

# Economic Transformation Through Sustainable Domestic Debt: Nigeria's Experience

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## Abstract

The Keynesian thinking of economics suggests that economy is improved by upward movement on the aggregate demand. The desire of Nigeria, like every economy, to attain one of the major macroeconomic goals of economic growth then puts pressure on her resources which resulted to borrowing. Is this a vice or virtue for economic transformation? This study empirically looks at the sustainability state of Nigeria's domestic debt with the intention of unveiling its economic realities towards achievable transformation. Using OLS regression techniques and time series data, the study analysed the domestic debt sustainability of Nigeria. Our results show that domestic debt of the country is sustainable given that government revenue grows at about 3.15% every year over the government expenditure, including interest rate. However, the ratio of primary deficit to GDP ( $p$ ) and the product of the ratio of the differential of real interest rate and real growth rate upon the real growth, and the one-period lag of the domestic debt stock ( $Z$ ) weakens the domestic debt sustainability by 0.94% and 0.18% respectively, every year. In the light of the findings, the study recommends among other things that proactive measures by the Government should be put in place to encourage the growth of GDP.

**Keywords:** Domestic Debt, Budget Deficit, Debt Profile, Sustainability, Debt-GDP Ratio, Economic Transformation.

## 1. Introduction

One of the major macroeconomic goals of any economy is economic growth. The concern for economic growth, in the absence of immediate resources, naturally necessitates government's expenditures being greater than her revenues. Given the resources required in development, the need to achieve minimum standards of living, the urgency to alleviate poverty and the importance of creating employment, infrastructure and fostering growth, governments may, at times, run up expenses that are greater than her revenue. At such time the need to cover the gap by borrowing becomes inevitable. Financing such a gap could be done in so many ways like increased taxation, ways and means, and debt creation. Whatever fiscal alternative that is adopted, like every other economic planning concept, needs adequate management to achieve the desired goal.

Debt creation and its management is part of the management of the economic process and many authors have justified the essence of government's debt. Singh (1999) while investigating the relationship between domestic debt and economic growth observes that sovereign debts have been incurred with the main objective of enhancing planned investment for economic development. Alison (2003) revealed three reasons often advanced for government domestic debts. The first is for budget deficit financing, secondly, it is for implementing monetary policy (buying and selling of treasury bills in the open market operation) and the third is to develop the financial instruments so as to deepen the financial markets. Though public debt has been seen as an inevitable tool of economic management, poor utilization could result to economic retrogression, rather than economic growth, and financial crisis. Some studies have shown negative relationship between economic growth and public debt. For instance (Adofu and Abula, 2010), found a negative relationship between domestic debt and economic growth in Nigeria, analyzing time series data from 1986 to 2005. Therefore, the importance of proper debt management cannot be over emphasised.

Nigeria's recent economic policies tend to favour inward economic development. This could be gleaned from the 2005 external debt repayment. Yet, it is not conclusive to state that Nigeria has sustainably managed her domestic debt to pave way for sustainable economic transformation. The continuous fiscal deficit of the Federal Government of Nigeria, together with the rise in the domestic debt stock after the 2005 debt repayment in Nigeria, poses a great threat to the sustainability of the country's domestic debt. Between 1980 and 2010, Nigeria witnessed continuous and increasing fiscal deficit except in 1995 and 1996 when she witnessed fiscal

surplus of ₦1, 000.00 million and ₦32, 049.40 million, respectively. The fiscal deficit stood at ₦1, 975.20 million in 1980; and as at 1990 had increased to ₦22, 116.10 million representing over 1, 000 % increase. However, with the debt repayment in 2005, the fiscal deficit reduced from ₦172, 601.30 million in 2004 to ₦161, 406.30 million in 2005. Yet, in 2010, it tremendously increased to ₦1, 105, 439.78 million (CBN, 2010). On the other hand, domestic debt stock which stood at ₦11, 192.60 million in 1981 grew to ₦116, 198.70 million in 1991 and in 2010 had risen to ₦4, 551, 822.39 million (DMO, 2010). The increase in the fiscal deficits, domestic debt stock and the domestic debt service may not have posed serious economic problem if there is more than proportionate increase in the differential of economic growth and interest rate. However, the trend analysis of interest rate and economic growth in Nigeria reveals that interest rate is always higher than economic growth, a situation that could suggest domestic debt unsustainability.

