

The Nexus between Economic Growth and Financial Development: The Case of Ethiopian Economy

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Abstract

This research tries to examine the effect of financial sector on the economic growth of Ethiopia over the period of 1980-2013. The paper uses ordinary least square method to determine both long-run and short-run effects of financial development on economic growth. It uses commercial-central bank asset ratio as an indicator of financial development where as variables such as openness, lagged real GDP, total investment, aid and labor force were used as conditioning variables. As to the trends of growth and financial sector of the country, Ethiopia has been experiencing strong economic growth compared to early years; the major financial institutions operating in Ethiopia are banks, insurance companies and micro-finance institutions and the financial sector of the country shows a slightly optimistic sign of growth but the performance of the financial sector of Ethiopia as compared to other middle-income African countries shows the need for more improvement. The empirical investigation shows a negative and significant effect of financial development indicator (i.e. commercial-central bank asset ratio) on the economic growth of Ethiopia. In addition, the regression results indicated that the conditioning variables openness and labor force showed an expansionary effect on the Ethiopian economy where as aid showed a significantly negative effect on the economic growth. Generally, the result of the study indicates that economic growth of Ethiopia is significantly influenced by financial sector development.

Introduction

Financial development plays a key role in economic growth and development process of any country (Johannes, 2011). Financial development creates a wide range of capital mobility which in turn stimulates the economy. Dagmawi (2013) noted that highly developed and well-functioning financial sector is crucial for efficient financial services and smooth flow of business activities within the economy. Hence, financial development brings the economy on the path of growth and development. However, the effect of financial development in economic growth is not always evident in the short-run. Furthermore, financial development- as captured by size, depth, efficiency and reach of financial system- varies sharply around the world, with large differences among countries at similar levels of income (Kunt, 2006). Some aspects of financial development may also cause an economy to fail. Financial liberalization is one way of financial development which may lead to financial crisis if it is not managed properly (Mishkin, 2009).

Ethiopian financial system is small and largely dominated by the state. The three state owned enterprises, namely the Commercial Bank of Ethiopia (CBE), the Development Bank of Ethiopia (DBE) and the Construction and Business Bank (CBB) dominated the financial sector. With liberalization of the banking sector in 1944, six private banks have been established (Getenet, 2013). Other financial system components such as non-banking sectors, mobile banking, capital market and fixed income market are at their early stages of development and hence limited. Nevertheless, microfinance sector is relatively well developed but not strictly supervised (Financial Sector Profile, 2012). Overall, Ethiopian financial sector remains to be at a low level of development to make a meaningful contribution to economic

development. Thus, it needs focused and targeted drive to quicken the pace (Wongelawit, 2002).

Over the past decade, the Ethiopian economy has been growing at twice the rate of the African regions, averaging 10.6% GDP growth per year between 2004 and 2011 compared to 5.2% in Sub-Saharan Africa (World Bank, 2012). A strong economic performance since the mid-2000s has helped turn Ethiopia into one of the fastest growing non-oil producing economies on the continent, driven mainly by the agriculture and service sectors (Financial Sector Profile, 2012).

The generally accepted notion, that financial development precede economic growth is given due attention in almost every country. In the Ethiopian economy, financial sector development was hindered by government intervention (Getnet, 2013). Another factor for the lagged financial sector development is the monopoly of public (state owned commercial banks). By contrast, the implementation of reforms, the entry of foreign banks and privatization of state owned banks reduce transaction cost and increases credit availability (Berlin, 2009). The above stated reforms play a crucial role in improving the efficiency of the banking sector which intern serves as an engine to growth. Moreover, countries experiencing higher economic growth are characterized by higher level of financial development as compared to countries which cannot achieve a sustainable level of economic growth (Kunt, 2008). This implies that economic growth stimulates financial sector development. Calderon and Liu (2002) indicated that, although the expansion of real sector significantly influence development of financial sector; it is truer in the case of developed countries.

The existence of the reversal relationship between economic growth and financial development has been a main source of controversy in this area of study. Therefore, the main theme of the study remains on the causal relationship between financial development and economic growth in the case of Ethiopia.

Statement of the problem

The assessment of the relationship between financial development and economic growth is very important because it provides useful information on economic variables that the government and relevant authorities need to control in order to attain the desired level of the targeted variables such as economic growth (Miftah, 2013). If financial development turns out to be the stimulus for economic growth then authorities should provide policies that enhance financial developments so that high economic growth can be achieved. But if the reverse is true, then the government needs to promote economic growth in advance.

