

EFFECT OF DOMESTIC DEBT ON ECONOMIC GROWTH IN THE EAST AFRICAN COMMUNITY

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Abstract

This paper empirically explores the effect of domestic debt, as a share of Gross Domestic Product (GDP), on economic growth in the East Africa Community (EAC) over the period 1990-2010. This study was based on the Solow growth model augmented for debt. Levin-Lin-Chu test (LLC) was used to investigate the properties of the data with respect to Unit roots. The Hausman specification test was used to select the panel fixed-effects model, which was corrected for heteroscedasticity. The results show that domestic debt has a positive significant effect on per capita GDP growth rate in the EAC. The policy implication is to promote sustainable levels of domestic borrowing to enhance growth.

Keywords: Domestic Debt; Economic Growth; East African Community

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1. Introduction

Domestic Public Debt is mainly debt owed to holders of Government securities such as Treasury Bills and Treasury Bonds. Governments usually borrow by issuing securities, government bonds and bills. Governments borrow for two reasons namely: when the projected revenue targets fall

short of the projected expenditure and to pay off maturing loans (Ponzi games) which is typical with domestic debt.

“Reasonable” levels of borrowing by a developing country are likely to enhance its economic growth, both through capital accumulation and productivity growth. Countries at early stages of development have small stocks of capital and are likely to have investment opportunities with rates of return higher than in advanced economies. As long as they use the borrowed funds for productive investment and they do not suffer from macroeconomic instability, policies that distort economic incentives, or sizable adverse shocks, growth should increase and allow for timely debt repayments (Pattillo *et al.* 2004).

Appropriate use of debt could lead to improved socio-economic growth and thus, better standards of living. In order to make debt effective, there is need for far reaching reforms in the management of the public sector. However in most cases, resources from debt have not been used as effectively, for example, projects financed by international loans have, due to lack of adequate or realistic planning, failed to generate sufficient resources to service the debt borrowed. Therefore socio-economic development is compromised since the government spends huge sums on loan repayments, hence reducing money it spends on education, health and other social amenities, which mainly target the poor, who comprise the majority of the population (KENDREN, 2009).

The literature on the origins of the African debt crisis lists a number of factors as its cause. The oil price shocks of 1973-74 and 1978-79, the expansion of the Eurodollar, a rise in public expenditure by African governments following increases in commodity prices during the early 1970s, recession in the industrialized nations and subsequent fall in commodity prices, as well as

rises in real world interest rate are all mentioned as major factors. Surprisingly, almost all of this literature focuses on the post-independence period, with a greater part of the analysis contained therein relating to the 1970s and 80s (Alemayehu, 2002).

The East African Community (EAC) is among the fastest growing regions. Growth rates have picked up strongly in the EAC countries over the last two decades hence outpacing the rest of Sub-Saharan African (SSA) since 2000. During 2005–2010, per capita income growth reached 3.7 percent a year in the EAC, compared to 3.2 percent for SSA as a whole, and almost quadruple the rate achieved in the previous 15-year period. Part of the recent high growth is “catching up” after years of very poor growth. In the last part of the 20th century, the region suffered periods of severe civil strife and bouts of economic instability. Since then, the region has been committed to strong policies.

However, growth within the EAC has been uneven. Rwanda, Tanzania, and Uganda have had the longest periods of high growth. Uganda’s growth acceleration started earlier than in the other countries and has lasted more than 20 years, with per capita income growth averaging 3.4 percent a year during 1990–2010. Growth in Rwanda and Tanzania has been strong since the early 2000s. After a period of stagnation, growth is picking up in Kenya, the largest of the five economies, averaging 1.9 percent a year since 2005 compared to minus 0.2 percent in 1990–2004, providing momentum for the region as a whole. Output declined in Burundi in most of the period since 1990 (reflecting periods of political conflict) but has shown signs of recovery in recent years (McAuliffe *et al.* 2012).

Once a country borrows, it has to pay the loan amount plus interest and associated cost (Debt servicing). This will therefore imply that the government uses resources which could be used to

meet its expenditures to pay the debt. Debt service has crowded-out funding for social and capital expenditures in these countries. After debt servicing and salaries, there is little left for core functions of the government, that is, education, health, basic infrastructure, and other essential services to create an enabling environment for the private sector. For example, in 1989, Kenya's debt service was more than a third of its export earnings. On the other hand Tanzania's debt payment was 86 percent of export earnings in 1987 (Kiringai, 2002).

