

Impact of Fiscal Deficits on Economic Growth in the East African Community

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Abstract

This study analysed the relationship between fiscal deficit and economic growth in the East African Community (EAC) at both regional and country level. The Pooled Mean Group (PMG) estimation technique was employed and panel data for the period between 2000 and 2021 to meet objectives of the study. PMG estimator gave both long run and short run regional outcomes and country-specific short run results. The findings indicate that there is a positive relationship between fiscal deficit and economic growth, with significance level of 1% observed in the long term. The country specific short run results reveal a negative link between fiscal deficit and economic growth in Burundi, Kenya and Rwanda while for Tanzania and Uganda the link is positive and significant. Real interest rate and inflation rate deteriorate economic growth in the EAC. Broad money supply growth and foreign direct investment boost economic activity in the EAC region. Fiscal restraint and discipline are required to promote economic growth in the region. There is need for governments to ensure price and interest rate stability through inflation targeting and limiting money supply.

Keywords: fiscal deficits, economic growth, PMG, East African Community

1. Introduction

A sustainable fiscal stance and economic growth are some of the key macroeconomic policy goals in both developed and developing nations. They are crucial for economic prosperity, maintaining stability and improving societal welfare and therefore countries strive to achieve them. EAC as a regional block has set development targets that are not limited to maintaining a fiscal deficit of less than 5% of GDP and annual GDP growth rate of more than 7% as outlined in EAC's 3rd development strategy and vision 2050 (EAC, 2016b). Moreover, individual country measures have been set up to achieve economic growth and fiscal stance. However, the gap between public expenditure and revenue at both regional and country level continue to grow. Annual GDP growth rate is averagely below the set target of more than 7% (WDI, 2022; WEO, 2023).

Whenever a government's spending surpasses the revenue it collects, it results in a budget deficit (Gruber, 2013). In many EAC countries, there are issues with tax collection efficiency due to low tax rates, a limited tax base, tax evasion, and tax avoidance. When these challenges are compounded by corruption in the taxation process, it often leads to persistent mismanagement of the budget and inadequate budget controls, causing budget shortfalls (Maweje & Odhiambo, 2022). Prevalence of natural disasters such drought and floods and pandemics like recently the global Covid-19 and Ebola have also widened the gap between public spending and revenue in the EAC.

Fiscal deficits can either support or harm an economy, depending on their purpose and management. Using deficits for productive investments and stimulating demand can be beneficial, as suggested by Gruber (2013). Conversely, deficits used for recurrent expenses or corruption can be detrimental. Persistent deficits can lead to exchange rate volatility, inflation, and intergenerational debt transfer. Barro (1989) argues that the impact of deficits can be neutral when considering the distribution of tax burdens and resource allocation across generations. Balancing fiscal sustainability and economic growth is a complex task.

Economic growth is determined by various factors. For example, public and private investment contribute to growth of economic activity through higher productivity. Additionally, technological progress increases productivity and efficiency in production which can lead to increased level of aggregate output. Accumulation of

human capital through education and acquiring skills and knowledge as well as good health is essential for economic growth. Sound macroeconomic environment that has sound macroeconomic policies that ensures price stability, favourable external balance and business environment is conducive for economic growth. Growth of the economy is essential because it leads to low levels of unemployment, improved standards of living, reduction in poverty rates and other positive spillover effects.

The trend of fiscal deficits and GDP growth rate in the EAC region has been unpredictable over the study period, 2000-2021. Average GDP annual growth was lowest in 2002 and highest in 2011 at 3.2% and 7.7% respectively. Fiscal deficit and GDP in the EAC region seem to move in opposite direction over the study period with exception of early 2000s. For instance, between 2000 and 2001 fiscal deficits were rising while GDP growth rose from 3.1 % to 5.1 %. Between 2014 and 2016 average fiscal deficit rose from 7.38% to 9.46% while GDP growth decline to 4.59% from 5.20%. Average fiscal deficit observed in the EAC between 2017 declined from 8.28% to 7.52% while GDP growth rose from 3.97% to 5.62% (WDI, 2022). It remains a research question whether the relationship between fiscal deficit and economic growth is statistically different at country-specific level.

The outcomes of both theoretical and empirical investigations into the relationship between fiscal deficits and economic growth present conflicting results. Neoclassical theory suggests an inverse link between budget deficits and economic growth, while Keynesian theories suggest a positive connection. Ricardian equivalence hypothesis argue that budget deficits have neutral effect on economic growth (Ricardo 1817; Keynes, 1936; Barro, 1989). Gupta et al. (2006) and Eminer (2015) opine that high fiscal deficit is not always harmful to an economy if higher public expenditure is used on productive purposes. Adak (2010), Fatima et al. (2012), Mohanty (2012), Rahman (2012), Nkrumah et al. (2016) and Rana and Wahid (2017) argue to the contrary that fiscal imbalances are detrimental to economic performance. This study sought to investigate the impact of fiscal deficits on economic growth in the EAC at regional and individual level using a modern panel estimation approach (Pooled Mean Group). PMG produces both short- and long-term correlations between study variables as well as short-run country specific results.

This study contributes to the existing literature on economic growth and budget deficits by examining this relationship on a small sample and producing both regional as well as country-specific results. Understanding the impact of fiscal deficits on economic growth is crucial for policy makers to development effective policies in times of economic downswings. Policy makers will be able to effectively manage public debt through fiscal discipline and formulate policies that stimulate economic growth.

The arrangement of this study is structured as follows: The first part includes an introduction, followed by a literature review in the second section. The third section addresses methodology, encompassing theoretical framework, analytical models, and data considerations. Section four presents empirical results and discussions, while the fifth section concludes with a summary, conclusion, and policy implications.

2. Literature Review

2.1 Theoretical Literature Review

Neoclassical theory argues that fiscal deficits have negative effects on investment and economic performance, primarily by reducing public saving and increasing government dissaving. This can lead to lower aggregate output and higher interest rates. Furthermore, neoclassical theory points out that high fiscal deficits can place a burden on future generations through increased taxes (Bernheim, 1989).

