

**The Impact of Financial Sector Development on Economic Growth:
The Case of Ethiopia
Dagim Tadesse
Addis Ababa University**

Abstract

Finance-growth nexus is one of the main debatable issues in the major economies of the world. Some argue that the impact goes from finance to growth while others argue that the impact is reverse, i.e. economic growth lead financial sector development. There are also others who suggest the relation is bi-directional. So, this study focused on examining the impact of financial sector development on economic growth of Ethiopia by using annual data for the period 1980-2013. The study used time series econometrics model which was estimated by using Ordinary Least Square (OLS). In this study financial sector development was proxied by credit extended to private sector to GDP ratio. The finding of this study suggests that financial sector development has positive impact on economic growth of Ethiopia.

Hence, to increase the positive contribution of the sector on the economic growth of the country priority should be given in creating favorable institutional environments, internal capacity building and ensuring accessibility to the rural population.

Keywords: Financial sector, development, economic growth and impact

1. Introduction

1.1. Background of the Study

Financial sector development refers to the process of enhancing and broadening financial systems. By increasing depth, liquidity, efficiency, and volume of financial institutions and markets, diversify domestic source of finance, and extending access to banking and other financial services (Ezra Dabla-Norries, 2012). It can also refers to the development of different financial institutions including Commercial banks, development banks, saving and loan associations, credit union, insurance companies with well-developed financial markets including loans, bonds, equity, asset backed primary markets and secondary derivate markets (Chami, etal, 2007 as quoted by TsegabirhanW.Giorgies 2009).

A well developed financial sector has an ability to increase economic growth through availing external finance to industries that depend on external financing, create more new firms per year in countries through availing enough financial sources for new projects, stimulate growth more through the allocation and re-allocation of finance resources or financial capital to their best productive use and it improve income inequality through direct and indirect channels (Mishkin, 2007). But within the finance growth nexuses literatures, some have argued in support of the above role of well developed financial sector contribution to economic growth on the other side an argument that financial deepening in consequence, and not causes of economic growth have raised. This makes the issue to be significant debatable issue among different economist (Aradic and Damer, 2006 as quoted by Chandan Kurlarathe).

The modern financial sector in Ethiopia has a long history starting from Bank of Abssinia, since in 1905 under the regime of Menelik. But this sector has not shown growth as expected because of different factors including government policies. However, after EPRDF held the government power and applied privatization policy there are some improvements even if it is also below expectation. There are some signals to this change for example, according to the World Bank report domestic credit to the private sector average share of GDP increase from 6.86% in the period between 1975/76-1991/92 to 13.16% in the period 1992/93-2008/09. Also the broad money supply (M2) 2,196,490,000 in 1980 increased to 84,987,960,000 in 2008. Now a day's according to National bank of Ethiopia (NBE, 2008). The financial system refers to the set of rules, regulation and arrangement of aggregate financial institutions, and agents that interact with each other and the rest of the world to accelerate economic growth and development of nation. Based on the above definition the sector in Ethiopia has 19 banks with the total of 2357 branches. The insurance and micro finance institutions are reached 15 and 31 respectively (NBE, 2014).

1.2 Research Issue

Financial intermediaries and financial markets contribute directly to increased economic growth and aggregate economic welfare through their effect on capital accumulation (the rate of investment) and on technological innovation. First, greater financial development leads to greater mobilization of savings and its allocation to the highest return investment projects and promoting sound corporate governance, financial development increases the rate of technological innovation and productivity growth, further enhance economic growth and social welfare (economic outlook 2011, as quoted by Geda 2011)

Financial market and intermediation also benefit consumers and firms in many other ways that are not directly related to economic growth, access to financial markets not only beneficial to both consumers and producers but also reduces poverty as the poor have access to banking services and credit. The importance of micro-finance can be seen in this context. Access to credit allows consumers to smooth consumption over time by borrowing and /or lending: in addition consumers to the diversification of saving and of portfolio chooses, micro-finance can also increases the return on savings and ensure higher income and consumption opportunities, insurance service can help mitigate a variety of risks that individuals and firms face, thus allowing, better sharing of individual or even macroeconomic risks (Geda, 2011).

Recently, debates on the causality between economic growth and financial sector development were becoming a hot issue among two major groups namely supply leading arguer and demand following arguer. The supply leading hypothesis posits a unidirectional causation that runs from financial sector development to economic growth implies that new financial markets and institutions will increase the supply of financial services on the. Other side, demand following hypothesis posits a unidirectional causation from economic growth to financial development which implies financial system passive response to economic growth meaning that the increasing demand for financial services might lead to the aggressive expansion of financial system as the real sector of the economy growth (Jhon E. Udo Ndebbio, 2004).

