International Journal of Sustainable Development & World Policy
2019 Vol. 8, No. 2, pp. 68-82
ISSN(e): 2305-705X
ISSN(p): 2306-9929
DOI: 10.18488/journal.26.2019.82.68.82

GOVERNMENT BORROWING BEHAVIOUR: IMPLICATIONS FOR PRIVATE SECTOR GROWTH IN NIGERIA

Abubakar Ado, Ahmad[1+]
Adegoke Ibrahim, Adeleke[2]
Augustine, Ujunwa[3]

[1,2,3]*Monetary Policy Department, Central Bank of Nigeria.*
[1]*Email: AAAHMAD@cbn.gov.ng Tel: +2348023112297*
[2]*Email: AIADELEKE@cbn.gov.ng Tel: +2348023755663*
[3]*Email: AUJUNWA@cbn.gov.ng Tel: +2348035010116*

(+ Corresponding author)

Article History
Received: 19 June 2019
Revised: 25 July 2019
Accepted: 27 August 2019
Published: 30 October 2019

Keywords
Government domestic debt
Private sector development
SVAR
Nigeria
Crowding out
Domestic savings.

JEL Classification:
E21; C32; H63.

ABSTRACT

This study seeks to examine the relationship between government borrowing behaviour and private sector growth in Nigeria. It utilises the Structural Vector Auto-regressions (SVAR) model to analyse the dynamics of government borrowing behaviour on the growth of private sector in Nigeria. The results from impulse response functions and variance decomposition appear to provide evidence that government borrowing behaviour has the tendency of impacting negatively on the effectiveness of private sector grow in Nigeria. This result can be explained, based on the fact that government has higher capacity to borrow than the private sector and this tends to crowd-out private sector in mobilising funds for investment and thus impacted negatively on their capacity to grow. The study, therefore, recommends that both fiscal and monetary authorities should improve on measures and policies that could enhance private sector growth, as higher government debt could create burden for future generations, disrupt movements in interest and exchange rates as well as hinder private investment. Doing this has the potentials of improving performance of private sector and the aggregate economy in Nigeria, since empirical literature is replete with evidence of existence of these channels.

Contribution/Originality: This study improves on the existing literature by examining the channels and extent of the impact of government borrowing behaviour on the private sector growth in Nigeria, as previous literature has shown varying and often conflicting results due to diversity in the structure of the economy and governance. The study, therefore, confronts the existing theories with recent data and tailor-made methodology.

1. INTRODUCTION

In recent time, there are renewed public policy debates on the implications of government borrowing behaviour in Nigeria. It arises as a result of persistent short-falls in government revenue and budget deficit financing. The debate focuses on the implications of deficit financing and the likely effects on private sector investment financing and growth. In Nigeria for instance, the government has sustained deficit budget financing in the last 20 years. Specifically, Nigerian fiscal deficit was N202.72 billion and increased to N580.19 billion in 2003 and 2007,

respectively. It further increased to N1.136 and N2.36 trillion in 2012 and 2017, respectively. However, the fiscal deficit to GDP ratio remained benign as it increased from 2.04 per cent in 2003 to 3.64 per cent in 2007, but declined to 2.85 per cent in 2012 and 2.18 per cent in 2017, respectively, largely because of the rebased GDP. The persistent budget deficits by the Nigerian government have raised an important research question on its likely impact on private sector growth.

Economic literature is inconclusive in this regard, as there are some scholars and policymakers in support of using deficit financing to grow the economy. The Keynesian theory in particular maintained that fiscal policy expansion through increased government borrowing has insignificant or no effect in increasing the level of interest rate in the economy but rather, it has capacity to increase the level of productivity and income, thereby crowding-in as against the usual crowding-out effects of the private sector growth in the economy (Aschauer, 1989). They enumerate the benefits associated with such approach which includes revenue stabilization, fiscal consolidation and building countercyclical buffer.

Some other authors, argued otherwise, as they believed that sustained deficit financing could hamper the economy, as it could bring about inflationary pressure, by depressing private investment and economic growth (Lidiema, 2018). In their view, huge government borrowing should be discouraged since government activities tend to benefit specific groups while the debt burden is burnt by the general taxpayer, thus creating incongruence between those who benefit and those who pay (Hargen and Harden, 1996). Sustained deficit financing implies that policy makers systematically overestimate the net marginal benefit of spending and, hence, tend to increase spending beyond the level that equates social marginal costs and benefits.

Furthermore, some other authors argued for the neutrality of government borrowing in the economy. The Ricardian equivalence hypothesis argued that expansion in government spending through borrowing is likely to be financed largely through increased future taxes, thereby has no immediate effects on interest rates and private sector investment and growth. This is also supported by the capital inflow theory where it is asserted that increased government borrowing may be partly or wholly financed by foreign capital inflow rather than the domestic resources, hence, no expected impact on private sector investment/growth and interest rate in the domestic economy.

Therefore, it is clear that these theoretical and empirical discussions had produced different and often conflicting results particularly about the channels and extent of the impacts of government borrowing behaviour on private sector. This may be due to diversity in the structure of the economy and governance, hence, the need to reexamine this issue given recent changes in the Nigerian economy. Also, it is important to confront these theories with practical reality using recent Nigerian data. This study, therefore, fills this important research gap by investigating the effect of government borrowing on private sector growth in Nigeria. To achieve the objectives of the study, the rest of the paper is structured as follows: Section 2 of the paper focuses on the stylised facts between government borrowing and private sector growth in Nigeria. Section 3 examines the relevant literature while section 4 provides the methodology of the study. Section 5 presents the empirical results while the conclusion and policy recommendation is contained in section 6.

2. STYLIZED FACTS ON THE RELATIONSHIP BETWEEN GOVERNMENT BORROWING AND PRIVATE SECTOR GROWTH

Nigerian government embarked on extensive borrowing in the last decade in order to finance its budget deficit. Figure 1 indicates the increasing trend in Federal Government domestic debt from 2005 to 2017. It shows that federal government domestic debt increased astronomically from N1.525 trillion in 2005 to N3.228 trillion in 2010 and stood at N12.496 in September 2017.