The Keynesian paradigm posits that when an economy is not operating at full employment, an increase in autonomous government spending, whether it's directed towards consumption or investment, and financed through borrowing, can lead to an increase in overall economic output through a multiplier effect (Keynes, 1936). Further Keynesian theory predicts that multiplier-based output growth will lead to expansion in demand for money holding money supply constant. This will to a partial increase in interest rates, which will partially counteract the multiplier effect. Keynesians argue that when there is an increase in aggregate demand, it can have a positive impact on private investment profitability even if interest rates are on the rise. Therefore, higher investment profitability, driven by increased demand for goods and services, can partially offset the negative effects of rising interest rates hence economic growth (Eisner, 1989).

Ricardian equivalence theory, introduced by Ricardo (1817) and expanded upon by Barro (1989), focuses on long-term impacts and argues that fiscal deficits primarily matter for smoothing the adjustment to spending or revenue shocks. According to this view, fiscal deficits are neutral for output growth. Deficits financed by borrowing essentially amount to tax postponement, where the current fiscal gap equals the future taxes required

to repay the growing debt caused by the deficit. This implies that all government spending, whether immediate or in the future, must be eventually paid for, and current spending should match today's income, both non-tax and tax. However, Feldestein (1976) criticized this theory, highlighting its failure to account for the impact of fiscal deficits on economic and population growth. The study suggests that government debt accumulation can negatively affect national savings and economic growth.

2.2 Empirical Literature Review

The empirical literature on the link between budgetary deficit and economic growth can be categorised into three theories: Neoclassical, Keynesian and Ricardian perspectives.

The Neoclassical proponents such as Fischer (1991) find an inverse link between budget deficits and economic growth using a sample of using 73 developing nations. The study applied panel data regression. Similarly, Easterly and Rebelo (1993) defined the productive expenditure as spending on communication and transportation. The study found a link between budget surplus and growth and concluded that severe budget deficits were harmful to the economy.

Adam and Bevan (2005) analysed the link between output and fiscal imbalances using a panel of 45 developing states. The study utilized an overlapping generation's model and fixed panel data estimation coupled with bivariate linear regression. The findings suggest a non-linear link between output and the fiscal deficit for selected of developing nations. Additionally, based on the unswerving management of budgetary constraints, the study uncovered confirmation of the threshold impact at a deficit level of roughly 1.5% of GDP. Adak (2010) find similar results in Turkey utilizing various models, both stationary and non-stationary, and the regression technique.

Using the Vector Error Correction Model, Granger Causality and Johansen Cointegration tests Mohanty (2012) examined both short and long-term connection between India's fiscal deficit and economic performance. The study's findings showed a long-term, negative and significant association between economic performance and fiscal imbalance. The results further indicated that the pre-reform deficit had a comparatively less detrimental effect on output compared to the fiscal deficit observed after the reform. Fatima et al. (2011) explored the correlation between Pakistan's budget deficit and output between 1978 and 2009 using a simple OLS model. The study findings revealed a negative and statically negative link between inflation and economic growth. The findings were attributed to government's long-term constraints in financing the budget deficits.

Similar conclusions were drawn by Nkrumah et al. (2016) in Ghana for the period 2000-2015. The study employed both trend analysis and the autoregressive distributed lag (ARDL) model for times series quarterly data. The trend analysis results indicated that from 2000 during the periods of huge budget deficits the output growth rate was low. Furthermore, the ARDL findings suggested an inverse association between economic and budget deficits. Using OLS estimation, error correction model and granger causality test Rana and Wahid (2017) investigated effect of budget deficit on output growth in Bangladesh between 1981 and 2011. The findings suggested a negative link between public budget shortfall and economic progress. A unidirectional connection linking the budget deficit and economic expansion was also discovered by the findings of the Granger causality test.

Several empirical studies agree with Keynesian theory. They include and not limited to; Gupta et al. (2005) found that a budget deficit has a favourable short- and long-term impact on economic performance. The study findings suggested that countries with more productive spending had greater growth rates than those with a budget deficit yet spent public funds on non-productive activities. Similar findings were made by Bose et al. (2007) in their study of 30 developing countries, which showed that if the budget imbalance was caused by productive spending, it would positively affect growth. Similarly, Odhiambo et al. (2013) examined the link between Kenya's budget deficits and aggregate economic activity from 1970 to 2007 using OLS estimation. Based on Keynesian theory, the study results showed that budget deficits were favourable for output growth in Kenya.

Taylor et al. (2012) investigated how the fiscal deficit affected debt and economic growth in the USA from 1961 to 2011. Utilizing co-integration analysis and a Vector Auto-Regression (VAR) methods, the study's findings demonstrated that the deficit/income ratio, which reacts counter-cyclically to growth, can be affected positively or negatively by growth of output. Econometric results indicate that the fiscal deficit has a favourable and substantial influence on growth. Correspondingly, Ahmad (2013) analysed the effect of budget deficit on economic performance between 1971 to 2007 for Pakistan. The results showed a positive, albeit insignificant, relationship between budget deficit and output. The Granger causality results showed that the variables had a two-way causal link.

Edame and Okoi (2015) investigated the link between Nigeria's budget imbalance and output growth for the period 1986-2013 using the Chow testing approach and annual country data. The outcomes indicate a strong correlation between Nigeria's fiscal deficit and output. The results are consistent with the study conducted by Awolaja and Osefo (2020). The study examined the association between budget deficit and output growth for 20 Sub Saharan Africa nations from 1991 to 2018. The PMG results revealed a significantly positive short-term effect of the budgetary deficit on output growth.

