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Effect of Gross Capital Formation on the Relationship between Debt Financing and Economic Growth among East Africa Community Member Countries

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Abstract

The main proponents of public borrowing to bridge the domestic financial resources gap confirm that debt contributes to economic growth through capital accumulation. Public debt and growth relationships can be both positive and negative. In the last two decades, the EAC member countries have witnessed unexplained disparities between economic growth and debt levels rise. Studies on debt and economic growth relationships have remained inconclusive. The studies allude to positive, negative, U-shaped and dual causality relationships. This study used a lagged multiple linear regression model to establish the effect of gross capital formation on the relationship between debt financing and economic growth in the EAC member countries using the Baron and Kenny four steps approach. Premised on the Keynesian and balanced growth theories of public debt, the study embraced a panel longitudinal research design to examine the relationships. The study finds statistically significant strong positive relationships between total debt and sustainable economic growth, domestic debt and sustainable economic development, external debt and sustainable economic development, domestic debt and total debt, external debt and total debt, domestic debt and external debt and gross capital formation and external debt. Gross capital formation has statistically significant weak positive relationships with sustainable economic growth, total debt and domestic debt. The study establishes that the influence of gross capital formation on the relationship between sustainable economic growth and debt finance components are statistically significant. Specifically, 53.05% of changes in sustainable economic growth are attributed to changes in debt financing and gross capital formation and the model is statistically significant. The study finds a statistically significant positive relationship between the interaction term of total debt financing, gross capital formation and sustainable economic growth. It also finds a statistically significant positive relationship between sustainable economic growth and the interaction of gross capital formation and domestic debt financing. Also, it finds a statistically significant negative relationship between the interaction terms of external debt financing with gross capital formation and sustainable economic growth. To benefit from the positive debt and growth nexus, Government policy makers should put in place efforts to improve the domestic debt market infrastructure and encourage domestic investor participation so as to benefit from the long term effects of debt finance. Policy makers and external development partners should relook at the terms of the specific facilities channeled for development in the region. An enabling macro-economic environment with good governance should be put in place in order to benefit from the debt stock. As a contribution to further research, a study should be modelled on the optimal mix of debt and the turning point (threshold) at which the positive effects of public debt reverts to negative effects. Also, since gross capital formation mediate the debt economic growth nexus. A study on what are the comfortable levels of gross capital formation for the diverse debt regimes is desirable.

Key Words: Debt Financing, Total Debt, External Debt, Domestic Debt, Economic Growth, Sustainable Economic Growth, Gross Capital Formation

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1.1 Introduction

The main proponents of public borrowing to bridge the domestic financial resources gap confirm that debt contributes to economic growth through capital accumulation. In Keynes (1935), governments require financial resources for public expenditure which either come from debt or own source revenues. According to Poirson, *et al*. (2014) and Schclarek (2004), the link between debt financing and economic growth is mainly through capital accumulation. In essence, acquiring debt for capital development is basic, like foundation of an organization, which will add to a profitable yield henceforth and subsequently, positive financial development.

Public debt and growth relationships can be both positive and negative. As explained in Pattillo, *et al*. (2002), the positive debt-growth relationship exists where debt is below certain levels of Debt-GDP ratio, while the negative debt-growth relationship takes effect above these thresholds. The positive relationship according to Poirson, *et al*. (2014) is through gross capital formation which is essentially investments in country's assets and infrastructure such as roads, railways, schools, hospitals, buildings and airports. The adverse effects of debt that leads to the negative relationships as identified in Arize, *et al*. (2014) include factors such as high interest payments, increased taxation to raise funds to repay the loans, diminishing national savings, spending cuts and high inflations rates.

Globally, as noted by the World Bank (2018), the economic growth remained at 3.1% during the 2017 and 2018 period, with an anticipated slowdown in the next two years, largely because of global slack dissipates and the removal of policy accommodations by majority nations. In the last decade, World Bank (2019) estimates that long-term debt from developed countries to poor countries increased by over 50% to $309 billion in 2017 due to increase in bond issuance. In the EAC member countries, World Bank (2019) notes that average public debt as a percentage of GDP has risen from 22% in 2010 to 34% in 2017. The International Monetary Fund (2018) observes that public debt increase has raised concerns over debt sustainability among local policy makers and international lenders. Annually, the East African Community (2017) and World Bank (2015) note that the EAC member countries have recorded an average of 4.2% GDP growth. Fole (2003) cite expansions of government expenditure, inflation and rise in global

interest rates as some of the causes of debt increase in the EAC member countries and Africa at large.

1.2 Research Problem

Nations require financial resources to provide public goods and services. In the event of budgetary deficit, Governments borrow to fill national budgetary deficit especially where domestic revenue is inadequate. Alzoubi, Khasawneh and Zoubi (2020) opine that the debt problem has emerged as one of the most prominent obstacles facing developing countries, because of its negative effects on the process of economic and social development. According to Krugman (1988), Musgrave (1959) and Myers (1977), high levels of debt can lead to debt overhang problem, trigger high interest rate and inflation rate which can crowd out private investment and then subsequently lead to low economic growth.

