

Trends and Determinants of Gross Domestic Saving in Ethiopia

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Abstract

This study examined the trend and major determinants of gross domestic savings rate (GDS) in Ethiopia using secondary annual data for the period 1980-2014. Data collected from central statistical authority (CSA) and MOFED. The macroeconomic variables used include economic growth rate, deposit interest rate, M2, foreign aid, inflation rate and age dependency ratio. The model was estimated using co-integration and error correction models to analyze the short and long run equilibrium among the variables. Results of the study show that inflation rate, age dependency ratio and broad money to GDP ratio play a significant role in determining the gross domestic savings in Ethiopia whereas real interest rates and foreign aid was not a significant determinant of gross domestic savings. The overall findings of the study underlined the importance of adopting a strict monetary policy to maintain money supply within manageable levels and ensure stable and low inflation rates which would help improve real incomes and would also cause development in the financial sector and hence improve gross domestic savings in the economy. Further, the government should formulate policies for the improvement of health care provision.

Keywords: Gross domestic savings, Age-dependency ratio, Broad money (M2), Inflation rate, Ordinary Least Squares, Ethiopia

1. INTRODUCTION

1.1 Background of the study

Saving is not only considered important for investment but it is also an important aspect for macroeconomic stabilization. Much of disparity in the growth performance between countries is often attributed to the differences in the rates of saving and investment. Low domestic saving rates may maintain low-growth levels. Lack of enough domestic resources will however not hinder going for external sources to finance investment requirements which makes the country highly sensitive to external shocks. A disadvantage to this would be the danger that any perception by foreigners of political and/ or social instability, corruption, and declining rule of law may lead to the outflow of the foreign capital leading to macroeconomic instability.

Therefore, domestic savings will continue to be a priority as a source of investment financing in order to minimize vulnerability to international economic fluctuations (Eric & Willy, 2015).

Adewuyi, Bankole, & Arawomo (2007) argue that a sufficiently strong saving performance is an important precondition for achieving economic growth, macroeconomic balance and financial and price stability. The relationship has become even more crucial with the studies confirming that despite the occasional importance of international flows of capital, the most important factor for a country's investment and economic growth is indeed its own saving.

The saving rate in Africa has perpetually been the lowest compared to other regions. It also faces serious credit constraints; and this, coupled with low income could greatly reduce any little incentive to save (Kibet, Mutai, Ouma, Ouma, & Owuor, 2009).

Development economists have been concerned for decades about the crucial role of domestic saving mobilization in the sustenance and reinforcement of the saving investment-growth chain in developing economies (Nwachukwu & Egwaikhide, 2007). Increased savings rates is therefore of crucial importance for achieving sustainable development and poverty-reducing growth in African countries (Keho, 2011).

According to the World Bank report (2011), the average saving rate of Ethiopia was very low compared with the averages of the sub-Saharan African countries. For instances, taking the data between the period 1980/81 and 2010/2011 show that average domestic saving rate of Ethiopia was only 8.6 percent of GDP. However, the average for sub-Saharan African countries was 17.2 percent of GDP for the same period.

This therefore indicates the need to boost savings in Ethiopia. Because of that, an understanding of the fundamental determinants of saving in Kenya represents critical importance in order to formulate policies to raise the domestic saving rate in line with the needs of economic growth.

By identifying the significant determinants of Gross Domestic Savings in Ethiopia, the study will help to improve the low saving rate that we see in the country.

1.2 Statement of the problem

Domestic saving is the main sources of finance to domestic investment. Of course, there have been two main views regarding the means of financing domestic investment. (Feldstein, 1983; Khan, 2006 and Culpeper, 2008).

The first view is that, in the world of perfect capital mobility, domestic investments are determined by the international flow of capital. According to this view, domestic investments are highly correlated with foreign capital inflow and less correlated with domestic savings. (Feldstein, 1983, Khan, 2006 and Culpeper, 2008).