Since the EAC member countries are striving for sustainable economic growth, they need to manage their fiscal deficit hence public debt. In order to bring it down, these countries must conquer the challenges of increasing revenues, expanding avenues for new investments and curtailing unessential public expenditures that can drive these economies to a higher growth path while limiting the current account deficit to sustainable levels.

2. Literature on Domestic Debt and Growth

2.1 Theoretical Literature

Domestic debt may have positive as well as negative impacts on economic growth. In the traditional view, a tax cut financed by government borrowing would have many effects on the economy. The immediate impact of the tax cut would be to motivate consumer spending. Higher consumer spending affects the economy in both short run and long run. In the short run, higher consumer spending would raise the demand for goods and services and thus raise output and employment. As the marginal propensity to consume is higher than marginal propensity to save, the increase in private savings falls short of government dis-saving. This increases the real interest rate in the economy hence encouraging capital inflow from abroad.

In the long run, the higher interest rate would discourage investment and thus crowd out private investment. The lower domestic savings mean a smaller capital stock. The inflow from abroad would result in greater foreign debt. The higher aggregate demand results in a higher price level that adjusts over time and the economy returns to a natural rate of output. The lower investment eventually leads to a lower steady state capital stock and a lower level of output. Therefore, the overall impact when considering the long-run period would be smaller total output and eventually lower consumption and reduced economic welfare. This is also referred to as the burden of public debt, as each generation burdens the next, by leaving behind a smaller aggregate stock of capital (Sheikh *et al.* 2010).

According to WB and IMF (2001), extensive use of domestic borrowing can have severe repercussions on the economy. Domestic debt service can consume a significant part of government revenues, especially given that domestic interest rates are higher than foreign ones. The interest cost of domestic borrowing can rise quickly along with increases in the outstanding stock of debt, especially in shallow financial markets. The increase in interest rates may be even more pronounced if the investor base is relatively narrow, since the government may be held hostage by a particular group of investors.

Domestic debt financing leads to crowding-out of private investment. When issuing domestic debt, governments tap domestic private savings that would otherwise be available to private sector. This is normally followed by an increase in domestic interest rates, if these are flexible, adversely affecting private investment. However, even when interest rates are controlled, domestic borrowing can lead to credit rationing and crowding-out of private sector investment (Fischer and Easterly, 1990).

2.2 Empirical Literature

Putunoi and Mutuku (2013) studies the impact of domestic debt on economic growth of Kenya over the period 2000-2010 using the Engel-Granger residual based and Johannes VAR based cointegration tests and revealed that domestic debt markets play an increasingly important role in supporting economic growth. They find that domestic debt expansion has a positive long-run and significant effect on economic growth.

Sheikh *et al.* (2010) investigates the impact of domestic debt on economic growth of Pakistan for the period 1972-2009 by applying ordinary least squares (OLS) technique. The study finds that domestic debt favourably affects economic growth in Pakistan implying that the funds generated through domestic borrowing have been used partially to finance those expenditures of government that contribute to growth of GDP. The principle is that domestic as well as external debt should be spent for long-term development purposes. Another reason for the positive relationship between domestic debt and economic growth in Pakistan may be that domestic debt is marketable.

Maana *et al.* (2008) explores the impact of domestic debt on Kenya's economy covering the period 1996 to 2007 using a modified Barro growth regression model. The study established that domestic debt expansion had a positive but not significant effect on economic growth during the period. However, the study found no evidence that the growth in domestic debt crowds-out private sector lending in Kenya.

Abbas and Christensen (2007) analysed optimal domestic debt levels in low-income countries and emerging markets between the period 1975-2004 using Granger Causality Regression model and found that moderate levels of marketable domestic debt as a percentage of GDP have

significant positive effects on economic growth. The study also provided evidence that debt levels exceeding 35 percent of total bank deposits have negative impact on economic growth.