To tackle the problem of the effective determination of domestic debt sustainability, the World Bank and Maastricht Treaty, for example, set threshold for domestic debt indicators. By implication, where domestic debt indicators fall above the threshold, the debt is considered unsustainable. As simple and plausible as this approach may look, some scholars like Conford, have pointed out the failure of the threshold to take into consideration some country-specifics in determining sustainability. Conford (2009) may be right when he pointed out that actual experience of country's debt problems has indicated limits to the usefulness of the commonly used indicators. These limits are partly due to lack of information concerning aspects of country's positions with an important bearing on their capacity to meet their obligations. The debt-GDP indicator (with a threshold less than 20%) always reveals sustainability of domestic debt in Nigeria. On the other hand, the differential of interest rate and growth rate of the country has been positive suggesting likely unsustainability. Some researchers like Okunroumu (1992), Odozi (1996), Garba (1998), Akintola (2003), Rapu (2003), Asogwa and Ezema (2005), Okigbo (2005), Oshadami (2006), and Adofu and Abula (2010) have carried out various research studies on domestic debt in Nigeria. However, none of these researches was concerned with the issue of domestic debt sustainability as a tool for economic transformation. This study, therefore, intends to evaluate domestic debt sustainability in Nigeria and its relevant economic implications towards sustainable economic transformation. This paper is organised into six sections. Immediately following this section one, is section two which reviews related literature. Section three focuses on the model of the study; section four discusses the empirical findings. Section five concentrates on the implications of findings for economic transformation, while section six concludes.

## 2. Review of Related Literature

### Theories

Various theories and approaches on the subject of domestic debt sustainability abound in economic literature. Such approaches include: the accounting approach, the present value budget constraint (PVBC) approach, the econometric approach, the sudden stop approach, the probabilistic approach, and the human development approach. This study focuses on the accounting approach and the econometric approach. The accounting approach relates public revenue with public expenditure. The inequality between the two will result in either a deficit or a surplus. The accounting approach focuses on pre-defined macroeconomic targets in the economy, which include inflation, growth rate of the economy ( $g$ ) and interest rate ( $r$ ). According to this approach, a primary deficit (or surplus) is defined as sustainable if it generates a constant (rather than ever-increasing) debt/GDP ratio, given a specified real GDP growth target and constant real interest rate (Oshikoya and Tarawalie, 2009). No matter the aspect of the accounting approach one is looking at, (Cuddington, 1996) observed that 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.

The econometric approach assumes that the sustainability of fiscal policy depends ultimately on what level of fiscal deficit can be financed. Implementations of this approach involve econometric testing of 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 econometric approach to evaluating fiscal and debt sustainability assumes that the sustainability of fiscal policy depends on what level of deficit can be financed, and that the level of deficit depends on the behavior of lenders. He further stated that the empirical implementation of this approach involves econometric testing of a set of time series data for the violation or not of the 'No Ponzi Game (NPG) condition, (NPG condition holds if the present value of the stock of public debt goes to zero in the limit). Taye (2011) pointed out that the recent literature for testing the sustainability of debt proceeded along two lines: one focusing on the flow and the other on the stock components of debt. He further emphasised 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. The simplest way of expressing the rationale is that, do the revenue and expenditure flows show close co-movements

as a trend: if they do, they are said to be co-integrated which is a technical way of saying their co-movements have a linear combination or correlation that could be traced and converges to zero even though each variable behaves randomly (Taye, 2011). Discussing the other focus of the literature, that is, econometric approach to domestic debt sustainability, Taye (2011) observed that some authors focused on the proposition that for the stock of debt to converge to zero, the flow or the budget balance must, on average, be zero. This means that the necessary and sufficient condition for debt sustainability is for government revenue and expenditure to be co-integrated.

