PATTERNS OF GOVERNMENT EXPENDITURE IN NIGERIA BEFORE AND AFTER THE 2006 DEBT RELIEF

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ABSTRACT

This study examines the patterns of government expenditure before and after the 2006 debt relief. Prior to the estimation procedures, the stochastic properties of the time series data were used. To examine the pre and post pattern of government expenditure within two subsample periods- 1980 to 2005 and 2006 to 2014, the study uses a structural test approach known as Chow test. The time series analysis observed the presence of a long-run co-integration among the variables while the fully modified OLS regression estimates revealed that gross domestic product, public debt service rate, inflation rate and control of corruption are statistically significant in explaining changes in total expenditure of the government. The results of Chow test however revealed that the patterns of government expenditure before and after the 2006 debt relief are not the same. The study therefore recommends that there should be high degree of transparency and accountability in government spending consumption, in order to prevent channelling of public funds to private accounts by government officials.Government should monitor the contract awarding process of capital and recurrent projects closely, to prevent against over estimation of execution cost. Government should also evaluate its spending pattern and the way budgetary plans are carried out at ministerial level, thereby reducing fiscal waste.

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INTRODUCTION

Nigerian pattern of spending has been on the increase for decades. The country has continued to borrow large amounts, often at highly concessional interest rates with the hope to put them on a fast route development through public investment. Total federal government expenditure in 1985, 1998 and 2013 was N5.9b, N43.2b, and N3845.1 respectively; within the referenced period, the proportion of recurrent expenditure as a percentage of total stood at81.4 per cent, 52.4 per cent and 43.2 per cent.

Excess debt servicing has continue to hamper with the initial intention of economic development , within the periods of 1985, 1998 and 2012 the composition of debt servicing constitute about 21.1 per cent, 36.2 per cent and 20.4 per cent of total recurrent expenditure. Prior to the period of debt relief, Nigeria ranks high among the heavily indebted countries in the world. The country's debt crisis emerged in the early 1980s as part of the crisis faced by less developed countries. It degenerated and led to the adoption of the structural adjustment programme (SAP) in 1986. This programme failed to resolve the debt crisis and a number of issues for which it was introduced such as achieving fiscal viability in the country. Hence, Nigeria entered into debt overhang problem, which persisted throughout the 1990s and the first half of the 2000s. As at 2005, external debt had amounted to N 2,695.1b (US $35.94m), roughly

half of the country's GDP and more than four times the federal government annual revenue (DMO, 2005). The then finance minister-Okonjo Iweala-states that, if Nigeria was to service its total external debt, there would be little left for capital expenditure (Okonjo, 2005). Hence, a concerted campaign for debt relief deal was launched in 2006 by the Nigerian government with the expectation of affecting its spending pattern positively. .

In relating public expenditure with public debt, some studies concluded that public expenditure is plagued by external debt burden compounded by structural weaknesses of the economies, making the attainment of rapid and sustainable growth and development difficult (Lora and Olivera, 2006). Other strands of literature argued that public debt is irrelevant to public expenditure. However, considering the 2006 exit of the Nigeria economy from the Paris debt over hanged, it is expected that the resources freed from debt servicing of long decades will stimulate productive spending. Thus, this study intends to use a structural test approach to examine the pre and post pattern of federal government expenditure within two subsample periods- 1980 to 2005 and 2006 to 2013. The paper is structured as follows: section II provides empirical and theoretical review of relevant literature, section III sets out the methodology and data. Section

IV presents the analysis of results and section V concludes.

