

Budget Deficit and Economic Growth: An Empirical Analysis of Real Sectors' Performance in Nigeria

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DOI: <https://dx.doi.org/10.51244/IJRSI.2026.13010009>

Received: 20 December 2025; Accepted: 25 December 2025; Published: 22 January 2026

ABSTRACT

Globally, countries have adopted budget deficit as a means of improving the economy. However, the concern of many Nigerians as regard to budget deficit is on whether the upsurge of Budget deficit has contributed to the growth of Nigeria economy. This study examines budget deficit and economic growth: an empirical analysis of the real sectors' performance in Nigeria. The objectives were to examine the effect of budget deficit on the agricultural sector, the industrial sector and the service sector contribution to economic growth. The study applied Generalised Method of Moment (GMM) model on secondary data from the period of 1981 to 2023 and the lags of the dependent variable were used as instruments. Augmented Dickey-Fuller unit root test was used to ensure the stationarity of the variables and bound test approach was used to ensure the existence of long run association among the variables in the model. The findings revealed that budget deficit crowds-out agricultural, industrial and service contributions to economic growth in the short run while in the long run, budget deficit crowds-out agricultural and service sectors contribution to economic growth. Also, the study shows that external debt crowds-in agricultural, industrial and service sectors contribution to economic growth in the long run. The institutional quality variable included shows that increase in corruption index increases industrial contribution to economic growth only in the long run. Exchange rate depreciation was found to favour industrial sector contribution to economic growth. The study therefore recommends that should endeavour to reduce budget deficit and whenever budget deficit occurs, measures should be adopted to cushion the short run effect of budget deficit on agricultural, industrial and service sector contribution to economic growth.

Keywords: Budget Deficit, Economic Growth, Economy, Performance, Real Sector

INTRODUCTION

The increasing roles of Nigeria government in the provision of essential public goods for the growing population has mounted pressure on the finances of the federal government. Also, exchange rate volatility, inflation, shock in the world crude oil prices and most importantly corruption further compounded federal government financing problem. This conforms with Mansoor, Karim and Farshid (2016) who observed that the difficulties of payment

balances, foreign debt, exchange rate problem among others have been the problems confronting developing countries.

Over the past 12 years, Nigeria government expenditure has exceeded its budget and the growth rate of the country has been negative. Trading Economics (2024) shows that in 2013, the Nigeria government budget was -1.4 percent of the gross domestic product as against its previous value of -1.3 percent of the gross domestic product (GDP). In 2015, there was significant gap between government budget and revenue generated as deficit hits -1.6 percent of the gross domestic product. This wide gap in the budgeted and revenue of the government has been on the increase from 2016 to 2023. In 2023, the highest deficit in budget was recorded and the value stood at -6.1 percent of the gross domestic product. This high rate of budget deficit has caused economic crises, and poor investment performance in Nigeria (Ibikunle & Atukson, 2022). The level of economic hardship in Nigeria has pushed many Nigerian below poverty line, yet more public debt is accumulated. This somewhat confirms the assertion of Week (2000) that budget deficit compromised the standard of living of present and future generation.

According to budget office of the federation (2024), Nigeria 2024 budget stood at N27 trillion with only about N18.32 trillion projected revenue. This implies that the deficit in the 2024 budget stood at N9.18 trillion and definitely, this must be paid for either in the short run or in the long run. Now, with debt servicing and non-debt recurrent expenditure taking about N8.25 trillion and N9.92 trillion respectively of the share of 2024 budget, while capital expenditure's share of the budget is N7.72 trillion, the hope of reconciling the deficit within a limited time period becomes shallow.

More so, the upsurge of budget deficit without corresponding increase in economic growth has raised serious concern. Although study like Oluwafadekemi and Adeyemi (2018) suggests that Nigeria should maintain budget deficit threshold of 5 percent, the long-time effect of budget deficit on the economy could eventually erode the proposed economic growth. This would be evident when the real sectors the economic that supposed to propel the desired growth envisaged are neglected.

LITERATURE

Budget deficit has created theoretical controversy and empirical divide in literature. Ricardian equivalence theory argue that budget deficit does not exert effect on the economy. Increase in budget deficit will be off-set by increase in present or future taxation and other sources of government revenue. Similarly, Neoclassical paradigm suggest that permanent deficit depresses capital accumulation while temporary deficit depresses savings and raises interest rate. However, the traditional Keynesians argue that deficit is not supposed to crowd-out investment. As a result, Eisner (1986) posits that under conditions of less than full employment, budget deficit increases aggregate demand which consequently increase investment and economic growth in an economy.

