

# ANALYSIS OF DOMESTIC DEBT: IMPLICATION FOR ECONOMIC GROWTH IN NIGERIA

---

PETER N. MBA, DENIS N. YUNI AND CHUKWUEDO S. OBUROTA

## ABSTRACT

This paper principally analysed the importance of domestic debt on economic growth of Nigeria. The objective of the study is to investigate the relationship between government domestic debt and economic growth and policy that is likely to improve private sector investment and break growth resistance problem. To empirically determine the relationship between domestic debt and some macroeconomic variables, we employed the error correction model procedures following an examination of properties of the time series using unit root and co-integration test. Findings show that domestic debt and credit have a significant and direct relationship with GDP and that debt servicing has inverse relationship with GDP and also government expenditure has a direct but not significant relationship with GDP. The implication of the findings concludes that domestic debt should be invested in productive sector of the economy and more specifically in the real sector and further productivity gain will be achieved in the improvement on capital project expenditure.

**KEYWORDS:** Domestic debt, credit, servicing, investment and economic growth

## 1.0 INTRODUCTION

One of the problems facing contemporary developing nations of the world including Nigeria is arguably the issue of rising domestic debt stock and the unpleasant implications to the economy especially when such debt spiral out of control.

The evolution of government borrowing in Nigeria can be traced back to the financial reform introduced by the colonial administration in 1958 which led to the creation of marketable public securities to finance fiscal deficit. Paragraph 35 of the central Bank of Nigeria ordinance 1958 states that the bank shall be entrusted with issue and management of federal government loans publicly issued in Nigeria upon such terms and conditions as may be agreed within the government and the bank.

Alison *et al.* (2003) pointed out several reasons for government domestic debt, first, for

budget deficit financing, second is for implementing monetary policy (buying and selling of treasury bills in the open market operations) and the third, is to develop the financial sector (supplying tradable financial instruments so as to deepen the financial markets). For this reason, government debt provides a benchmark for insurance of private sector securitized debt such as corporate bonds and treasury bills to build investors confidence through guaranteed or secure return.

In the Late 1970s and early 1980s, most developing countries of Africa including Nigeria experienced unprecedented and severe economic crisis. These crisis manifested in several ways such as persistent macroeconomic imbalances, widening-savings-investment gap, high rates of domestic inflation, chronic balance of payments problems and huge budget deficit (Akpokodje, 1998).

Although different reason have been

---

**Peter N. Mba**, Department of Economics, University of Calabar, Calabar, Nigeria

**Denis N. Yuni**, Centre for Demographic and Allied Research, University of Nigeria, Nsukka, Nigeria.

**Chukwuedo S. Oburota**, Department of Economics, University of Calabar, Calabar, Nigeria

adduced for the slow down of these economies. Green and Villannueza (1998) attributed the problem to the decline in investment rate in the affected economies. It is in the light of this that prominence is being attached to increasing the magnitude of real asset investment in the economy.

Domestic debt may have positive effect on growth in the short-run but in the long-run if the debt service repayment regime exceeds the ability to pay with some probability, it will lead to debt overhang and at a point, the interest becomes higher than the principal and the effect becomes negative. At this point, crowding-out of investment and private sector constraints will arise due to capital shortages.

In Nigeria apart from factors identified to explain the changing domestic debt profile (such as high budget deficit, low output growth, large expenditure growth, high inflation and narrow revenue base), others include oil shocks as defined in terms of price fluctuation and single-commodity economy as a result of non-diversification and expansion of non-traditional export.

The objective of the study therefore, is to investigate the relationship between government domestic debt and economic growth. If there is, which policy is likely to improve private sector investment and break growth resistance problem.

The importance of the study if established will provide policy makers and government with useful information that will avoid debt overhang, choking economic growth and constraining the private sector development.