Federal Government Expenditure and External Debt in Nigeria: Some Stylized   Facts
The composition of federal government expenditure in Nigeria is made up of capital and recurrent expenditure. Going by the picture depicted in figure 2.1 below, recurrent expenditure constitutes the major share of total federal government expenditure since 1980s. In the early periods, both categories of expenditure have moved in the same direction, with capital expenditure growing slightly than the recurrent expenditure in the mid-1990s to the late 1990s. However, this trend has been on the reversed since the early 2000s, with recurrent expenditure constituting the junk of total federal expenditure and even after the 2006 debt relief.
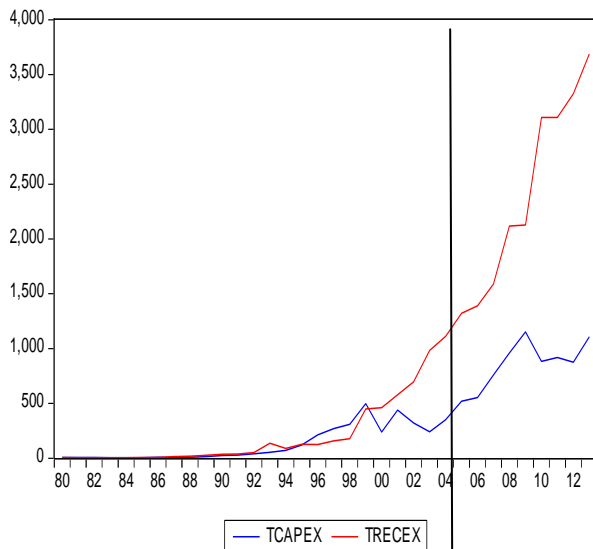

Figure 2.1: Trends of Government Expenditure in Nigeria (1980 to 2013)
Note: TCAPEX is total capital expenditure, while TRECEX is total recurrent expenditure
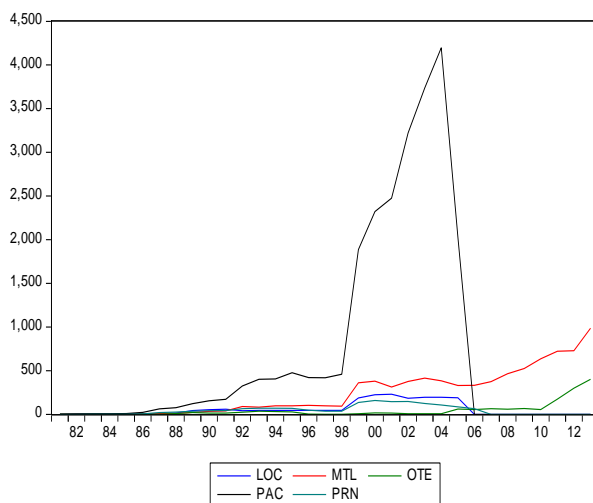

Figure 2.2: Trends of External Debt in Nigeria (1980 to 2013)

Figure 2.2 depicts the various categories of external debt in Nigeria. The external creditors include; the London Club (LOC), Multilateral Creditors (MTL), Paris Club(OTE), Promissory Notes and Other Creditors(PRN). Starting from early 1980s to late 1980s, the growth rate of external debt was still within a sustainable threshold, however, the Paris Club debt reversed this trend starting from the early 1990s. External debt increased astronomically over the 1990s through to the mid- 2000s. A major feature in this trend shows that the Paris Club creditors dominate the total external debt since 1980s to mid 2000s in Nigeria. Specifically, pre 2006, the margin of the Paris Club debt was extremely high compared to other categories of debt.

An external debt tied to short term high concessional interest rate has a great implication for a developing country like Nigeria. First, the junk of what constitute the total federal expenditure goes to servicing these debts. Also these debts are collected with the intention of investing on capital projects, which are belief to have long term returns, but the mode of repaying most of these debts are on short term base with high concessional interest rate. Funds meant to fast track development plans are eventually tied to servicing public debt. For instance in 1990, 2000, and 2010, the total amount that went into debt servicing was N23.8b, N131b and N415.7 b; all constituting about 67.7, 28.4 and 13 .4 percent of total recurrent expenditure respectively. Thus, with the 2006 debt relief which release about $30b from the Paris Club creditors, one would expect a drastic reduction in debt servicing rate, with these fund channel into a more meaningful expenditure plan.