Some empirical studies support the Ricardian and Neoclassical theories while some other studies support the Keynesian theory of budget deficit. In Nkurumah, Orkoh and Owusu (2016), budget deficit was observed to strongly crowd out economic growth and that 100 percent increase in budget deficit would lead to about 3 percent decrease in economic growth. Also, Oluwafadekemi and Adeyemi (2018) showed that fiscal deficit is negatively related to economic growth. These studies support the Ricardian equivalence and Neoclassical theory that Puget deficit does not necessarily lead to economic growth. Mansoor, Karim and Farshid (2016) used static panel models to examine the effect of growth, efficiency and budget deficit in MENA countries and the study shows with economic growth acting as dependent variable, there exists a negative correlation between budget deficit and economic growth. However, with budget deficit as the dependent variable, the study shows positive effect of economic growth and inflation. This further indicates that budget deficit increases with increases with economic growth. Similarly, Fagbohun (2017) shows that both budget deficit and external reserve have statistical and positive effect on capital income. Uremadu, Umezurike and Onyele (2024) study on the effect of budget deficit on Nigeria economy shows that both banks and non-banks sources of public debt financing exerts positive effect on economic growth. This further supports the fact that budget deficit is expected to increase economic growth especially when the increased government spending is on capital projects.

Shamsideen and Abisoye (2020) examined the impact of budget deficit on economic growth in an emerging market and the finding shows that budget deficit has both short and long run effect on economic growth. Also, in a study of whether a certain threshold budget deficit is required to support economic growth, Umaru, Aliero and Abubakar (2021) showed that budget deficit positively affects national output and this happens when the deficit does not exceed certain threshold. Similarly, Mavodyo (2020) argued that budget deficit stimulates economic growth.

However, most empirical studies examine budget deficit and economic growth and not successfully examine the effect of budget deficit on sectoral output. The various sectors of Nigeria economy need to be evaluated to ensure balance growth. Therefore, in order to close this gap, this study examines the effect of budget deficits on the real sectors.

Methods and Data

This study is anchored on Keynesian theory of budget deficit. This theory argues that under conditions of less than full employment, budget deficit stimulates aggregate demand which increases investment and consequently, the growth of real sectors.

The production function can be specified using Cobb Douglas production function of the form

$$Y = AK^{\alpha}L^{\beta} \quad (1)$$

Where

Y is agricultural output (AOT)

A is technological innovation

K is capital and is proxy by commercial bank credit to agricultural sector (AgCredit)

L is total labour force

Taking the natural log of both side of Equation (1), we have

$$\ln AOT_t = \ln A_t + \alpha \ln AgCredit_t + \beta \ln L_t \quad (2)$$

Let $\ln A = \gamma_0$, $\alpha = \gamma_1$, and $\beta = \gamma_2$

$$\text{It implies that } \ln AOT_t = \gamma_0 + \gamma_1 \ln AgCredit_t + \gamma_2 \ln L_t \quad (3)$$

However, capital and labour are not the only factors that affect agricultural output. Budget deficit (BDT) which affect the amount of money government invest in agricultural sector, climate change (proxy by rainfall (Rfall)), interest rate (INTR) (measured by the cost of borrowing for investment into agricultural sector), inflation (INFL) (measured by consumer price index) and institutional quality (proxy by corruption index (CORR)) and exchange rate (OEXR) affect agricultural output. Therefore, equation (3) could be expand to accommodate these variables.

$$\ln AOT_t = \gamma_0 + \gamma_1 \ln AgCredit_t + \gamma_2 \ln L_t + \gamma_3 \ln BDT_t + \gamma_4 \ln Rfall_t + \gamma_5 \ln INTR_t + \gamma_6 \ln INFL_t + \gamma_7 \ln CORR_t + \gamma_8 \ln OEXR_t + \mu_t \quad (4)$$

Similarly, industrial sector is one of the key sectors of an economy and it is known as the engine of economic growth. In recognition of the crucial role of industrial sector in Nigeria economy, this study examined the effect of budget deficit on industrial sector. It uses equation (3) with slight moderation. The variable Y is regarded as the industrial output (INDOT), K capital and is proxy by commercial bank credit to industrial sector (CRINDUS), and L is the total labour force. Also, including other variables (Budget Deficit (BDT), Interest rate (INTR), inflation (INFL), official exchange rate (OEXR), and institutional quality (proxy by corruption index

(CORR) that affect industrial output, the autoregressive distributed lag parsimonious error correction model of the effect of budget deficit on industrial output is shown on equation (6).