Among early works, one which laid the foundation for many other researches was the work by Patrick (1966). He posits two phenomena to explain the bi-directional relationship between economic growth and financial development. The first phenomenon which is called “supply-leading” indicates the creation of financial institutions and the supply of their financial assets, liabilities, and related financial service in advance of the demand for them. This phenomenon induces economic growth in two ways. First, it transfer resources from underutilized sector to modern sector and second, it stimulates an entrepreneurial response in these modern sectors. The second phenomenon which is called “demand –following” postulates the creation of financial services in response to the demand for these services by

investors and savers as the real economy grows. Both phenomena stated above show a unidirectional relationship between the two variables. However Patrick (1966) also came up with the idea to combine these two phenomena by the term “stage of development hypothesis”. It suggests a sequential relationship between these two phenomena.

Economists sharply disagree about the role of financial sector in economic growth. Ross (2004) noted, by citing Lucas (1988) that some economists dismiss finance as an “over stressed” determinant of growth and others such as Kunt (2008), Alessandra (2005) and Swamy (2010) arrive at the conclusion that financial development causes growth in economy. In addition other researchers posit that “where enterprise leads finance follows” (Robinson 1952). These statements indicate the belief that economic growth precedes financial development.

Therefore, this study tries to fill both time and knowledge gap by using available up to date data and methodology in order to provide a strong empirical evidence to support the thesis. It plans to use ordinary least square (OLS) model to analyze the effect of financial development on economic growth.

Objectives of the Study

General –objective

The general objective of this study is to examine the impact of financial development on economic growth within the context of the Ethiopian economy.

Specific objectives

- To investigate the trends of economic growth.
- To investigate the trends of financial development.
- To review types of government reforms that brings financial development.
- To investigate the overall linkage between financial development and economic growth.
- To forward appropriate policy prescriptions.

Scope and Limitation of the study

In this study the effect of financial development on economic growth of the Ethiopian economy is investigated. The study covers the period from 1980 to 2013. Thus this paper is limited in scope to thirty four years of coverage. The limitations faced were the lack of data for some economic variables. On the contrary, the study was also limited by availability of several data for the same economic variables. That is, the data from one source is different to the other, making it hard to choose the most reliable data to use for the paper. Consequently, the study is limited in scope of variables that may have otherwise been incorporated.

Significance of the Study

This study may entail significant policy implication for government and other concerned bodies to forward appropriate policies on finance and on the overall economy.

Model specification and Methodology

Model Specification

Regarding the way empirical models are set up, there are two broadly divided classes of studies in the literature surrounding finance – growth nexuses. The first group of studies tries to build up on different growth models. For example, the most widely used growth model in this regard is the neo-classical model which incorporates financial development as one determinant of growth in addition to the other factors such as initial level of capital, population growth, initial (lagged GDP ratio) and a measure of human capital. While the main strength of such models is its conformity with theoretical foundation, 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 Yabibal (2007), Odedokun(1996) indicated that, even though this models serve the purpose of eliminating the shortcomings of the first approach it is criticized as lacking a framework with standard theoretical underpinning. In addition, so as to incorporate a range of other socio-economic variables that may be unique of the country's institutional structure, the second approach is more preferable.

Accordingly, in order to investigate the causal relationship between financial development and economic growth, this research uses the second approach. Hence, our growth equation will have the following form.

$Y = f(\text{Financial development indicator, Conditioning variables})$

RGDP = f (Commercial-Central bank asset ratio, lag RGDP, Openness, foreign Aid, Labor force, Total Investment)

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$$\text{LRGDP} = B_0 + B_1\text{LCC} + B_2\text{LLRGDP} + B_3\text{LOP} + B_4\text{LTI} + B_5\text{LAID} + B_6\text{LLF} + u$$

*the signs above the variables indicate the expected relations with the dependent variable

Where, L – Natural Logarithm

RGDP – Real Gross domestic Product

BANK – Commercial-Central Bank Asset Ratio

LRGDP - Lag Real Gross domestic Product

OP – Trade Openness

AID – Foreign Aid

LF – Labor Force

TI – Total Investment

u- Stochastic Error

Econometric Procedure

Unit Root Test

A test of stationarity (or non stationarity) that has become widely popular over the past several years is the unit root test. Stationary time series are important because if a time series is non stationary, we can study its behavior only for the time period under consideration. Each set of time series data will therefore be for a particular episode. As a consequence, it is not possible to

generalize it to other time periods. Therefore, for the purpose of forecasting, such (non stationary) time series may be of little practical value (Gujarati, 2004). For this research, the Augmented Dickey-Fuller (ADF) test is used to test for unit root. The ADF test is preferred due to its simplicity and due to the fact that it has widely been used with satisfactory result. The presence of unit root indicates that the variables are not stationary (Gujarati, 2004).