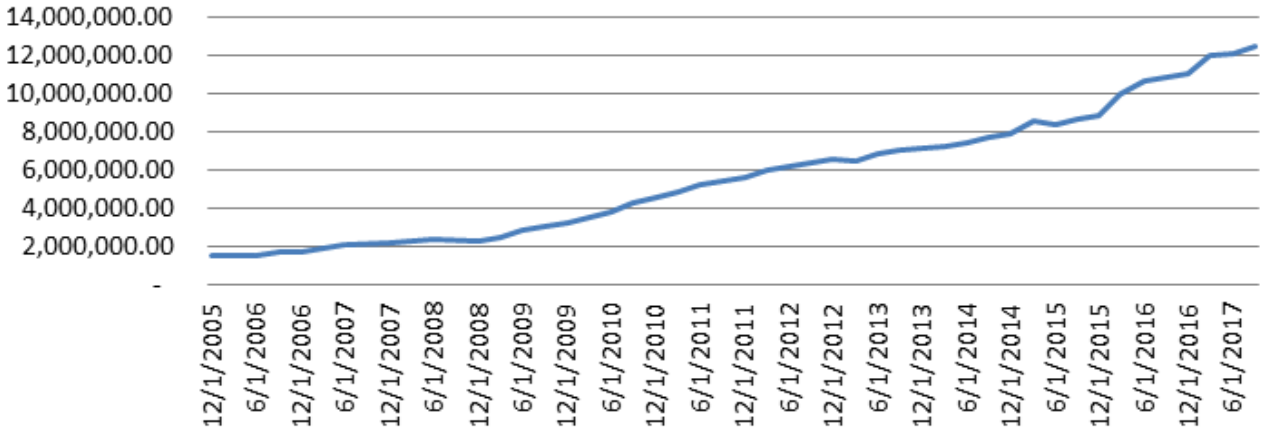

Figure-1. Federal government domestic debt.

Source: Bloomberg.

Interestingly, external debt stock which nosedived between 2006 and 2009 during the debt trap exit started trending upwards from 2011 till date, as shown in Figure 2. The upward trend in Nigeria's external debt stock could be explained by the persistent borrowing behaviour of government to finance deficit budget.

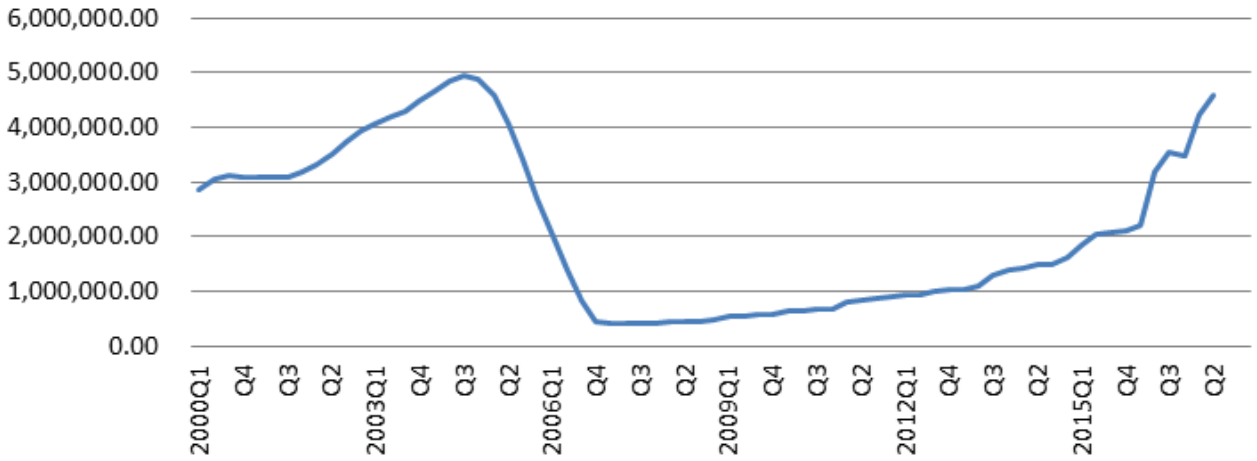

Figure-2. Nigeria's external debt stock.

Source: National bureau of statistics (NBS) and central bank of Nigeria (CBN) statistical bulletin.

The increasing trend in Federal Government fiscal deficit occurred during the period of economic boom and economic recession. Specifically, Nigerian economy witnessed significant boom during increasing oil prices and recession during decreasing oil price because the Nigerian economy depend largely on crude oil receipt. From about $10 per barrel in 1999, the price of oil rose to $65 per barrel in 2006 and much further to about $142 per barrel in July 2008, before moderating significantly in the wake of the global economic and financial crisis to $45 per barrel in January 2009. Thereafter oil price picked up again and remained above $100 per barrel in June 2014 before the sudden and persistent decline from to June 2014. As could be seen from Figure 3, Nigeria's output growth mimic's movement in global crude oil price. The second half of the 2014 prior to the recession witnessed an episode of free fall in oil price reminiscent of late 2008. The increasing trend in Federal government fiscal deficit amidst increasing crude oil price and revenue raises three important policy questions such as, should government embark on fiscal deficit in times of economic boom and the likely implications of fiscal deficits for macroeconomic management.

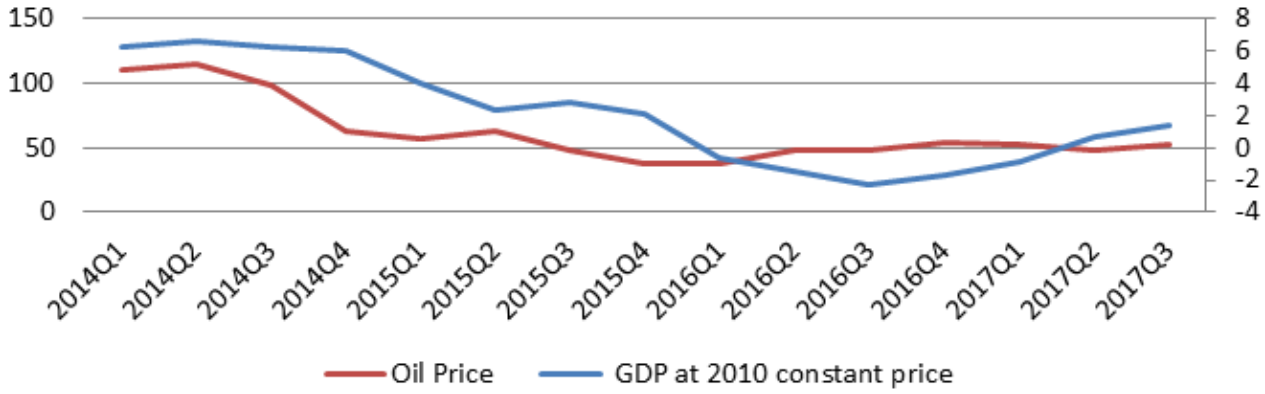

Figure-3. Nigeria's output growth and crude oil price.

Source: National bureau of statistics (NBS) and central bank of Nigeria (CBN) statistical bulletin.