Adoufu and Abula (2010) examine the effect of domestic debt on the Nigerian economy during the period 1986-2005 using OLS technique. The findings reveal that domestic debt has negatively affected the growth of the economy and recommends that the government should introduce efforts to resolve the outstanding domestic debt.

2.3 The Augmented Solow Model

According to Brauning (2003), following Mankiw, Romer and Weil in 1992, it is assumed that households fix the saving and the educational spending ratio. So we have an augmented Solow model. An increase in public debt is used to redistribute every individual's tax burden from the youth to the middle age increases the steady growth rate.

We assume a Cobb-Douglas technology with CRS $Y = AK^\alpha L^\beta$. Let H be human capital and N be the number of workers. Then H/N is human capital per worker, $L = (H/N)N$. Therefore, a production function is obtained as:

$$Y = AK^\alpha L^\beta$$

Output Y is used for consumption, investment, government purchases and spending on education, $Y = C + I + G + Z$.

Considering the public debt dynamics, the government raises loans and levies an income tax in order to finance government purchases and interest payments on public debt. The government spends a fixed share of national income on goods and services $G = gY$ with the purchase ratio g constant. In addition, the government borrows a specified portion of national income $B = bY$

with the deficit ratio b constant. The budget deficit in turn adds to public debt $\dot{D} = B$. The government pays the interest rate r on public debt D , so the public interest amounts to rD . The government imposes a tax at the flat rate t on both factor income and debt income $T = t(Y + rD)$. Thus, the government budget constraint can be written as $B + T = G + rD$.

Next regard the dynamics of physical and human capital accumulation. Disposable income is the sum of factor income and debt income, net of taxes respectively, $Yd = Y + rD - T$. Human capital can be augmented by spending on education, $\dot{H} = Z$. By backward substitution, one obtains $\dot{K} = s(Y + rD - T) - B$ and $\dot{H} = z(Y + rD - T)$, with $B + T = G + rD$, $B = bY$ and $G = gY$, which results to:

$$\dot{K} = (1 + b - g)sY - bY \text{ and } \dot{H} = (1 + b - g)zY.$$

The model can be presented by a system of six equations.

$$Y = AK^\alpha H^\beta \quad (2.1)$$

$$\gamma = \frac{\alpha Y}{K} \quad (2.2)$$

$$\dot{K} = (1 + b - g)sY - bY \quad (2.3)$$

$$\dot{H} = (1 + b - g)zY \quad (2.4)$$

$$\dot{D} = bY \quad (2.5)$$

$$bY + t(Y + rD) = gY + rD \quad (2.6)$$

Here, α , β , b , g , s , z , D and K are exogenous, where r , t , \dot{D} , \dot{H} , \dot{K} and Y are endogenous.

In the steady state, physical and human capital grow at the same rate as output,

$$\hat{K} = \hat{H} = \hat{Y} \quad (2.7)$$

We obtain the steady state growth rate as

$$\hat{Y} = \hat{H} = \hat{K} = [z(1 + b - g)]^\beta [s(1 + b - g) - b]^\alpha A \quad (2.8)$$

3. Methodology

The basic regression equation that was used to estimate the relationship between domestic debt and economic growth is therefore of the type:

$$\ln RGDP_{i,t} = \beta \ln X_{i,t} + \gamma \ln DD_{i,t} + \mu_i + v_t + \varepsilon_{i,t} \quad (3.1)$$

Where;

$RGDP_{i,t}$ - is the growth rate of real GDP per capita. It is the dependent variable.

$X_{i,t}$ -consists of different explanatory variables that were used. The variables are government size, openness, private investment and terms of trade. These variables are known to be consistently associated with growth.

DD - is the internal debt variable, that is, the ratio of domestic debt to GDP.

μ_i – unobserved country-specific effects. It captures the effect of each cross-section (country) which does not vary over time. This is because the study is only interested in analyzing the impact of variables that vary across time.

v_t –unobserved time-specific effects.

$\varepsilon_{i,t}$ – is the error term.

