CHAPTER EIGHT

ASSESSING THE IMPACT OF PUBLIC DEBT ON DOMESTIC

PRIVATE INVESTMENT IN NIGERIA (1960-2022)

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Abstract

This study investigated the effect of public debt on domestic private investment in Nigeria from 1960 to 2022; the ARDL-ECM method was employed to examine the time series data spanning 63 years. ADF and Philip-Perron Stationarity tests indicated that variables were stationary at a level I(0) and the first difference I(1). The variables had a long-run equilibrium relationship confirmed by the bounds test. The results revealed that in the short run. Public Debt significantly positively affected Domestic Private Investment. At the same time, loanable funds significantly crowd out Domestic Private Investment in the short term. It was also found that in the long run, public debt exerted a significant crowding-out effect on Domestic Private Investment, while loanable funds and public investment crowded in Domestic Private Investment. The use of Public Debt to create an enabling macroeconomic environment through the provision of public infrastructure and lowering interest rates to encourage the private sector towards higher accessibility of loanable funds is recommended to harness the significant long-term crowding-in effect of public investment and loanable funds on Domestic Private Investment. On the other hand, venturing into the productive industry through a partnership with the private sector through domestic production and exploring the value chain of such output will improve the government's

revenue generation from government-owned productive ventures for improved repayment ability. In conclusion, activating the public sector into a real sector will help the appropriate use of Public Debt to eliminate the significant crowding-out effect of Public Debt on Domestic Private Investment.

Introduction

The critical role of domestic private investment in economic performance and the mediation role of public debt in budgetary gaps make these two macroeconomic variables crucial for determining financial growth. Domestic private investment is an essential component as well as an accelerator of economic growth. On the other hand, public debt is a loan owed by a particular government to domestic or foreign sources, often acquired for either investment or consumption purposes due to shortages or inadequacy of financial resources of such government. Therefore, public debt is a two-edged sword whose effect could be crowding in or out of an economy if invested or consumed, respectively. In as much as existing empirical literature on the relationship between public debt and private investment abound (Pamba, 2022; Nwaeze, 2017; Forgha et al., 2014; Chongo, 2013), theory, however, suggests that public debt could crowd in or crowd out private investment (Samuelson & Nordhaus, 2003). Public debt crowding in domestic private investment refers to the increasing effect of public debt on domestic private investment, while the displacement of domestic private investment by public debt is known as crowding out.

Despite recording sustainable ratios of Nigeria's public debt to Gross Domestic Products (GDP), the growth of public debt over the years is alarming as Nigeria's public debt increased from N 118 million in 1960 to N 27,401.38 trillion in 2019 and N 41,604,057.45 trillion in 2022 (Debt Management Office [DMO], 2022); Central Bank of Nigeria [CBN], 2008). Nigerian government's borrowing recorded its lowest in 1960 as Nigeria's fiscal policy is dominated by deficit budgeting, thereby increasing public debt to increase debt servicing with its attendant effects of shortages in the loanable fund, rising interest rate, inflation and taxes. Worse still, repayment of public debt in Nigeria depends on revenue from crude oil sales rather than returns from the productivity of such public debts (DMO, 2018). Budgeted debt servicing amounted to N2.16 trillion by 2018, N2.45 trillion by 2019 and N3.26 trillion by 2020. Specifically, external debt servicing gulps about 50% of Nigeria's revenue, raising Nigeria's total debt burden to 128% of debt accumulation between 2010 and 2018 (African Development Bank [AFDB], 2019).

