DOES GOVERNMENT EXPENDITURE INFLUENCE ECONOMIC GROWTH IN EAST AFRICA COMMUNITY?

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ABSTRACT

Economic growth of East Africa Community (EAC) region has remained low over the years for the region to attain the middle level economic status. High government expenditures in the region has increased demand for public debt since these expenditures are more than the tax generated revenues. This generated interest to study the influence of these factors on the economy. The study targeted the five countries of East Africa Community which consists of Kenya, Uganda, Tanzania, Rwanda and Burundi from 2005 to 2020. The study used panel data obtained from World Bank development indicators database. Stationary tests were carried to stabilize the data. Public debt and tax were stationary at level while economic growth and government expenditure were stationary at first difference. All variables were regressed at first difference for uniformity. Hausman test and Langrage Multiplier (LM) tests showed that pooled OLS regression model was the most appropriate to estimate the parameters and conduct the inference. Diagnostic tests results showed that the data had no problem of multicollinearity, heteroskedasticity and serial correlation.The study results showed in East Africa Community, government expenditure had a positive but insignificant effect on growth with a p-value of 0.273 at 0.05 significance level. The study recommends that the countries of EAC region should adopt robust fiscal policies that reduce public debts and taxation rates in their economies.

Keywords: Government Expenditure, Public Debt, Economic Growth

1. Introduction

Report by Africa Development Bank (2019) shows that the East Africa Community (EAC) region recorded a growth rate of about 5.7 percent on average in the last decade. This growth

trend is not high enough to achieve middle-income status before the end of this decade which is the ambition of governments in this region (McAuliffe, 2012).

Empirical studies that have been done indicate that economic growth of growing economies is influenced by the various fiscal factors. The influence of fiscal policies on economic growth has generated several disagreements from the researchers and policy makers. While some indicate that fiscal factors have positive influence on economic growth, others conclude that these effects are negative and insignificant (Ibrahim, 2015; Kwoba, 2015; Basu, et al., 2000)

Fiscal policy entails government deliberate actions by the government in its expenditure and taxation to influence macro-economic variables in a desired direction to achieve a sustainable economic growth and development. According to Keynesian economists, an economy needs active government intervention that should influence the level of demand in the economy. When governments increase their expenditure by providing more public goods, social services, infrastructure development and targeted intervention such as subsidies would lead to increased aggregate demand, supply and employment of resources which ultimately causes growth in the economy (Keynes, 1936; Lin, 1994).

According to Scandizzo and Sanguinetti (2009) and other economists increase in government expenditure in capital investment that have a long period of productive life and development of physical infrastructure such as transport network, energy generating plants, government buildings, water and sanitation networks leads to sustainable economic growth.

Expenditure of EAC governments has remained high compared to their GDP for the last 15 years with an average growth rate of 14.92 compared to other more developed Sub Saharan economies such as Nigeria which recorded government expenditure GDP ratio of 4.4 percent in 2017. A part from Tanzania whose spending in relation to GDP has shown a down ward trend, the rest of the EAC spending trends show increased government activities on expenditure. This trend is not healthy for the economy of the region. Burundi's spending gone up from 14 percent in 2005 to a high of above 30 percent of the GDP in 2020. Uganda's spending also has shown a significant rise from 9.59 percent to 12.09 percent, with Rwanda rising by 0.85 percent to 14.9 in 2018. Kenya's spending shows a declining rate from 14.17 percent in 2010 to 12.91 in 2018; however this rate is still high. The trends of Tanzania are now at a single digit after deliberate steps by the government to curb its expenditure in relation to its GDP (World Bank 2019).

2. THEORETICAL AND EMPIRICAL LITERATURE

2.1 The Keynesian Theory

According to the Keynesian theory, governments should use fiscal policies to correct imbalances in the economy and boost economic growth. During period of recession the government should adopt expansionary measures such as increased public expenditure can be undertaken to raise aggregate demand on the factors of production and goods and services produced hence boost the economy.

