

The Link between Public Debt and Government Expenditure Pattern: The Nigeria Experience

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Abstract: *This study empirically examines the relationship between public debt and government expenditure in Nigeria from 1980 to 2013. The data which is purely secondary data was sourced through the Central Bank of Nigeria Statistical Bulletin for various years. The study estimated a model with public debt as the dependent variable while the capital expenditure and recurrent expenditure are the independent variables. Using the ordinary least square regression technique, the t-test statistic results at 5% level of significance, revealed that there is a significant relationship between public debt and government expenditure in Nigeria. It then recommends that the government of Nigeria should make haste to reduce its recurrent expenditure and embark more on capital expenditure so as to meet the Vision 20:2020. Again, the economy of Nigeria should be diversified to reduce the over dependence on crude oil revenue. If the diversification programme is embarked upon, it will definitely reduce the tendency of the government accumulating public debt.*

Keywords: *Public debt, capital expenditure, recurrent expenditure, Nigeria, displacement theory, creditors*

I. Introduction

Nigeria is a mono-product economy and started experiencing public debt problem in the 1980s when her external debt position exacerbated. This situation led to the inability of Nigeria to generate the needed fund from sale of her crude oil to service the debt owed international creditors. To carry out production activities, Nigeria resorted to borrowing. These borrowings were meant to supplement the domestic savings (Ezeabasili, 2006). Eboigbe and Idolor (2013) posit that a country can also borrow in the short -term from external sources to finance current account deficits arising from external disturbances in order to shore up liquidity position in the future.

Gana (2002) opines that foreign borrowing is desirable and necessary to accelerate economic growth, provided that they are channeled to increase the productive capacity of the economy and promote economic growth and development. Economic theory also suggests that reasonable levels of borrowing by a developing country are likely to enhance its economic growth. To enhance economic growth, countries at early stages of development like Nigeria borrow to augment what they have due to dominance of small stocks of capital hence they are likely to have investment opportunities with rates of return higher than that of their counterparts in developed economies. This will only be effective if the borrowed fund is well utilized for the productive activities that they were meant for.

In Nigeria, there have recently been some significant successes in governance related to PEM. These include Nigeria being the first African country to exit the Paris Club and the London Club, and the publication by the Nigeria Extractive Industries Transparency Initiative (NEITI) of the financial, physical and process audits of the oil sector (ADB, 2009). The rejuvenation of interest in growth theory in recent years has brought to life again the enthusiasm of scholars in finding out and construing the nexus between government expenditure and economic growth particularly in developing countries like Nigeria. Niloy, Emraul and Denise (2003) assert that government expenditure profile has been increasing in geometric term through government various activities. Taiwo and Abayomi (2011) maintain that the size and structure of public expenditure will determine the pattern and growth in output of the economy. The structure of Nigerian government expenditure can broadly be categorized into capital and recurrent expenditure.

The debate on the relationship between public debt and government expenditure is still an unsolved issue both conceptually and empirically. Despite the fact that the conceptual positions on the subject are quite diverse, the conventional wisdom is that huge government expenditure is the determinant of government borrowings. Empirical studies however, do not entirely corroborate the conventional wisdom. Meanwhile, the aim of this paper is to examine the relationship between public debt and government expenditure in Nigeria from 1980 – 2013.

II. Theoretical Framework

This study is anchored on the Displacement Theory. Jack Wiseman and Allan T. Peacock founded the theory in 1961. Peacock and Wiseman's study is probably one of the best known analyses of the time pattern of public expenditures. Their main argument was that public expenditure does not increase in a straight or continuous manner, but in "Jack or Stepwise" fashion. They based their argument on a political theory of public determination namely that governments like to pay taxes, and that government need to provide public goods for the citizens. At times, some social or other disturbances occurs which show the need for increase in public expenditure, which the existing level of revenue cannot meet. Hence government expenditure rises will cause the inadequacy of the existing level of revenue clear to everyone that the best option is to borrow, leading to public debt. The movement from the initial and low level of expenditure to a new and higher level is known as displacement effect. Public expenditure is displaced upwards and for the period of the crisis displaced private for public expenditure does not however fall to its original level. The inadequacy of the revenue as compared with the required expenditure will in the view of Peacock and Wiseman creates the imperfection effect. The government then expands its scope of services to improve these social conditions and because people perception to tolerable levels of taxation (as a source of revenue) does not return to its former level, the government is able to finance these higher levels of expenditures originating in the expanded scope of government and debt charges.