$$\ln Y_t = \gamma_0 + \gamma_1 \ln K_t + \gamma_2 \ln L_t \quad (3)^*$$

Equation (3)* is the industrial sector modified form of equation (3). Labour and capital represent industrial labour (INDULABOR) and capital is proxy by commercial banks credit (CRINDUS) to industrial sector. Therefore, Equation (3)* can be expanded to incorporate industrial specific variables as;

$$\ln \Delta \text{INDOT}_t = \varphi_0 + \gamma_1 \ln \text{CRINDUS}_t + \gamma_2 \ln \text{INDULABOR}_t + \gamma_3 \ln \text{BDT}_t + \gamma_4 \text{INTR}_t + \gamma_5 \ln \text{INFL}_t + \gamma_6 \text{CORR}_t + \gamma_7 \ln \text{OEXR}_t + \mu_t \quad (5)$$

More so, the service sector is also regarded as an important sector of an economy that drives economic growth. This study also examines the effect of budget deficit on the contribution of service sector to economic growth. The study adopts Equation (3) with slight modification to accommodate service specific factors. The modified version is known as equation (3)**

$$\ln Y_t = \gamma_0 + \gamma_1 \ln K_t + \gamma_2 \ln L_t \quad (3)^{**}$$

Where Y represents the service sector contribution to gross domestic product (SERVOT).

L represents service labour (SERVLAVOR)

K represents capital which will be proxy by gross capital formation (GCF)

Other determinants of service sector outputs include;

Official exchange rate (OEXR)

Corruption (CORR) measured by corruption index. This variable is included to find out the effect of institutional quality on the service sector output.

Budget deficit (BDT): This is the variable of interest in the model.

Inflation (INFL) as previously defined.

Interest rate (INTR): This affects public and private sector investment and hence the service sector.

Therefore, in an autoregressive distributed lag, the parsimonious error correction model of the effect of budget deficit on service output is shown as;

$$\begin{aligned} n\Delta \text{SERVOT}_t = & \varphi_0 \\ & + \varphi_1 \sum_{i=1}^q \ln \Delta \text{SERVOT}_{t-i} + \varphi_2 \sum_{i=0}^q \ln \Delta \text{GCF}_{t-i} \\ & + \varphi_3 \sum_{i=0}^q \ln \Delta \text{SERVLAVOR}_{t-i} + \varphi_4 \sum_{i=0}^q \ln \Delta \text{BDT}_{t-i} + \varphi_5 \sum_{i=0}^q \Delta \text{INTR}_{t-i} \\ & + \varphi_6 \sum_{i=0}^q \ln \Delta \text{INFL}_{t-i} + \varphi_7 \sum_{i=0}^q \Delta \text{CORR}_{t-i} + \varphi_8 \sum_{i=0}^q \ln \Delta \text{OEXR}_{t-i} + \omega \text{ECM}_{t-1} + \gamma_1 \ln \text{GCF}_t \\ & + \gamma_2 \ln \text{SERVLAVOR}_t + \gamma_3 \ln \text{BDT}_t + \gamma_4 \text{INTR}_t + \gamma_5 \ln \text{INFL}_t + \gamma_6 \text{CORR}_t + \gamma_7 \ln \text{OEXR}_t \\ & + \mu_t \quad (6) \end{aligned}$$

Methods of Estimation

The study conducted unit root test on the variables using Augmented Dicky Fuller Unit root test. Also, since some of the variables were I(0) and some I(1), the study adopted Paseran bound test cointegration approach. As part of the robust check of the data, the tolerance and variance inflation factor were used to ensure that the variables are free from multicollinearity. The autoregressive distributed lag (ARDL) estimation technique was adopted for all the sectors and serial correlation, heteroscedasticity, CUSUM and CUSUM of square tests were conducted. In addition, Ramsey reset test was conducted to ensure that the model is correctly specified.

Data and Instrument for Data analysis

The data for this analysis was time series and it was sourced from World Development Indicators (WDI), Central Bank of Nigeria (CBN) statistical bulletin and World Governance Indicator (WGI). The data was analysed using E-views 10 Statistical and Econometrics software.