When the government increases its activities in provision of essential utilities to the citizens and on development projects in the economy, it's spending increase which leads to increased employment of factors of production in all sectors of the economy. When more factors of production are demanded, the economy shall experience more output produced, employment rate will raise, income and profits of businesses rise while households increase their aggregated demand for goods and services from firms. This would result in the firms hiring more factors of production to meet the increased demand of goods and services needed by the government and households. This leads to increased production and wealth generation hence growth in GDP. However, the greatest limitation of this theory is that it does not address the problem of inflation, misallocation and inefficiencies in allocation of resources brought about by increased government spending (Kurihara, 2012).

2.2 Empirical literature

According to Metwally and Tamaschke (1994), there is no real burden associated with public debt and therefore public debt has no influence on economy of a country (Metwally and Tamaschke, 1994). Accordingly unlike external debt, domestic public debt does not add to the real resource base in the economy since such resources are already present in the economy.

From Keynesian, policy makers should consider the effects of fiscal policies on taxation since such policies may disturb private consumption, savings and investment rates in the economy. Reduction in taxation rates would boost consumption by availing more disposable income for both household and firms. This leads to increased general demand for goods and services hence production.

Studies on the influence of fiscal factors on the economy show mixed results. Chude (2013) studied on how public spending influence economic growth rate for Nigeria. Using ECM technique in examining both long and short run influence, the results showed that government spending influences positively economic growth for Nigeria.

Ocran (2009) examined the effect of fiscal policy variables on economic growth for South Africa between 1990 and 2004, by employing vector regressive modelling technique and impulse

response functions in the estimation. The study indicated that government consumption expenditure; fixed capital formation and tax receipts had a positive effect on economic growth. However, fiscal deficits have insignificant impact on economic growth.

Njuguna (2009) studied effects of public expenditure on economic growth for Kenya between 1963 and 2006. By assuming Keynesian theory on public spending and economic growth rate and employing the OLS estimation techniques the results showed that increased government spending on productive sectors have a positively significant impact on economic growth.

Moreno-Dodson (2008) carried out an empirical analysis of how public spending contributes to growth on fastest growing economies of developing countries using panel data. The study employed OLS and GMM econometric methods to analyse the data. The results show that public spending has a significant positive impact on GDP growth.

Korman and Brahmasrene (2007) did a study on the influence of government expenditure on economic growth of Thailand employing Granger causality tests. The results showed that government expenditures has no influence on economic growth and are not co-integrated.

3. METHODOLOGY

The research analysed a dynamic econometric panel model that combines the both time series and cross section data. The model to be estimated was of the form:

$$Ln\ GDP_{it} = \alpha + \beta_1 Ln\ GEX_{it} + \beta_2 Ln\ GDI_{it} + \beta_3 Ln\ DEB_{it} + \beta_4 Ln\ SAV_{it} + \beta_5 Ln\ TAX_{it} + \gamma_i + \mu_t$$
.... (viii)

Where:

GDP represents annual GDP percentage growth rate, GEX represents government expenditure percentage rate of GDP, GDI represents rate of gross domestic investment

DEB represents Public debt as percentage of GDP, SAV represents level of domestic savings rate, TAX represents total tax rate on businesses, Ln represents natural logarithm, γ_i represents country unobserved heterogonous variables (presence of sea port, devolution rate in governance and demographic characteristics), μ_t represents the error term, β_i - Slope Coefficients and t - Represents the index of time.

The study used pooled OLS regression model to determine correlation among the variables to be considered in the study.

3.1 Panel Data Estimation Technique

The research used panel data estimation techniques for determining the influence of government expenditure has on economic growth using data from EAC region. Panel data estimation technique makes it possible to study time series (different periods) and cross-sections (different countries) simultaneously, each with one dependent with several independent variables (Mose, et. al. 2014). Panel time series refers data collected from selected individual countries in different time periods. This type of data considers the same individuals in each cross-section and hence causing a repetition of same countries at different time periods (Ghazi, 2014).

