Domestic Debt Sustainability and Private Sector in Nigeria: Implications on Employment

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Abstract

A strand of literature supported sourcing of fund internally via debt relative to foreign debt. The principal and interest on such internal debt is a reinvestment into the economy which would frequently have a chain investment effects. This study investigates the domestic debt sustainability level, crowding out effect and its implication on employment in Nigeria. Through the application of Maastricht Treaty Indicators, it was revealed that the domestic debt level in Nigeria is not sustainable. The long-run equation, using employment as the dependent variable showed that there is a negative relationship with domestic debt, employment, aggregate output and credit to private. The correlation analysis shows that aggregate output has a negative relationship with employment and credit to the private sector. The findings were in line with previous studies that emphasised the need for broad-based growth in Nigeria. The implications of the result showed that the gradual increase in domestic debt in Nigeria has a crowding-effect on the private investment which had resulted in negative implications on employment generation through the private sector. Hence, the study recommended the need for a proper channel of investment through domestic debt with the aim to increase the productive capacity of the economy, Among others.

Keywords: Domestic debt; Sustainability; Employment.

1. Introduction

Achieving macroeconomic objectives of low rate unemployment, price stability and sustainable growth and development is vital to most countries irrespective of the level of current development. In order to achieve these goals, more attentions have been given to monetary or fiscal measures. The fiscal measures involve the use of tax and expenditure controlled by the government to regulate the economy. However, there are cases in which the government might need to source for extra funds either internally or externally to meet the needs at hand. Debt is generated by the gap between domestic saving and investment, which can increase in absolute terms over time (Olapade and Asaleye, 2016). Hameed *et al.* (2008), stated that domestic borrowing helps accelerate economic growth which is properly regulated will lead to development. The government often borrow funds to finance its budget deficits by issuing bonds or bills referred to as domestic debt. Private companies also raise shares in the financial market to finance its operations. This implies that government and private companies compete for available borrowed funds in the financial market, thus affecting such funds which private investors could borrow. This effect is called *"crowd out."* The effect of government borrowing could lead to rising interest rates. Theoretically, there is no agreement in the literature on the implications of debt on the economy. A strand of the literature posited that a negative relationship exists between domestic debt and economic growth (Diamond, 1965; Saint-Paul, 1992). While another strand of literature argued that domestic debt has a positive relationship with economic growth (Hulmstrom and Tirole, 1998; Woodford, 1990).

However, in recent times, questions have been raised with respect to debt sustainability and its implication on the private sector in Nigeria (Olapade and Asaleye, 2016). Evidence from official statistics has shown that the magnitude of the domestic debt has been on the increasing trend over the years (CBN, 2018). Despite the huge domestic debt stock, Nigeria is still characterized by dilapidated infrastructure facilities and high mismanagement of resources (Asaleye *et al.*, 2018a). Likewise, the Nigerian government has taken various measure to sustain the domestic debt which includes; debt rescheduling, debt conversion, debt-equity and debt forgiveness. Increase in the size and magnitude of debt has generated concern to Nigerian government and policy analysts (CBN, 2018). This raises questions about debt sustainability, its implications on private sector and employment in Nigeria. The connections between domestic debt and employment have been established in the literature (Borensztein *et al.*, 2007; Emran and Farazi, 2009; Jones, 2012; Khan and Gill, 2009). According to Olapade and Asaleye (2016), sustainability entails that the borrower has the capacity to repay its debt without having negative effects on macroeconomic objectives. Funds borrowed is expected to be invested in productive projects in the private sector,

unlike the government that borrows to finance the deficit. So, in the public sector more attention is given to the long-run effects.

