

Factors Effecting Economic Growth of a Nation: The Case of Sub-Saharan African Nation Ethiopia

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ABSTRACT

The need of conducting this study is to examine the effect of aggressively increasing debt of Ethiopia. The annual data series over the period 1987-2019 has been used. The study used secondary data from National Bank of Ethiopia and World Bank website. The study has been made by using the (Auto- Regressive Distributive Lag) ARDL and (Ordinary Least Square) OLS models to check the relationship of growth and external debt. The models consider consumption, investment, current expenditure and external debt as independent variables and Real (Gross Domestic Product) GDP economic growth index as dependent variable. The effect of investment on GDP is determined by the level of capital return and interest rate so if, it is invested on productive sector and area it will have positive effect unless, the reverse is true. Private consumption and government current expenditure are just fuel for the economic activates when income increases consumption and demand of goods and service increases so it has positive effect on GDP. If consumption cutback weather private or public sector would reduce revenue and that leads to affect GDP negatively. According to the findings there is a statistically significant adverse effect of debt on economic growth of Ethiopia. In Ethiopia external debt service is a burden for its nation and it makes the GDP slows down. This study recommends that Ethiopia should find out any option of debt cancellation and must increase human development and more infrastructure development. In addition productive expenditure management, public sector reform, tax base expansion, export lead market and remittance are helpful for the growth of Ethiopia.

KEYWORDS: ARDL, Consumption, External Debt, Economic Growth, GDP, Investment, and Expenditure Management

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I. INTRODUCTION

In every country, government has to finance its expenditure, but with tax, it is impossible for government to finance its all expenditures, so public borrowing bridges the gap between revenue and expenditures. Government debt is one method of funding government operations, but it is not the only method. Governments can also create money to finance their debts, in that way removing the need to pay interest (Martin, 2009).

This practice shrinks government interest costs rather than truly cancelling government debt, but can result in hyperinflation if used unsparingly. Government debt is also called public debt. Government debt is one method of financing government operations. A debt is an obligation to pay money, deliver goods, or render service under an express or implied agreement. One who owes is a debtor, one to whom it is owed, is a creditor, or lender.

It's common that some governments default to set their expenses according to their revenues so the need to take debts in order to manage their expenses. On the other hand, other developing countries take debt to invest in their infrastructure, (railways, transportation, electricity, education). (Greer, 2013) focus on this point and said that debt may be used by state and local governments to expand the resources available to finance new construction of buildings and other tangible assets.

External debt is an important tool for financing infrastructure in recent years. Rapid expansion of the debt of developing countries like Ethiopia has increased the importance of the subject and it is related economic components. A high level debt can cripple the government operations because debt burden is a long term cost that cannot be reduce times of fiscal stress. Developments studies suggesting developing countries external

assets can fill the savings investment gap and it boost their growth. If debt size is too small it cannot effective or it is too large it can also to various economic problems. The donor agencies also impose many restrictions and also the debt management specially the expenditure side it is a burden for an economy it may causes negative effect.

The prime objective of the study is to identify the long-term effect on public debt. In addition, other objective are, factors responsible for economic growth, external debt effect on economic growth, impact of private consumption on the economic growth and government expenditures' and its impact on economic growth.

II. LITERATURE REVIEW

Theories of public debt and Economic Growth-Growth models augmented with public agents issuing debt to finance consumption or capital goods tend to exhibit a negative relationship between public debt and economic growth, particularly in a neoclassical setting. Meade (1958) was drawing attention to the fact that the removal of the "deadweight debt" would: (i) raise the incentive of households to save (the Pigou-effect) 10; (ii) improve the incentives for work and enterprise; (iii) possibly allow for a decrease in income taxation at a later stage as a result of saving interest payments on the budget (improving even more the incentives for work and enterprise). Modigliani (1961), refining contributions by Buchanan (1958) and Meade (1958), claimed that the national debt is a burden for next generations, which comes in the form of a condensed flow of income from a minor stock of private capital. Apart from a direct crowding-out effect, he also pointed out to the influence on long-term interest rates, possibly in a non-linear form "if the government operation is of sizable proportions it may significantly drive up [long-term] interest rates since the decrease of private capital will tend to increase its marginal product" Even when the national debt is generated as a counter-cyclical measure and "in spite of the easiest possible monetary policy with the whole structure of interest rates reduced to its lowest feasible level", the debt increase will normally not be costless for future generations even though being beneficial to the current generation.