3.2 Pooled OLS Regression Model

According to Akbar et al.(2011); while it is assumed that all coefficients are constant across time and individual countries; however if these individual effects are neither significant country nor significant temporal effects, all the data is pooled and Ordinary Least Squares (OLS) regression model is regressed. The Langrage Multiplier (LM) test was carried out to determine whether to use the individual effects regression or a pooled OLS regression model

4. Data Analysis and Discussion

4.1 Results for panel unit root test

The study employed Levin, Lin and Chu (2002) to affirm stationarity of variables under study. The findings of the test are shown in table 4.1

Table 4.1 Results for panel unit root test

Variable	Form of test	Test statistics	P-Value	Conclusion
	Unadjausted t	-7.4193	0.0025	1st Difference
Economic growth	Adjusted t	-2.8017		
	Unadjausted t	-7.8765	0.0001	1st

Government expenditure	Adjusted t	-3.8634		Difference
Public Debt	Unadjusted t	-6.1023	0.0004	Level
	Adjusted t	-3.3278		
	Adjusted t	-3.5033		
Tax	Unadjusted t	-4.2894	0.0014	Level
	Adjusted t	-2.9898		

Source: Constructed from the study data

From the findings of the stationery results shown in table 4.2; the study rejected the null hypothesis of presence of unit root at level in some variables. The study concluded that public debt and tax were stationary at level or integrated of order zero I (0) while economic growth and government expenditure were non-stationary at level but became stationary at first difference, hence integrated of order one, I(1). All variables were regressed at first difference for uniformity.

4.2 Hausman Test Results

The study performed the Hausman tests on the panel models in this study in order to ascertain the most appropriate model and method of estimation between; Fixed Effects Model (FEM) and Random Effects Model (REM). The Hausman test compares the fixed effects to the random effects models by testing the null hypothesis that the coefficients estimated by the efficient random effects estimator are the same as the ones estimated by the consistent fixed effects estimator. The test verifies whether the unobserved countries effects are correlated with the regressors. The null hypothesis is not rejected when the Hausman statistic, which asymptotically follows a chi-square distribution, is statistically insignificance implying that the random effects model is the most appropriate. The model summary of the results are presented in table 4.3.

Table 4.3 Results of Hausman Test

Var	Fixed	random	Difference	S.E.
GEX	.1086666	.1086666	-7.67e-15	.0182706
DEB	-.031359	-.031359	-1.11e-16	.001351
TAX	.0122432	.0122432	-2.19e-16	.0006173

Source: Constructed from the study data

From the results of table 4.3 on Hausman Test the study failed to reject the null hypothesis since Hausman statistic was statistically insignificance with a p -value 0f 1.000. This implied that there was insignificant random effect in the panel data and the individual level effects are best modelled using the random effects method than fixed effect model.

4.3 Langrage Multiplier (LM)

Langrage Multiplier (LM) tests was done to examine if individual specification variance are zero. The test contrasts a random effect model and pooled OLS model and helps in deciding between random effects regression and a simple pooled OLS regression model. The test was necessary since the Hausman test results suggested random effect model as the most appropriate.

Table 4.4   Results of Langrage Multiplier (LM) Test

	Var	sd = sqrt(Var)
GDP	6.343558	2.518642
E	1.600397	1.265068
U	0	0
Test: Var(u)		0
	chibar2(01)	0.00

Prob > chibar2	1.0000

Source: Constructed from the study data

The null hypothesis of the test is that variances across entities are zero. That is, there is no significant difference across units (no random effect). From the results, the study failed to reject the null hypothesis (p-value = 1.000) and concluded that there was insignificant random effect in the panel data and therefore random effect model was not appropriate in dealing with heterogeneity better than pooled OLS regression model. Meaning variability of the variables across the EA countries were not very different from each other.

4.4 Multicollinearity Test

A variance of inflation (VIF) was used to determine the degree of correlation between variables so as to avoid multicollinearity which can adversely affect the reliability of the study estimates. If there is high multicollinearity between independent variable, confidence intervals for coefficients will tend to be very wide and t-statistics will be very small. Coefficients will have to be larger in order to be statistically significant; hence it will be harder to reject the null hypothesis when multicollinearity is present. A commonly given rule of thumb is that VIFs of 10 or higher (or equivalently, tolerances of 10 or less) may be an indication of the problem of multicollinearity (Williams, 2015; Joseph, William, Black, Babin & Anderson, 2014). The results of mean VIF are given in table 4.4

Table 4.5 Results for Multicollinearity test

Variable	VIF	1/VIF
GEX	5.58	0.179278
TAX	4.28	0.233456
DEB	2.19	0.457044
Mean VIF	3.13	

Source: Constructed from the study data

The study results show that there is no multicollinearity problem. This is because the correlation results in table 4.4 show that all the variables had a variance inflation factor of less than 10 and a tolerance statistic greater than 0.10.