Different researches have been going on by using cross country and a country level data to justify the impact of financial sector development on economic growth. For example, finding of Peter and Wachtel (2008) by using cross sectional and panel data on financial and macroeconomic indicators for 84 countries, they used three proxy to financial sector development namely ratio to GDP of liquid liabilities (M2), liquid liabilities less narrow money (M3 less M1) and credit allocated to the private sector, applied King and Levine's Serson Barro growth regression shows that financial sector development has a strong impact on economic growth of. Similarly, Esen Kilic (2008) concludes economic growth is affected by financial sector development in 49 countries, which are Organization for Economic Cooperation and Development (OECD) members and emerging markets. He used money market measure and credit market measure as a proxy to financial sector development and employed Granger causality test, unit root tests, co-integration analysis and panel data for the cross country data.

Scholars in Africa, also, review the link between finance and economic growth in different times. For example Chandang Kurarathe (2001) conclude financial sector development, total private credit extension to GDP and value added ratio were used as a proxy for it, has positive direct effect on per capita GDP or improved financial intermediation and increased liquidity promotes economic growth in South Africa. In the same manner Torroam J.tabor and Chiang(2013) by using stoke of money supply, domestic credits, foreign real credit, inflation and exchange rate as a proxy to financial deepening and applied co-integration and error correction model for the period 1990- 2011 in Nigeria. They conclude the financial sector development has essential role in Nigerian economy.

In Ethiopia, like the rest of the world, the issue about financial sector development and economic growth has been investigated in different times by different researchers. The findings of these researches show different results. Some conclude financial sector development has significant negative impact on economic growth. Fozia's finding (2014) by using commercial- central bank asset ratio as a proxy for financial sector development and Ordinary Last Square (OLS) estimation is a good example.

On the other hand, the study carried out by Lameke (2014) by using the commercial bank assets to all banks asset ratio as a proxy for financial development and Granger causality test shows that there is causally unrelated relation between financial sector development and economic growth in Ethiopia. In 2011, Anemut's conclusion also shows financial sector development is not a major cause of economic growth in Ethiopia. He used OLS estimation technique for the time series data and credit extended to the private sector as a proxy to financial sector development. Contrary to the above findings, Roman (2012) employed co-integrated vector auto regressive (CVAR) and Granger causality test as techniques of analysis and credit extended to the private sector as a financial sector development proxy. She, then, concluded the existence of bi-directional causality between economic growth and financial sector development.

This paper tries to justify the arguments between different research results through the extension of time series data set from former researches and using different proxy to the sector unlikely to recent papers. Accordingly, the study is guided by the following basic research questions:-

- What are the features of financial sector development in Ethiopia?
- How does financial sector development affect economic growth of Ethiopia?

1.3 Hypothesis of the Study

With the help of sufficient and appropriate empirical data on the impact of financial sector on economic growth in the case of Ethiopia, this study will test the following hypothesis:

Financial sector development has positive impact on economic growth

1.4. Objective of the Study

1.4.1 General Objective

The general objective of the study is to examine the impact of financial sector development on economic growth of Ethiopia.

1.4.2 Specific Objectives

The specific objectives of the study are:-

- Investigating the trend of financial sector development in Ethiopia
- Investigating the trend of economic growth in Ethiopia
- Investigating the trend of other growth determinant variables in Ethiopia

2. Methodology

In the finance-growth nexus literature there are two broadly classes of studies regarding the way empirical models are set-up. The first group of studies tries to build up on different models. The most widely used growth model in this regard is the unrestricted neo-classical model in which most economists involved in related growth studies agree in addition to labor and capital the related factors of production, in this case financial sector development, be treated as factors of production in order to make the model reliable with the real life situation that today's productive plants tend to display increasing return to scale (Jhon E. UdoNdebbio, 2004). While the main strength of such a model is its conformity with theoretical foundations, but its inability to include a broad set of other basic variables such as inflation, government expenditure, and openness make it more likely that the contribution of finance to economic growth will be biased (Yabibal, 2007). The second approach to the study is to simply incorporate some measures of financial development with a broad set of conditioning variables in the growth equation. As cited by Fozia(2014), yabibal (2007) indicated that, even though the second approach serves as the purpose of eliminating the shortcoming of the first approach, it is criticized as lacking a frame work with standard theoretical underpinning. The second approach is more preferable so as to incorporate a range of other socio economic variables that may be different according to the country's institution.

Accordingly, in order to investigate the impact of financial sector development on economic growth this research uses the second approach. Hence, the paper growth equation has the following form $Y=f(\text{financial sector development, conditioning variables})$ $RGDP = \beta_0 + \beta_1 LRgdp + \beta_2 Pc + \beta_3 Lbf + \beta_4 Open + \beta_5 Inf + e_{it}$ Where RGDP refers to the country's economic growth

LRGDP is lagged real GDP as proxy for convergence effect

Pc refers the ratio of credit to the private sector per GDP ratio as proxy financial sector development deepening

Open refers trade openness which is measured by Export + Import per GDP
Inf refers inflation in the country
e refers the stochastic disturbance term

The model can be considered as a linear multivariate in which growth is dependent variable where as the remaining right hand side variables are explanatory. The model was estimated using OLS technique for its simplicity and normality distribution. (Gujarati, 1995)

2.1 Data Sources

This paper employed secondary data from different sources. Data on real GDP, credit extended to the private sector and inflation was collected from National Bank of Ethiopia (NBE). Whereas trade openness and labour force data were collected from Ministry of Finance and Economic Development (MoFED).

