The Impact of Budget Deficit on Economic Growth in Sub-Saharan Africa

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Abstract

In spite of the plethora of fiscal policy measures adopted and applied over the years, budget deficit still remains pervasive in sub–Saharan African Countries. Therefore, this study set out to examine the relationship between budget deficit and economic growth in sub–Saharan Africa. This study used annual data spanning from 1986 to 2020 and the data were sourced from the World Bank Development Indicators. Static Panel Data of Fixed and Random effects and Pairwise Granger Causality were employed to capture the stated objectives. The result of the Panel Unit Root test revealed that the variables are not stationary at levels but made stationary at the first difference. The results of the fixed effect showed that budget deficit has significant positive effect on economic growth while other variables have insignificant positive link with economic growth in sub- Saharan Africa. The results from the Pair-wise granger causality test exhibited presence of a bi-directional relationship between Exchange rate (EXR) and External Debt (ED) meaning that Exchange rate granger cause External Debt and vice versa. However, uni-directional relationships exist between Real Gross Domestic Product (RGDP) and Inflation Rate (INF), ditto the other variables. Therefore, the study concludes that budget deficit is highly significant to economic growth in sub- Saharan Africa. Based on the findings of this study, it was recommended that governments of SSA should put up sound and workable policies that are needed to improve economic stability in sub–Saharan Africa. More so, Governments should set on motion institutional and regulatory frameworks that can strengthen the existing policy measures so as to enhance economic stability in sub-Saharan Africa.

Keywords: *Budget deficit, economic growth, Fixed and Random effect and Panel Pair Wise Granger Causality Test.*

1.0 INTRODUCTION

1.1 Background to the Study

Budget deficit is one of the economic issues facing both developed and developing countries. There has been incidence of large government deficit in sub-Saharan Africa since the late 1970s and this has generated a controversial argument among policymakers and economists (Dikachim, 2020). O'Neill (2023) reported that sub-Saharan Africa's budget deficit in 2021 amounted to around 5.12 of GDP. A budget deficit occurs when the expected expenditures exceed the expected revenue (Dikachim, 2020). Governments' expenditures include money spent on all projects regardless of the goal of these projects such as transportation, education, defence and civil administration to mention a few. Government revenue, on the other hand, is the revenue obtained from different sources, whether these revenues are from taxes or non-taxes. Budget deficits, according to Ball and Mankiw (2023), would reduce national saving, spurred higher interest rates which also affect flow of capital across national boundaries, and also reduce investment.

Governments finance budget deficits through various sources and this involve domestically borrowing (often used in developed countries with domestic financial systems), borrowing from the World Bank or the International Monetary Fund (IMF) (i.e. International sources), and minting currency by the central bank (i.e. monetary financing) and through foreign aid from different agencies and donor governments. The effect of budget deficits on the economy to a large extent depends on how it is financed. If the government deficit is financed by borrowing from commercial banks, the effect will lead to an increase in the interest rates, thereby resulting in crowding out of private investors. If the government deficit is financed by money creation or borrowing from the central bank (i.e. monetary financing), the effect may cause inflation. Financing deficit by externally borrowed funds; effect is likely to lead to appreciation of the exchange rate resulting from the inflow of foreign exchange which will affect the performance of exports, which finally leads to the deterioration of the current balance payment of account. It can also affect growth in the country's external debt stock which could result in a debt crisis.

1.1 Statement of the Problem

The relationship between budget deficit and economic growth remains one of the widely debated topics among policy makers and economists in both developed and developing countries of the world. Deficit financing and economic growth has been a worrisome issue facing the Sub-Saharan African countries for at least past two decades. Deficit financing is a recurring problem and governments of SSA have applied various fiscal policy measures to curb excessive budget deficit. However, despite the frantic efforts of the governments on this issue, poverty, unemployment and insecurity still remains pervasive. More so, in literature, this study is very rare in SSA. The few studies on it are basically on causal relationship using only two variables of the topic. They used Gross Domestic Product (GDP) as proxy for economic growth and as for the dependent variable, budget deficit was the only variable used as the explanatory variable. However, this study intends to fill a lacuna by adding macroeconomic variables such as exchange rate, inflation and interest rate as control variables to the regressors.