### Empirical Findings

In his study, Kulasake (2002) analysed public debt sustainability of Thailand. He used the accounting approach and found that public debt is sustainable, only domestic debt to GDP ratio is unsustainable. He also found out that private investment was crowded out due to higher public borrowing. Hafiz and Aisha-Ghaus (1997) analysed growth and sustainability of public debt in Pakistan. They applied the accounting approach, using threshold of external debt/GDP, and shows that change in external debt/GDP ratio can be attributed to the increase in non-interest current account deficits and capital losses on external debt due to real exchange rate depreciation. In conducting an empirical analysis on public debt sustainability for Barbados, Drakes (2008) under number of scenarios that could exist in the future, used forecasts of primary surpluses and a number of key macroeconomic variables, with the projections based on ARIMA models for annual data that spans 1970-2007, and conclude that given the actual level of debt and the median-case scenario, that Barbados' public debt was approaching an unsustainable level.

In Nigeria, Rapu (2003), using accounting approach of debt sustainability, measured the sustainable domestic debt stock level of the Federal Government of Nigeria from 1960 – 2002. Specifically using the budget constraint model relative to GDP, he concludes that under the then fiscal stance of primary deficit, the Federal Government domestic debt is not sustainable.

Increasing US fiscal deficits stirred empirical studies involving sustainability of fiscal policy. Hamilton and Flavin (1986) pioneered the Present Value Budget Constraint (PVBC) approach to analyse the concept of fiscal sustainability. Applying this methodology to the US data from 1960 to 1981, and using real primary surplus, seigniorage and real debt stock, they found that the US budget balance presented a long run sustainable path, despite its systematic budget deficits. In another empirical work that followed, Kremers (1988) argued convincingly Hamilton and Flavin's Augmented Dickey-Fuller (ADF) regression were misspecified by not including sufficient lagged differences of dependent variable to eliminate serially correlation in the residuals. He claimed that the addition of a second lagged dependent variable produces a correctly specified regression. With this specification, the ADF test indicated that the debt series is non-stationary due to the presence of a unit root. In testing the fiscal sustainability in US, over a long term period including annual data from 1792 and 1692 (these periods include periods of major wars like civil war; World War I and World War II), Ahmed and Rogers (1995) using a co-integration relationship implying sustainability taking into account the above-mentioned break points, conclude that despite the US deficit problem, the currently expected future course of fiscal policy might plausibly be regarded as sustainable. Achibald and Greenidge (2003) using econometric approach to assess the sustainability of Barbados' fiscal position essentially tested for co-integration of the present value budget constraint (PVBC). The result of the study over the period 1974-2001 suggested that fiscal policy had been sustainable during the period the study covered. Buiter and Patel (1995) had earlier analysed fiscal sustainability in India. In their study, they analysed the Indian government solvency based on the PVBC. They concluded that given the non-stationarity of the discounted public debt, the indefinite continuation of the pattern of behavior reflected in the historical time series process of India, is inconsistency with the maintenance of solvency.

Here in Africa, Tshiswaka-Kashalala (2006) analyzing the sustainability of the government of South Africa's fiscal policies during the period 1990-2005 using quarterly data; found that government revenue, government spending on goods and services, and interest payment are non-stationary but co-integrated. A standard three-variable framework of Vector Error Correction (VEC) model was used by the author to test whether data from the historical process in South Africa are consistent with the intertemporal government budget constraint. Oshikoya and Tarawalie (2009) empirically assessed the sustainability of fiscal policy in the countries of the West African Monetary Zone (WAMZ) using annual time series data for the period 1980 to 2008. They employed the present value budget constraint in analyzing the fiscal sustainability in a co-integrating framework and Granger causality that accommodates both stationary and non-stationary variables. Their result revealed that fiscal policy was weakly sustainable for all the countries except Sierra Leone whose fiscal policy was found to be unsustainable.

