
EXTERNAL DEBT AND ECONOMIC GROWTH IN TANZANIA: EVIDENCE FROM A VECTOR ERROR CORRECTION MODEL

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Abstract

Keywords:

External Debt Stock;
Economic Growth;
External Debt Service;
Gross Capital formation;
Foreign Direct Investment.

This study investigated the relationship between external debt and economic growth in Tanzania. Time series data on external debt stock and external debt service was used to capture external debt burden on sustainability of economic growth. The study more specifically set out to test causal relationship between external debt and economic growth. An empirical investigation was conducted using time series data on Real Gross Domestic Product, External Debt Stock, External Debt Payments, Gross Capital Formation and Foreign Direct Investment. The techniques of estimation employed in the study include Augmented Dickey Fuller test, Johansen Cointegration, Vector Error Correction Mechanism and Granger Causality Test. The results show a significant long-run relationship and a one way causal relationship between external debt stock and economic growth in Tanzania. The findings of the study shows that lagged values of external debt and debt service significantly affect negatively economic growth and they have long-

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run association. Based on the findings the study there is a need to consolidate on the gains of any debt relief granted and the consequent reduction in the country's debt stock. One way to achieve this is through undertaking consistent debt management strategies, persistence servicing of debt and prudential borrowing when seeking external finance in order to ensure sustainability of debt services and promote economic growth.

1. Introduction

One of the sources of financing capital formation for development in any economy including Tanzania is external debt. Due to the vicious circle of low productivity, low income, and low savings, most of Least Developing Countries (LDCs) in the world are characterized by insufficient internal capital formation. The compelling need to balance the savings-investment gap for sustainable growth and off-set fiscal deficits in developing countries forced government to source for finance outside its established main source of revenue, which is taxation. This implies that in order to bridge resource gap developing countries have to seek for technical and financial support from Developed Countries (DCs). The justification for seek for external funds from abroad is based on the fact that a country should borrow provided that the capital borrowed produces a rate of return that is higher than the cost of borrowing. It is worth mentioning that in some cases external debt found to act as a major constraint to capital formation in developing nations. In those countries the burden and dynamics of external debt show that they do not contribute significantly to financing economic growth and development [2]. In most cases, the huge debt accumulates because of the servicing requirements and the principal itself apart from other factors. It follows therefore, external debt becomes a substitute to domestic savings and investments and tends to crowd them out and act as a constraint on growth and development in those countries [5].

In principal debt or borrowing is one of the factors that determine economic growth. External debt is a crucial element in financing development activities, whereby a country borrows in order to fill saving-investment gap and hence boost long-term productivity and

growth as well as to improve in human welfare and development. In recent decades, the impact of external debt on economic growth in the developing countries including Tanzania has attracted considerable attention of researchers and academicians. External debt and economic growth nexus has not been encouraging as the Debt-GDP ratio as well as Debt Service-GDP ratio has been on the increase resulting in huge debt burden annually [21]. From economic theory point of view, it is believed that reasonable levels of external debt by a developing economy are likely to enhance its economic performance through covering of domestic saving-investment gap. It is expected that when a nation's economic growth is enhanced, the poverty level is likely to be alleviated gradually. However, there remains deep divergent view among researchers on the role of external finance in the country's economic development process. On one hand some scholars stresses the productive impact of external debt as a necessity to supplement domestic savings, stimulate investment and hence promote economic growth. The argument in this view is that the once borrowed funds are being converted into capital assets and other required inputs for production will lead to sustainable economic growth and development as it will boost the productive capacity of the economy [31]. On the other hand, a counter opinion is that the accumulation of huge external debts triggers a steady decline of economic assets out of the government possession through the means of debt service commitments. These resources could have been applied to development projects and upgrade of country's infrastructure if there were no debt overhang.

