BUDGET DEFICIT AND ECONOMIC GROWTH NEXUS IN NIGERIA

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ABSTRACT

The empirical literature on the budget deficit–growth nexus has piqued the attention of Economists, but the findings are far from unanimous. This paper investigated the relationship between Nigeria's budget deficit and economic growth from 1981 to 2019. The Johansen Cointegration test, the Toda and Yamamoto Granger causality test were used. The paper's estimated results revealed causal relationships between our variables of interest. The paper also revealed that the budget deficit, domestic credit, and exchange rate affect Nigeria's economic growth. The paper concluded that the budget deficit is an expansionary fiscal policy tool that stimulates economic growth and that the budget deficit does not necessarily intensify inflationary pressures in Nigeria but rather manifests through other macroeconomic variables. As a result, the paper proposed that monetary policy be improved to function as checks and balances and supplement fiscal policy to maintain Nigeria's economic growth.

Keywords: Budget deficit, economic growth, fiscal policy, inflation, Toda and Yamamoto

INTRODUCTION

The goal of policymakers in both developing and developed countries is to achieve inclusive and sustainable growth. The policymakers in these countries see the Gross Domestic Product (GDP) as the leading growth indicator. However, evidence from developing countries has proved that the growth in GDP in most of these countries is non-inclusive. To curtail the risk of non-inclusive growth in these countries, governments adopted an expansionary fiscal policy, leaving their fiscal regimes with a persistent deficit balance (Umaru & Gatawa, 2014).

Persistent government budget deficits have become a major concern in these countries. A budget deficit occurs when the government's revenue falls short of its expenditures in a financial year. The extensive theoretical and empirical literature has investigated the link between budget deficits and macroeconomic variables. In Nigeria — the excessively important-dependent country — any fiscal policy extension depletes external reserves and weakens the currency. Budget deficits are often attributed to the 1970s Keynesian-inspired expenditure-led growth theory. The majority of the world's countries have followed the idea that the government must stimulate aggregate demand to encourage economic development. However, the effect on macroeconomic variables in most countries, including Nigeria, cannot be overstated (Olomola & Olagunju, 2004).

Nigeria has historically adopted an expansionary monetary policy to stimulate economic growth and development. This policy resulted in the escalation of Nigeria's annual government deficits. Nigeria's budget deficit began in 1957 and became recurrent in the 1970s, prior to the 1967–1970 civil war, and continues to this day. The country had a budget surplus for just seven years: 1970, 1971, 1973, 1974, 1979, 1980, and 1996 (CBN, 2020). While persistent deficits were considered detrimental to Nigeria's economic growth, successive governments assumed that the deficits needed to be maintained to improve the economy, thereby leading to expansionary monetary policy. However, this expansionary monetary policy impacts macroeconomic variables such as inflation, which acts as a medium for the effect of the budget deficit on economic growth.

The relationship that exists between inflation and economic growth is one of the most critical debates. Although the inflation growth linkage is a part of the liberal consensus in modern economics, some controversies exist. Some consensus (Ahiakpor & Akapare, 2014; De Gregorio, 1996; Thanabalasingam, 2013)suggests that moderate and stable inflation rates foster a country's development process, helping overall economic growth. However, not everyone shares the same degree of confidence in the consensus. The major concern is whether inflation is necessary or detrimental for economic growth. The sustained budget deficit, combined with the high inflation rate and cyclical non-inclusive growth in Nigeria, suggests an inter-relationship between budget deficit, inflation, and economic growth unless empirically proven otherwise. Thus, one might not be mistaken in believing that Nigeria's rising budget deficit and inflation, as well as its dwindling economic growth, are not coincidental. As a result, it is necessary to analyse their interrelationships. Therefore, this paper investigated the relationship between budget deficit, inflation, and economic growth in Nigeria.

While numerous studies have been carried out on the link between budget deficit and economic growth (Abdrahman, 2012; Edame & Okoi, 2015; Ogebe, 2015; Nwant, 2019) or between inflation and economic growth (Min, 2006; Vikesh & Subrina, 2004), the evidence of studies that examine the relationship between budget deficit, inflation, and economic growth within the same frame is barely sufficient in Nigeria. Additionally, these studies do not agree on the exact relationships between these variables. The absence of consensus in the literature indicated a pressing need for further examination of the relationships in Nigeria.

