Government Domestic Borrowing and Private Sector Credit Crowding out: Empirical Evidence from Nigeria

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Abstract: The impact of government domestic borrowing on the private sector credit has been a subject of great interest to researchers in finance. This study looked at the impact of government domestic borrowing on private sector credit in Nigeria. Government domestic borrowing can affect the private sector by crowding out private sector credit directly or indirectly through rising interest rates. The study employed an ex-post research methodology. Secondary data was collected from the Debt Management Office Nigeria and the Central Bank of Nigeria. The study covered a 10-year period from 2009 to 2018. An OLS multiple regression model was used. Government domestic borrowing was proxied by federal government bond issuances as the dependent variable. The deposit money banks' prime lending rates, private sector lending by the banks, the bank's investment in treasury bills and government bonds were the independent variables. The data was tested for heteroscedasticity, stationarity, normality, multicollinearity and serial correlation to examine the robustness of the model. The results showed that prime lending rate has a positive effect on government bond issuance although not significant. The findings also indicated that there is a negative relationship between government domestic bond issuance and the banks credit to private sector. However, this relationship is not statistically significant implying that government borrowing may not have crowded-out private sector. The relationship between government bond issuances and bank investment in treasury bills and government bond is negative although not significant. The findings of this study suggest that government domestic borrowing in Nigeria may have resulted in the reduction of private credit and this works through the credit channel and the interest rate channel.

Keywords: Domestic Borrowing, Crowding out, Private Sector Credit, Interest Rate, Government Securities

1. Introduction

Nigeria has been offering double digit interest rate in its government securities in the last ten years. The high double-digit returns could encourage banks to invest in government securities as opposed to actual financial intermediation of funds to the private sector. When governments borrow domestically, they tend to use up domestic private savings that would have been accessible for private sector lending [1]. This can reduce loanable funds and also raise the cost of capital for private borrowers. Domestic borrowing by the governments is common in both developed and developing economies [33]. In many markets domestic borrowing by governments can lead to crowding out of the private sector. The impact of government borrowing on private sector credit has been a topical issue in economics and finance [16, 32]. The debate whether public and private sector borrowings are complements or substitutes

is an unsettled empirical question in the field of development policy [31]. Government borrowing usually emanate from expansionary fiscal policy in order to meet the demand of the citizens in a bid to increase social services and provide infrastructure. Banks as financial institutions play very important roles in the economic development and growth of any country [15]. They channel scarce resources from the surplus economic units to the deficit economic units in an economy. They provide loan to deficit units in the form of short-term, medium term and long-term credit. Bank credits to a reasonable extend exert reasonable influence on the pattern and trend of economic growth in Nigeria [15].

Fiscal deficit financing has an impact on macroeconomic variables such as inflation, exchange rates, unemployment, interest rates and money supply [24]. The process of financing the needs of government give rise to public debts. The Nigerian government finance deficits through the sale of government

securities in both the domestic market and international markets. The Debt Management Office (DMO) is the government agency established to centrally coordinate the management of Nigeria's debt. As at September 2019 Nigeria's domestic debt was 13,901,546,027,378.00 naira. The domestic debts accounts for about 68% of the total public debt. This comprises of Federal Government Bond 10,074,909,394,592.00 (72.4%) Federal Government Treasury bills,651,514,042,000.00 (19%) other types of domestic debt instruments are the Green Bond, Treasury Bonds, Promissory Notes, Sukuk and the Savings Bond. The DMO conducts monthly auction of Federal Government Bond, bimonthly auction of treasury bills and quarterly auction for savings bonds. Other issuances do not follow a specific auction calendar [11].

The level of domestic credit measures financial resources provided to the private sector by banks and other financial institutions. Credit is the oil that greases the private sector. The more credit to the private sector reflects more opportunity for the private sector to grow and develop [8]. The degree of crowding-out depends on the nature of the response of the banks to a higher government borrowing and how they alter their balance sheets [19]. Access to safe government assets could allow the banks to take less risk by increase their lending to the government and borrowers could face higher borrowing costs. However, if banks have excess liquidity, a higher degree of lending to the government may not result in any significant reduction of credit to the private sector. The relationship between government borrowing and private credit is usually thought of as negative. If the government borrows one naira more from the banks, the banks are left with one naira less for the private sector lending. Fiscal policy effectiveness varies greatly depending on the extent of its crowding-out and crowding-in effects on the private sector [17]. Many empirical studies have shown that government borrowing crowds out the private sector [10]. Economic theories suggest that a reasonable level of debt should help both developing and developed countries enhance their economic growth [19]. Therefore, it is clear that these theoretical and empirical discussions had produced different and often conflicting results particularly the extent of the impact of government borrowing behaviour on private sector. The impact of government domestic borrowings can be through different channels. Government domestic borrowing can affect private sector by crowding out private sector credit directly (real crowding out), or indirectly through rising interest rates (financial crowding out). The magnitude of these potential consequences depends on the degree to which government domestic borrowing raises interest rates and or reduces private credit [8].