4.5 Heteroskedasticity Test

The study used panel data and so it was most likely that the assumption of constant error variance does not hold due to cross-sectional data. In the presence of heteroskedastic disturbances, more weight is placed on observations with larger error variances and less weight is placed on observations with small error variances. The result is that the estimates are unbiased and consistent but they are not efficient (Pindyck & Rubinfeld, 1998).

Table 4.6 Results of Heteroskedasticity Test

Ho:		Constant variance
Variables:		fitted values of D.GDP
chi2(1)	=	0.0500
Prob > chi2	=	0.8319

Source: Constructed from the study data

The study conducted the tests of heteroskedasticity for each model specification by use of Modified Wald Test for group wise heteroskedasticity for panel models and Breusch-Pagan-Godfrey Test for income inequality models. The null hypothesis of the test is that the error term has got a constant variance (homoskedastic). The null hypothesis is rejected when the Chi-Square statistic is statistically significance hence there is no problem of heteroskedasticity.

4.6 Serial Correlation Test

According to Torres (2010) serial correlation tests applies to macro panels with long panels of 20 to 30 years but it is not a problem with short micro panels. This study used a short panel data of 16 years. However, since the statistical package used in the estimation of the study model, usually reported the Durbin-Watson (DW) statistics, which tests the first order autocorrelation the study reported the Durbin Watson (DW) statistic for all estimated models to check for possible autocorrelation. The value of Durbin Watson statistic always lies between 0 and 4. If the

Durbin Watson statistic is substantially less than 2, there is evidence of positive serial correlation while if Durbin Watson is less than 1, implies positive autocorrelation and when Durbin Watson is greater than 3 is an indication of negative autocorrelation (Bhargava, Franzini & Narendranathan, 1982). The reported DW for the study model was within the acceptable range of no serial correlation. This indicates that the estimated models were free of serial correlation problems.

4.7 Pooled OLS Regression Model

In order to determine the influence of government expenditure, public debt and taxation has on the economic growth of East Africa Community; pooled OLS regression analysis model was employed. The results for the pooled OLS regression model are as shown in table 4.8

Table 4.8 Results of Pooled OLS Regression Model Output

GDP	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
GEX	-.1158981	.1690532	1.11	0.273	-.1503617	.524142
DEB	-.0333508	.0107315	-3.11	0.003	-.0547595	-.0119421
TAX	-.4308136	.0538842	-8.00	0.000	-.5383096	-.3233175
Cons	-.1158981	.3061467	-0.38	0.706	-.7266441	.4948479
R-squared	0.6188	Adj R-squared	0.5912	Prob>F	0.0000	

From the Results of the Pooled OLS Regression, the model output shows a probability greater than F statistics being significant at 0.000 at 0.05 level. Further the model output shows an R-squared of 61.88% meaning the variables explain the model well as shown in table 4.8.

From the pooled OLS regression model, government expenditure has a positive but insignificant effect on growth with a p-value of 0.273 at 0.05significance level. These results are in line with

the study done by Korman and Brahmasrene (2007) that employed Granger causality tests which also showed that government spending is not significant to economic growth. This could be due to the fact that a bigger ratio of the government expenditure in the EAC region is allocated to recurrent expenditures than in development of human capital, technology and capital accumulation projects and misallocation, misappropriation and rampant corruption incidences in the EAC region.

5. Conclusion

On the basis of empirical results, the study concluded that, government expenditure has a positive but insignificant influence on GDP in EAC region. Governments in the region should come up with policies that discourage increased government spending especially on recurrent expenditures and increase their budgetary allocations on developmental sectors. Taxation has a significant negative influence on economic growth. Therefore the policy makers should carefully formulate tax policies that do not affect investors and businesses negatively. There is need to reduce tax rates and broaden the tax base to increase government revenue. Reduction in tax rates should also be accompanied by reduced government spending to avoid the fiscal deficits in their budgets. The study recommends that the government should allocate more of its resource in their budgets on development of human capital, technology, infrastructure development and capital accumulation projects.

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