macro variables such as foreign direct investment, country openness, financial sector development (banking sector development in particular), inflation prevailed, human capital development, country external debt stock, etc.... however based on data availability and my special focus on the contribution of banking sector to economic growth I choose the variables listed in the model below.

Mathematical model

$$Y = \gamma_0 + \sum \beta_i X_i$$

Where Y is per capita GDP (constant 2010 US\$), γ_0 is the constant term and X_i 's are repressors consisting of of openness (OPN), Foreign Direct Investment net inflow percentage of GDP (FDIGDP, Bank Sector Development (proxied by Private Sector Credit by Bank as percent of Real GDP, PSCR GDP)

Table 4.1 Selected variables

Variables	definition	Proxy for	Expected sign
pcGDP	Gross Domestic product Per Capita	Economic growth	
OPN	Openness (export +import)/GDP	Country openness	+
PSCR GDP	Domestic credit to private sector by bank (% RGDP)	Bank sector development	+
FDIGDP	Foreign direct investment net inflows (% RGDP)	FDI	+

4.4 Econometric model

In time series data selecting the appropriate method of analysis is basically depend on the stationarity test of the variable. If all variables are stational in level OLS/ VAR model can be unbiased estimator (Min B. Shrestha and Guna R. Bhatta,2018). OLS method of estimation

$$y_i = a + b_j x_{ji} + e_i$$

Where the residuals (e_i) are calculated

$e_i = y_i - a - b_j x_i$ OLS estimation focuses on minimization of residuals. Where y_i is the dependent variable and x_i are regressors, a & b_j are intercept and coefficients of different regressors and e_i is residuals or error terms. When all variables are not stationary at level and they become stationary OLS estimation is easy but inefficient.

Vector Autoregression (VAR) with “p” lag length

$$Y_t = \gamma_0 + \sum_{i=1}^p \delta_i Y_{t-i} + \sum_{j=0}^p \beta'_{ji} X_{jt-i} + u_t$$

Where; γ_0 is constant term Y_t is a vector of variables, X_j is a vector of regressors & u_t is a vector of error terms-unobservable zero mean white noise vector process (serially uncorrelated and independent) we also called impulses or innovations or shocks. All variables in VAR gives the advantage that all variables are endogenous there is no exogenous variables All the variables in VAR model have equal lag length of (p).

Since the VAR model are inefficient when there is no cointegrated non stationary variables, checking the cointegration is necessary. If the series is cointegrated we can run the VAR and VECM Model

The four variable VECM if there is one cointegrated relationship.

$$\Delta \ln pcGDP_t = \alpha_1 + \sum_{i=1}^{p-1} \delta_{1i} \Delta \ln pcGDP_{t-i} + \sum_{j=1}^{p-1} \beta_{1j} \Delta \ln PSCRGDP_{t-j} +$$

$$\sum_{m=1}^{p-1} \phi_{1m} \Delta \ln FDIGDP_{t-m} + \sum_{k=0}^{p-1} \psi_{1k} \Delta \ln OPN_{t-k} + \lambda_1 ECT_{t-1} + u_{1t}.$$

$$\Delta \ln FSCRGDP_t = \alpha_2 + \sum_{i=1}^{p-1} \delta_{2i} \Delta \ln pcGDP_{t-i} + \sum_{j=1}^{p-1} \beta_{2j} \Delta \ln PSCRGDP_{t-j} +$$

$$\sum_{m=1}^{p-1} \phi_{2m} \Delta \ln FDIGDP_{t-m} + \sum_{k=1}^{p-1} \psi_{2k} \Delta \ln OPN_{t-k} + \lambda_2 ECT_{t-1} + u_{2t}.$$

$$\Delta \ln FDI GDP_t = \alpha_3 + \sum_{i=1}^{p-1} \delta_{3i} \Delta \ln pcGDP_{t-i} + \sum_{j=1}^{p-1} \beta_{3j} \Delta \ln PSCR GDP_{t-j} +$$