Development in developing countries collided with the decrease in their local savings, high consumption rates and the lack of local investments. The scenario led to resorting to debt as one of the means of providing the necessary financing to achieve the desired growth and advancing economic development (Alzoubi, Khasawneh and Zoubi, 2020). Poirson, *et al*. (2014) and Schclarek (2004) however advanced that debt financing improves growth of the economy, mainly through capital accumulation.

As noted in the East African Community (2017) and World Bank (2019), in the last two decades, the EAC member countries have witnessed unexplained disparities between economic growth and rise in debt levels. On average, annual economic growth remained at 4.2%, against a rise in debt levels from an average of 22% in 2010 to 34% in 2017.

Empirical studies on the relationships between public debt and economic growth have remained inconclusive mostly because of diverse study contexts and variations in methodological applications. Positive relationships are established by Babu *et al*. (2014) in EAC, Putunoi and Mutuku (2013) in Kenya while negative relationships are established by Panizza and Presbitero (2014) among 17 OECD countries, Lee and Ng (2015) in Malaysia and Were (2001) in Kenya. Isibor, *et al*. (2018) in Nigeria however notes that external debt negatively affects the economy

while internal debt positively affects the economy. A U-shaped debt-economic growth relationship is established among EU member countries by Mencinger, *et al*. (2014) while dual causality relationships are established by Egbetunde (2012) in Nigeria leading to the question; what is the exact effect of gross capital formation on the relationship between debt financing and economic growth among the EAC member countries?

1.3 Research Objectives

The study sought to establish the effect of gross capital formation on the relationship between debt financing and economic growth in the EAC member countries.

2.1 Literature Review

The gross capital formation, debt and economic growth relationship is explained in the Keynesian theory and balanced growth theory as well as several empirical studies discussed herein that arrive at conflicting conclusions and recommendations.

2.1.1 Keynesian Theory

Keynesian theory of public debt was established by Keynes (1935) and recommended that debt adds value instead of a risk for economic development of a country. In like manner, Keynes (1935) expound that acquiring debt for capital development is basic, like foundation of an organization, which will add to a profitable yield henceforth and positive financial development. The Keynes theory therefore encourages developing nations to borrow for purposes of economic development. The consequence of this theory is that nations that borrow but do not channel the funds towards capital buildup, may not realize the economic gain anticipated.

According to the Keynes theory, debt contributes to the economic growth, mainly through capital accumulation. As explained in Habib and Zurawicki (2002) capital formation can also be created through use of domestic revenue, foreign direct investments, international trade, foreign aid and external remittances for purpose of economic progress. It is also noted that economic development is not generally proportionate with huge borrowing in view of factors including political agitation and monetary flimsiness**.** Keynesian theory of public debt contributes to this study by elucidating the link between debt financing, capital formation and economic growth.

2.1.2 Balanced Growth Theory

The balanced growth theory as advanced by Nurkse (1952) states that in order to achieve balanced growth in any underdeveloped nation, the government needs to make large and simultaneous investment in several industries. Premised on the principle of demand and supply which is adversely affected by poverty levels in a nation, Nurkse (1952) underscore that because of the adverse poverty, there is minimal saving and investment affecting both supply and demand. In essence, Nurkse (1952) links low income and poverty with under development and therefore encourages government to invest heavily across several sectors of the economy.

The balanced growth theory considers breaking the poverty cycle as key to growth of developing nations. From this background, Nurkse (1952) vouch for investment in multiple sectors to enlarge the market size, boost productivity and incentivize the private sector to invest. In essence, the theory advocates for internally driven growth, favoring internally generated revenue for the investment (capital creation).

2.1.3 Empirical Review

Lotto and Mmari (2018) used the OLS regression in Tanzania to study the debt and economic growth relationship between 1990 and 2015. Study variables included domestic debt, GDP, inflation, export, gross capital formation and government expenditures. The study found insignificant negative debt-economic growth relationship. The insignificant indirect relationship was established through increased government expenditure, inflation and crowding out effect.

Isibor, *et al*. (2018) studied the Nigerian government's debt and its impact on economic growth from 1982-2017 using the two-stage least square regression. In the first equation, debt variables and their slacks relapsed against GDP and the results showed that the external debt negatively affects the economy while internal debt positively affects the economy. For the second equation, GDP, total savings deposits in the Nigerian deposit money banks and capital expenditure was regressed against the internal debt. The outcome showed that variables have significant relationships with internal debt.

Lee and Ng (2015) studied the debt-economic growth relationship in Malaysia covering the years between 1991 and 2013, using ordinary least squares regression method. The study established that high levels of debt have negative relationships with economic growth. In addition, excessive government consumption negatively affected the economic growth pointing at the need for the government to exercise prudence in management if its debt resources.

Babu *et al*. (2014) applied multiple regression analysis to study domestic debt and economic growth in the EAC member countries between 1991 and 2010. The study showed positive debt-economic growth relationship. Babu *et al*. (2014) also used Cobb-Douglas technology model to confirm the relationships established. The analytical model did not capture autoregressive nature of the economic variables in the study.