Presentation of Data

Descriptive Statistics

	Mean	Median	Std. Dev.	Skewness	Kurtosis	Jarque-Bera	Prob.	Obs.
LNAOT	11.8854	10.9668	2.2333	0.4903	1.6942	4.7782	0.0917	43
BDT	1152.067	-2.7700	2503.529	2.5656	9.1992	116.0308	0.0000	43
INFL	19.0794	13.0069	16.2812	1.8674	5.4729	35.9489	0.0000	43
INTR	17.6822	16.9391	5.1910	0.3172	2.9868	0.7217	0.6970	43
LNAGCREDIT	3.7657	3.8998	2.3360	-0.2117	1.9700	2.2219	0.3292	43
LNAGLABOUR	3.9350	4.0638	0.2091	-1.1164	2.6529	9.1485	0.0103	43
LNCRINDUS	5.5576	5.7158	2.6809	-0.1479	1.5272	4.0427	0.1324	43
CORR	-1.1877	-1.1263	0.1490	-0.4356	2.3446	2.1295	0.3448	43
LNEXTDEBT	21.7957	21.4510	1.3482	1.5512	4.6530	21.6262	0.0000	43
LNGFCF	7.8855	8.0322	2.2907	0.4320	3.4916	1.7707	0.4125	43
LNINDOT	11.8430	10.9205	2.2673	0.5400	1.7906	4.7109	0.0948	43
LNINDULABOR	2.2739	2.1714	0.1659	0.6906	1.8829	5.6547	0.0591	43
LNOEXR	3.7302	4.7753	2.0497	-0.7964	2.4354	5.1170	0.0774	43
LNSERLABOR	3.7048	3.6977	0.2061	0.0577	1.3208	5.0755	0.0790	43
LNSERVOT	11.3822	11.0239	1.7415	0.8199	2.9412	4.8247	0.0896	43

Table 1: Descriptive Statistics of variables

Source: Author, 2024

Table 1 shows the descriptive statistics of the variables in the models. It could be observed that corruption has the least mean value -1.18 followed by the log of industrial labour 2.27, log of service labour 3.70, log of exchange rate 3.73, log of commercial banks credit to agricultural sector 3.76, log of gross fixed capital formation 7.88 and agricultural labour 3.93 while budget deficit has the highest mean value 1152.06 followed by the log of external debt 21.79, inflation 19.07 and interest rate 17.68.

Similarly, the standard deviation of budget deficit 2503.52 shows evidence of wider spread from its mean while the standard deviation of corruption 0.14, log of industrial labour 0.16, log of service labour 0.206, log of agricultural labour 0.209 and log of external debt 1.34 cluster around their mean value and showing evidence of less departure from their mean value.

The degree of asymmetry of the distribution shows that log of commercial bank credit to agricultural sector (LNAGCREDIT), log of agricultural labour (LNAGLABOR), log of commercial banks credit to industrial sector (LNCRINDUS), corruption (CORR) and log of exchange rate (LNOEXR) are all negatively skewed while other variables in the model showed evidence of positive skewness. This therefore implies that the distribution of most of the variables is slightly asymmetric and very close to normal. The kurtosis indicates that BDT, INFL, LNEXTDEBT, and LNGFCF have kurtosis greater than 3 which indicates leptokurtic or excess peaked while LNAOT, INTR, LNAGCREDIT, LNAGLABOR, LNCRINDUS, CORR, LNINDOT, LNINDULABOR, LNOEXR, LNSERLABOUR and LNSERVOT have kurtosis less than less than 3 and they are said to be platykurtic.

The probability values of Jarque-Bera were found to be less than 0.05 for LNEXTDEBT, BDT, BDT, INFL, LNAGLABOUR, and LNEXTDEBT indicating that each of the variables are not normally distributed while the probability values of Jarque-Bera were found to be greater than 0.05 for LNAOT, INTR, LNAGCREDIT, LNCRINDUS, CORR, LNGFCF, LNINDOT, LNOEXR, and LNINDULABOR LNSERVOT indicating that each of these variables are normally distributed. The total number of observations used in the study is 43 from the period of 1981 to 2023.

Unit Root Test

Table 2: Augmented Dickey-Fuller Unit Root Test

Variable	Level Form		First Difference		Order of Integration
	ADF Level	5% ADF test statistic	ADF Level	5% ADF test statistic	
LNAOT	-2.933158	-1.734978	-2.935001	-5.176586	I(1)
LNAGCREDIT	-2.933158	-1.034236	-2.935001	-7.315326	I(1)
LNAGLABOUR	-2.933158	-1.508181	-2.935001	-5.646116	I(1)
LNEXTDEBT	-2.935001	-1.025757	-2.936942	-7.374053	I(1)
BDT	-2.936942	8.545432			I(0)
INTR	-2.933158	-2.908741	-2.936942	-6.099911	I(1)
INFL	-2.933158	-3.082368			I(0)
CORR	-2.935001	-4.374668			I(0)
LNINDOT	-2.933158	-1.754376	-2.935001	-6.172632	I(1)