$$\sum_{m=1}^{p-1} \phi_{3m} \Delta \ln FDI GDP_{t-m} + \sum_{k=1}^{p-1} \psi_{3k} \Delta \ln OPN_{t-k} + \lambda_3 ECT_{t-1} + u_{3t}.$$

$$\Delta \ln OPN_t = \alpha_4 + \sum_{i=1}^{p-1} \delta_{4i} \Delta \ln pcGDP_{t-i} + \sum_{j=1}^{p-1} \beta_{4j} \Delta \ln PSCR GDP_{t-j} + \sum_{m=1}^{p-1} \phi_{4m} \Delta \ln FDI GDP_{t-m} +$$

$$\sum_{k=1}^{p-1} \psi_{4k} \Delta \ln OPN_{t-k} + \lambda_4 ECT_{t-1} + u_{4t}.$$

p-1 = the lag length reduced by 1

δ_{si} , β_{sj} , ϕ_{sm} and ψ_{sk} are short-run dynamic coefficients of the model's adjustment to long-run equilibrium

λ_i is the speed of adjustment parameter with negative sign

ECT_{t-1} = the error correction term which is the lagged value of the residuals obtained from the cointegrating regression of the dependent variables on the regressors and it contains long run information derived from the long run cointegrating relationships. And named U_{it} as the same as in VAR model.

4.5 Econometric Procedures

4.5.1 Stationary Test

Most of the modeling techniques applied in time series analysis are primarily concerned with stationarity of the Data. A non-stationary time series is a stochastic process with unit roots or structural breaks. Unit root is the major source of non-stationary of series, so that the statistical procedure employed to determine the stationarity of a series is called 'unit root test'. According to Nkoro and Aham Kelvin Uko, (2016) non-stationary stochastic process may be Difference Stationary Process (DSP) or Trend Stationary Process (TSP). A time series is said to be trend stationary process if the trend is completely predictable and not variable, whereas if it is not predictable, we call it difference or integrated stochastic trend or difference stationary process. In the case of deterministic trend, the divergence from the initial value (represents non-stationary mean) is purely random and they die out quickly and they do not contribute or affect the long run development of the time series. If the series is DSP differencing the series is the solution, while if the series is TSP removing the trend component makes the series stationary.

Most of the non-stationary stochastic time series process is DSP and the solution of differencing may lose the long-run properties or information, cointegration may help to retain this long-run properties. There are different methods to test for stationarity of the series such as Dicky Fuller or Augmented Dicky Fuller, Phillips Perron (PP) and Kwiatkowski, Phillips, Schmidt and Shin (KPSS) test. Most popular method is ADF test which is formulated as:

$$\Delta y_t = \mu + \delta y_{t-1} + \sum_{i=1}^k \beta_i \Delta y_{t-i} + e_t$$

Where $\delta = \alpha - 1$, α = the coefficient of y_{t-1} in the autoregressive process of $k+1$ in levels, Δy_t = first difference of y_t , i.e. $y_t - y_{t-1}$.

The null hypothesis of ADF is $\delta = 0$ against the alternative hypothesis of $\delta < 0$. If we do not reject null, the series is non-stationary whereas rejection means the series is stationary. The PP and KPSS is the same implications, but the null hypothesis in KPSS test is the series is stationary while the alternative hypothesis is non-stationary.

4.5.2 Cointegration Test

“Cointegration is an econometric concept that mimics the existence of a long-run equilibrium relationships among underlying economic time series that converges over time” (Emeka Nkoro and Aham Kelvin Uko, 2016). It establishes a stronger statistical and economic basis for empirical error correction model, which can bring together short and long-run information in modeling variables and helps to retaining the loss of long-run properties or information of the variable due to differencing. That is, cointegration involves a certain stationary linear combination of variables which are individually non-stationary but integrated to an order I (d) can be paired such that the workings of equilibrium forces will ensure they do not drift too far apart. There are different procedures to test for cointegration such as Engle and Granger (1987), Pesaran and Shin (1995) and Pesaran et al (1996b) proposed Autoregressive Distributed Lag (ARDL) approach to cointegration or bound test for cointegration and Johansen and Juselius (1990) cointegration procedure.