2.0 REVIEW OF EMPIRICAL STUDIES.

Adam and Bevan (2005) investigated the relationship between fiscal deficit and growth for 45 developing countries using co-integration model and threshold. It was found that there is significant relationship between fiscal deficit and growth in developing countries and that there is evidence of interaction effect between debt stocks exacerbating the adverse consequence of high deficit. Brauninger (2002) examined the interaction of budget deficit, public debt and endogenous growth in Spain using co-integration analysis. It was revealed that if the ratio of deficit fixed by government is below a critical level, then there are two steady states where capital and public debt grow at the same constant rate and an increase in the deficit ratio will reduce the growth rates of gross domestic product (GDP). This means that if the deficit ratio exceeds the critical level, then there is no steady state of economy.

Adeboye (2003) examined the long run relationship between budget deficit and economic growth incorporating savings and investment. The study grouped 64 developing countries, Nigeria inclusive into A, B, and C based on their level of interest rate. The study indicates that crowding out effect of budget deficit on private investment in Nigeria's economy has significance impact on the economic growth, the level of employment, the standard of living.

Okoye and Akenbor (2010) examined the impact of deficit financing on socio-economic activities in Nigeria from 1997 to 2007 using Pearson product moment correlation coefficient to test the significance of the relationship between deficit financing, economic and social community service. The study found that deficit financing has a positive and significant impact on economic activities in Nigeria.

Osuji and Ozurumba (2013) investigated the impact of external debt financing on economic development in Nigeria using stationarity test, co-integration test and vector error correction model. The study shows that London debt financing possessed positive impact on economic growth while Paris Club debt and Promissory Note were inversely related to economic development in Nigeria. Ojong and Hycenth (2013) examined the effect of budget deficit financing on the development of the Nigerian economy using ordinary least square (OLS) regression techniques. It was found that there is a significant relationship between economic growth and government expenditure and there is no significant relationship between government revenue and economic growth in Nigeria. Okoro (2013) used granger causality and vector auto regression (VAR) techniques to test the hypothesis that deficit financing affects trade balance in Nigeria between 1980 and 2008. It was found that through short run dynamics result; there is positive relationship between deficit financing and trade balance (surplus). While the long run result posits that an increase in deficit financing diminishes trade deficit in Nigeria

. Akinmulegun (2014) examined deficit financing and its effect on economic growth in Nigeria employing the econometric technique of Vector Auto Regression (VAR) Model. The relevant variables used are as follows: real gross domestic product (RGDP), the gross capital formation (GCF), the real interest rate (RINTR), inflation rate (INFR) and budget deficit. It was discovered that deficit financing has not contributed significantly to economic growth in Nigeria. Cinar, Eroglu, & Demirel (2014) examined the effect of budget deficit policies on economic growth. The study used the 2001Q1–2011Q4 data on the best five (Panel A) and five worst (Panel B) countries in European Union by their debt levels and used the panel ARDL model. The findings showed that there is a short-run negative relationship between public debt

and economic growth for the two groups of countries while the long-run estimation results showed budget deficit policies did not affect economic growth in Panel A and B. The finding of the study however is contrary to that of Despotović & Durkalić (2018) who analysed the impact of budget deficit on European Union membership countries. Their study was for the period 2000 to 2015 and their findings however showed that in the pre-crisis period (2000 – 2007), public debt grew both in the EU and in candidate countries, Albania, Bosnia, Herzegovina & Serbia. Also, after the crisis, the correlation remained strong & positive in all countries except Turkey.

Humera (2015) examined the impact of budget deficit on economic growth in Pakistan during the period from 1976 to 2007. The study utilized Co integration technique, VAR Granger Causality test and vector error correction model to estimate the model. GDP was used as a measure of economic growth. The result of Johansen co integration showed that all variables are co integrated. However we have not found any significant impact of budget deficit on economic growth of Pakistan but the findings also showed that the budget deficit has a positive impact on the growth. The results of VAR Granger Causality showed that GDP granger cause investment and investment granger cause deficit. However budget deficit does not granger cause GDP. Edame & Okoi (2015) explored the impact of fiscal deficits on economic growth in Nigeria during the military and democratic regimes. The study employed Chow endogenous break test, unit root and cointegration tests. The study found that fiscal deficit had a significant growth impact during the military regime, while it has not had a significant impact on economic growth during the democratic regime.