Poirson et al. (2014) applied OLS regression analysis and causality to study debt financing and economic growth relationship in 61 developing countries between 1969 and 1998. The study showed that high debts levels negatively affect capital creation and total production factor growth which affects economic growth.

Panizza and Presbitero (2014) examined the debt-economic growth relationship in a sample of 17 OECD countries. The study applied an instrumental variable method to establish a negative relationship between debt and economic growth. The study established that this relationship wanes once the debt is instrumented with a variable that intervenes in the interaction between foreign currency debt and exchange rate volatility.

Mencinger, *et al*. (2014) applied panel estimation method on a generalized economic growth model on data gathered for the years between 1980 and 2010 to test the debt and economic growth relationship. The study established a U-shaped debt-economic growth relationship. The relationship was found to be statistically significant, changing from positive to negative relationship at 80% to 94% debt ratio for long time EU member states and 53% to 54% for new member states.

Putunoi and Mutuku (2013) used a linear regression model to study debt and economic growth relationship in Kenya between years 2000 and 2010. The study established that domestic borrowing contributed to economic growth. This conclusion was contrary to a similar study in Kenya between 1970 and 1995, by Were (2001), who established that there is an adverse association between debt and economic development. Were (2001) observed that debt financing, affected private investments negatively, thereby confirming the crowding out effect.

Egbetunde (2012) studied the relationship between public debt and economic growth in Nigeria for the period ranging from 1970 to 2010. The study adopted the Vector Autoregressive (VAR) methodology. The study noted that public debt and economic growth have long-lasting relationship. The results implied that there is a dual causal relationship between debt and economic prosperity in the Nigeria context. The study concluded the relationship is affected by the extent to which the government uses the borrowed funds for the purpose of economic development.

3.1 Methodology

The study embraced a panel longitudinal research design. The longitudinal research design was adopted because the study variables namely the debt financing, gross capital formation and sustainable economic growth change over time. This design, therefore, allowed the collection of data on the same study variables repeatedly over a long period in order to establish the trend and relationships. Since data was collected across EAC member countries, panel longitudinal research design enables the researcher to analyze and establish trends among the study variables in individual countries. Panel longitudinal design was also chosen because it gave the researcher more data points which reduces collinearity and increases the degree of freedom among the explanatory variables (Hsiao, 2007).

4.1 Findings, Conclusions and Recommendations

The study sought to establish the trend movement of total debt amount the EAC member countries. The time series trend movement for natural log for the five countries is presented in figure 4.1 below.

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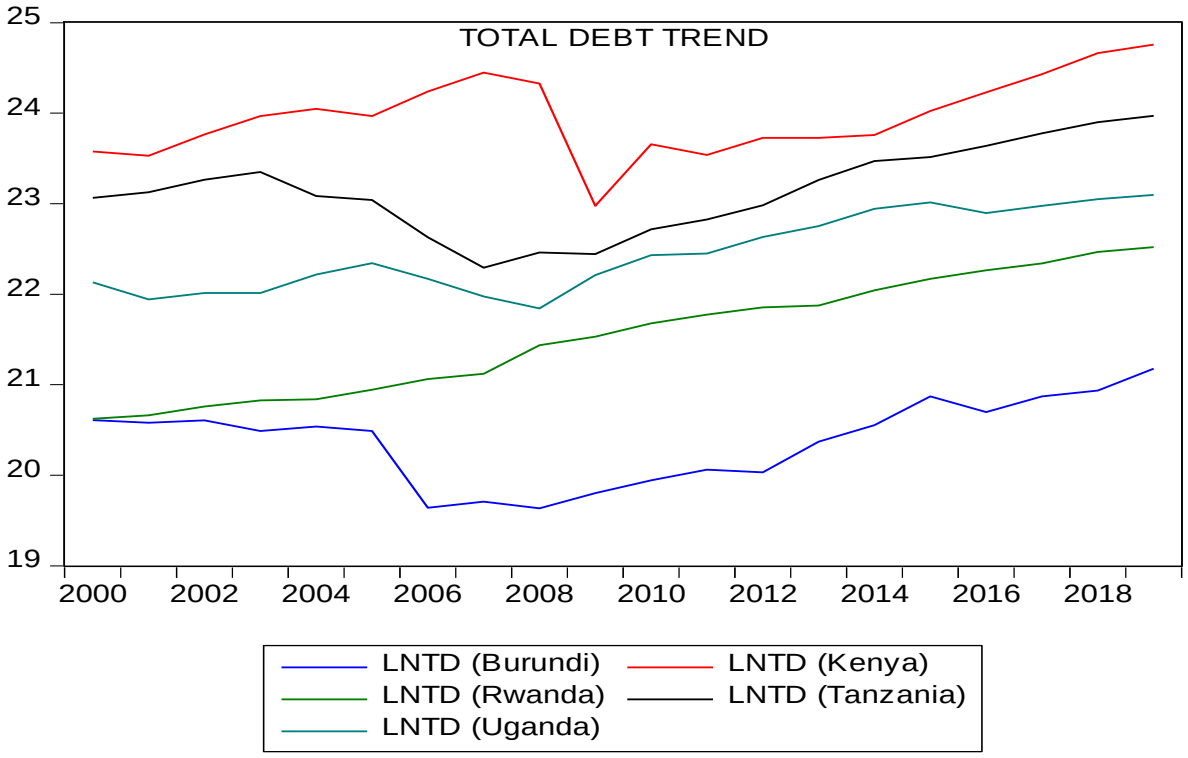