## 2.0 LITERATURE AND MOTIVATIONS

There is a seeming consensus among some economists that capital accumulation plays a vital role in economic growth. This is commonly discerned from the Harrod –Domar, Neo classical and endogenous growth models {Smith, et al (2003) and Turnovsky, (2000)}. Therefore in economies where capital is deficient, economic growth is most likely to be on the decline. In situations where it is not possible to raise investment levels due to deficient savings and since foreign loans are difficult to obtain, recourse could be made to government contracting domestic debt. Investment as explored in Harrod-Domar model plays a dual role of creating productive capacity as well as

effective demand. When attention has been focused directly on problems of underdevelopment in post-war era, capital shortage has been singled out by economists as a major cause of underdevelopment.

In another study, the traditional neoclassical model postulates that a reasonable level of borrowing contributes positively to economic growth. It considers debt as a substitute for domestic savings and investment and therefore domestic savings and investment are crowded out as a result (Krugman, 1988).

In related studies by Cohen and Sachs (1986) and Cohen (1992), present that endogenous growth models were the driving force for growth and capital accumulation. According to Cohen (1992), debt is positively related to economic growth. Although at higher level the requirements of debt servicing obligation complicate debt accumulation for capital formation and growth. Growth is therefore high at early stages as country borrows, but falls to a lower level. There is no crowding out investment at this level because lenders are more patience and value growth more than debtor countries themselves. These depend on whether the debtor countries are able to implement optimal rescheduling policies to avoid debt overhang. Rescheduling of debt had not solved the problem rather it postpones the doomsday.

Even though the inflow of capital leads to a build up in debt, the resources generated by higher growth should be sufficient to service the debt. However, the logic of capital scarcity in neoclassical model seems to be different with the experience of poor low-income countries. Debt crisis in poor countries cropped up as a result of corruption, poor institution, uncertainty nature of macroeconomic environment, poor debt management strategies, political and social instability, structure of the capital market parameter and high level of financial recklessness (Mba et al;2012)

Another argument on the acquisition of domestic debt was set forth by Diamond (1965). He argued that when government borrows domestically, they use up domestic private savings that would otherwise have been available for private sector lending. In turn, the smaller residual pool of loanable funds in the market raises the cost of capital for private borrowers, reducing private investment demand and hence

accumulation, growth and welfare. In shallow financial markets where firms have limited access to international finance, domestic debt can lead to both swift and severe crowding out of private lending.

Growth theory suggests that higher capital cost would cause the desired capital-output ratio in the economy to fall. As a result, if costs do rise in the longer run, entrepreneurs will have less capital to work with than if interest rates had remained low. This implies that the level of output that the economy will be able to sustain is likely to decline and that during the transition period to the new lower capital-output ratio, the reduced rate of growth of potential output will be temporarily lower.

Examining the contribution of domestic debt, Moss et al; (2006) point out that increasing the reliance on domestic debt financing may help mitigate the problems of external borrowing which has been found to crowd-out domestic institutions by weakening the state's dependence on its citizenry and hence severing accountability channel that forces domestic institution reform. Domestic debt also plays some significant role in the growth of both advanced and emerging market economies. It is useful if it is targeted at generating growth in the productive base of the economy and within sustainable levels.

However, Abbas and Christensen (2007) developed a new domestic database covering 93 low-income countries and emerging markets over the period 1975-2004 to estimate the growth and impact of domestic debt. Moderate levels of non-inflationary domestic debt, as a share of GDP and bank deposits are found to exert a positive overall impact on economic growth. Granger-causality regressions suggest support for a variety of channels: improved monetary policy, broader financial market development; strengthening domestic institution/accountability and enhance private savings and financial intermediation. There is some evidence that above a ratio of 35 percent of bank deposits, domestic debt begins to undermine growth, lending credence to traditional crowding-out and bank efficiency concerns. Importantly, the growth contribution of domestic debt is higher if it is marketable, bears positive real interest rates and is held outside the banking system.