The data set was collected for about 34 years (1980-2013) in the data set inflation was measured by percentage, where as real GDP by constant market price. The data for financial sector development was credit as a percentage of real GDP.

2.2 Significance of the Study

This paper focused on one of highly debatable issues in the field of economics. Many studies have been done in this topic; there is widespread difference among scholars on account of differences in proxies they used and methodologies. In fact, the objectives of this study are stated above, the finding of this study was expected to be significant for the following important reasons. First, it identifies the impact of financial sector development on economic growth and it is useful for those who are interested to know the impact of financial sector development in economic growth. Moreover, it is believed that this can be used as an addition to the available literatures for further information.

2.3 Scope and Limitations of the Study

Due to time and financial constraints the study is limited in scope. Even if financial sector development has many influences on economic growth, the study focused only the economic effect or its contribution to Gross Domestic Product. The study also has limitations in its data sources; such as:

- It does not incorporate primary data
- Time series data that are up to data are hard to come by
- It is difficult to get full time data from one source

3. Model Specifications and Methodology

3.1 Model Specification

Model specification refers to econometric denomination of the relationship between variable and independent variable. There are two broad classes of studies regarding the way empirical model are set-up in the finance growth nexuses literature. The first model set by including financial development proxy in the unrestricted neo-classical model in addition to labor and capital. The second method of model creation is incorporating some measure of financial development with a broad set of conditioning variable in the growth equation. In order to investigate the impact of financial development on economic growth this research uses the second approach (ibid). Hence real gross domestic product (RGDP) is specified as a function of lagged real gross domestic product (LRGDP), labor force (LF), credit extended to the private sector to the ratio of real GDP (CR), trade openness (OP) and inflation (INF). So the model for this study is specified as follows;

$$RGDP = f(LRGDP, LF, CR, OP, INF)$$

By introducing the intercept term and error term in to the above equation we can have the following equation

$$RGDP = \beta_0 + \beta_1 lrgdp + \beta_2 lf + \beta_3 cr + \beta_4 m_2 + \beta_5 op + \beta_6 inf + v$$

4. Descriptive and Econometric Analysis

4.1 Descriptive Analysis

4.1.1 Summary Statistics and Distributional Issues

The summary statistics which includes the central tendency and dispersion measures whose value explains the nature of distribution. The measures used include mean, standard deviation, skewness and kurtosis. From the data, mean values for each variable is computed and included in the table below.

Table 1: Summary Statistic

Variables	Observation	Mean	Standard deviation	Minimum	Maximum	Coefficient of variation
LRGDP	34	11.04746	1.309303	9.433789	13.86181	0.1185162019
LNLGDP	34	10.98064	1.215959	9.433789	13.67011	0.1107366237
PCGDP	34	.3778766	0.340526	0.1032555	1.272573	0.901156621
Open	34	.1661663	0.2829422	0.01686	1.36842	1.7027652418
LLBF	34	3.10902	0.3357829	2.52008	3.64211	0.8105705335
INF	34	8.723529	10.661349	-10.6	36.4	1.2221371649

Source: own computation using stata software

As observed from the table above, the variables trade openness and inflation have higher coefficient of variation with values of 1.7027652418 and 1.2221371649 respectively. These higher values of coefficient of variation show these variables are relatively more dispersed with higher variation and less consistent and uniform. On the other side variables like real GDP, lagged GDP, credit extended to the private sector to GDP and labor force have lowest value of coefficient of variation. This result shows such variables are more consistent and uniform. So this implies that the country has more or less

consistent or stable GDP, financial sector development, trade openness and labor force.

Table 2: Skewness/Kurtosis for Formality Distribution

Variables	Observation	Pr (skewness)	Pr (kurtosis)	Joint	
				Adj ch2(2)	Pro > chi2
Lrgdp	34	0.07144	0.5988	3.80	0.1496
Llrgdp	34	0.0866	0.7062	3.35	0.1877
Pcgdp	34	0.0005	0.0930	11.90	0.0026
Open	34	0.0000	0.6829	37.08	0.0000
Llbf	34	0.8847	0.0015	4.75	0.0931
Inf	34	0.0710	0.2199	4.76	0.0926

Source: own computation using stata software

Skewness, which is a measure of symmetry, indicates that a symmetrical data is skewness closer to zero. A negatively skewed data means it is skewed to the left while a positively skewed data means it is skewed to the right, from the table we can see that all variables are almost positively skewed but trade openness is almost symmetry at the origin.