The objective of this study was to examine the relationship between government domestic borrowing and credit to the private sector in Nigeria. Most of the earlier studies were focused on the developed economies. This study was motivated by the fact that are dearth studies that has empirically investigated the relationship between government borrowing and private sector credit in Nigeria. Also, it is important to confront these theories with practical reality using recent data from Nigeria. This study also attempts to contribute to the literature on how government domestic borrowing behaviour impacts on private sector.

2. Literature Review

2.1. Conceptual Review

2.1.1. Crowding out Effect

Crowding out is described as partial loss of private capital formation. This is due to increase in borrowing government through sale of government securities [16]. This happens when government through its borrowing competes with the private sector for funds.

2.1.2. Private Sector Credit

This is level of domestic financial resources provided to the private sector by banks and other financial institutions. Bank's credit to private sector in Nigeria and other countries is said to be as the credit extended to the private sector only: both firms and households. This can be in form of loans, trade credits and other accounts receivable, that establish a claim for repayment.

2.1.3. Government Domestic Borrowing

Government borrowing is as result as a shortage of revenue over expenditure [13]. Government can finance its fiscal deficits through borrowing from domestic and external sources. Domestic borrowing means borrowing in local currency.

2.2. Theoretical Review

2.2.1. Keynesian Crowding out and Crowding in Theory

Public debt has generate debate and disagreements among economists, academia and policy makers in the history of modern government [18]. The Keynesian school believes that government spending is important to stimulate aggregate demand in the economy and in the process promote private sector investment. The Keynesian theory believes that fiscal policy expansion through increased government borrowing has insignificant impact in increasing the level of interest rate in the economy but rather, it has capacity to increase the level of productivity.

2.2.2. Classical Crowding out Theory

The classicalists are of the opinion that if government participates in actively in the economy through expansionary fiscal policy would lead to higher interest rates, reduced after-tax income and increased wages all of which reduce firms' profitability and by implication business investment. The consequence of this is that businesses will not expand They believe that despite the fact that government intervention has an impact on output, such impact is only temporary and in the long-run, its negative side effect of crowding out private investment does more harm than good to the economy, therefore, rendering fiscal policy ineffective and self-defeating [29].

2.2.3. The Fiscal Allusion Theory

This theory (see [6]) argued that because populace (voters) do not understand the inter-temporal budget constraint of the

government, when offered a deficit financed expenditure programme. They tend to 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 spending more than they collect as taxes in order to please fiscally alluded voters [6]

2.3. Empirical Review

2.3.1. Evidence from Nigeria

Using a Structural Vector Autoregressions (SVAR),(see [2]) model to analyse the dynamics of government borrowing behaviour on the growth of private sector in Nigeria provided evidence that government borrowing behaviour has the propensity of impacting negatively on the effectiveness of private sector grow in Nigeria. In a study (see [27]) it was concluded that high interest rate crowds-out (reduces) private sector small and medium scale investment. Also, [3] found out that public sectors crowds out private investment in Nigeria. Similarly, [26] established that fiscal deficit has a significant negative effect on domestic credit in Nigeria. In their study (see [4]) concluded that governments fiscal dominance have a negative impact Deposit Money Banks' (DMBs) private sector credit allocation in Nigeria. While [9] using Maastricht treaty indicator and co-integration posits there is a negative long-run relationship between domestic debt and aggregate output and credit to private sector in Nigeria. Also [5] using Johnasen Co-integration test and Vector Error Correction Model in their study Public Debt and Private Investment in Nigeria analysis data from 1980-2010 concluded that domestic debt crowds out domestic investment in both short run and long run. Also [25] concluded that, domestic borrowing component of public borrowing crowds out private investment in Nigeria in a study Public Borrowing and Private Investment in Nigeria: Any crowding out effect ? While [28] using data from 1988 to 2018 and adopting regression technique concluded that domestic debt has a significant positive impact on private sector credit.