Table 1 revealed fall in government revenue from between 2013 and 2016 largely due to decline in crude oil prices. Specifically, government retained revenue declined from to N3.29 trillion, N3.21trillion and N2.95 trillion in 2014, 2015 and 2016 respectively, from N3.36 trillion in 2013. Similarly, government budget deficit increased to N1.15 trillion, N1.56 trillion and N2.19 trillion in 2013, 2015 and 2016 respectively, from 0.97 trillion 2012. Despite the rebasing of the Nigerian GDP effective from 2010, total fiscal deficit to GDP ratio increased to 1.44, 1.65 and 2.16 per cent in 2013, 2015 and 2016, from 1.36 per cent in 2013.

The structure of Nigerian economy could also have influenced the trend in deficit financing. Nigeria is not only a net exporter of crude oil but also a net importer of refined products. Apart from accounting for over 83 per cent of government budgetary revenues, oil export earnings is largely responsible for about 98 per cent of Nigerian external reserves, thus making Nigerian more or less an oil enclave economy- a case in which the oil sector employs very few people and yet contributes disproportionately to GDP. The implication of oil price shocks to the revenue base of Nigeria is often very devastating, volatile and unsustainable in the short to medium term.

Table-1. Federal government fiscal balances, 2011-2017.

Budget heads/Ratios	2011	2012	2013	2014	2015	2016	2017*
Federal government retained revenue (N' billion)	3,140.64	3,154.86	3,362.19	3,287.77	3,209.57	2,947.49	3,077.21
Total expenditure (N' billion)	4,299.16	4,130.58	4,515.69	4,123.42	4,767.37	5,140.77	3,881.81
Budget deficit (N' billion)	-1,158.52	-975.72	-1,153.50	-835.64	-1,557.80	-2,193.27	-804.6
Primary deficit (N' billion)	-631.44	-296.44	-325.39	106.03	-497.42	-879.81	736.35
Total fiscal deficit (per cent) of revenue	-36.89	-30.93	-34.31	-25.42	-48.54	-74.41	-26.15
Primary deficit (per cent) of revenue	-20.11	-9.4	-9.68	3.22	-15.5	-29.85	23.93
Total fiscal deficit/GDP per cent	-1.84	-1.36	-1.44	-0.94	-1.65	-2.16	-0.97
Primary deficit or surplus /GDP per cent	-1	-0.41	-0.41	0.12	-0.53	-0.87	0.89
GDP (N' Billion)	62,980.40	71,713.94	80,092.56	89,043.62	94,144.96	101,489.49	82,844.00

Source: OAGF.
*2017 figures are as at September 2017.

Two main factors can be identified as being responsible for this development. First, apart from the revenue fluctuations induced by oil price volatility, government expenditure had also become pro-cyclical. Increased oil revenues led government to increase expenditure in the hope that downward movement of oil prices will be a short term phenomenon, while high prices will be prolonged. Unfortunately, such permutations sometimes fail, especially as the causal factors of oil price volatility often varied and intractable in most cases.

Second, the structure of fiscal federalism induces fiscal unsustainability in Nigeria. Specifically, section 80 and 81 of the 1999 Constitution as amended, stipulates that all revenues collected should be consolidated in the Federation Account and shared periodically among all the tiers of government. This had fiscal federalism provision in the constitution makes it difficult to save and to use such savings to smoothen revenues fluctuations if and when it occurs. The obvious lack of national saving culture has impacted the economy negatively in a number of ways. One of such ways is that, while it is difficult to achieve fiscal sustainability in such circumstances, induced excess liquidity in system occasioned by profligate and uncontrolled expenditure by all tiers of government overburdens and overstretches the absorptive capacity of the economy and more importantly, overburdens monetary policy management.

In response to the foregoing challenges in fiscal sustainability and budget management in Nigeria, the government introduced some far reaching budgetary reforms in 2004. Some of the key fiscal policy innovations of the reforms were the introduction of oil price based Fiscal Rule and fiscal consolidation. The main thrust of the Fiscal Rule is that government revenues will be based on a benchmark price that will be less than the prevailing market price, and the excess revenue that accrues to government will be saved for budget stabilization purposes. The Excess Crude Account (ECA) was therefore created to warehouse such excess revenue. It is noteworthy that the ECA account grew to about $20 billion between 2004 and 2007 Figure 4. However, a large proportion of the ECA was used to stabilize the economy in the wake of the Global Financial Crises of 2007 to 2009 that impacted oil price developments worldwide.

Notwithstanding the effective deployment of the ECA account during the GFC, it remains a subject of disagreement between the Federal government and sub-national government basically on account of its alleged unconstitutionality. Due to the unrestrained manner with which national and subnational governments access and deplete the ECA, the federal government introduced the Sovereign Wealth Fund (SWF) through the passage of the NSCIA Act of 2011. The Act gave powers to the government to float a Sovereign Wealth Fund with three major objectives; components of stabilization, intergenerational equity and infrastructure development with an initial start-up capital of $1b. Though the Sovereign Wealth Fund still remains a subject of controversy between the Federal government and the sub-national governments, it has at least signposted the need for a sustainable national saving culture to address occasional revenue fluctuations as a result of oil price and output volatility.

3. REVIEW OF RELATED LITERATURE

Fiscal deficits can be financed by issuing external debt, interest-bearing internal debt and monetary financing (Anand and Wijnbergen, 1989). The source of deficit financing, to a large extent determines its implications on economic management. The major source of fiscal deficit in Nigeria is domestic borrowing through the domestic treasury bill and bond market. Debts are incurred to finance fiscal deficits if tax revenues and money creation cannot fill the fiscal gap by expansive government expenditure.

However, debt as fiscal deficit financing source could create burden for future generations. Unsustainable debts could trigger disruptive movements in interest rates and exchange rates as highly indebted countries become vulnerable to global market shocks. Debt-finance deficits are inflationary, since what matters for prices is not just the money stock but some combination of money plus the outstanding interest-bearing government debt (Blanchard, 1984). Under this view, the stock of money determining prices is seen an effective money that include assets other than deposits and currency, and combines with weights not restricted to zero or one.

Though domestic borrowing could deepen the capital market, it leads to an increase in the demand for loanable funds, and reduction in loanable funds to finance private investment. Such pressure could lead to an increase in the price of loans (interest rate) and a likely decrease in private investment. Using the loanable fund model provides an interaction between long-term and short-term interest in that, apart from assessing the effect of fiscal stimulus on

long-term interest rate, it can also provide information about the relationship between short- and long-term interest rates, and the characteristic of the term structure of interest rate.