Cinar et al. (2014) examined how budgetary deficit policies affected European Union's output growth. The study separated the data into two groups based on their amounts of debt (the best 5 and worst 5 EU countries) using quarterly data from the years 2000 Quarter1 to 2011Quarter 4. The panel ARDL results showed that effective fiscal policy positively influenced growth in the short term. Similar to this, Molocwa et al. (2018) investigated the political economy of the budget deficits in the BRICS (China, Brazil, India, Russia, and South Africa) member states for the period of 1997-2016. Using a panel cointegration approach, the findings of the study validated that there exists a persistent and favourable connection between budget deficit and output within the BRICS nations. The findings also showed a bidirectional causal link between budget shortfalls and growth of output.

Eminer (2015) examined the connection between North Cyprus's budget deficit and growth of output from 1983 to 2010. The ARDL technique was also utilized to assess the association between all the variables, and the Granger causality test was performed to examine the long-term causation between the key variable. The results indicate a direct link between all types of public expenditure and output. The study concluded high public expenditure or increased budget deficits do not always result to decreased economic growth. Aslam (2016) examined the dynamic association between Sri Lanka's budget deficits and output using data from 1959 to 2013. The study employed Johansen cointegration and VECM techniques to examine the existence of both short- and long-term relationships between the budgetary deficit and output growth. The findings provided strong support for a long-term dynamic connection between budget deficits and output growth.

The proponents of Ricardian approach suggest that fiscal deficit has no impact on economic growth. For instance, M'Amanja and Morrissey (2006) employed time series methods to assess the impact of Kenya's fiscal measures on economic performance, utilizing data covering the period from 1964 to 2002. According to the study, inefficient spending and non-distortive tax revenue had no negative effects on growth as defined by economic theory. While distortionary taxes had little influence on output, productive spending had a large negative impact.

In an analysis of the Malaysian economy from 1966 to 2003, Tan (2006) explored the short- and long-term connection among fiscal deficit, output, and inflation. The study found no enduring relationship between fiscal deficits and output, and no indication of a linkage between the two variables. Keho (2010) estimated the link between budget deficits and output for 7 West African countries covering 1980-2005. The study found conflicting results, with 3 of the 7 nations reporting no evidence of causality, one revealing a one-way causal relationship going from deficit to output, and the others demonstrating a two-way causal relationship between output and budgetary shortfalls.

Velnampy and Achchuthan (2013) examined the effect of fiscal shortfall on output for Sri Lanka and found no indication of a connection between budget deficit and output growth. Rahman (2012) employed quarterly data spanning from 2000 to 2011 in Malaysia to assess the correlation between budget deficit and output through the ARDL approach. The outcomes corroborated the Ricardian Equivalence Hypothesis, suggesting that a budgetary discrepancy does not have a lasting influence on output. Furthermore, the study discovered a clear connection between long-term production and productive spending.

3. Methodology

3.1 Theoretical Framework

The theoretical framework is based on the Keynesian models employed by and models in Mohanty (2012) and Nkrumah et al. (2016). According to the Keynesian theory, aggregate output in an economy is written as

$$Y = C + I + G + (X - M) \quad (1)$$

Where

$$\begin{aligned} C &= c_0 + c_1 Y^d, \quad b > 0 & Y^d &= Y - T & I &= I_0 + \lambda i, \quad \lambda > 0 \\ G &= \bar{G} & X &= \rho + \gamma e, \quad \gamma > 0 & M &= m + \mu Y^d, \quad \varpi > 0 \end{aligned}$$

Where Y is aggregate output, C is total consumption expenditure, I is planned private investment spending, G is government purchases, X is exports, M is imports, Y^d is disposable income, T is tax revenue, i is rate of

interest and e is the rate of exchange. c_0 , I_0 , ρ and m are autonomous variables for C , I , X and M , respectively.

Substituting the behavioural functions into equation (1), the equilibrium output (income) is given by

$$\bar{Y} = \frac{A}{\phi} + \frac{1}{\phi}(\lambda i + \gamma e + G - (c_1 - \mu)T) \quad (2)$$

Where $\phi = 1 - c_1 + \mu$, $A = c_0 + I_0 + \rho - m$

If the imbalance is such that actual government expenditure is more than total tax revenue, there is a fiscal deficit (FD) which could be written as

$$FD = G - T \approx G - (c_1 - \mu)T \quad (3)$$

$G - T$ denotes the government deficit if the government entirely relies on tax revenue. If private consumption expenditure is not fully utilized, the government could derive $(c_1 - \mu)T$ from consumption expenditure. Deducting $(c_1 - \mu)T$ from government purchases G gives an estimate of the budget deficit.

Substituting (3) into (2) yields

$$\bar{Y} = \frac{A}{\phi} + \frac{1}{\phi}(\lambda i + \gamma e + FD) \quad (4)$$

Suppose the economy is open, then the model can further be expanded to accommodate the balance of payments and money market. Therefore, the Liquidity-Money (LM) equation is given as

$$i = \chi \frac{B}{P} + \omega Y, \quad \chi < 0, \omega > 0 \quad (5)$$

where P is the general price level, B is foreign reserves held by a monetary authority. Additionally, the balance of payments (BOP) schedule could be given as

$$B = A_2 - \rho_0 Y + \rho_1 e + \rho_2 i, \quad \rho_0, \rho_1, \rho_2 > 0 \quad (6)$$

Where A_2 is the cumulative of predetermined components in the net export function, and ρ_0 , ρ_1 , ρ_2 are coefficients.