Figure 4.1: Movement of Total Debt

As presented in figure 4.1, Kenya leads the region in Total debt level, followed by Tanzania, Uganda, Rwanda and Burundi respectively. Kenya's Total Debt exhibited an increasing trend between years 2000 to 2007 when it declined slightly up to year 2009 after which it earnestly maintained an increasing trend to date. Tanzania total debt level increased between years 2000 to 2003 after which it declined up to year 2007. Thereafter, it has maintained an increasing trend to date. Uganda total debt level has an increasing trend over the years save for year 2001 and 2008 when it declined but earnestly picked an increasing trend. Rwanda total debt levels has been on an increasing trend throughout the period. Burundi debt levels declined between years 2000 to 2007 where after it has been on an increasing trend to date.

Generally, the levels of domestic debt for Kenya has exceeded the other EAC countries domestic debt levels except for year 2011 when it was lower than Tanzania domestic debt level and year 2012 when it was lower than both Tanzania and Uganda Debt levels. From the year 2000, domestic debt level for Rwanda and Burundi exhibited an increasing trend.

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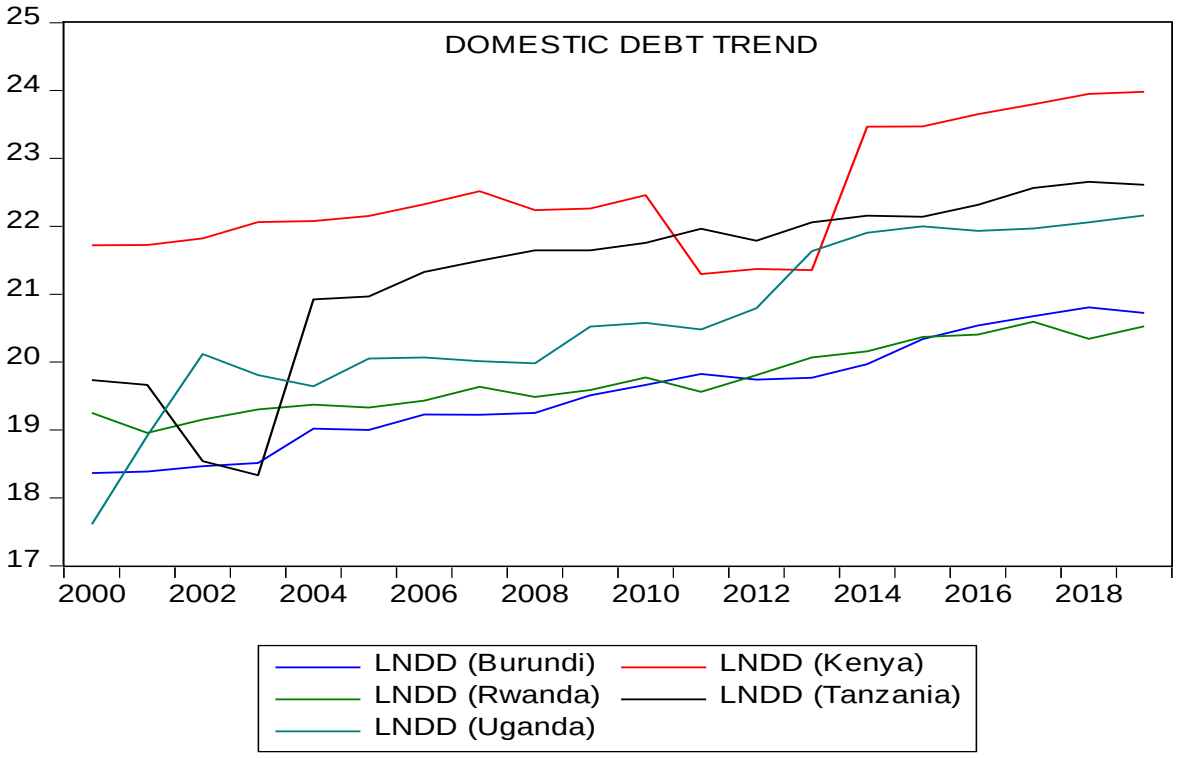

Figure 4.2: Movement of Domestic Debt

As presented in Figure 4.2, Kenya domestic debt level increased slightly between year 2000 and 2011. It then decreased between year 2011 and 2013 and thereafter increased after 2013 to date. Tanzania domestic borrowing declined between year 2000 and 2003 after which it increased to date. Uganda domestic debt level recorded an increase over the period with a steep increase between 2000 and 2002.

As presented in Figure 4.3 below, the external debt for Kenya has been on an increasing trend from year 2000 to 2018 when it declined slightly. Tanzania, Uganda and Rwanda external debt levels declined between the years 2006 and 2007 mostly due to the global financial crisis after which its levels have exhibited an increasing trend. External debt trend for Burundi has declined since year 2008.