4. Data

The data employed in the study consists of a panel of five countries covering the period 1990-2010. The dependent variable is real GDP per capita growth rate (economic growth), for the debt variable, the indicator which was used here is the total domestic debt-to-GDP ratio (*DD*). Other than the debt variable, different explanatory variables were used to control for other factors that influence economic growth, the variables are private investment (*pinv*), government expenditure (*gvte*), terms of trade (*tot*) and openness (*opns*). The source of data for variables: economic growth, private investment and terms of trade was mainly World Development Indicators (WDI) 2011 of the World Bank. However the study obtained domestic debt data from the Annual Debt Reports of the Central Banks of the five EAC countries, and openness data from the Penn World Tables version 7.1.

Recent studies such as Bosworth and Collins (2003) suggest that it is better to focus on a core set of explanatory variables that have been shown to be consistently associated with growth and evaluate the importance of other variables conditional on inclusion of the core set. It is therefore upon such basis that the variables in this study were selected and justified. These variables have also been shown to be consistently associated with growth in the findings of Sala-i-Martin *et al.* (2004).

5. Empirical Analysis and Presentation of Results

5.1 Panel Unit Root Tests

One of the econometric problems in empirical analysis is non-stationarity of time series data. Spurious regression and inconsistent results are likely to be obtained if we run a regression in the level form while the variables in the model are non-stationary and therefore inferences based on

such data are likely to be meaningless. Due to this econometric problem, the variables in the model were tested for panel unit roots using the Levin-Lin-Chu (LLC) method. The Levin-Lin-Chu test is based on the following hypotheses:

H_0 : Each time series contains a unit root.

H_1 : Each time series is stationary.

The results of the panel unit root tests for the variables are summarized and presented in Table 1.

Table 1: LLC Tests for Stationarity/Unit root tests for all variables (variables in levels)

| Variable | LLC (Level) | LLC (First Difference) | LLC (P-Value) Level | Order of Integration |
|----------|--------------------|---------------------------|------------------------|----------------------|
| LNRGDP | -3.2612 -2.4582 | - | 0.0011 | I(0) |
| LNGVTE | -1.8619 -1.7187 | -4.1003 -2.9438 | 0.1783 | I(1) |
| LNPINV | -1.5662 -1.3780 | -4.8588 -3.1609 | 0.5261 | I(1) |
| LNOPNS | -1.4523 -1.3151 | -5.1897 -3.2571 | 0.5978 | I(1) |
| LNTOT | -1.1113 -1.0207 | -4.2445 -2.9929 | 0.8646 | I(1) |
| LNDD | -4.4059 -1.7314 | -5.3321 -3.3191 | 0.0417 | I(1) |

Critical Values: -2.460 (1%); -2.180 (5%); -2.040 (10%).

From the results in Table 1, only the variable real GDP per capita growth rate (RGDP) was found to be stationary at 5 percent level of significance and therefore integrated of order zero (I(0)), while the rest of the variables, GVTE, PINV, OPNS, TOT and DD are integrated of order one (I(1)), that is, they were found to be stationary after differencing them once.

5.2 Cointegration Tests

The panel data property of each variable was established and obtaining their order of integration, the next step was to establish whether the non-stationary variables are cointegrated. Usually, when variables are differenced to attain stationarity, the long-run properties are lost. Cointegration means that there is a long-run relationship between two or more non-stationary variables. Since the dependent variable (RGDP) was stationary (I (0)), it was not possible to check for cointegration in that particular case.

5.3 Hausman Test

Hausman test was carried out to decide whether to use fixed or random effects model. The results are presented in Table 2.

Table 2: Hausman Test Results

Hausman fixed random

-Coefficients-

| | (b) fixed | (B) random | (b-B) Difference | S. E. |
|---------------|----------------------|-----------------------|-----------------------------|--------------|
| LNGVTE | -0.3834427 | -0.2266823 | -0.1567603 | 0.0796634 |
| LNPINV | 0.2593462 | -0.0819139 | 0.3412601 | 0.6912984 |
| LNOPNS | -0.3222148 | -0.2419819 | -0.080233 | 0.0278517 |
| LNTOT | -0.0467704 | -0.0129315 | -0.0338389 | 0.0156052 |
| LNDD | 0.2095102 | 0.1512991 | 0.0582112 | 0.0317513 |

Test: H_0 : difference in coefficients not systematic

$$\chi^2 (5) = 15.69$$

$$\text{Prob} > \chi^2 = 0.0470$$

From the Hausman test results in Table 2, the p-value is 0.0470, less than 0.05. This shows that the value is significant and therefore fixed effects model is applicable in regression. The fixed effects model was therefore chosen based on Hausman test carried out.