Substituting equation (5) into (3) yields

$$Y = A_1 + \delta_1 \frac{B}{P} + \delta_2 Y + \gamma e + FD \quad (7)$$

Where $\delta_1 = \frac{\chi \lambda}{\rho}$ and $\delta_2 = \frac{\mu \lambda}{\rho}$

Furthermore, substituting equation (6) into (7) gives,

$$Y = A_1 + \frac{\delta_1}{P}(A_2 - \rho_0 Y + \rho_1 e + \rho_2 i) + \delta_2 Y + \gamma e + FD \quad (8)$$

Simplifying equation (8) yields

$$Y = C + \frac{1}{P}(\eta_1 e + \eta_2 i) + \eta_3 e + \eta_4 FD \quad (9)$$

Where $\omega = 1 + \delta_1 \rho_0 - \delta_2$, $C = \frac{A_1 + \delta_1 A_2}{\omega}$, $\eta_1 = \frac{\delta_1 \rho_1}{\omega}$, $\eta_2 = \frac{\delta_1 \rho_2}{\omega}$, $\eta_3 = \frac{\gamma}{\omega}$, $\eta_4 = \frac{1}{\omega}$

By taking logs of the second term in equation 9's right-hand side gives

$$Y = C + \psi e + \eta_2 i - \pi + \eta_3 e + \eta_4 FD \quad (10)$$

Where π is inflation and $\psi = \eta_1 + \eta_2$

Equation (10) suggests that at the steady state, output is positively impacted by a fiscal deficit, interest rate and exchange rate and negatively influenced by the inflation rate.

3.2 Econometric Analytical Model

The estimated model of the study is pinned on the work of Eminer (2015) and Nkrumah et al. (2016). Thus, the study estimated the model below

$$RGDP = f(FD, RIR, INFL, FDI, BMS) \quad (11)$$

Where, RGDP is real GDP (annual growth rate), FD is fiscal deficit as ratio of GDP (excluding grants), RIR is the real interest rate, INF is inflation rate measured by CPI, FDI is foreign direct investment (inflows) and BM is broad money supply growth (annual percentage).

The analytical model is specified as follows

$$RGDP_{i,t} = \alpha_0 + \alpha_1 RGDP_{i,t-k} + \alpha_2 FD_{i,t-k} + \alpha_3 RIR_{i,t-k} + \alpha_4 INF_{i,t-k} + \alpha_5 FDI_{i,t-k} + \alpha_6 BMS_{i,t-k} + \mu_i + \varepsilon_{i,t} \quad (12)$$

Where; $RGDP_{i,t}$ is Real Gross Domestic Product (Annual GDP growth rate), $FD_{i,t}$ is Fiscal deficit, $INF_{i,t}$ is Inflation Rate, $FDI_{i,t}$ is Foreign Direct Investment, $BMS_{i,t}$ is Broad Money Supply, μ_i represent unobserved individual country effects and $\varepsilon_{i,t}$ is error term.

3.3 Data

The estimations used panel data from 5 EAC states namely Burundi, Kenya, Rwanda, Tanzania and Uganda for the period between 2000 and 2021. South Sudan and Democratic Republic of Congo were not included in the sample due to unavailability of data. Data on Real GDP annual growth rate (RGDP), inflation measured as CPI (CPI), Foreign Direct Investment (FDI) and Broad money supply (BMS) was sourced from the World Development Indicators of the World Bank. Fiscal deficit's data was obtained from various sources including IMF's World Economic Outlook (WEO) and East African Community publications (EAC facts and figures).

3.4 Pre-Estimation Tests

Panel cross-sectional dependence test

Pesaran (2004) cross-sectional dependence test was carried out to establish interconnection between cross-sectional units. This is because EAC countries are likely to have similar macroeconomic environment hence interconnected. The null hypothesis states no cross-sectional dependence while alternative indicates cross-sectional dependence.

Panel unit root tests

In absence of cross-sectional dependence, first generation panel unit root tests are applicable. This study utilized Levin, Lin and Chu (2002) and Hadri (1999) panel unit root tests. Null hypothesis for H. LM test indicates stationarity while alternative suggests otherwise. LLC panel unit root test's null hypothesis is of non-stationarity while alternative is otherwise.

Panel cointegration Test

The study sought to establish long run relations between fiscal deficit and economic growth. Therefore, Pedroni's (2004) residual cointegration test was employed to determine long run cointegrating relationship between variables. The null hypothesis is of no cointegration between the variables in the model and alternative is of cointegration.

3.5 Estimation Technique

The econometric model was a dynamic panel equation and, therefore, the dynamic panel estimation technique was suitable. The Pooled Mean Group estimator recommended by (Pesaran et al., 1999) was most suitable for this study because the panel period (T) was larger than the sample size (N). One of the advantages of PMG is that it ensures that the long-term parameters remain consistent across all nations while allowing variations in short-term estimations. PMG estimate can account for endogeneity which guarantees valid and consistent estimates. This estimation technique can also reproduce country specific short run results.

The model starts with the following panel Auto Regressive Distributed Lag (ARDL) model for the countries $i=1, 2, \dots, N$ and time period $t=1, 2, \dots, T$,

$$RGDP_{i,t} = \sum_{k=1}^a \alpha_{i,k} RGDP_{i,t-k} + \sum_{k=0}^b \beta'_{i,k} X_{i,t-k} + \mu_i + \varepsilon_{i,t} \quad (13)$$

Where; $RGDP_{i,t}$ is GDP annual growth rate. $X_{i,t}$ is $k \times 1$ vector of control variables that include: fiscal deficit (FD), Real interest rate (RIR), inflation rate (INF), Foreign direct investment (FDI) and Broad money supply (BMS). $\alpha_{i,k}$ are lag-added scalar coefficients of the real GDP growth rate. $\beta'_{i,k}$ are $k \times 1$ vector of coefficients of explanatory variables and μ_i is individual country fixed effects.

The estimated Pooled Mean Group equation is given as:

$$\begin{aligned} \Delta RGDP = & -\phi_i (RGDP_{i,t-1} - \alpha_1 FD_{i,t} - \alpha_2 RIR_{i,t} - \alpha_3 INF_{i,t} - \alpha_4 FDI_{i,t} - \alpha_5 BMS_{i,t} - \alpha_{m+1} t - \omega_{0,i}) \\ & + \beta_{1,i} \Delta RGDP_{i,t} + \beta_{2,i} \Delta FD_{i,t} + \beta_{3,i} RIR_{i,t} + \beta_{4,i} INF_{i,t} + \beta_{5,i} \Delta FDI_{i,t} + \beta_{6,i} BMS_{i,t} + \varepsilon_{i,t} \end{aligned} \quad (14)$$

4. Empirical Results and Discussions

4.1 Pre-Estimation Test Results

The summary statistics for the variables employed in the study is presented in table 1 (see the appendices). Pesaran's cross-sectional dependence test results in table 2 show that there is no cross-sectional dependence in the model. The p-value is 0.5569 which is higher than 5% hence we do not reject the null hypothesis of no cross-sectional dependence. This implies that there is no interconnection between the cross-sectional units and therefore PMG estimation technique is suitable without accounting for cross-sectional dependence.