LITERATURE REVIEW
Theories of Government Expenditure
A plethora of theories have been propounded to explain the importance of public expenditure in an economy. Notable among these are: Wagner's hypothesis (1883) and Peacock-Wiseman hypothesis (1967). In this paper we specifically adopt the Wagner's law of increasing state activities, which is a theoretical underpin that explains the growth of public expenditure and its generalization concerning the secular trend. Wagner (1883) offers three reasons to justify his hypothesis. The first reason explains that public functions substitute for private activity, which invariably leads to expansion in administrative and protective functions of the state. Thus, as nations become more advanced, the number /magnitude of market failure would force the state to become more regulatory in nature, thereby expanding its role. Also, economic development results in the expansion of cultural and welfare expenditures. As income increases, society would demand more education, entertainment, a more equitable distribution of wealth and income, and generally more services. Education and culture were areas cited in which collective

producers were more efficient than private producers. Wagner's final suggestion was that the dynamic nature of technology and increasing scale of investment required in many activities would bring the development of large private monopolies whose domineering effects on market would have to be neutralized by state in the interest of economic efficiency. In this hypothesis, public expenditure is an endogenous factor which is determine by the income of an economy. Bird (1970) concurs with Wagner's law stating that "the activities of government are an increasing function of the changing structure of the economy".

Apart from the overall income of the economy, public debt may affect economic activity in different ways; public debt can have an adverse effect on economic growth by increasing public expenditure. It can also nullify the initial growth intention by rendering government expenditure unproductive. Soludo (2003) opined that countries borrow for two broad reasons: higher investment-health, education infrastructure- or to finance transitory balance of payment deficit. Once an initial stock of debt grows to a certain threshold, servicing them becomes a burden, and countries find themselves with excessive unproductive spending, with debt crowding out investment and growth(Oxfam, 1998a). Thus, higher external debt service severely limits the resources for investment in the process of economic growth.

On empirical ground, various studies on the impact of outputs and public debt on public expenditure have emerged in the past. Chiung-Ju (2006)used bound test based on unrestricted Error Correction Model (ECM)and annual time series to test the Wagner's hypothesis for China and Taiwan. He found that there exists no long run relationship between government expenditure and outputs. In relating public expenditure with debt, Were (2001) used panel data analysis and concluded from her study that the sub-Saharan African public expenditure is still plagued by its heavy external debt burden compounded by structural weaknesses of the economies.

A study by Lora and Olivera (2006) assesses the effects of total public debt (external and domestic) on social expenditure worldwide and in Latin America using an unbalanced panel of around 50 countries for the period 1985-2003. Their finding is that higher debt ratios do reduce social expenditures, as popular opinion holds. Loans from multilateral organizations like the World Bank or the Inter-American Development Bank do not seem to ameliorate the adverse consequences of debt on social expenditures. Also, their findings revealed that defaulting on debt obligations does help to increase social expenditures. Nonetheless, Latin America is different in some respects. The adverse effects of debt and debt-interest payments are significantly stronger in the region, which makes defaults more beneficial to social expenditures. Hence they conclude that over indebtedness should be avoided in Latin America, so as to protect social expenditure.

In yet another study showing insight from cross-country regression analysis by Hasen (2001), on the impact of external debt on economic growth and investment consumption, the regression results were suggestive of a series of interesting relationships. Empirical analyses reporting negative effects of debt and debt servicing were also supported while a novelty in the study was evidence of a complex interplay between the level of external debt and investment consumption just as the macroeconomic effectiveness of investment consumption is negatively related to the level of indebtedness which is more severe in heavy debt dependent countries. Thus, high debt reduces growth mainly by lowering the efficiency of investment rather than the volume.

METHODOLOGY
The model adopted in this paper is based on the theoretical construct of the Wagner's hypothesis. The framework states that, the activities of government are an increasing function of the changing structure of the economy. Here government expenditure is the measure of state activity while national income measures the changing structure of the economy (Peacock and Wiseman, 1961; and Musgrave 1986). This framework do not limit the inclusion of other relevant exogenous variables into the model, hence we include public debt service rate, population, inflation rate, and corruption index as one of the determinant of public expenditure. We use the functional form given by Peacock-Wiseman traditional version (1961), to interpret Wagner's hypothesis. The model is specified as:

$$Texp_t = \alpha_0 + \alpha_1 GDP_t + \varepsilon_t \qquad (1)$$

Where *Texp* is the nominal government expenditure and *GDP* is the nominal Gross Domestic Product. Eq (1) could be further re-specifiedto capture the effect of control variable, hence we have;

$$lnTEXP = \alpha_0 + \beta_1 lnGDP + \beta_2 lnPDR + \beta_3 lnPOP + \beta_4 INFR + \beta_5 COCE + \mu \qquad (2)$$

Where;

$lnGDP$ = log of gross domestic product

$lnPDR$ = log of public debt service rate

$lnPOP$ = log of population

$INFR$ = inflation rate

$COCE$ = control of corruption

Apriori specification: the expected signs of the coefficients of the explanatory variables are:

$\beta_1, \beta_2, \beta_3, \beta_4 > 0$; while, $\beta_5, < 0$.