For instance, a positive relationship between long- and short-term interest rates should support the expectation theory of the term structure of interest rates and the possibility of the monetary authority influencing long-term interest rates. The slope of the LM curves is irrelevant to the crowding-out effect (Friedman, 1978). Hence, an expansionary fiscal policy might first be reflected in an increase in output, but the financing of the deficit (tax- or debt-financed expenditure) would set in motion contractionary forces that could offset the initial increase in output. Contractionary monetary policy without appropriate coordination with fiscal authorities could aggravate the cost of debt service which undermines the sustainability of fiscal position.

If inflation rises because of tax monetary policy, nominal interest rates will increase thus leading to capital loss by investors. Tight monetary policy could lead to higher interest rates with fiscal policy consequences for tax revenues and growth. Lower rate of growth could lead to a deceleration in expansion in reserved money and reduce Seigniorage revenue for the monetary authorities.

Fiscal consolidation leads to cut in spending and creates appropriate fiscal buffers for fiscal sustainability. Reduction in spending aids the achievement of inflation objective of monetary policy, but may reduce growth due to the fact that increase in interest rates reduces investment. Debt servicing could be more easily achieved through fiscal consolidation. Savings and reduced spending could raise foreign reserves and engender stable exchange rates.

Theoretical and empirical literatures on the above question are numerous, and it would be appropriate to review some of the extant literature. First, can the tax smoothing theory of the government budget explain the fiscal deficit in Nigeria? The theory argues that "budget deficits and surpluses are used optimally in order to reduce the distortionary effects of taxation, given a certain pattern of spending" (Lucas and Stokey, 1983; Alesina and Perotti, 1993). By extension, the principle of tax smoothing implies that tax rates should be constant over the business cycle and budget deficit could only occur during recession but compensated by surplus during expansions. In explicit terms, government should only embark on budget deficit during war or recession. Alesina and Perrotti (1994) employed the model in an attempt to explain why several OECD countries have accumulated large government debt or fiscal deficits in peace times, but found the model insufficient in answering the question. However, Baron (1985;1986;1987) used two hundred years of British and American data to test the presence of tax smoothing. His findings were consistent and quite successful. Specifically, the debt to GDP ratio was consistent with the principle of tax smoothing, as it increases during war time and decrease during peacetime and fluctuate with the business cycle.

The tax smoothing principle is not consistent with the fiscal deficit trend observed in Nigeria from 2003 – 2013. Within this period, Nigeria witnessed political stability – smooth transition from one democratically elected government to another. Also, crude oil which contributes about 90 per cent of government total revenue maintained an upward trend, except for the steep and transitory decline in 2009 as a result of the global financial crisis. Essentially, the period of increasing fiscal deficit was peacetime, without economic recession which strongly negates the principle of tax smoothing. As such it is convenient to conclude that this model fails to sufficiently explain the trend in Nigeria between 2003 and 2013. Given that Nigerian economy entered into recession in the third quarter of 2015, the model provides a good justification for increased government borrowing for the period of 2016 till date in order to re-inflate the economy.

Another theory used in explaining persistent fiscal deficit is the fiscal allusion theory (Alesina and Perrotti, 1994). The theory argues that because "voters do not understand the inter-temporal budget constraint of the government, when offered a deficit financed expenditure programme, they overestimate the benefit of current expenditures and underestimate future tax burden". As such, "opportunistic politicians who want to be reelected take advantage of this confusion by raising and spending more than they collated as taxes in order to please fiscally alluded voters". This explanation appeared intuitively in the Nigerian political landscape. However, the model is

not totally convincing for the following reasons. Fiscal deficit would have occurred or sky-rocketed in the year proceeding the election or election year but would not have been persistent. It is also difficult for electorate in Nigeria to understand the complexity of government budget, let alone making the uncorrelated errors of underestimating or overestimating the cost and benefits of taxes and spending.

The strategic role of debt theory is not a standard departure from the fiscal allusion theory, but links past policies to future policies. It is based on the assumption that government can take advantage of strategic possibility and show that "political game between governments in office at different points in time can lead to an accumulation of government debt beyond what is prescribed by the tax smoothing model (Alesina and Tabellini, 1989). Succinctly put, considering a country with two dominant political parties, with different political ideologies. That is, one part likes defense and the other likes social welfare, and the two parties angle to hold political office in order to implement their desired policies. The strategic role of debt theory argues that suppose a party in power likes defense and the result of next election is uncertain, the party will be inclined to incur debt to finance defense, in order to constrain the other party's ability to finance social welfare. Such practice will make today's government embark in fiscal deficit, finance defense, and restrain future government's ability to spend. This theory might only be suitable in developed economies like United States of America and United Kingdom. It is not sufficient in explaining the trend, fiscal deficit in Nigeria, since the manifestos of the two dominate parties in Nigeria are social welfare oriented.

Other models that tried explaining deficit behaviour of government include distributional conflicts and wars of attrition, geographically dispersed interests, budgetary institution and median voter theorem. Amongst these models, the budgetary institutions model which tests the impact of budgeting procedures on fiscal discipline and budget outcome can only be applicable in Nigeria. This is based on its central thesis that "procedures lead to greater fiscal discipline if they give strong prerogative to the prime minister or finance minister, if they limit universalism, reciprocity, and parliamentary amendments and facilitate strict execution of the budget law". In Nigeria for instance, the power of budget approval resides with the parliament and there have been cases where the parliament revised the budget upward and downward. However, the presence of parliamentary amendment to Nigerian budget or the limits to the power of the president in budget negotiation does not really explain the fiscal deficit trend in Nigeria.

While it is established that oil receipts contributes 80 per cent of the total government revenue, there might be visible challenges that impacted revenue and expenditure in those boom periods. To buttress this point, Anyanwu *et al.* (1997) argued that there has been a sustained decline in the Agricultural contribution to both government revenue and GDP since independence. Notably, the contribution of agriculture to GDP declined from 61.50 percent in 1964/65 to 14.63 per cent in 1983. Two major developments in the world commodity export market accounted for this decline: first, the collapse of commodity prices as a result of improved agricultural output in industrialized countries. This was compounded by import substitution industrialization strategy adopted by Nigeria in her first and second development plans which largely failed, partly because of the gap created by lack of technological base to support agro-based industrialization drive. Therefore, as market for primary commodities declined globally, domestic processing of such commodities could not be undertaken thus leading to decline in revenue and growth.

On the other hand, the impact of oil boom on general government revenue was unprecedented, as Nigerian oil exports more than quadrupled government revenue in less than a decade. The impact of oil exports on government revenue was so dramatic as the value of oil exports, which was as low as N8.8m naira in 1960 rose to about N728,265.2 million in 1995. However, the golden age of oil exports and revenue boost in Nigeria was between 2006 and 2013. Indeed, an independent audit report, authorized by the Nigerian Extractive Industry Transparency Initiative (NEITI) (2013) reports that a total of $282.3 billion was earned from oil exports between 2006 and 2011.