Engle and Granger (1987) cointegration test is residual based test, it requires running a regression and testing for unit root in the residual. This can be done using the ADF test on the OLS residuals, applying appropriate critical values make decision depend on this and with the null hypothesis is no cointegration against alternative of cointegration. According to Alemayehu

et al., (2011), cited by (Roman Tesfaye, 2012) using this test has weakness, 1st lack of power because it does not explain all the information in a dynamic relation between variables; 2nd there is no unique cointegrating vector when we have two variables in the equations and lastly there is a possibility to have more than one cointegration relationship between the variables.

Autoregressive Distributed Lag (ARDL) approach to cointegration or bounds test for cointegration of Pesaran and Shin (1995) and Pesaran et al (1996b), unlike the Engle and Granger (1987) cointegration procedure, Autoregressive Distributed Lag (ARDL) approach to cointegration helps in identifying the cointegrating vector(s). If one cointegrating vector in the underlying equation is identified, the ARDL model of the cointegrating vector is reparametrized into ECM (Emeka Nkoro and Aham Kelvin Uko, 2016). When there are multiple cointegrating vectors ARDL Approach to cointegration cannot be applied, rather Johansen and Juselius (1990) approach becomes best alternative. if

$$x_t = Ax_{t-i} + \varepsilon_t \text{ then}$$

$$\Delta x_t = A_1 x_{t-i} - x_{t-i} + \varepsilon_t$$

$$= (A_1 - I) x_{t-i} + \varepsilon_t$$

$$= \Pi x_{t-i} + \varepsilon_t$$

x_t and ε_t are (n.1) vectors A_1 = an (n.n) matrix of parameters, I = an (n.n) identity matrix $A_1 I$
We test the rank of matrix(A-I). If the rank of (A-I), that is, the rank of $\Pi = 0$, then we say sequences are unit root processes. If rank of $\Pi = k$ then we say the series is stationary and if rank of $\Pi < k$, also known as reduced rank, then there exists cointegration. Hence, the intuition is if we have 4 variables in cointegration tests, the maximum rank of Π can be less than four (if $k = 4$, cointegration rank < 4 and the maximum cointegration relation is only three.)

4.5.3 Causality Test

If two variables Y and X are cointegrated, then there may exist any of the 2 relationships: unidirectional or bidirectional. If two variables are not cointegrated, then one does not affect the other and are independent. To determine the pattern of such relationship, Granger (1969) has developed causality testing method. If current and lagged values of X improve the prediction of

the future value of Y, then it is said that X ‘Granger causes’ Y. The simple model of Granger causality is as follows.

$$\Delta Y_t = \sum_{i=1}^n \alpha_i \Delta Y_{t-i} + \sum_{j=1}^n \beta_j \Delta X_{t-j} + U_{1t} \quad (a)$$

and

$$\Delta X_t = \sum_{i=1}^n \gamma_i \Delta X_{t-i} + \sum_{j=1}^n \delta_j \Delta Y_{t-j} + U_{2t} \quad (b)$$

Eq. (a) shows that the current value of ΔY is related to the past values of itself and the past values of ΔX . Similarly, Eq. (b) suggests that ΔX is related to the past values of itself and that of ΔY . The null hypothesis in Eq. (a) is $\beta_j=0$ which means, “ ΔX does not Granger cause ΔY ”. Similarly, the null hypothesis in Eq.(b) is $\delta_j=0$ and states “ ΔY does not Granger cause ΔX .” The decision criteria of rejection or non-rejection of the null hypothesis is based on the F-Statics.

4.5.4 Diagnostic Tests

To make the estimated model robust and adquate, we need to determine the fitness of the model through checking goodness of fit statistics and conducting diagnostics tests. The goodness of fit in the model is measured by R^2 or adjusted R^2 . From the two adjusted R^2 is more preferable because it increases when the new included variable improves the prediction power. The most common diagnostic tests in VECM model is autocorrelation test, normality test and model stability test.