The other view is that due to the existence of substantial impediments to capital mobility across international borders, domestic investments are highly dependent on domestic savings. That means, since foreign capital is something exogenous, countries that try to depend on foreign capital can be highly affected by external shocks. This is because countries, especially developing countries, will face a serious domestic capital shortage whenever a decline in foreign capital inflow happens. As a result, most economists argue that domestic saving is the major determinant of domestic investment growth which in turn is also basic for fast and sustainable economic growth (Feldstein, 1983; Khan, 2006 and Culpeper, 2008).

Among the various factors that are likely to play an important role in explaining savings is foreign capital inflow. Haile and Alemayehu (2000) argued that a study which attempted to clean biases in the data, marginal propensity to consume out of foreign aid for Ethiopia is found to be close to one. Thus, empirical evidences concluding that foreign aid crowds out domestic savings.

However Gupta (1979) reported a positive effect of foreign aid on domestic savings.

The available empirical evidence of the impacts of foreign capital inflow on the domestic savings and other economic performance of a recipient country is mixed. While a number of studies have found that foreign capital inflow supplements domestic savings, others have found that FCI displaces savings. Some studies have failed to find any statistically significant relationship between these two macroeconomic indicators (Haile and Alemayehu, 2000).

Among the various factors that are likely to play an important role in explaining savings, the demographic structure of the population has been viewed as one of the most crucial. The „East

Asian Miracle“ is often attributed to the rapid demographic transition, which contributed to increasing the rates of national savings and economic growth by lowering fertility rates and changing the age composition of the population (Higgins and Williamson, 1997; Bloom and Williamson, 1998; Mason, 2001). A striking feature of Ethiopia is the age structure of the population. The high fertility rates lead to high level of age dependency ratio. This has serious implications for domestic savings rates.

There are many reasons to believe that the dependency ratio is central for explaining differences in savings behavior and economic growth in Ethiopia. The theoretical underpinnings of this belief are based on the life-cycle hypothesis. The argument goes as follows. Economic agents have negative savings when young and have low or no income, positive savings during their productive years and, again, negative savings when they are old and retired (Modigliani, 1970).

As children constitute a heavy charge for parents and do not contribute to production, an increase in their proportion in the population is expected to reduce the private savings rate (Leff, 1969).

Similarly, an increase in the proportion of elderly in the population is also expected to hamper the aggregate savings rate, since the retired are assumed to exercise negative saving.

By contrast, increases in the dependency ratio may put significant upward pressure on government spending on health and education needed to improve the quality of life. This could involve a reduction in public savings if fiscal policies remained unchanged. Hence, the age structure of the population has a special role in explaining the overall national savings rates.

As studied by Coale and Hoover (1958), Mason (1988), and Higgins (1998), demographic factors are believed to be significantly correlated with the saving rates historically. Moreover, life cycle hypothesis of Modigliani (1966) also suggests the possible negative correlation between old age dependency ratio and saving rate, by stating that individuals prefer to spend their entire income evenly throughout their lives.

Old age dependency ratio is negatively correlated with domestic saving rate, as economic burden due to larger proportion of non-working population hampers the economy from generating savings. Moreover, as life cycle hypothesis argued by Modigliani (1970) represents, elderly population is expected to save less than working-age population.

For young age dependency ratio, as researched by Fry and Mason (1982) and Mason (1988). The presence of children naturally facilitates the consumption of households and impedes households from saving their income (Mason 1988). Economic burden due to higher young age dependency ratio is conceptually very similar to that due to higher old age dependency ratio, as both represent the ratio of non-working population to working population.

Above all foreign capital inflow and age dependency ratio is important determinants of gross domestic savings in Ethiopia. But there is a research gap in dealing with these determinants and in knowing their extent in affecting gross domestic savings. This paper will examine gross domestic savings in Ethiopia by incorporating these factors and other factors affects gross domestic savings.