The major aim of this study is to investigate empirically impact of external debt on economic growth in Tanzania using a Vector Error Correction Model (VECM). The importance of this econometric model in analyzing data based on its power to capture the interdependencies between multiple time series and good forecasting capabilities. It is a desire of every country which seeks external finance to fill saving-investment gap to achieve sustainable economic growth and have sustainable levels of debt. Because of this notion, the nature of the relationship between external debt and economic growth must be well known and clearly understood for better policy formulation and implementation. Therefore, the findings of this study shall be of immense benefit to government, researchers, international agencies and society as a whole. More specifically, the study of this nature should help government and policy makers to know what levels of public debt will deter economic growth with a non-linear effect external debt on growth and thus adopt policies that will keep the country's debt level in a sustainable level. In other words the

study's result will be highly relevant in the formulation and implementation of effective policies as well as providing baseline study and subsequently work on it for better results in the future.

2. Literature Review

2.1 Theoretical Framework

A correlation between rising government debt and unproductive government spending that crowd-out private savings which in turn diminish the nation's investible resources was observed by classical economists. However, the role of savings and investment in stimulating economic growth has been emphasized by Harrod-Domar growth model and that the rate of economic growth in the country depends on the level of saving and the capital output ratio. The dual gap model posits that developing economies faces two gaps in their economy which they have to fill, gap between savings and investments and gap between exports and imports. The dual gap analysis is built on the works of different authors [11, 14, 17, and 22] which hinges development on investment and requires savings. Theoretically savings is expected to equal investment, but in reality it is inadequate to stimulate sustainable growth and development. The model further assumed that most developing countries experiencing scarcity of domestic savings needed to augment country's investment and balance of trade needed to finance intermediate and capital goods from external resources [37].

The national income identity is used to explain the two gap model:

$$Y = C + I + G + X - M = C + S + T \text{ Eq(1)}$$

Whereby;

Y = total output produced in a given year

C = total private consumption in a given year

I = total investment in a given year

G = government expenditure in a given year

X = country's exports

M = country's imports

S = country's savings and

T = county's tax revenue

The premise underlying the analysis is that domestic investment can be financed by domestic saving as well as through inflows of capital from abroad. Therefore by

rearranging equation (1), the resource gap is highlighted with the savings gap on the left hand side and trade gap constraint on the right hand side of equation (2) below:

$$I - S = (X - M) + (G - T) \text{ Eq(2)}$$

Let F denotes (X-M) and with the assumption that government plans its expenditure to be equal to its tax revenue, equation (2) can be modified to be:

$$I - S = F \text{ or } I = S + F \text{ Eq(3)}$$

Based on the above analysis there are several possible scenarios that may play out; if savings (S) is too small to sustain the amount required for investment (I) for the country to undertake, a savings gap would exist. On the other hand, if export (X) is too small to sustain the importation of commodities (M) and ensure full utilization of the resources of the economy, a trade gap would exist. The deduction we get from equation (3) is that domestic investment can be financed by domestic savings and/or external debt from abroad in which case external debt can augment investment, which in turn stimulates country's economic growth by filling either the savings gap or trade gap. This model is relevant for this study considering the long-term investments required for sustainable economic growth in Tanzania and its domestic realities.

2.2 Empirical Literature

The empirical literature about the nature of the relationship between external debt and economic growth or specifically the effect of debt on economic growth can be summarized by three strands of thought. The first strand sees external debt as a capital inflow in the country with a positive effect on domestic savings and investment and consequently on sustainable growth. External debt is used to balance the savings-investments and off-set fiscal deficit, and does not automatically transform into debt burden when funds are optimally utilized. In order to attain an optimal condition for debt utilization, the marginal return on investment should be greater than or equal to the cost of borrowing. In the short-run, foreign debt can make it possible for countries to experience uneven endowments of resources or to exploit uneven investment opportunities available across the world without naturally being associated with unevenness in consumption. In the long-run, foreign debt can allow countries to undertake long-term investment projects without having to sacrifice current consumption for future consumption that would otherwise be necessary in a dynamic model. Furthermore, models of endogenous growth show how access to international capital markets and finance can lead to faster economic growth. This

argument implies that money obtained from abroad in terms of borrowings complement domestic savings and investments for sustainable growth [4, 8, 15, 19, 20 and 28].