LITERATURE REVIEW

The Keynesian theory suggests that increasing budget deficits boost productivity by inversing the marginal propensity to save. Because increased output enhances the demand for money, if the money supply is held constant, interest rates must rise while private investment falls. This single act reduces productivity and partially balances the Keynesian multiplier effect. The ardent supporters of this Keynesian approach contended that the budget deficit did not always crowd out private investment.

However, the structuralist inflation theory contends that inflation is required for rapid economic transformation. The structural school of thought argued that inflation is inescapable in an economy trying to achieve a specific degree of economic growth and development. This school of thought holds that inflation positively impacts economic growth (that is, a growing economy is expected to experience a certain threshold of inflation). In contrast, monetary economists such as Friedman, Fischer, Muth, Lucas, and others have maintained that inflation is a serious economic problem. Inflation, according to monetarists, is a major hindrance to rapid and sustained economic growth and development.

Many empirical studies have come up with different findings on the relationship between budget deficit and inflation or inflation and economic growth in developed and developing countries. The study of Muhammed *et al.* (2013) examined the relationship between budget deficit and economic growth in Pakistan from 1980 to 2010. The study utilised both the ordinary least square (OLS) regression model and the Pearson correlation test to capture the study's main objectives. The study's findings revealed a linear and strong positive relationship between budget deficit and economic growth. Also, in Pakistan, Najid (2013) examined the relationship between budget deficit and economic growth between 1971 and 2007 using both the Granger causality approach and the OLS regression model. The Granger causality test results revealed a bi-directional causal relationship between budget deficit and economic growth in Pakistan.

Similarly, Humera (2015) empirically examined the effect of Pakistan's budget deficit on economic growth, using annual time series data from 1976 to 2007. Statistical analysis methods used include cointegration, the vector autoregressive Granger causality measure, and the vector error correction model. Unlike the bi-directional relationship found by Najid (2013), Humera (2015) showed that the budget deficit did not Granger cause economic growth during the study period. Shakhaowat (2015) examined the link between inflation and economic growth in Bangladesh from 1961 to 2013, and the findings revealed that inflation negatively affects economic growth.

In Africa, Ahiakpor and Akapare (2014) studied the connection between inflation and economic growth in Ghana from 1986Q1 to 2012Q4. The study revealed that gross fixed capital formation, government expenditure, labour force, and money supply positively impact economic growth, while inflation and interest rates negatively impact it. Also, in Ghana, Kurantin (2017) assessed the effects of budget deficits on economic growth and development between 1994 and 2014. The study's findings showed that a persistent budget deficit caused damage to Ghana's economic growth and development during the period considered. Following the findings, the study recommended adopting and implementing policies that can reverse the unacceptable budget deficit that has crowding-out effects on investment, thereby hindering the growth and development of Ghana.

In Nigeria, many studies have investigated the link between budget deficit and economic growth. For instance, Monogbe *et al.* (2015) examined how the government managed its external deficit by borrowing from external sources, domestic debt, or increasing the total money supply and its effect on Nigeria's economic growth using secondary data. The findings revealed that deficit financing harms economic growth in Nigeria. Similarly, Edame and Okoi (2015) empirically measured the economic relationship between budget deficits and economic growth in Nigeria from 1980 to 2013. The study used Chow endogenous test and the cointegration method. The Chow endogenous test showed that budget deficit had a major impact on economic growth during the military junta, and the reverse was the case during the democratic dispensation. The result also indicated a significant positive relationship between gross fixed capital formation and economic growth.

Likewise, Ogebe (2015) investigated the effect of government budget deficits on economic growth in Nigeria between 1970 and 2012. The study employed a simple Keynesian model for 1970 to 2012 and found causal relations and a significant correlation between the government's budget deficit and economic growth. On the other hand, the study of Shuaib *et al.* (2015) measured the impact of the inflation rate on economic growth in Nigeria from 1960 to 2012. The study found no cointegrating relationship between inflation and economic growth, and the result of the Granger causality test showed an inconclusive result.

