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Long-term Determinants of Government Expenditure: A Disaggregated Analysis for Nigeria

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Abstract. This study examines the long-term determinants of marked expansion of government expenditure in Nigeria. Using annual time series data for a period of 51 years (1960-2010) and a single equation estimation approach, we overcome an omitted variable bias by testing a wide range of leading hypothesis (on the determinants of government expenditure) in a comprehensive specification. The result yields a variety of interesting and qualified evidence. Among other results, we found that inflow of foreign aid contributes to expansion of government recurrent expenditure at the expense of capital spending; debt servicing reduces all components of government expenditure; revenue is a major factor that accounts for long-term government growth; openness has a significant negative association over government expenditure; higher population (mostly in urban areas) leads to higher government spending; military regime is favorable to capital expenditure expansion in Nigeria than the civilian administration; election period is associated with higher government expenditure than would otherwise be the case. To ensure fiscal sustainability and the overall growth of the Nigerian economy, some useful policy options have been suggested. These include cautious trade liberalization policy, diversification of the Nigerian economy and internally revenue generation improvement initiative, fiscal restraint on further foreign debt, population reduction programme or legislation, reduction in the cost of election, etc.

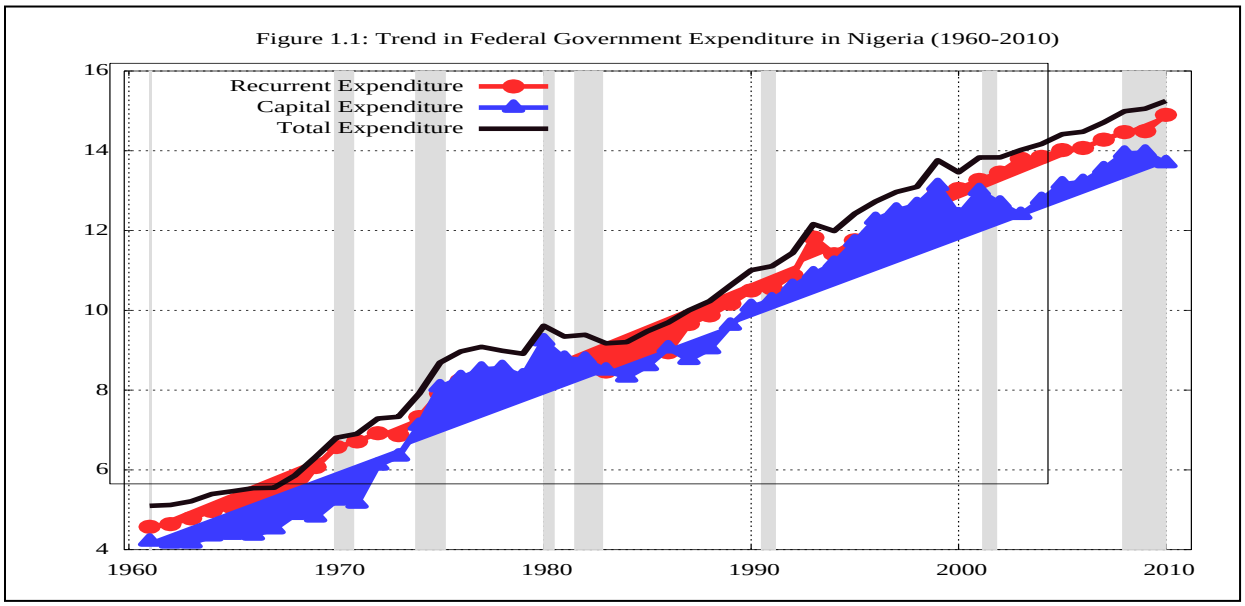
Key words: Government expenditure, Determinants, demographic factors, Political variables

JEL Code: C22, H11, H50

1. Introduction

Over the years, the structure and size of the public sector in terms of its expenditure have grown tremendously in many economies, especially after the World War II. Even in the capitalist countries like the U.S., governments have

become more influential, as they provide social services and income supplements as well as managing the economy (Cameron, 1978). Figure 1.1 presents preliminary evidence on the ever-increasing trend in Federal government expenditure (expressed in log scales) in Nigeria from 1960 to 2010. It shows clearly that the nation's total public expenditure has been expanding for the past decades.