The second strand of thought in analyzing impact of debt on growth considers external debt as a substitute to domestic savings and investment and therefore tends to crowd them out [1, 6, 27, 29, 30 and 36]. It is being argued that, if future debt is going to be greater than a country's ability to repay its debts, the expected debt service will be an increasing function of its output level over time. In other words from rational expectation point of views, the returns from investing in a country are considered as being subjected to a high marginal tax by creditors and this might discourage domestic and foreign investors to undertake various investment opportunities. This is known as debt overhang theory and purports that accumulation of high stock of public debt would stagnate economic growth and tangle developmental efforts through the channels of reduced public revenue and investment expenditure. It maintains that debt accumulation stimulates growth initially but when it exceeds the debt sustainability threshold level, the debt accumulation effect will magnify through liquidity constraint in the credit market while debt servicing commitment reduce the earnings from exportation within the public sector for spending and by this means undermining economic growth and development [35]. Generally, most studies conducted tend to confirm debt overhang/crowding-out effects. However, the empirical literature is mainly focused on examining the impact of external debt on investments rather than on economic growth *per se* [33]. While the obtained findings are quite promising, there is a need for case-by-case studies in view of each country's unique characteristics of economic and social conditions. This is particularly important given the stringent conditionalities attached for debt relief initiatives undertaken over the years.

A third strand of thought in summarizing the nature of the relationship between external debt and growth have been formed from the literature which attempted to reconcile the two conflicting views provided above by developing models with non-linear effects of debt on growth [7, 9, 10, 12, 13, 18, 23, 25, 26 and 33]. Endogenous growth models are being presented in a situation where capital accumulation is the sole force driving growth for the economy. Access to international financial markets by countries is limited because of the risk of debt repudiation by borrowers. In the early stages growth is high as the country borrows and invests in short-term and long-term projects. Later on, growth tends to fall to a lower level, and this new level would be higher than it would have been if there was no international borrowing and lending (financial autarky). During the early stage of repaying

countries' debts as required does not crowd-out investment because lending countries are more patient and value growth more than the borrowing countries themselves. However, this result will depend on the ability of borrowing countries to implement optimal rescheduling policies of external debt acquired. If these countries are not able to commit themselves to this policy, a debt overhang scenario will occur and investment and growth in the later stages will be even lower than in financial autarky [3]. Given these extant empirical findings, it can be concluded that poor management of external debts acquired could lead developing countries to exhibit and suffer the consequences of a negative relationship between the debt level and economic growth. Hence, it is important to maintain a healthy level of external debt and to utilize acquired funds to boost domestic savings and investment for country's sustainable growth.

3. Research Method

3.1 Data Type and Sources

This study examines the nature of the relationship between external debt and economic growth in Tanzania using secondary data obtained from published sources, that is, obtained from secondary sources of information. The variables of interest chosen in this study based on the availability and reliability of data in which five variables (GDP, External Debt Stock, External Debt Services Payment, Gross Capital Formation and Foreign Direct Investment) are being included. The data were obtained from National Bureau of Statistics (NBS) and International Financial Statistics (IFS) Data Stream published by International Monetary Fund (IMF). Secondary data used is of the time series nature in which the given variables are being measured over a period of 1985 to 2017.

3.2 Econometric Model

This study adopted the methodology of co-integration analysis using the Augmented Dickey Fuller (ADF) unit root test, Johansen co-integration and Vector Autoregressive Approach of estimation which provides coefficient estimates of the time-series data used in analysis. Also a test for causality between external debt and economic growth using Granger Causality Test is carried out. The Vector Error Correction Model (VECM) is used to correct or eliminate the discrepancy that occurs in the short-run due to various reasons. It is used to test the speed of adjustment from short-run to long-run equilibrium and due to occurrence of any internal or external shocks in the economy. The coefficient of Error-Correction Term (ECT) gives the percentage of the discrepancy between the variables that

can be eliminated in the next time period. The a priori expectation underlying the analysis is that the VECM coefficient must be negative and significant. The higher the coefficient of VECM implies the more the speed of adjustment as described by Error Correction Term (ECT) in the analysis.