Thus, the fiscal deficit might be to stabilize revenue during fiscal shocks, for fiscal consolidation to ensure the absorptive capacity of the economy to keep it at equilibrium to sustain macroeconomic stability, and build buffer that will insulate the economy from oil prices fluctuation in the future.

On the empirical side, Anyanwu *et al.* (2017) examined the effects of government domestic debt on private sector credit in 28 oil-dependent countries, using panel data estimation technique from 1990- 2012. It found that increase in government borrowing from domestic banks significantly reduces private sector credit but no significant impact on the lending rate. It therefore concluded that government domestic borrowing resulted in the shrinking of private credit through the credit channel and not the interest rate channel. In a similar vein, Lidiema (2018) investigated the effects of domestic government borrowing on private investment in Kenya, using Auto Regressive Distributed Lag (ARDL) technique from 1975 to 2014. The study found that Domestic Debt has a negative and significant relationship with investment and that financial development variable has positive and significant relationship with domestic investment. This suggests that excessive domestic government borrowing will negatively affect domestic investment and may eventually harm the economy. Therefore, the study recommended that government should regulate domestic borrowing pattern and boost domestic financial development through Small and Micro enterprises lending.

4. ESTIMATION METHODS

Given the theoretical framework above, with the further assumption that the typical structure and dynamics of the economy in Nigeria could be approximated by a typical structural VAR system, we examine the dynamics of government borrowing behaviour on the private sector growth in Nigeria. We impose contemporaneous restrictions derived from theoretical considerations and assumptions on information availability to write the general structural representation as follows:

$$Ax_t = A_1^* x_{t-1} + \ldots + A_p^* x_{t-p} + B\varepsilon_t, \quad (1)$$

The structural shock ε_t remains a white noise process, with the distribution: $\varepsilon_t \sim (0, I_k)$. The (K x K) coefficient matrices facilitates the modelling of $A_i^* (i = 1, \ldots, p)$ instantaneous relations. The structural form parameter matrix is denoted by $B.$ The structural shocks ε_t are assumed to be orthogonal and related to residuals of the model by linear equations. To obtain the connection of the structural shocks with the reduced form disturbances, Equation 1 is multiplied by A^{-1} to have the relationship between the reduced and structural form errors of the form:

$$\mu_t = A^{-1} B \varepsilon_t \quad (2)$$

Amisano and Giannini (1997) proposes that restrictions for matrices A and B can be combined such that the model for innovations from Equation 2 becomes:

$$A\mu_t = B\varepsilon_t \quad (3)$$

Breitung *et al.* (2004) identified 2K2 elements in the structural form matrices, with $K(K+1)/2$ as the maximum identifiable restrictions. For exact identification of the A and B matrices, $2K^2 - K(K+1)/2$ are required, and the scheme for achieving these are discussed in what follows. As explained before, we investigate the effects of government borrowing behaviour on the private sector growth in Nigeria via a structural model comprising of four-component vector (yt) of endogenous variables defined as:

$$y_t = (CPSG_t, CGSG_t, INT_t, DDT_t) \quad (4)$$

Where

$\mathrm{CPSG_t}$ is the proxy for growth in the credit to the private sector variable. $\mathrm{CGSG_t}$ is the measure for the growth in the credit to the government sector. INT_t and DDT_t are respectively interest rate and the domestic debt variables.

We utilized the standard cholesky recursive scheme for the purpose of identification of the structural innovations. This is based on our assumption of Equation 3 specification of the relation between the canonical errors and the structural disturbances. Thus, the model for innovations is specified as follows:

$$\begin{bmatrix} 1 & * & 0 & 0 \\ * & 1 & 0 & * \\ 0 & * & 1 & * \\ 0 & * & * & 1 \end{bmatrix} \begin{bmatrix} \mu_t^{CPSGg} \\ \mu_t^{CGSG} \\ \mu_t^{INT} \\ \mu_t^{DDT} \end{bmatrix} = \begin{bmatrix} b_{11} & 0 & 0 & 0 \\ 0 & b_{22} & 0 & 0 \\ 0 & 0 & b_{33} & 0 \\ 0 & 0 & 0 & b_{44} \end{bmatrix} \begin{bmatrix} \varepsilon_t^{CPSG} \\ \varepsilon_t^{CGSG} \\ \varepsilon_t^{INT} \\ \varepsilon_t^{DDT} \end{bmatrix} \quad (5)$$

Where μ_t^{CPSGg}, μ_t^{CGSGg}, μ_t^{INT} and μ_t^{DDT} are the reduced form disturbances and $\varepsilon_t^{\mathrm{CPSG}}$, $\varepsilon_t^{\mathrm{CGSG}}$, $\varepsilon_t^{\mathrm{INT}}$ and $\varepsilon_t^{\mathrm{DDT}}$ are the structural shocks to the model. We are guided by prior empirical specification to derive the identification scheme represented in Equation 5. Equation 5 has a non-recursive identification structure with four restrictions that ensure just-identification. The asterisks are the freely estimated parameters. Line 1 is the equation for the growth of private sector; it shows that the growth of private sector depends on the growth of government borrowing behaviour in the country.

For Nigeria, as in many developing country governments borrowing behaviour plays a significant role in its economy. Line 2 is the equation for government borrowing behaviour; it indicates the growth of government borrowing in the economy depends on the level of interest rate and existing government debt. Line 3 is the interest rate equation; it postulates that interest rate is influenced by government borrowing behaviour, growth of private sector and the existing government debt. Finally, line 4 is the existing government debt equation; it indicates that existing government debt is also determined by growth of government borrowing behaviour through growth of private sector and the rate of interest rate in the economy.

5. EMPIRICAL RESULTS

To investigate the effects of government borrowing behaviour on the private sector growth in Nigeria, our empirical procedures proceed as follows: we begin with a preliminary step of testing for the order of integration of variables (unit root test), determination of the optimal lag length of the SVAR, as well as the cointegrating properties of the model. We employed the Augmented Dickey–Fuller and Philips–Perron tests in testing for unit root. The results generally indicated that the variables employed in the estimation are of unit roots in levels and first order stationary. We determined the optimal order of the reduced-form VAR by employing the joint criteria provided by the Akaike Information Criterion, Schwarz Bayesian Criterion, and Hannan–Quinn Criterion. The results indicated in Table 2 suggest the order of the VAR to be 2. We employed the multivariate cointegration approach proposed by Johansen (1988) and Johansen and Juselius (1990) to test for cointegration. As Table 3 indicates, the cointegration test indicates the existence of one cointegrating relations among the four variables model.

Table-2. Lag length selection.

