European Journal of Business and Management
ISSN 2222-1905 (Paper) ISSN 2222-2839 (Online)
Vol.8, No.12, 2016

Effects of Public Debt on Economic Growth in Nigeria (1970-2011)

Dr. Oyedele, Oloruntoba
Department of Banking and Finance, Bowen University, Iwo, Osun State Nigeria

David, Joseph Olusegun
Department of Business Administration, Bowen University, Iwo, Osun State Nigeria

Omojola, Sunday Olusola
Department of Accounting, Bowen University, Iwo, Osun State Nigeria

Abstract
This study attempted in examine the effect of public debt on economic growth in Nigeria between 1970 and 2011. Nigeria had her external demand to the major creditors amounted to 36.2 billion US dollars in the year 2011 at the exchange rate N135 to a US dollar and the total domestic was estimated as 23.9billion US dollars in 2011. The effect of this on the economy called for investigation. Time series data were sought on CBN Statistical Bulletin, 2011 Edition, and World Development Indicators (WDI). The statistical properties of the time series data were properly investigated using appropriate econometric techniques. The results of the cointegration analysis from both Eagle-Granger and Johansen methods of cointegration test, reveal that there exist no long-run relationship between public debt and economic growth in Nigeria. The results from disaggregated public debt showed that there exist a positive but non-significant relationship between per capital domestic public debt and economic growth ((=0.414001; P<0.05) while a negative and not significant relationship was found to exist between per capita external public debt and economic growth (((=0.57431; P<0.050. Also the overall public debt-growth model was not significant ((F=0.182265; P<0.05). The result of the aggregated public debt showed that, there exist a negative and non-significant relationship between per capital debt and economic growth (=0.048849; P<0.05). Also the overall public debt growth model was not significant (F=0.002386; P<0.05). The study further employs the ECM to find out if there is evidence of any dynamic relationship between public debt and economic growth during the period under investigation, the result of the ECM estimated provides no evidence in support of the existence of dynamic relationship between public debt (aggregated and disaggregated) and economic growth. Also, from the disaggregated approach, only 11.1 percent of the variation in economic growth is explained by the model while the percentage of the variation in economic growth explained by the new model increases to 44.4 percent when aggregated approach was used. This results show that debt finance is not employed as a feasible fiscal option to foster economic growth in Nigeria during the period under investigation. It is apparent with this result that debt finance does not produce the desired growth-effect in Nigeria. Government needs to be more transparent and committed to the course of the masses by putting borrowed money into highly productive sectors that will improve the productive capacity of the economy.

1.0 INTRODUCTION

Empirical literature confirmed that certain levels of public debt that would help finance productive investment are expected to enhance economic growth and reduce poverty rate though beyond certain levels an additional indebtedness might hinder growth and consequently increase poverty rate in the economy. Many developed countries have experienced a systematic increase in government expenditure over the past few decades. This has resulted to a large budget deficit. A situation in which planned expenditure exceeds planned revenue, expenditure growth rate is greater than the growth rate of revenue raised through taxation; hence the increase in government expenditure has been financed by debt leading to high debt profile for most developing economies. Two very crucial questions have been raised ie are budget deficits bad for growth? If yes, how do we check the persistent budget deficits? These two questions have contributed to a growing body of literature and remain unresolved issues theoretically as well as empirically, Hemming et al.(2002) and Briotti (2005). Three major opposite views were established.

Keynesian economics suggests that budget deficit has, by the working of the multiplier, a positive effect on the macroeconomic activity. Recently, within the framework of endogenous growth models, budget deficits can impact long-term growth positively if they are used to finance growth enhancing expenditures, for instance, public infrastructure, research and development, education and health (Barro, 1990; Romer, 1990; Lucas, 1988). Contrary to this positive view, neoclassical economics hold contrary view that budget deficits impact long-term economic growth negatively. They argue that budget deficits have detrimental effects on long-term economic growth by competing with private sector (crowding out effect). Finally, the Ricardian equivalence approach demonstrated by Barro (1974) argues that variation in budget deficit is neutral to

economic growth (neutrality of fiscal deficit).