Diamond (1965) develops the effect of taxes on the capital stock and differentiates between public external and internal debt. He concludes that, through the impact of taxes required to finance the interest payments, both types of public debt reduce the available lifetime consumption of taxpayers, as well as their saving, and thus the capital stock. In addition, he opposes that internal debt can produce a further decrease in the capital stock arising from the substitution of government debt for physical capital in individual portfolios. Claessens (1990) for instance, claimed that only the countries that are on the wrong side of the debt laffer curve would benefit from unilateral debt reduction.

Ricardo Theory of public debt-Among the not so many theories on public debt there is the Ricardo theory of public debt. In his Principles, Ricardo premised the treatment of public debts by a statement that the ordinary and extra-ordinary expenditures of the State were chiefly payments made to sustain unproductive laborers and he pointed out that any saving from the expenses of the Government would be added to the income if not to the capital of the contributors

Public Debt and economic growth-Public debt is the domestic and external debt obligation of a nation. This is debt that is borrowed to finance the economy's budget deficit. Panizza and Presbitero (2013), found out that theoretical models yield ambiguous results. Their reading of the empirical literature is that there is no paper that can make a strong case for a causal relationship going from debt to economic growth. They also found out that the presence of thresholds and, more in general, of a non-monotone relationship between debt and growth is not robust to small changes in data coverage and empirical techniques. Egert (2012) found out that advanced countries with high debt must act quickly and decisively to address their looming fiscal problems. The longer they wait, the bigger the negative impact will be on growth, and the harder it will be to adjust. Researchers in the likes of Paisa and Presbitero (2013), Cecchetti, Mohanty, and Zampolli (2011) and Egert (2012) have found out that there is a negative relationship between public debt and economic growth.

Economic growth and its determinant

Economic growth as defined: increase of the economic resources of a country or community (Babylon dictionary). It is an increase in capacity of an economy to produce goods and services compared from one period of time to another (Abbas. 2005).

External debt and economic growth

External debt is the external debt obligation of the country. Shabbir (2013) explored the long run relationship between external debt and economic growth in developing economies, by using a sample of 70 developing countries over a period of 1976-2011.

Consumption, Investment and Economic Growth-Consumption is a vital factor of the gross domestic product (GDP). The total expenditure in an economy calculated as the sum of households and public expenditures is very important in terms of its contribution to economic growth. Consumption is, therefore, one of the most crucial components of GDP. Since consumption cutbacks in either private or public sector would

reduce revenues of the firms, tax revenues from both direct and indirect taxes will eventually decrease. Since companies that act with the goal of profit maximization would employ fewer employees at lower wages due to their diminishing revenues, they will also cause an economic recession.

In addition to changes in consumption, another factor affecting an economic growth is investment (Sukirno, 2003). Furthermore, the investment is one of the components of GDP and hence the effect of investment on a nation's economy can be seen from the GDP. An investment is affected by the level of capital return and interest rate. For this reason the capital owner will invest if the capital return level is greater than the interest rate and as the investment spending decreases, the GDP also decreases (Mankiw, 2015).

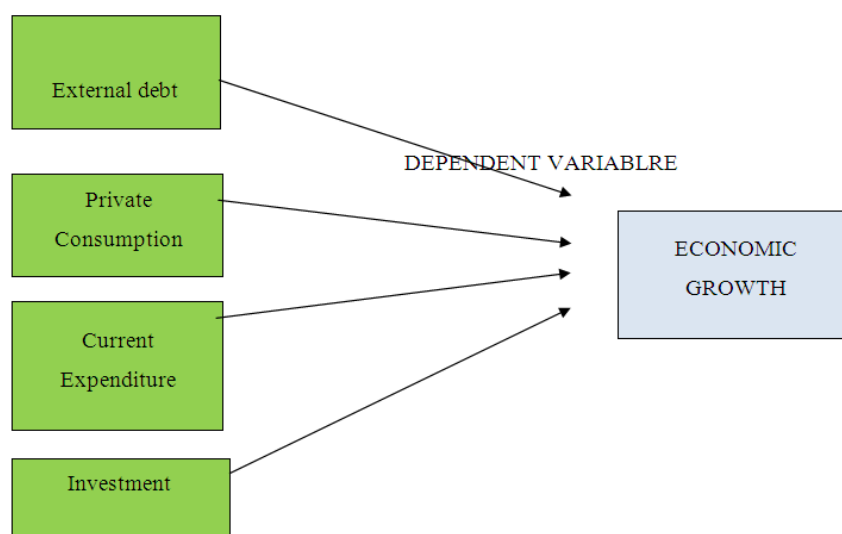
Theory of Government expenditure and economic growth

Government expenditure is government acquisition of goods and services for current or future use (Shim, 2003). The relationship between government spending and economic growth is very important for developing countries most of which have experienced increasing levels of public expenditure over time. Everything else held constant, government consumption will increase GDP since it contributes to current demand. However, there is also a negative effect since increased public expenditure needs to be financed. Financing public expenditure is done through taxes or by borrowing. Mitchell, (2005) notes that policy makers are divided as to whether government spending helps or hinders economic growth. Advocates for increased government spending argue that government programs provide valuable "public goods" such as education health facilities and infrastructure.