Abdullah, Azad and Siddiqua (2018) examined the impact budget deficit on economic growth in Bangladesh using annual data spanning from 1986 to 2015. The study employed Augmented Dickey Fuller (ADF), Phillips - Perron (PP) and Kwiatkowski Phillips-Schmidt-Shin (KPSS) unit root tests to test for stationarity. Establishing the existence of cointegration among variables following the Johansen's procedure, long run cointegrating vector has been estimated depending on VECM. The threshold has been identified solving the estimated long run cointegrating relationship for a local maximum. Findings can be summarized by saying that the long run impact of budget deficit on growth would remain positive; nevertheless, there would be no short run adjustment. Depending on the model definition and the particular exogenous variable(s), the threshold budget deficit has been measured to range between 4.55 to 5.0 percent of GDP.

. Arjomand, Emami, & Salimi (2016) used the static panel models to study the effect of growth, efficiency and government budget deficit in MENA selected countries within the period 2000 to 2013. The result of the estimated relationship for the first model in which government budget deficit is the dependent variable indicate positive effect of economic growth and inflation rate variables as well as the negative effect of labour productivity and government budget deficit. Moreover, the second model in which economic growth is the dependent variable demonstrates the positive effect of labour productivity index and economic growth. In addition, negative correlation of government budget deficit with economic growth is also maintained.

Nkrumah Orkoh and Owusu.(2016) used Autoregressive Distributed Lag (ARDL) approach with trend analysis to assess the relationship between Ghana's budget deficit and economic growth from 2000 to 2015 using quarterly data. The trend analysis reveals that since 2000, years of high budget deficit were usually followed by years of low economic growth and vice versa. This phenomenon was pronounced in 2009, when the Gross Domestic Product (GDP) growth rate fell from 7.3 percent in 2008 to 4 percent in 2009, following an increase in the

budget deficit from 8 percent in 2007 to 11.5 percent in 2008. The same phenomenon was observed between 2012 and 2015. The econometric results show a significantly negative effect of budget deficits on economic growth. Thus, a 100 percent increase in budget deficit in the long run would lead to a 3 percent decrease in real GDP, holding all other factors constant. The results confirm the Neoclassical proposition that high budget deficit does not necessarily translate into economic growth. Similarly, Aero & Ogundipe (2016) also investigated the effects of fiscal deficits on economic growth in Nigeria for the period 1981 to 2014 using the Threshold Autoregressive (TAR) model. The study found out that a significant negative relationship exists between fiscal deficits and economic growth. The study however concluded that the Nigerian economy has been characterized by continuous fiscal deficits, which has not positively contributed to economic growth.

Iqbal, ud Din, & Ghani (2017) examined the relationship between fiscal deficit and economic growth in Pakistan to determine if there is a threshold level of fiscal deficit that could serve as a policy benchmark in promoting growth through fiscal expansion. The analysis applied the STAR model to time-series data for the period 1972 to 2014. The study revealed that fiscal deficit has a negative impact on economic growth

. Tung (2018) examined the effect of fiscal deficits on economic growth in Vietnam. The study applied the Error Correction Model on the quarterly data of 2003 to 2016. The empirical results strongly indicate that there is a cointegration relationship between fiscal deficit and economic growth in Vietnam, in which fiscal deficit had harmful effects on economic growth in both the short and long run. In particular, the correlation analysis confirmed that fiscal deficit can hurt not only the gross output but also private investments, foreign direct investments, and net exports. Ramu & Gayithri (2017) used the vector error correction estimation method to examine the long run and short run relationship between budget deficit and economic growth in India. The period of study was 1970 to 1971 and 2011 to 2012. The findings however showed that budget deficit inversely affects gross domestic product and the effective fiscal deficit enhances capital formation directly and indirectly encourages the private sector to invest more Molocwa, Khamfula, & Cheteni (2018) examined the political economy of budget deficits among the BRICS nations (Brazil, Russia, India, China and South Africa) between 1997 and 2016 using a panel cointegration approach to determine the long run relationship between economic growth, budget deficits, inflation and gross investment. The results of the study showed a long-run equilibrium association between economic growth and the selected variables. Furthermore, there is a positive relationship between budget deficit, inflation, and economic growth, for the period under study for BRICS countries. Lastly, the results support the view that there is a bi-directional linkage from budget deficit to economic growth.