LNCRINDUS	-2.933158	-0.779598	-2.935001	-4.934599	I(1)
LNINDULABOR	-2.933158	-0.939048	-2.935001	-5.064103	I(1)
LNGFCF	-1.948886	3.031584			I(0)
LNSERVOT	-2.933158	-1.328877	-2.935001	-4.479711	I(1)
LNSERLABOR	-2.933158	-1.169440	-2.935001	-6.214758	I(1)
LNOEXR	-2.933158	-1.937201	-2.935001	-5.616596	I(1)

Source: Author, 2024

Table 2 shows that LNAOT, LNAGCREDIT, LNAGLABOUR, LNEXTDEBT, INTR, LNINDOT, LNCRINDUS, LNINDULABOR, LNSERVOT, LNSERLABOR, and LNOEXR were stationary at first difference, and are integrated of order 1 while BDT, INFL, CORR, and LNGFCF were stationary at level and are integrated of order 0. This shows that there are combinations of I(0) and I(1) in the study and necessitates the use of bound test cointegration approach.

Cointegration Test

Table 3: Bound Test Cointegration

	Value			Significance	I(0)	I(1)
	F-statistic	K	Actual sample size			
Model 1	9.298348	8	39	10%	1.85	2.85
				5%	2.11	3.15
				2.5%	2.33	3.42
				1%	2.62	3.77
Model 2	10.87868	8	40	10%	1.85	2.85
				5%	2.11	3.15
				2.5%	2.33	3.42
				1%	2.62	3.77
Model 3	4.493579	8	40	10%	1.85	2.85
				5%	2.11	3.15
				2.5%	2.33	3.42
				1%	2.62	3.77

Source: Author, 2024.

Table 3 shows the result of bound test cointegration for model 1, model 2 and model 3. It could be observed that the F-statistic value of each of the models exceeds the 5 percent value for the lower and upper bound. This is an

indication that there exist long run association among the variables in model 1, model 2 and model 3. So, even if the variables wonder about in the short run, there would be co-movement among them in the long run.

Table 4: Autoregressive Distributed Lag (ARDL) Conditional Error Correction Regression Result

Variable	Model 1	Model 2	Model 3
	Dep. Variable: LNAOT	Dep. Variable: LNINDOT	Dep. Variable: LNSERVOT
C	-65.28378 (0.0000)	15.70181 (0.2032)	14.64918 (0.2019)
LNAOT(-1)*	-1.283334 (0.0000)*		
LNINDOT(-1)*		-1.037814 (0.0000)*	
LNSERVOT(-1)*			-1.186427 (0.0000)*
LNAGCREDIT(-1)	0.659942 (0.1422)		
LNINDULABOR		-8.030766 (0.0091)*	
LNSERLABOR(-1)			-9.519121 (0.0022)*
LNAGLABOUR(-1)	8.864472 (0.0000)*		
LNCRINDUS(-1)		-1.007647 (0.0035)*	
LNGFCF(-1)			1.835638 (0.0136)*
BDT(-1)	-0.002420 (0.0000)*	-0.000408 (0.1906)	-0.001170 (0.0004)*
LNEXTDEBT(-1)	2.076935	0.811934	0.920921

	(0.0000)*	(0.0258)*	(0.0033)*
INFL(-1)	0.017811 (0.0640)**	-0.007807 (0.4616)	0.063141 (0.0043)*
INTR(-1)	-0.109847 (0.0175)*	-0.053900 (0.3333)	-0.143194 (0.0170)*
LNOEXR(-1)	1.164867 (0.0158)*	2.092058 (0.0000)*	0.920921 (0.5693)
CORR	1.571811 (0.0858)**		
CORR(-1)		2.513998 (0.0395)*	-0.813142 (0.5587)
D(LNAOT(-1))	0.017477 (0.9078)		
D(LNAOT(-2))	-0.303487 (0.0274)*		
D(LNINDOT(-1))		-0.271414 (0.0238)*	
D(LNSERVOT(-1))			0.330221 (0.0804)**
D(LNAGCREDIT)	-0.923857 (0.1041)		
D(LNGFCF)			-0.905815 (0.4946)
D(LNGFCF(-1))			2.519956 (0.0602)**
D(LNCRINDUS)		0.004336 (0.9962)	
D(LNSERLABOR)			-5.942118