These contrasting views have made less attractive the use of public expenditures for stimulating economic activity and created a common fear of deficits. Today, the conventional wisdom seems to be that deficits are not desirable because of their adverse macroeconomic effects. Iyoha (2002) asserted that the problem confronting Nigeria economy is best appreciated by undertaken a comprehensive analysis of Nowzad and Williams (1981), debt indicators are measures of debt burden and they can be used as analytical tools for policy purpose and may also be used for descriptive or prescriptive purposes. According to Ibrahim et al, (2006), the problem of debt in Nigeria is further compounded by her inability to service her debt at the required and specific periods. The issue of debt management in Nigeria formed a major concept to the economic policy of Structural Adjustment Programme which was adopted in Nigeria right in the year 1985. Iyoha (2002) reiterates that one disturbing aspect of the macroeconomic management of the Sub-Sahara Africa in the 1980's was the failure of the economy to respond favourably to the administrations of structural adjustment programme (SAP) which was recommended by the World Bank and IMF as an antidote to the economic crisis brought about by the debt crisis. Nigeria being an integral part of the Sub-Sahara Africa had her external debt to the major creditor to the tune of the 50 billion US dollars in 2004 while her domestic debt as at 2001 stood at 8.9 billion dollars (CBN Statistical Bulletin, 2009 Edition).

Nigeria economy has been characterized with tremendous debt accumulation without any significant impact on the economy. This was due to corruption, ineptitude, unethical behaviours and poor planning policy formulation and implementation. The continuing stay in power of the so-called military juntas and the political instability experienced in the post independence era have worsening matters as debt burden continues to grow without any meaningful impact on growth. In the last quarter of the year 2005, Nigeria had a sign of relief when she was granted some debt pardon by her major creditor: the Paris Club. Consequently, the issue of debt relief has received mixed reactions from different stakeholders in the economy, but the fact remains that until empirical relationship between public debt and economic growth over the period is established, appraisal of debt relief issue as experienced by Nigeria may be vague. Also, the issue of debt finance has always received varying responses from the stakeholders, some have a kind of optimistic view about its effect on growth while other have a pessimistic view about its effect on growth and people's welfare. To some, the fear of the debt burden is the beginning of wisdom. Two schools of thought viz; the pessimist and the optimist usually emerge; the first school of thought resists such attempt on the part of government while the second school of thought sees it as a blessing and hence demonstrates a strong support for such a fiscal option. This study shed more light in an attempt to resolve the controversy surrounding the use of debt finance as a fiscal option in Nigeria. The rest of this paper is organized as follows: Section 2 discusses the theoretical and empirical literature regarding the effect of public debt on economic growth. Section 3 presents the data and the econometric methodology, Section 4 presents results and discussion while section 5 concludes.

2.0 THEORETICAL AND EMPIRICAL LITERATURE REVIEW

Theoretically, tremendous efforts have been made to explain theoretical models of debt in relation to economic growth measured by real per capita GDP. The classical economists did not give much attention to the issue of debt since government is seen as the largest debtor in an economy. However, they emphasized on loan as credit, interest rate as cost of credit and the relationship between demand for credit and interest rate. They argued that the market forces and not the government should determine the rate of interest i.e the invisible hand of forces of demand for and supply of loanable funds (Thirlwall, 1998). However, it is no gain saying any longer that this position of classical economist no longer holds in most developing countries where government is playing and is expected to play more active roles in the management of the economy. More importantly, the political, social and institutional assumptions underlying classical theory are not valid in the developing countries ie. the underlying assumptions of classical theory are not practically applicable to the prevailing conditions in the developing countries Nigeria inclusive.

Laisser-faire has lost its significance in such economies. Competitive market system has been gradually replaced by monopoly, which has tended to perpetuate and strengthen the vicious circle of poverty. Therefore, development is possible through government intervention rather than through laissez-faire (Jhigan, 1995). According to Keynes and the Keynessians, government participation in the economy is strongly a must, this consequent upon the incident of the great depression of 1930's in Great Britain. Fiscal policy came into the lime light through government participation in the process of economic management. Fiscal management involves government expenditure and revenue. Iyoha (2002) therefore asserted that debt management is an integral part of fiscal management.

Analysis of the short-run and long-run effects of budgetary policies is one of the most controversial issues in modern macro economics. In representative household models with intergenerational bequests, public debt has no effect on households levied to finance interest payments. In overlapping generations models, however, households do not take full account of the higher taxes that future generations will pay to finance the

interest payments, so public debt does affect the wealth of the current generation. Budgetary policies therefore have no effect on private consumption, output or the capital stock in a representative household economy, while in an overlapping generation economy they do.

In traditional models, economic growth is driven by exogenous population growth or labour-augmenting technical progress, and in overlapping generation versions budgetary policies affect steady-state levels of per capital consumption, capital and output, but not growth. For a simple overlapping generation model, a steady-state increase in the public debt / output ratio financed by lump-sum taxes reduces long-run growth and increases the share of private consumption in national income. A steady-state, balanced-budget increase in the share of government consumption reduces both long-run growth and the share of private consumption. In contrast, for a representative household economy, the substitution of debt for tax finance has no effect and a balanced-budget increase in the share of government consumption crowds out private consumption one-for-one, with no effect on growth.