2. Empirical Literature

Samuel (2005) studied the determinants of aggregate domestic private savings in Kenya capturing the reform period 1980 to 2003. The study included demographic variables like young and old age dependency ratios, and the different measures or indicators of financial sector development: the ratio of M2 money to GDP, the ratio of liquid liabilities to GDP, and the ratio of the assets of commercial banks to the assets of central bank as new variables previously not used in any study on Kenya. Among the other variables were income tax, deposit rate used at central bank, current account deficit, the interest rate spread, terms of trade, inflation rate and real gross disposable per capita income.

A hybrid model was specified consisting of all the variables identified from the Life Cycle hypothesis on savings and consumption, the permanent income hypothesis and the simple

Keynesian hypothesis was used in the estimations. The results of the estimations showed that aggregate private savings in Kenya is significantly determined by the current account deficit, the ratio of M2 money to GDP, real gross per capita income growth, deposit rate and the old age dependency ratio.

Bankole & Fatai (2013) examined the cause and effect relationship between domestic savings and economic growth in Nigeria during the period 1980-2010. The researchers employed the Granger-causality and Engle-Granger co-integration techniques to analyze the relationship between savings and economic growth. In addition, the granger causality test revealed that causality moves from savings to economic growth in Nigeria. Thus, the researchers accept the

Solow's hypothesis that savings precedes economic growth but reject them Keynesian theory that it is economic growth that leads to higher savings. The researchers recommended that government and policy makers should employ policies that would accelerate domestic savings so as to increase economic growth.

Mohan (2006) examined the direction of causality and impact between domestic savings and economic growth for a number of countries with different levels of income and economic growth. The results revealed that the direction of causality runs from economic growth to domestic savings. Also, income level in a country is found to play a significant role in determining the direction of causality between domestic savings and economic growth. This is similar to Modigliani (1970) finding that has shown that there is a large and highly significant positive correlation between saving and growth in a cross section of countries.

Touny (2008) in his study of determinants of domestic saving performance in Egypt, adopts an empirical study approach to analyze the determinants of domestic saving performance in Egypt during the period 1975 – 2006. They revealed that growth rate of fixed per capita income, inflation rate, current account deficit ratio and budget deficit ratio are significant determinants of saving both in the short and long run. Real interest rate is a significant determinant in the short run but insignificant determinant in the long run. The ratio of broad money supply is insignificant determinant in the short run but significant in the long run.

Apunda (2009) examined the determinants of private savings and economic growth in Kenya, using annual time series data for the period 1980 to 2010. The study used regression analysis to determine the relationship between private savings and economic growth in Kenya. The findings show that there is a negative relationship between private savings GDP and interest rate, and a positive relationship between inflation rates, GDP per capita with private savings. From the findings, the researcher recommends that appropriate monetary and fiscal policies should be put in place to help regulate inflation since it positively influences private savings. In addition, we infer that private savings reflects the macro-economic condition of the country and can therefore be used to predict the future path of economic growth.

Kiptoo (2011) the main objective of his study was to find out the impacts of remittance on domestic savings levels in Kenya for the period between 1970- 2011. Secondary data sourced from the World Bank database and Kenya National Bureau of Statistics was used. The Error

Correction Model (ECM) was used. Empirical results showed that GDP per capita, exports and investment affect domestic savings positively and significantly. Real interest rate does not have a significant effect on domestic savings. Remittance affects positively and significantly domestic savings positively.

Keho (2011) examined the long run determinants of savings rates for seven

West African countries over the period 1970-2006 using the bounds testing approach to cointegration. The results showed; rate of real per capita GDP growth, Age-dependency ratio, inflation rate, interest rates on savings deposits and current account are significant determinants of saving. Financial sector development was found to be an insignificant determinant of saving.

Ismail & Rashid (2013) in their study of determinants of household savings in Pakistan states saving and inflation rate are interconnected. There exists a positive as well as a negative relationship between inflation and household saving as documented in the earlier studies. A positive association between household saving and inflation prevails because higher inflation reveals higher income and saving. Inflation can have a positive effect on saving rates as an insecurity about future asset values and future real incomes in an inflationary environment can promote saving in order to continue future consumption levels. The relationship between inflation rate and household saving may be negative as uncertainty about future increases. The other reason for this negative

relationship is that mostly people want to maintain real level of consumption thus higher spending today results in lower level of household saving. A higher rate of inflation leads to insecurity about financial returns and results in lower rate of saving.