Alison (2001), identified three reasons that have led to increased domestic debt. Firstly, debt is incurred from financing the budget deficit. Secondly, debt raises from the implementation of monetary policy and thirdly domestic debt is incurred to develop the financial sector by supplying financial instruments so as to deepen financial markets. Most of the empirical studies in Nigeria focused on the relationship between domestic debt and economic growth Damian and Chukwunonso (2014). This research work will focus more on domestic debt and employment using Maastricht treaty method to measure its sustainability, and as well examined the implications of the debt on private sector in Nigeria. It is believed that the study will serve as a blueprint for other developing countries on debt sustainability. In other to achieve the objective of this study, the Maastricht Treaty methodology was adopted. The method has the following indicators and thresholds: Domestic debt to GDP is sustainable when it is between 40 and 60; Domestic debt to revenue is sustainable when it is 200; Domestic debt service to revenue is sustainable when it is between 20.25 and 25; Domestic debt service to GDP is sustainable when it is 3-3.6 (max<5.0); Domestic debt service to expenditure is at a sustainable level when it is 7.5 and 9.0 (max=10).

The rest of this paper is structured as follows; Section 2 presents the review of the literature and Section 3 employs the methodology and model specification. Section 4 covers the presentation of the result. Finally, Section 5 presents the conclusion and recommendation.

2. Review of Literature

Evidence from the theoretical perspective on debt-growth nexus has been inconclusive in literature. Diamond (1965), and associates shared the view that domestic debt result to crowding-out effect which affects the private sector negatively by restricting capital accumulation and affect long-run growth in the economy. This effect can as well as hindered employment generation (Saint-Paul, 1992). On the other hand, some scholars shared the view that domestic debt affects the economy positively due to its ability to enhance the supply of liquid assets or collateral (Hulmstrom and Tirole, 1998; Woodford, 1990). Gunning and Marsh (2001), shared the view that the influence of the domestic debt on the economy depends on its sustainability. Debt sustainability is the ability for a country to meet up with its debt obligations without affecting the laid down goals for growth and development. Gunning and Marsh (2001), argued that domestic debt can be sustainable if the debt is compatible with government revenue or the productive capacity of the economy.

On methodological approaches, different methods have been advanced in the literature to examine the implications of debt on the economy. One of the approaches includes the accounting approach, which relates the public expenditure to public revenue. The inequality could be a deficit or a surplus. This method focused on macroeconomic factors which include growth rate, inflation and interest rate. According to Oshikoya and Tarawalie (2009), using this approach, a deficit or surplus is defined as sustainable if it generates a constant debt to GDP ratio, given a constant real interest rate and a specific real GDP growth target. As observed by Cuddington (1997) accounting approach to domestic debt sustainability focuses on a particular debt ratio. These include debt to GDP ratio, Debt to Export, Total revenue to GDP. Chijioke (2015), used the econometric approach, the scholars assume that the sustainability of fiscal policy depends ultimately on the level of fiscal deficit that can be financed. Implementations of this approach involve carrying out an econometric test on a set of time series data to determine stationarity and the possible existence of co-integration between revenue and expenditure (Scott-Joseph, 2006). Tshiswaka-Kashalala (2006), pointed out that the econometric approach to evaluating fiscal and debt sustainability assumes that the sustainability of fiscal policy depends on what level of the deficit can be financed. Also, the level of deficit depends on the behaviour of lenders. Taye (2011), pointed out that literature for testing the sustainability of debt proceeded along two lines: firstly, the flow and secondly, the stock components of debt. The scholar further emphasized that the approach on the flow component examines how the revenue and expenditures flow together over time and the extent to which that movement exhibits some correlation.

Consequently, one method of assessing debt sustainability is based on public debt stationarity tests. This method gained momentum from the work of Hamilton and Marjorie (1986). Generally, a stochastic process is stationary when it tends to revert to its average or to its trends following a random stock. For instance, if the domestic debt has a growth rate that is equal to that of the GDP growth rate, surpluses are raised in such a way for the domestic debts to revert back to its previous position before the shock. Here, the fiscal policy causes the domestic debt to comply with the transversality condition (that is the domestic debt sustainable condition). Although, various criticisms were advanced against this approach. One of them is that an integrated debt of any order is sustainable. As it is impossible in practice to test stationary for all orders there is no way to prove that the debt is non-sustainable (Bohn, 2008).