The results of panel unit root tests in table 3 indicate that inflation rate (INFL), real interest rate (RIR) and broad money supply (BMS) were stationary at levels. However, by employing H. LM and LLC test real GDP annual growth rate (RGDP), fiscal deficit as ratio of GDP (FD) foreign direct investment (FDI) were stationary after first differencing. Panel unit root results show that the variables are of cointegration order I (0) and I (1). This also implies that with a mixture of cointegration order I (0) and I (1) PMG estimator was appropriate.

The Pedroni's panel cointegration test results in table 4 show that we reject the null hypothesis of no cointegration at 5% level of significance. This implies that the variables employed in the model have long run cointegrating relationships. With rejection of null hypothesis, PMG estimator was appropriate for long run analysis.

4.2 Pooled Mean Group (PMG) Estimation Results and Analysis

This study used the Pooled Mean Group (PMG) technique to determine the link between fiscal deficits and economic growth.

4.2.1 Regional Analysis of Fiscal Deficits and Economic Growth

Table 5 presents results on effects of fiscal deficit on economic growth in the EAC region.

Table 5. Effect of fiscal deficit on economic growth in the EAC Region

Long Run Dynamics				
Dependent variable: GDP growth rate				
Variable	Coefficient	Std. Error	t-Statistic	Prob*
FD	0.1525	0.0697	2.1864	0.0321**
RIR	-0.1117	0.0344	-3.2492	0.0018*
INF	-0.1097	0.0457	-2.3979	0.0192**
FDI	0.7747	0.1032	7.5042	0.0000*
BMS	0.1345	0.0269	5.0116	0.0000*
Short Run Results				
Dependent variable: GDP growth rate				
COINTEQ01	-0.9704	0.2347	-4.1342	0.0001*
Δ (FD)	-0.3996	0.2567	-1.5570	0.1240
Δ (RIR)	0.0834	0.0682	1.2225	0.2256
Δ (INF)	0.0141	0.0788	0.1795	0.8580
Δ (FDI)	0.2534	0.1738	1.4582	0.1493
Δ (BMS)	-0.0817	0.0421	-1.9401	0.0564***
C	1.8567	0.8470	2.1922	0.0317**
Number of observations	105	Lag selection method	AIC	

Note. ECT is the error correction term and Δ shows that the variable is first differenced. *, ** and *** indicate 1%, 5% and 10% level of significance, respectively.

The research findings reveal a positive and significant relationship between fiscal deficit and economic growth in the East African Community. This implies that, at 5 percent level of significance, a unit increase in the budget deficit increases annual GDP growth rate by approximately 0.15 percent in the long term. The long-term positive link between budget deficits and economic at regional level may be attributed to productive public spending. The results support the Keynesian theory of economic expansion and budget deficit (Keynes, 1936) which predict a favourable impact of fiscal deficits on economic growth. An increase in a country's spending is anticipated to boost aggregate demand and economic growth through a multiplier effect. These results are consistent with reviewed empirical literature. Gupta et al. (2005), Bose et al. (2007), Maji and Achegbulu (2012), Taylor et al. (2012), Odhiambo et al. (2013), Ahmad (2013), Cinar et al. (2014), Edame and Okoi (2015), Eminer (2015), and Aslam (2016) find a significant link between fiscal deficits and economic growth.

Real interest rate has a long-term negative relationship with GDP annual growth rate at 1 percent level of significance. A rise in real rate of interest may crowd out private investment leading to a reduction in aggregate demand and output growth. Inflation rate measured as consumer price index has a long-term inverse link with economic growth in the EAC region. The findings suggest that at 5 percent level of significance, 1 percent increase in inflation rate will lead to about 0.1 percent increase in the GDP annual growth rate. This implies that a high level of inflation slows GDP growth rate in the EAC.

Foreign direct investment and broad money supply growth have a statistically positive association with economic growth. Both variables increase aggregate demand in the economy hence economic growth. The

short-term error correction coefficient is both negative and statistically significant, implying the significance of the error correction model at a 1% any imbalance within the model is rectified within a one-year span.

4.2.2 Country-Specific Short Run Analysis of Fiscal Deficits and Economic Growth

PMG estimation technique allows for short-run country specific analysis. It was employed to further analyse the effects of fiscal deficits at individual country level. Table 6 presents the results.

Table 6. Effect of fiscal deficits on GDP in individual EAC countries

Variable	Burundi	Kenya	Rwanda	Tanzania	Uganda
ECT _{t-1}	-0.9736* (0.0004)	-0.1205* (0.0002)	-0.6816* (0.0005)	-0.3359* (0.0002)	-0.7409* (0.0000)
ΔFD	-0.1983* (0.0092)	-0.6982* (0.0003)	-1.2551** (0.0352)	0.0423*** (0.0816)	0.1110* (0.0092)
ΔRIR	0.1033** (0.0117)	-0.0944* (0.0023)	0.3235* (0.0001)	0.0437* (0.0006)	0.0409* (0.0001)
ΔINF	0.0404 (0.1518)	-0.0859* (0.0026)	-0.0554 (0.1638)	-0.1358* (0.0007)	0.3075* (0.0000)
ΔFDI	0.3936 (0.1541)	0.1409 (0.3849)	0.1628 (0.8095)	-0.2450** (0.0347)	0.8147* (0.0009)
ΔBMS	-0.0404* (0.0010)	-0.2406* (0.0000)	-0.0890* (0.0022)	-0.0004 (0.8321)	-0.0383* (0.0001)
CONSTANT	-0.6836 (0.6798)	2.8264 (0.1496)	2.2878 (0.2437)	0.6775 (0.0664)	4.1757 (0.3091)

Note. ECT is the error correction term and Δ shows that the variable is first differenced. *, **and *** indicate 1%, 5% and 10% levels of significance, respectively.