Most studies on public debt and its effect on economic growth have controversial and debatable. Typically focused on external debt and took a quarter data and drive conclusion by applying Johanson co-integration. Even though the Johnson's Co-integration technique is one of the widely used methods of time series analysis, its outcome could not be reliable for small sample size; that is observations less than eighty years for the time series data (Narayan, 2005; Udoh et.al, 2012). Relatively, the (ARDL) method has some advantage over the Johnsons method (Pesaran et al., 1999). And also most of the studies use almost similar independent variables by ignoring a plenty of macroeconomic variables. In addition to that most studies have failed to incorporate the fact. There are other macroeconomic variables that are brought about by debt increase, which affect economic growth. This study aims to contribute to fill this gap by using most recent data, suitable model and the most popular components of GDP as independent variable adding government expenditure, private consumption and investment as extra macroeconomic variables to the model.

After careful study of literature review, the following conceptual framework is formulated to illustrate the effects of debt on the economic growth in Ethiopia the most popular and known components of economic growth index the so called GDP is more explained by private consumption, government expenditure and investment.

RESEARCH MODEL AND HYPOTHESES DEVELOPMENT



III. RESEARCH METHODOLOGY

Research design

The study adopted a descriptive research design. Descriptive studies are concerned with the what, where and how of a phenomenon hence more placed to build a profile on that phenomenon (Mugenda, A. &

Mugenda, O. 2003). Descriptive research design is more appropriate because the study seeks to build a profile about the relationship between public debt and economic growth. In order to address the research questions, the appropriate research methodology and specific research methods are adopted as discussed in the subsequent sections of the chapter.

The study used quantitative secondary data from the ministry of finance directory of treasury, department of debts. Data on economic development was collected from the World Bank (WB) home page and from international monetary fund (IMF) website and also the National Bank of Ethiopia. The study period included 1987-2019 financial periods. This period was chosen because of the many changes that occurred within the nation that implications on the macroeconomic variables in Ethiopia. The study used annual data because Government Budgets are drawn annually and the deficits and surplus which are key elements.

Data Analysis Method

The study was used STATA 14.1 version software application to aid in data analysis, because The paired t-test, a non-parametric test of differences developed by Sir Williams Gosset (Mugenda.O&Mugenda, A 2003) is used in this study as a test of significance. The analysis used in this paper is at (0.05) level of significance (95 percent degree of confident with 5 percent degree of freedom). In order to determine the relationship between public debt and economic growth in Ethiopia, the researcher were conduct the auto regressive lag distributed model (ARDL) model. The study were based on Harrod Domar growth model which gives insights into the dynamics of growth which holds that the level of savings and capital are functions of the level of GDP in an economy.

Model Specification

The econometrics model used in this research is a Vector Auto Regression Model (VAR) model. Assumptions for this model are data should be time serious, more than 30 years is better, multivariate time serious function, Some of the variables are stationary at level form (stationary sets is used to know the mean variance and covariance be constant over sample) and some of them are stationary at first difference, all variables are with mean 0 (mean of the residual), variance and covariance are constant over sample, there is may long run co-integration between the dependent and independent variable over there system of equation and in addition dependent and independent variable in the given objective, the model may affect by its previous year period.

$$Y = \beta_0 + \beta_1 X_1 + \epsilon$$

Where: Y= real Economic growth (Measured by GDP)

ϵ = Error Term

This model was expanded into the following model:

In order to determine the relationship between domestic debt and economic growth in Ethiopia, the following regression model is employed:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon$$

Where: Y= Economic growth (Measured by change in Real GDP)

X₁= External debit

X₂= Current Expenditure of government

X₃= Private consumption

X₄=Investment

This model is a multiple regression model, the multivariate time serious model for ARDL model described by.

$$Y_t = \beta_0 + \beta_1 Y_{t-1} + \beta_2 Y_{t-2} + \beta_3 X_t + \beta_4 X_{t-1} + \beta_5 X_{t-2} + \dots + \epsilon$$