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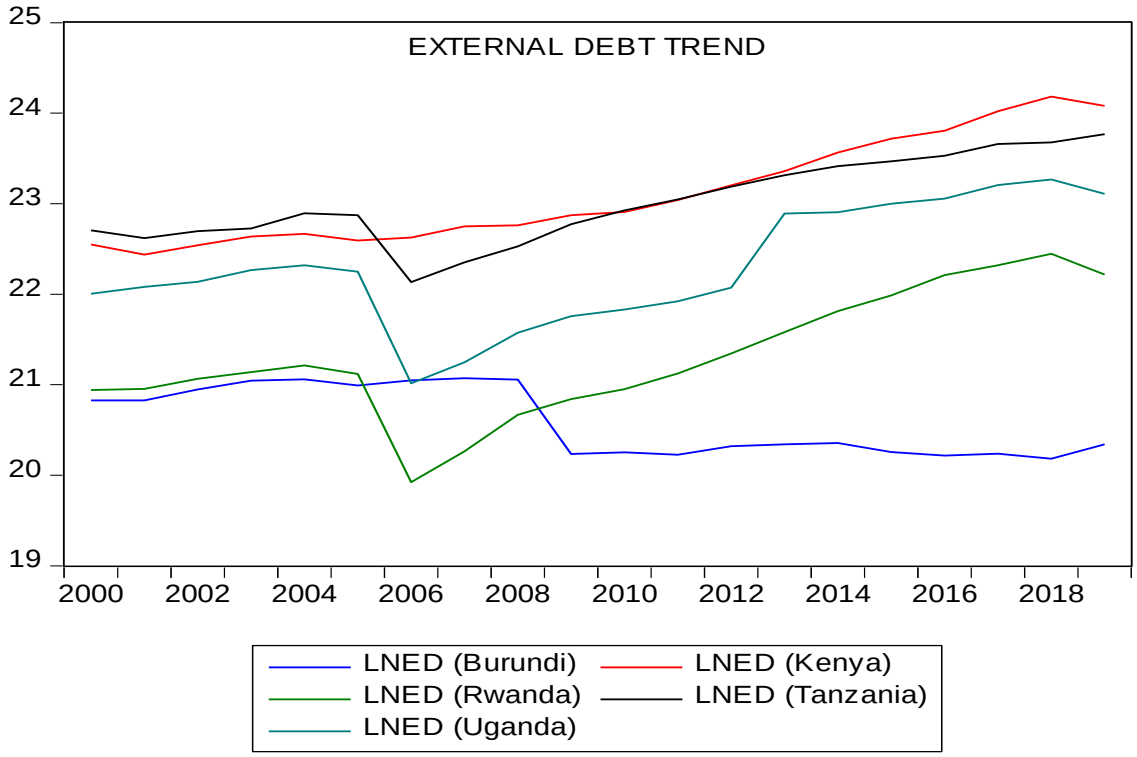

Figure 4.3: Movement of External Debt

Generally, regional countries' sustainable economic growth has been on an increasing trend save for Burundi where the sustainable economic growth levels exhibit a near stagnation trend over the period. Kenya sustainable economic growth index leads the regional pack followed by Tanzania, Uganda, Rwanda and Burundi respectively. In figure 4.4 below, the sustainable economic growth for Kenya, Tanzania, Uganda and Rwanda declined in year 2009 when compared to the general increasing trend exhibited in earlier years.

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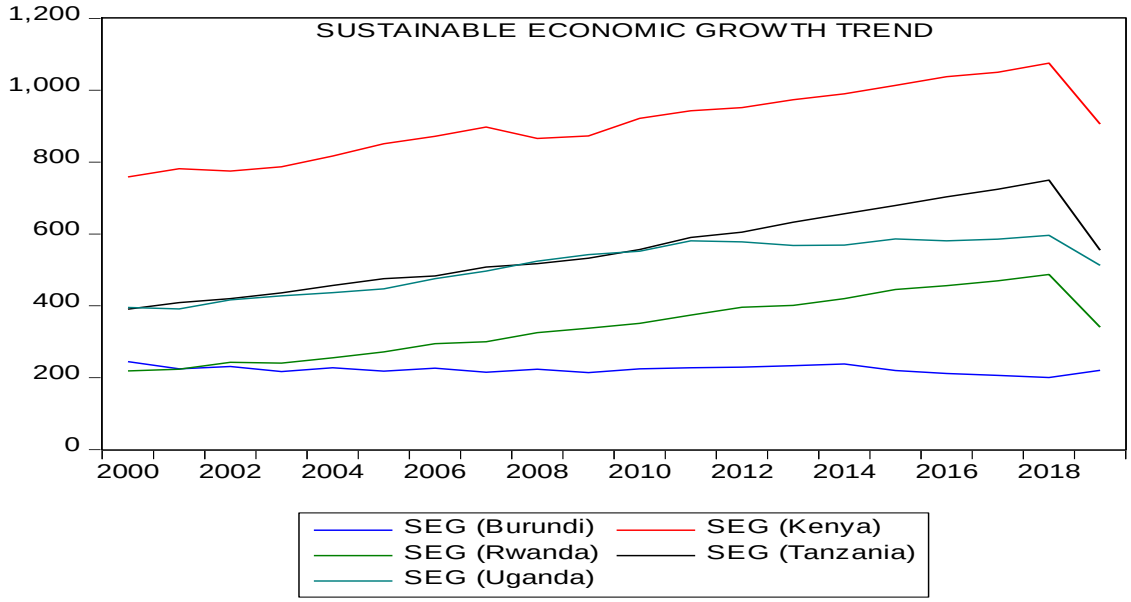