Domestic private investment, however, resolves many economic problems to improve financial performance. The expected value additions to the economy include the creation of employment, production of goods for local consumption and export, reduction of poverty through improved income and standard of living, a boost to capital formation and consequently, improvement in economic growth and development. In other words, domestic private investment is an essential component of GDP, which measures the productive capacity of an economy. However, domestic private investment in Nigeria is declining, a critical problem requiring urgent attention. The highest value of domestic private investment as a ratio of GDP was recorded at the country's independence in 1960, implying that beyond that point, private domestic investment has performed poorly as a ratio of GDP in Nigeria. In addition, 2019, the World Bank Ease of Doing Business Index placed Nigeria at 131st out of 190 countries (World Bank, 2019). Nigeria's 131st position of Ease of Doing Business is a poor indicator that will inhibit the performance of domestic private investment in the country. Hence, the high rate of unemployment, low production of goods for local consumption and massive importations, depreciating naira to the dollar exchange rate, high poverty rate, low income and poor standard of living, as evident in the Nigerian economy may not be farfetched from the poor performance of domestic private investment in the country.

On the other hand, Nigeria's debt-GDP ratio stood at 19.08%, 19.00%, 21.33% and 32% in 2018, 2019, 2020 and 2022, respectively, whereas its average from 1960 to 2022 is 39.66% (CBN, 2020; DMO, 2022). According to DMO (2022), Nigeria's self-imposed limit of total public debt to GDP ratio is 40% in the 2020 to 2023 Medium-Term Debt Management Strategy, implying that Nigeria's persistently rising public debt is still within the safe limit of borrowing. Similarly, the International Monetary Fund recommended debt-sustainability threshold is pegged at 45% of debt to GDP (Kidochukwu, 2015). Nigeria's average debt sustainability for 1960 to 2022 is 39%, which is suggestive of sustainable

public debt levels in Nigeria. However, economic theory suggests that public debt could crowd out private investment.

Through policies, the Nigerian government has encouraged domestic private investment, as the CBN reports of 2008 and 2022 have indicated that domestic private investment grew in nominal value. Domestic private investment recorded impressive nominal growth from 1960 to 2022, but evaluating domestic private investment as a ratio to GDP remains unimpressive from 1960 to 2022. Graphically, the trend line of domestic private investment represents a successive downward decline. However, the poor performance of domestic private investment is worsened by inadequate financial resources, as consumption expenditures in debt servicing and more significant recurrent expenditures continue to overshadow capital expenditure. Against this background, therefore, the fulcrum of this research was to investigate the effects (crowding in/out) of public debt on domestic private investment in Nigeria.

Empirical Literature Review

Theoretical and empirical literature have argued either side of the crowding-out and crowding-in effects. The study by Dantama and Usman (2012) on Nigeria covering 1981 to 2010 found that public debt and debt service had no long-run relationship with domestic private investment, while public debt granger caused debt service in the short-run, the researchers concluded that a sustainable economy succeeds with less FDI, public debt and debt services; Results from this study contrast results from Apere (2014) which examined the impact of disintegrated public debt on private investment in Nigeria covering 1981 to 2012 as results revealed that the impact of domestic debt on private investment in Nigeria is linear and positive while the impact of external debt on private investment in Nigeria's public debt into external and domestic debt from 1980 to 2010, found that domestic debt crowded out domestic private investment both in the short and long run while external debt crowded in domestic private investments.

The study of Nigeria by Nwaeze (2017) from 1970 to 2016 supports the assertion that private investment is crowded out by public debt, having revealed that overall fiscal deficit, external borrowing debt stock and interest rate had negative relationships with credit to the private sector. It

was also revealed that a positive relationship existed between domestic borrowing debt stock and credit to the private sector. In light of the crowding-out effect hypothesis, Chinanuife and Nwodo (2018) investigated Nigeria's public debt spiral and public-domestic private investment from 1981 to 2016. They found that public debt crowds out public investment. On the other hand, having focused on the relationship between public debt (domestic and external debt) and investment in Nigeria from 1981 to 2016, Ogunjumi (2019) showed that domestic debts crowd in both private and public investment in the long-run and short-run as the external debt was shown to have a direct and significant relationship with private investment both in the long-run and short-run. Public debt crowds in public and private investment while crowding out foreign direct investment. Similarly, Eze et al. (2019) analysed the impact of public debt on economic growth in Nigeria for the period covering 1981-2017 and the results indicated that external debt depressed GDP while government expenditure had a positive effect on GDP; in addition, external debt, public debt and national saving negatively impacted public investment. At the same time, there was a long-term relationship between public investment and public debt.