CHAPTER FIVE: RESULTS AND DISCUSSION

In this chapter attempt is made to provide analysis of the short-run and long-run relationship between bank sector development in Ethiopia using annual data from 1981-2018. Before directly embark on interpretation of the estimation result, we first must check different pre econometric time series tests.

5.1 Stationary Test Result

Stationarity test can be performed using Dicky-Fuller or Augment Dicky Fuller, Perron (PP) and Kwiatkowski, Phillips, Schmidt and Shin (KPSS) test procedures. For this study we employ Dickey-Fuller method of unit root test.

Table 5.1 : ADF Unit Root Test in Level

Variable	Test statistic	At 1% critical value	At 5% critical value	At 10% critical value
pcGDP	2.869	-3.668	-2.966	-2.616
FSCR GDP	2.178	-3.668	-2.966	-2.616
OPN	0.793	-3.668	-2.966	-2.616
FDIR GDP	-2.043	-3.668	-2.966	-2.616

***Result from running syntax dfuller pcGDP FSCR GDP OPN FDIR GDP

Table 5.2: ADF Unit Root Test in Level with time trend

Variable	Test statistic	At 1% critical value	At 5% critical value	At 10% critical value
pcGDP	0.929	-4.270	-3.552	-3.211
FSCR GDP	0.172	-4.270	-3.552	-3.211
OPN	-1.309	-4.270	-3.552	-3.211
FDIR GDP	-2.989	-4.270	-3.552	-3.211

***Result from running syntax dfuller D.pcGDP D.FSCR GDP D.FDIR GDP, trend

Table 5.2 shows the series is not deterministic trend, rather it is stochastic trend.

Table 5.3: ADF Unit Root Test at first difference

Variable	Test statistic	At1% critical value	At5% critical value	At10% critical value
D.pcGDP	-3.432	-3.675	-2.969	-2.617
D.FSCR GDP	-4.205	-3.675	-2.969	-2.617
D.OPN	-5.250	-3.675	-2.969	-2.617
D.FDIR GDP	-7.268	-3.675	-2.969	-2.617

***Result from running syntax dfuller D.pcGDP D.FSCR GDP D.FDIR GDP

From table 5.1 one can observe that all variables are non-stationary in level, because the absolute value calculated trace statistic is lower than 5 percent critical value of the ADF test for unit root. So that we cannot reject the null hypothesis of unit root, however we cannot run regression on non-stationary variable unless they are cointegrated and try the next option of differencing. By considering the variables are difference stationary and make differencing can solve the problem of unit root. As we can see in table 5.3 all variables become stationary after the first difference. Since the absolute value of calculated statistic is higher than 5 percent critical value, we are enforced to reject the null hypothesis in favor alternative hypothesis. As I indicated before the null hypothesis in Dickey-Fuller test states that the series has unit root while the alternative is series is stationary.

In time series analysis running regression on differenced time variable may leads to lose of long run properties or information of variables. Cointegration helps to retain these long run properties lose by differencing, but before running cointegration test one should check the maximum lag length set in the model. This can be done by either of the following criterion such as, Final Prediction Error (FPE), Akaike Information Criterion (AIC), Hannan-Quinn Information Criterion (HQIC) and Schwarz Information Criterion (SIC).

Table 5.4 : VAR lag length selection criterion

lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
0	-109.91				0.00955	6.70061	6.76185	6.88018
1	18.1005	256.02	16	0.000	1.3E-05	0.11174	0.41793	1.0096*
2	28.7551	21.309	16	0.167	1.9E-05	0.42617	0.97732	2.04232
3	45.9255	34.341	16	0.005	0.00002	0.35733	1.15343	2.69176
					6.4e-	-		
4	85.0287	78.207*	16	0.000	06*	1.00169*	.039375*	2.05103

Result by syntax varsoc pcGDP PSCR GDP FDIGDP OPN

Table 5.3 indicates that the maximum lag length used in this model should be 4 as Final Prediction Error (FPE), Akaike Information Criterion (AIC), Hannan-Quinn Information