In two separate studies, Emran et al, (2008;2009) studied issues of impact of

government borrowing on the credits provided by the domestic banking sector for 25 developing countries. Results indicate a significant crowding-out effect on the private credits provided by banks. They found that an increase in the government borrowing by one dollar reduces credit to the private sector up to 80 cents in the long-run. They replicate their previous work and investigate crowding out effect for 60 developing countries. Their findings indicate more drastic results. They show empirically that \$1.00 more government borrowing reduces private credit by about\$1.40. According to their view, the crowding-out effect on bank credits may have significant adverse effect on private investment and on economic growth in developing countries where capital markets are not well developed.

Curiously, the empirical evidence of domestic debt at different levels remains ambiguous. Ayyoub *et al.* (2012) investigates the impact of debt on overall GDP, manufacturing sector growth and unemployment situation in Pakistan. Applying the OLS techniques for the period 1989-90 and 2009-10, result shows that these are actual expenditures on debt servicing which are mainly responsible for the worst situation of less productivity, increasing unemployment and less contributing manufacturing sector. Whereas debt and liabilities to GDP ratio is found positively related with the growth of manufacturing sector. They suggest reducing expenditure on debt servicing and utilize debt on more productive expenditures and reduce the overall government deficit in the economy.

Putonoi *et al.* (2013) studied the effect of domestic debt on economic growth in Kenya using quarterly time series data spanning from 2000 to 2010. Findings showed that domestic debt expansion in Kenya for the period under study has a positive and significant effect on economic growth and recommends that the government should encourage sustainable domestic borrowing provided the funds are utilized in productive economic avenues.

In another study, Kumar and Woo (2010) explored the impact of high public debt on long-run economic growth based on a panel of advanced and emerging economies over four decades, taking into account a broad range of determinants of growth as well as various estimation issues including reverse causality and

endogeneity. Findings suggest an inverse relationship between initial debt and subsequent growth, controlling for other determinants of growth: On average, a 10 percentage point increase in the initial level-to-GDP ratio is associated with a slowdown in annual real per capita GDP growth of 0.2 percentage point per year, with the impact being somewhat smaller in advanced economies. Analysis of the components of growth suggests that the adverse effect largely reflects a slowdown in labour productivity growth mainly due to reduced investment and slower growth of capital stock.

Additionally, Checherita and Rother (2010), investigates the average impact of government debt on per-capita GDP growth in twelve euro area countries over a period of about 40 years with effect from 1970. They found that a non-linear impact of debt on growth with a turning point – beyond which the government debt-to-GDP ratio has a deleterious impact on long-term growth at about 90-100% of GDP. Confidence intervals for the debt turning point suggest that the negative growth effect of high debt may start already from levels of around 70-80 percent of GDP, which call for even more prudent indebtedness policies. The channels through which government debt is found to have an impact on the economic growth rate are: (i) Private savings; (ii) Public Investment; (iii) Total factor productivity and (iv) Sovereign long-term nominal and real interest rates. From a policy perspective, the results provide additional arguments for debt reduction to support long term economic growth prospects.

There have also been some studies on domestic debt and growth in Nigeria with varying submissions and results. For instance, Garba (1998) explored the domestic debt data for Nigeria and posits that a flow variable exceeds its reference stock and referred to this anomaly a stock-flow puzzle. Also, Asogwa *et al.* (2005) concluded that domestic government debt in Nigeria has continued to suffer from confidence crisis as market participants have consistently shown greater unwillingness to hold longer maturities. The duo stressed that domestic macroeconomic conditions must improve and become stable to encourage market participants to hold longer maturing debt instrument of government.

Adofu and Abula (2009) identified the effect of domestic debt on growth and recommended that increasing revenue base through tax reform programmes should be encouraged. Egbetunde (2012) found that there is a bi-directional causality between public debt and economic growth in Nigeria and concluded that debt is positively related to economic growth.

It is pertinent to note that the role of debt on economic growth is more contentious in empirical than in theoretical studies, hence to our knowledge, there is the further problem of debt overhang that cropped up as a result of non debt servicing which has not been consciously tackled in previous studies in Nigeria.

### 3.0 Methodology

#### 3.1 Theoretical framework

This study builds its model from the augmented Solow production function (Solow, 1956) that makes output a function of stocks of capital, labour, human capital and productivity (see Mankiw *et al.*, 1992).