Contrarily, Ubi & Inyang (2020) descriptively appraised the implication of fiscal deficit on Nigeria's economic development from 1980 to 2016. The study disclosed that Nigeria's fiscal deficit has contributed positively to the growth of per capita income, economic growth and stabilization of balance of payments only but did not reduce unemployment and inflation rates. Furthermore, Oyeleke & Ajilore (2020) investigated the sustainability of fiscal policy in Nigeria for the period 1980-2010. The study employed the error correction method and the findings revealed that fiscal policy was weakly sustainable in the economy of Nigeria. Efuntade (2020) examined budget deficit and economic growth in Nigeria. It specifically investigated the relationship between excess public expenditure, public revenue reduction, inflation rate, unemployment rate and real gross domestic product of Nigeria. This study adopted ex-post facto research design. The study period covered thirty-one (10) years spanning from 2009 to

2019, while error correction model was used to analyze the data. The findings revealed among other things that; there was presence of co-integration (long-run relationship) among the variables in the model, excess public expenditure and public revenue reduction has significant relationship with economic growth of Nigeria, while inflation rate and employment rate does not any positive relationship with economic growth of the country in the long run

Saleh & Harvie (2020) examined the impact of the budget deficit on key macroeconomic variables in the seven major industrial countries (G-7): Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States. The period of study was from 1964 to 1993 and multiple regression analysis, as well as meta-analysis was used to analyse the data. The multiple regression results indicated that the budget deficit led to higher short-term interest rates in Japan and the United States. Concerning the long-term interest rate, the budget deficit led to an increase in this rate in France, Germany, and the United States. The budget deficit, however, appeared to worsen the trade balance in Canada. For economic growth, the budget deficit was a significant variable of growth in France, Germany, and Italy. The budget deficit, however, did not manifest any impact on the long-term interest rates.

Abubakar (2021) carried out an in-depth investigation of the effects of deficit financing on economic growth in the Sub-Sahara African countries, using Cameroon, Kenya, Nigeria and South Africa as the sample size. The longitudinal research design was used since the data obtained for the variables of the study covered a timeframe of 35 years - spanning from 1986 to 2020. Real GDP denoting economic growth served as the dependent variable, while government budget deficit, government domestic debt, government external debt, government external reserves, and broad money supply represented the explanatory variables. Both the fully modified ordinary least squares and panel regression methodologies were employed to analyse the study's data. Some of the findings of the study showed that all the variables became stationary at first difference and that there existed a long run relationship among the study's variables. The random effect results which emanated from the panel regression exercise showed that domestic debt exerted positive and significant impacts on economic growth in Cameroon, Kenya, Nigeria and South Africa, respectively. External debt exerted positive and significant impacts on economic growth in Kenya and Nigeria but affected economic growth in Cameroon and South Africa negatively. External reserves also impacted economic growth positively in Kenya and Nigeria but it affected economic growth negatively in Cameroon and South Africa.

3.0 RESEARCH METHODS AND MATERIALS

3.1 Model Specification
The model used in this study follows the model of Abubakar (2021) with modifications which derived its root from Dual gap theory. This study modifies the model with a control variable of interest rate. The model is thus specified below:

RGDP = F (ED, DD, BD, MS2, EXR, INT, INF)-------------------------.-----------------------3.1

By linearizing the function, we have the following equations:

$$RGDP_{it} = \alpha_0 + \alpha_1 ED_{it} + \alpha_2 DD_{it} + \alpha_3 BD_{it} + \alpha_4 MS_{2it} + \alpha_5 EXR_{it} + \alpha_6 INT_{it} + \alpha_7 INF_{it} + \varepsilon_t$$

- (3.2).