The Augmented Dickey-Fuller test is in two forms: one with only intercept and another with intercept and trend. The one that is chosen for this paper depends on the nature of curvature of the variable being tested for unit root. If the curvature of a time series variable exhibit trend, then, the Augmented Dickey-Fuller test is conducted with intercept and trend. On the other hand, if the curvature of a variable exhibits no trend, then, the ADF Test is performed with only intercept (Gujarati, 1995 as cited by Miftah, 2012).

The null hypothesis is that the series contains a unit root which implies that the coefficient is equal to zero. The null hypothesis that the series contains a unit root is accepted if the calculated value, in absolute terms, is less than 1%, 5% or 10% critical value. On the other hand, the null hypothesis is rejected if the coefficient is negative and statistically significant. In this case the calculated value, in absolute terms, is more than 1%, 5% or 10% critical value (Gujarati, 1995). Where the null hypothesis is accepted, it means the series contains a unit root and thus the series is non-stationary. In the presence of unit root in the series, the series are differenced to avoid spurious regression results (high R2 values and high t-ratios yielding results with no economic meaning). The null hypothesis is rejected if the coefficient is negative and statistically significant else the series should be differenced over again until stationarity is achieved. The standard econometric practice is, however, that series should be differenced up to two. If stationarity is not

achieved by differencing two times a variable, the series should be abandoned (Gujarati, 1995).

Co-integration Analysis

We are concerned about the concept of cointegration because making a variable stationary by differencing only gives the short run dynamics while we are also interested in knowing the long run relationship. Economically speaking, two variables will be co integrated if they have long run relationships between them. i.e. co integration implies the existence of long run relationship between economic variables. A number of methods for testing cointegration have been proposed in literatures. However the Engle-Granger (1987) two-stage procedure is widely applied. In order to check for the existence of long run relationship (cointegration) in this model, unit root test on the residuals from the regression has been conducted using Augmented Engle Granger (AEG) test.

According to the Engle-Granger two stage procedures method, all we have to do in testing for cointegration is to estimate the long run model, obtain the resulting residuals and run DF and ADF test on the residual to check whether it is stationary or not (Gujarati, 2004). If the residuals from regression are stationary, the usual regression methodology is applicable to data involving time series.

Error Correction Model (ECM)

An error correction model is a short run model which reflects the current error in achieving the long run equilibrium relationship among variables. ECM is used to estimate the short run economic growth function and allows

us to study the short run relationship among variables under consideration. An important theorem known as the Granger representation theorem, states that if two variables Y and X are cointegrated, then the relationship between the two can be expressed as ECM (Gujarati, 2004). Generally, since ECM is a short run model, the coefficients of the independent variables show short run relationship of them with the dependent variable.

Normality Test

The model assumes that the random variable u has a normal distribution. This means that small values of u 's have a higher probability to be observed than large values. This assumption is necessary for conducting statistical tests of significance of the parameter estimates and for constructing confidence intervals. If the assumption of normality is violated, the estimates of parameters are still unbiased but the statistical reliability by the classical tests of significance (t-statistic and F-statistic) of the parameter estimates cannot be assessed because these tests are based on the assumption of normal distribution of the u 's (Gujarati, 1995).

Test for Heteroskedasticity

One of the assumptions of CLRM (classical linear regression model) is the disturbance " U_i " are homoscedastic. That is, they all have the same variance (δ^2). If this is not the case i.e. if the variance of U_i is (δ^2), indicating that it is varying from observation to observation, we have a situation of heteroscedasticity or non constant variance in the presence of heteroscedasticity, the usual hypothesis testing routine is not reliable, raising the possibility of drawing misleading conclusion because it will make OLS estimates to have

larger variance and wider confidence interval. Therefore, it's important to consider it (Gujarati, 1995).

Model Specification Test

In regression analysis, specification is the process of developing a regression model. This process consists of selecting an appropriate functional form for the model and choosing which variables to include. Therefore, model specification test is used to examine whether there is omitted variables in the model or not. If an estimated model is not correctly specified, then it will be biased and inconsistent.