Akanbi (2020) examined the impact of government domestic borrowing on private-sector credit in Nigeria from 2009 to 2018. Results indicated that prime lending rate and government bond issuance had a positive relationship, while government domestic bond issuance and bank credit to the private sector had a negative relationship. The study by Anoke *et al.* (2021) on the relationship between public debt and domestic private investment in Nigeria from 1980 to 2018 revealed that external debt, domestic debt and debt servicing had a negative impact on domestic private investment, and there was no directional causality between public debt and domestic private investment. The study concluded that public debt crowded out domestic private in the long run.

Results of a study of South Africa by Pamba (2022) showed that public investment crowds out private investment. Iliyasu and Sambo (2022) tested the crowding out hypothesis in Nigeria from 1961 to 2018; the study found that debt servicing affected capital and non-debt servicing recurrent expenditure adversely. Serin and Demir (2023) explored the crowding-out effect of public debt and public investment on private investment in

Turkey from 1975 to 2020, and the study found that public investment, public debt stock and external debt service had a crowding-out effect on private sector investment.

These reviews show that public debt crowding in and crowding out of private investment occurred through time and place, as mixed results were revealed globally. Studies on Nigeria covered lesser period than this study or explored other variables in place of total public debt (Dantama & Usman, 2012; Chinanuife & Nwodo, (2018); Apere (2014); Kehinde *et al.* (2015); Ogunjumi (2019); Akanbi (2020) and Anoke *et al.* (2021).

Iliyasu and Sambo (2022), having covered a period close to this study (1961 to 2018), however, also used the variable of debt servicing. In addition, economists need to pay more attention to the critical role of interest rates in investment models, which this research considers to be a determinant of domestic private investment. To get clearer evidence on Nigeria, this study was carried out over a broader period of time, from 1960 to 2022. It used the total public debt variable as a determinant of private investment, following the specification of the crowding-out effect hypothesis.

The Crowding-out Effect Theory

The Crowding-out Effect theory, the theoretical framework of this research, is credited to the work of Solow and Blinder (1973) and further developed by Roger Bacon and Walter Eltis in 1976. The crowding-out effect is the displacement of capital from the nation's stock of private wealth by the public debt (Samuelson & Nordhaus, 2003). The foundation of this theory is in the works of classical economists but improved to its present status by neoclassical economists. Classicists who were the proponents of a free market argued that government intervention in the economy is a competition with the private sector for scarce funds, thereby driving up prices and interest rates, which tend to crowd out the private sector. Similarly, Solow and Blinder (1973) posited that when the government engages in productive activities of the private sector, private investment is supplanted by the government. In other words, the crowding-out effect is the reduction in private sector expenditure caused by increased government expenditure through a deficit budget via a tax cut, increased money supply, or bond issue (Jhingan, 2002). In a similar

view, McConnell (1987) posited that the essence of the crowding-out effect is that an expansionary (deficit) fiscal policy tends to increase the interest rate and reduce investment spending, thereby weakening or cancelling the stimulus of fiscal policy.

Method and Results

The crowding-out effect theory, which suggests that private investment is dependent on public debt, is adopted thus:

$$DI = \alpha_0 + \alpha_1 PD \square_{-1} + \alpha_2 PUI \square_{-1} + \alpha_3 IR \square_{-1} +$$

The introduction of the lag form of the stochastic Model is based on the requirement of the Autoregressive Distributed Lag (ARDL) Model, which was used to capture the dynamic effect of public debt on domestic private investment. The natural log form of the ARDL Model is:

$$\Delta \ln D I_{t} = \alpha_{0} + \beta_{1} \ln D I_{t-1} + \beta_{2} \ln P D_{t-1} + \beta_{3} \ln P u I_{t-1} + \beta_{4} I R_{t-1} + \beta_{5} \ln L F_{t-1} + \sum_{t-1}^{p} \alpha_{1i} \Delta \ln D I_{t-1} + \sum_{t-1}^{q} \alpha_{2i} \Delta \ln P D_{t-1} + \sum_{t-1}^{q} \alpha_{3i} \Delta \ln P u I_{t-1} + \sum_{t-1}^{q} \alpha_{4i} \Delta I R_{t-1} + \sum_{t-1}^{q} \alpha_{5i} \Delta \ln L F_{t-1} + \mu_{1t}$$