Source: Author's Plot from CBN (2010), *Statistical Bulletin*

In recent times, rising public expenditures have become a major source of policy concern in Nigeria. Specifically, one of the policy drives of the present administration is seeking ways to reduce the rising cost of governance via a cut in government recurrent spending. The current public sector fiscal problems appear to have placed a severe stress on public funding of other capital projects like infrastructure[1]. Recent evidence has shown that government expenditure is useful for economic growth (see Akpan and Abang, 2013). However, there appears to be a general consensus that no country may attain meaningful development by jerking up the financing of its recurrent expenditure to the detriment of capital expenditure. Since the policy environment for an effective manipulation of government spending to attain its desired goals are influenced by a number of factors, an understanding

[1] For instance, the un-sustainability of the current fiscal regime have been blamed for the recent push by government for the removal of fuel subsidy, in order to free funds for more 'productive' expenditure.

of these factors by policy makers is very crucial. This study attempts to give an empirical content to some of these factors in the Nigerian context.

Interestingly, the substantial growth of the size of the government has long been investigated by economists as well as political scientists but with mixed results (see Henrekson & Lybeck, 1988). To date, there is no consensus evidence or a-one-size-fit all explanations for the long run evolution of government expenditure. A number of studies have link a rise or fall in public spending to several factors including corruption (Mauro, 1998), political regimes (Persson & Tabellini, 1999; Milesi-Ferretti, Perotti & Rostagno, 2002; Shelton, 2007; Shonchoy, 2010), foreign aid (Heller,1975; Njeru, 2003; Remmer, 2004, Swaroop, Shikha & Rajkurmar , 2000; Quattara, 2006), elections (Vergne, 2009; Eslava, 2005), bureaucratic and administrative process (see Hemming, 1998; Nordhaus ,1975; Hibbs, 1977; Alesina, 1987; Brauninger, 2005), information asymmetries about incumbent government competence of public good provisioning (Rogoff, 1990), degree of openness (Rodrik, 1998; Cameron,1978), rising populations and urbanizations (Shelton, 2007), ethnic fractionalizations, external debt servicing burden (Shonchoy,2010; Mahdavi, 2004), fiscal illusion (Gemmell, Morrissey & Pinar, 1999) and income (Aregbeyen,2006; Akpan, 2011; Henreskon,1993; Sideris, 2007), amongst others. Whether these or any other factors could rightly be held responsible for the long-term growth of Nigeria's public expenditure remains an empirical question. An important issue for policy purposes is to empirically examine the factors that have contributed to the long-term growth in Nigeria's public spending behavior over the years. This task is undertaken in the present study.

Our study is significant in many ways. For one, following the discovery of income's relative meager explanatory power in explaining the growth of public expenditures[2], there has been a proliferation of studies trying to move from this

[2] See studies like Diamond & Tait (1988), Henreskon (1993), Narayan, Nielsen & Smyth (2008) and Sinha (2007). Essentially, as argued by Diamond & Tait (1988), the empirical testing of the hypothesis that per capita income is of strategic importance in explaining the long-term growth of government expenditure rests on the assumption that all other variables are so unimportant that

narrow specification and to test some of the leading hypothesis together in a unified framework. However, much of the existing literature on this line of research has been dominated by studies for the Western economies (e.g. Shelton, 2007; Henrekson & Lybeck, 1988). Generally, very few convincing empirical (single-country) studies attempt to explain the sustained growth of public expenditures in developing economies of the Sub-Saharan Africa. The only study that comes close to filling this gap is Shonchoy (2010). However, Shonchoy's study (which uses a panel data analysis) was not only on developing countries in Africa, but also on other developing countries in America, Asia and Europe. It will be difficult to make a comparative analysis or draw a definite conclusion on what influences the pattern of government expenditure in a single country based on a cross- sectional regression analysis of the Shonchoy type. Since government spending profile and priorities tends to differ from one country to another, it is glaring that only country-specific study like the present one can provide a useful policy insight about the determinants of government expenditure in a developing economy like Nigeria. In addition, the paucity of empirical studies on this topical issue is most striking in the case of Nigeria. To the best of our knowledge, the only previous attempts to explain the growth in government expenditure in Nigeria include Taiwo (1989), Abeng (2005) and most recently, Okafor & Eiya (2011). However, each of these studies is deficient in one way or the other. For instance, Taiwo's and Okafor & Eiya's studies suffer severely from small sample problem[3]. Although Abeng's study represents the most convincing study of the three, his study concentrates narrowly on the non-debt component of government expenditure in Nigeria. None of the aforementioned studies attempts a disaggregation of Federal Government expenditure into its various components such as administration, social and community services, economic services, etc. This study attempts to fill these gaps.