Tests for Multicollinearity

One of the assumptions of classical linear regression model (CLRM) is that there is no perfect colinearity among some or all explanatory variables. If the explanatory variables are perfectly linearly related to each other, the problem of multi colinearity will arise. Recently, however, the term multi colinearity is used in broader sense to include the case of perfect colinearity as well as the case where the explanatory variables are highly linearly related. Not considering the problem of multi colinearity will result in wrong conclusion as a result of large variance and standard error of OLS estimators, wider confidence interval, insignificant "t" value and high R square value and so on. Therefore, it is important to deal with this problem using variance inflation factor (VIF) as dedicating mechanism (Gujarati, 1995).

Test for Autocorrelation

The model assumes that successive values of the random variable u are temporally independent and that the value which u assumes in any one

period is independent from the value it assumes in any previous period. This implies that the covariance of u_i and u_j equals zero. If this assumption is not satisfied, then the value of u in any particular period is correlated with its own preceding value (or values). This is known as autocorrelation or serial correlation of the random variable u (Wooldridge, 2000). Where the random term is autocorrelated, the parameter estimates are still statistically unbiased but the variances of the parameter estimates are likely to be larger or the variance of the random term may be seriously underestimated or the predictions based on the parameter estimates will be inefficient in the sense that the variance is large. The Durbin-Watson d statistics test is used to check correlation between the errors in different time periods.

Nature and Source of Data

The study conducts the empirical analysis using annual time-series data sets for the period 1980-2013 for all variables specified in the model. This period is chosen based on the availability of full figures. However the last three years of labor force data were forecasted. Data for real GDP,

The data for the different variables were obtained from multiple sources which include World Development Indicators (2012) World Bank Database, National Bank of Ethiopia, and IMF database.

The Overall Ethiopian Economy

Ethiopia's economy is primarily dependent on rain-fed agriculture and primary commodities rendering it very susceptible to external shocks. In addition to the above, the productivity of agriculture is very low although agricultural production has recently increased (Roman, 2013). The country had implemented a series of Structural Adjustment Programs (SAPs) and had

started a set of institutional reforms since 1992/93 sponsored by IMF and World Bank. Further, the government designed and pursued Agricultural Development-led Industrialization (ADLI) that focuses on productivity enhancement of the small holder peasants through increased utilization of improved seed, fertilizer and farming techniques. With respect to trade, the country is oriented outwardly favoring export sector (EEA/EEPRI report, 2009).

In the fight against poverty, the country has been implementing a series of poverty reduction strategy programs. Owing to various policy and institutional measures, the performance of the country has shown significant leap in the last few years.

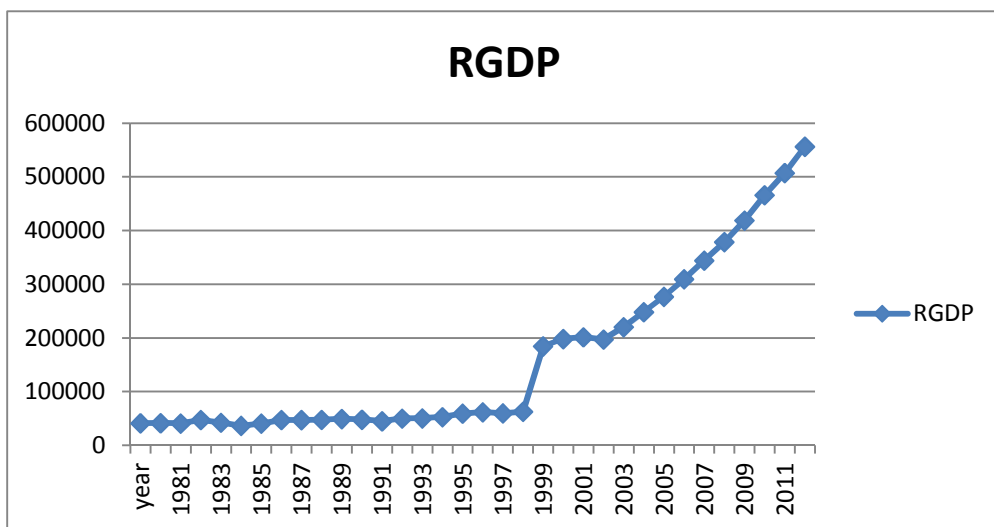
Trends of Economic Growth

Economic growth of the country has shown various changes in different political regimes. These change in government structure created a problem of inconsistency in implementing policies of previous regimes. In addition to this natural disaster like famine and drought had a depressing effect on the history of economic growth of the country (Geneye, 2011).