3.3 Model Specification

Examining the impact of External Debt on Economic Growth in Tanzania is the main aim of the study. The model in this paper is adopted from a simple open macroeconomic debt growth model as described in the theoretical framework section of the literature review. The model is specified of the functional form:

$$GDP = F(EDS, EDP, GCF, FDI) \text{ Eq(4)}$$

Where:

GDP = Real Gross Domestic Product

EDS = External Debt Stock

EDP = External Debt Payments

GCF = Gross Capital Formation

FDI = Foreign Direct Investment

The model is specified of its stochastic form:

$$GDP_t = \alpha_0 + \alpha_1 EDS_t + \alpha_2 EDP_t + \alpha_3 GCF_t + \alpha_4 FDI_t + \varepsilon_t \text{ Eq(5)}$$

Where:

ε_t = Error term

The model is specified of its log-linear form:

$$\text{Log}GDP_t = \beta_0 + \beta_1 \text{Log}EDS_t + \beta_2 \text{Log}EDP_t + \beta_3 \text{Log}GCF_t + \beta_4 \text{Log}FDI_t + \varepsilon_t \text{ Eq(6)}$$

Real GDP is a measure that reflects the value of goods and services produced in a given year in the country. In this study it is used to capture economic growth because it is adjusted for inflation and as such provides a more accurate figure for the analysis. Real GDP, External Debt Stock (EDS), External Debt Payment (EDP), Gross Capital Formation (GCF) and Foreign Direct Investment (FDI) were logged due to the large nature of their values.

4. Results and Analysis

4.1 The Unit Root Test

Usually non-stationary data produces spurious regression; hence the obtained result may be misleading. Therefore, it was cognizant to establish the stationarity of data. From the

empirical studies most of the time series data such as the ones used in this study tend to exhibit either a deterministic and/or stochastic time trend and are therefore found to be non-stationary; that is, the variables of interest have means, variances and covariances that are not time invariant. The test result of the Augmented Dickey-Fuller statistic for all the time series variables used in the estimation at levels are presented in Table 1. The results of the stationarity tests at level show that all of the variables have a unit root. Since the p value for all variables found to be greater than 0.05, we accept null hypothesis that means variables are not stationary.

Table 1: Unit Root Test Results at Levels

| | Z statistic | Interpolated Dickey-Fuller | | | | | |
|------|-------------|----------------------------|----------|-------------|----------|--------------|----------|
| | | 1% Value | Critical | 5% Value | Critical | 10% Value | Critical |
| LGDP | 3.615 | -3.702 | | -2.980 | | -2.622 | |
| LEDS | -0.717 | -3.702 | | -2.980 | | -2.622 | |
| LEDP | -0.290 | -3.702 | | -2.980 | | -2.622 | |
| LGCF | 0.258 | -3.702 | | -2.980 | | -2.622 | |
| LFDI | -1.778 | -3.702 | | -2.980 | | -2.622 | |

Having found that the variables are not stationary at level, the next step is to difference the variables once in order to perform stationarity tests on difference variables. The results of the stationarity tests on differenced variables confirmed stationarity. As it has been shown that the variables are not stationary at levels hence violate the basic assumption of the classic linear regression model. According to this assumption variables should have a constant mean, variance and the covariance between the two time periods should be zero. Violation of this assumption leads to spurious regression. In order to avoid this short fall, the unit root test is being conducted at first difference of variables were p values was found to be less than 0.05 hence rejecting the null hypothesis of non stationarity.

Table 2: Unit Root Test Results at First Difference

| | Z statistic | Interpolated Dickey-Fuller | | | | | |
|------|-------------|----------------------------|----------|-------------|----------|--------------|----------|
| | | 1% Value | Critical | 5% Value | Critical | 10% Value | Critical |
| LGDP | 2.270 | -3.709 | | -2.983 | | -2.623 | |
| LEDS | -0.486 | -3.709 | | -2.983 | | -2.623 | |
| LEDP | 0.778 | -3.709 | | -2.983 | | -2.623 | |
| LGCF | 0.020 | -3.709 | | -2.983 | | -2.623 | |
| LFDI | -1.801 | -3.709 | | -2.983 | | -2.623 | |

The ADF test results with variables at first difference are shown in Table 2. The null hypothesis of the presence of unit root in the series was rejected since their probability values were found to be less than 0.05 and the values of their calculated ADF (in absolute terms) statistics which were higher than their critical values. Following obtained result, it can be concluded that the variables of interest are integrated of the order one, that is 1(1).