Umeora (2013) analysed the relationship between budget deficit and other macroeconomic variables in Nigeria, including the GDP, inflation, money supply, lending rate and exchange rate. The study was conducted using the OLS methodology. According to the report, economic growth, the exchange rate, inflation, the money supply, and lending interest rates contribute to 43% of changes in government deficit spending. In addition, Akinmulegun (2014) found that deficit financing had not contributed significantly to economic growth in Nigeria. On the other hand, Idris and Bakar (2017) investigated Nigeria's inflation-economic growth relationship. The study concluded that Nigeria's current inflationary trend has a detrimental effect on the country's ability to achieve sustainable growth and development. Similarly, Anidiobu *et al*. (2018) investigated the effect of inflation on economic growth in Nigeria from 1986 to 2015, and the paper revealed that inflation has no significant effect on economic growth in Nigeria.

In one of the recent studies, Nwanna (2019) assessed the effect of deficit finance on economic growth in Nigeria between 1981 and 2016. The study's findings showed that deficit financing has a significant negative effect on economic growth in Nigeria. Similarly, Sunday and Philomena (2020) revealed that budget deficits do not significantly impact external reserves. The study further showed that budget deficits have no significant influence on inflation in Nigeria, which suggests that a rise in the budget deficits will stimulate aggregate demand output and reduce inflation. On the contrary, Olaniyi (2020) found no symmetric or asymmetric causality between Nigeria's budget deficits and inflation. These findings imply that Nigeria's budget deficits are not inflationary and that constant double-digit inflation rates do not cause Nigeria's budget deficits.

On the other hand, Akamobi and Unachukwu (2021) found that budget deficits have positive and significant impacts on economic growth in Nigeria and a one-way causal link from budget deficits to economic growth. In contrast, Chukwu *et al*. (2020) revealed that budget deficits have negatively impacted economic growth and inflation. In the same vein, Ezinne and Folake (2021) and Adaramola and Dada (2020) demonstrated how inflation has harmed economic growth by diminishing competitiveness and weakening money's purchasing power.

METHODOLOGY

The model for this study is specified as follows:

$$RGDP = f\left(GFCF, BDF, INF, EXC, DMC, INT\right) \qquad 1$$

The econometric specification is as follows:

$$RGDP = \delta_0 + \delta_1 GFCF + \delta_2 BDF + \delta_3 INF + \delta_4 EXC + \delta_5 DMC + \delta_6 INT + \mu \qquad 2$$

Where:
RGDP = real GDP (as a proxy for economic growth); GFCF = gross fixed capital formation; BDF = budget deficit; INF = inflation rate, EXC = exchange rate; DMC = domestic credit (using private sector credit as a proxy) and INT = interest rate, μ = stochastic error term. The variables are in their natural log except for inflation, exchange rate and interest rate. The data were sourced from the Central Bank of Nigeria Statistical Bulletin (2017). The augmented model of Toda and Yamamoto (1995) is employed to examine the causal link among the variables. The following system of Toda and Yamamoto version of the Granger causality test equations is estimated:

$$
\begin{bmatrix} RGDP_t \\ GFCF_t \\ BDF_t \\ INF_t \\ EXC_t \\ DMC_t \\ INT_t \end{bmatrix} = A_0 + A_1 \begin{bmatrix} RGDP_{t-1} \\ GFCF_{t-1} \\ BDF_{t-1} \\ INF_{t-1} \\ EXC_{t-1} \\ DMC_{t-1} \\ INT_{t-1} \end{bmatrix} + A_2 \begin{bmatrix} RGDP_{t-2} \\ GFCF_{t-2} \\ BDF_{t-2} \\ INF_{t-2} \\ EXC_{t-2} \\ DMC_{t-2} \\ INT_{t-2} \end{bmatrix} + A_3 \begin{bmatrix} RGDP_{t-3} \\ GFCF_{t-3} \\ BDF_{t-3} \\ INF_{t-3} \\ EXC_{t-3} \\ DMC_{t-3} \\ INT_{t-3} \end{bmatrix} + A_4 \begin{bmatrix} RGDP_{t-4} \\ GFCF_{t-4} \\ BDF_{t-4} \\ INF_{t-4} \\ EXC_{t-4} \\ DMC_{t-4} \\ INT_{t-4} \end{bmatrix} + A_5 \begin{bmatrix} RGDP_{t-5} \\ GFCF_{t-5} \\ BDF_{t-5} \\ INF_{t-5} \\ EXC_{t-5} \\ DMC_{t-5} \\ INT_{t-5} \end{bmatrix}
$$