2.3.2. Evidence from Other Countries

In Kenya [21] using data from 1975 to 2014 empirical confirmed that excessive domestic borrowing by the government negatively affect investment by the private sector. Using panel data from 60 developing countries [12] provided evidence that there is a significant crowding out effect of government borrowing on private credit in these countries. While [22] assessed the impact of government borrowing on the private sector credit in Zimbabwe using monthly data from 2012 to 2018 using a multivariate regression model and an unrestricted Vector Auto-regression (VAR) confirms a negative but not significant relationship between credit to government and credit to private sector, implying that credit to government may not have crowded-out private credit. In Malaysia in a study by [20]) Bond Market Development in Malaysia: Possible Crowding-Out from Persistent Fiscal Deficits: finds no evidence of crowding-out effects on Malaysia's domestic corporate bond market from the country's growing government debt market. In India,[16] finds evidence that fiscal deficit leads the interest rate rise of the corporate bond market, thereby empirically validating the possibility of financial crowding out in the Indian bond market.

In a study Government Domestic Debt, Private Sector Credit, and Crowding Out Effect in Oil-Dependent Countries [8] examined the crowding out effect of government domestic borrowing using a panel data for 28 oil-dependent countries over the period 1990 -2012. They found out that a 1% increase in government borrowing from domestic banks significantly decreases private sector credit by 0.22% and has no significant impact on the lending rate banks charge to the private sector. This finding suggests that government domestic borrowing has resulted in the shrinking of private credit and works through the credit channel and not through interest rate channel. Similarly [33] in Pakistan found out that 1%growth in goverent borrowing leads to 0.08% of crowiding out of private sector credit which indicates a negative but small impact of government borrowing.

In China, between 2006 and 2013, local public debt crowded out the investment of private firms [17]. In Egypt [32] stated that Egypt has been relying heavily on debt-financing from the banking sector to finance its growing deficit. They employed VAR model using quarterly data from 1970-2009 confirmed that banks shift their portfolio away from the private sector deemed risky loans to government debt-instrument. In Jordan [7] provided evidence that government borrowing from the domestic banks leads to crowding out of private credit.

3. Research Methodology

In this section the methodology of the empirical model used to achieve the objectives of this study is discussed.

3.1. Sources of Data

The study employed and ex-post research methodology design. Secondary data was collected from the Debt Management office and the Central Bank of Nigeria. The research covers a 10-year period of 2009 to 2018

3.2. Model Specification

$$BDI= \beta_0 + \beta_1 CPS + \beta_2 TBR + \beta_3 FGB + \beta_4 PNT + \mu \quad (1)$$

Where: BDI = Federal Government of Nigeria Bond Issued

CPS= Credit to Private Sector

TBR = Treasury Bills Investments made by Banks

FGB= Government Bond Investments made by Banks

PNT= Prime lending rate

β_0 is the intercept,

β_1, β_2, β_3, and β_4 are the slope (coefficients) of the explanatory variables.

μ is the stochastic or error term assumed to capture the influence of other exogenous factors that are capable of influencing dependent variable in the model.

4. Data Presentation, Analysis and Discussion of the Results

4.1. Introduction

This section focused on, analysis and discussion of the results. The analysis was carried out using Ordinary Least Square (OLS) multiple regression method. Diagnostics test such as residual normality test, autocorrelation test and heteroskedasticity test was also conducted.

4.2. Analysis of the Result

4.2.1. Descriptive Statistics

Table 1. Descriptive Statistics.

	BI	CP	PLR	SB	TB
Mean	1071173.	12626.93	16.90000	1629.131	1877.961
Median	1021692.	12429.12	16.85500	1644.750	2241.175
Maximum	1550464.	16683.89	19.55000	2043.800	3065.790
Minimum	726500.0	9198.170	15.68000	1153.540	585.4500
Std. Dev.	238756.5	2931.426	1.103802	298.9246	902.6804
Skewness	0.639652	0.220128	1.308880	-0.234420	-0.363533
Kurtosis	2.789202	1.491867	4.472945	1.905785	1.606027
Jarque-Bera	0.700439	1.028455	3.759263	0.590465	1.029911
Probability	0.704534	0.597962	0.152646	0.744358	0.597527
Sum	10711731	126269.3	169.0000	16291.31	18779.61
Sum Sq. Dev.	5.13E+11	77339351	10.96540	804203.3	7333488.
Observations	10	10	10	10	10

4.2.2. Stationarity Result

Table 2. Stationary Test.