			(0.0021)*
D(LNSERLABOR(-1))			4.072128 (0.1030)
D(LNAGLABOUR)	1.323777 (0.5315)		
D(BDT)	-0.001716 (0.0000)*	-0.001083 (0.0035)*	-0.001342 (0.0027)*
D(BDT(-1))	-0.000973 (0.0070)*	-0.001124 (0.0051)*	-0.000525 (0.0962)**
D(LNEXTDEBT)	0.108983 (0.5152)	-0.043469 (0.7908)	0.332925 (0.0721)**
D(LNEXTDEBT(-1))	-1.099258 (0.0001)*	-0.644986 (0.0134)*	
D(INFL)	0.006488 (0.4539)	-0.029451 (0.0108)*	0.036067 (0.0078)*
D(INFL(-1))			-0.033216 (0.0157)*
D(INTR)	-0.047899 (0.2405)	-0.096063 (0.0189)*	-0.022831 (0.5977)
D(INTR(-1))		-0.140284 (0.0064)*	
D(CORR)			-1.487417 (0.2158)
D(CORR(-1))		3.742556 (0.0010)*	
D(LNOEXR)	-0.185160 (0.6739)	0.024317 (0.9533)	1.246499 (0.0606)**

R-squared	0.966578	0.967020	0.945436
F-statistic	26.02854	27.85508	12.05364
Prob. F-statistic	0.000000	0.000000	0.000003
Durbin Watson	2.013005	1.964360	1.809739

Source: Author, 2024

Table 4 shows the short ARDL conditional error correction regression result of the study. Model 1 represents the regression output for agricultural sector contribution to economic growth while model 2 and model 3 represent the industrial and service sectors contribution to economic growth. In model 1, the sector specific variables are log of agricultural labour (LNAGLABOR), and log of commercial banks credit to agricultural sector (LNAGCREDIT). It could be observed from model 1 that 1-period lag of agricultural sector contribution (LNAOT (-1)) to economic growth was significant at 5 percent level. Also, 1-period lag of log of agricultural labour (LNAGLABOR(-1)), 1-period lag of budget deficit (BDT(-1)), 1-period lag of log of external debt (LNEXTDEBT(-1)), 1-period lag of interest rate (INTR(-1)), and 1-period lag of log of official exchange rate (LNOEXR(-1)) were all significant at 5 percent level. It shows that holding other variables in model 1 constant, 1-percent increase in budget deficit would decrease agricultural sector contribution to economic growth by 0.17 percent. Also, the current period corruption was observed to crowd-in agricultural contribution to economic growth at 10 percent level. The study shows that holding other variables in the model constant, an increase in corruption index would increase agricultural contribution to economic growth by 1.57 percent. This is somewhat possible where corruption in the form of bribe favours agricultural production through investment in the sector. However, other variables in model 1 like the log of commercial banks credit to agricultural sector (LNAGCREDIT), interest rate (INTR), inflation (INFL), log of external debt (LNEXTDEBT), and log of official exchange rate (LNOEXR) do not exert significant effect on agricultural contribution to economic growth in the short run.

In model 2, the study examined the short run effect of budget deficit on industrial sector contribution to economic growth. It could be observed that 1-period lag of the log of industrial output (LNINDOT(-1)), log of industrial labour (LNINDULABOR), 1-period lag of commercial banks credit to industrial sector (LNCRINDUS(-1)), 1-period lag of log of external debt (LNEXTDEBT(-1)), 1-period lag of the log of official exchange rate (LNOEXR(-1)), 1-period lag of corruption (CORR(-1)), budget deficit (BDT), 1-period lag of budget deficit (BDT(-1)), 1-period lag of log of external debt (LNEXTDEBT(-1)), current period of inflation (INFL), and current period of interest rate (INTR) exert statistically significant effect on industrial sector contribution to economic growth. The study shows that holding other variables in model 2 constant, 1-percent increase in budget deficit would decrease industrial sector contribution to economic growth by 0.10 percent. Also, 1-percent increase in the past external debt would decrease industrial contribution to economic growth by 0.64 percent. Similarly, inflation was observed to crowd out industrial sector contribution to economic growth. The study shows that holding other variables in the model constant, 1-percent increase in inflation would decrease industrial sector contribution to economic growth by 0.02 percent. More so, interest rate exerts significant effect on industrial sector contribution to economic growth. The study shows that holding other variables in model 2 constant, 1-percent increase in lending interest rate would decrease industrial sector contribution to economic growth by 0.09 percent.

In model 3, the study examined the service sector contribution to economic growth. It could be observed that 1-period lag of the log of service sector contribution to economic growth (LNSEROT(-1)), 1-period lag of the log of service labour (LNSERLABOR(-1)), 1-period lag of the log of gross fixed capital formation (LNGFCF(-1)), 1-period lag of budget deficit (BDT(-1)), 1-period lag of; inflation (INFL(-1)), log of external debt, and interest rate were all statistically significant at 5 percent level. However, the study shows that holding other variables in model 3 constant, 1-percent increase in service labour would decrease the service sector contribution to economic growth by 5.94 percent. Also, budget deficit crowds-out service sector contribution to economic growth. The study shows that holding other variables in model 3 constant, 1-percent increase in budget deficit would decrease

service sector contribution to economic growth by 0.13 percent. Similarly, external debt exerts statistically significant effect on service sector contribution to economic growth at 10 percent. The study shows that holding other variables in model 3 constant, 1-percent increase in external debt would increase service sector contribution to economic growth by 0.33 percent. This is not surprising as part of the current external debt would be used to finance the service sector.