### 3. The Model

#### Model I

Drawing from the assumption that the key consideration for any government to resort to debt is the availability and feasibility of debt financing, the starting point for the evaluation of debt sustainability is the balance sheet of the consolidated public sector or the government budget constraint. The government budget constraint defines the relationship between domestic debt and budget deficit

Thus, following Rapu (2003), the relationship between domestic debt and budget is represented by:

$$D_t = (1+r) D_{t-1} + P_t \text{-----} (1)$$

where:

$D_t$  is the debt stock at a given period,  $t$

$(1+r) D_{t-1}$  is the cost of debt at time  $t-1$

$P_t$  is the primary deficit at time  $t$ .

Equation (1) simply states that the total domestic debt stock at time  $t$  is the sum of the cost of debt at time  $t-1$  and the primary deficit at time  $t$ .

Letting  $S_t$  represent the cost of domestic debt, equation (1) can be written as:

$$D_t = P_t + S_t \text{-----} (2)$$

Making assumptions that the level of domestic debt in each period is  $D_t$ ; the level of real output in each period is  $Y_t$ ; and the level of debt service is represented by  $S_t$ . Also, let  $r$  and  $g$  represent the real interest rate and the real growth of output respectively, thus the equation can be written as follows:

$$D_t = D_{t-1} (1+r) + S_t \text{-----} (3)$$

$$Y_t = (Y_{t-1} (1+g)) \text{-----} (4)$$

Relating the debt to output, we divide equation (3) by equation (4)

$$D_t/Y_t = D_{t-1}/Y_{t-1} * (1+r)/((1+g)) + (S_t/Y_t) \text{-----} (5)$$

Solving for the stable ratio of domestic debt service to GDP, we obtain:

$$S_t/Y_t = ((r-g) / ((1+g)*(D/Y)_{t-1})) \text{-----} (6)$$

Substituting equation (2) into equation (6) and solve, we obtain:

$$\Delta(D/Y) = (P/Y) + (r-g) / (1+g)* (D/Y)_{t-1} \text{-----} (7)$$

Simplifying equation (7) we will take the derivation of the debt-GDP ratio by using lower case variables. Thus let:

$d$  = debt-GDP ratio, that is  $(D/Y)$

$p$  = the primary deficit/ GDP ratio, that is  $(P/Y)$ .

Then equation (7) can be written as:

$$\Delta d = p + ((r-g) / ((1+g))*d_{t-1}) \text{-----} (8)$$

From equation (8) above, the differential of real interest rate,  $r$ , and real growth rate of the economy,  $g$ ,  $(r-g)$ , theoretically determines the sustainability of domestic debt. When the differential is non-increasing, sustainability is implied. On the other hand, if the differential is increasing, unsustainability of domestic debt is implied.

Putting equation (8) in an econometric form, we have:

$$\Delta d = \alpha_0 + \alpha_1 p + \alpha_2 ((r-g) / (1+g)) * d_{t-1} + \mu \text{-----} (9)$$

However, to analyze the effect of military and democratic regime, and pre-2005 external debt repayment and post-2005 external debt repayment on domestic debt sustainability, we use dummy variables. The model is thus:

$$\Delta d = \alpha_0 + \alpha_1 p + \alpha_2 ((r-g) / (1+g)) * d_{t-1} + \alpha_3 D_{1t} + \alpha_4 D_{2t} + \mu \text{-----} (10)$$

where:

$D_1$  = Dummy Variable of democratic and military regimes within the period under study. While  $t$  for  $D_1$  represents time periods:  $D = 0$  in military regime and  $D = 1$  in democratic regime.

$D_2$  = Dummy Variable of pre and post 2005 external debt repayment in Nigeria for the period under study. While  $t$  for  $D_2$  represents time periods:  $D = 0$  in pre 2005 debt repayment period and  $D = 1$  in post 2005 repayment (2006 to 2010) period.