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they can simply be thrown into the error term – an assumption that has been negated by a number of studies.

[3] The two studies rely on relatively small samples: Taiwo's study period was 1960-1982 while Okafor & Eiya was based on just 10 observations from the period 1999 to 2008.

Most importantly, this study is unique in the Nigerian case. The sampled period for this study (1960-2010) differed significantly from all other studies. This large sample, single out this study as the first contemporary study to provide a robust empirical explanation for the growth of government expenditure in Nigeria, taking into recognition the various economic, political, institutional and demographic changes over the past decade. By taking past trends and recent development into consideration, this study does not only have an edge over others, but it represents an important contribution to public finance literature in Nigeria by providing fresh insights into the growth of public expenditure in the country.

The balance of this paper is the following. Section 2 presents the model used in the study and explained the data used in the analysis. The presentation and discussion of the empirical findings is done in section 3. The last section offers the conclusion and recommendations.

2. The Model and Data

The core exercise in this sub-section is to attempt to model government expenditure on a vector of relevant explanatory variables nominated in the literature, while taking the peculiarity of Nigeria into consideration. Our approach follows single equation estimation and is in the spirit of Huang & McDonnell (1997), Sanz & Velazquez (2002), Shelton (2007) and Shonchoy (2010). Since the growth determinants may exert different degree of influence over total versus Federal government expenditure (Huang & McDonnell, 1997), it would be useful to first undertake the analysis at both levels to see if the inclusion of state and local government expenditure significantly alters the results. Again, we also decompose Federal government expenditure into its two broad components: recurrent and capital. Further, we disaggregate recurrent and capital expenditures into four categories: administrative, social and community service, economic service and transfers expenditures. In most cases, we attempt a breakdown of recurrent expenditure into eight components: general administration, education, health, other social and community services, agriculture, transport and communication, other

economic services and transfers. This last categorization was informed by data availability. For instance, data on defense, internal security and National Assembly were patchy. The essence for the categorization was to evaluate the relative importance of the determinants on these categories of expenditure.

On the choice of which explanatory variable to include in the model, we stick to those that have been repeatedly demonstrated in the literature to exert first-order effects on the patterns of government expenditure. However, to minimize the incidence of multicollinearity, we first specify a baseline model and latter extend the specification to include other variables of interest. Essentially, our basic specification is of the form:

$$Government\ Expenditure_t = \beta + \vartheta * Base\ Variables_t + \mu_t \qquad (1)$$

For an extended specification, we follow the practice of Shonchoy (2010) and keep this basic specification with added sets of new variables. Precisely, the explanatory variables considered in this study are categorized into the following sets:

Baseline Variables: Aid Inflow, Total Revenue, Real Income per capita, Degree of Openness , Total Population, and Debt Service.

Demographic Variables: Elderly population (aged 65+), Young Population (aged 15-), and Urbanization

Institutional/Political Variables: Regime Dummy (1 for civilian administration and 0 otherwise), Corruption index, Structural Adjustment Programme (SAP) Dummy (1 for the period 1986-2001 and 0 otherwise), War Dummy (I for the civil war period 1967-72 and 0 otherwise) and Election Dummy (1 for the years 1979, 1993, 1999, 2003, 2007 and 0 otherwise). It must be noted that we have extended the civil-war period 1967-1970 by two extra years. This is intended to capture possible effect of the presumed massive rehabilitation and reconstruction programmes following the end of the war in 1970.

Against this backdrop, a specific example of our basic model can explicitly be stated as:

$$\begin{aligned}\log(FGEX)_t = {} & \alpha + \pi_1 \log(Aid_{t-1}) + \pi_2 \log(Revenue_{t-1}) \\ & + \pi_3 \log(Real\ income\ per\ capita_{t-1}) + \pi_4 \log(Openness_{t-1}) \\ & + \pi_5 \log(Population_t) + \pi_6 \log(Debt\ Service_{t-1}) + \pi_7(time\ trend) \\ & + \mu_t \qquad (2)\end{aligned}$$

Where *FGEX* is Federal government expenditure and μ is the error term, assumed to be independently and normally distributed. The inclusion of time trend in the model is to capture the cyclical or secular trends in government expenditure during the period under review. Specifically, its statistical significance in the model would indicate how much government expenditure grows per year (on the average). One period lag on some of the variables is intended to capture the bureaucratic inertia of government expenditure. This practice is consistent with the specification used by Shonchoy (2010). The preference for a double log model is due to the usual statistical convenience in interpreting the results as elasticities. For similar reasons, all other variables included in the extended specification, except the dummies, would also be logged.