4.2 Johansen Cointegration Test

Following the confirmation that all variables included in the analysis are integrated of order one, the next step is to test for the existence of a cointegration relationship among the variable of interest in the study. A natural first step in the analysis of cointegration is to establish that it is indeed a characteristic of the data. Two broad approaches for testing for cointegration have been developed. The Engle and Granger [16] method is based on assessing whether single-equation estimates of the equilibrium errors appear to be stationary. The second method is by Johansen [24] which is based on the VAR approach. If a set of variables is truly cointegrated, then it should be possible to detect the implied restrictions in an otherwise unrestricted VAR. The Johansen cointegration test results for all variables in the study are reported in the Tables 3 below. Test results suggest that there are two cointegrating equations, since two lags were found. Trace statistics is used to test null hypothesis that rank is zero against alternative hypothesis that rank is positive. The obtained Johansen cointegration tests below strongly rejected the null hypothesis of no cointegration, i.e. no long-run relationship between the dependent and the independent variables in favor of at least 2, cointegrating vectors. This implies that there is long-run relationship between the dependent variable and the chosen explanatory variables.

Table 3: Johansen Cointegration Test

| Maximum Rank | Parms | LL | Eigen Value | Trace Statistics | 5% Critical Value |
|--------------|-------|----------|-------------|------------------|-------------------|
| 0 | 30 | 75.4234 | | 60.9833 | 68.52 |
| 1 | 39 | 86.9125 | 0.5235 | 38.0052 | 47.21 |
| 2 | 46 | 96.4167 | 0.4584 | 18.9969 | 29.68 |
| 3 | 51 | 101.6604 | 0.2870 | 8.5094 | 15.41 |
| 4 | 54 | 105.4672 | 0.2178 | 0.8957 | 3.76 |
| 5 | 55 | 105.9151 | 0.0285 | | |

NB: Number of observations 31, number of lags 2.

4.3 Estimation of the Vector Error Correction Model (VECM)

A Vector Error Correction (VEC) model is a restricted Vector Autoregression (VAR) model that has cointegration restrictions built into the provided specification, so that it is designed for use with non-stationary variables that are known to be cointegrated. VEC methodology superficially resembles simultaneous-equation modeling in that several endogenous variables are being considered together. But each endogenous variable is explained by its lagged, or past, values and the lagged values of all other endogenous variables in the model; usually, there are no exogenous variables in the model. The VEC specification restricts the long-run behavior of the dependent or endogenous variables to converge to their cointegrating relationship while allowing a wide range of short-run dynamics. The cointegration term is known as the error correction term (ECM) since the deviation from long-run equilibrium is corrected gradually through a series of partial short-run adjustments. Error correction model is used to bridge both short-run and long-run relationship within the context of a single equation [34].

As can be seen from Δ GDP equation the result in Table 4 indicated that most of the variables and their lags are significant. The R^2 of the equation indicated that all the explanatory variables in the model accounts for 95.44% of the systematic variation in GDP. The F-statistical value of 146.63 with the probability value of 0.0000 indicated that the whole model is significant. The error correction term, that is, ECM(-1) is negative and statistically significant at the 1% level. Its coefficient of -0.7559 implied that the speed at which the short-run equation converges to equilibrium in the long-run due to any internal

or external shocks is high. One year lagged external debt stock (EDS) has a negative and statistically significant relationship with current GDP at 1% level in Tanzania. The negatively signed coefficient of EDS is in conformity with debt overhang hypothesis. A unit increase in EDS consequently means that GDP decreases by 0.0688 units. One year lagged Foreign Direct Investment (FDI) has a positive and highly significant relationship with current GDP, while the Gross Capital Formation (GCF) has statistically insignificant relationship with GDP in Tanzania. A unit increase in FDI will lead to 0.0059 units increase in GDP. One year lagged External Debt Payment (EDP) has a positive and significant relationship with current GDP. A unit rise in EDP will cause GDP to decrease by 0.0549 units.