The other measure, which is kurtosis, indicates whether distribution is peaked or flat relative to a normal distribution. The value of kurtosis for all variables show that they have low department from normality since their kurtosis is less than 6. The normality test as indicated by X^2 (Chi ²) confirms that all variables are normally distributed.

4.1.2 Trends of Variables in Model

Trend refers to the direction of movement of variables within a given time interval. Variables may move upward, downward or may remain the same as time passes. In this section the trend of economic growth and variables which have significant impact on economic growth are briefly discussed.

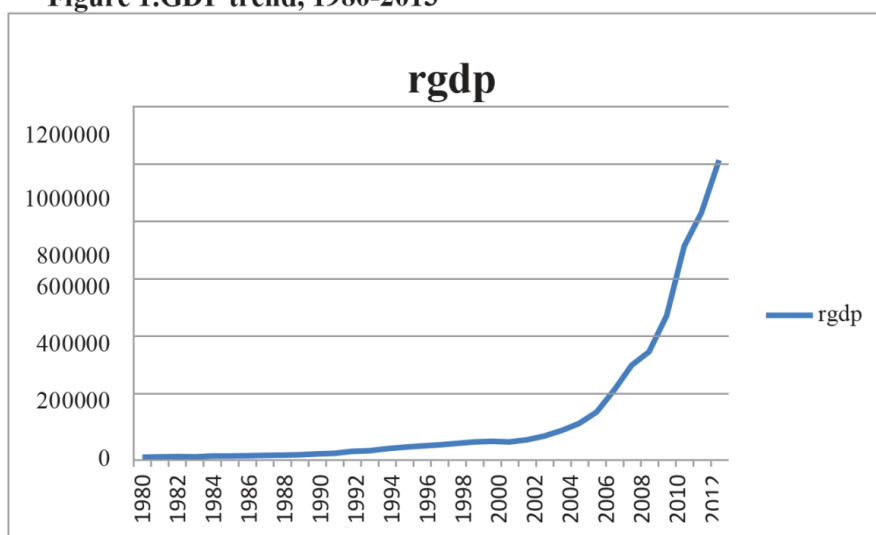
4.1.2.1 Trends of Economic Growth

GDP is the total market value of all final goods and services produced annually within a country. It measures production within national borders regardless of whether the factors of production are locally or foreign owned. It is the best indicator of country's economic growth.

Ethiopia is one of the poorest nations in the world in which country's GDP is highly depending on the agricultural sector which in turn depends on nature (i.e. rainfall).

The economy experienced a long period of stagnation, period of recovery and decade of fast growth. Specially, over the last one decade the country's economy is rapidly growing. As presented below it had registered highest growth rate in last decade.

Figure 1. GDP trend, 1980-2013



Source: own computation based on NBE data

As the diagram depicts, compared to early years Ethiopia has been experiencing strong economic growth in recent years. With real GDP growth at or near double digit level since 2003/2004, the country has consistently outperformed most other countries in Africa outperformed most other countries in Africa and expanded much faster than the continent-wide average (African Development Bank [AFDB], 2013)

The gross domestic product (GDP) in Ethiopia expanded 9.70 percent in 2012/2013 fiscal year GDP annual growth rate in Ethiopia

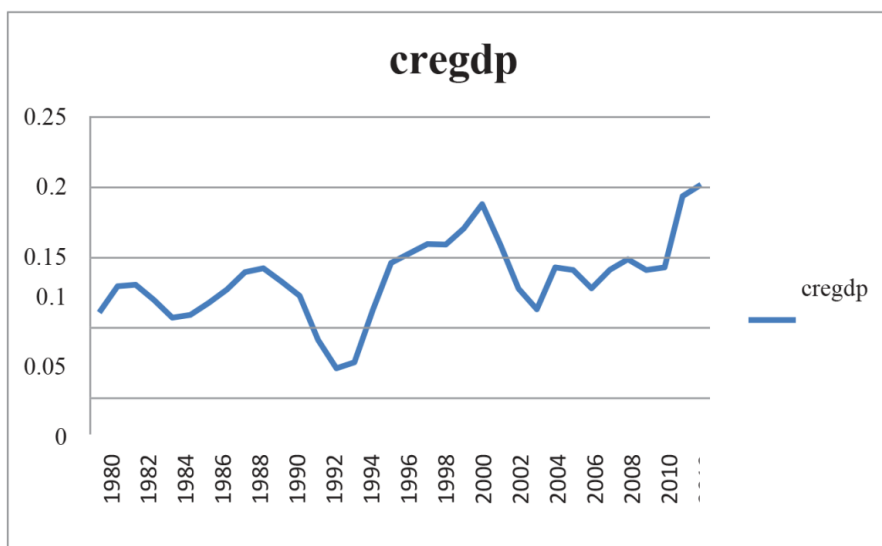
averaged 5.20 percent from 1982 until 2013, reaching an all time high in of 13.86 percent in 1987 and a record low of -11.14 percent in 1985 (NBE report,2013)

4.1.2.2 Trends of Financial Sector Development

Ethiopia's financial system is small and largely dominated by the state .currently public bank's account for 67% of total deposit and 55% loans and advance. Government dominates lending, control interest rates, and owns the largest bank, commercial bank of Ethiopia (CBE) whose assets represent about 70% of the sector total as of April 2013.