Criterion (HQIC) indicates, but the Schwarz Information Criterion (SIC) suggests the optimal lag length of one. While too few lags may lead to specification error and too many lags may result in loss of degree of freedom, insignificant coefficient or multicollinearity

5.2 Co integration Test Result

Since all the variables are stationary after first difference, we use Johansen test for cointegration. In Johansen test while the null hypothesis indicates the absence of cointegration or long run relationship between variables, the alternative hypothesis indicates that the variables have long run relationship between them and the decision criterion is based on trace statistic and maximum eigen value statistics in comparison with the 5% critical value. It is possible to run Johansen tests for cointegration both at level and log form.

Table 5.5: Johansen tests for cointegration with trend and constant at level

Johansen tests for co integration					
Trend: constant			Number of obs =		34
Sample: 1985 - 2018			Lags =		4
maximum rank	parms	LL	eigenvalue	trace statistic	5%critical value
0	52	35.816	.	98.426	47.21
1	59	62.073	0.787	45.910	29.68
2	64	77.830	0.604	14.39*	15.41
3	67	84.960	0.343	0.1374	3.76
4	68	85.029	0.004		
maximum rank	parms	LL	eigenvalue	max statistic	5% critical value
0	52	35.816	.	52.515	27.07
1	59	62.073	0.786	31.512	20.97
2	64	77.823	0.604	14.261	14.07
3	67	84.960	0.343	0.137	3.76
4	68	85.028	0.004		

By syntax: vecrank pcGDP PSCRGDP FDIGDP OPN, trend (constant) lags(4) max

Johansen tests for co integration					
Trend: constant			Number of obs =		34
Sample: 1985 - 2018			Lags =		4
maximum rank	parms	LL	eigenvalue	trace statistic	5% critical value
0	52	27.788	.	45.196*	47.210
1	59	41.910	0.564	16.952	29.680
2	64	48.226	0.310	4.320	15.410

3	67	50.369	0.119	0.033	3.760
4	68	50.386	0.001		
maximum rank	parms	LL	eigenvalue	max statistic	5%critical value
0	52	27.788	.	28.244	27.07
1	59	41.910	0.56426	12.632	20.97
2	64	48.226	0.31032	4.287	14.07
3	67	50.369	0.11845	0.033	3.76
4	68	50.386	0.00097		

By syntax: *vecrank lnpcGDP lnPSCRGDP lnFDIGDP lnOPN, trend(constant) lags(4) max*

While table 5.4 A & B indicate the presence of at most two cointegrating relationships among the variables, 5.5 C indicates the absence of no cointegrating relationships among the variables and table 5.4 D indicates the presence of one cointegrating relationship. If the variables are cointegrated it is possible to construct long run (VEC) models.

Table 5.6 : Vector Error Correction Model estimation result

	(1)	(2)	(3)	(4)
VARIABLES	D_lnpcGDP	D_lnPSCRGDP	D_lnFDIGDP	D_lnOPN
L._ce1	-0.214*** (0.054)	-0.038 (0.125)	1.345*** (0.480)	0.133 (0.087)
LD.lnpcGDP	0.388** (0.189)	0.025 (0.436)	-1.982 (1.672)	0.636** (0.305)
L2D.lnpcGDP	0.0406 (0.210)	-0.115 (0.484)	-0.280 (1.859)	0.034 (0.339)
L3D.lnpcGDP	0.364* (0.191)	-0.120 (0.440)	-1.234 (1.690)	-0.209 (0.308)
LD.lnPSCRGDP	0.176 (0.128)	0.262 (0.296)	-0.358 (1.138)	0.189 (0.207)
L2D.lnPSCRGDP	0.295** (0.118)	0.483* (0.272)	-3.218*** (1.045)	0.072 (0.190)
L3D.lnPSCRGDP	0.284** (0.129)	0.296 (0.299)	-1.274 (1.146)	-0.198 (0.209)
LD.lnFDIGDP	0.002 (0.024)	-0.064 (0.054)	-0.008 (0.208)	0.087** (0.038)
L2D.lnFDIGDP	0.012 (0.025)	-0.153*** (0.059)	-0.380* (0.225)	0.044 (0.041)
L3D.lnFDIGDP	0.015	0.009	0.190	-0.033