Based on the result from the regression result the estimated model will be written as

$$RGDP_t = RGDP_{t-2} + C_t + C_{t-1} + C_{t-3} + I_{t-1} + EXDEB_t + CE_t + CE_{t-2} + \epsilon_t$$

Where: (RGDP), Y_t= Economic growth at a time t (Measured by change in Real GDP)

(RGDP)Y_{t-2} = real GDP at t-2 (previous 2 year real GDP)

C_t = current year private Consumption

C_{t-1} = previous year private Consumption at t-1

C_{t-3} = private Consumption at t-3(previous 3 year private consumption)

I_{t-1} = previous year Investment at t-1

(EXDEB_t) = Current year External Debt

CE_{t-1} = previous year government Current Expenditure

CE_{t-2} = government Current Expenditure at t-2(previous 2 year Current Expenditure)

ϵ_t =error term of the model

Here, we can conclude that ARDL model have exogenous variable rather it is a system equation.

Each variable are depends on their previous year result, this if the failure if Ordinary List Square (OLS) regression. Because one of the assumption of multiple regression is no correlation between dependent variables (no auto correlation)

In order to test the significance of the model in measuring the relationship between public debt and economic performance, this study employs a test called as t test in the ARDL model. The study is tested at 95 per cent confidence level and 5 per cent significant level. If the significance number found is less than the critical value (0.05), then the conclusion will be that the model is significant in explaining the research objective.

Validity and Reliability Test

When dealing with time series data, it is necessary to assess whether the series is stationery or not. The reason behind is that regression of non-stationery series on another non-stationery leads to what is known as spurious regression. Furthermore, statistical test of the parameters resulting from such regression may be biased and inconsistent. So to verify the validity of the test the researcher will apply Unit Root Test, Co-integration Test and Diagnostic Test.

IV. ECONOMIC RESULTS AND DATA PRESENTATION

Variables and their short name

To use easily in the STATA application software the researcher try to use short name for all the variables as follow.

- a. rgdp is the real GDP of the country Ethiopia .
- b. exdebis the external debit of the country Ethiopia .
- c. c is the consumption of house hold.
- d. ce is the current expenditure of the Government.
- e. jis investment of the country Ethiopia.

Maximum Lag Length of the Model

To know the maximum lag length of the function the researcher tries to apply different tests. Those are Akaike Information criteria (AIC), Schwartz Information Criteria (SIC), Hannan Qinn Information Criteria (HQC). The researcher try to determining the optimal lag length using the *syntax varsocrgdp, varsocexdeb, varsoc c, varsocce, and varsoci* for each variables.

Optimal Lag Length

Variables	Determined optimal lag length
Real GDP	(2)
Consumption	(4)
Investment	(4)
External Debit	(1)
Current Expenditure	(4)

Source: STATA Result

Rules to determine the maximum lag length

Rule i. If all information criteria choose at the same optimal lag length, can easily select.

Rule ii. It can be decide by majority rule in case of difference in the information criteria.

Rule iii: There is also a way to determine the optimal lag length that satisfies the postestimation test in particular auto correlation test.

Rule iv. Too long and too short lag length is not recommended.

Base on those rules, the researcher try to determine the maximum lag length for each variables.

Unit Root Test-To determine the model is Vector Auto Regression (VAR) model, Vector Error Correction (VEC) model and Auto Regression Distributed Lag (ARDL) model; the researcher tries to test stationary at level form by using the Deckey Fuller (DF test).

Assumption, the sample must be zero mean of error, and constant variance and covariance in the sample

Stata syntax *dfullerrgdp, dfullerexdeb, dfulleri, dfuller c, dfullercefor* each and the result is

Stationary Test		
Variables	Test statistic	5% critical value
Real GDP	2.697	2.989
Consumption	2.633	2.980
Investment	2.022	2.980
External Debt	13.058	2.980
Current Expenditure	9.888	2.980
Stationery at first difference		
Real GDP	4.432	2.986
Consumption	4.291	2.983
Investment	4.226	2.983

Source STATA Result

Here, the researcher decides that two variables external debt and current expenditure are with greater than 5% critical value their test statistics, so these are stationery at level form the rest three variable real GDP, consumption and investment at level form yet not stationery because less than 5% critical value their test statistics but mean while three of them become stationery at first difference. If some variables are stationary at level form and the other are stable at first difference, we can use ARDL model.

Estimation of ARDL Model

The regression result is shows the relationship between the independent variable at time t and other independent variables, including their lags.