Rewriting equation (10) in a reduced form, thus:

$$\Delta d = \alpha_0 + \alpha_1 p + \alpha_2 Z + \alpha_3 D_{1t} + \alpha_4 D_{2t} + \mu \text{-----} (11)$$

where:

$$Z = ((r-g) / (1+g)) * d_{t-1}$$

#### Model II

To evaluate domestic debt sustainability using econometric methodology, we specify an econometric relationship between government revenue and government expenditure, inclusive of interest payment, following Scott-Joseph, 2006. The analysis involves the application of econometric techniques to determine the presence of unit roots and co-integration. The regression equation is specified thus:

$$R_t = \alpha + \beta(G_t + i_t D_{t-1}) + \varepsilon_t \text{-----} (12)$$

where:

$\alpha$  = intercept

$R_t$  = government revenues

$G_t$  = government expenditures

$(G_t + i_t D_{t-1})$  = total expenditure, including interest

$D_t$  = debt stock

$i_t$  = interest rate.

Specifying equation (12) in a reduced form, we have:

$$R_t = \alpha + \beta Q + \varepsilon_t \text{-----} (13)$$

where:

$$Q = (G_t + i_t D_{t-1}).$$

Note that  $0 > \beta > 1$ . The necessary and sufficient condition for sustainability is that the series in equation (13) must be co-integrated. If only one of the series is  $I(1)$ , while the other is  $I(0)$ , the two series will diverge, and equation (13) will not hold, implying that public debt is not sustainable. The data for this study is sourced from CBN Statistical Bulletin (various) and the Debt Management Office (DMO) Annual report (2010). The econometric method is employed in this study.

#### 4. Empirical Findings

The stationarity tests using the Augmented Dickey-Fuller (ADF) indicated that the ADF test statistics were less than the critical values at 5% level of significance. Real GDP Growth (g), Government Expenditure ( $G_t$ ), Government Revenue ( $R_t$ ), Total Expenditure including interest (Q) and  $GG_t (= G_t + r_t D_{t-1})$  are stationary at second difference. The ratio of domestic debt to GDP (d), and the ratio of Primary Deficit to GDP (p) are stationary at first difference; while the Real Interest Rate (r), the product of the ratio of the differential of real interest rate and real growth rate upon one plus the real growth, and the one-period lag of the domestic debt stock (Z) are stationary at level. The Error Correction Variable of model I (ECM1) and model II (ECM2) are stationary at level implying that there is a long-term relationship between ( $d_t$ ) and (p) in model I and long-term relationship between ( $R_t$ ) and (Q) in model II. The result in model I is stated below:

$$\Delta d = -0.059928 - 0.941970p - 0.178904Z + 0.036587D_{1t} - 0.030882D_{2t}$$

$$\text{Se} = (0.013545) \quad (0.222174) \quad (0.030796) \quad (0.017883) \quad (0.023948)$$

$$t = (-4.424532) \quad (-4.239789) \quad (-5.809236) \quad (2.045928) \quad (-1.289522)$$

$$R^2 = 0.699701.$$

(Appendix I) The result shows that the model is of good fit judging from the value of the  $R^2$  (0.699). This means that approximately 70% of rate of changes in the domestic debt sustainability in Nigeria (ratio of domestic debt stock to GDP as proxy) are explained by changes in the explanatory variables. The overall model is also significant with the probability value (P-value, 0.000021) of the F-statistic being less than  $\alpha$  (0.05). We equally observe that  $R^2 <$  Durbin-Watson (DW) statistic. The possible explanation of this is that the regression specification is not spurious and there is absence of multicollinearity in the regression specification. After 29 adjusting endpoints with 5 explanatory variables (excluding intercept), that is  $n = 29$  and  $k' = 5$ , the Durbin-Watson (d) calculated test statistic lies above the upper limit of the tabulated (d) test statistic  $d_U = 1.841$  and not below the lower limit  $d_L = 1.080$ . This implies that there is no evidence of positive first-order serial correlation.