5.4: Test for Cross-Sectional Dependence

Cross-sectional dependence is the interaction between cross-sectional units. Cross-sectional dependence leads to efficiency loss for least squares and invalidates conventional t -tests and F -tests which use standard variance-covariance estimators. The study employed the Breush-Pagan Lagrange Multiplier (LM) test of independence. The null hypothesis is that the residuals across entities are not correlated.

Table 3: Cross-Sectional Dependence Test Results

Correlation matrix of residuals

| | __e1 | __e2 | __e3 | __e4 | __e5 |
|------|---------|--------|---------|--------|--------|
| __e1 | 1.0000 | | | | |
| __e2 | -0.2576 | 1.0000 | | | |
| __e3 | -0.2646 | 0.0048 | 1.0000 | | |
| __e4 | 0.2014 | 0.0582 | -0.0512 | 1.0000 | |
| __e5 | -0.1886 | 0.2654 | 0.4216 | 0.2525 | 1.0000 |

Breusch-Pagan LM test of independence: $\chi^2(10) = 10.610$, Pr = 0.3887

e_i – residuals from the cross-sectional units, $i = 1, 2, \dots, 5$.

Based on 20 complete observations over panel units

The p-value is greater than 0.05, therefore insignificant. It tells us that there is no cross-sectional dependence.

5.5 Heteroscedasticity Test

Heteroscedasticity is a situation where the error terms do not have constant variance. It can be caused by measurement errors and if there are subpopulation differences or other interaction effects. Heteroscedasticity does not lead to biased parameter estimates, however, the standard errors are biased if heteroscedasticity is present. This in turn leads to bias in test statistics and confidence intervals.

The test results for heteroscedasticity are presented below.

Modified Wald test for GroupWise Heteroscedasticity in Fixed Effect Regression Model

$$H_0: \sigma_i^2 = \sigma^2 \forall i$$

Table 4: Heteroscedasticity Test Results

| | |
|----------------|---------------|
| χ^2 (5) | 219.85 |
| Prob> χ^2 | 0.0000 |

The p-value is less than 0.05, it is significant which reveals the presence of heteroscedasticity. Therefore the null hypothesis for homoscedasticity is rejected. Regression was then done by correcting for heteroscedasticity using the option 'robust' in fixed effects. The use of robust standard errors does not change coefficient estimates, but (because the standard errors are changed) the test statistics gives a reasonable accurate p-values. Hence when heteroscedasticity is present, robust standard errors tend to be more appropriate.

5.6 Test for Serial Correlation

Serial correlation occurs when the error terms from different time periods (or cross-section observations) are correlated. According to Drukker (2003), serial correlation in linear panel-data models biases the standard errors and causes the results to be less efficient, therefore, serial correlation should be identified in the idiosyncratic error term in a panel data model. A new test

by Wooldridge (2002) is very attractive because it requires relatively few assumptions and is easy to implement.

A test for serial correlation was conducted and the results presented below.

Wooldridge Test for Autocorrelation in Panel Data

H₀: no first order autocorrelation

$$F(1, 4) = 4.182$$

$$\text{Prob} > F = 0.1103$$

From the results, the p-value is greater than 0.05, therefore, we fail to reject the null hypothesis and conclude that the data does not have serial correlation.

5.7 Domestic Debt and Economic Growth in the EAC

In this section, the hypothesis regarding the growth- domestic debt nexus was tested. The economic growth-domestic debt analysis is based on panel data; this is because it gives the chance to control for endogeneity, omitted variables and also explores the data across time. The basic estimation technique applied here is panel fixed-effects corrected for heteroscedasticity.