It is pertinent to point-out that both the linear and the log-linear specifications were tried; however the log-linear appeared better in terms of goodness of fit, precision of estimates and a tolerable level of multi-collinearity. Thus, transforming equations 3.2 into aggregate production function $Y_i = AX_i + U$ ---(3.3) Where

RGDP = Real Gross Domestic Product

ED = External Debt

DD= Domestic Product

BD = Budget Deficit

MS2 = Broad Money Supply

EXR = Exchange rate

INT = Interest rate

INF= Inflation

α_0= intercept, α_1-α_7=parameters/ coefficients.

3.3 A Priori expectation

This refers to the expected relationship between the dependent variables and independent variables of the model. In connotation to the economic theory, external debt, domestic debt, budget deficit and broad money supply is expected to impact economic growth positively while exchange rate, interest rate and inflation is expected to impact economic growth negatively. The theoretical expectation is symbolically expressed as follows

$\alpha_1 \, \alpha_2 \, \alpha_3 \alpha_4 > 0$ while α_4 and $\alpha_5 \, \alpha_6 \, \alpha_7 < 0$

3.4 Estimating Techniques

The estimating technique employed in this study is Static panel data and Pair-wise Granger Causality Test. The choice of this estimating technique is informed by the need to determine the time series characteristics of the variables that are used in this study. Panel data is used to examine the relationship between budget deficit and economic growth among the selected countries of sub-Saharan Africa. The descriptive analysis is used to analyze the trends of budget deficit and economic growth in Sub-Saharan Africa. Pair-wise Granger Causality Test was used to determine the direction of causality between budget deficit and economic growth in sub Saharan Africa.

3.5   Sources of Data

This study relies on secondary data. Data like external debt, domestic debt, budget deficit, broad money supply and exchange rate were sourced from World Bank Development Indicator, World Bank Data Base, World Bank Global Development Network Growth Data Base, National bureau of statistics and Central Bank of various sub-Saharan African countries

statistical bulletins (2021). Data such as inflation, interest rate and debt were sourced from IMF's International Financial Statistics (IFS) and United Nation statistical bulletin (2021).

4.0 RESULTS AND DISCUSSION

This chapter presents and analyses the descriptive statistics and the results of various empirical tests conducted in this study. The descriptive statistics are mainly tested to help describe and analyze data in a meaningful way that will bring out patterns from the data. In addition to this, analyses are made on the empirical tests conducted to carry out the objectives of this study which include: the unit root test, static panel data test (both fixed and random effects) and Pairwise Panel Granger Causality. The chapter is also concluded by discussing some of the findings drawn from the study.

4.1 Descriptive Statistics

Table 4.1: Descriptive Statistics of the variables

	RGDP (%)	DD	ED (billion)	BD (%)	EXR	INT (%)	INF (%)	MS2 (trillion)
Mean	6.28	214492.20	9.77	15.13	168.48	20.41	10.64	2.97
Std. Dev.	15.81	594924.70	13.90	23.63	206.35	20.54	12.32	6.93
Maximum	149.97	3477512.00	64.60	91.50	732.40	91.67	72.84	38.60
Minimum	-9.11	8.50	23.00	0.10	2.02	0.72	-17.64	3.24
Skewness	6.29	3.62	1.52	1.82	1.20	1.66	2.51	3.45
Kurtosis	52.82	16.27	4.86	5.03	3.05	4.87	11.15	14.68
Observations	139	139	139	139	139	139	139	139

Author Source computation (2022)

Table 4.1 shows the summary statistics of all the variables used in this study. From the results, the mean value of RDGP, DD, ED, BD, EXR, INT, INF and MS2 are 6.28, 214492.20, 9.7, 15.13, 168.48, 20.41, 10.64, and 2.97 respectively. Also, result shows that Broad money supply (MS2) has the highest standard deviation values of 6.93 trillion while Interest rate (INT) has the lowest mean value of 20.54 percent. Furthermore, the highest maximum value stood at 38.60 trillion (i.e., MS2) while the lowest value is 149.97 percent (i.e., RGDP). It is obvious however that Real Gross Domestic Product (RGDP) also have the lowest minimum value of -9.11 percent while Broad Money supply (i.e., MS2) has the highest minimum value of 3.24 trillion. All the variables in this study are positively skewed and they are also mesokurtic.