$$
+ A_6 \begin{bmatrix} RGDP_{t-6} \\ GFCF_{t-6} \\ BDF_{t-6} \\ INF_{t-6} \\ EXC_{t-6} \\ DMC_{t-6} \\ INT_{t-6} \end{bmatrix} + \begin{bmatrix} \varepsilon RGDP \\ \varepsilon GFCF_t \\ \varepsilon BDF_t \\ \varepsilon NF_t \\ \varepsilon EXC_t \\ \varepsilon DMC_t \\ \varepsilon INT_t \end{bmatrix}
$$

3

The Toda and Yamamoto (TY) procedure employs a modified Wald test for putting restrictions on the parameters of the VAR (k) from an augmenting VAR (k + dmax) model, where k is the lag length, and dmax is the maximum order of integration of variables. The method relies on augmented VAR modelling. This modified Wald test has asymptotic chi-square (χ2) distribution irrespective of integration order of the series or their cointegrating characteristics. The test provides information about the long-run causality, which approaches that use first differencing ignore.

Results

To ensure that the time series data used for this analysis are in good structure, the estimation begins with the descriptive analysis, unit root test and the cointegration analysis of the time series data.

Table 1: Descriptive Statistics

	RGDP	BD	INFR	DC	EXR	INTR
Mean	31757.15	-288901.7	19.60389	3856.111	76.59172	17.57927
Median	22391.14	-67714.15	12.55000	391.5650	57.37225	17.54281
Maximum	69023.93	32049.40	72.84000	21082.72	253.4923	29.80000
Minimum	13779.26	-2208222.	5.380000	8.570000	0.610000	7.750000
Std. Dev.	18151.71	491952.8	17.69075	6302.896	72.03856	4.760751
Skewness	0.874864	-2.222251	1.664644	1.532968	0.423730	0.196211
Kurtosis	2.318378	7.849309	4.526998	3.904840	1.985553	3.468595
Jarque-Bera	5.289230	64.90410	20.12382	15.32804	2.620937	0.560364
Probability	0.071033	0.000000	0.000043	0.000469	0.269694	0.755646
Sum	1143257.	-10400461	705.7400	138820.0	2757.302	632.8537

Source: Eviews Estimate

Table 1 shows the description of the variables used in the estimation. The Tables shows wide variations in the variables as revealed by the mean values. For instance, the mean

of RGDP, budget deficit, inflation, domestic credit and exchange rate are 31757.15, -288901.7, 19.60389, 3856.111, 76.559172 and 17.57927, respectively. Most of the variables are positively skewed except the budget deficit variable, which is negatively skewed. Furthermore, the Kurtosis in the Table shows that RGDP and EXP are short-tailed (values less than three), while others are long-tailed (values greater than three). It is clear from the Table that the residuals are normally distributed, as most probability values are less than unity.

Unit Root Test

This paper employs the Augmented Dickey-Fuller (ADF) unit root test to check the stationarity properties of the data. The essence of this is to test the null hypothesis of unit root or non-stationary stochastic process.