Variable	I(0): (at Level)	I(1): (first difference)	I(2): (Second difference)
BDI	Stationary (0.0229)		
CPS	Non-Stationary (0.8500)	Non-Stationary (0.1118)	Stationary (0.0250)
PNT	Stationary (0.0004)		
FGB	Non-Stationary (0.2887)	Stationary (0.0456)	
TBR	Non-Stationary (0.2458)	Stationary (0.0109)	

Source: EViews 10 output.

From here we can observe that BDI and PNT are stationary at level (i.e they do revolve around the same mean), FGB and TBR are stationary at first difference and CPS is stationary at second difference. Augmented Dickey-Fuller test statistic from Table 2 also shows the stationarity levels. From Table 2 BDI and PNT at level are stationary with probability 0.0229 and 0.0004 respectively, FGB and TBR become stationary at first difference with probability 0.0456 and 0.0109 while CPS become stationary at second difference with probability 0.0250. Therefore, the ordinary least square estimator will be run using the stationary level of the variables under study.

4.2.3. Multiple Regression Result

Table 3. Ordinary Least Square Estimator

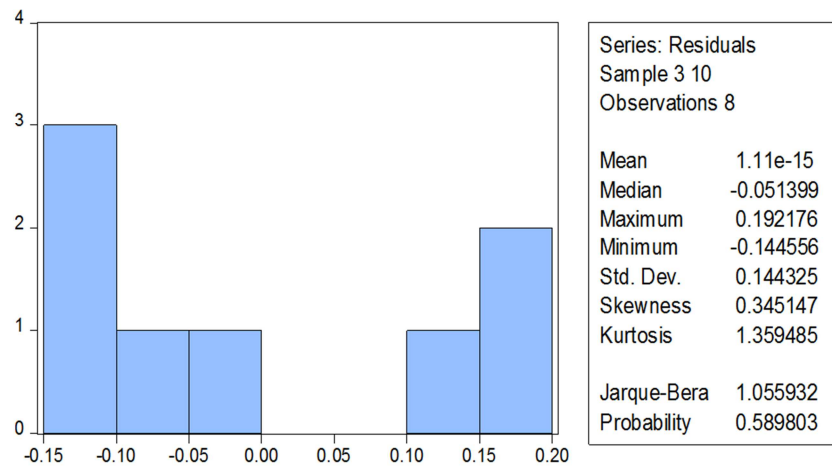| Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.804232	7.968593	0.853881	0.4559
DDLNCPS	-0.333740	0.848069	-0.393529	0.7202
DLNFGB	-0.175679	0.496056	-0.354151	0.7467
DLNTBR	-0.092819	0.148427	-0.625352	0.5761
LNPNT	2.521902	2.827131	0.892036	0.4381
R-squared	0.434457	Mean dependent var		13.88710
Adjusted R-squared	-0.319601	S.D. dependent var		0.191915
S.E. of regression	0.220460	Akaike info criterion		0.082968
Sum squared resid	0.145807	Schwarz criterion		0.132618
Log likelihood	4.668130	Hannan-Quinn criter.		-0.251908
F-statistic	0.576159	Durbin-Watson stat		1.933208
Prob (F-statistic)	0.702467			

Source: EViews10 Output.

The result on Table 3 shows that the coefficient of determination, R – Squared (R^2) = 0.434457 (43.5%), which means that 43.5% of the variation in the dependent variable (BDI) can be accounted for by the independent variables; CPS, FGB, TBR and PNT. The result on Table 3 shows PNT have positive effect on BDI while CPS, FGB and TBR have negative effect on BDI though they are all not significant with probabilities greater than 0.05 at 95% confidence interval. The probability of the F-statistic (0.702467), shows that the independent variable combined have no significant effect on the dependent variable (BDI). The Durbin Watson statistic (1.9332) shows that the errors are not suffering from auto-correlation.