Since the analysis is time series in nature, the study used both Augmented Dickey-Fuller and Philip

Perron tests to examine the presence of unit root for each of the variables in the model. This is followed by co-integration test which is used to determine whether groups of non-stationary series are co-integrated or not.The model specified in equation (2) is also estimated using fully modified Ordinary Least Squares (FMOLS) methods while subjecting the analysis to structural stability test - Chow test. The Chow test therefore enables us to do a pre and post analysis of the patterns of government expenditure for the two sub periods in Nigeria.

Chow Test

The test of stability of the patterns of Government Expenditure was carried out using the Chow test (Chow, 1960). The test is to ascertain whether the government expenditure function over the years has been stable. Specifically, the test is to determine whether the patterns of government expenditure before and after the 2006 debt relief are the same. The Chow test is therefore computed as thus:

$$F^* = \frac{(\sum e_p^2 - (\sum e_1^2 + \sum e_2^2))/k}{(\sum e_1^2 + \sum e_2^2)/(n_1 + n_2 - 2k)} \quad (3)$$

Where:

$F^* =$ observed F- ratio

$\sum e_p^2 =$ pooled unexplained variations of two periods: 1980-2005 (the period before the   debt relief) and 2006-2014 (the period after the debt relief).

$\sum e_1^2 =$ unexplained variations of the pattern of government expenditure between 1980-   2005 i.e. before the 2006 debt relief.

$\sum e_2^2 =$ unexplained variations of the pattern of government expenditure between 2006-   2014 i.e. the period after debt relief.

$n_1 =$ number of observations during the period before the 2006 debt relief; (1980-2005).

$n_2 =$ number of observations during the period after the debt relief; (2006-2014).

K = total number of coefficients including the intercept.

$(n_1 + n_2$ -2k) = degree of freedom.

Three linear regressions were fitted to operationalize the Chow test; one equation for the restricted model

(pooled data) with its sum squared residual shown in table 4 and separate regressions for the unrestricted models (capturing the period before debt relief and the period after debt relief data).

The main hypothesis in the Chow test follows that the coefficients are equal for both sub-samples (equation 4):

$$H_0: \beta_1 - \beta_2 = 0 \quad (4)$$

Against

$$H_1: \beta_1 - \beta_2 \neq 0 \; [\quad (5)$$

Variables Measurement and Sources of Data

Total expenditure is measured by state activities both recurrent and capital expenditure incurred by the government. National income measures the changing structure of the economy is proxied by Gross Domestic Product. Public debt service rate measured cost of external borrowings in Nigeria. Population is measured by population density. Inflation rate is measured by the annual percentage change in the price of goods and services. Control of corruption estimates measure the level of corrupt practices by the government officials. The study employed annual data from 1980 to 2014 from various sources: The Central Bank of Nigeria (CBN) bulletin, World Development Indicators (WDI) and Worldwide Governance Indicators (WGI).

EMPIRICAL RESULT
Test of Stationarity

Before estimating equation (2), this study examines the stationary status of the variables in the model in order to ensure appropriate regression. The stationary test was conducted using the Augmented Dickey-Fuller and Phillip Perron tests. Form the stationarity estimates presented in table 1, it was observed that in the Phillip-Perron test, all variables are integrated of order one except INFR which is at level. Considering the ADF test, variables like: LNGDP, LNPDR LNPOP are integrated of order one, i.e. the variables are I(1) series, while LNTEXP and COCE are integrated of order two i.e. I(2) series and INFR is stationary at level i.e. I(0).