4.2: Correlation Matrix
4.2.1 Table 4.2: Correlation Matrix

Variables	RGDP	ED	DD	BD	MS2	INF	EXR	INT
RGDP	1.00							
ED	-0.11	1.00						
DD	-0.13	-0.25	1.00					
BD	0.37	-0.37	-0.16	1.00				
MS2	-0.10	0.63	-0.01	-0.23	1.00			
INF	-0.09	0.36	-0.15	-0.29	-0.01	1.00		
EXR	0.38	-0.15	-0.28	0.72	0.08	-0.27	1.00	
INT	0.14	-0.45	-0.17	0.68	-0.21	-0.28	0.78	1.00

Author Source Computation(2022)

Table 4.2 represents the correlation estimates of the variables in this study which reveals that External Debt (ED), Domestic Debt (DD), Broad Money Supply (MS2) and Inflate Rate (INF) negatively correlates with Real GDP whereas, Budget Deficit (BD), Exchange Rate (EXR) and Interest Rate (INT) positive correlates with RGDP.

4.3: Unit Root Test

Table 4.3: Unit Root Test Result

	Augmented Dickey-Fuller	Phillips-Perron
	I(1)	I(1)
RGDP	68.9137**	115.267**
LNED	52.2161**	110.575**
LNDD	51.6414**	632.108**
LNBD	43.0426**	124.352**
LNMS2	66.1501**	124.093**
LNEXR	60.2686**	101.056**
LNINF	83.7374**	108.788**
LNINT	37.6469**	82.8606**

Author Source Computation(2020)

Note: $** p<.05$

The test for unit root in the Table 3 shows that considering Augmented Dickey-Fuller and Phillips-Perron test all variables are stationary at first difference that is I(1) within the years considered (1986-2020).

4.4: Static Panel Data (Fixed and Random Effects)

Table 4.4: Fixed and Random Effect Regression Results

Fixed effects			Random effects		
Variable	**Coef.**	**p-value**	**Variable**	**Coef.**	**p-value**
LNDD	.997	.102	LNDD	8.445	.041**
LNED	.815	.812	LNED	1.185	.767
LNBD	.953	.015**	LNBD	-11.348	.003***
LNMS2	.643	.508	LNMS2	-.747	.841
LNEXR	.943	.153	LNEXR	-5.389	.169
LNINT	.369	.989	LNINT	1.732	.644
LNINF	.048	.59	LNINF	3.388	.349
Constant	.926	.003***	Constant	83.934	.014**

Author source computation(2022)

4.5: Post-Estimation Tests

Table 4.5: Post-Estimation Tests

Hausman Test		Breusch and Pagan LM Test	
Chi-square test value	17.205	P-value	1.0000
P-value			
0.016			

Note: *** $p<.01$, ** $p<.05$

Results from both fixed effect and Random effects estimation as shown in the Table 4.5. The random effects model shows that Domestic debt (LNDD), External Debt (LNED), Interest rate (LNINT) and Inflation rate (LNINF) are positively related to Real GDP. This is also the case of the constant at zero level of (DD, ED, BD, MS2, EXR, INT and INF) with a coefficient value of 83.93 and 0.014 significant probability value. Although, Domestic debt (LNDD) is significant at 0.041 percent (i.e., < 5 %) and Budget Deficit (LNBD) at 0.003 percent, External debt (LNED), Broad Money Supply (LNMS2), Exchange rate (LNEXR), Interest rate (LNINT) and Inflation rate (LNINF) have probability values greater than 5 percent. Furthermore, Budget Deficit (LNBD), Broad Money Supply (LNMS2) and Exchange rate (LNEXR) have an inverse relationship with on Real GDP implying that a unit increase in LNBD, LNMS2 and LNEXR will lead to 11.348, 0.747 and 5.389 decline respectively in Real GDP.