During the Imperial Regime (1930- 1974), the county had an experience for modern technology, developments in infrastructure and industries that showed an increase in the rate of GDP in the late 1960 and beginning of 1970's compared to the previous periods. But during the last years of the Imperial regime the GDP growth rate started to fall mainly due to famine in some parts of the country. In addition the rise of opposition parties and political disorder in the country had enormous role for the decrease in GDP (Geda & Befekadu, 2005 as cited by Geneye, 2011). Under the Derg regime (1975- 1991), known for its socialist policy, Ethiopia's GDP growth became

lower. These was related to the takeover of the private sector by the government, high pressure from different opposition parties within the country as well as war with Somalia within the first three years were some of the major effects behind the fall in output growth in the country during the Derg Regime. The severe drought that took place in 1984/85 was also additional factor for the decrease in total GDP (Ibid). In 1984 and 1985 the severe drought declined the growth rate by 3% and 10% in per capita respectively. During the EPRDF regime the GDP growth decelerated by 3% and 2% in 1998 and 2003 respectively. On the other hand GDP rate grew by 14% in 2004 which is the highest growth rate up to 2011. Lately Ethiopia has experienced a strong economic growth, with an average growth of real GDP of 11.2% per annum during the 2003/04-2008/09 period (Mwanakatwe and Barrow, 2010 as cited in Roman, 2012). The figure below shows the trends of economic growth measured in real GDP during the 1980-2013 periods.

Figure 1: Real GDP trend, 1980-2013



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 2003/04, the country has consistently outperformed most other countries in Africa and expanded much faster than the continent-wide average (AFDB, 2010). The gross domestic product (GDP) in Ethiopia expanded 9.70 percent in 2012/13 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).

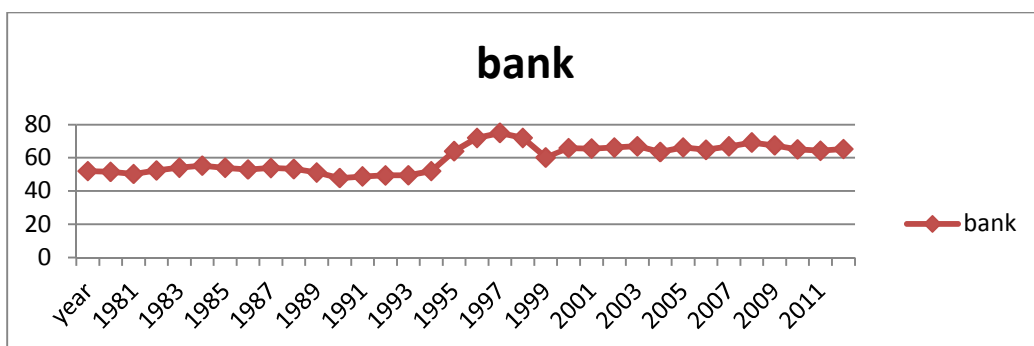
Trends of Financial Development in Ethiopia

The major financial institutions operating in Ethiopia are banks, insurance companies and micro-finance institutions. The number of banks operating in the country by the year 2011/2012 reached 17, of which 14 were private, and the remaining 3 state-owned. During the year, 319 new branches were opened raising the total branch network in the country to 1,289 from 970 last year. As a result, bank branch to population ratio declined from 65,415.834 people to 62,063.6 in 2011/12. However, the share of private banks branch network was 47.6 percent at the end of the same year (NBE, 2012). Insurance services are performed by nine private and one state-owned insurance company. At the end of 2006/07, these insurance companies were operating 146 branches in the country. Moreover, there were 28 micro-finance institutions as June 2006/07 and several other savings and co-operatives operating as financial institutions.

Regarding the development of financial market, Treasury bill market is the only regular primary market where securities are transacted on a weekly basis. There is no secondary market for the securities. Government bonds are also occasionally issued to finance government expenditures and/or to absorb excess liquidity in the banking system (NBE, 2012). 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. The following figure shows the trends of commercial- total bank asset ratios from 1980-2013.