According to (Ergun Dogan, 2006), crowding out effect is referred to as a well known negative effect of increasing government expenditures on private consumption and investment via an increase in the real interest rate. This would be the case if a government deficit arises, and the deficit is financed by domestic debt. Debt financing might lead to a credit squeeze, and a subsequent increase in real interest rates. The result, at least, theoretically, is the crowding out of private consumption and investment. Alogoskoufis and van der Ploeg assess the dynamic effects of budgetary policies; a temporary tax cut leads to a rise in the private consumption / income ratio and an adjustment path with rising ratios of public debt and private consumption to income. Growth jumps downwards and continues falling to a new equilibrium long-run growth rate. Thus a deferral of taxes and the consequent debt accumulation produce both short-run and long-run reductions in growth, which may explain the low correlations between real interest rates and both budget deficits and growth often found in empirical studies using overlapping generation exogenous growth models. Once growth is endogenous, real interest rates are determined solely by the user cost of capital and are unaffected by budgetary policies, while the difference between the real interest rate and the growth rate depends not only a preferences but also on budgetary policies, so there is no particular reason for them to be highly correlated. These results suggest that budgetary policies far from being neutral have long-term effects on economic growth.

3.0 DATA AND METHODOLOGY

The data for this study include real per capita GDP, per capita domestic debt, per capita external debt and per capita public debt (aggregated). The study formulated econometric models and adopted adequate econometric techniques. These techniques include; unit root test, cointegration test and ordinary least square method of estimation in order to examine the effect of public debt on economic growth in Nigeria. This method of analysis makes use of the regression analysis based on the formulated models using the theoretical framework.

RPCGDP = f(PCDPDBT, PCEXTPDBT)…….(1)

The econometric model is therefore specified as follow:

$RPCGDP_t = \beta_o + \beta_1 PCDPDBT_t + \beta_2 PCEXTPDBT_t + \varepsilon_1 t$…….(2)

TPDBT = DPDBT + EXTPDBT …….(3)

RPCGDP = f(PCTPDBT)…….(4)

$RPCGDP_t = \alpha_o + \alpha_1 PCTPDBT_t + \varepsilon_2 t$……..(5)

RPCGDP = RGDP/POPULATION……. (6)

PCDPDBT = DPDBT/POPULATION……..(7)

PCEXTPDBT = EXTPDBT/POPULATION ….. (8)

PCTPDBT = TPDBT/POPULATION ……..(9)

Where:

RPCGDP = real per capita GDP (a proxy used to measure economic growth)

PCDPDBT =per Capita Domestic Public Debt (disaggregated)

PCEXTPDBT = Per capita External Public Debt (disaggregated)

PCTPDBT = Per capital Total Public Debt (aggregated)

$\varepsilon_1 t$and $\varepsilon_2 t$ are the stochastic error terms.

β_o, β_1, β_2, α_o, α_1, are the regression parameters. Equation 2 will be estimated to capture the relationship between the RPCGDP (dependent variable) and the independent variables (Public debt (disaggregated): PCDPDBT and PCEXTPDBT), using the ordinary least square (OLS) estimation technique, Equation 5 will also be estimated to capture the effect of public debt (aggregated) on real per capita income. The contribution of each independent variable to the variation in the dependent variable will be evaluated from the regression coefficients ((o, (1, (2, (o, (1) and their usefulness will also be tested for. The proportion of the variation in the dependent variable explained by variation in independent variables will also be estimated, using the coefficient of determination.

The ECM version of equation 2 is thus specified as given by equation (10) shown below

$\Delta RPCGDP_t = \gamma_o + \gamma_1 \Delta PCDPDBT_t + \gamma_2 \Delta PCEXTPDBT_t + \gamma_3 (RPCGDP_{t-1} - \psi_1 PCDPDBT_{t-1} - \psi_2 PCEXTPDBT_{t-}$

$_1$) + u_t……10

The dependent variable, RPCGDP is expected to change between t-1 and t as a result of changes in the values of the explanatory variables (PCDPDBT and PCEXTPDBT), between t-1 and t, and also in part to correct for any disequilibrium that existed during the previous period. The error correction term represented by ($RPCGDP_{t-1}$ - $\psi_2 PCEXTPDBT_{t-1}$) in equation (10) above has the coefficient (β which describes the speed of adjustment back to equilibrium, and its strict definition is that it measures the proportion of last period's equilibrium error that is corrected for. The coefficients $-\psi_1$ and $-\psi_2$ describe short-run relationship between changes in y as a result of changes in any of the explanatory variables (PCDPDBT and PCEXTPDBT). The coefficients $-\psi_1$ and $-\psi_2$ describe long-run relationship between changes in RPCGDP as a result of changes in any of the explanatory variables (PCDPDBT and PCEXTPDBT).