The result in model I further shows that the rate of change of primary deficit to GDP (p) is statistically significant (P-value,  $0.0003 < \alpha$ ). The negative sign of the coefficient (-0.942) agree with a priori expectation. This result implies that one percent change in the rate of change of primary deficit-GDP worsened the domestic debt sustainability of Nigeria by 0.942 percent each year within the period under study. Also, the result of the product of the ratio of the differential of real interest rate and real growth rate upon the real growth, and the one-period lag of the domestic debt stock (Z) is significant at 5% level of significance (P-value,  $0.0000 < \alpha$ ). Again, the negative sign of the coefficient (-0.179) agree with a priori expectation. The result implies that one percent change in the product of the ratio of the differential of real interest rate and real growth rate upon the real growth, and the one-period lag of the domestic debt stock caused domestic debt sustainability in Nigeria to worsen by about 0.179 percent each year within the period under study. The dummy variables  $D_1$  and  $D_2$  are not statistically significant. At 5% level of significance,  $D_1$  has a probability value (P-value,  $0.052 > \alpha$ ) and  $D_2$  has a probability value (P-value,  $0.210 > \alpha$ ). The possible interpretation of this result is that there is no significant influence of the leadership style on the management of domestic debt in Nigeria. We can also deduce that politics, whether during military or democratic setting in Nigeria, has been influencing the management of economic variables adversely. The Error Correction Variable (ECM1) is not statistically significant (P-value,  $0.3513 > \alpha$ ) and wrongly signed (0.124) thus cannot be relied upon in explaining the long-term relationship between the domestic debt-GDP and primary deficit-GDP within the period under study.

Looking at the regression result of model II:

$$R_t = -117242.7 + 3.154814Q$$

$$\text{Se} = (174877.6) \quad (0.629962)$$

$$t = (-0.670427) \quad (5.007942)$$

$$R^2 = 0.693825$$

(Appendix II), the  $R^2$  shows a good fit (0.694) of approximately 69%. This means that about 69% of the variation in government revenue ( $R_t$ ) is explained by the variation in total expenditure, including interest (Q). The probability of F-statistic (P-value,  $0.0000 < \alpha$ ) shows that the model is statistically significant. Again, since  $R^2 <$  DW the regression specification of the model is not spurious and there is absence of multicollinearity in the model. The Durbin-Watson calculated test statistic of 2.1448 shows that there is no evidence of positive first-order serial correlation since after 28 adjusting endpoints with 2 explanatory variables, excluding the intercept, tabulated DW statistic are  $d_L = 1.255$  and  $d_U = 1.560$  lower limit and upper limit respectively.

Total expenditure, including interest rate ( $Q$ ) exerted a significant ( $P$ -value,  $0.0000 < \alpha$ ) and positive (3.155) impact on the government revenue ( $R_t$ ). This agrees with a priori expectation. The statistical significant of the coefficient ( $\beta$ ) implies that domestic debt is sustainable (Scott-Joseph, 2006). However, the result reveals that one percent increase in government expenditure improves government revenue by about 3.155 percent. We can observe that government revenue grows faster (marginally, of about 3.155%) than government expenditure within the period under study.

## 5. Implication of Findings For Economic Transformation

Based on the findings of this study, the following policy implications are observed; and equally the following policy options are recommended for adequate management of domestic debt to avoid deepening into unsustainable state:

Primary deficit-GDP is significant and gradually worsening domestic debt sustainability (by about 0.94%, for a percent increase in primary deficit-GDP). This implies that GDP is not growing adequately to support primary deficit. Also the differential of real interest and real economic growth is significant and contributes in worsening domestic debt sustainability in Nigeria. This implies that the benefit of domestic debt is eroded away, over time, with the high cost of doing business in the economy and high inflation rate in the economy. The fact that there exist no significant relationship between domestic debt sustainability and political regime implies that the mentality of leaders, both in the military regime and democratic regime, has not been helpful in managing domestic debt sustainability in Nigeria. The military sees themselves as not accountable to anybody and as such has not contributed to the management of domestic debt sustainability. The democratic leaders, on the other hand, put their party first than better economic management. The 2005 external debt repayment in Nigeria has not significantly affected domestic debt sustainability. Even though that there is no significant influence on the domestic debt sustainability between the pre-debt repayment and post-debt repayment, there is an observed negative impact of the external debt repayment on the domestic debt sustainability. This implies that the debt managers in the country transferred the full weight of debt to domestic scene, with less than appropriate management attention. Indeed, floating more domestic debt instruments were expected to deepen the financial markets and assist monetary policy implementation in the country, yet there is noticed undue rising of the domestic debt stock, therefore worsening the domestic debt sustainability. The fact that government revenue grows marginally over government expenditure tells us that domestic debt is (marginally) sustainable.