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-1466.156	NA	51675383	29.11200	29.21557	29.15393
1	-942.5420	995.3847	2228.433	19.06024	19.57808	19.26988
2	-823.6601	216.5769	291.0108*	17.02297*	17.95510*	17.40032*
3	-811.0652	21.94756	312.5098	17.09040	18.43680	17.63546
4	-804.3068	11.24167	377.9762	17.27340	19.03408	17.98617
5	-779.2978	39.61827*	319.9322	17.09501	19.26996	17.97549
6	-765.7370	20.40839	341.6526	17.14331	19.73253	18.19150
7	-749.2553	23.49860	346.7846	17.13377	20.13727	18.34967
8	-743.0864	8.306674	435.4596	17.32844	20.74622	18.71206

* indicates lag order selected by the criterion.
LR: sequential modified LR test statistic (each test at 5 per cent level).
FPE: Final prediction error.
AIC: Akaike information criterion.
SC: Schwarz information criterion.
HQ: Hannan-Quinn information criterion.

Table-3. Johansen maximum likelihood cointegration trace and eigenvalue test.

Data trend	None	None	Linear	Linear	Quadratic
Test type	No intercept	Intercept	Intercept	Intercept	Intercept
	No trend	No trend	No trend	Trend	Trend
Trace	1	1	1	1	1
Max-Eig	1	1	1	1	1

Selected (0.05 level*) Number of cointegrating relations by model.
*Critical values based on.

5.1. Impulse Response Functions

We estimated the structural VAR models by maximum likelihood, using the variance–covariance matrix of the reduced form model and the restrictions imposed for the structural form. We examine the dynamics of government borrowing behaviour on the private sector growth in Nigeria through the impulse response functions from the estimated SVAR. Figure 4 shows the estimated IRFs recovered from a structural decomposition when non-recursive identification is used. Panel (2) of Figure 4 confirmed the postulates that the government borrowing behaviour can influence the growth of the private sector. As the IRF indicates, a one standard deviation shock to government borrowing behaviour causes significant increases in private sector growth in major part of the periods before it begins to dissipate.

Hence, both fiscal and monetary authorities should improve on measures and policies that could minimise growth in the credit to the government sector as against the growth in the credit to the private sector, as literature is replete with importance of private sector in the growth and development of an economy. Panel (9) and Panel (13) respectively provide importance for the interest rate and domestic debt respectively. Panel (9) provides evidence that shocks to growth in credit to the private sector tends to bring about higher interest rate, while panel (13) suggests an immediate response of domestic debt to shocks to growth in credit to the private sector. The study tends to confirm the believe that higher government debt could create burden for future generations, disrupt movements in interest and exchange rates as well as hinder private investment.

Furthermore, Panels (10) and (14) provides support for the idea that higher interest rate tends to discourage growth in credit to the government sector. These findings might be a reflection of the fact that government have capacity to borrow at a lower cost compare to the private sector. Other interesting outcome from the model include Panel (12) that indicates a one standard deviation shock to domestic debt causes decrease in interest rate throughout the period. This suggests that policies and programmes that can reduce the level of domestic debt can enhance the monetary authorities call for lowering interest rates in Nigeria. This is also corroborated by Panel (15) where shocks to interest rates bring about higher domestic debt. This suggests monetary authorities should have an eye on the level of domestic debt as determinants of interest rate.

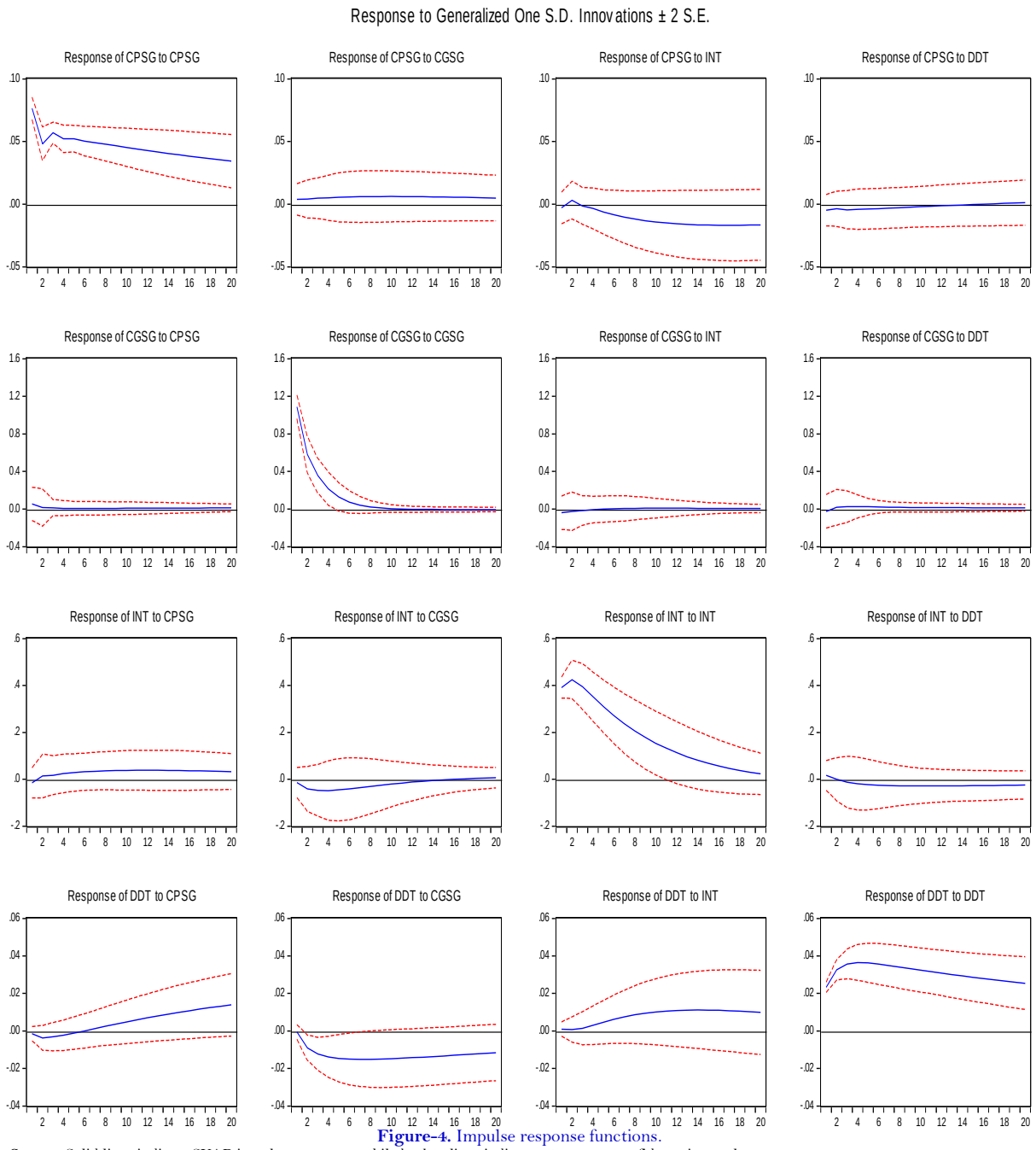

Figure-4. Impulse response functions.