To examine the existence or otherwise of long-run equilibrium relationship as well as the short-run dynamic between public debt (disaggregated) and economic growth, the following error correction model will be estimated:

$\Delta RPCGDP\iota = \gamma_o + \gamma_1 \Delta PCDPDBT\iota + \gamma_2 \Delta PCEXTPDBT\iota + ECM_{t-1} + \mu_{1t}$…….(12)

Similarly, in order to examine the existence or otherwise of long-run equilibrium relationship as well as the short-run dynamic between public debt (aggregated) and economic growth, the following error correction model will be estimated:

$\Delta RPCGDP\iota = \gamma_o + \gamma_1 \Delta PCDPDBT\iota + ECM^2_{t-1} + \mu\varepsilon_{2t}$…….(13)

4.0 RESULTS AND DISCUSSION

4.1 The Unit root test

The study begins by identifying the order of integration, I (d), of the time series data. Phillips-Perron (1988) unit root test PP approach was employed for this purpose. Phillips-Perron test is designed to be robust for the presence of autocorrelation and heteroscedasticity. The regression equation for the Phillips-Perron (AR(I) process) is given by:

$\Delta y_t = \varphi_o + \varphi y_{t-1} + \varepsilon_t$

Where ε_t is a white noise error term assumed to be stationary with mean zero and constant variance. The test was carried out to reject the null hypothesis of a unit root ($\varphi = 1$). From the data collected on real GDP, population growth, domestic and external public debt, real per capita income, per capita public debt (aggregated), per capita domestic public debt and per capita external public debt (disaggregated) were computed, the refined data obtained were later subjected to various econometric analysis. From the results in table 1a, it is revealed that all variables in their level form exhibit a 1 (1) process and of course were differenced once in order to make them becoming a (o) process. This indicates that variables are integrated of order one.

Table 1a: Phillip-Perron Unit Root Test (all variables are expressed in log form

Variable	PP-statistic at level	MacKinnon 5% Critical value	PP-statistic at First Difference	MacKinnon 5% Critical value	Order of Integration
Log (RPCGDP)	-2657470	-2.9378	-5.736860	-2.9399	I (I)
Log (DPDBTPC)	-0.593985	-29378	-4.540202	-2.9399	I (I)
Log (EXTPBTPC)	-1.619779	-2.9378	-4.688687	-2.9399	I (I)
Log (TOTPBTPC)	-1.348415	-2.9378	-4.255625	-2.9399	I (I)

Source: computed by the author

In order to determine if there is cointegrating relationship between public debt and economic growth in Nigeria, the study employed both Eagle-Granger and Johansen cointegration approaches, the results from the two approaches indicate that there is no long-run relationship between public debt and economic growth in Nigeria.

Cointegration Test using Eagle-Granger cointegration test approach.

The study first run the OLS at the level of all variables by estimating equation 2. The result of which is shown table 1b, the residual obtained from this regression was tested for unit root; the results shown in table 2a and table 2b indicate that the residual of the regression is non stationary (ADF statistic = 2.664206;5% Mackinnon critical value = -2.9399; PP test-statistic = -2.473138; 5% Mackinnon critical value -2.9378). This implies that there is no long-run relationship between public debt and economic growth in Nigeria.

Table 1b:OLS result at level
Dependent Variable : LOG (RPCGDP)
Method: Least Squares
Sample:1970-2011
Included observations: 40

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG (PCDPDBT)	0.237037	0.133246	1.778935	0.0835
LOG (PCEXTPDBT)	0.167388	0.097368	1.719134	0.0939
C	-3.545606	0.371715	-9.538516	0.0000
R-squared	0.752996	Mean dependent var		-6.481124
Adjusted R-squared	0.739645	S.D dependant var		1.233603
S.E of regression	0.629446	Akaike infor criterion		1.984087
Sum squared resid	14.65951	Schwarz criterion		2.110753
Log likelihood	-36.68173	F-Statistic		56.39763
Durbin-Watson stat	0.343245	Prob (F-Statistic)		0.000000