Financial sector development in Ethiopia is usually measured by private credit to GDP, commercial-total bank asset ratios and ratio of broad money to GDP. Graph presented below shows the trend of credit extended to the private sector to gross domestic product of the country for the period between 1980 and 2013.

Figure 2. trend of private credit to GDP



Source: own computation based on NBE data

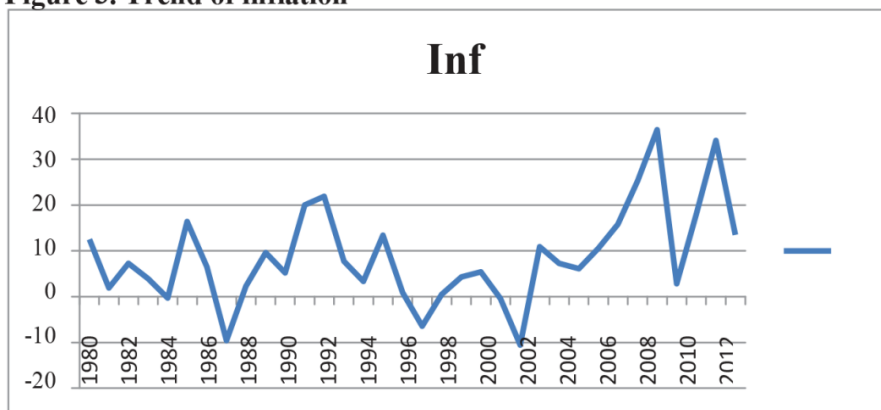
As we can observe from the diagram, the financial sector development of Ethiopia as measured by credit extended to the private sector to GDP has been shown slight ups and downs over the period of 1980-1991. However after 1988 credit to the private sector

showed a severe decrease reaching a minimum of 0.07. This implies that out of the total credit in the financial sector, 5 percent was given to the private sector. The period that followed showed increase in the period from 1993 to 2000 and this is mainly due to the involvement of the private sector in the banking industry. The period that followed showed a fair decrease but not as much as the first year of the data. In general, the Ethiopian financial sector shows a slightly optimistic sign of growth.

4.1.2.3 Trend of Inflation in Ethiopia

From the below graph we can see that, higher inflation expectation by money economics due to devaluation and cancellation in transitional government after the fall of the Derg regime, The inflation had registered a lower rate (1992—2000), except, the higher inflation 21% observed in 1992. The average inflation rate between 1992—2000 was 6%, this resulted from a prudent fiscal and monetary policy emphasized by the government during the period the government had set target on the levels and growth rates of money supply, domestic credit and bank financing of the budget deficit. This limited the aggregate demand in the economy and hence lowered the inflation rate.

Figure 3. Trend of inflation



Source own computation

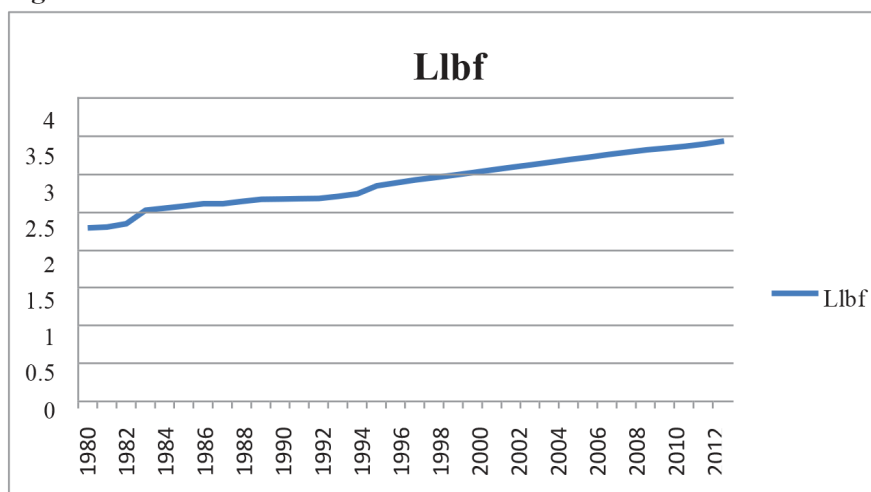
As can be seen from the above graph inflation rate has turned out to be higher and continued in soaring after 2003. Particularly recently starting from 2007 it is continued on registering double digit rate. The

government has been taking various measures. However, it does not seem that the government is succeeding in reducing the inflation rate.