Larbi (2013) explored the determinants of private savings in Ghana using the residual-based tests for cointegration to determine the long run relationship between private savings and its determinants. Financial liberalization, per capita income and inflation were found to have a positive and significant relationship with private savings. The positive and significant coefficient of the fiscal deficit variable confirmed the Ricardian Equivalence hypothesis in Ghana. There is a strong willingness to save but the capacity to save is not very robust. Financial liberalization is recommended to be deepened to give financial institutions room for improved financial packages for increased savings. Growth should be pursued vigorously to improve incomes and hence peoples capacity to save. In spite of the results for fiscal deficits, government must keep its spending within sustainable limits and invest appropriately.

Ogbokor (2014) stated that the driving objective for the article was to empirically establish the determinants of savings in Namibia through the use of co-integration and error correction mechanisms for the period running from 1991 to 2012. The article relied heavily on unit root tests, co-integration and error correction procedures as ways of investigating the research issue under consideration. First, the time series characteristics of the variables used were ascertained with the help of the augmented Dickey-Fuller unit root procedure. Second, the long-run relationship between savings and its determinants was examined using the procedure suggested in the literature by Johansen and Juselius. The results of the co-integration tests suggest that there is a long-run relationship between savings and the explanatory variables used in the study. The results suggest that inflation and income have positive impact on savings, whilst population growth rate has negative effects on savings. Further, deposit rate and financial deepening have no significant effect on savings.

Kibet, Mutai, Ouma, Ouma, & Owuor (2009) adopt a microeconomic approach on establishing the determinants of household savings in rural Kenya. They estimated a saving function derived within the life cycle framework while taking cognizance of the structure of a developing economy. Their estimation result shows that; gross income, credit access, dependency ratio, age, nature of occupation and level of education are significant determinants of saving. Rate of interest were found to have some slight significance in determining saving.

Kahangi & Muturi (2013) adopts a microeconomic approach on establishing the determinants of household savings in urban Kenya. The methodology adopted involved the estimation of a saving function derived from standard life-cycle theory modified to cover the peculiar features of the developing economies. The study employed survey design and SPSS for analysis of data.

Their estimation result showed that; age, income and gender were found to have a great influence on savings. Education level and household size were found to be insignificant determinants of saving.

Determinants of domestic saving in Ethiopia using the autoregressive distributed lag (ARDL) bounds testing approach (Ayalew, 2013) is a more recent study. Time series annual data from

1970/71-2010/11 was used for the analysis. The Estimated results revealed that growth rate of income, budget deficit ratio and inflation rate were statistically significant short run and long run determinants of domestic saving in Ethiopia. But, depositing interest rate, current account deficit ratio and financial depth were found to be statistically insignificant determinants in the long run.

However, in the short run, financial depth and interest rates were found to have statistically significant meaning in explaining domestic savings in Ethiopia. The overall findings of the study underlined the importance of raising the level of income in a sustainable manner, minimizing the adverse impacts of budget deficit and inflation rate and creating competitive environment in the financial sector. (Ismail & Rashid, 2013), showed a negative association between the old dependency ratio and household saving rate. The population structure has been identified as a factor affecting saving behavior in less developed countries.

It can be concluded from the overview of Empirical Literature that determinants of savings rates are several. Some empirical studies revealed that variables such as GDP growth rate and GDP per capita growth rate represent the most important determinants of gross domestic savings (Mahmoud 2008; Kidane 2010; Emmanuel and Ahmad 2001). Also, budget deficit and current account deficit had negative impact on saving rate. While lagged gross domestic saving rate, interest rate, broad money and inflation rate appeared to have an ambiguous impact on saving levels and thus the significance of these variables was mixed between studies (Athukorala and

Sen 2004; Mahmoud 2008; Nwachukwu and Egwaikhide 2007; Ahmed 2011; Kidane 2010; Ahmad and Marwan 2003).