Our a priori expectations are the following. The expected coefficient of *Aid Inflow* is ambiguous. It depends on whether aid inflows are usually utilized on intended programme (and therefore exert a positive influence on government expenditure) or diverted into private consumption (in which case aid fungability hypothesis holds for Nigeria). In addition, whether aid inflows would be biased towards recurrent expenditure as against capital expenditure, or towards "unproductive" expenditure as against "productive" expenditure cannot be established a priory. The coefficient of *Revenue* is also expected to be positive, as a rise in government revenue should potentially expand its expenditure. Similarly, we expect the coefficient of *Income per capita* to be positive. In line with Wagner's

hypothesis, there should be a long-run positive relationship between income per capita and government expenditure. Thus, a positive sign for this variable would provide a test for the validity of Wagner's law in Nigeria. A positive sign is also expected for the *Degree of Openness* coefficient in line with the existing literature. Specifically, we expect the impact of this variable to be more biased towards the transport and communication sector in line with the empirical finding of Shelton (2007). *Population* is hypothesized to positively influence government expenditure, especially on the demand for social services. The same positive result is expected for *Urbanization* in the extended specification. Although the coefficient for the other demographic variables, *Elderly Population (aged 65+)* and *Young Population (aged 15-)* are also expected to be positive, we expect the former to exert a greater influence on government transfer expenditure and health care than latter. In addition, we expect the younger cohort to have a more positive significant impact on government expenditure on education than the older segment.

The expected sign for *Debt Service* is negative. This is because a higher debt service could hamper government expenditure on other key sectors of the economy, and therefore leads to a reduction in aggregate expenditure. Specifically, the core of the IMF macroeconomic adjustments programme has been anchored on fiscal deficit reduction as a condition for debt restructuring and relief initiative for developing countries. What cannot be established a priori is which sector or component of government expenditure bears a greater burden of expenditure reduction occasion by increased debt service.

The expected coefficient for the adjustment dummy, *SAP,* is negative for the very reason that one of the core tenets of SAP was a drastic reduction of government expenditures, especially from "unproductive" spending to tame the tide of mounting fiscal deficits. Again, which components of government expenditure bear the greater brunt of the adjustment policy in the Nigerian case would be an interesting outcome of this study. The *Regime Dummy* is hypothesized to have a positive coefficient. The significant of this variable would provide a crude test of the common perception that civilian governments usually are costly and/or bigger

spenders than military governments. Similarly, the *Election Dummy* is expected to be positive in its coefficient. It is hypothesized that more expenditures are carried out during election time than would otherwise be the case. Finally, the impact of *corruption* on government expenditure in Nigeria is ambiguous. For one, incidence of corruption could lead to a bleated budget, especially administrative expenditures. Similarly, in conjunction with Mahdavi's (2004) submission, corruption could lead to a drastic reduction on government expenditure on social services like health and education, where the opportunities for maneuver are not large. On aggregate, the impact remains ambiguous. For the *War Dummy,* the coefficient could be either positive or negative. Since defense expenditure is a component of administrative spending, we expect the variable to exert a greater influence on this category of expenditure than on others. The effect is expected to be negative for the social and community service spending. Besides, the statistical significance or otherwise of this variable would provide a crude test for the prognosis of Peacock & Wiseman (1961).