	(0.031)	(0.072)	(0.276)	(0.050)
LD.lnOPN	-0.244	-0.030	4.100***	-0.019
	(0.155)	(0.358)	(1.375)	(0.251)
L2D.lnOPN	-0.180	-0.647*	1.108	0.101
	(0.157)	(0.361)	(1.388)	(0.253)
L3D.lnOPN	0.104	-0.255	0.071	-0.156
	(0.102)	(0.235)	(0.902)	(0.164)
Constant	0.013	0.129**	0.005	0.008
	(0.023)	(0.054)	(0.207)	(0.038)
Observations	34	34	34	34

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

From table 5.6 bank sector development and economic growth did not have any relationship in short run even at 10% level of significance. This may be due to inefficient banking sector with little experience of idea financing or banks did not provide credit for entrepreneur or innovative activities did not have contribution to economic growth in short run or the short time span of a time series data may also indicate the insignificance of the banking sector development. Investment is necessary for the country to maintain their already existing level of per capital income, but this investment requires the correspondence increasing in saving (Arthur Lewis, 1956). According to Lewis the rate of productive saving depends on an increase in the share of national income of those economic groups which have the highest propensities to productive investment, however the private enterprise and the governments negative attitude towards capital investment hampers economic growth. Lewis hypothesized that the state has to be the crucial investor and savor, however the government should consider the inflation rate from deficit investment because the inflation that arise from this deficit financing may leads to investment in efficiencies. Unfortunately, this decision is political in character.

The current economic environment and institutional framework in Ethiopia in addition to the subjective individual motivation, test, preference, awareness and attitude towards finance hinders the increase in per capita income to have positive impact on bank sector development. The government of Ethiopia is the sole provider of electric power and telecom service, so that the inefficiencies on these sectors were the bottle necks in banking sector development even if the per capita income shows progress. This result is consistent with (Patrick, 1996) who states that financial intermediation or the need for financial service is highly determined by the growth

of national income, but these demand-following phenomena is not automatic specially in developing country where the restrictive banking legislation, religious barriers against loans and interest charges, hand to mouth life of majority citizen together with imperfections in the operation of the market mechanism. In short run the only statistically significant determinant of economic growth is foreign direct investment. This is may be due to foreign direct investment is the short time solution for filling budgets and trade deficit in Ethiopia.

when the Johansen normalization is imposed on the log of per capita GDP. The log of private sector credit as percent of gross domestic product have negative impact on economic growth, this indicates that banks are inefficient in providing loan to the private sector. The current banking industry is characterized by state dominancy. Due to that significant amount loan is provided to public projects instead of private sector. For instance, commercial bank of Ethiopia provides impaired loans to Ethiopian sugar factor, railway construction and other public enterprises. In addition, banks required 100 percent collateral from borrower discourage entrepreneurs and innovative ideas, this leads to the dominancy of well-known inefficient firms in the loan market. This inefficiency of private sector in conjunction with no monitoring from the lending bank and also from bank distort productivity, increase inflation and hams small-scale efficient firms. Most of the bank loan provided to private sector are short term average of 3-year repayment, this forced the borrower to use their capital as repayment and leads to liquidation.

Generally banking industry of Ethiopia has short history, isolated from the rest of the world, easily brittle for shocks (evidenced by liquidity problem in last two quarters), even if they look like good in deposit mobilization and well profitable. They are also inefficiency in channeling fund to profitable firm, their core banking system has short history not more than a decade, the log of openness indicator has positive impact on economic growth, this consistent with anti-protectionist trade policy, even if the country experience trade deficit still now. The log of foreign direct investment expressed as percentage of gross domestic product has no statistically significant impact on economic growth. The coefficients of bank sector development and openness are statistically significant even at 1% critical level, whereas the coefficient on foreign direct investment is insignificant at the same percent critical level. Hence the error correction term and long run equation is formulated as follows.