Nevertheless, factors which have successfully explained determinants of domestic savings rates in one country would not be certainly appropriate or successful in another country due to differences in economic, social, and demographic conditions among countries. Some of these factors may be significant in one case, but not in others, and thus they should be carefully examined taking into consideration the characteristics of each case. Thus, this study tries to determine factors that explain gross domestic savings rate in Ethiopia, which may help policy makers to formulate policies that enhance domestic saving rates.

3. Methodology of the study

3.1 Data Type and Source

This paper uses data collected from two sources. Data on GDP, gross domestic savings, real deposit rate of interest, broad money supply (M2), Foreign aid and Inflation Rate is collected from MoFED; the data for Age-Dependency Ratio is obtained from central statistics agency (CSA).

The data covers 34 years (1980-2014). In the data set GDP is measured at current market prices.

The data on gross domestic savings, broad money supply (M2) and Foreign aid are measured as a ratio of GDP.

3.2 Model Specifications

The functional relationship between gross domestic savings rate (GDS/Y) and its determinants is expressed as:

$$GDS/Y = f(RGDPG, ADR, MS/Y, R, FA/Y, INFL, U) \dots \dots \dots (1)$$

The specific econometric model can thus be explicitly expressed as follows:

$$(GDS/Y)_t = \beta_0 + \beta_1 RGDPG_t + \beta_2 ADR_t + \beta_3 MS/Y_t + \beta_4 R_t + \beta_5 FA/Y_t + \beta_6 INFL_t + U_t \dots \dots (2)$$

Where, GDS/Y is the gross domestic savings as a proportion of GDP, RGDPG is the growth rate of the real Gross Domestic Product (GDP), ADR is age dependency ratio, R is the real deposit rate of interest on bank deposits, MS/Y is the ratio of broad money supply (M2) to GDP, FA/Y is foreign aid as a proportion of GDP, and INFL is inflation rate.

In the model, t represents time period under analysis, U_t is the error term and is used to capture the unobserved effects and assumed to have zero mean and non-serial correlation, β_1 to β_6 are coefficients of associated independent variables; and β_0 is the constant intercept of the equation.

Determination of a saving function based on country level data on time series requires following strict estimation procedures. First is to carry out unit root test to test for stationarity of the macroeconomic variables. This was done using the Augmented Dickey Fuller (ADF) approach on both the dependent and independent variables. The next step was to perform a cointegration test which is basically a test of stationarity of the residuals. If all or some explanatory variables are cointegrated, the next step was to estimate a multivariate saving function. If sets of variables were cointegrated, the short-run dynamics and long-run equilibrium could be described by an Error Correction Model. Estimation of the long-run relationship is by Ordinary Least Squares (OLS).

4. Results and Discussions

4.1 Unit Root Test

This study uses dickey fuller (DF) test to analysis or investigate stationarity of Variables. It also shows the order of integration. If the calculated dickey fuller is greater than the tabulated (critical) value at a given level, the time series variable is stationary at the given order.

The unit root test result of the variables is presented in the following table.

Table 1 ADF Unit-Root Test Results

Variable	t-Statistic	Test critical values			Remark	Order of Integration
		1%	5%	10%		
GDS/Y	3.268	-3.689	-2.975	-2.619	Stationary	I (0)**
RGDPG t-1	-4.220	-3.696	-2.978	-2.620	Stationary	I (0)***
INFL	-3.975	-3.689	-2.975	-2.619	Stationary	I (0)***
R	-4.839	-3.689	-2.975	-2.619	Stationary	I (0)***
M2/Y	10.157	-3.689	-2.975	-2.619	Stationary	I (0)***
FA/Y	-8.201	-3.696	-2.978	-2.620	Stationary	I (1)***
ADR	4.644	-3.689	-2.975	-2.619	Stationary	I (0)***

Notes: *Significant at 10 percent ** Significant at 5 percent, *** Significant at 1 percent; H0: there is a unit root.