The Maastricht Treaty Approach, on the other hand, is an internationally acceptable standard which set certain pre-conditions for the European Union. This standard must be fulfilled by any country who wants to be a member. Maastricht treaty was signed by the European Union on, 1992. The aim of the criteria is to ensure price stability and also ensure there is no negative impact of debt on member countries. This study adopts this approach. Its domestic debt indicator and threshold ranks are as follows: Domestic debt to GDP is sustainable when it is between 40 and 60; Domestic debt to revenue is sustainable when it is 200; Domestic debt service to revenue is sustainable when it is between 20.25 and 25; Domestic debt service to GDP is sustainable when it is 3-3.6 (max<5.0); Domestic debt service to expenditure is at a sustainable level when it is 7.5-9.0 (max=10).

Empirically, Grobety (2018) investigated the relationship between government debt and growth in developed and developing economies. It was reported by the scholar that industries with greater liquidity grow disproportionately in countries with higher levels of government debt. More so, industry growth is mainly caused by

domestic debt and not by the external debt. Lee and Ng (2015), worked on public debt and economic growth. The scholars reported that public debt over time has a negative impact on GDP. In addition, it is found that the budget deficit, government consumption external debt and domestic debt service are a decreasing function of GDP. Ferreira (2014), worked on debt and economic growth in the European Union investigating the causality relationship between real GDP and three different types of debt namely, foreign and private debt. The scholar documented that there is bi-directional causality between domestic debt and economic growth. Forslund *et al.* (2011), examined the relationship between public debt and some selected macroeconomic indicators in developing and emerging market countries. The scholars documented a weak correlation between inflation and the composition of debt.

Emran and Farazi (2009) investigate crowding out effects of the government domestic debt on the private sector of 60 developing countries. Their findings show empirically that one dollar more of government borrowing reduces private credits by about 1.40 dollar. According to the Emran and Farazi (2009), the crowding out effect on bank credit exact significant negative impact on private investment and economic productivity the countries where the capital market is not well developed. Borensztein *et al.* (2007), also discovers that debt overhang had an adverse effect on private investment in the Philippines. The effect was strongest when private debt rather than total debt was used as a measure of the debt overhang. The study concluded that heavy debt burden acts to reduce investment through both the debt overhang and the "crowding out" effect. Similarly, Khan and Gill (2009) in their study showed that there is significant evidence of private credit crowding out. They concluded that public expenditure, excess liquidity in the financial sector and relatively sustainable government domestic borrowings were the cause of private credit crowd out in Pakistan.

Jones (2012) investigates whether government internal Debt crowd-out investments in the private sector in Eastern Caribbean countries using panel data from 1993 to 2011 and the model utilized 6 regressors namely private investment, public domestic debt, public investment, total deposits and interest rate, all the variables used were taken in ratio to GDP except interest rate. Jones (2012) confirmed the presence of statistically significant evidence of crowding-in effect in the ECCU during the period 1993 to 2011. Christensen (2005), examined the implication of domestic debt on sub-Saharan African countries. It was reported by Christensen (2005) that domestic interest payment had heavy implication on the budget and also crowds out private sector lending. Matiti (2013), examined the relationship between public debt and economic growth in Kenya. It was discovered that domestic debt had a higher interest rate than external debt, this makes domestic debt expensive to maintain.

In Nigeria, most of the empirical literature in relation to debt focused on growth (Damian and Chukwunonso, 2014; Imimole, 2014; Tamunonimim, 2013). Before the recession in Nigeria in the second quarter of 2016, the country has been experience increase in growth rate along with increase in unemployment rate (Adama *et al.*, 2018; Asaleye *et al.*, 2017a; Asaleye *et al.*, 2018b; Asaleye *et al.*, 2018c). Given the current trend of the domestic debt in Nigeria, its impact on the private sector and employment generation in Nigeria remain under-research. This study contributes to the existing knowledge by investigating the impact of domestic debt on employment and the private sector in the Nigerian economy.