ECM is the residual of the level regression result above. The residual is tested for unit root using Augumented Dickey Fuller test-statistic and the result is shown below:

Table 2a: Cointegration Test using Eagle-Granger cointegration test approach

ADF Test Statistic – 2.664206	1%	Critical Value	=	-3.6117
	5%	Critical Value		-2.9399
	10%	Critical Value		-2.6080

*MacKinnon critical values for rejection of hypothesis of a unit root
Augumented Dickey –Fuller Test Equation
Dependent Variable : D (ECM)
Method: Least Squares
Sample (adjusted) :1970-2011
Included observations: 38 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ECM (-1)	-0.258898	0.097176	-2.664206	0.0116
D(ECM(-1)	0.116257	0.158029	0.735667	0.4668
C	0.034931	0.056130	0.622327	0.5378
R-squared	0.169139	Mean dependent var		0.031016
Adjusted R-squared	0.121661	S.D dependant var		0.367277
S.E of regression	0.344211	Akaike infor criterion		0.780535
Sum squared resid	4.146850	Schwarz criterion		0.909818
Log likelihood	-11.83016	F-Statistic		3.562481
Durbin-Watson stat	2.015740	Prob (F-Statistic)		0.039062

ECM is the residual of the OLS result in Table 2a. The residual is tested for unit root using Phillips-Perron statistic and the result is shown in Table 2b:

Table 2b: Cointegration test using Eagle-Granger cointegration test approach

PP Test Statistic -2.473138 1% Critical Value* -3.6067
5% Critical Value -2.9378
10% Critical Value -2.6069
*MacKinnon critical values for rejection of hypothesis of a unit root.
Lag truncation for Bartlett (Newey-West suggests:3)
Kernel: 3
Residual variance with no correction 0.109584
Residual variance with correction 0.104362

Phillips-Perron Test Equation
Dependent Variable : D (ECM)
Method: Least Squares
Sample (adjusted) :1970-2011
Included observations: 38 after adjusting endpoints

Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
ECM (-1)	-0.221377	0.088769	-2.493838	0.0172
C	0.031689	0.054422	0.582287	0.5639
R-squared	0.143900	Mean dependent var		0.031885
Adjusted R-squared	0.120762	S.D dependant var		0.362453
S.E of regression	.339864	Akaike infor criterion		0.729378
Sum squared resid	4.273778	Schwarz criterion		0.814689
Log likelihood	-12.22287	F-Statistic		6.219230
Durbin-Watson stat	1.827924	Prob (F-Statistic)		0.017233

In order to validate the result obtained from the Eagle-Granger approach to cointegration test, the study employed Johansen cointegration test approach. This approach compares the likelihood Ratio to 5 percent Critical Value to determine the number of cointegration vector. The result in table 3 shows that the Likelihood Ratio rejects any cointegration at 5% significant level. This indicates that there exists no long-run relationship between public debt and economic growth in Nigeria.

Table 3: Result of Johansen Cointegration test

Sample (adjusted) :1970-2011
Included observations: 38
Test assumption: Linear deterministic trend in the data
Series: LOG(RPCGDP) LOG(PCDPDBT) LOG (PCEEXTPDBT) LOG (PCTOTPDBT)
Lags interval: 1 to 1

Eigenvalue	Likelihood Ratio	5 Percent Critical Value	1 Percent Critical Value	Hypothesized No. of CE (s)
0.343191	32.04865	47.21	54.46	None
0.219754	16.07491	29.68	35.65	At most 1
0.148798	6.645367	15.41	20.04	At most 2
0.013678	0.523347	3.76	6.65	At most 3

*(**) denotes rejection of the hypothesis at 5% (1%) significance level
L.R. rejects any cointegration at 5% significance level
From the results in table 4a, there exist a positive but non-significant relationship between per capita domestic public debt and economic growth (t= 0.414001; P>0.05) while a negative but not significant relationship was found to exist between per capita external public debt and economic growth (t = -0.504261; P>0.05). Also the overall public debt-growth model was not significant (F = 0.182265; P >0.05). This result implies that domestic public debt has positive influence on economic growth while external public debt has negative influence on economic growth in the short-run.
The Durbin-Watson statistic of 1.874537 indicates absence of serial autocorrelation.