Table 1: Unit Root Test Results

Augmented Dickey Fuller (ADF) Test				Phillip-Perron (PP) Test			
Variables	Level	1st/2nd Difference	Status	Level	1st Difference	Status
LNTEXP	1.974318	-5.327445***	I(2)	2.183945	-5.309934***	I(1)
LNGDP	-0.789905	-6.047234***	I(1)	-0.859885	-6.076091***	I(1)
LNPDR	-1.028528	-7.410414***	I(1)	-0.926142	-7.486236***	I(1)
LNPOP	0.493811	-2.873760*	I(1)	0.419317	-2.840043*	I(1)
INFR	-3.217801**	-	I(0)	-2.714909*	-	I(0)
COCE	-2.542229	-10.91494***	I(2)	-2.266229	-11.92245***	I(1)

*Note: *** implies significant at 1%, while ** implies significant at 5% and * significant at 10%.*
Source: Author's Computation, 2015

As a follow-up to the stationary tests, this study examines the presence of co-integration among the

variables in equation (2) above. The co-integration test was estimated using the Johansen co-integration

test and the result is presented in table 2. As the Trace test clearly indicated the presence of three co-integration equations among the variables, the Maximum Eigen value test however clearly reveal the presence of one co-integration equation among the variables. Both tests therefore rejected the null hypothesis of no co-integration for r=0 at 5percent critical values. Also, the null hypothesis of no co-integration for $r \leq 1$ at 5percent critical value could

be rejected as well since the statistic value for Trace test is greater than the critical value at 5percent even though the case is otherwise for the Maximum Eigen value test. This also applies to $r \leq 2$ and the null hypothesis should be rejected while the null hypothesis of no co-integration for $r \leq 3$ at 5percent critical value could not be rejected.

Table 2: Summary of the Co-integration Estimate

Trace test				Maximum Eigen value test			
Null	Alternative	Stat value	95% critical values	Null	Alternative	Stat value	95% critical values
r = 0	r ≥ 1	121.9230	95.75366	r = 0	r = 1	41.27257	40.07757
r ≤ 1	r ≥ 2	80.65045	69.81889	r ≤ 1	r = 2	29.64902	33.87687
r ≤ 2	r ≥ 3	51.00143	47.85613	r ≤ 2	r = 3	25.97478	27.58434
r ≤ 3	r ≥ 4	25.02665	29.79707	r ≤ 3	r = 4	17.13632	21.13162
r ≤ 4	r ≥ 5	7.890327	15.49471	r ≤ 4	r = 5	7.784997	14.26460
r ≤ 5	r ≥ 6	0.105330	3.841466	r ≤ 5	r = 6	0.105330	3.841466

Source: Authors' computation, 2015.

This follows the argument that the statistic values for both tests at $r \leq 3$ were less than the critical values at 5percent. The co-integration result therefore suggests

that the linear combination of the variables in equation (2) above were stationary and there exists a long-run relationship among the variables.

Table 3: The Long-run OLS Result without Correction for Autocorrelation

Dependent variable	Constant/independent variables	Coefficients	T-values
LNTEXP			
	C	-2.048188	-0.228931
	LNGDP	0.712462	5.946957***
	LNPDR	0.259763	2.039772*
	LNPOP	0.622797	0.290550
	INFR	-0.015139	-2.775463***
	COCE	1.984786	2.746581**
	R-squared	0.981508	
	Adjusted R-squared	0.978206	
	Durbin-Watson stat	0.652872	

*Note: *** implies significant at 1%, while ** implies significant at 5% and * significant at 10%.*
Source: Author's Computation, 2015.

Table 4: the Long-run OLS Result after Corrected for Autocorrelation

Dependent variable	Constant/independent variables	Coefficients	T-values
LNTEXP			
	C	-5.258640	-0.560877
	LNGDP	0.666531	6.592178***
	LNPDR	0.261138	2.320446**
	LNPOP	1.500698	0.663839
	INFR	-0.020037	-4.201290***
	COCE	2.356030	3.542988***
	LNTEXP(-1)	-0.039322	-0.560418
	R-squared	0.992601	
	Adjusted R-squared	0.990893	
	Durbin-Watson stat	1.857349	
	Sum squared resid	2.421399	

*Note: *** implies significant at 1%, while ** implies significant at 5% and * significant at 10%.*
Source: Author's Computation, 2015