4.2 Test of co-integration

A linear combination of a time series variable becomes stationary if there is co-integration relationship between

the variables. The variables are said to be stationary if the residual is cointegrated (Stationary). The residual is stationary at 1% level of significant as shown in the following table. Therefore, the variables are co-integrated and there is long run relationship between them.

Table 2 Co-integration test results

Dickey-Fuller test for unit root Number of obs = 33

Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value
-4.570	-2.453	-1.696	-1.309

P-value for Z (t) = 0.0000

Since AEG test result is -4.570 and greater than 1% critical, it is stationary at 1% level I (0), which means the variables are stationary. This shows the existence of long run relationship among the variables.

4.3 Long run model Estimation

From the table below (table 1) the residual is stationary at 1% significant level shows the presence of long run relationship between the dependent and in dependent variables.

Accordingly from the estimation, the following results are obtained for the long run model of;

$$GDS/Y_t = \beta_0 + \beta_1 RGDPG_t + \beta_2 ADR_t + \beta_3 MS/Y_t + \beta_4 R_t + \beta_5 FA/Y_t + \beta_6 INFL_t + U_t \dots (3)$$

Table 3: OLS long run Estimation results

Variables	Coefficient	Std.err	T-value	T-probability
lrgdpg	-.0000667	.0005269	-0.13	0.900
Infl	-.0006329	.0003289	-1.92	0.065
R	-.0002652	.0002345	-1.13	0.268
m2y	.6245855	.0587073	10.64	0.000
Fay	-1.384804	.394932	-3.51	0.002
Adr	-.0069226	.0015073	-4.59	0.000
Cons	.6666393	.1504369	4.43	0.000

Number of obs = 34

F (6, 27) = 196.95

Prob > F = 0.0000

R-squared = 0.9777

Root MSE = 0.01519

Mean VIF | 3.38

chi2 (1) = 0.52

Prob > chi2 = 0.4696

Adj R-squared = 0.9727

Durbin-Watson d-statistic (7, 34) = 1.559318

An examination of the econometric results shows that the overall fit is satisfactory with an Rsquared (R2) of 0.9777 or 97%. It implies that GDP, inflation rate, real interest rate, financial sector development indicator (M2), foreign aid and age-dependency ratio explained about 97% systematic variations on Gross Domestic Savings (GDS) over the observed years in the Ethiopian economy while the remaining variation is explained by other determinant variables outside the model. The value of Durbin Watson is 1.56 for the model. This falls within the determinate region and implies that there is a positive first order serial autocorrelation among the explanatory variables in the model.

Table shows that real GDP growth rate has a negative and statistically insignificant impact in the long-run on the ratio of gross domestic savings to GDP. The inflation rate has a negative and significant impact in the long-run on the ratio of gross domestic savings to GDP at 10% level of significance. If the inflation rate rises by one percent, then GDS/Y will significantly decrease by 0.0006329 percent, ceteris paribus. Bank interest rate has a negative and statistically insignificant impact in the long-run on the ratio of gross domestic savings to GDP. Financial sector development has a positive and statistically significant impact in the long-run on the share of GDS to GDP. This implies that a one unit increase in financial sector development will lead to

.6245855 percent increase in the share of GDS to GDP. The foreign aid has a negative and significant impact in the long-run on gross domestic savings at 5% level of significance. Thus the results indicate that, if the ratio of foreign aid to GDP rises by one percent, then GDS /Y will significantly decrease by -1.384804 percent, ceteris paribus. Age-dependency ratio is also an important determinant of gross domestic savings at 1% significant level. This implies that a one unit increase in age-dependency ratio will lead to a decrease in GDS/Y by 0.0069226 units. It can be inferred that age-dependency ratio has a negative impact on GDS in Ethiopia.

From the analysis, it was evident that financial development, foreign aid, Inflation and Age dependency ratio were found to be significant determinants of savings, while Real interest rates and GDP growth rate on the other hand was found to be an insignificant determinant of gross domestic savings.