However, applying the Cobb–Douglas production function (Cobb and Douglas, 1928)

$$\Psi_{t\tau} = A_{t\tau} K_{\delta t\tau}^{\alpha} L_{t\tau}^{\beta} H_{t\tau}^{\gamma} \dots \quad (1)$$

Where  $\Psi$  is the flow of output,  $K_{dt}$  represent the domestic capital stock,  $L$  is the labour,  $H$  is the human skills capital stock, and  $A$  is the total factor productivity, which explains the output growth that is not accounted for by the growth in factors of production specified.

Taking logs and differentiating equation (1) with respect to time, we obtain the familiar growth equation:

$$\Psi_{t\tau} = a_{t\tau} + \alpha K_{\delta t\tau} + \beta \lambda_{t\tau} + \gamma \eta_{t\tau} \dots \quad (2)$$

Where lower case letters represent the growth rates of output, domestic capital stock, labour and human capital, and  $\alpha$ ,  $\beta$  and  $\gamma$  represent the elasticity of output, domestic capital stock, labour and human skill capital, respectively.

In a world of perfect competition and constant returns to scale, these elasticity coefficients can be interpreted as respective factor shares in total output. Equation 2 is a fundamental growth accounting equation, which decomposes the growth rate of output into growth rate of total

factor productivity plus a weighted sum of the growth rates of capital stocks, human capital stock and the growth rate of labour.

The final form of Equation 2 therefore is

$$\Psi_{it} = a_{it} + \alpha I_{dit} + \gamma h_{it} + \varepsilon_{it} \dots (3)$$

where  $\varepsilon_{it}$  is an error term.

Equation 3 therefore is the basis for our empirical model estimation.

**3.2 Model specification**

In other to address the research objective, this study decomposed GDP into domestic debt and other macroeconomic factors as explanatory variables. Government capital expenditure will be used to proxy capital while population will be used to proxy labour. The significant contribution of Oil to the Nigerian economy propels us to include it. Debt servicing is also included to analyse its impact on economic growth as it is one of the negative consequences of debt and credit. The model is therefore specified as follows:

$$\ln GDP_t = \beta_0 + \beta_1 DDT_t + \beta_2 DCR_t + \beta_3 GCPEXP_t + \beta_4 INTR_t + \beta_5 DBTSVS_t + \beta_6 POP_t + \beta_7 OILREV_t + \mu_t \dots \dots \dots (4)$$

where:

GDP = Gross Domestic Product (proxy for economic growth in Nigeria)

DDT = Domestic debt

DCR = Domestic credit

GCPEXP= Government capital expenditure

INTR = lending rate.