Since each major disturbance always leads to government to assume a larger proportion of the national economic activities, the net result is the concentration effect. Therefore, concentration effect is the tendency of the government activities to grow faster than the economy. ICAN (2010) opines that the increasing public expenditure can be explained in terms of increasing cost of debt servicing. Since states are related to one another through various economic transactions, there are tendencies to run into debts which have to be settled.

III. Empirical Review

Litany of studies have been carried out on the public debt and other macroeconomic variables like economic growth, economic stabilization, public investment, and so on; while others conducted research on public expenditure of government. Dilrukshini (2002) investigates the relationship between public expenditure and economic growth in Sri Lanka over the period 1952-2002. With the application of Johansen co-integration technique and Granger causality test, the results show the increase in public expenditure in Sri Lanka is not directly dependent, and determined by economic growth.

Olugbenga and Owoye (2007) examine the relationship between government expenditure and economic growth for a group of 30 countries during the period of 1970-2005. The findings show that a long-run relationship exists between government expenditure and economic growth. Also, the causality runs from economic growth to government expenditure in 10 of the countries, confirmed the Wagner's law.

Muritala and Taiwo (2011) conducted a research to examine the effects of government spending on the growth rate of real gross domestic product in Nigeria using econometric model with Ordinary Least square (OLS) technique. The result shows that there is a positive relationship between real GDP as against the recurrent and capital expenditure. It then recommended that government should promote efficiency in the allocation of development resources through emphasis on private sector participation and privatization/commercialization.

Taiwo and Agbatogun (2011) analyze the implications of government spending on the growth of Nigeria economy over the period 1980 – 2009, using Johansen co-integration, unit root test and error correction model. The result shows that total capital expenditure, inflation rate, degree of openness and current government revenue are significant variables that enhance growth in Nigeria. The paper recommends that government should explore more avenue of generating revenue rather than procure huge debt either internally or externally.

Sinha, Arora and Bansal (2011) carried out a study on the determinants of public debt for middle and high income group countries using panel data regression. Their model was estimated using the Indian Market, with the public debt to gross domestic product (GDP) as the dependent variable while the independent variables were government expenditure, long term interest rate, foreign direct investment, population density, current account balance, real GDP growth rate and inflation at consumer price. Their findings revealed that government expenditure, long term interest, real GDP growth rate, inflation at consumer price, and FDI are significant while current account balance and population density was insignificant. For the middle income group countries, the autoregressive model result shows that their total debt is negatively related to GDP growth while current account is positively related to total public debt. However, the result of the income group countries shows that the total debt depends on the GDP growth rate while other variables are insignificant.

Ogujiuba and Abraham (2012) examine the relationship between government revenue and expenditure in Nigeria. Using macro data from 1970 to 2011, the correlation analysis, Granger causality test, regression analysis, lag regression model, vector error correction model and impulse response analysis were employed in the analyses. The findings revealed that revenue and expenditure are highly correlated and that causality runs

from revenue to expenditure in Nigeria. The study concludes that shocks from crude oil price passes through oil revenue to affect expenditure.

Sulaiman and Azeez (2012) examine the effect of external debt on the economic growth in Nigeria using econometric techniques of Ordinary Least Square (OLS) Augmented Dickey Fuller (ADF) Unit Root test, Johansen co-integration test and Error Correction Method (ECM) and found that external debt has contribute positively to the Nigerian economy. Ezeabasili, Isu and Muojekwu (2011) investigate the relationship between Nigeria's external debt and economic growth between 1975 and 2006 applying econometric analyses. The finding shows that external debt has negative relationship with economic growth in Nigeria.

Eboigbe and Idolor (2013) examine the impact of external debt on public sector investment in Nigerian economy, using the co-integration economic technique on annual time series data for 31 years (1980 – 2011) to test the hypothesized relationship. The result of the study shows that there is a positive relationship between external debt and public investment, meaning that an increase in debt stock will lead to increase in capital expenditure and public investment in turns. The paper recommends that Nigeria should be concerned about the absorptive capacity of the economy before embarking on more external debt acquisition; and that the portfolio of debt should be diversified in terms of sources and types to avoid concentrations of debt service imperatives.