The R-squared values of model 1, model 2, and model 3 show that the explanatory variables included in each of the models explain about 96%, 96% and 94% respectively of the variations in agricultural contribution to economic growth, industrial contribution to economic growth and service sector contribution to economic growth. The value of F-statistic and probability of F-statistic (0.000000) show that all the models are statistically significant at 5 percent. The Durbin-Watson values of 2.0, 1.9 and 1.9 for model 1, model 2 and model 3 respectively show the absence of autocorrelation in the model.

Table 5: Long run result

Variable	Model 1	Model 2	Model 3
	Dep. Variable: LNAOT	Dep. Variable: LNINDOT	Dep. Variable: LNSERVOT
LNAGCREDIT	0.514240 (0.1491)		
LNINDULABOR		-7.738156 (0.0022)*	
LNSERLABOR			-8.023350 (0.0000)*
LNAGLABOUR	6.907376 (0.0000)*		
LNCRINDUS		-0.970933 (0.0069)*	
LNGFCF			1.547198 (0.0051)*
BDT	-0.001885 (0.0000)*	-0.000393 (0.1854)	-0.000986 (0.0000)*
LNEXTDEBT	1.618390 (0.0000)*	0.782350 (0.0299)*	0.776213 (0.0030)*
INFL	0.013879 (0.0657)**	-0.007523 (0.4606)	0.053220 (0.0011)*

INTR	-0.085595 (0.0113)*	-0.051936 (0.3384)	-0.120693 (0.0082)*
LNOEXR	0.907688 (0.0078)*	2.015831 (0.0000)*	0.243191 (0.5684)
CORR	1.224787 (0.0635)**	2.422398 (0.0254)*	-0.685370 (0.5740)
C	-50.87045 (0.0000)	15.12969 (0.1767)	12.34731 (0.1527)

Source: Author, 2024

Table 5 shows the long run result of the effect of budget deficit on agricultural, industrial and service sectors contributions to economic growth. Model 1 represents the agricultural sector, model 2, the industrial sector and model 3, the service sector.

In model 1, the log of agricultural labour, budget deficit, log of external debt, interest rate, and log of official exchange rate were significant at 5 percent level while inflation and corruption were significant at 10 percent level. However, the log of commercial banks credit to agricultural sector was statistically insignificant. The study shows that holding other variables in model 1 constant, 1-percent increase in the log of agricultural labour would increase agricultural contribution to economic growth by 6.90 percent. Similarly, the study shows that holding other variables in model 1 constant, log of external debt would increase agricultural contribution to economic growth by 1.61 percent. However, budget deficit was observed to crowd-out agricultural contribution to economic growth. The study shows that holding other variables in model 1 constant, 1-percent increase in budget deficit would decrease agricultural contribution to economic growth by 0.18 percent. Interest rate was also observed to crowd-out agricultural contribution to economic growth in the long run. The study shows that holding other variables in the model constant, 1-percent increase in interest rate would agricultural contribution to economic growth by 0.08 percent. the rate at which 1 dollar is exchange for naira was observed to show a positive effect on agricultural contribution to economic growth. The study shows that holding other variables in the model constant, 1-percent increase (depreciation of naira) in the log of official exchange rate would increase agricultural contribution to economic growth by 0.90. Other variables in the model that exert significant effect on agricultural contribution to economic growth at 10 percent are corruption and inflation. The study shows that 1-unit increase in corruption index would increase agricultural contribution to economic growth by 1.22. Similarly, holding other variables in the model constant, 1-percent increase in inflation would increase agricultural contribution to economic growth by 0.01 percent.