Table 5: Results of Economic Growth and Domestic Debt Regression

| Dependent Variable: LNRGDP | | Method: Fixed Effects Regression | | |
|------------------------------------|-------------|----------------------------------|-------------|---------|
| Variable | Coefficient | Std. Error | t-Statistic | p-value |
| CONSTANT | 1.5042 | 0.3134 | 4.80 | 0.003 |
| DLNGVTE | -0.1201 | 0.0759 | -1.58 | 0.117 |
| DLNPINV | 0.3394 | 0.0568 | 5.98 | 0.001 |
| DLNOPNS | 0.0250 | 0.0526 | 0.48 | 0.636 |
| DLNTOT | -0.4229 | 0.0500 | -8.45 | 0.000 |
| DLNDD | 0.1166 | 0.0489 | 2.38 | 0.019 |
| Adj. R² = 0.5907 | | Durbin Watson = 1.9837 | | |
| F (9, 115) = 3.4528 | | p-value (F) = 0.000843 | | |

The results show that expansion in private investment positively impacts growth. The coefficient of private investment has its hypothesized sign (positive) and statistically significant at 1 percent level, meaning that a 10 percent increase in private investments leads to economic growth by 3.394 percent. Investment in an economy leads to increased capital spending as it involves construction of industries, buying new machines, investing in skills and education increases labour productivity. This has led to increase in the productive capacity of the EAC countries which boost economic growth. These results conform to the findings by Jorgenson (2003), Hoover and Perez (2004) and Abdi (2004) who found a strong link between investment in general and machinery and equipment investment in particular with economic growth.

From the results, a 10 percent change in terms of trade leads to a 4.229 percent decline in economic growth in the EAC. These results were as expected (negative relationship) since the region faces adverse terms of trade caused by the nature of the commodities they specialize in. Terms of trade volatility tends to induce volatility in consumer spending, investment, inflation and economic growth thereby making macroeconomic policies difficult to implement. The EAC countries are developing and usually face sharp swings in export prices which contribute to increased volatility in growth of GDP. Studies by Mendoza (1997) and Broda (2003) have also concluded that changes in terms of trade can account for half of the output volatility in developing countries; furthermore the EAC member countries' exports are small and undiversified specifically the case of Rwanda and Burundi leading to weak growth performance. The EAC member countries like other developing countries are more sensitive to terms of trade volatility than their industrial counter parts that specialize in production of manufactured products. This is the reason why terms of trade are negatively related to economic growth in EAC.

From the results shown in the Table 5, the debt coefficient is positive and statistically significant at 5 percent level of significance which indicates that if domestic debt levels rise by 10 percent, the economy grows by 1.166 percent, holding the other independent variables in the model constant. The positive impact of domestic debt on economic growth is due to the fact that domestic debt levels in EAC countries are still moderate and sustainable and therefore promotes growth. These results are consistent with previous studies by Maana *et al.* (2008) and Abbas and Christensen (2007) who argue that moderate levels of domestic debt could have a positive effect on the economy, more so if the debt is marketable. Debt that is securitized, bears positive real interest rates and is diversely held is found to be robustly friendlier to growth. In contrast, Fischer and Easterly (1990) and WB and IMF (2001) argue that domestic borrowing can lead to crowding out of private sector investment and hence a decline in economic growth.

Moderate levels of domestic debt promote financial deepening and institutional and foreign participation which then drives economic growth. The outlook on domestic issuance capacity in low middle income countries looks broadly favourable. The quality and span of domestic debt markets can have a significant impact on the optimal size of domestic debt. A higher level of domestic debt can likely be sustained without compromising growth if the domestic debt is issued in the form of marketable securities, bears positive real interest rates, and is issued to investors outside the banking system. Putunoi and Mutuku (2013) also established that domestic debt expansion had a positive significant effect on Kenya's economic growth. The relationship between economic growth and domestic debt is evidenced by the fact that domestic debt markets promote financial depth and economic efficiency. This is as a result of increased expansion of capital market and financial sector liberalization in the EAC recently which drives growth. For

example in Kenya, the formation of Capital Markets Authority has increased the activities in the Nairobi Stock Exchange.

The regression results in Table 5 show that the coefficient of government expenditure is negative. The effect of government expenditure on economic growth of EAC countries was as hypothesised (positive or negative), but in this case it is negative though not statistically significant at any conventional level of significance. This could be as a result of corruption, redirection of funds, large recurrent expenditure and misappropriation of government funds in these countries.