The country-specific results in table 6 reveal a negative and statistically significant impact of fiscal deficits on economic growth in Burundi, Kenya and Rwanda. At 1 percent level of significance, a unit increase in fiscal deficits as a ratio of GDP leads to approximately 0.2 and 0.7 percent deterioration in the annual GDP growth rate for Burundi and Kenya respectively. Similarly, an increase in fiscal deficits by 1 percent will result into a 1.3 percent decline in GDP growth in Rwanda at 5 percent level of significance. The adverse relationship between fiscal deficits and economic growth in these nations may be connected to the practice of domestic borrowing to fund budget shortfalls. This, in turn, reduces the availability of funds for private planned investments and consumer spending, thereby impeding overall output growth.

This is consistent with neoclassical theory which asserts that fiscal deficits are detrimental to the economy. The theory suggests that high fiscal deficits strain interest rates hence crowding out private investment expenditure. This reduces aggregate demand and hence economic growth. The study outcomes align with previous empirical studies by Fischer (1991, 1993), Easterly and Rebelo (1993), Adam and Bevan (2005), and Brender and Drazen (2008). Time series investigations by Adak (2010), Fatima et al. (2012), Mohanty (2012), Rahman, (2012) Nkrumah et al. (2016), and Rana and Wahid (2017) also reveal a negative correlation between output growth and fiscal deficit. On contrary, fiscal deficit in Uganda and Tanzania has a positive and substantial impact on economic growth. The magnitude of the impact is higher in Uganda compared to Tanzania. These results align with Keynesian theory and empirical studies as discussed earlier.

Real interest rate has positive short run impact on economic growth for all EAC Partner States with exception of Kenya. At 1 percent level of significance, a unit increase in real rate of interest leads to 0.09 percent decline in annual GDP growth in Kenya. Crowding out of investment expenditure could be the cause of this negative relationship. Inflation rate has significant and negative relationship with economic growth in Kenya and Tanzania while in Uganda it has a positive impact. The impact of foreign direct investment on economic growth is significantly positive in Uganda and negative in Tanzania. Broad money supply growth has negative short term impact on economic growth across all the countries sampled in the study. The ECT coefficients across all the countries was negative and significant implying that the error correction model is significant.

5. Conclusion and Policy Implications

5.1 Conclusion

The study results reveal that, at regional level fiscal deficit has a long-term positive impact on economic growth. At country specific level, fiscal deficit has short run negative association with annual GDP growth rate in Burundi, Kenya and Rwanda. For Tanzania and Uganda, fiscal deficit has a positive and significant impact on

economic growth. Therefore, for majority of EAC Partner States, fiscal deficit is detrimental to the economy. Real interest rate and inflation have a negative long run association with economic growth at regional level but the case is different at individual country level. For instance, real interest rate Burundi, Rwanda, Tanzania and Uganda positively impacts economic growth. The impact in Kenya is negative and significant in the short run. Impact of foreign direct investment on economic growth for Uganda is positive while that of Tanzania is negative.

5.2 Policy Implications

It is crucial for individual EAC governments to constrain fiscal deficit to a reasonable level that would be favourable for long term economic growth. To achieve this, EAC governments should prioritize fiscal discipline and consolidation to reduce budget shortfalls and long-term public debt. They should also focus on productive public spending to boost aggregate output and economic performance. Addressing insufficient public revenue collection is crucial, and measures such as broadening the tax base, improving tax collection efficiency, combating tax evasion, corruption among tax officials, and unproductive tax exemptions are essential. Additionally, diversifying public revenue through non-tax sources is recommended. Fiscal reforms such as fiscal accountability and transparency and development of independent fiscal oversight institutions can foster fiscal discipline in the EAC.

According to evidence, inflation rate and real interest rate are detrimental for economic growth; therefore, the EAC government must implement monetary policy tools like inflation and credit control targeting to attain long run price stability. There is need for EAC governments to promote economic openness so as to attract foreign direct investment. Additionally, governments can ensure stable and predictable business environment which motivates investors to invest.

References

- Adak, M. (2010). Kamu açıkları ve ekonomik büyüme: Türkiye örneği / Public Debt and Economic Growth: The Case of Turkey. *Maliye Dergisi*, 159, 233-243.
- Adam, C. S., & Bevan, D. L. (2005). Fiscal Deficits and Growth in Developing Countries. *Journal of Public Economics*, 89(4), 571-597. <https://doi.org/10.1016/j.jpubeco.2004.02.006>
- Ahmad, N. (2013). The role of Budget Deficit in the Economic Growth of Pakistan. *Global Journal of Management and Business Research Economics and Commerce*, 13(5), 1-4.
- Aslam, A. L. M., & Lebbe, S. M. A. (2016). Impact of Fiscal Deficit on Inflation in Sri Lanka: An Econometric Time Series Analysis. *International Letters of Social and Humanistic Sciences*, 70, 8-13. <https://doi.org/10.18052/www.scipress.com/ILSHS.70.8>
- Awolaja, G. O., & Esefo, I. O. (2020). Budget Deficit and Economic Growth in Sub-Saharan Africa: PMG Approach. *Asian Journal of Economics, Business and Accounting*, 13(3), 1-10. <https://doi.org/10.9734/ajeba/2019/v13i330174>
- Ball, L. N., & Mankiw, N. G. (1995). What Do Budget Deficits Do? In *Proceedings - Economic Policy Symposium - Jackson Hole, Federal Reserve Bank of Kansas City* (pp. 95-119). <https://doi.org/10.3386/w5263>
- Barro, R. J. (1989). The Ricardian Approach to Budget Deficit. *Journal of Economic Perspectives*, 3(2), 37-54. <https://doi.org/10.1257/jep.3.2.37>
- Bernheim, B. D. (1989). A Neoclassical Perspective on Budget Deficits. *Journal of Economic Perspective*, 3, 55-72. <https://doi.org/10.1257/jep.3.2.55>
- Bose, N., Haque, M. E., & Osborn, D. R. (2007). Public Expenditure and Economic Growth: A Disaggregated Analysis for Developing Countries. *The Manchester School*, 75(5), 33-556. <https://doi.org/10.1111/j.1467-9957.2007.01028.x>
- Ciñar, M., Eroglu, I., & Demirel, B. (2014). Examining the role of budget deficit policies in economic growth from a Keynesian perspective. *International Journal of Economics and Finance*, 6(10), 191-200. <https://doi.org/10.5539/ijef.v6n10p191>
- EAC. (2016a). *East African Community Facts and Figures (2016) Report*. East African Community, Arusha, Tanzania. Retrieved from <https://www.eac.int/documents/category/key-documents>
- EAC. (2016b). *Vision 2050: Regional vision for socio-economic transformation and development*. East African Community, Arusha, Tanzania. Retrieved from <https://www.eac.int/documents/category/key-documents>.