Source: Solid lines indicate SVAR impulse responses, while broken lines indicate 95 per cent confidence intervals.

Table-4. Variance decompositions.

Panel 1: Variance decomposition of CPSG					
Period	**S.E.**	**CPSG**	**CGSG**	**INT**	**DDT**
1	0.0766	100.0000	0.0000	0.0000	0.0000
2	0.0906	99.6370	0.0308	0.3231	0.0092
3	0.1070	99.6978	0.0512	0.2368	0.0142
4	0.1191	99.6939	0.0856	0.2045	0.0160
5	0.1301	99.5910	0.1199	0.2742	0.0148
6	0.1397	99.3875	0.1564	0.4431	0.0130
7	0.1484	99.0925	0.1923	0.7035	0.0118
8	0.1562	98.7274	0.2273	1.0331	0.0122
9	0.1635	98.3109	0.2605	1.4139	0.0147
10	0.1701	97.8605	0.2916	1.8283	0.0196
11	0.1763	97.3904	0.3202	2.2623	0.0271
12	0.1820	96.9122	0.3463	2.7045	0.0370

13	0.1873	96.4350	0.3696	3.1458	0.0495
14	0.1923	95.9656	0.3904	3.5796	0.0644
15	0.1969	95.5092	0.4085	4.0006	0.0817
16	0.2012	95.0692	0.4242	4.4053	0.1013
17	0.2053	94.6481	0.4377	4.7913	0.1230
18	0.2091	94.2474	0.4489	5.1569	0.1467
19	0.2126	93.8680	0.4582	5.5013	0.1724
20	0.2160	93.5101	0.4657	5.8243	0.2000
Panel 2: Variance decomposition of CGSG					
Period	S.E.	CPSG	CGSG	INT	DDT
1	1.0877	0.2492	99.7508	0.0000	0.0000
2	1.2333	0.2073	99.7313	0.0017	0.0597
3	1.2838	0.2023	99.6726	0.0026	0.1225
4	1.3018	0.2003	99.6227	0.0025	0.1745
5	1.3083	0.2014	99.5805	0.0034	0.2147
6	1.3107	0.2032	99.5450	0.0058	0.2460
7	1.3116	0.2057	99.5139	0.0094	0.2710
8	1.3120	0.2086	99.4857	0.0139	0.2918
9	1.3122	0.2118	99.4596	0.0187	0.3099
10	1.3124	0.2155	99.4351	0.0234	0.3260
11	1.3125	0.2195	99.4118	0.0279	0.3408
12	1.3127	0.2240	99.3895	0.0320	0.3545
13	1.3128	0.2289	99.3680	0.0357	0.3674
14	1.3130	0.2343	99.3472	0.0390	0.3796
15	1.3131	0.2400	99.3269	0.0419	0.3912
16	1.3133	0.2462	99.3072	0.0444	0.4023
17	1.3134	0.2527	99.2878	0.0465	0.4130
18	1.3135	0.2596	99.2688	0.0484	0.4232
19	1.3137	0.2668	99.2502	0.0500	0.4330
20	1.3138	0.2744	99.2318	0.0513	0.4425
Panel 3: Variance decomposition of INT					
Period	S.E.	CPSG	CGSG	INT	DDT
1	0.3912	0.1584	0.1158	99.7259	0.0000
2	0.5793	0.1312	0.5913	99.1962	0.0813
3	0.7034	0.1479	0.8840	98.7615	0.2066
4	0.7891	0.2171	1.0979	98.3512	0.3339
5	0.8505	0.2983	1.2511	97.9979	0.4526
6	0.8952	0.3954	1.3578	97.6847	0.5621
7	0.9282	0.5025	1.4285	97.4054	0.6637
8	0.9527	0.6184	1.4722	97.1503	0.7591
9	0.9711	0.7409	1.4965	96.9133	0.8493
10	0.9848	0.8681	1.5072	96.6896	0.9351
11	0.9952	0.9980	1.5090	96.4761	1.0170
12	1.0030	1.1289	1.5053	96.2709	1.0949
13	1.0089	1.2592	1.4986	96.0731	1.1692
14	1.0133	1.3873	1.4907	95.8823	1.2397
15	1.0168	1.5121	1.4827	95.6986	1.3066
16	1.0194	1.6324	1.4755	95.5223	1.3698
17	1.0215	1.7474	1.4696	95.3537	1.4294
18	1.0231	1.8564	1.4652	95.1930	1.4855
19	1.0244	1.9590	1.4624	95.0405	1.5381
20	1.0255	2.0548	1.4612	94.8966	1.5874
Panel 4: Variance decomposition of DDT					
Period	S.E.	CPSG	CGSG	INT	DDT
1	0.0233	0.3955	0.0388	0.1469	99.4188
2	0.0409	0.9651	4.6495	0.0535	94.3318
3	0.0555	0.8377	7.2970	0.0561	91.8092
4	0.0677	0.6843	9.0479	0.1646	90.1032
5	0.0781	0.5369	10.3013	0.3975	88.7643
6	0.0872	0.4309	11.2402	0.7438	87.5851

7	0.0952	0.3783	11.9636	1.1733	86.4848
8	0.1025	0.3842	12.5298	1.6544	85.4317
9	0.1092	0.4505	12.9764	2.1586	84.4145
10	0.1153	0.5768	13.3294	2.6636	83.4302
11	0.1210	0.7617	13.6074	3.1526	82.4784
12	0.1264	1.0030	13.8241	3.6139	81.5591
13	0.1314	1.2979	13.9902	4.0397	80.6722
14	0.1361	1.6437	14.1140	4.4254	79.8169
15	0.1405	2.0373	14.2020	4.7687	78.9921
16	0.1447	2.4753	14.2595	5.0690	78.1961
17	0.1488	2.9547	14.2910	5.3271	77.4272
18	0.1526	3.4722	14.2999	5.5446	76.6833
19	0.1562	4.0244	14.2893	5.7238	75.9625
20	0.1597	4.6081	14.2619	5.8673	75.2627

5.2. Variance Decompositions

The results from the impulse response summarized the effects of government borrowing behaviour on the private sector growth in Nigeria. We seek further evidence from the SVAR forecast error variance decomposition (FEVD) which provides an analysis of the contributions of each of these endogenous variables to variations observed in each variable over the forecast horizon. In examining our empirical question, panels (3) and (4) of Table 4 provide the proportion of variation in interest rate and domestic debt rates respectively, that is accounted for by each of the endogenous variables in the model. Panel (3) corroborates the results from the impulse response function as growth in credit to the private sector variable accounted for the greatest proportion (2.05 per cent) of variation in interest rate, besides itself (94.90 per cent) at the end of the forecast horizon.