Table 4a: OLS Result (Disaggegated public debt) after correction for unit root
Dependent Variable : D (LOG(RPCGDP(-1))
Method: Least Squares
Sample (adjusted) :1970- 2011
Included observations: 38 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG (PCDPDBT)	0.149107	0.360161	0.414001	0.6814
LOG (PCEXTPDBT)	-0.0057431	0.113891	-0.504261	0.6172
C	0.091683	0.085509	1.072211	0.2910
R-squared	0.010308	Mean dependent var		0.107346
Adjusted R-squared	-0.046246	S.D dependant var		0.348151
S.E of regression	0.356111	Akaike infor criterion		0.848507
Sum squared resid	4.438521	Schwarz criterion		0.977790
Log likelihood	-13.12163	F-Statistic		0.182265
Durbin-Watson stat	1.874537	Prob (F-Statistic)		0.834166

The estimated equation thus is shown as follows:
Estimation Command
LS(LOG(RPCGDP(-1) D(LOG(PCDPDBT(-1) D(PCEXTPDBT(-1) C
Estimation Equation:
D (LOG(RPCGDP(-1) = C(1) *D(LOG (PCDPDBT(-1) + C(2)*D(LOG(PCEXTPDBT(-1_ + C(3)
Substituted Coefficients:
D(LOG(RPGDP(-1) = 0.1491070906*D(LOG(PCDPDBT(-1) – 0.0574306736*D (LOG(PCEXTPDBT(-1) + 0.09168340129
From the results in table 4b, there exist a negative and non-significant relationship between per capita public debt and economic growth (t=0.048849; P>0.05). Also the overall public debt-growth model was not significant (F=0.002386; P>0.05). The Durbin-Watson statistic of 1.917962 indicates absence of serial autocorrelation. The estimated equation thus is shown below:

Table 4b: OLS Result (Aggregated public debt) after correlation for unit root
Dependent Variable : D (LOG(RPCGDP(-1))
Method: Least Squares
Sample (adjusted) :1970-2011
Included observations: 38 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LOG(PCTOTPDBT(-1)	-0.010155	0.207894	-0.048849	0.9613
C	0.109139	0.068009	1.604771	0.1173
R-squared	0.000066	Mean dependent var		0.107346
Adjusted R-squared	-0.027710	S.D dependant var		0.348151
S.E of regression	0.352942	Akaike infor criterion		0.806170
Sum squared resid	4.484452	Schwarz criterion		0.892359
Log likelihood	-13.31724	F-Statistic		0.002386
Durbin-Watson stat	1.917962	Prob (F-Statistic)		0.961309

Estimation Command
LS(LOG(RPCGDP(-1) D(LOG(PCDPDBT(-1) D(PCEXTPDBT(-1) C
Estimation Equation:
D (LOG(RPCGDP(-1) = C(1) *D(LOG (PCDPDBT(-1) + C(2)
Substituted Coefficients
D(LOG(RPCGDP(-1) = -0.01015549159*D (LOG(PCTOTPDBT(-1) + 0.1091393951

Analysis of Public Debt-Economic Growth nexus within the frame work of error correction model.
To improve the robustness of the result, the study further by estimating the error correction models specified in equations 12 and 13 above to model public debt growth relationship using both aggregated and disaggregated approaches. The result shows that there is positive but non-significant relationship between per capita domestic public debt and economic growth (t= 200605; P > 0.05). This implies that per capita domestic public debt even though with positive impact does not significantly influence growth in the short-run. On the other hand, the result revealed that there is a negative and non-significant relationship between per capita external public debt and economic growth (t=0805243; P>0.05). this implies that per capita external public debt with negative impact does not significantly influence economic growth in the short –run. However, while the domestic debt

influenced economic growth positively, external debt exerts a negative influenced economic growth in Nigeria. The ECM coefficient even though significant at 5% critical value but it is positively signed. This indicates that public debt and economic growth diverge instead of convergence relation. This confirms that a long-run equilibrium relationship does not exist between public debt and economic growth in Nigeria.

Table 5a: ECM Result (Disaggregated public det)
Dependent Value: D(LOG(RPCGDP(-1))
Method: Least Squares
Sample (adjusted): 1970-2011
Included observation: 38 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D (PCDPDBT (-1)	0.073977	0.368769	0.200605	0.8422
D (PCEXTPDBTD(-1)	-0.089097	0.110647	-0.805243	0.4263
ECM (-1)	0.184778	0.101943	1.812551	0.0787
C	0.104530	0.086027	1.215080	0.2327
R-squared	0.111358	Mean dependent var		0.107346
Adjusted R-squared	0.032949	S.D dependant var		0.348151
S.E of regression	0.342368	Akaike infor criterion		0.793438
Sum squared resid	3.985335	Schwarz criterion		0.965816
Log likelihood	-11.07533	F-Statistic		1.420215
Durbin-Watson stat	1.715351	Prob (F-Statistic)		0.253812