The ARDL model regression Result

ARDL (2, 3, 1, 0, 2) REGRESSION

	F(12, 16)	7,858.82	
	Prob > F	0.0000	
	R-squared	0.9998	
	Adj R-squared	0.9997	
VARIABLES	Coefficient	T vale	P > t value
REAL GDP			
LAG 2	-0.7113021	-4.11	0.001
CONSUMPTION			
LAG 0	-0.1992011	-2.27	0.037
LAG 1	1.055411	12.47	0.000
LAG 3	0.5491914	2.88	0.011
INVESTMENT			
LAG 1	0.5361987	3.39	0.004
EXTERNAL DEBIT	-0.6717139	-4.24	0.001
CURRENT EXPENDITURE			
LAG 0	1.225751	2.26	0.038
LAG 2	3.692038	3.19	0.006
CONSTANT TERM	61805.75	6.39	0.000

The model is rewrite as

$$Y_t = \beta_0 - \beta_1 Y_{t-2} - \beta_2 X_t + \beta_3 X_{t-1} + \beta_4 X_{t-3} + \beta_5 X_{t-1} + \beta_6 X_t - \beta_7 X_t + \beta_8 X_{t-2} + \epsilon$$

$$RGDP_t = 6.1305.75 - 0.71 RGDP_{t-2} - 0.2 C_t + 1.06C_{t-1} + 0.55C_{t-3} + 0.54I_{t-1} - 0.67EXDEB_t + 1.23CE_t + 3.69CEX_{t-2} + \epsilon_t$$

The estimated ARDL model indicates that, there is a 99.9 % relationship between the current year real GDP and other independent variables with highest significant level of 0.000. So, the estimated ARDL model is good.

From the regression result, all the independent variables and there lags affect the Real GDP of the country, So, real GDP is affected by other variables including their lags and also by itself (before 2 year). Here, there are eight independent variables and one dependent variable. But, at the beginning the total independent variables was only four, all those variables have significant relationship with the dependent variable Real GDP

at time t, instead the model contains other five additional variables. Those are one lag of real GDP, two lags of private consumption (previous year and previous 3 year), one lag of investment and one lag of government current expenditure.

The Error Correction Model

One of the important of using the ARDL model is to estimate the error correction term. This error correction model is very important to know what percent of an economic shock be adjusted within one year, and how long it takes to adjust the economic shock of the country and also can identified if there is long run relation in the estimated model or not.

ECM

ARDL (2, 3, 1, 0, 2) Regression

	R-squared		0.9989
	Adj R-squared		0.9980
Variables	Coefficient	T vale	P > t value
Adjustment			
Real GDP Lag 1	-1.9561	-8.39	0.000
Long Run Relation			
External Debit	-0.3434	-4.26	0.001
Consumption	0.8739	17.27	0.000
Investment	0.3359	2.77	0.014
Current Expenditure	3.4292	6.17	0.000
Short Run Relation			
Real GDP			
LD.	0.7113	4.11	0.001
Consumption			
D1.	-1.9087	-7.54	0.000
LD.	-0.5833	-3.34	0.004
L2D.	-0.5492	-2.88	0.011
Investment			
D1	-0.5362	-3.39	0.004
Current Expenditure			
D1	-5.4823	-4.09	0.001
LD	-3.6920	-3.19	0.006
Constant Term	61805.75	6.39	0.000

Source: STAT Result

From the result the researcher conclude that, there is a short run and long run effect of independent variable on the current time of real GDP. Here, also a positive speed of adjustment.

The most important and critical point from the result is, the rate of adjustment. Here, the rate of adjustment value is 195% and the sign is negative. The negative sign indicates that, the adjustment (response to economic shock, it may be positive or negative) must be in the inverse. In other word if the economic shock is positive, the rate of adjustment will try to reduce the real GDP and if the economic shock is negative the rate of adjustment will try to increase the real GDP. So, an economic shock happens in the country, the 195% of the shock will adjust in one year.

The long-run ARDL estimate on Table there is a strong relationship between the real GDP and external debt, consumption, current expenditure and investment with higher significant level of 0.001,0.000,0.001 and 0.000 respectively. The long run effect of external debt is -0.3434. This result indicates that, the increase in 1 million birr in the external debt will decrease the real GDP by 0.3434 million birr in the long run. In the other hand the long run effect of the private consumption is 0.8739.This result that, consumption increased by one

million birr will increase the real GDP also by 0.8739 million birr, the long run effect of current expenditure is 3.4292. This result shows that, an increase in the government current expenditure in one million can increase the real GDP of the country by 3.4292 million birr in the long run, the long run effect of investment is 0.3359. This shows that an increase of 1 million birr investment the real GDP of the country increased by 3.4292 million birr in the long run.