3. The Methodology of the Study

3.1. Model Specification

The model to investigate the impact of domestic debt on the Nigerian economic growth are stated below:

$$RGDP = f(DD, DEP, PC, IR, EMP, GCF)$$

(3.1)

In equation 3.1, RGDP represents the real gross domestic product; DD represents domestic debt as a ratio of GDP; DEP represents total deposit as a ratio of GDP; PC represents private credit as a ratio of GDP; IR represents Interest rate of commercial banks; EMP represents employment; and growth rate of GCF represents gross capital formation;

$$RGDP_t = \alpha_o + \beta_1 DD_t + \beta_2 DEP_t + \beta_3 PC_t + \beta_4 IR_t + \beta_5 EMP_t + \beta_6 GCF_t + u_t$$

(3.2)

In equation (3.2), β_0 is the intercept while β_1, β_2, β_3, β_4, β_5, β_6 are the parameters for ddomestic debt, total deposit ratio to GDP, private credit as ratio to GDP, interest rate of commercial bank, employment and growth rate GCF respectively. Where 't' is the period of observation, that is 1981 to 2017.

The emphasis in this study is on the long-run relationship impact of domestic debt and credit to the private sector on employment. To this purpose, the study employed Johansen Cointegration and normalised on employment to establish employment long-run equation. Prior to the cointegration test, the study investigated the property of the unit of the time series using the Augmented Dickey-Fuller (ADF) approach. Likewise, correlation analysis was carried out to investigate the relationship among the series. Hence, equation (3.2) is specified in the vector as:

$$RGDP_t = \alpha_0 + \beta_1 \sum_{i=1}^{n} DD_{t-1} + \beta_2 \sum_{i=1}^{n} DEP_{t-1} + \beta_3 \sum_{i=1}^{n} PC_{t-1} + \beta_4 \sum_{i=1}^{n} IR_{t-1} + \beta_5 \sum_{i=1}^{n} EMP_{t-1} + \beta_6 \sum_{i=1}^{n} GCF_{t-1} + u_t$$

(3.3)

The Johansen cointegration equation in the Vector Autoregression is given as follows:

$$K_t = \alpha + C_1 K_{t-1} + \ldots C_p K_{t-p} + u_t$$

(3.4)

In equation (3.4), K_t is 'n by 1' vector of the variables. It is assumed that the series are integrated of order (1). Hence, the VAR is written as:

$$\Delta K_t = \alpha + \Pi K_{t-1} + \sum_{i=1}^{n-1} \Gamma_i \Delta K_{t-i} + u_t \tag{3.5}$$

$$\Pi = \sum_{i=1}^{p} C_i - I \qquad \text{and} \quad \Gamma_i \text{ is given as} \qquad -\sum_{j=i+1}^{p} C_j$$

In equation (3.5),

The null hypothesis of long-run relationship is tested, in the siltation where the coefficient matrix Π indicates less than the rank given by $r < n$ shows that there is a long-run relationship in $r \times n$ matrices. The two tests used in the cointegration are:

$$Jh_{tra} = -T \sum_{i=r+1}^{n} In(1 - \hat{\lambda}) \tag{3.4}$$

$$Jh_{max} = -TIn(1 - \lambda_{r+1}) \tag{3.5}$$

In equations (3.4) and (3.5) are the trace and maximum eigenvalue tests respectively. In case, the two result conflict, the study will take the result of the maximum eigenvalue, it has been shown in the literature that is most appropriate for small samples (Asaleye *et al.*, 2017b; Obadiaru *et al.*, 2018).

For checking the sustainability level of domestic debt, using Maastricht treaty 1992, the following variables are needed; Domestic debt; Real Gross domestic product; Revenue; Domestic debt service; Expenditure. The methodology adopted in this study is the Maastricht treaty method and econometric analysis. This method is an internationally acceptable standard which set certain pre-conditions for the European Monetary Union. It creates an international standard for the measurement of domestic debt sustainability, set by the European Union. We aim to ascertain the level of how domestic debt and domestic debt servicing are sustainability to revenue, expenditure and real GDP. The domestic debt indicator and threshold ranks are as follows:

Table-1. Sustainability Qualifying Criteria

S/N	Indicators	Threshold Rank
1	Domestic debt/ GDP	40
2	Domestic debt/ revenue	150-200
3	Domestic debt service/ revenue	20.25-25
4	Domestic debt service/ GDP	3-3.6 (max< 5.0)
5	Domestic debt service/ expenditure	7.5-9.0 (max= 10)

Source: Maastricht Treaty, 1992.