Error correction term

$$ECT_{t-1} = \ln pcGDP_{t-i} + 1.589 \ln PSCR GDP_{t-i} - 0.123 \ln FDI GDP_{t-m} - 2.065 \ln OPN_{t-k} - 3.77494$$

long run equation per capita GDP as dependent variable.

$$\Delta \ln pcGDP_t = 0.0134 - 0.2143 \Delta \ln pcGDP_{t-i} - 0.038 \Delta \ln PSCR GDP_{t-i} + 1.345 \Delta \ln FDI GDP_{t-m} +$$

(0.189) (0.436) (1.672)

$$0.133 \ln OPN_{t-k} - 0.214 ECT_{t-1}$$

(0.305)

The adjustment coefficient (-0.214) is statistically significant at the 1% critical level. Suggesting that the previous year's error (or the deviation from the long-run equilibrium) are corrected for within the current year at a convergence speed of 21.4%. In our case it takes 4.67 years which is almost equivalent to one GTP period. By this adjustment speed the country's vision of becoming middle income country by the year 2025 will be achieved, but the role of banks to economic growth has to improve.

5.3 Granger Causality Test

The granger causality test helps to identify the direction of causality. In this study case this test helps to identify whether demand-following or supply-lead phenomenon would exist. It helps to know the relationship between economic growth and bank sector development have unidirectional or bidirectional. Granger causality test can be conducted by Wald test and the result is shown as given in table below

Table 5.7: Granger causality test

Null hypothesis	Observation	F-statistics	Probability
$\ln PSCR GDP$ does not Granger Cause $\ln pcGDP$	38	9.7107	0.002
$\ln pcGDP$ does not Granger Cause $\ln FSCR GDP$	38	2.3631	0.124

Table 5.6 illustrates that bank sector development cause economic growth. The null hypothesis of $\ln\text{PSCR GDP}$ does not Granger cause $\ln\text{pcGDP}$ is rejected at 5% critical value, but $\ln\text{pcGDP}$ does not Granger cause $\ln\text{FSCR GDP}$ is accepted meaning that bank sector development and economic growth have unidirectional causality from bank sector development to economic growth, meaning that supply-leading phenomenon of Patrick's 1966 was prevailed. According to Patrick the creation of financial institutions and the supply of their financial assets, liabilities, and related financial services in advance of demand for them, especially the demand of entrepreneurs in the modern, growth-inducing sector. This is evidenced by the current Ethiopian banks attempt to open new branches by imagining the customers will join when they are accessible. Additionally, banks promotion methods which is attaching rewards while depositing money is the indication of attracting bank users by providing special offer to the depositor. Currently banks are focusing on deposit mobilization and ignore financing of innovative activity and entrepreneurs, but Dashen bank has little experience of idea financing. Hence banks should encourage innovations and transfer funds from well-known inefficient firms to creative small-scale enterprises, unless economic growth cannot achieve.

5.4 Diagnostic Test

After checking the long run and short run results diagnostic tests should be conducted to make fruit full conclusion and recommendations. Most diagnostic tests conducted in time series analysis, specifically in Vector Error Correction Model, were autocorrelation test, test of normality and model stability test. Autocorrelation test can be conducted by Lagrange-multiplier test.

Table 5.8: Lagrange-multiplier test

Lag	Chi2	df	Prob>chi2
1	18.6772	16	0.28576
2	18.8085	16	0.27872
3	23.1209	16	0.11054
4	14.7032	16	0.54648

H0: no autocorrelation at lag order

As can be seen from table 5.7 the model does not have autocorrelation problem up lag order 4 .