POP = Population

OILREV = Oil revenue

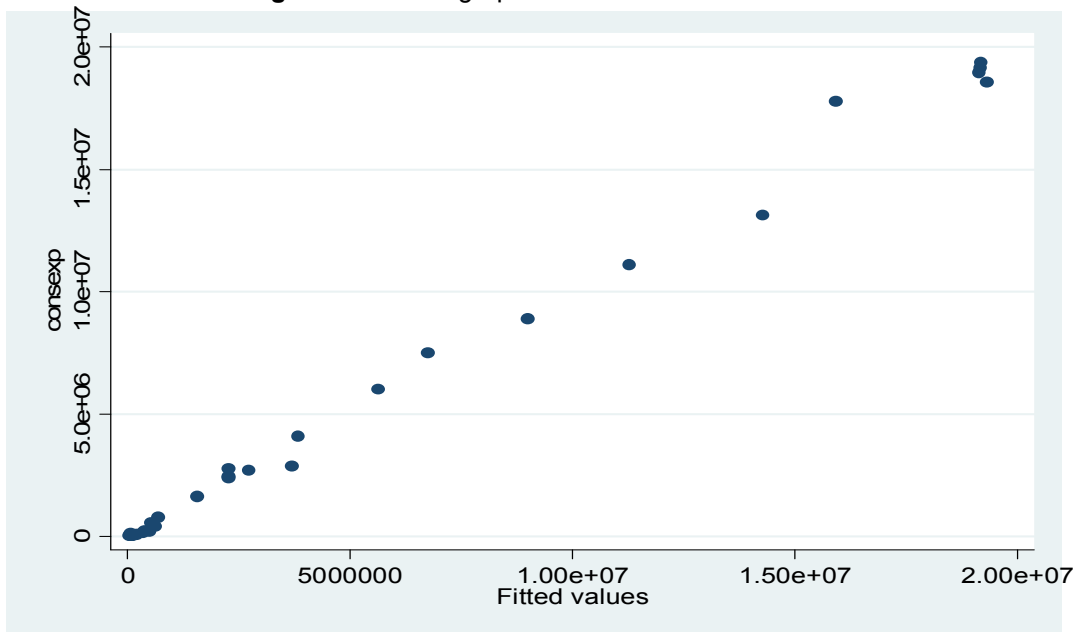
**3.3 Data sources**

The data for the analyses were obtained from the following secondary sources: Central Bank of Nigeria (CBN) statistical bulletin (various issues) and annual reports for various years and the Debt Management Office (DMO). All data series are annual and span through the period, 1980 – 2011.

**4.0 Results and Discussions**

The study uses econometric analysis to ascertain the objectives. To do this, the study first verifies if the assumptions of the classical linear theory are violated. The first key assumption tested is that of linearity as shown below;

Figure 1: Scatter graph of RGDP on its Residual



The graph above illustrates a scatter graph of RGDP against its residual. The dotted lines lie on a 45° line pattern across the graph that shows a highly sensitive linear relationship between the independent variables and the dependent variables. This set of dependent and independent variables therefore validate the linearity assumption thereby making it suitable for a classical linear model. Also, the test of multi-collinearity was performed and none of the variance inflation factors (VIF) for each variable was more than 10, hence suggesting that there exist no severe multi-collinearity. The test for

autocorrelation is discussed below and all this ensure that the regression results are not spurious and therefore viable for recommendation.

The ADF unit root test was conducted to ascertain whether the variables in the model are stationary. The test is inevitable in order to avoid the generation of spurious regression results. Engle-Granger co-integration test, on the other hand was conducted to test for the long-run or equilibrium relationship between the time series. The summary of the stationality and co-integration tests is shown in the table below;

**Table 1: Unit Root and Co-integration Test Results**

Variables	No of lags	ADF Statistic	Critical Values	Order of Integration
Real gross domestic product	0	-3.633	1% = -3.716 5% = -2.986* 10% = -2.624	Stationary at first difference
Domestic credit	0	-5.588	1% = -4.334* 5% = -3.580 10% = -3.228	Stationary at first difference
Domestic debt	0	-6.619	1% = -4.334* 5% = -3.580 10% = -3.228	Stationary at first difference
Debt servicing	0	-4.211	1% = -4.325 5% = -3.576 10% = -3.226	Stationary at level
Governmental capital expenditure	0	-4.050	1% = -3.648* 5% = -2.958 10% = -2.612	Stationary at first difference
Population	0	-3.243	1% = -3.723 5% = -2.989* 10% = -2.625	Stationary at second difference
Lending rate	0	-6.053	1% = -3.716* 5% = -2.986 10% = -2.624	Stationary at first difference
Oil revenue	0	-9.921	1% = -3.716* 5% = -2.986 10% = -2.624	Stationary at first difference
Residual	0	-1.118	1% = -4.325 5% = -3.576 10% = -3.226	Not Stationary at level

The results shown in the table above indicated that the ADF test statistics were greater than the critical values at 5% level of significance. Real GDP, domestic debt, domestic credit, lending rate, oil revenue and government expenditure on

capital are stationary at first difference. Population is stationary at second difference, while the Debt servicing is stationary at level. The fact that not all the variables were stationary at level means there exist unit root which is the

necessary condition for conducting a co-integration test. To test for co-integration the regression was ran and the residual tested and found to be non-significant. This means that there exists no co-integration among the variables. Therefore the necessary condition for the error correction model was satisfied but the sufficient condition; which is the existence of co-integration

was not satisfied. Hence the error correction model cannot be run since the necessary condition (unit root) is satisfied but the sufficient condition (co-integration) is not satisfied. This therefore leads to the simple regression with order of differentials whose results are shown below:

**Table 2: Results of Real Gross Domestic Product on its Determinants**

<b>Government capital expenditure</b>	<b>3.100</b>
(0.192)	
<b>population</b>	<b>-20463.1</b>
(0.504)	
<b>Lendingrate</b>	<b>-31358.1</b>
(0.576)	
<b>Domestic debt</b>	<b>3.674***</b>
(0.000)	
<b>Domestic credit</b>	<b>0.821**</b>
(0.004)	
<b>Debt service</b>	<b>-15172.8</b>
(0.579)	
<b>Oilrevenue</b>	<b>1.575***</b>
(0.000)	
<b>_cons</b>	<b>1440412.3</b>
(0.501)	
<b>R square</b>	<b>0.9903</b>
<b>F probability</b>	<b>0.0000</b>
<b>Durbin Watson (8, 32)</b>	<b>2.055819</b>
<b>p-values in parentheses</b>	
<b>* p&lt;0.05, ** p&lt;0.01, *** p&lt;0.001</b>	

The model above illustrates a representation of the explanatory variables on the dependent variable, as the R square is as high as 0.9903. This shows that 99.03% of the dependent variable- RGDP is explained by the independent variables used in the model. While the F probability is as low as 0.0000 showing that the overall model is significant even at 1% level of significance. Also, the Durbin-Watson value of 2.056 lies in the zone of No auto correlation which shows that there exist no autocorrelation in this regression. Post estimation tests for linearity and multi-collinearity were also made and found to be good, therefore not violating the

assumptions of the classical linear regression theory.

The result illustrates the impact of six predictors on RGDP. The result suggests that domestic debt and domestic credit have a significant and direct relationship with GDP. This is not surprising since they are an external source and can be classified as an input into the economy. It is however good that Domestic debt and credit have a positive relationship with Real GDP, given that a worse scenario will be where it is negatively related to GDP probably due to corruption, misallocation of the funds or otherwise. This will mean that the Debts are not promoting the economy and should be stopped

out-richtly. Nevertheless, debt service has an inverse relationship with real GDP though it is not significant; this reminds us of the negative impacts of debts which is the aftermath of debt servicing and repayment regime. And this ought to be curtailed before it significantly affects real GDP negatively.

Government capital expenditure has a direct but non-significant relationship with Real GDP, which is expected. However the fact that it is not significant opines that government should improve the efforts since capital expenditure is one of the fundamentals of sustainable development. There exists an inverse relationship between lending rate and government expenditure, though it is not significant just like government capital expenditure. Population as well as lending rate has an inverse and non-significant relationship with Real GDP. This could be explained by the fact that quantity of population is increasing without a significant increase in the quality so as to boast the GDP. Oil revenue increases real GDP significantly with every unit change. This is not surprising as it contributes to about 95% of National revenue.

#### 5.0 POLICY IMPLICATIONS AND CONCLUSION

Our results have important policy implication on how to ensure prudent investment of domestic debt in Nigeria. Domestic debt should be invested in productive sectors of the economy and more specifically in the real sector to create employment and reduce poverty incidence in the country. Secondly, debt repayment should be done unasked to avoid overhang in terms of compounding both interest and principal to enable private sector have access to long term credits to drive the economy. Thirdly, government should improve more on capital expenditures such as infrastructures since they are the key to growth and will reduce the cost of production and investment.

The analysis indicates that there are some evidence of positive impact of domestic debt and credit on growth rate of gross domestic product but debt servicing has an inverse relationship with real gross domestic product which has been found to be consistent with some of the findings in the literature. However government capital expenditure is not significant with gross domestic product and this suggest that

government should improve more on capital project development.