Table 1 can be explained as follows: Domestic debt to GDP is sustainable when it is between 40; Domestic debt to revenue is sustainable when it is 200; Domestic debt service to revenue is sustainable when it is between 20.25 and 25; Domestic debt service to GDP is sustainable when it is 3-3.6 (max<5.0); Domestic debt service to expenditure is at a sustainable level when it is 7.5-9.0 (max=10). Thus, if any of the ratios exceeds the critical values, the member is classified as severely indebted and having an unsustainable domestic debt profile. This study makes use of secondary data covering a period of 1981-2017. This data is gotten from CBN Statistical Bulletin, 2018 and National Bureau Statistic.

4. Data Analysis and Interpretation
4.1. Test for Sustainability of Domestic Debt

Table-2. Test for Sustainability of Domestic Debt

Indicators	Ratio Values	Threshold Rank	Conclusion
Domestic debt/GDP	68.6324/98.3874	40	Not sustainable
Domestic debt/revenue	88.6324/73.0137	150-200	Sustainable
Domestic debt servicing/GDP	59.3226/98.3874	20.25-25	Not sustainable
Domestic debt servicing/revenue	59.3226/73.0137	3-3.6 (max< 5.0)	Not sustainable
Domestic debt servicing/expenditure	59.3226/75.0968	7.5-9.0 (max= 10)	Not sustainable

Source: (CBN, 2018)

Table 2 was derived by getting the sum total of each of the variables from 1981 to 2017 which includes; domestic debt, domestic debt service, GDP, revenue and expenditure. The baseline of domestic debt/GDP is 40-60%, from the table above, it was shown that Nigerian domestic debt/GDP was not sustainable. Nigerian domestic debt/revenue from 1981-2017 was sustainable at the baseline of 200%. The baseline scenario of domestic debt servicing/GDP is 20.25-25%. Nigeria domestic debt servicing/GDP was not sustainable from 1981-2017. The Nigerian domestic debt servicing/revenue baseline is 3-3.6%, Nigeria has experienced a non-sustainable from 1981-2017. Finally, the domestic debt servicing/expenditure has a baseline scenario of 7.5-9%, of which Nigeria has not experienced sustainability from 1981-2017.

4.2. Unit Root Result

Table-3. Unit Root Test

Variables	ADF at levels	ADF at 1st diff	ADF at 2nd diff	Order
RGDP	0.080907	-5.602885	-4.572220	I(1)
DD	-2.413375	-4.491579	-5.653281	I(1)
DEP	-0.381548	-4.207831	-7.175916	I(1)
PC	-2.181115	-6.396309	-9.019109	I(1)
IR	-2.947660	-6.386385	-10.07281	I(1)
EMP	0.635177	-6.431402	-12.53765	I(1)
GCF	-0.168542	-4.057202	-8.805022	I(1)

Source: Authors computation from Eviews 10

From table 3, the variable RGDP, DD, DEP, PC, IR, EP and GCF were not all stationary at level. However, became stationary after first difference. So all the variables are integrated of order 1. Thus the null hypothesis of the presence of a unit root is rejected at first difference as the absolute values of the ADF statistics were greater than the critical values at 5 per cent level of significance. Likewise, the result of the cointegration indicates one co-integrating vector for both the trace and maximum eigenvalue.

Table-4. Long-run normalized co-integrating coefficient

EMP	DD	DEP	PC	IR	RGDP	GCF
1.000000	0.239762	-1.595741*	0.034417*	-0.096300*	0.060541*	0.455960
	(0.03410)	(0.39279)	(0.00032)	(0.00967)	(0.00245)	(0.26253)

standard error in parentheses   *indicates significance at the level of per cent
Source: Author's Compilation from Eviews 10

Table 4 presents the long-run normalized co-integration result. The study normalised on employment, due to the procedure of the normalization, the signs are reversed in the interpretation. It can be depicted from the result that all variables are statistically significant at the level of 5 per cent except the variable GCF. Domestic debt (DD), credit to private sector (PC) and aggregate output (RGDP) have a negative relationship with employment. While total deposit and interest rate have a positive relationship with employment.