Where Δ is the change operator. *DI*, *PD*, *PUI*, *IR* and *LF* are variables in the Model. α_0 is the intercept of the Model, $\alpha_{1i} - \alpha_{5i}$ and $\beta_1 - \beta_5$ are parameter estimates of the Model, *p* is the optimal lag of the dependent variable, *q* is the optimal lag length of the independent variables, μ_{lt} is the error term and *t* is time indicating the current year, and lags at *t*-1

indicating the previous year. The a-priori expectation are $0 \ge \beta_2 < 0$, $\beta_3 >$

 $0, 0 > \beta_4 < 0, \beta_5 > 0.$

Data

Secondary data of the variables: Domestic Investment (DI), Public Debt (PD), Public Investment (PuI), Interest Rate (IR) and Loanable Fund (LF) in the specified Model was sourced from publications of the CBN Statistical Bulletins, the National Bureau of Statistics publications of national accounts and annual abstracts and Debt Management Office publications and websites. The times series data covered from 1960 to 2022.

Results

Employing E-views 10 to investigate the effect of public debt on domestic private investment in Nigeria, the stationarity tests indicated that the variables were stationary at levels I(0) and at first difference I(1), the ARDL Model of domestic private investment and public debt was regressed.

Results of ARDL Long-Run Form Bounds Test for the Domestic Private Investment and Public Debt Model

The Bounds Test is also known as the Co-integration Test in the ARDL modelling method. It reveals the existence of the long-run relationship among variables in a model.

Level of	F-	Lower	Upper Bounds
Significance	Statistics	Bounds	
10%		3.03	4.06
5%	4.593839	3.47	4.57
2.5%		3.89	5.07
1%		4.4	5.72

Table 1Bounds Test Results

Source: Extract from E-views 10 Output 2023

Table 1 shows that at a 5% significance level, $F_c = 4.593$ and $F_t = 4.57$ at the upper bounds, implying that the calculated F-statistics is greater than

F-Tabulated at the upper bounds. Hence, Co-integration is among the domestic private investment and public debt model variables.

ARDL Short-Run Effect of Public Debt on Domestic Private Investment in Nigeria

able 2	Short-Run	Error	Correction	n Re	gression	Resul	ts
	Short Run		Contraction		Sicosion	Itcour	U D

Variable	Coefficient	Std. Error	t-Statistic	Prob.
С	-0.227562	0.085379	-2.665302	0.0102
@TREND	0.011849	0.002766	4.283838	0.0001
D(lnPD)	0.547888	0.105521	5.192199	0.0000
D(IR)	-0.004774	0.008427	-0.566500	0.5735
D(lnLF)	-0.155639	0.050133	-3.104510	0.0031
CointEq(-1)	-0.325463	0.065439	-4.973535	0.0000
~		1.0.0		

Source: Extract from E-views 10 Output 2023

From Table 2, the coefficient of Public Debt (lnPD) shows a positive relationship with the Domestic private investment (lnDI), which is significant at 0.000 probability value, less than 5%. This negative instantaneous effect refutes the theoretical expectation of the crowding out effect theory.

The negative influence of interest rate (IR) on domestic private investment is insignificant because its probability value of 0.5735 is greater than 5%. Loanable fund (lnLF) in Table 2 revealed that instantaneously, one percentage change in loanable fund reduces lnDI by 15.563%. This result confirms the theoretical expectation of a crowding-out effect of lnLF on lnDI, which indicates that government borrowing causes a scramble for loanable funds between the public and private sectors, such that the private sector investment is crowded out.