- EAC. (2019). *East African Community Facts and Figures (2019) Report*. East African Community, Arusha, Tanzania. Retrieved from <https://www.eac.int/documents/category/key-documents>.
- Easterly, W., & Rebello, S. (1993). Fiscal policy and economic growth. *Journal of Monetary Economics*, 32(3), 417-458. [https://doi.org/10.1016/0304-3932\(93\)90025-B](https://doi.org/10.1016/0304-3932(93)90025-B)
- Edame, G. E., & Okoi, O. B. (2015). Fiscal Deficit and Economic Growth in Nigeria: A Chow Test Approach. *International Journal of Economics and Financial Issues*, 5(3), 748-752.
- Eisner, R. (1989). Budget deficits: Rhetoric and reality. *The Journal of Economic Perspectives*, 3(2), 73-93. <https://doi.org/10.1257/jep.3.2.73>
- Eminer, F. (2015). The Impact of Budget Deficit on Economic Growth in North Cyprus. In *Proceeding of the 2015 WEI International Academic Conference*. West East Institute.
- Fatima, G., Ahmed, A. M., & Rehman, W. (2011). Fiscal Deficit and Economic Growth: An Analysis of Pakistan's Economy. *International Journal of Trade, Economics and Finance*, 2(6), 501-504. <https://doi.org/10.7763/IJTEF.2011.V2.156>
- Feldstein, M. (1976). Temporary layoffs in the theory of unemployment. *Journal of Political Economy*, 84(5), 937-958. <https://doi.org/10.1086/260491>
- Fischer, S. (1991). Growth, Macroeconomics, and Development. In O. J. Blanchard, & S. Fischer (Eds.), *NBER Macroeconomics Annual* (Vol. 6, pp. 329-379). National Bureau of Economic Research, Cambridge, MA. <https://doi.org/10.2307/3585065>
- Gruber, J. (2013). *Public Finance and Public Policy* (4th ed.). New York: Worth Publishers.
- Gupta, S., Clements, B., Baldacci, E., & Mulas-Granados, C. (2005). Fiscal Policy, Expenditure Composition, And Growth in Low-Income Countries. *Journal of International Money and Finance*, 24(3), 441-463. <https://doi.org/10.1016/j.jimonfin.2005.01.004>
- Hadri, K. (2000). Testing for Stationarity in Heterogeneous Panel Data. *The Econometrics Journal*, 3(2), 148-161. <https://doi.org/10.1111/1368-423X.00043>
- Iddrisu, A. G., & Bokpin, G. A. (2018). Political Business Cycles and Economic Growth in Africa. *Journal of Economic Studies*, 45(4), 760-772. <https://doi.org/10.1108/JES-02-2017-0056>
- IMF. (2023). *World Economic Outlook*. International Monetary Fund, Washington, D.C. <https://www.imf.org/en/Publications/WEO>
- Keho, Y. (2010). Budget Deficits and Economic Growth: Causality Evidence and Policy Implications for WAEMU Countries. *European Journal of Economics, Finance and Administrative Sciences*, 18, 99-104.
- Keynes, J. M. (1936). *The General Theory of Employment, Interest and Money*. Macmillan, New York.
- Lessem, R., & Urban, C. (2016). Local economic gains from primary election spending. *The Economic Journal*, 126(597), 2147-2172. <https://doi.org/10.1111/ecoj.12296>
- Levin, A., Lin, C. F., & Chu, C. S. J. (2002). Unit Root Test in Panel Data: Asymptotic and Finite Sample Properties. *Journal of Econometrics*, 108(1), 1-24. [https://doi.org/10.1016/S0304-4076\(01\)00098-7](https://doi.org/10.1016/S0304-4076(01)00098-7)
- M'Amanja, D., & Morrissey, O. (2005). Fiscal Policy and Economic Growth in Kenya. *CREDIT Research Paper No. 5*. University of Nottingham.
- Maji, A., & Achegbulu, J. O. (2012). The Impact of Fiscal Deficit on Economic Growth in Nigeria. *Canadian Research & Development Centre of Sciences and Cultures*, 4(2), 127-132.
- Mohanty, R. K. (2012). Fiscal Deficit-Economic Growth Nexus in India: A Cointegration Analysis. *Journal of Quantitative Economics*, 18(3), 683-707. <https://doi.org/10.1007/s40953-020-00211-1>
- Molocwa, G. A., Khamfula, Y., & Cheteni, P. (2018). Budget Deficits, Investment and Economic Growth: A Panel Cointegration Approach. *Investment Management and Financial Innovations*, 15(3), 182-189. [https://doi.org/10.21511/imfi.15\(3\).2018.15](https://doi.org/10.21511/imfi.15(3).2018.15)
- Nkrumah, K. O., Orkoh, E., & Owusu, A. M. (2016). Exploring the Budget Deficit-Economic Growth Nexus: New Evidence from Ghana. *Journal for Advancement of Developing Economies*, 5(1), 30-43.
- Nordhaus, W. D. (1975). The Political Business Cycle. *Review of Economic Studies*, 42(2), 169-190. <https://doi.org/10.2307/2296528>
- Odhiambo, O. S., Momanyi, G., Lucas, O., & Aila, F. O. (2013). The Relationship between Fiscal Deficits and