Figure 2: Trend of commercial – central bank asset ratio (BANK)



As we can observe from the diagram, the financial sector development of Ethiopia as measured by commercial-central bank asset ratio (bank) has been fairly comparable over the period of 1980-1996. However, after 1998, bank ratio showed a slight increase, reaching a maximum of 0.75. This implies that out of the total bank assets in the financial sector, 75 percent was credited to commercial banks. The period that followed showed a fair decrease but not as much as the first years of the data. In general, the Ethiopian financial sector shows a slightly optimistic sign of growth. The performance of the financial sector of Ethiopia as compared to other middle-income African countries shows the need for more improvement. Further, in Ethiopia, where the majority of the population is a rural resident, more penetration to the rural region is needed if financial development is to be achieved.

Econometric Analysis

To investigate the effect of financial development on economic growth, this paper has used OLS method of econometric analysis. It utilized time series data for the period 1980-2013 to check the effect both in the long run and short run. The results from the economic analysis are as follows:

Test for stationarity and Cointegration

The first procedure while dealing with time series data is stationary test. Augmented Dickey-Fuller (ADF) test is used to test for unit root.

Table 1: Dickey fuller (DF) test for unit root at level and first difference

Variables	At level	At difference
LRGDP	0.444	-5.380
LLRGDP	0.454	-5.363
LNOPP	-0.697	-5.434
LAID	0.626	-4.805
LNF	-0.936	-5.003
LTI	-1.902	-9.488
LNCC	-1.371	-4.397

The absolute values of the calculated test statistics for all variables are less than its critical value at 10% level of significance. The result indicates that all variables are non-stationary at level, i.e, the series appears to have unit root. So the null hypothesis that each variable has unit root cannot be rejected by the ADF test. However, after applying the first difference, we reject the null hypothesis since the data appears to be stationary at first difference.

In order to check for the existence of long run relationship i.e. co-integration, in the model a unit root test on the residuals from the regression has been

conducted using dickey fuller (DF) test. If the residuals from regression (U_t) are integrated of order of zero I (0) or stationary at level, then it is said the variables are cointegrated (Gujarati 2004).

Table 2: Cointegration Test

	Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	-4.947	-3.696	-2.978	-2.620

The above table shows a unit root test for the residual using dickey- fuller test. The result indicates that the residual is stationary at level, which indicates the existence of long-run relationship between the variables.

The Long-Run Model

The long run model is the outcome of regressing dependent variable on independent variable. Time series variables in this study are cointegrated and there combination is stationary at level. Therefore, regression result cannot be spurious and hence the model could show the long run relationship between dependent and independent variable.

Table 3: Regression results

LRGDP	Coef.	Std. Err.	T	P>t	[95% Conf. Interval]
LLRGDP	0.6714844	0.104595	6.42	0	0.456874-0.8860948
LNOPP	0.1390601	0.129003	1.08	0.291	-0.1256322-0.4037524
LAID	-0.0761758	0.044013	-1.73	0.095	-0.1664833-0.0141317
LNF	0.9931568	0.295922	3.36	0.002	0.3859755-1.600338
LNCC	-0.8361901	0.422313	-1.98	0.058	-1.702704-0.0303243

LTI	0.4544236	0.194514	2.34	0.027	0.055313-0.8535341
Constant	2.913359	1.505522	1.94	0.064	-0.1757179-6.002435
No of observations = 34		ovtest F(18, 9) = 2.46 (0.0843)			
F(6, 27) = 179.39 (0.0000)		Hetroskedasticity = 0.62 (0.4309)			
R-squared = 0.9755					
Adj R-squared = 0.9701					

The value of R^2 indicates that 97.5% of the long run variation in the dependent variable is explained by the employed explanatory variable or by the independent variable of the model during the studied time period. The F-test shows that whether overall effect of dependent variable on an independent variable is significant. The result of this model shows a result of 0.0843, which is greater than 0.05. Hence, we accept the null hypothesis, which is, the model has no omitted variables.

As expected the control variables lagged real GDP, labor force, openness and total investment have a positive effect on real GDP. Furthermore the variables aid and bank have an unexpected negative effect on the dependent variable. Most of the control variables stand in a statistically significant relation with the independent variable with the exception of openness.

Financial development proxy (Bank) is significantly negative in the long-run. Thereby indicating that high level Bank have unexpected negative effect on real GDP. It seems plausible that this result were caused by the delayed effect of financial reform of Ethiopia on economic growth, the presence financial constraints that are imposed in the financial sector of Ethiopia, the existence of incomplete financial markets, and the lack of financial skills of

bankers due to lack of training or corruption that may lead to the dependence of financial system on the real side of the economy making the contribution of the financial sector to economic growth lesser (Roman, 2013).