4.4 The short run model (dynamics)

ECM (Error correction model) is use to estimate the short run relationship between the variables and to determine the adjustment in the short run shock by differencing the long run model. The short run model can be estimated (ECMT-1) to capture the adjustment towards the long run and the model can be specified as follows.

$$d(GDS/Y)t = \beta_0 + \beta_1dRGDPt + \beta_2dADRT + \beta_3 dMS/Yt + \beta_4dRt + \beta_5dFA/Yt + \beta_6dINFLt + ECMt-1 + et \dots\dots\dots(4)$$

The error correction model is employed to correct for disequilibrium and determine the short run relationship between variables. The analysis of short run dynamics is often done by first eliminating trends in variables usually by differencing. In order to capture the adjustment towards the long run mode, the ECM incorporates the equilibrating error term (ECMt-1).

According to the short run model regression result shows as follows

Table 4: Short run estimation result

Variables	Coefficient	Std.err	T-value	T- probability
Dlrgdpg	.0007326	.0004205	1.74	0.094
Dinfl	-.0007292	.0002638	-2.76	0.011
Dr	-.0004016	.0001374	-2.92	0.007
dm2y	.8441864	.2684741	3.14	0.004
Dfay	-.5966294	.4108996	-1.45	0.159
Dadr	-.0031456	.005756	-0.55	0.590
ECMt-1	-.5161764	.2089036	-2.47	0.021
Cons	-.0023684	.0034661	-0.68	0.501

Number of obs = 33 Adj R-squared = 0.7266

F (7, 25) = 13.15 Root MSE = 0.01358

Prob > F = 0.0000 Durbin-Watson d-statistic (8, 33) = 2.0506

R-squared = 0.7864

The lagged GDP growth rate has a positive and significant impact on gross domestic savings in the short-run at 10% significance level. Inflation rate has negative and statistically significant impact on gross domestic savings in the short-run at 10% significance level. Interest rate has negative and statistically significant impact on gross domestic savings in the short-run at 1% significance level. Ratio of broad money to GDP has positive and statistically significant impact on GDS in the short-run at 1% significance level. Foreign aid and age-dependency ratio has negative and statistically insignificant impact on gross domestic saving in the short-run.

The error-correction term (ECMt-1) is 0.5161 which means that the speed of adjustment is

51.61% which shows that the model will correct disequilibrium position at the rate of 51.61% annually.

All the independent variables jointly determined the gross domestic savings in the short-run since the p-value of F-statistics is less than 5%. The Durbin-Watson Statistics is 2.0506 which show that there is no autocorrelation.

4.5 Discussion of the Estimated Results

The paper examined major determinants of gross savings in Ethiopia for the period 1980-2014.

The co-integration test indicated that the variables used in the model were co-integrated which means that there is a long-run equilibrium between the independent variables and the gross domestic savings.

The model estimates indicate that the inflation rate is found to have negative but statistically significant impact on gross domestic savings both in the short and long-run. This implies that a one percent increase in

inflation rate would result to 0.0007292 and 0.0006329 percentage point decrease in the ratio of gross domestic savings to GDP in both the short and long-run respectively.

The lagged GDP growth rate has a positive and significant impact on gross domestic savings in the short-run and has negative but insignificant impact in the long-run. This supports the argument that growth of income at individual level is a major determinant of gross domestic savings in developing countries in the long-run.

Bank interest rate has a negative and statistically significant impact on gross domestic saving in the short-run but insignificant in the long-run. Foreign aid has a negative and insignificant impact on gross domestic saving in the short run but has significant negative effect on gross domestic saving in the long-run.

Ratio of broad money (M2) to GDP as a measure of financial development has a positive and very statistically significant impact on gross domestic savings both in the short and long-run.

This implies that a one percent increase in financial development would result to 0.844 and 0.6245855 percentage point increase in gross domestic savings in both the short and long-run respectively.

Age-dependency ratio is also an important determinant of gross domestic savings at 1% significant level in the long-run. This implies that a one unit increase in age-dependency ratio will lead to a decrease in GDS per GDP by 0.0069226 units in the long-run. It can be inferred that age-dependency ratio has a negative impact on GDS in Ethiopia in the long-run but a negative and insignificant impact in the short-run.