Based on the e-views output in Table 2, the ARDL Error Correction Model shows that the error correction term's coefficient (CointEq (-1)) is negatively signed (-0.325) as expected and is significant based on the probability value of 0.000%, which is less than 5%. It indicates that for any shocks from Public Debt and other variables in the Model, the recovery speed from short-run disequilibrium to long-run convergence is 32%.

Long-Run Effect of Public Debt on Domestic Private Investment in Nigeria

The long-run effect of public debt on Domestic private investment is shown in Table 3. The coefficient of lnPD indicates a crowding-out effect on DI at 0.654%, which is significant at a 0.011 probability value.

Table 3	Results of the ARDL Long-Run Form			
Variable	Coefficient	Std. Error	t-Statistic	Prob.
lnPD	-0.654387	0.248800	-2.630174	0.0112
lnPUI	0.740533	0.229526	3.226357	0.0022
IR	0.062199	0.044402	1.400820	0.1672
lnLF	0.780085	0.150447	5.185125	0.0000
a n				

Source: Extract from E-views 10 Output 2023

Table 3 revealed that the long-run effect of lnPD on DI is a crowding out effect of 65%, which is significant at a 0.011% probability value, lower than 5%. The effects of lnPUI, IR and lnLF on DI are crowding in effect at 0.74%, 0.06% and 0.78%. Only the interest rate is not significant in the long run because the probability value of the coefficient of IR is 0.16, which is greater than 5%. The coefficients of public investment and loanable funds had probability values of 0.00, less than 5%, implying that percentage change in lnPUI and lnLF crowds in DI by 0.74% and 78%, respectively. This result indicates that public debt crowds out domestic private investment while public investment and loanable funds crowd domestic private investment in the long run.

Diagnostic Tests for the Domestic Private Investment and Public Debt Model

The diagnostic tests of the residual of the Model, including non-serial correlation of residuals, homoscedasticity of residuals and the stability of the Model, were satisfied to ensure the reliability of the analytical tools. These diagnostic tests justify the ARDL estimates as reliable and consistent with econometrics modelling requirements. For the stability tests of the Model, the CUSUM test confirmed that the Model is stable as the residuals are within the critical bounds region of 5% significance; this implies that the intercept of the Model is stable and there is no structural change in the Model over time.

Findings and Conclusion

The ARDL results revealed that Public Debt had a significant direct positive effect of 0.54% on Domestic Private Investment in the short run, implying that instantaneously, the government's borrowing is an addition to the economy reflected by the positive impact captured by this study in the current year of borrowing. This significant result conflicts with the finding by Iliyasu and Sambo (2022) and Kehinde (2015) that debt servicing and domestic debt hurt Private Investment in Nigeria.

In the long run, however, the negative effect of 65% is higher than the short-run positive effect, which is a call for caution. This result refutes the finding by Dantama and Usman (2012) that there is no long-run relationship between government borrowing and Domestic Private Investment in Nigeria. On the other hand, the study by Serin and Demir (2023) is confirmed by this study. The negative effect of borrowing in the long run may be attributed to repayment requirements, interests and penalty payments. Hence, to resolve the crowding-out effect of Public Debt on Domestic Private Investment found to be significant in the long run, using Public Debt to create an enabling macroeconomic environment is recommended to harness the significant direct crowding-in effect of Public Debt on Domestic Private Investment. The government should use borrowed funds appropriately by venturing into the productive industry through significant direct partnerships with the private sector.

In the short-run, the loanable fund negatively impacted domestic private investment, confirming the Crowding-out Effect Theory, which stipulated that government borrowing may displace private sector investment through the scramble for loanable funds between the government and the private sector. However, in the long run, the loanable fund was found to private crowd in domestic investment, which confirms the *apriori* expectation that access to credit will boost investment. Interest rates exerted an insignificant effect in the short and long run. A stable and lower interest rate is recommended to improve private sector access to loanable funds for boosting domestic private investment in Nigeria.

Public investment's long-run effect is crowding in Domestic Private Investment, which confirms *apriori* expectation. More investment in public infrastructure is therefore recommended to improve the performance of Domestic Private Investment in Nigeria.

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