Table 5a: ECM Result (Disaggregated public debt)
Dependent Value: D(LOG(RPCGDP(-1))
Method: Least Squares
Sample (adjusted): 1970-2011
Included observation: 38 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D (PCDPDBT (-1)	0.073977	0.368769	0.200605	0.8422
D (PCEXTPDBTD(-1)	-0.089097	0.110647	-0.805243	0.4263
ECM (-1)	0.184778	0.101943	1.812551	0.0787
C	0.104530	0.086027	1.215080	0.2327
R-squared	0.111358	Mean dependent var		0.107346
Adjusted R-squared	0.032949	S.D dependant var		0.348151
S.E of regression	0.342368	Akaike infor criterion		0.793438
Sum squared resid	3.985335	Schwarz criterion		0.965816
Log likelihood	-11.07533	F-Statistic		1.420215
Durbin-Watson stat	1.715351	Prob (F-Statistic)		0.253812

Table 5b: ECM Result (Disaggregated public debt)
Dependent Value: D(LOG(RPCGDP(-1))
Method: Least Squares
Sample (adjusted): 1970-2011
Included observation: 8 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D (LOG (TOTPBDBT(-1))	0.028286	0.59041	0.479079	0.6521
D (PCEXTPDBTD(-1)	0.0344448	0.024780	-1.390144	0.2232
C	0.052465	0.020568	2.550752	0.0512
R-squared	0.444111	Mean dependent var		0.067628
Adjusted R-squared	0.221755	S.D dependant var		0.046076
S.E of regression	0.040648	Akaike infor criterion		-3.287749
Sum squared resid	0.008261	Schwarz criterion		-3.257959
Log likelihood	16.15100	F-Statistic		1.997299
Durbin-Watson stat	2.472358	Prob (F-Statistic)		0.230394

Estimation command:
LS D(LOG(RPCGDP(-1) D(LOG(TOTPBDBT(-1) ECM(-1) C D(LOG(RPCGDP(-1) = C(1) * D(LOG(TOTPBDBT(-1) +C(2) " ECM2)-1) + C(3)
Substituted Coefficient

D)LOG(RPCGDP)-1) -= 0.028285525256*D(LOG(TOTPBDBT(-1) + 0.03444804388 *ECM2(-1) + 0.05246479609

Conclusion

This study was carried out to determine the effect of public debt on economic growth in Nigeria between 1970 and 2011. time series data were extracted from Central Bank of Nigeria CBN Statistical Bulletin 2010 Editiion and World Development Indicator (WDI). Real income per head of the population was used as a proxy to measure economic growth over the period. Domestic public debt and external public debt per head of population (disaggregated) as well as Public debt per head of the population (aggregated) were computed and used as explanatory variables. The results of the cointegration test, reveal that there exist no long-run relationship between public debt and economic growth in Nigeria. The result of the regression analysis show that domestic public debt has a positive but not significant influence on economic growth in the short-run while external public debt has a negative and non-significant impact on economic growth in Nigeria during the period under investigation. It is apparent with this result that debt finance does not produce the desired growth effect in Nigeria. Though from the result, it is true that a positive relationship was found to exist between domestic public debt and economic growth but such relationship is not significant. It shows that debt finance is not a feasible fiscal option that can be used to foster economic growth in Nigeria. The reason why public debt has not explained much of the variations in economic growth in Nigeria might be as a result of corruption and embezzlement of public fund. Bulks of the money borrowed were not used for the purpose in which they were supposed to be used. Embezzlement and diversion of public funds have characterized our fiscal behaviour. For public debt to have a positive and significant growth effect in Nigeria, governments need to be more transparent and commitment to the course of the masses by putting such money into highly productive sectors that will improve the productive capacity of the economy. The cost of such debt in term of interest / debt servicing should not exceed its benefit i.e the returns to the public audience. Government should not violate the term and agreement entered into at the point of taking such loan. Government should be able to use the money judiciously and meet up with the arrangement earlier made us to when and how to pay back so that it wont become a burden to the generation that take such loan and in-coming generations. As a matter of priority, government should put up machinery for effective debt management that will prevent resurgence of after-debt economic crisis in Nigeria.

REFERENCES

Akpan, N.I. (2005). "Government Expenditure and Economic Growth in Nigeria: A Disaggregated Approach" Central Bank of Nigeria Financial Review.