On the other hand, fixed effects estimation results shows that all variables considered in this study are positively related to Real Gross Domestic Product (RGDP). However, Budget Deficit (BD) was statistically significant at 5 percent whereas, constant was significant at 10 percent. Furthermore, the Hausman test probability value of 0.016 reveals indicates a fixed effects model is appropriate and the Breusch-pagan LM test reveals that the model is free serial correlation.

4.6: Pair-wise Granger Causality Test

Table 4.6: Pair-wise Granger Causality Test Result

Null Hypothesis:	F-Statistic	Prob.	Decision
LNINF does not Granger Cause RGDP	0.37793	0.686	Do not Reject
RGDP does not Granger Cause LNINF	3.04322	0.0512	Reject
LNINT does not Granger Cause LNDD	2.7247	0.0694	Reject
LNDD does not Granger Cause LNINT	0.09919	0.9056	Do not Reject
LNBD does not Granger Cause LNED	1.50739	0.2254	Do not Reject
LNED does not Granger Cause LNBD	2.99872	0.0534	Reject
LNEXR does not Granger Cause LNED	5.09676	0.0074	Reject
LNED does not Granger Cause LNEXR	3.31426	0.0395	Reject
LNMS2 does not Granger Cause LNBD	0.23155	0.7936	Do not Reject
LNBD does not Granger Cause LNMS2	2.87695	0.06	Reject
LNINT does not Granger Cause LNBD	0.49209	0.6125	Do not Reject
LNBD does not Granger Cause LNINT	2.90491	0.0584	Reject
LNINF does not Granger Cause LNEXR	0.66609	0.5155	Do not Reject
LNEXR does not Granger Cause LNINF	4.33138	0.0151	Reject
LNMS2 does not Granger Cause LNINF	0.0514	0.9499	Do not Reject
LNINF does not Granger Cause LNMS2	3.80234	0.0249	Reject

Results from the Pair-wise granger causality test shows the presence of a bi-directional relationship between log of Exchange rate (LNEXR) and log of External Debt (LNED) meaning that Exchange rate granger cause External Debt and vice versa. On the other hand, Uni-directional relationship exist between Real Gross Domestic Product (RGDP) and log of Inflation Rate (INF), log of Domestic Debt (DD) and log of Interest Rate (INF), log of External Debt (LNED) and log of Budget Deficit (LNBD), log of Budget Deficit (LNBD) and log of Broad Money Supply (LNMS2), log of Budget Deficit (LNBD) and log of Interest rate (LNINT), log of Exchange rate (LNEXR) and log of Inflation rate (LNINF), and log of Inflation rate (LNINF) and log of Broad Money Supply (LNMS2)

5.0 CONCLUSION AND POLICY RECOMMENDATIONS

The study set out to examine the effect of budget deficit on economic growth in sub Saharan Africa. The results of the fixed effect revealed that budget deficit has significant positive effect

on economic growth while other variables have insignificant positive link with budget deficit in sub- Saharan Africa. The results from the Pair-wise granger causality test exhibited presence of a bi-directional relationship between Exchange rate (EXR) and External Debt (ED) meaning that Exchange rate granger cause External Debt and vice versa. However, uni-directional relationships exist between Real Gross Domestic Product (RGDP) and Inflation Rate (INF), ditto the other variables. Based on the findings of this study, it was established that the macroeconomic variables are not significantly related to economic growth despite the fact that they are positively associated. Therefore, the study recommends that governments of SSA should put up sound and workable policies that are needed to improve economic stability in sub Saharan Africa. Governments should also ensure strong fiscal discipline without compromising the wellbeing of the citizenry by allocating budget spending to sectors that can translate the deficit into high economic growth both in the short and long runs. Governments have to come up with regulatory framework that can strengthen the existing policy measures so as to enhance economic stability in sub-Saharan Africa by maintaining low level of inflation and unemployment rate.

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