Table 2: Unit Root Test Results

	LEVEL		1st Difference		2nd Difference		
VARIABLE	Test statistics	Critical values @5%	Test statistics	Critical values @5%	Test statistics	Critical values @5%	Conclusion
RGDP	-2.0065	-3.5485	-1.5456	-3.5485	-5.3294	-3.5530	I(2)
BD	-0.3788	-3.5950	-7.1491	-3.5950	-	-	I(1)
INFR	-3.8360	-3.5485	-	-	-	-	I(0)
DC	2.3147	-3.5875	-7.5744	-3.5875	-	-	I(1)
EXR	-1.3860	-3.5443	-3.9951	-3.5485	-	-	I(1)
INT	-4.7881	-3.5684	-	-	-	-	I(0)

As shown in Table 2, a good number of the variables are not stationary at level. For instance, only the inflation rate and interest rate are stationary at level, while budget deficit, domestic credit and exchange rate become stationary at first difference. Only real GDP becomes stationary at the second difference.

Cointegration Test

This test is to identify the number of cointegrating relationships that exist in the model. The study employed the Johansen cointegration test. It offers two tests; the Trace test and the Max-Eigenvalue test. The Trace statistics show the null hypothesis that there are at most r number of cointegrating relationships among the variables. Table 2 shows the result of the Trace statistics.

Table 3: Johansen Cointegration Result

Hypothesised		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.7677	111.3084	95.7537	0.0028
At most 1	0.5505	64.5977	69.8189	0.1216
At most 2	0.4243	39.0133	47.8561	0.2597
At most 3	0.2856	21.3433	29.7971	0.3366
At most 4	0.2203	10.5807	15.4947	0.2387
At most 5	0.0785	2.6177	3.8415	0.1057

* denotes rejection of the hypothesis at the 0.05 level

**denotes the p-values

The trace test in Table 3 shows one cointegrating equation at a 5% level of significance. To further confirm the result, the statistical result is presented below.

Table 4: Maximum Eigenvalues Co-integration Result

Hypothesised		Max-Eigen	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.7677	46.7106	40.0776	0.0078
At most 1	0.5505	25.5844	33.8769	0.3466
At most 2	0.4243	17.6700	27.5843	0.5228
At most 3	0.2856	10.7626	21.1316	0.6710
At most 4	0.2203	7.9630	14.2646	0.3825
At most 5	0.0785	2.6177	3.8415	0.1057

Max-eigenvalue test shows one cointegrating equation at the 5%

* denotes rejection of the hypothesis at the 5% level

** denotes the p-values

The max-Engenvalue test in Table 4 also shows one cointegration equation at a 5% level of significance. This result implies that the variables included in the study move in a similar direction. The existence of cointegration is indicative of a long-run relationship among the variables.

Causality Test

The first step is to determine our lag length. Table 4reports the optimal lag length of two (2) as selected by four different criteria: Final Prediction Error (FPE), Akaike information criteria (AIC), Schwarz Information Criterion (SIC) and Hannan-Quinn Information Criterion (HQ).

Table 4: Lag Length Selection

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-1854.984	NA	8.72e+38	109.5284	109.8427	109.6356
1	-1587.832	408.5853	2.48e+33	96.69598	99.20999*	97.55333
2	-1518.919	77.01980*	1.14e+33*	95.52466*	100.2384	97.13219*

* indicates lag order selected by the criterion

The next step is to estimate the T-Y granger causality test by augmenting our VEC with the maximum order of integration of the series (d_{max}). The results of this test are presented in Table 5.

Table 5: Toda and Yamamoto Granger causality Test Results

Dependent Variables	Independent variables						
	RGDP	BD	INFR	INTR	GFCF	EXR	DC
RGDP		6.3376**	1.2831	1.0977	0.3936	0.0325	7.0337
		(0.0421)	(0.5265)	(0.5776)	(0.8213)	(0.9839)	(0.0297)
BD	14.3631***	-	0.0242	2.4741	10.7146***	4.7280*	1.6210
	(0.0008)		(0.9880)	(0.2902)	(0.0047)	(0.0940)	(0.4446)
INFR	0.8188	0.0292	-	6.7652**	1.0465	2.2121	0.4900
	(0.6641)	(0.9855)		(0.0340)	(0.5926)	(0.3309)	(0.7827)
INTR	0.6881	1.7965	3.4496	-	0.0416	1.1791	1.6005
	(0.7089)	(0.4073)	(0.1782)		(0.9794)	(0.5546)	(0.4492)
GFCF	1.1151	9.7125***	0.1838	2.4385	-	0.4406	6.2406*
	(0.5726)	(0.0078)	(0.9122)	(0.2955)		(0.8023)	(0.0441)
EXR	4.1617	11.9179***	1.5863	0.8472	1.6655	-	0.8195
	(0.1248)	(0.0026)	(0.4524)	(0.6547)	(0.4348)		(0.6638)
DC	3.7770	9.4932***	0.2680	1.0583	16.0610***	0.0857	-
	(0.1513)	(0.0087)	(0.8746)	(0.5891)	(0.0003)	(0.9581)	