4.1.2.4 Trends of Labor Force

Due to the fast increase in the population over the last decades the labor force of the economy grows considerably. It increased from 26.104 million in 1984 to 63.578 in 2013. For a long period of time due to higher unemployment and underemployment the labor force is seen as a liability than an asset to the economy but nowadays it has a positive impact on the economy which is a result of an increase in government expenditure on the skill of its population through higher education and Technical Vocational and Education Training institutions and a recent decrease in population growth rate. We can observe that it is increasing over time from the trend graph below;

Figure 4. Trend of labor force



Source own computation

4.2 Empirical/Econometric Analysis

This section deals with estimating and interpreting the main behavioral and policy variables in the overall inflation determinants and particularly the impact of financial sector proxy variable on economic growth. Time series data refers to the data set collected on one or more variables over a given period, in this case from 1980 to 2013. In this section the results of test for stationary, co

integration; correction model, multicollinearity, heteroskedasticity, and auto correlation are discussed.

4.2.1 Stationary Test: Unit Root Test

As we can see from the table below, some variables are stationary at level i.e., I(0) which are inflation (inf), trade openness(open) while Gross Domestic Product (lnrgdp), lagged Gross Domestic Product (llrgdp), labor force (llbf), credit extended private sector to GDP (pcgdp) i.e., I(1).

Table 3: Augmented Dicky Fuller (ADF) Unit Root Test with Constant

Variables	Test statistic at level	Test statistic at 1 st difference	Critical value		
			1%	5%	10%
Lrgdp		-3.238	-3.702	-2.980	-2.622
Llrgdp		-20.584	-3.702	-2.980	-2.622
Pcgdp		-4.394	-3.702	-2.990	-2.622
Open	-5.699		-3.696	-2.978	-2.620
Llbf		-8.305	-3.702	-2.990	-2.622
Inf	-3.827		-3.696	-2.978	-2.620

Source: own computation

From table 3 we can see that variables labor force and inflation are stationary at level while variables lrgdp, llrgdp, pcgdp and open are stationary at first difference. The computed test statistics of variables in absolute value is greater than the Mackinnon critical value at 1%, 5% and 10% in absolute terms. Therefore the ADF test failed to reject the null hypothesis of the existence of unit root, so variables in the model are stationary.

4.2.2 Estimation and Interpretation of Long Run Model

4.2.2.1 Cointegration test: Engle-Granger Test (Two step test)

After testing stationarity of the variables and verifying almost all are I(1), which is a vital condition for co-integration, the next step will be to test for co-integration. It helps to check the existence of long run

relationship between economic growth and independent variables. Follow Granger (1987) two step procedure by estimating the long run economic growth model, the residual is saved and tested for stationary. First, regress the variables that show the significance of the variables.

Table 4: Test for Co-integration

Variable	Test statistics	Critical values		
		1%	5%	10%
Residual	-23.569	-3.696	-2.978	-2.620

Source: own computation

The above table shows that the error term is stationary at 1% Mackinnon critical value; since the computed test statistic is greater than the critical value we reject the null hypothesis of the existence of unit root in the residual. Hence, there is a meaningful long run relationship between the economic growth variables, i.e. the economic growth function is co-integrated.

Table 5: The Long Run Model

Variables	Coefficients	Standard err	t-value
Lrgdp	0.1424309	0.0605241	2.35
Pcgdp	1.407744	0.1707142	8.25
Open	-0.0144013	0.0881027	-0.16
Llbf	2.099494	0.14863356	14.13
Inf	0.0023904	0.0027215	0.80
Constant	2.407439	0.4642117	5.19
R² = 0.9911			

<p>Adj .R²=0.9895</p> <p>F(5, 28)=622.02(0.0000) Hettest = chi.2 17.2(0.0041)</p> <p>Reset= F(3, 25)=1.95(0.1475)</p> <p>DW d statistics (6, 34) = 1. 488005</p> <p>Durbin waston static(transformed) 1.77695</p> <p>VIF = 4.71</p> <p>Source: own computation</p>

As we can see from the above table the long run economic growth rate shows a good fit to the data with $R^2 = 0.9911$ which shows that 99.11 percent of the variation in economic growth is explained jointly by the independent variables included in the model.

The overall significance of the model is tested using F statistic as follows:

$$H_0: \beta_0 = \beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6$$

H1: not H_0

The F test which is against the null hypothesis (H_0) that all the explanatory variables of the long run model taken together do not explain the dependent variables is rejected, implying that the independent variables jointly explain the dependent variable 1% level of significance.