Table 5.9 Jarque-Bera test

Equation	chi2	df	Prob > chi2
D_lnpcGDP	0.443	2	0.80119
D_lnPSCRGDP	0.129	2	0.93743
D_lnFDIGDP	5.890	2	0.05260
D_lnOPN	3.115	2	0.21067
ALL	9.578	8	0.29593

Table 5.10 Eigenvalue stability condition

Eigenvalue		Modulus
1		1
1		1
1		1
.8465026	.415347i	.94291
.8465026	-.415347i	.94291
-.2001714	.7332018i	.760035
-.2001714	-.7332018i	.760035
.2945139	.611511i	.678737
.2945139	-.611511i	.678737
-.5703862	.3016619i	.645244
-.5703862	-.3016619i	.645244
.6186211		.618621
-.5844818		.584482
-.1462945	.4463751i	.469737
-.1462945	-.4463751i	.469737
.4262449	.426245	

The VECM specification imposes 3-unit moduli

As we can observe from table 5.8 and 5.9, the model passes normality and stability conditions, so conclusions and recommendations drawn from the model are not misleading.

CHAPTER SIX: CONCLUSION AND POLICY RECOMMENDATION

6.1 Conclusion

Banking system in Ethiopia has short period of history as compared to developed world. Through its history banking sector surmount different responsibilities, the state controls this sector and used as source of finance for public projects and throughout the political history of the country. The sector discharges different responsibilities in favor of the interest of political leaders. Until 1994 banking sector was totally controlled by the state, but following the proclamation number 84/1994 the sector opens up for domestic private companies and private banks were established, however, banking industry is closed to the rest of the world still today.

In this study attempted to analyze the short run and long run relationship between banking sector development with economic growth and found that in the short run this sector doesn't have any relationship with economic growth of the country, but in long run banking sector development have negative significant effect on growth. This is due to different reasons; Firstly, most of bank loans were guaranteed by collateral by the means of fixed asset. This makes the banks negligent in closely following the borrowers and monitor the dispersed loan. Because of that the borrowers may involve in mal-operation activities and this harms the banks itself and the economy in long run. In addition to this the borrowers may invest the borrowed fund for consumption of durable and non-durable funds and that leads demand pull inflation and finally high level of inflation ills the economy in long run. Secondly banks provide loans to well-known inefficient firms and this inefficiency of private firms will transmit inefficiency to the country's production which pull back the economy. Thirdly high level of lending interest rate charged by the bank in combination with the lengthy process to borrow pushes the private sector to find finance from curb market and that will lead to cost push inflation and this leads to a decline in production level. Fourthly highly concentrated, more state owned and isolated from the rest of the world banking system will not effective in channeling funds from depositor to borrower. As we can see from chapter three of this paper more than 52 percent of the loan disbursement is covered by three and five largest bank (Commercial Bank of Ethiopia, Development Bank of Ethiopia and Bank of Abyssinia) and 63 percent is by five largest banks (Commercial Bank of Ethiopia, Development

Bank of Ethiopia, Bank of Abyssinia, Dashen bank and Awash bank) the share of state-owned bank from the total loan disbursement is more than 45 percent. Fifthly our current banks have little experience of idea financing and doesn't encourage innovations and entrepreneurs (only Dashen bank do such activities) will not positively contribute to growth. Lastly the proxy indicator may not cover all the turn of bank sector development means that banks are important in employment creation, accessibility and factor income generation due to this the overall importance of banks may be important.

The Granger causality test result shows the direction of causality is unidirectional from bank sector development to economic growth. supply leading hypothesis of Patrick (1996) is prevailed.

6.2 Policy recommendation

As we can be seen from empirical result the current banking system has negative effect on the economy and the adjustment speed shows that at most five years required for this negative effect to adjust, which is equivalent to one GTP period. Having to this I recommend the policy makers or concerned body that 1st "Asian miracle" should be taken as best experience; meaning that banks should not be provide loan based on fixed asset collateral rather based on idea, innovation and entrepreneur. Secondly the government should create favorable environment to competition between banks and should decline the state ownership in banking sector. Thirdly the government should facilitate the process of establishment of new banks currently. Lastly the government should improve infrastructure development like telecom, Electric power since those enterprise limits the efficient transformation process of banking sector.

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