The impact of openness on economic growth is positive but not statistically significant at any conventional level of significance. This could be as a result of the EAC countries specializing in primary product exports and have small trade shares in the international market. Therefore, the beneficial effects from openness could not be felt properly in the economies.

6. Conclusion and Policy Implications

The main focus of this study was to establish the effect of domestic debt on the economic growth of the EAC member countries. Regression results of domestic debt and economic growth revealed that domestic debt expansion has a positive effect on economic growth of the EAC member countries. However, the study established that terms of trade volatility faced by the EAC countries negatively affects their economic growth.

The governments of the EAC member countries should promote moderate levels of domestic borrowing which can be sustained by the respective countries as it promotes economic growth if used in productive and efficient avenues. However, domestic debt is usually expensive and

should be minimized since it has wider negative macroeconomic effects for instance, if interest rate on treasury bills rise, banks target treasury bills and not lending to borrowers, interest rates and inflation also goes up.

In order to promote faster growth, terms of trade can be improved through processing of the EAC exports. This could be supplemented through increased export earnings by export promotion strategy. Improvement in terms of trade increases domestic real income which raises the level of public investments and therefore growth. The governments should also ensure food stability to avoid importation of food which is a common practice in the region.

The governments can privatize some of the public assets in order to cut large public expenditure and also raise revenue on a temporary basis. Non-growth recurrent expenditure should not exceed the accepted levels, for example, the wage bill for Kenya has surpassed. Corruption and leakages in public funds should be reduced so as to ensure that government expenditure promotes growth.

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A. Appendix

A 1 Variables, Measurement and Sources of Data

RGDP- Real GDP per Capita Growth. This paper uses Real GDP per capita, which is the annual percentage growth rate of GDP per capita based on constant local currency. Islam (1995) uses per capita values. Data Source: WDI (2011) Data Base.

PINV–Private Investments. Investment refers to the purchase of goods that are not consumed today but are used in the future to create wealth. Theoretically, Investment is the key to economic growth, if investment rises in an economy, aggregate demand also rise and therefore economic growth. Jorgenson (2003) obtained that investment in tangible assets is the most important source of economic growth in the Group of Seven (G7) nations. The contribution of capital input exceeds that of productivity for all countries for all periods. This variable is measured as a ratio of GDP. Data source: WDI (2011) Data Base.

GVTE - Government Expenditure. Government expenditure refers to general government final consumption expenditure as a share of GDP. Larger government provide public goods, further increases in government expenditure can increase the disposable incomes of the citizens which encourages growth. However, large government spending can lead to transfer of additional resources away from the most productive sectors of the economy to government, where they are used less efficiently and thus undermining economic growth. Cooray (2009) concluded that expansion of government expenditure contributes positively to economic growth. However a study by Barro (1991) suggested that large government expenditure has negative impact on economic growth. Data Source: WDI (2011) Data Base.

TOT - Terms of Trade. Terms of trade refers to the price of a country's exports (P_X) relative to the price of its imports (P_M). Where P_X is a price index for all export goods due to the fact that countries export more than one good, P_M is a price index for all import goods. Mendoza (1997) proposes a stochastic growth model whereby terms of trade uncertainty can adversely affect savings and growth. Data Source: WDI (2011) Data Base.

OPNS - Openness. Openness refers to the sum of exports and imports of goods and services as a share of GDP. According to World Bank (1993), significant growth rates are often associated with countries embracing the ongoing globalization and increasing openness to the international exchange of goods and services as well as ideas and technologies. Participation in the international economy was the primary source of growth in many East Asian countries that have experienced fast economic development during the past 50 years. This variable is measured as the ratio of imports (M) plus exports (X) to GDP [$(M + X) / GDP$]. Data Source: Penn World Tables (7.1).

DD-Domestic Debt. Domestic debt refers to money owed to lenders within a country, that is, holders of government securities such as treasury bills and bonds. It is expressed as a ratio of GDP. According to WB and IMF (2001), extensive use of domestic borrowing can have severe repercussions on the economy through crowding out of private investments. However, Abbas and Christensen (2007) argue that moderate levels of domestic debt could have a positive effect on the economy if the debt is marketable. Data Source: Kenya National Bureau of Statistics and the Central Banks of EAC member countries.