The individual significance of the coefficients is tested based on the following hypothesis.

$$H_0: \beta_i = 0$$

H1: not H_0

The t-test for the individual significance of the coefficient shows that H_0 is accepted for β_4 and β_6 whereas H_0 is not accepted for, $\beta_0, \beta_1, \beta_2, \beta_3$ and, β_5 . This means, concerning the individual significance of the independent variables, the constant term, the coefficients of lagged GDP, financial sector development and labor force are found to be significant where as trade openness and inflation are found to be insignificant (see table 4.5). The sign for the coefficients of lagged real GDP financial sector development and labor force are consistent with their priori expectation. As can be observed from the result, a 1% rise in lagged domestic real GDP will increase the current economic growth by 0.1424309 %. Similarly, according to the long run result, a 1% increase in labor force will increase the economic growth by 2.099494 %.

The main variable of the study of which the researcher is interested in, which is financial sector development, is proxied by credit extended to the private sector to GDP increases economic growth by

1.407744% on average holding other factors constant when it increases by 1%.

4.2.2.2 Test for Multi Co-linearity

Table 6: Multi-collinearity Test

Variable	VIF	1/VIF
Llrgdp	9.91	0.100858
Pcgdp	6.39	0.156527
Llbf	4.56	0.219305
Openn	1.14	0.879099
Inf	1.53	0.654742
Mean VIF	4.71	

Source: own computation

Based on VIF calculation the model has no multi co-linearity problem. This means there is no serial correlation between the independent variables included in the model in the long run.

4.2.2.3 Test for Heteroscedasticity

Breusch-Pagan test for heteroscedasticity shows the model has not this problem since the calculated $\chi^2(17.2)$ is greater than from the chi critical (0.0041) at 5% significance level. So the error term has constant variance.

4.2.2.4 Test for Auto Correlation

The transformed Durbin-Watson (D-W static= 1.77695) for this model shows the model has not this problem since it is near to two. That means the error term is not correlated with its past value

The Error Correction Model

Short Run Model

The short run model is estimated by ECM and the result summarized in table below

Table 7: Short Run Estimation Result

Dependent variable lgdp			
Variables	Coefficient	St. Error	T value
Ecm	-0.5413352	0.1901577	-2.76
D1 llrgdp	0.4405785	0.1489032	3.00
D1 pcgdp	0.924802	0.13348226	6.92
D1llbf	-0.0958475	0.2344049	-0.42
D1 open	0.063523	0.2253481	0.89
D1inf	0.0002817	0.0008158	0.31
Constant	.05311887	0.0253454	2.11

$R^2 = 0.7334$
 Adj $R^2 = 0.6840$
 $F(5\ 27) = 14.85$
 Hettest χ^2
 (1)=0.01(0.9172)
 D-w d statistics
 = 1.51878
 Transformeddw = 2.010233
 VIF= 13.99

Source: own computation

Based on the above table, R^2 and Adj R^2 for short run model 73.33% and 68.4% respectively showing that 73.33% and after adjustment 68.4% of the variation in economic growth is explained by the variation in the explanatory variables in short run. Regarding the individual significance of the variable in 95% confidence interval all variable except the trade openness have significant impact on the economic growth of Ethiopia. Specifically, lagged GDP and llbf affect economic growth positively. Similarly, financial sector development, as in the long run model, affects economic growth positively.

The ECM shows that the error correction term has a statistically significant coefficient. Based on the result in the table, 54.13% of the disequilibrium in one period will be corrected in the subsequent period. The negative coefficient of the error correction term shows that at any period, if economic growth were above the normal condition, it will start falling in the next period to be normal.

4.2.2.5 Test for Multi-collinearity (VIF test)

Variables	VIF	1/vif
Llgdp	32.85	0.0304414
E	39.74	0.02516356
Inf	1.17	0.85470085
Open	0.08	12.5
Llbf	1.17	0.58823529
pcgdp	1.06	0.94339623
Mean VIF	13.99	

Source: own computation

From the above table, we can understand that the study has multi co-linearity problem since the mean of VIF is greater than 10. This problem is expected to exist since the model used credit extended to the private sector and inflation which have a serial correlation since credit to the private sector has inflationary pressure in short run. But the existence of multi co-linearity does not cause the regression coefficients to be biased. Their probability distributions are centered around the true values and the standard errors and t tests remain valid. “Do nothing” is one of the solution proposed by Gujarati, 1995 for this problem so the paper used this solution.

5. Conclusions

Well-functioning financial sector has a positive impact on economic growth of the country through increasing the amount of savings and hence, volume of investment and promoting the efficiency through which these resources are allocated. Even if Ethiopia’s financial sector remains to be at low level of development, it has meaningful contribution to the current economic growth of the country.