- Economic Growth in Kenya: An Empirical Investigation. *Greener Journal of Social Sciences*, 3(6), 306-323. <https://doi.org/10.15580/GJSS.2013.6.051113603>
- Pedroni, P. (2004). Panel Cointegration: Asymptotic and Finite Sample Properties of Pooled Time Series Tests with an Application to the PPP Hypothesis. *Econometric Theory*, 20, 597-625. <https://doi.org/10.1017/S0266466604203073>
- Persson, T., & Tabellini, G. E. (1990). *Macroeconomic Policy, Credibility and Politics* (1st ed.). Routledge, London.
- Pesaran, H., Shin, Y., & Smith, R. (1999). Pooled Mean Group Estimation and Dynamic Heterogeneous Panels. *Journal of the American Statistical Association*, 94, 621-634. <https://doi.org/10.1080/01621459.1999.10474156>
- Pesaran, M. H. (2004). General Diagnostic Tests for Cross Section Dependence in Panels. *CESifo Working Papers, No. 1229*. Munich, Germany. <https://doi.org/10.2139/ssrn.572504>
- Rahman, N. H. A. (2012). The Relationship Between Budget Deficit and Economic Growth from Malaysia's Perspective: An ARDL Approach. In *2012 International Conference on Economics, Business Innovation, IPEDR* (Vol. 38, pp. 54-58). Singapore: IACSIT Press.
- Rana, E. A., & Wahid, A. N. M. (2017). Fiscal Deficit and Economic Growth in Bangladesh: A Time Series Analysis. *The American Economist*, 62(1), 31-42. <https://doi.org/10.1177/0569434516672778>
- Ricardo, D. (1966). *On the Principles of Political Economy and Taxation*. In P. Sraffa (Ed.), *The Works and Correspondence of David Ricardo* (Vol 1: Principles of Political Economy and Taxation). Cambridge University Press.
- Romer, D. (2019). *Advanced Macroeconomics* (5th ed.). New York: McGraw-Hill Irwin.
- Tan, E. C. (2006). Fiscal Deficits, Inflation and Economic Growth in a Successful Open Developing Economy. *Review of Applied Economics*, 2(1), 129-139.
- Taylor, L., Proano, C. R., Carvalho, L., & Barbosa, N. (2012). Fiscal Deficits, Economic Growth and Government Debt in the USA. *Cambridge Journal of Economics*, 36(1), 189-204. <https://doi.org/10.1093/cje/ber041>
- Velnampy, T., & Achchuthan, S. (2013). Fiscal Deficit and Economic Growth: A Study on Sri Lankan Economic Perspective. *Developing Country Studies*, 3(3), 166-175.
- Wickens, M. (2013). *Macroeconomic Theory: A Dynamic General Equilibrium Approach*. Princeton University Press. <https://doi.org/10.1515/9781400842476>
- World Bank. (2022). *World Development Indicators*. Washington DC: *World Bank*. <https://databank.worldbank.org/source/world-development-indicators>

Appendix

Summary Statistics

Table 1 presents descriptive statistics of variables used in the model.

Table 1. Descriptive statistics of selected variables

Variable	Minimum	Maximum	Mean	St. Deviation
			Statistic	Statistic
RGDP	-3.90	13.19	5.212790	2.963925
FD	2.8	20.00	9.03718	3.703285
RIR	-16.6792	22.99559	8.649521	7.0544
INF	-5.228091	85.35327	8.064122	9.761689
FDI	-0.0013049	6.656597	1.975666	1.636412
BMS	-0.0640779	38.0836	16.12074	7.700882
Number of Observations=110				

Note. GDP, FD, RIR, INF, FDI, and BM refer to GDP Annual growth rate, Fiscal deficits (excluding grants) as ratio of GDP, Real interest rate, Inflation rate, Foreign direct investment and Broad money supply annual growth respectively.

Panel Cross-Section Dependence Test

Cross-Sectional Dependence test by Pesaran (2004) was employed and the results are presented in table 2.

Table 2. Pesaran's test results for cross-sectional dependence

	Statistic	P-value
Pesaran CD test	0.587522	0.5569

The null hypothesis, which suggests no cross-sectional dependence, is accepted at a 5% level of significance. The variables in the model are therefore cross-sectionally independent.

Panel unit root tests

Table 3 provides panel data unit root test results at level and first differences.

Table 3. Panel unit root test results

Variable	H. LM Statistic	P value	LLC Statistic	P value	Order of Integration
RGDP	-1.8770	0.9697	-6.9390	0.0000	I (1)
FD	-1.7288	0.9581	7.7843	0.0000	I (1)
RIR	1.4754	0.0016	-2.9465	0.0016	I (0)
INFL	-0.3426	0.6341	-3.4311	0.0003	I (0)
FDI	-5.2057	0.0000	-1.6473	0.9502	I (1)
BMS	4.4192	0.0000	-3.2028	0.0007	I (0)

Note. HLM is Hadri LM test and LLC is Levin-Lin-Chu test. I(0) and I(1) indicate stationary at level and after first differencing respectively.

Panel Cointegration Test

Table 4 presents Pedroni (2004) panel cointegration test results.

Table 4. Pedroni panel cointegration test results

	Statistic	P-Value
Modified Phillips-Perron t	0.7940	0.2136
Phillips-Perron t	-5.3983	0.0000
Augmented Dickey-Fuller t	-4.7337	0.0000

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