Most theoretical and empirical papers show that financial development can boost economic growth by mobilizing saving, exerting control, allocating resources and improving innovation. However, the results from this study shows otherwise. This is because the strong contribution of financial development to economic growth does not occur until a country has reached a certain financial development level. Under such level the contribution of financial development to economic growth is weak (Inoubli and Khallouli, 2011). It indicates that the financial development of Ethiopia hasn't reached a level where it contributes positively to economic growth. The regression analysis indicates insignificant but positive effect on economic growth. Openness may indirectly affect GDP-per-capita growth (proxy for economic growth) through both capital accumulation (physical and human) and productivity growth. First, openness to international flows of capital may raise the speed at which physical capital and human capital are accumulated locally (at least temporarily). Second, openness may speed up productivity growth through faster technological progress (Andersen and Babula, 2008).

Further, labor force significantly affects economic growth. That is a unit increase in labor force increases real GDP by 0.99, keeping other things constant. Similarly, total investment which is composed of public investment and private investment has a positive and significant impact on economic growth. An increase in both private and public investment results in more production capacity, more opportunities for jobs and higher wages consequently, higher income/GDP (Anwer and Sampath, 1999).

Multicolinearty and Normality test

Table 4: Multicollinearity and Normality test

Tests	Results
Normality result(Prob>z)	0.00005
Mean VIF	6.68

Shapiro-Wilk W test was used to test for normal data. The result show non-uniform distribution. However, the test for multicollinearity shows a result of 6.68 (If $VIF \geq 10$, there is Multi colinearity problem). This indicates the absence of multicollinearity problem in the model.

Autocorrelation test

Durbin-Watson statistic (original) 1.684501

Durbin-Watson statistic (transformed) 1.805807

The Durbin Watson value of 1.684501 which is not near to two indicates the presence of autocorrelation in the model, but after corrected by using Robust (prais lrgdp llrgdp lnopp laid lnf lncc lti), result DW 1.805807, which is near to two indicates the absence of autocorrelation.

Short-Run Error correction Model

This section will discuss the short run dynamics between the dependent and independent variables. If the differenced level variable is regressed on another differenced variable, the outcome shows that the dependent and independent variable has short run relationship.

Table 5: ECM results

D.LRGDP	Coef.	Std. Err.	T	P>t	[95% Conf.Interval]
LLRGDP D1.	0.72548	0.21582	3.36	0.002	0.28099 - 1.169971
LNOPP D1.	0.060507	0.123733	0.49	0.629	-0.19433 - 0.315341
LAI D1.	-0.14292	0.059386	-2.41	0.024	-0.26522 - -0.02061
LNF D1.	1.845419	0.838908	2.2	0.037	0.117656 - 3.573182
LNCC D1.	-2.18529	0.426526	-5.12	0	-3.06374 - -1.30685
LTI D1.	0.48182	0.122486	3.93	0.001	0.229555 - 0.734084
r L1.	-0.83279	0.273898	-3.04	0.005	-1.3969 - -0.26869
Constant	-0.01612	0.041009	-0.39	0.698	-0.10058 - 0.068338
Number of obs = 33		Root MSE .13444			
F(7, 25) = 5.91 (0.0004)		Mean VIF= 1.73			
R-squared = 0.6233		Durbin-Watson d-statistic (8, 33) = 1.882929			
Adj R-squared = 0.5178		ovtest F(3, 22) = 24.53 (0.0000)			
Heteroskedasticity, chi2(1) = 18.55 (0.0000)					

The tests made on the short-run model imply a partially satisfactory result. The F-test (model specification test) implies the existence of omitted variables in the model. The VIF outcome however indicates the absence of multicollinearity problem. Further, result DW 1.8829, which is near to two indicates the absence of autocorrelation.

The coefficients of the independent variables indicate short run relationship of the independent variables with the dependent variable. The above error correction model illustrate that 62.3% of the total variation in value of the

dependent variable is explained by the independent variables in the short run. All variables in the short run model have the same result as the long-run with only minor coefficient changes. The result from the short run model on financial development indicator (Bank) still suggests the same result as the long run. Though the expected result was positive, in both cases the result was otherwise. The reasons for short-run result may be the less weight given to financial sector development by the government. However, recently many private commercial banks are being established, hence, this result might change in the near future.