In model 2, the study examined the effect of budget deficit on industrial sector contribution to economic growth. It could be observed from model 2 that log of industrial labour, log of credit to industrial sector, log of external debt, log of official exchange rate and corruption were found to be statistically significant at 5 percent level while budget deficit , inflation and interest rate were found to be statistically insignificant in the model. Also, it could be observed that holding other variables in the model constant, 1-percent increase in industrial labour decreases industrial sector contribution to economic growth by 7.83 percent. Similarly, commercial banks credit to industrial sector crowds-out industrial contribution to economic growth. The study shows that holding other variables in model 2 constant, 1-percent increase in commercial banks credit to industrial sector decreases industrial sector contribution to economic growth by 0.97 percent. External debt was found to exert statistically significant effect on industrial contribution to economic growth in the long run. The study shows that holding other variables in the model constant, 1-percent increase in external debt would lead to 0.78 percent increase in industrial contribution to economic growth. Also, the study shows that 1 unit increase in the index of corruption would lead to 2.4 unit increase in industrial contribution to economic growth. Similarly, the log of official

exchange rate exerts significant effect on industrial contribution to economic growth. The study shows that holding other variables in the model constant, 1-percent increase in the rate at which 1 dollar is exchanged for naira (depreciation of naira) would lead to 2.0 percent increase in industrial contribution to economic growth.

In model 3, the study examined the effect of budget deficit on the contribution of service sector to economic growth. It could be observed that the log of service labour, the log of gross fixed capital formation, budget deficit, log of external debt, inflation, and interest rate exert statistically significant effect on service sector contribution to economic growth in the long run. It further reveals that holding other variables in model 3 constant, 1-percent increase in service labour decreases service sector contribution to economic growth. Similarly, the log of gross fixed capital formation exerts significant positive impact on service sector contribution to economic growth. The study shows that holding other variables in the model constant, 1-percent increase in the gross fixed capital formation would increase the service sector contribution to economic growth by 1.54 percent. Budget deficit shows statistically significant negative impact on service sector contribution to economic growth. The study shows that holding other variables in the model constant, 1-percent increase in budget deficit decreases service sector contribution to economic growth by 0.09 percent. more so, external debt was found to exert positive and statistically significant effect on service sector contribution to economic growth. The study shows that holding other variables in the model constant, 1-percent increase in budget deficit would increase service sector contribution to economic growth by 0.77. Also, inflation shows positive and statistically significant effect on service sector contribution to economic growth. The study shows that holding other variables in the model constant, 1-percent increase in inflation would increase service sector contribution to economic growth by 0.05 percent. Interest rate shows negative and statistically significant effect on service sector contribution to economic growth. Model 3 shows that holding other variables constant, 1-percent increase in lending interest rate would decrease service sector contribution to economic growth by 0.12 percent.

DISCUSSION OF FINDINGS

Budget deficit crowds-out agricultural, industrial and service contributions to economic growth in the short run while in the long run, budget deficit crowds-out agricultural and service sectors contribution to economic growth. This finding somewhat conforms to the findings of Adama, Ohwofasa and Ayodele (2019) on the ground that both studies show that budget deficit crowds-out agricultural contribution to economic growth. However, in this study, budget deficit had significant effect on agricultural output in the long run and not in the short run as was shown by Adama, Ohwofasa and Ayodele (2019).

Also, the study shows that external debt crowds-in agricultural, industrial and service sectors contribution to economic growth in the long run. This finding is contrary to the findings of Okumoko and Amaegberi (2018) who observed that budget deficit supports agricultural output. In this study, budget deficit impact negatively on agricultural contribution to economic growth in the long run while in the short run, there was no significant effect of budget deficit on agricultural output. Similarly, this study shows that an increase in corruption index increases agricultural and industrial contributions to economic growth in the long run. This is similar to the findings of Chakravorty, Rutskiy and Sevastyanova (2022) who observed that positive impact of corruption on firm growth with a highly significant coefficient of the key variable of interest, which is bribe.

CONCLUSION AND RECOMMENDATIONS

This study examines budget deficit and economic growth: an empirical analysis of the real sectors' performance in Nigeria. The objectives were to examine the effect of budget deficit on the agricultural sector, the industrial sector and the service sector contribution to economic growth. The study applied Autoregressive Distributed Lag (ARDL) model on secondary data from the period of 1981 to 2023. Augmented Dickey-Fuller unit root test was used to ensure the stationarity of the variables and bound test approach was used to ensure the existence of long run association among the variables in the model. The findings revealed that budget deficit crowds-out agricultural, industrial and service contributions to economic growth in the short run while in the long run, budget deficit crowds-out agricultural and service sectors contribution to economic growth. Also, the study shows that external debt crowds-in agricultural, industrial and service sectors contribution to economic growth in the long run. The institutional quality variable included shows that increase in corruption index increases industrial contribution to economic growth only in the long run. Exchange rate depreciation was found to favour industrial

sector contribution to economic growth. The study therefore recommends that should endeavour to reduce budget deficit and whenever budget deficit occurs, measures should be adopted to cushion the short run effect of budget deficit on agricultural, industrial and service sector contribution to economic growth.

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