All the coefficients of investment, private consumption and current expenditure are indicates a negative significant effect on economic growth, except this year GDP will have positive and significant effect on next year GDP.

Diagnostics Tests

At the end of the development of the model, check the stability of the model is very common and mandatory part of the researcher. Because if the diagnostic test if fail, the regression result of the model will be superiors (false result). Dou to this the researcher tries to test the entire diagnostic test for the model. The diagnostic test based on the assumption of Ordinary List Square (OLS) regression.

Assumptions for OLS

All variables are with mean 0 (mean of the residual), variance and covariance are constant over sample. Here, the data should be normally distributed, there will be homoschedacticty, and there is no correlation between error term and other independent variables.

To check all those assumptions the researcher tries to use different tests as follow.

Heteroscedasticity Test

The concept of heteroscedasticity is regression disturbances whose variances are not constant across observations. The precise form of the heteroscedasticity is usually unknown, however. In that case, generalized least squares are not usable, and we may need to salvage what we can from the results of ordinary least squares. So, to accept the model result the observation should be homoschedastic. The researcher try to use the White's test for this reason; stata syntax estat in test, white.

White's test for heteroscedasticity

Chi2	Df	Prob.
30	29	0.4140

Source: STATA output

Ho: Homoschedasticity

Ha: heteroscedasticity

Here, Chi2 value is 0.4140, this is greater than 0.05. So, accept the Ho hypothesis and reject the Ha hypothesis. Ho hypothesis is there is homoschedasticity; and the Ha hypothesis is there is heteroscedasticity. So, the researcher concludes that the observations are homoschedastic, meaning that, there is constant variance among the observation.

Correlation Test

Time-series data often display auto correlation or serial correlation of the disturbances across periods. The sequence of observations is a time-series process which is characterized by its time ordering and its systematic correlation between observations in the sequence.

In the current context, this distribution of t is said to be covariance stationary or weakly stationary. It can be said, for example, that t is generated by a time-series process whose mean and variance are not changing over time. Except in very special cases, we would expect all the elements in the t component random vector, to be correlated. In this instance, said correlation is called autocorrelation.

To check this researcher uses the Durbin Waston and Estat Breusch- Bgodfrey test from stata, using saytaxestatdwatson estatbgodfrey, lags(2)

Breusch-Godfrey LM test for autocorrelation

Durbin-Watson d-statistic(8, 30) = 2.149605

lags(p)	chi2	df	Prob > chi2
11.695	4.282	4	0.0198

Source: STATA result

Hypothesis H0: There is no serial correlation

Ha: There is serial correlation

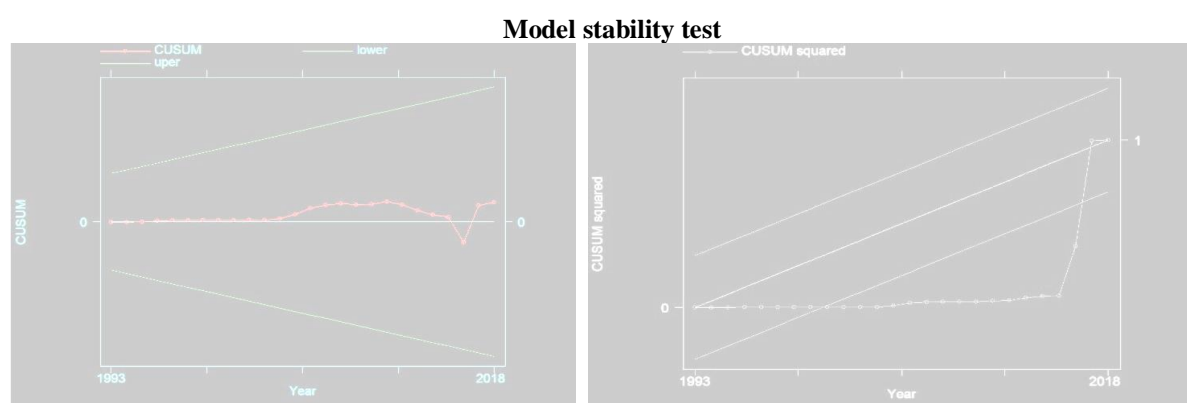
Here, from the result the value Prob > chi2 (0.0198) is greater than 0.05. So, accept Ho (no serial correlation) and reject Ha (serial correlation). As a result the researcher concludes that, there is no serial correlation between variables with time.