#### REFERENCES

- Abbas, S. M and Christensen, J. E., 2007. "The Role of Domestic Debt Market in economic growth: An Empirical Investigation for low income countries and Emerging markets. IMF working paper WP/07/127.
- Adoful, I and Abula, M., 2009. Domestic Debt and the Nigerian Economy, Current Research Journal of Economic Theory.
- Alison, J., 2003. "Key issues for analyzing Domestic Debt sustainability" Debt Relief International 2001 publication 5.
- Akpokodje, G., 1998. "Macroeconomic Policies and Private Investment in Nigeria" In Rekindling Investment for Economic Development in Nigeria by Ben Aigbokhan (ed). Selected papers for the 1998 Annual Conference, the Nigerian Economic Society.
- Asogwa, R. C and Ezema, C. C., 2005. Domestic Government Debt structure, Risk characteristics and monetary policy conduct: Evidence from Nigeria, Final Research Report submitted for "International Research Project on macroeconomic policy challenges for low income countries.
- Ayyoub, M., Chaudhry, I. S and Yaqub, S., 2012. "Debt Burden of Pakistan: Impact and Remedies for future. Universal Journal of Management and Social Sciences.
- Checherita, H and Rother, J., 2010. Domestic Debt, Credit Rationing and Investment, Journal of Development Economics, 2, (1): 12-20.
- Christensen, J. E., 2004. "Domestic Debt Markets in Sub-Saharan Africa", IMF working paper No. 04/46, Washington: International monetary fund.



- Cohen, D., 1992. Low Investment and Large LDC debt in the 1980s. *American Economic Review*, 83, 437-449.
- Diamond, P., 1965. National Debt in a Neoclassical Debt Model”, *Journal of Political Economy*, Vol.55, PP, 1126-1150.
- Egbetunde, T., 2012. Public Debt and Economic growth in Nigeria: Evidence from granger causality, *America journal of Economics* 2, (6): 101-106.
- Emran, M. S and Fazari, S., 2008. Government Borrowing and Private Credit: Evidence from developing countries. *World Bank Working Papers*.
- Emran, M. S and Fazari, S., 2009. Lazy Banks? Government Borrowing and Private Credit in Developing countries. *Institute for International Economic Policy Paper Series*, WP-2009-9.
- Garba, A. G., 1998. “Nigeria Domestic Debt; Resolution of the stock-flow puzzle and generation of credible data set” *NJESS*, Vol. 40; no.3, 313-350.
- Green, J and Villannueza., 1998. “Private Investment in Developing countries: An Empirical Analysis”. *IMF staff papers* 38, (2): 33-58
- Krugman, P., 1988. Financing Versus Forgiving a debt overhang: Some analytical notes. *Journal of Development Economics*, Vol. 29, PP253-268.
- Kumar, M. S and Woo, J., 2010. ”Public Debt and Growth”, *IMF working paper*, WP/10/174.
- Lucas, R. E., 1990. Why does capital flow from rich to poor countries? *The American Economic Review*, 80, (2): 92-96.
- Mba, Peter N., Bell-Gam, M. A and Ubi, P. S., 2012. “Interplay of Foreign Aids, External Debt and Economic Growth: The Nigeria Experience”, *International Journal of Economics and Finance*, Vol.4, No.8.
- Moss, T., Pettersson, N and Walle, N. V., 2006. “An Aid-Institutions Paradox?” *CGD working paper 74* (Washington: Center for Global Development).
- Putanoi, G. K and Mutuku, C. M., 2013. Domestic Debt and Economic Growth Nexus in Kenya, *Current Research Journal of Economic theory* 5, (1): 1-10.
- Smith., 2003. *Economic Development: Eight Edition*, Pearson Education Inc.634-666.
- Solow, R., 1956. “A Contribution to the theory of economic growth”, *Quarterly Journal of economics*, 70: 65-94.
- Turnovsky, S. J., 2000. “Growth In An Open Economy: Some Recent Development” *Conference Papers*, National Bank of Belgium, 1-2.