Credit to the government sector and that of domestic debt only accounted for 1.46 per cent and 1.59 per cent of variation in interest rate respectively. Panel (4) decomposes variations in domestic debt variable to other endogenous variables and itself. Besides itself (75.26 per cent), credit to government accounted for a large proportion of domestic debt variation (14.26 per cent). Credit to the private sector and interest rate accounted for paltry 4.61 per cent and 5.87 per cent respectively. Similarly, panel (2) indicates a significant role of Credit to the private sector in explaining Credit to the government sector.

6. CONCLUSION AND POLICY RECOMMENDATION

This study seeks to examine the relationship between government borrowing behaviour and private sector growth in Nigeria. It shows clearly that fiscal deficit has remained persist over the years. The presence of increasing oil price within the period has raised an important question on why should government should continue borrowing in an era of plenty. It has been argued that it is possible to borrow in an era of plenty, at least, to address different coordination issues in fiscal and monetary policy. Specifically, borrowing during such periods addresses the issues of deepening the financial markets both for attracting portfolio investments and reducing the inflationary impact of monetary financing of public debts.

In terms of empirical analysis, Structural Vector Auto-regressions (SVAR) model was utilised to analyse the dynamics between government borrowing behaviour and private sector growth in Nigeria. The results from impulse response functions and variance decomposition appear to provide robust evidence that government borrowing behaviour has the tendency of impacting negatively on the effectiveness of private sector growth in Nigeria. This is a clear confirmation of the popular crowding-out effect.

This result can be explained based on the fact that government has higher capacity to borrow than the private sector and this tends to crowd-out private sector in mobilising funds for investment and thus impacted negatively on their capacity to grow. The study, therefore, recommends that both fiscal and monetary authorities should improve on measures and policies that could enhance private sector growth, as higher government debt could create

burden for future generations, disrupt movements in interest and exchange rates as well as hinder private investment. Doing this has the potentials of improving performance of private sector and the aggregate economy in Nigeria, since empirical literature is replete with evidence of existence of these channels.

Funding: This study received no specific financial support.
Competing Interests: The authors declare that they have no competing interests.
Contributors/Acknowledgement: All authors contributed equally to the conception and design of the study.

REFERENCES

Alesina, A. and R. Perotti, 1993. Income distribution, political instability, and investment. Unpublished Manuscript, Harvard University.

Alesina, A. and R. Perrotti, 1994. The political economy of budget deficits, National Bureau of Economic Research Working Paper, No. 4637, 1050 Massachusetts Avenue, Cambridge.

Alesina, A. and G. Tabellini, 1989. External debt, capital flight and political risk. Journal of International Economics, 27(3-4): 199-220.Available at: https://doi.org/10.1016/0022-1996(89)90052-4.

Amisano, G. and G. Giannini, 1997. Topics in structural VAR econometrics. 2nd Edn., Springer Verlag.

Anand, R. and V.S. Wijnbergen, 1989. Inflation and the financing of government expenditure: An introductory analysis with an application to Turkey. The World Bank Economic Review, 3(1): 17-38.Available at: https://doi.org/10.1093/wber/3.1.17.

Anyanwu, A., C. Gan and B. Hu, 2017. Government domestic debt, private sector credit, and crowding out effect in oil-dependent countries. Journal of Economic Research, 22(2): 127-151.

Anyanwu, J.C., A. Oyefeso, H. Oaikhenan and F.A. Dimowo, 1997. The structure of the Nigerian economy (1960-1997). Onitsha: Joanee Eductional Publishers Limited.

Aschauer, D.A., 1989. Is public expenditure productive? Journal of Monetary Economics, 23(2): 177-200.Available at: https://doi.org/10.1016/0304-3932(89)90047-0.

Baron, R.J., 1985. Government spending, interest rates, prices and budget deficits in the United Kingdom, 1730-1918. University of Rochester Working Paper.

Baron, R.J., 1986. U.S. deficits since world war I. Scandinavian Journal of Economics, 88: 193-222.

Barro, R.J., 1987. Government spending, interest rates, prices, and budget deficits in the United Kingdom, 1701–1918. Journal of Monetary Economics, 20(2): 221-247.

Blanchard, O., 1984. Debt, deficit and finite horizons, national bureau of economic research Working Paper, No. 1389, 1050 Massachusetts Avenue, Cambridge.

Breitung, J., R. Bruggemann and H. Lutkepohl, 2004. Structural vector autoregressive modeling and impulse responses, in H. Lutkepohl & M. Kratzig (eds), Applied Time Series Econometrics, Cambridge: Cambridge University Press. pp: 159-196.

Friedman, B.M., 1978. Crowding out or crowding in? The economic consequence of financing government deficits, national bureau of economic research Working paper, No. 284, 1050 Massachusetts Avenue, Cambridge.

Hargen, J.V. and I. Harden, 1996. Budget process and commitment to fiscal discipline, International Monetary Fund, WP/96/78. Washington: International Monetary Fund.

Johansen, S., 1988. Statistical analysis of cointegration vectors. Journal of Economic Dynamics and Control, 12(2-3): 231-254.Available at: https://doi.org/10.1016/0165-1889(88)90041-3.

Johansen, S. and K. Juselius, 1990. Maximum likelihood estimation and inference on cointegration—with applications to the demand for money. Oxford Bulletin of Economics and Statistics, 52(2): 169-210.Available at: https://doi.org/10.1111/j.1468-0084.1990.mp52002003.x.

Lidiema, C., 2018. Effects of government borrowing on private investments in Kenya. Journal of Finance and Economics, 6(2): 49-59.Available at: https://doi.org/10.12691/jfe-6-2-3.

Lucas, J.R.E. and N.L. Stokey, 1983. Optimal fiscal and monetary policy in an economy without capital. Journal of Monetary Economics, 12(1): 55-93.Available at: https://doi.org/10.1016/0304-3932(83)90050-8.

Nigerian Extractive Industry Transparency Initiative (NEITI), 2013. Financial, physical and process audit: An independent report assessing and reconciling physical and financial flows within Nigeria's oil and gas industry. Available from https://eiti.org/sites/default/files/documents/2013_nigeria_eiti_report_oil-gas.pdf.