Table 4: Results of Error Correction Model

| Dependent Variable $\Delta LGDP$ | | | | | | |
|----------------------------------|------------------------------------|------------|-------|-----------|------------------------|---------|
| Variable | Coefficients | Std. Error | Z | P > [Z] | [95% Conf. Interval] | |
| Constant | 0.1441 | 0.0262 | 5.50 | 0.000 | 0.0927 | 0.1955 |
| $\Delta LGDP_{t-1}$ | 0.0571 | 0.1402 | 0.41 | 0.684 | -0.2178 | 0.3319 |
| $\Delta LGDP_{t-2}$ | 0.4605 | 0.1604 | -2.87 | 0.004 | 0.1461 | 0.7749 |
| $\Delta LE DS_{t-1}$ | -0.0688 | 0.0247 | -3.46 | 0.005 | -0.1172 | -0.0203 |
| $\Delta LE DS_{t-2}$ | -0.0580 | 0.0168 | 3.89 | 0.001 | -0.0909 | -0.0252 |
| $\Delta LE DP_{t-1}$ | -0.0549 | 0.0141 | 1.67 | 0.000 | 0.0273 | 0.0827 |
| $\Delta LE DP_{t-2}$ | -0.0202 | 0.0121 | 1.07 | 0.095 | -0.0035 | 0.0441 |
| $\Delta LGCF_{t-1}$ | 0.0348 | 0.0326 | 0.26 | 0.285 | -0.0290 | 0.0987 |
| $\Delta LGCF_{t-2}$ | 0.0103 | 0.0398 | -3.07 | 0.795 | -0.0677 | 0.0884 |
| $\Delta LFDI_{t-1}$ | 0.0059 | 0.0019 | -0.70 | 0.002 | -0.0097 | -0.0021 |
| $\Delta LFDI_{t-2}$ | 0.0011 | 0.0016 | 1.50 | 0.482 | -0.0043 | 0.0021 |
| ECM_{t-1} | -0.7559 | 0.1303 | -5.16 | 0.000 | -0.2152 | -0.0967 |
| R-Squared | 0.9544 Adjusted R-Squared = 0.9479 | | | | | |
| F-Statistic | 146.63 Prob(F-Statistic) = 0.0000 | | | | | |

4.4 Granger Causality Test

The result of pair-wise Granger's causality between the variable of interest in this study is provided in Table 5. However, for the purpose of discussion in this paper the focus is on the causal relationship between economic growth and external debt in Tanzania. The null hypothesis states that EDS does not Granger cause GDP, and GDP does not Granger cause

EDS. The rule of thumb states that the probability of the F-statistic must be less than 0.5 to show the existed causal relationship at the 5% level.

Table 5 below gives result for obtained probabilities for causal variables EDS and GDP are 0.035 and 0.779 respectfully. Therefore, the null hypothesis is being rejected stated that EDS does not Granger cause GDP, hence external debt stock cause changes in GDP at 5% level. On the other hand, the null hypothesis is being accepted for the case of GDP does not Granger cause EDS and hence GDP does not cause changes in external debt stock in Tanzania. It is generally implied that there exist a one way causal relationship exist between external debt burden and gross domestic product in Tanzania. Accumulation of external debt over time causes changes in the country's productive capacity as measured by GDP.