Apania, A. and A. Turrini (2008), "Government Expenditure and Economic Growth in the EU: Long Run Tendencies and Short-Term Adjustment". Economic Papers 300, European Commission, February.

Babatunde, M.A. and R.A. Adefabi (2005), "Long Run Relationship between Education and Economic Growth in Nigeria: Evidence from the Johansen 's Cointegration Approach". Paper presented at the Regional Conference on Education in West Africa Constraints and Opportunities Dakar; Senegal, November 1st – 2nd Cornell University /CREA / Ministerede l'Educatin du Senegal.

Baghestani, H. McNown, R. (1994), "Do Revenue or Expenditures Respond to Budgetary Disequilibria?" South, Econ. J. 61(2): 311-322.

Baghestani, H. AbuAl-Foul, B. (2004), "The Causal Relation between Government Revenue and Spending: Evidence from Egypt and Jordan". J. Econ. Finance 28 (2) 260-269.

Barro, R.J. (1974), "Are Government Bonds Not Wealth," Journal of Political Economy 81: 1095-117.

Barro, R.J. and X-Sala-I-Martin (1992). "Public Finance in Models of Economic Growth", Review of Economic Studies, 59, 645-661.

Bath, K.S., Nirmala, V. and Kamaiah, B. (1993). "Causality between Tax Revenue and Expenditure of Indian States". Indian Econ. J., 40 (4); 109-117.

Blackley, P.R. (1986). "Causality between Revenues and Expenditures and the size of the Federal Budget", Pub. Finance Q., 14: 139-156.

Bohn, H. (1991) "Budget Balance through Revenue or Spending Adjustments: Some Historical Evidence for the United States". J. Mon Econ., 27:333-359.

Buchanan, J.M. and Wagner, R.W. (1978). "Dialogues Concerning Fiscal Religion", J. Mon. Econ., 4:627-636

Briotti, M.G. (2005), "Economic Reactions to Public Finance Consolidation: A Survey of the Literature", European Central Bank, Occasional Paper Series, No. 38.

Garcia S. et. al (1999). "Balancing Budget through Tax Increases or Expenditure Cuts: Is it Neutral?"

Gounder, N., P.K. Narayan and A. Prasad (2007). "An Empirical Investigation of the Relationship between Government Revenue and Government Expenditure: The Case of Fiji Islands", International Journal of Social Economic.

Hasan, S. Y. and A. H. Sukar (1995), "Short and Long-Run Dynamics of Expenditures and Revenues and the Government Budget Constraint: Further Evidence", Journal of Economics " Causation, Spending, and Taxes: Sand in the Sandbox or Tax Collector for the Welfare State." American Economic Review Fiscal Policy in Europe, 1991-2003. An Evidence –Based Analysis, CEPR, London.

Iyoha, M.A. (2002). "Microeconomic: Theory and Policy", Benin City: March Publisher Nigeria.

Jhigan, M.L. (1995). "Development Economics for Developing Economies"". New Delhi India.

Koutsoyiannis, A. (1977). Theory of Econometrics". London: Macmillan Press Ltd, and Basingstoke Associated Company.

Kneller, R., Bleanye, M. and N. Gemmell (1999). "Fiscal Policy and Growth: Evidence from OECD Countries". Journal of Public Economics.

Kolluri, B.R., M.J. Panik and M.S. Wahab (2000), "Government Expenditure and Economic Growth: Evidence from G7 Countries". Applied-Economis.

Koren, S., and A. Stiassny (1998), "Tax and Spend, or Spend and Tax? An International Study". Journal of Policy Modeling 20: 163-91.

Loizides, J. and G. Vamvoukas (2005), "Government Expenditure and Economic Growth: Evidence from Trivariate Causality Testing", Journal of Applied Economics, 8, 125-52.

Dada, M.A. (2012), "Effect of Debt on Economic Development in Nigeria". A paper delivered in Conference on Issues and Challenges in Accounting and Corporate Government.

Nowsad, E. and Williams, A. (1981). "Public Debt Management in Nigeria. A Publication of NISER", Ibadan, Nigeria.

Ogeh, I.T. (1992). "External Debt and Nigeria Economic Growth CBN Bulletin". Vol. 20 No. 2.

Okah, S.E. (1994), "Implication of Public Expenditure under SAP", Nigeria Journal of Economics & Social Studies Vol. 36. No. 8.

Okonjo Iweala (2005), "Minister of Finance Speech on Gains from Debt Pardon on NTA Network September.

Thiriwall, A. (1998). "Economics Development for the Developing World". London: Oxford University Press.