Figure 4.4: Movement of Sustainable Economic Growth

Figure 4.5 below presents the Gross Capital Formation trend wherein Tanzania has led the EAC countries in GCF since year 2003. As presented in Figure 4.5, the GCF trend has increased in Kenya, Uganda, Tanzania and Rwanda until year 2015 when there has been a slight decline. GCF in Burundi increased up to year 2006 and declined up to year 2016.

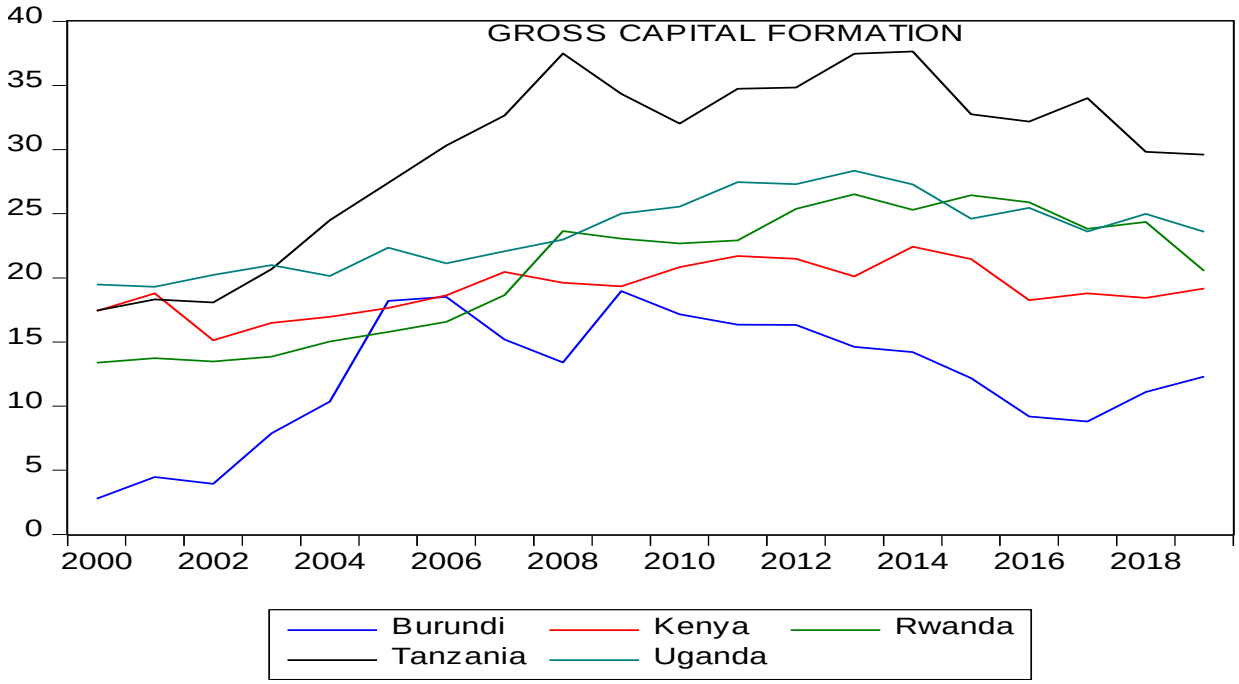

Figure 4.5: Gross Capital Formation Trend

As presented in table 4.1 below, there are statistically significant strong positive relationships between total debt and sustainable economic growth (r=0.904, P<0.05), domestic debt and sustainable economic development (r=0.839, P<0.05), external debt and sustainable economic development (r=0.834, P<0.05), domestic debt and total debt (r=0.789, P<0.05), external debt and total debt (r=0.902, P<0.05), domestic debt and external debt (r=0.759, P<0.05) and gross capital formation and external debt (r=0.575, P<0.05). Gross capital formation has statistically significant weak positive relationships with sustainable economic growth (r=0.377, P<0.05),total debt (r=0.483, P<0.05) and domestic debt (r=0.469, P<0.05).

Table 4.1: Correlation Analysis

	SEG	LNTD	LNDD	LNED	GCF
SEG	1				
LNTD	.904**	1			
LNDD	.839**	.789**	1		
LNED	.834**	.902**	.759**	1	
GCF	.377**	.483**	.469**	.575**	1

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

The Baron and Kenny (1986) four steps were useful to test the mediation effects of gross capital formation on the relationships between the debt financing components (total debt, external debt and domestic debt) and sustainable economic growth. In the first step, sustainable economic growth was regressed against the debt financing attributes as presented in Table 4.2 below. The regression model in Table 4.2 presents Adjusted R^2= 0.8968, F = 258.815, p<0.05. The regression outcome therefore shows that 89.68% of variation in sustainable economic growth may be attributed to changes in debt financing choices amongst the EAC member countries and the relationship is statistically significant (p<0.05). As presented in Table 4.2 statistically significant constructive link exist between total debt financing and sustainable economic growth (β=0.293, t =9.563, p<0.05) on one hand and domestic debt financing and sustainable economic growth (β=0.064, t =3.297, p<0.05) on another hand. The positive link among external debt

financing and sustainable economic growth variables is however non statistically significant (β=0.015, t =0.437, p>0.05).