Model Stability Test

At the end of the estimation of the model, check the model stability is important, to accept the model as good model. In order to use ARDL method to co integration to determine stability, we need to apply stability tests such as the (CUSUM) and (CUSUMSQ) tests after co integration for determining stability of the coefficients (Bahmani, Oskooee and Gelan, 2009). Stability of the estimated parameters is tested by applying the cumulative sum of recursive residuals (CUSUM) and of squared residuals (CUSUMSQ) proposed by Brown et al. (1975).

A similar logic underlies an alternative test of model stability proposed by Brown, Durbin and Evans (1975) based on recursive residuals. The technique is appropriate for time series data and might be used if one is uncertain about when a structural change might have taken place. The null hypothesis is that the coefficient vector betas are the same in every period; the alternative is simply that is not.

To check this model stability the researcher uses, a CUSUM test using stata syntax `cusum6 rgdpexdeb c, i, ce, cs(cusum) lw(lower) uw(upper)`



Source: STATA Result

CUSUM and CUSUMSQ test results show that the parameters of the UECM model are relatively stable over time. The plots are given in Figure above. The green lines represent critical bounds at 5% significance level. Following Pesaran *et al.* (2001), Cumulative Sum of Recursive Residuals (CUSUM) and Cumulative Sum of Recursive Residual of Square (CUSUM Square) tests denoted by QS and QS2, respectively, have been applied to the residuals of optimum model to check for the structural stability of the short- and the long-run coefficients. The results of both CUSUM and CUSUM Square show stability of coefficients for this model. Coefficients are considered to be stable if the plot *stays* within the 5% critical upper and lower bounds for most of the sample period, otherwise they are unstable.

V. RESULTS, FINDINGS AND DISCUSSION

In this study the researcher used the Augmented Dickey-Fuller (ADF) test of stationary. After checking for the order of integration of all variables in the model, the Autoregressive ARDL model involves two steps for estimating the long-run relationship (Pesaran et al., 2001). In the first step the existence of long-run relationship among all variables in an equation should be examined and then in the second step the long-run and short-run coefficients of the variables can be estimated in the model. One can run the second step only if we find a long run co-integration relationship among the variables in the first step.

As can be seen from the regression result of, long run ARDL in Table the relationship between the independent variable at time t and other independent variables, including their lags discussed on the subsequent parts of the chapter.

Factors of Economic Growth in Ethiopia

The estimated ARDL model indicates that, there is a 99.9 % relationship between the current year real GDP and other independent variables with highest significant level of 0.000. So, the estimated ARDL model is good.

From the regression result, all the independent variables and there lags affect the Real GDP of the country, So, real GDP is affected by other variables including their lags and also by itself (before 2 year). Here,

there are eight independent variables and one dependent variable. But, at the beginning the total independent variables were only four, all those variables have significant relationship with the dependent variable Real GDP at time t , instead the model contains other five additional variables. Those are one lag of real GDP, two lags of private consumption (previous year and previous 3 year), one lag of investment and one lag of government current expenditure.

From the result, the current year real GDP is affected by the previous 2 year real GDP, current year private consumption, previous year of private consumption, previous three year of private consumption, previous year of investment, current year of external debt, current year of government current expenditure and previous two year of government current expenditure.

Economic Growth and External Debt in Ethiopia

If real GDP of the country increase by one unit (one million of birr) before 2year, the current year real GDP will decrease by 0.7113 (units million of birr). In other word if the current year GDP is increased by 1 million after 2 year the real GDP will decrease by 0.7113(unit million of birr) at *ceteris Paribus*.

This result support also the finding that high public external debt levels are associated with low growth as a higher tax burden on capital is required to service this stock of public external debt, leading to a lower rate of return on capital and hence lower investment and lower economic growth.

On the other hand an increase in the current year external debt by 1 (unit millions of birr) the real GDP of the current year will decreased by 0.67 (unit millions of birr) with highest significant level of 0.000 at *ceteris Paribus*. Here, this result is a big risk for the country real GDP On the other hand, According to the conventional view of the public debt and/or the overhang theory of Krugman (1988), public external debt acts as a major constraint to capital formation in developing nations by discouraging investment if this borrowing is not used for productive purposes. From this relation we can conclude that the current year external debt affect the current year Real GDP so external debt has negative effect on economic growth of Ethiopia.