Oyinlola and Akinnibosun (2013) examine the relationship between public expenditure and economic growth in Nigeria for the period of 1970 to 2009. Using the Gregory-Hansen structural breaks cointegration technique, and employing a disaggregated public expenditure level, the study confirms Wagner's law in two models in the long run. The long run elasticity results showed that economic growth does not translate to growth in recurrent expenditure, administrative expenses and transfer expenditures. The result also shows that economic growth leads to growth in capital expenditure as well as in social community service. The study recommended that efforts should be geared towards maintaining adequate level of investment in social and economic infrastructure.

In another study by Mah, Mukkudem-Petersen, Miruka and Petersen (2013), efforts were made to determine the impact of government expenditure on debt in Greece using the vector correction model and granger causality model with annual data from 1976 to 2011. the result shows that a significant positive relationship exists between gross government debt and gross national expenditure. They recommend that countries should revisit their fiscal policies in order to reduce its debt and sustain it.

Le, Van, Nguyen-Van and Barbier-Guachard (2014) examine the relationship between government expenditure, tax on returns to asset, public debt and economic growth. The study adopted the growth model as developed by Barro (1990) and Greiner (2007) while the three sectors used were government, firms and consumers. With the Eigenvalues of the Jacobian matrix, the results indicate that government expenditure, consumption, and domestic debt increase with tax rate. Meanwhile, if there is high productivity of capital, the impact of tax rate on external debt is positive if tax rate does not exceed a certain threshold, otherwise, the relation is decreasing.

Oni, Aninkan and Akinsanya (2014) investigate the joint effects of capital and recurrent expenditures of government on the economic growth of Nigeria using the ordinary least square method for estimating multiple regression models. The findings show that both variables (capital and recurrent expenditures) have positive effects on economic growth for the period of study (1980-2011). The study recommends diversification of Nigeria revenue base to be less dependent on crude oil.

Siew-Peng and Yan-Ling (2015) examine the contribution of public debt to the economic growth in Malaysia over the period of 1991 to 2013. Time series data was collected from the DataStream database. Using the Gross Domestic Product (GDP) per capita as a proxy for economic growth, the debt – growth model was estimated and quarterly data was employed. The findings of the study show that the economic growth as measured by GDP per capita shows a negative association with the public debt. It was recommended that the Malaysian government should utilize the fiscal monetary policy efficiently to ameliorate the dependence on public debt so as to meet the vision 2020 goal of a developed economy.

From the foregoing review, this study will modify the model used in Sinha, *et al.* (2011) and our variables will be public debt and public expenditure (recurrent and capital expenditure) in Nigeria.

IV. Methods And Model Specification

This study examines the relationship between public debt and government expenditure in Nigeria from 1980 – 2013. The study adopted a time series research design hence times series data from 1980 to 2013 was employed. The data which is purely secondary data was sourced through the Central Bank of Nigeria Statistical Bulletin for various years.

To capture the relationship between public debt and expenditure, the empirical model that accommodates public expenditure (capital expenditure and recurrent expenditure) and public debt was specified. Hence the function below was used in estimating the dependent variable.

$$PDebt = f(CExp, RExp, \varepsilon) \quad (1)$$

This means that public debt is the function of capital expenditure, recurrent expenditure, and other stochastic error term capturing other variables not explicitly included in the model.

Thus, the model for the study estimated from the function above is

$$PDebt = \beta_0 + \beta_1 CExp + \beta_2 RExp + \varepsilon \quad (2)$$

Where, PDebt = public debt

β_0, β_2 = coefficients

CExp = capital expenditures

RExp = recurrent expenditures

V. Results and Discussions

Table 1: Regression Results

Dependent Variable: LOG(PDEBT)
 Method: Least Squares
 Date: 08/07/15 Time: 16:24
 Sample(adjusted): 1981 2012
 Included observations: 32 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-2.906271	1.184572	-2.453436	0.0204
LOG(CEXP)	0.059814	0.222952	0.268282	0.7904
LOG(REXP)	0.679870	0.223933	3.036049	0.0050
R-squared	0.666208	Mean dependent var		5.882783
Adjusted R-squared	0.643188	S.D. dependent var		1.963983
S.E. of regression	1.173161	Akaike info criterion		3.246341
Sum squared resid	39.91290	Schwarz criterion		3.383753
Log likelihood	-48.94145	F-statistic		28.94020
Durbin-Watson stat	0.194850	Prob(F-statistic)		0.000000

Source: Author's E-view Output

The Table above shows that the P-value for the recurrent expenditure (RExp) is significant while capital expenditure (CExp) is insignificant. Also, the Durbin-Watson statistic value (0.194850) shows that there is absent of autocorrelation in the model. The acceptable value for the Durbin Watson Statistic is 2 but it permits a range of ± 0.2 . The Durbin-Watson Statistic of 0.194850 falls within the acceptable range, the model is free from autocorrelation and is reliable.