Table 4.2: Debt Financing and Sustainable Economic Growth

Dependent Variable: LNSEG				
Method: Panel Least Squares				
Periods included: 18				
Cross-sections included: 5				
Total panel (balanced) observations: 90				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNED	0.015817	0.036153	0.437500	0.6628
LNDD	0.064943	0.019696	3.297253	0.0014
LNTD	0.293019	0.030639	9.563583	0.0000
C	-2.061933	0.356290	-5.787228	0.0000
R-squared	0.900284	Mean dependent var		6.132769
Adjusted R-squared	0.896805	S.D. dependent var		0.503761
S.E. of regression	0.161828	Akaike info criterion		-0.761137
Sum squared resid	2.252198	Schwarz criterion		-0.650035
Log likelihood	38.25118	Hannan-Quinn criter.		-0.716334
F-statistic	258.8153	Durbin-Watson stat		0.453360
Prob(F-statistic)	0.000000			

As a second step in testing the intervening effect of gross capital formation on the relationship, gross capital formation as an intervenor was regressed against the debt financing variables namely total debt, external debt and domestic debt and the findings are presented in Table 4.3 below. As presented in Table 4.3, 25.41% of variation in gross capital formation are explained by variation in debt financing in a model that was statistically significant (Adjusted R^2 = 0.254, F = 11.106, P<0.05). The negative link amongst domestic debt and gross capital formation is not statistically significant (β=-0.180, t = -0.243, P>0.05) implying that a decline in domestic debt by one unit, results in decline in gross capital formation by up to 0.180 units. The adverse link between total debt and gross capital formation is also not statistically significant (β=-0.266, t = -0.230, P>0.05) inferring that a unit upsurge in total debt, declines the gross capital formation by

up to 0.266 units. The positive relationship between external debt and gross capital formation is statistically significant (β=3.929, t = 2.884, P<0.05) inferring a unit upsurge in external debt leads to increase in gross capital formation by up to 3.929 units.

Table 4.3: Debt Financing and Gross Capital Formation

Dependent Variable: GCF
Method: Panel Least Squares
Periods included: 18
Cross-sections included: 5
Total panel (balanced) observations: 90

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNDD	-0.180888	0.742167	-0.243730	0.8080
LNED	3.929806	1.362271	2.884745	0.0049
LNTD	-0.266003	1.154504	-0.230405	0.8183
C	-54.97159	13.42529	-4.094630	0.0001

R-squared	0.279245	Mean dependent var	21.81365
Adjusted R-squared	0.254103	S.D. dependent var	7.060480
S.E. of regression	6.097808	Akaike info criterion	6.497162
Sum squared resid	3197.760	Schwarz criterion	6.608265
Log likelihood	-288.3723	Hannan-Quinn criter.	6.541965
F-statistic	11.10646	Durbin-Watson stat	0.198457
Prob(F-statistic)	0.000003		

In the third step, the intervening variables proxied by gross capital formation are regressed against the dependent variable, in this case, sustainable economic growth. The findings are presented in Table 4.4 below which shows that 23.65% of changes in sustainable economic growth are accounted for by variation in gross capital formation and the model is statistically significant (Adjusted R^2 = 0.236, F = 28.578, P<0.05). From the model, we establish a statistically significant progressive link amid sustainable economic growth and gross capital formation (β=0.035, t = 5.345, P<0.05) implying that a unit increase in gross capital formation leads increases the sustainable economic growth by up to 0.035 units.

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Table 4.4: Gross Capital Formation and Sustainable Economic Growth

Dependent Variable: LNSEG				
Method: Panel Least Squares				
Periods included: 18				
Cross-sections included: 5				
Total panel (balanced) observations: 90				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
GCF	0.035327	0.006608	5.345927	0.0000
C	5.362164	0.151431	35.40995	0.0000
R-squared	0.245147	Mean dependent var		6.132769
Adjusted R-squared	0.236569	S.D. dependent var		0.503761
S.E. of regression	0.440159	Akaike info criterion		1.218611
Sum squared resid	17.04914	Schwarz criterion		1.274163
Log likelihood	-52.83751	Hannan-Quinn criter.		1.241013
F-statistic	28.57894	Durbin-Watson stat		0.045580
Prob(F-statistic)	0.000001			

In the fourth step, the interaction term of the independent variable (debt financing elements) and intervening variable (Gross capital formation) is regressed against the dependent variable (Sustainable Economic Growth) and the results are presented in Table 4.5 below. As presented in the table, 53.05% of changes in sustainable economic growth are attributed to changes in debt financing and gross capital formation and the model is statistically significant (Adjusted R^2 = 0.530, F = 34.530, P<0.05). The findings of the table lead to the testing of sub hypotheses one (a, b, c) herein.