It is important to note that the first regression as shown in table 3 is not reported because it has problem of autocorrelation. Thus, a close inspection of the table 4 indicates that the specified model has a very high coefficient of determination. This can be seen from R-squared of 99percent and the adjusted R-squared of about 99percent.The R-squared shows the percentage of variation in the dependent variable that was accounted for by variation in the explanatory variables. The Durbin-Watson test has clearly shown that the autocorrelation problem has been corrected.
Findings from the analysis reveal that all variables conform with the theory except inflation rate and control of corruption. Variables such as Gross Domestic Product, Public Debt Service Rate, Inflation rate and Corruption are statistically significant in explaining changes in total expenditure of the government. However, population and the period one lag value of total expenditure of the government are not statistically significant in explaining changes in the present total expenditure of the government. For instance, a percentage increase in national income will bring about an increase in the total expenditure of the government by 67 per cent. Also, a percentage increase in public debt service rate will bring about an increase in the total expenditure of the government by 26 per cent. More so, a unit increase in inflation rate lead to a decrease in the total expenditure of the government by 0.02 per cent. Lastly, a unit increase in the control of corrupt practices lead to an increase in the total expenditure of the government by 2.4 per cent.

Table 5: Summary of OLS Results for Periods 1980-2005 and 2006-2014

Long-run OLS Results after Corrected for Autocorrelation (1980-2005)				Long-run OLS Results after Corrected for Autocorrelation (2006-2014)		
Dependent variable	Constant/independent variables	coefficients	T-values	Constant/independent variables	coefficients	T-values
LNTEXP						
	LNGDP	0.941797	17.69518***	LNGDP	-0.639013	-17.84294**
	LNPDR	0.104944	2.338926**	LNPDR	0.658957	25.43828**
	LNPOP	-0.235579	-1.653067	LNPOP	-2.893977	-15.74299**
	INFR	-0.005270	-1.844227*	INFR	-0.024136	-4.790867
	COCE	0.931709	1.896705*	COCE	-1.340575	-15.53119**
	LNTEXP(-1)	1.099677	1.099677	LNTEXP(-1)	3.059002	28.89302**
	R-squared	0.990880		R-squared	0.991141	
	Adjusted R-squared	0.988346		Adjusted R-squared	0.946844	
	Durbin-Watson stat	1.951496		Durbin-Watson stat	2.523080	
	Sum squared resid	0.877632		Sum squared resid	0.002407	

Note: *** implies significant at 1%, while ** implies significant at 5% and * significant at 10%.
Source: Author's Computation, 2015

Table 6: Chow Test Result

Variables	N	Calculated $F_{C-value}$	Tabulated $F_{\propto-value}$	Degree of Freedom	p-value
Pattern of Government Expenditure during the period 1980-2014	35	5.2544	2.49	$V_1 = 7$, $V_2 = 21$	<0. 05
Pattern of Government Expenditure before 2006 debt relief (1980-2005)	26				
Pattern of Government Expenditure after 2006 debt relief (2006-2014)	9				

Source: Authors' Computation, 2015.

As shown in table 6, the tabulated value ($F_\propto$) at 0.05 level of significance with $V_1 = 7$ and $V_2 = 21$ degree of freedom is ** compare to the calculated values (F_C) with 5.2544.

Since $F = 5.2544 > 2.49$, the hypothesis of equality is rejected. There is evidence that the patterns of government expenditure before and after the 2006 debt relief are not the same. This implies that the patterns of government expenditure have been on the increase overtime and these could be as a result of increased population, high incidence of corrupt practices by the public institutions, increasing debts services both the principal and the accrued interests and high rate of inflation respectively.

CONCLUSION AND RECOMMENDATIONS
This study specifically examined the patterns of government expenditure before and after the 2006 debt relief. The study observed the presence of a long-run co-integration among the variables while the fully modified OLS regression estimates revealed that gross domestic product, public debt service rate, inflation rate and control of corruption are statistically significant in explaining changes in total expenditure of the government. Finally, the result of Chow test revealed that the patterns of government expenditure before and after the 2006 debt relief are

not the same. Consequently, this study recommends that there should be high degree of transparency and accountability in government spending consumption, in order to prevent channelling of public funds to private accounts by government officials. Government should monitor the contract awarding process of capital and recurrent projects closely, to prevent against over estimation of execution cost. Government should also evaluate its spending pattern and the way budgetary plans are carried out at ministerial level, thereby reducing fiscal waste.

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