Note: *** and ** denotes significant at 1% and 5% significance level, respectively. The figure in the parenthesis is the p-value.

DISCUSSION OF FINDINGS

Table 1 shows a bidirectional relationship between economic performance and budget deficit. This means that both variables are causing each other. Similarly, the result shows bidirectional causality between budget deficit and gross fixed capital formation. The result also reveals a unidirectional causality between budget deficit and exchange rate, with a causal relationship from the exchange rate to the budget deficit, without feedback. Similarly, the result reveals a unidirectional causality between budget deficit and domestic credit, without causality running from domestic credit to budget deficit without feedback. The result also establishes a bidirectional relationship between gross fixed capital formation and domestic credit. Additionally, the result establishes a unidirectional causality between inflation and interest rates and a unidirectional causality between economic output and domestic credit. However, there is no causality between economic performance and inflation and budget deficit and inflation. The finding is in line with that of Olaniyi (2020), which concluded that budget deficits are not inflationary but contradicts Ezinne and Folake (2021), which found that inflation has detrimental impacts on economic growth.

The results above demonstrate bidirectional causation, indicating that Nigeria's budget deficit and economic output take precedence over one another in time. The findings indicate that historical and current budget deficit values provide critical details for forecasting future spending levels and vice versa. It implies that increased economic growth results in a larger budget deficit, resulting in increased economic growth. The findings strongly support the traditional Keynesian belief that increased government spending will assist in achieving expansionary fiscal policy by increasing domestic output, encouraging private investors to become more optimistic about the economy's future, which will lead in turn lead to more investment, resulting in increased capital accumulation through the multiplier effect. The budget deficit clearly has a big and favourable impact on Nigeria's economic growth. Budget deficit in its broad sense is not a poor policy option for output expansion. As a result, we argue that Nigeria's budget deficit stimulates economic growth and encourages the government to employ deficit financing. However, it is a two-edged sword that can either improve or worsen any economic scenario, especially when the timing is off. This finding agrees with Akamobi and Unachukwu (2021), which revealed that budget deficit has a favourable and considerable impact on economic growth but opposes Chukwu et al. (2020), which suggested that budget deficit financing has not resulted in the desired growth in Nigeria and should be lowered.

CONCLUSION AND POLICY IMPLICATIONS

This paper examined the relationship between budget deficit and economic growth in Nigeria. The paper has established that budget deficit granger causes economic growth and that budget deficit has a significant relationship with economic growth. Therefore, the study concludes that budget deficit is an expansionary fiscal policy instrument that will enhance economic growth in Nigeria, and it will not inevitably accelerate inflationary pressure but manifests through other macroeconomic variables. Based on these findings, the paper recommends that monetary policy be improved to serve as a check and balance and be used in conjunction with fiscal policy to maintain economic growth in Nigeria. The government should also pursue growth in the money supply to increase the needed growth since this will not automatically lead to inflation.

Also, the government must ensure fiscal discipline without jeopardising citizens' well-being by directing budget spending to sectors that can convert the deficit into high economic growth. The government should divert deficit financing into productive activities such as providing capital goods such as roads and power and the creation or provision of new technologies so that Nigeria's economy can grow faster than the anticipated burden of deficit financing. This will encourage private persons to pursue investment opportunities. Future studies should compare the impacts of budget deficits and inflation with other economies.

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