To ameliorate the problem of inadequate growth of GDP, proactive measures by the Government should be put in place to encourage the growth of GDP. Government should create conducive environment for private sector to strive, in other to encourage a private-sector led growth. The encouragement of real sector should be another step in boosting the growth of GDP. Effort should be channeled by the government in identifying the real farmers and adequate measures taken to assist them in their agricultural activities. Nigeria is blessed with fertile farmland and as such improving agriculture will improve the country's productivity. The way out to the rising domestic debt stock is for debt managers to consciously and prudently strike a balance between financing budget deficit, implementing monetary policy and developing the financial instruments so as to deepen the financial markets, on one hand and to maintain sustainable domestic debt stock on the other hand. The DMO should adopt a more proactive strategy of managing the country's domestic debt. A preventive, rather than curative, management approach should be adopted by DMO and all other ministries, parastatals and agencies directly or indirectly linked with the management of the country's domestic debt.

There is the need to further increase the revenue base and/or reduce the total expenditure of the country in order for the domestic debt to remain sustainable. Attention of the government should be directed to the non-oil revenue like taxes. Personal Income Tax, Company Income Tax, Petroleum Profit Tax, Stamp Duties, Custom Duties, and Value Added Tax have the potential of improving the revenue base of the country if their respective laws are strengthened to avoid tax evasion and other tax irregularities. Further monitoring and improvement is required to ensure that taxes collected by the tax officials are correctly and timely paid into the coffers of the government. Creation of more job opportunities is required not only to reduce unemployment, but this will further increase the tax base and revenue base of the government and reduce total expenditure of the government. To create more jobs, government should focus their economic policies on diversification of the economy to enhance the performance of the non-oil sector. The non-oil sector in Nigeria presents more potential for job creation than the oil sector.

## 6. Conclusion

The results from this study confirms that domestic debt in Nigeria is sustainable, but with its sustainability being threatened and weakened drastically. On this note, we suggest that the government and public debt managers take proactive measures to avoid the country's domestic debt deepening into unsustainability.

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## APPENDIX

### Appendix I: Regression Result of Model I

Dependent Variable: D(DI,1)

Method: Least Squares

Date: 10/10/13 Time: 10:40

Sample(adjusted): 1982 2010

Included observations: 29 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.059928	0.013545	-4.424532	0.0002
D(P,1)	-0.941970	0.222174	-4.239789	0.0003
Z	-0.178904	0.030796	-5.809236	0.0000
D1	0.036587	0.017883	2.045928	0.0524
D2	-0.030882	0.023948	-1.289522	0.2100
ECM1(-1)	0.123799	0.130138	0.951289	0.3513
R-squared	0.699701	Mean dependent var		-0.002731
Adjusted R-squared	0.634418	S.D. dependent var		0.069755
S.E. of regression	0.042177	Akaike info criterion		-3.311915
Sum squared resid	0.040914	Schwarz criterion		-3.029026
Log likelihood	54.02277	F-statistic		10.71805
Durbin-Watson stat	2.102900	Prob(F-statistic)		0.000021

Source: Regression result using Eviews 3.1

### Appendix II: Regression Result of Model II

Dependent Variable: D(RT,2)

Method: Least Squares

Date: 10/10/13 Time: 14:52

Sample(adjusted): 1983 2010

Included observations: 28 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-117242.7	174877.6	-0.670427	0.5087
D(Q,2)	3.154814	0.629962	5.007942	0.0000
ECM2(-1)	-0.900055	0.162074	-5.553359	0.0000
R-squared	0.693825	Mean dependent var		87890.57
Adjusted R-squared	0.669331	S.D. dependent var		1589415.
S.E. of regression	913974.3	Akaike info criterion		30.38995
Sum squared resid	2.09E+13	Schwarz criterion		30.53269
Log likelihood	-422.4593	F-statistic		28.32631
Durbin-Watson stat	2.144823	Prob(F-statistic)		0.000000

Source: Regression result using Eviews 3.1

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