4.2.4. Test for Residual Normality

The figure 1 shows that the residuals are normally distributed with probability 0.589803 which is greater than 0.05

Series: Residuals	
Sample 3 10	
Observations 8	
Mean	1.11e-15
Median	-0.051399
Maximum	0.192176
Minimum	-0.144556
Std. Dev.	0.144325
Skewness	0.345147
Kurtosis	1.359485
Jarque-Bera	1.055932
Probability	0.589803

Source: E 10 views output

***Figure 1.** Residual Normality.*

4.2.5. Test for Heteroskedasicity

***Table 4.** Test for Heteroskedasicity.*

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	1.283022	Prob. F(4,3)	0.4362
Obs*R-squared	5.048728	Prob. Chi-Square(4)	0.2823
Scaled explained SS	0.127613	Prob. Chi-Square(4)	0.9980

Source: EViews 10 Output.
H_0: Homoskedasticity.
H_1: Heteroskedasicity.

The above result tests that the null hypothesis that the error variances are all equal versus the alternative that the error variances are a multiplicative function of one or more variables. The result show that it is free from Heteroskedasticity and the variance are equal (Homoskedasticity) with P-value 0.4362 which is greater than 0.05 at 95% confidence interval for rejecting null hypothesis.

***Table 5.** Test for multicollinearity.*

Variance Inflation Factors			
Sample: 1 10			
Included observations: 8			
Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	63.49848	10451.89	NA
DDLNCPS	0.719220	1.472508	1.472430
DLNFGB	0.246071	1.653701	1.605086
DLNTBR	0.022031	1.300526	1.242845
LNPNT	7.992668	10431.72	1.392242

Source: Eviews 10 Output.
Decision rule.
VIF = 1 (Not correlated).
1 < VIF < 5 (Moderately correlated).
VIF >=5 (Highly correlated).

Table 6. Correlation Analysis.

Covariance Analysis: Ordinary					
Sample: 3 10					
Included observations: 8					
Balanced sample (listwise missing value deletion)					
Correlation					
Probability	DDLNCPS	DLNFGB	DLNTBR	LNBDI	LNPNT
DDLNCPS	1.000000				

DLNFGB	-0.351190	1.000000			
	0.3937	-----			
DLNTBR	0.288947	-0.414687	1.000000		
	0.4876	0.3070	-----		
LNBDI	-0.362660	-0.136495	-0.253724	1.000000	
	0.3773	0.7472	0.5443	-----	
LNPNT	-0.298209	-0.306398	0.061476	0.559905	1.000000
	0.4731	0.4604	0.8850	0.1490	-----

4.2.6. Test for Multicollinearity

Variance inflation factors (VIF) measure how much the variance of the estimated regression coefficients is inflated as compared to when the predictor variables are not linearly related. The results from the above table show that the variables are not suffering from multicollinearity (no correlation between predictors) since the VIF are less than 5. Table 6 is the correlation matrix that show how the variables are associated with each other and there probabilities.

4.3. Discussion of Results

The result on Table 3 shows that the coefficient of determination, R – Squared (R^2) = 0.434457 (43.5%), which means that 43.5% of the variation in the dependent variable (BDI) can be accounted for by the independent variables; CPS, FGB, TBR and PNT.

PNT have positive effect on BDI although not significant effect. The a priori expectation is that lending rate will rise when government borrowing rises. This support the assertion of [16].

CPS, FGB and TBR have negative effect on BDI though they are all not significant with probabilities greater than 0.05 at 95% confidence interval. The CPS, have negative effect on BDI though not significant implying that government borrowing may not have crowded-out private sector credit. This support the assertions of ([16, 22, 33]. The FGB and TBR have negative effect on BDI though they are all not significant. This could imply that banks increase their investment in government securities (risk free securities) because of excess liquidity.

5. Summary and Conclusion

This study looked at the effect of government domestic borrowing on the private sector lending n Nigeria. The study employed the OLS multiple regression in analyzing the data sourced from 2009 to 2018 The results indicates that there is a negative relationship between government domestic and credit to private sector. However, this relationship is not statistically significant implying that government borrowing may not have crowded-out private sector credit. The results also show that prime lending rate has a positive effect on government bond issuance although not significant. These research results are important for understanding the mechanism through which government borrowing affects the private sector. This study finding suggests that government domestic borrowing in Nigeria may have resulted in the reduction of private credit and this works through the credit channel and the interest rate channel. These results have some policy implications. For policy makers they should note that substantial and persistent levels of government domestic debt can cause downward pressure on domestic loanable funds and hence hinder private investment. The importance of developing and maintaining strong institutions to control spending, manage debt cannot be overemphasized.

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