In the previous chapter of this research, the econometrics method of data analysis was employed to examine the impact of financial sector development on the economic growth of Ethiopia. To determine both long-run and short-run impact of financial sector development on

economic growth his paper used ordinary least square (OLS) method. It used credit extended to the private sector to GDP ratio as an indicator of financial sector development where as variables such as openness, lagged real GDP, labor force and inflation were used as conditioning variables.

The result of the finding shows a positive and significant impact of financial sector development on the economic growth of Ethiopia both in the long run and short run .The result is in line with Roman's finding in 2012 which supports finance- lead (supply leading) hypothesis, stating financial sector development has a positive impact on economic growth, in the case of Ethiopia. This result has been caused by the role of the increasing private sector investment in the economy which is funded partially by the fund obtained from the banks and it may also be the result of current contribution of micro finance institutions in the economy of Ethiopia.

In addition, the regression result indicates that the conditioning variables last year GDP and labor force showed an expansionary effect on Ethiopian economy where as trade openness and inflation have in significant effect on economic growth. Generally, the result of the study indicates that economic growth of Ethiopia, both in the short run and long run, is significantly influenced positively by financial sector development.

6. Policy Recommendation

The finding of this study shows financial sector development has positive impact on economic growth of Ethiopia as the findings of most studies undertaken before. Based on the finding of the study, the following policy implications can be drawn:

First, despite recent improvements much more need to be done to deepen and broaden financial sector in order to increase the positive contribution of the sector in economic growth of Ethiopia. That is, in order to increase the availability of credit and pooling of savings: there should be deep penetration of financial sector to the rural regions where there is growth and money to be utilized. Second, the government should do more in creating favorable institutional environment like reliable information, contract enforcement and

political stability which are basic in providing financial services to the private sector.

Third, financial institutions are required to do much in their internal capacity building starting from arranging their organizational structure to increase their service giving ability and efficiency. Fourth, to increase mobilization of resources from all aspects of the society the sector has to do much with controlling mechanisms of the provided funds to avoid the problem of fungibles and hence moral hazard. Finally, we suggest the use of more diversified financial development indicators that fully captures the concept of financial development. This indicates a gap for further research in this area of study.

Reference

- AFDB (2010); African Development Bank Cite Report.
- Akilo A.E and Egbetunde T.(2010);"Financial Development AND economic Growth :The Experience of 10 Sub-Saharan African countries Revisited".THE review of Finance and Banking, Vol 02,Issue1
- AlemayhuGeda, Tony and Addison (2001); "The New Financial sector and its regulation; in the case of Ethiopia", Oxford university press.
- Anemut Desalew(2011).The Link between financial deepening and economic growth in Ethiopia. Senior essay in AAU
- Asli Demirguc-Kunt(2006). Finance and Economic Development: Policy Choices For Developing Countries.
- ChristianL.Nguna and TemiladM.Abimula(2013);" Financial deepening dynamics and Implication For Financial policy Coordination in a Monetary union: the case of MAEMU" Johannesburg South Africa.
- EsinKilic (2011);"An Empirical Analysis of The Relationship between Financial Deepening and Economic Growth: In the case of OECD countries". Financial Sector Profile (2012); WWW.MFW4A.ORG
- FoziaMussema (2014);" The Nexus between Financial Development and Economic growth: In the case of Ethiopia" senior AAU.
- Gujarati,D .(2004).Basic Econometrics, Fourth edition. Tata McGraw hill,New Delhi.
- HiwotTadesse(2011); " Determinant of Financial sector Development: In the case of Ethiopia", senior essay in AAU.

- John E.udoNdebbibo (2011);" Financial Deepening, Economic Growth and Development: Evidence From Selected Sub-Sahara African countries", University of Calabar Nigeria.
- LamekTeresa(2014);" Financial sector development and economic growth in Ethiopia", senior essay in AAU.
- Mishkin.F.S(2007);" The Economics of money, banking and financial markets", Pearson/Addison.
- M.Odhiambo(2011); " Investigating the Long Run and Causal relationship Between Financial development, Foreign Capital and Economic growth", Peretoria South Africa. National Bank of Ethiopia (NBE) website; www.nbe.gov.et
- Noureen Adnan (2011);"Measurement Financial Development a Fresh Approach", Qatar Faculty of Islamic studies.
- Odhiambo(2011);" The Nexus between Financial Deepening, Capital Inflows And Economic Growth in Tanzania".
- Roman Tesfay (2012);"The link Between Financial Development and Economic Growth in Ethiopia", Master thesis in AAU.
- Todaro and Smith (2006), Economics of Development.
- TsegabirhanW.Giorgis(2009); Stretching out to reach the potential to Mobilize Domestic Financial Resource of Africa Low Income Economics: In the case of Ethiopia". World Bank's Global Financial Development Database (2013).
- YabibalMululem (2007);" Financial development and Economic growth in Sub-Saharan Africa: A Panel Data Approach", Master thesis in AAU.