H_{1a}: *Gross capital formation does not significantly affect the relationship between total debt financing and economic growth among EAC member countries.*

As presented in Table 4.5 below, there is a statistically significant progressive bond amid the interaction term of total debt financing, gross capital formation and sustainable economic growth (β=0.017, t = 5.683, P<0.05) implying that gross capital formation strengthens the link amid total debt financing and economic growth. A unit increase in the interaction between total debt

financing with gross capital formation increases the sustainable economic growth by up to 0.017 units. The finding leads to rejection of sub hypothesis one (a).

Table 4.5: Debt Financing, Gross Capital Formation and Sustainable Economic Growth

Dependent Variable: LNSEG
Method: Panel Least Squares
Periods included: 18
Cross-sections included: 5
Total panel (balanced) observations: 90

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNED_GCF_	-0.020358	0.003297	-6.173975	0.0000
LNDD_GCF_	0.004416	0.001959	2.253646	0.0268
LNTD_GCF_	0.017777	0.003128	5.683269	0.0000
C	5.289373	0.111802	47.30999	0.0000

R-squared	0.546392	Mean dependent var	6.132769
Adjusted R-squared	0.530569	S.D. dependent var	0.503761
S.E. of regression	0.345152	Akaike info criterion	0.753766
Sum squared resid	10.24520	Schwarz criterion	0.864868
Log likelihood	-29.91945	Hannan-Quinn criter.	0.798569
F-statistic	34.53036	Durbin-Watson stat	0.284671
Prob(F-statistic)	0.000000		

H_{1b}: *Gross capital formation does not significantly affect the relationship between domestic debt financing and economic growth among EAC member countries.*

A statistically significant constructive link amid sustainable economic growth and the interaction of gross capital formation and domestic debt financing is noted in Table 4.5 above (β=0.004, t = 2.253, P<0.05) implying that gross capital formation strengthens the bond amid domestic debt financing and sustainable economic growth. A unit increase in the interaction term of domestic debt and gross capital formation increases sustainable economic growth by up to 0.004 units. In light of this finding, the study rejects sub hypothesis one (b).

H_{1c}: *Gross capital formation does not significantly affect the relationship between external debt financing and economic growth among EAC member countries.*

The statistically significant negative relationship between the interaction terms of external debt financing with gross capital formation and sustainable economic growth as presented in table 4.5 (β=-0.020, t = -6.173, P<0.05) implies that gross capital formation diminishes the link between external debt financing and sustainable economic growth. A unit increase in the interaction amid external debt financing and gross capital formation leads to a decline in sustainable economic growth by up to 0.02 units. The study therefore rejects sub hypothesis one (c).

In summary, the study establishes that the influence of gross capital formation on the relationship between sustainable economic growth and debt finance components are statistically significant. The study findings are consistent with arguments in Keynesian theory of Public debt attributed to Keynes (1935) which proposed that borrowing for capital formation is necessary just like setting up public enterprises, which contributes to a productive output and subsequently a positive economic growth as demonstrated by Yakita (2008). However the findings are a departure from that of Lotto and Mmari (2018) of an insignificant negative debt-economic growth relationship through gross capital formation.. The differences could be attributed to differences in country specific factors such as governance that could impact the relationship.

Specifically, on the effect of gross capital formation, the study establishes statistically significant positive relationships between sustainable economic growth on one hand and the interaction variable of gross capital formation and total debt as well as the interaction variable of gross capital formation and domestic debt on another hand. The findings infer that gross capital formation reinforces the relationships between sustainable economic growth and total debt financing and domestic debt financing respectively. The study also establishes a statistically significant negative relationship between sustainable economic growth and the interaction term of gross capital formation and external debt which implies that gross capital formation diminishes the relationship between external debt and sustainable economic growth. Capital formation is therefore critical in explaining the link between debt components and economic progress, and should be encouraged through sound policies by the EAC member states.

Since the study establishes statistically significant positive relationships between domestic debt and sustainable economic growth. Government policy makers should put in place efforts to

improve the domestic debt market infrastructure and encourage domestic investor participation so as to benefit from the long term effects of debt finance. Caution is however required not to crowd out the private sector of finance as the government borrows in the domestic market to finance the sustainable development goals. Governments have also attracted external finance for financing development initiatives. The study finds that the relationship is positive but is not statistically significant. Policy makers and external development partners should relook at the terms of the specific facilities channeled for development in the region. Considering that gross capital formation intervene the effect of external debt on economic growth, an enabling macro-economic environment with good governance should be put in place amongst the EAC countries in order to benefit from the debt stock.

As a contribution to further research, the study proposes that since there are positive and negative impacts of the various elements of public debt on economic growth, there may be country specific factors that determine debt productivity. A study should be modelled on the optimal mix of debt and the turning point (threshold) at which the positive effects of public debt reverts to negative effects. Also, since gross capital formation mediate the debt economic growth nexus. A study on what are the comfortable levels of gross capital formation for the diverse debt regimes is envisaged.

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