Table-5. Correlation Analysis Result

	RGDP	DEP	PC	IR	EMP	GCF	DD
RGDP	1.000000						
DEP	-0.155262	1.000000					
PC	-0.373712	0.192907	1.000000				
IR	-0.022485	0.231431	0.717667	1.000000			
EMP	-0.500405	0.253390	-0.306479	-0.017584	1.000000		
GCF	0.103589	0.178842	-0.045992	0.137572	0.131277	1.000000	
DD	-0.100480	-0.197844	0.637795	0.452441	-0.367620	-0.025602	1.000000

Source: Authors computation from Eviews 10

Table 5 shows the result of the correlation test. Evidence from the table showed that EMP, DEP, PC, IR and DD have a negative correlation with RGDP. While GCF has a positive impact on RGDP. Also, PC, IR, EMP and GCF have a positive correlation with DEP. While DD has a negative impact on DEP. For PC, IR and DD have a positive correlation with PC, while EP and GCF have a negative correlation with PC. In the fourth column, DD and GCF have a positive correlation with IR, while EMP has a negative correlation with IR. In the fifth column, GCF has a positive correlation with EMP while DD has a negative impact on EMP. Finally, the sixth column DD has a negative correlation with GCF.

4.3. Discussion of Findings

This study adopted the Maastricht treaty indicator, econometric and statistical approaches. This paper investigates the domestic debt sustainability level, crowding out effect; its implication on employment in Nigeria. Through the application of the Maastricht treaty indicator, it was revealed that the domestic debt level in Nigeria is not sustainable. The normalized co-integration result showed that there is a negative long-run relationship between domestic debt and employment. It also showed that there exists a negative long-run relationship between aggregate output and credit to private while investment measured through gross capital formation was not significant. The correlation analysis also shows a negative relationship between aggregate output and the following variables; employment and credit to the private sector. The implication of the shows that the growth experience in Nigeria is not inclusive. These findings are also in line with the studies of Oloni *et al.* (2017); Asaleye *et al.* (2017a), that reported negative relationship between employment and output in Nigeria despite the steady growth rate in the economy that was documented before the recession in the second quarter of 2016. Likewise, the study by Lee and Ng (2015) reported a negative relationship between domestic debt and economic growth. However, the findings

contradict the theoretical argument given by Woodford (1990) and Hulmstrom and Tirole (1998), that there is a positive relationship between growth and debt. Hence, the general conclusion is that the steady increase in domestic debt in Nigeria has a crowding-effect on the private investment which had resulted in negative implications on employment generation through the private sector.

5. Conclusion and Recommendation

Augments in the literature have shown that using domestic debt to stimulate sustainable growth and development is more preferable than external debt. Since the repayment of the principal and interest on such internal debt is a reinvestment into the domestic which would frequently have a chain investment effect on the domestic economy. Therefore, this research work examined the sustainability level of domestic debt, crowding out effect and its implication on economic growth. The Maastricht Treaty Indicators was adopted in the study to investigate the level of domestic debt sustainability. It was revealed that the domestic debt level in Nigeria is not sustainable. This research work concludes that for a sustainable level of domestic debt, the government needs to able to reduce the level of domestic debt and GDP ratio to about forty per cent and tries to maintain it for a period of time. The long-run equation, using employment as the dependent variable showed that there is a negative relationship with domestic debt, employment, aggregate output and credit to private. The correlation analysis shows that aggregate output has a negative relationship with employment and credit to the private sector. The implications of the result showed that the gradual increase of domestic debt in Nigeria had caused a crowding-effect on the private investment. This, on the other hand, had resulted in negative implications on employment generation through the private sector.

The research work made some suggestions in other to achieve the desired level of sustainability domestic which will enable debt servicing by the federal government without affecting the laid down macroeconomic policies for growth and development. There is a need for proper management of debt. In this case, domestic debt management should be considered as a program or policy that will help to pay back the debt in due time by investing in productive activities. Also, there is a need for restructuring of domestic debt in Nigeria. The government should attempt as much as possible to avoid all forms of borrowing, however; borrowing should only become an alternative when highly significance projects are being considered. The DMO should make policies that will ensure that borrowed funds are properly invested and scrutinized for accountability and transparency. The government should generate enabling social-economic atmosphere that will encourage industrialization which will, in turn, attract foreign direct investment.

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