From the regression result above, the constant or intercept is 0.666208. This implies that when all the model parameters are zero, there will still be an effect of 0.666208 on the public debt. The coefficient of capital expenditure (0.059814) was positively signed. This shows that capital expenditure exert about 5.98% effects on public expenditure. The coefficient of recurrent expenditure is 0.679870, implying that the recurrent expenditure exert far greater effect (67.98%) on public debt in Nigeria.

The coefficient of determination R^2 is 0.666208. This is an indication that the independent variables specified in the model are adequate in explaining about 66.6% of total variations in the public expenditure.

Test of Hypothesis

Ho: There is no significant relationship between public debt and government expenditure in Nigeria.

To test this hypothesis, we considered the value obtained from the estimation of the model with the table value. The P-value for recurrent expenditure is 0.0050, which is less than 0.05 and is therefore significant. The t-statistic for the recurrent expenditure obtained from the estimation is 3.036049. The table value is 1.699127 at 5% level of significance. This implies that the contribution of recurrent expenditure to the government expenditure is significant at the 5% level of significance. Therefore at the 5% level of significance, the alternate hypothesis is accepted while the null hypothesis is rejected.

For the F-Statistic, which apart from the R^2 also tells about the overall significance of the model, the value obtained through estimation is 0.000000, while the table value is 748.5869. Since the estimated value is lesser than the table value, we reject the null hypothesis and accept the alternate hypothesis that there is a significant relationship between public debt and government expenditure in Nigeria.

The above findings of the study are collaborated by similar findings of studies conducted by other researchers and scholars before now. For instance, Ogujuba and Abraham (2012) find that public debt and government expenditure are highly correlated and that causality runs from revenue to expenditure in Nigeria. The findings of other studies like Sinha, Arora and Bansal (2011), Muritala and Taiwo (2011), and Oni, Aninkan and Akinsanya (2014) also supported our results though economic growth was used as dependent variable in their studies.

VI. Conclusion And Policy Implications

The debate on the relationship between public debt and government expenditure is still an unsolved issue both conceptually and empirically. Despite the fact that the conceptual positions on the subject are quite diverse, the conventional wisdom is that huge government expenditure is the determinant of government borrowings. This study therefore empirically examines the relationship between public debt and government expenditure in Nigeria from 1980 – 2013. The study estimated a model with public debt as the dependent variable while the capital expenditure and recurrent expenditure are the independent variables. Using the ordinary least square regression technique, the t-test statistic results at 5% level of significance, revealed that there is a significant relationship between public debt and government expenditure in Nigeria.

From the regression result, the constant or intercept (0.666208) implies that when all the model parameters are zero, there will still be an effect of 0.666208 on the public debt. The coefficient of capital expenditure (0.059814) was positively signed. This shows that capital expenditure exert about 5.98% effects on public debt. The coefficient of recurrent expenditure is 0.679870, implying that the recurrent expenditure exert far greater effect (67.98%) on public debt in Nigeria. The coefficient of determination R^2 (0.666208) is an indication that the independent variables (capital expenditure and recurrent expenditure) specified in the model are adequate in explaining about 66.6% of total variations in the public expenditure.

The policy implication of the findings is that the recurrent expenditure exerts far greater effect (67.98%) on public debt in Nigeria. This means that the funds borrowed by government are mostly utilized in recurrent expenditure like payment of staff salaries and their likes. A government that spends greater percentage of its public debt on recurrent expenditure is bound to remain an undeveloped economy without positive future. Therefore, the government of Nigeria should make haste to reduce its recurrent expenditure and embark on capital expenditure more for it to meet the Vision 20:2020. Again, the economy of Nigeria should be diversified to reduce the over dependence on crude oil revenue. If the diversification programme is embarked upon, it will definitely reduce the tendency of the government accumulating public debt.

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