Table 5: Results of Granger Causality Test

| Null hypothesis: | F-Statistic | Probability(F-Stat.) |
|--------------------------------|-------------|----------------------|
| EDS does not Granger cause GDP | 6.7219 | 0.035 |
| GDP does not Granger cause EDS | 0.4999 | 0.779 |
| EDP does not Granger cause GDP | 1.6398 | 0.440 |
| GDP does not Granger cause EDP | 1.5438 | 0.462 |
| GCF does not Granger cause GDP | 6.6664 | 0.036 |
| GDP does not Granger cause GCF | 2.3053 | 0.316 |
| FDI does not Granger cause GDP | 15.186 | 0.001 |
| GDP does not Granger cause FDI | 8.8095 | 0.012 |

4.5 Analysis of the Regression Results

The result of the Johansen cointegration test provided in Table 3 revealed that there exists a long-run relationship between external debt stock, external debt servicing, and gross domestic product per capita in Tanzania, this is from the evidence that at least 2 cointegrating equations exists among the variable of interest. Result of the computed ECM equation indicated that external debt stock lagged twice have significant negative relationship with gross domestic product per capita in Tanzania implying that external debt has reach a point to be unproductive in terms of its contribution to the production process of the country. For the case of external debt service lagged twice, payment for borrowed funds was also found to be negatively affect current gross domestic product and

statistically significant. In principal investment and gross capital formation are linked to debt service of the country, that is why a higher payment for this service can influence the returns of productive investment and discourage capital formation. This is one of the explanations why the variable of the debt service affects significantly and negatively economic growth. The payment of debt service decreases investment and impedes economic growth. From the conducted analysis, gross capital formation (GCF) and foreign direct investment (FDI) lagged twice were found to be statistically insignificant in determining systematic variation in current GDP in Tanzania. The value of the coefficient of determination (R^2) of 0.9544 showed that that the exogenous variables in the ECM equation, EDS, EDP, GCF and FDI explains about 95% of the systematic variations in GDP equation, implying the remaining percentage will be explained factors not included in the model. The F-statistical values, 146.63, was statistically significant at the 1% level going by the probability values of 0.0000, implying that EDS, EDP, GCF and FDI taken together, have significant linear relationship with the dependent variable. The error correction method revealed that the lagged error correction term in ECM(-1) is high and statistically significant judging from its high and negatively signed coefficient. Finally, the Granger Causality test revealed that there exist causal relationship between external debt stock and gross domestic product per while no causal relationship exist between gross domestic product and external debt stick. This implies that only a one way causal relationship exists between EDS and GDP as far as assessment of external debt and economic growth is concern in Tanzania.

5. Conclusion

Many developing countries choose external finance as a means of ensuring sustained economic growth and development with less domestic borrowing. The 'dual gap' model of growth postulates that investment is a function of savings and that investment that requires domestic savings normally will not be sufficient to ensure sustainable growth, thereby necessitating complementary of external finance. An important issue that needs empirical investigation is assessment of whether or not external borrowing drives economic growth in debtor countries. This paper investigates empirically external debt and economic growth using VECM and granger causality test in Tanzania. External debt stock and debt service payment showed a negative statistically significant relationship with gross domestic product as a measure of economic growth. Debt service exerts a negative influence on the contributions of domestic resource on growth. In one way or the other investment and

gross capital formation are linked to debt service of the country, that is why a higher payment for this service can influence negatively the returns of productive investment, discourage capital formation and lower growth. The logical implication of the findings obtained in this study is that external debt has not been well utilized as far as growth is concerned and there is always room for improvements. Therefore, among other things there is a need to consolidate on the gains of any debt relief granted and the consequent reduction in the country's debt stock. One way to achieve this target is through undertaking consistent debt management strategies, persistence servicing of debt, prudential borrowing when seeking external finance and possible liquidation of large part of outstanding external debt. The government should ensure that marginal return on investment is always greater than or equal to the cost of borrowing any development projects which will requires external borrowings. Finally, it is worth mentioning that all indebted countries including Tanzania should seek external borrowings for sustainable growth and development only for very high priority, well-appraised, and self-liquidating projects in order to ensure sustainability of debt services in the long-run. In addition to that, such projects should have direct impact on economic development. An economic culture of transparency, in the issue of debt management, should be cultivated. Also a sound macroeconomic environment is an important ingredient of country's growth because it is a logical prerequisite to proper utilization of external funds and ensuring links among different productive sectors in the economy.

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