Therefore the result reveals that the “conventional view” of public external debt holds true for Ethiopia. It is inconsistent with the findings of studies made by Rahman (2012) for Malaysian economy, Okechukwu and Anele (2012) for Nigeria’s economy, Al-Zeaud (2014) for Jordanian economy, Uzun, et al., (2012) for transition economies.

But it is consistent with the results specifically those related to developing countries such as a study made by Peng Lee and Ling Ng (2015) for Malaysian economy, Shabbir and Yasin (2015) for developing countries, Kumar and Woo (2010) for advance and emerging economies.

Economic Growth and Private Consumption in Ethiopia

The result shows that, if increase by 1 (unit million birr) of private consumption the current year real GDP decrease by 0.2 (unit millions of birr) with a good significant level of 0.037 at 5 % degree of confidence. In contrast, if the previous year of private consumption increased by 1 (unit million birr) the current year will increased by 1.06 (unit millions of birr), in other hand if the private consumption increase by one million in this year the next year real GDP will increased by 1.06 million birr at *ceteris Paribus* with highest significant level of 0.000 and also if the previous 3year of private consumption increased by 1 (unit millions of birr) the current year real GDP will increased by 0.55 (unit millions of birr) in other hand if the private consumption increased by one unit after 3 year the real GDP will increased by 0.55 (unit million birr) with higher significant level of 0.011 at *ceteris Paribus*.

From this relation we can conclude that, the current year consumption affect the current year real GDP negatively, next year and after 3year will affect positively. This means that, the consumption cost of the current year will accumulate and show positive effect on real GDP after one year and next 3 year later. From the two-sector economy it is known that economic growth is directly proportional to household consumption which means as the consumption decreases, the economic growth also decreases. Thus spending made by consumer households are used to purchase various needs within a given year.

if the previous year of investment increased by 1 (unit one million birr) the current year will increased by 0.54 (unit millions of birr), in other hand if the investment increase by 1 million in this year the next year real GDP will increased by 0.54 million birr at *ceteris Paribus* with highest significant level of 0.000.

Economic Growth and Government Expenditure in Ethiopia

The Ethiopian government tries to increase the real GDP of the country in different ways of mechanism; one way of mechanism is debt from external (this debt is mostly for foreign currency consumption purpose). But from the regression result the increase of external debt will decrease the current year real GDP at *ceteris Paribus*. Without expenditure the government cannot be facilitate any activity, including real GDP. So, in the real world economy the real GDP and the total government expenditure are highly related, because without expenditure there is no output, in other word without cost no benefit (to get more profit it needs more cost). In

the Ethiopia context, these relations also valid with one lag length and current year. If the current year government current expenditure increased by 1 (unit million of birr) the current year real GDP increased by 1.23 (unit million of birr), in other word if current expenditure increased by one million the real GDP of current year will be increased by 1.23 million birr with the same relation the previous 2 year current expenditure increased by one (unit million in birr) the real GDP increased by 3.69 million birr at setters Paribas with higher significant level of 0.006. The macroeconomic theory suggests that public sector expenditure should have a positive impact on economic growth. Supporting this theory, Freeman and Webber (2009) find that the productive type of public service expenditure in education and health can lead to long-term economic return.

VI. CONCLUSIONS

Ethiopia is being a developing country and compliments its revenue through exports of primary commodities. In attempting to add on the available domestic resources, successive governments have acquired huge amount of external debt which is used to finance the national development projects. Therefore, the main objective of this study is to investigate the effect of public external debt on economic growth of Ethiopia by proxy of real GDP. Unlike researchers who consider external debt effect on economic growth consider conventionally known components of GDP; like consumption, investment and government current expenditure macroeconomic variables, to explain the economic performance index in a best way.

the government needs to mobilize its own resource and need to pursue policies geared towards reducing its exposure to external debt stock in order to reduce its adverse effects on the economy, to avoid more loans build-upping, the government should diversify the economy so as to generate more revenue and need to increase financing from the domestic market, government should focus the debt management, especially on the expenditure side the borrowed fund should tied on productive area and for infrastructural sector that support productivity of other sectors rather than social consumption, government should focus on quality of education and generate competent, qualified and productive citizen, even for the rest of the world and to export productive labour to maximize FCY in flows and minimize FCY distress and debt overhang, public private partnership and proper utilization of existing natural resource and mechanized farm and lead to export market to settle existing public debt that hinder the economic growth of Ethiopia, The government and policy makers should expeditiously seek to implement structural Reforms geared towards public sector reform and public external debt sustainability, There is a need for the government and policy makers to know the threshold level of public external debt

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