In conclusion, it is important to note that all the independent variables jointly determine the gross domestic savings in the long run since the p-value of F-statistics is less than 0.05. The errorcorrection term (ECMt-1) is 0.5161764 which means that the speed of adjustment is 51.61% which shows that the model will correct disequilibrium position at the rate of 51.61% annually.

All the independent variables jointly determined the gross domestic savings in the short-run since the p-value of F-statistics is less than 5%. Also, the adjusted R2 is about 97.27%, which means that in the long-run, changes in explanatory variables explain 97% variations in the gross domestic savings ratio in Ethiopia during the period (1980-2014). The Durbin-Watson statistics is 2.0506 which mean that there is absence of autocorrelation.

5. CONCLUSION AND POLICY IMPLICATION

5.1 Conclusion

The study used econometric frame work to analyze trends and determinants of gross domestic saving in Ethiopia. The study hypothesized that foreign aid affects gross domestic savings significantly and negatively and age dependency ratio affects gross domestic saving significantly and negatively. So as to achieve the stated objective and to test hypothesis of the study, ordinary least square methods of estimation is used. Before an econometric estimation, the variables were tested for their order of integration and they were tested for their order of integration and they were found that integrated (Stationary) of order zero, I (0). The residual is stationary at level indicates that the Regression stationary at level (co-integrated). This means variables there is long run relationship among the explanatory variables, finally OLS estimation techniques is used to estimate the short run and the long run coefficient of variables used to investigate the relationship of variables in the model.

Statistical evidence from this study showed that the long run relationship between domestic savings and its determinants differ with its short run dynamics. Empirical results showed that

Foreign aid has a negative and insignificant impact on gross domestic saving in the short run but has significant negative effect on gross domestic saving in the long-run.the statistical evidence in short run is inconsistency with the hypothesis but consistence with long run econometric result.

Age-dependency ratio has a negative impact on GDS in Ethiopia in the long-run but a negative and insignificant impact in the short-run. It is consistent with the hypothesis in the long run but inconsistent with the short run econometric result.

Ratio of broad money (M2) to GDP as a measure of financial development has a positive and very statistically significant impact on gross domestic savings both in the short and long run. Bank interest rate has a negative and statistically significant impact on gross domestic saving in the short-run but insignificant in the long-run.

The lagged GDP growth rate has a positive and significant impact on gross domestic savings in the short-run and has negative but insignificant impact in the long-run. The model estimates indicate that the inflation rate is found to have negative but statistically significant impact on gross domestic savings both in the short and long-run.

5.2 Policy Implication

Based on the analysis made and conclusion arrived the following policy implication are derived.

As it was observed from the estimation results, Ratio of broad money (M2) to GDP as a measure of

financial development has a positive and very statistically significant impact on gross domestic savings both in the short and long-run. And inflation rate is found to have negative but statistically significant impact on gross domestic savings both in the short and long-run. The government of Ethiopia should take measures like Adoption of a strict monetary policy to maintain money supply within manageable levels and ensure stable and low inflation rates will help improve real incomes and will also cause development in the financial sector and hence improve gross domestic savings in the economy.

A negative and insignificant effect of interest rate on savings has a policy implication that is an increase in the real interest rate will not lead to a rise in gross domestic savings in Ethiopia. But to use interest rate as a means of increasing saving different measures should be taken first. This include: developing financial markets, deregulating the commercial sector including removing any ceilings on interest rate and increasing the participant in the financial sector.

In addition, state interest is recommended in the age dependency ratio, which was found to have significant and negative influence on gross domestic savings in the economy. From the empirical findings this study implies the improvement of health care provision by the government for the entire population. This will go a long way in improving the life expectancy and hence improve this dependency ratio. This partly will motivate workers to save for the old age.

Event though the study provides important outcomes on analyzing the trend and determinants of gross domestic saving in Ethiopia further study is needed that would overcome the limitations of the study. More variables should include in the model to found the appropriate and more accurate results.

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