One possible explanation to short-run negative effect of financial development to economic growth is that in the “good times” banks relax their criteria and lend to both good and bad projects, then when the “bad times” arrive most loans become non-performing and the source of credit dries up, rationing out even good projects (Binam and Gianluigi, 2009). On the other hand, in the short run, financial instability and financial volatility has negative incidence on financial development and growth. Loayza and Ranciere (2004) believe that this negative effects of financial development on economic growth both in the short and long run is strongly bound to the financial fragility, which they measure through the occurrence of systemic banking crisis (number of years that country experienced financial crises) and the financial volatility (standard deviation of financial development growth).

Similarly, aid has significantly negative effect on the economic growth of Ethiopia. According to the result, the short run model suggested that a unit increase in aid reduces the real GDP by -0.1426 holding other variables constant. The possible explanation is that aid works in countries where institutional and macroeconomic frameworks are conducive, namely with

good fiscal, monetary and trade policies. So in Ethiopia, the absence of these factors may have led the result to become negative (Burnside & Dollar, 2000 as cited by Kiiza, 2011). On the contrary, labor force had a highly positive and significant effect on the real GDP. A one unit increase in labor increase real GDP by 1.84, keeping other variables constant. One of the basic prerequisite for economic growth being human capital accumulation, the result is to be expected. The remaining conditioning variables lagged real GDP, openness and total investment had an expected positive effect on economic growth in the short run. The effect of lagged real GDP and total investment was significant while openness's effect remained insignificant.

Finally, the coefficient of lagged ECM takes the negative sign and it is statistically insignificant justifying that the short run model is correctly specified. The coefficient indicates that 83.3% of the disequilibrium in value of LGDP in one period is corrected in the next period. It also indicates the speed adjustment of about 83.3% from the value of LRGDP in the short run to long run. Therefore, ECM tells us that 83.3% of discrepancy between short run and long run value of LRGDP is corrected each year.

Conclusion and Policy Recommendation

Conclusion

Financial Sector development is a key instrument for a healthy economy. However, Ethiopia's financial sector remains to be at low level of development to make a meaningful contribution to economic growth and development. Thus, it needs focused and targeted drive to quicken its pace. The unavailability of financial market such as stock market, bond market, etc further confirm the underdevelopment of the financial sector. Further, the undue attention given only to the development of the Ethiopian economy

without an exclusive regard to financial development led to inactive financial sector in Ethiopian. For this reason, this research tries to examine the effect of financial sector on the economic growth of Ethiopia over the period of 1980-2013. The paper uses ordinary least square method to determine both long-run and short-run effects financial development on economic growth. It uses commercial-central bank asset ratio as an indicator of financial development where as variables such as openness, lagged real GDP, total investment, aid and labor force were used as conditioning variables.

The empirical investigation shows a negative and significant effect of financial development indicator BANK on the economic growth of Ethiopia. This result contradicts with most other works which implies the further decay that exists on the Ethiopian financial sector. This result may have been caused by the dominance of state owned banks that control almost half the financial market, the unruling conditions that are set by governments that restrict other private commercial banks from performing to their fullest capacities and other problems may include. In addition, the regression results indicated that the conditioning variables openness and labor force showed an expansionary effect on the Ethiopian economy where as aid showed a significantly negative effect on the economic growth. Generally, the result of the study indicates that economic growth of Ethiopia is significantly influenced by financial sector development.

Policy Recommendation

Thought almost all other studies show positive impact of financial development on economic growth, this study indicates the negative effect of financial sector development on economic growth of Ethiopia. This may as well be due to underdevelopment of the country's financial sector, due to the excessive regulations and due to the existence of a dominant state owned

financial banks. Based on the above findings of the study, the following policy implications can be drawn:

- Effort should be made to resolve problems of financial sector in Ethiopia. That is in order to increase the availability of credit and pooling of savings; there should be deep penetration of financial sectors to the agricultural regions/rural regions where there is growth and money to be utilized.
- The government needs to loosen up its strict financial sector entrant criteria if financial development is to be achieved.
- Privatization of state owned banks is another policy implication. The existence of state owned banks may lead to lower levels of financial development. The inefficient allocation of credit by state owned banks is due to the politically-favored financing of unviable projects and extreme corruptions. Therefore, government role in the financial sector should be limited to regulation.
- The importance of secondary market in developing countries should be given more thought and further studies should be done in this area so that financial markets enter the country's economic structure in the near future.
- The use of more diversified financial development indicators that fully capture the concept of financial development. This indicates a gap for further research in this area of study.

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