2.1 The Data

Apart from the *dummies* created by the researcher, all our data set are from secondary sources. Total government revenue and all data on government expenditures, measured in millions, are from 2010 Statistical Bulletin of the Central Bank of Nigeria (CBN). Total government expenditure was the sum of Federal, State and Local Government expenditures. However, data on Local Government expenditure were not available until 1993. All the demographic variables: Total Population, Young Population, aged 15 and below (% of Total Population), Elderly Population, aged 65 and above (% of Total Population) and Urbanization (% of Total Population), were taken from the World Development Indicators & Global Development Finance (2012) database. Real income per capita (in 2005 constant prices) and degree of openness (in 2005 constant prices) were extracted from the Penn World Table, version 7.0 developed by Alan, Summers & Aten (2011). Debt service (in % of GNI) and Aid inflow (proxied by official development assistance (ODA)) came from the World Development Indicators &

Global Development Finance (2012) database. The variable was measured in 2009 constant U.S. dollars ($). As a measure of corruption, we utilized the Corruption Perception Index (CPI) complied by the Transparency International, available at www.transperency.org. This variable was only available for just 16 periods: 1995-2010. Table A1 (at the appendix) displays the sample correlation matrix of the included (explanatory) variables (except the corruption index). Some of the variables have correlation coefficient in excess of 60% - a further justification for allowing some of the variables to enter into the model with one lag.

3. Empirical Results and Discussion

The models were estimated using the Ordinary Least Square (OLS) technique. To control for heteroskedasticity and autocorrelation, which is common in macroeconomic time series data, we utilized White's (1980) heteroskedasticity and autocorrelation-consistent (HAC) robust estimator, which is reputed for its robust standard errors that are asymptotically valid in the face of both autocorrelation and heteroskedasticity of the error process (see Davidson and MacKinnon, 1999)[4].

3.1 Basic Specifications

The left hand side (LHS) of Table 1 presents the results of our basic model when the time trend was included. Apart from debt service, openness and population, the rest of the variables turn out with the expected signs, but very few were significant. The time trend was unambiguously insignificant for all the

[4] Given that our data are time series, we followed the standard practice in econometrics by first conducting preliminary diagnostics test on the time series properties of the included variables before estimation. These include the unit root tests as well as the cointegration test. For the Unit Root test, we applied the ADF (Dickey & Fuller ,1979) and KPSS(Kwiatkowski, Phillips, Schmidt & Shin, 1992) tests while the test for cointegration was conducted using the Full Information Maximum Likelihood (FIML) cointegration approach developed by Johansen (1988, 1991). The two test statistics employed unanimously indicate that most of the variables are stationary at first difference. In the case of cointegration, the Trace and Max-Eigen statistics returns overwhelming evidence of long-run relationships among the variables, which variables ruled out the likelihood of spurious regression results. The results for these diagnostic tests are not shown here to conserve space; they are however available from the authors upon request.

specifications, except for the first model (column 1) where it shows significant at the 10% level.

In the light of the above, the models were re-estimated without the time trend and the results are reported in the right hand side (RHS) of Table 1. Compared with the results in LHS, our results in RHS prove more robust. For instance, the reductions of Schwarz Criterion statistic for all the models from their former levels in the LHS imply that the later estimates are more preferable. Good enough, all the variables, except openness, are now with the expected signs. A unit increase in foreign aid (last year) significantly reduces current level of total, federal and capital expenditures by 6%, 9% and 32% respectively. However, it leads to an increase in recurrent expenditure by 6.5%. These results could be a pointer that the aid fungability hypothesis holds for Nigeria. In other words, foreign aid is used to promote recurrent expenditure as against capital expenditure. If we regard the former as "unproductive" and the latter as "productive", it would imply that the influx of foreign aid to Nigeria is spent on unproductive items instead of productive items that promote faster growth.

As expected, government revenue has a positive and significant impact on government expenditure. An increase in last year's revenue increases capital expenditure by over 70% and recurrent expenditure by 38%. Given that most of Nigeria's revenue comes largely from the oil sector, the results imply that any fluctuation in oil production in the country would have a disastrous effect on government fiscal behaviour. The positive coefficient of real income per capita also tends to suggest that Wagner's hypothesis holds for Nigeria. The results show that there is a long run positive relationship between income per capita and government expenditure. This result, however, did not hold for all categories of expenditure (e.g. recurrent expenditure). This is a striking result in need of further explanation, which we shall return to shortly.

Our results in the RHS of Table 1 also revealed that there exist a strong positive relationship between Nigeria's population and its expenditure. The impact of population on capital expenditure was, however, not significant.

Table 1: Determinants of Government Expenditure: Basic Specifications

	With time trend				*Without time trend*			
Variables	(1) Total Gov. Expenditure	(2) Federal Gov. Expenditure	(3) Recurrent Expenditure	(4) Capital Expenditure	(5) Total Gov. Expenditure	(6) Federal Gov. Expenditure	(7) Recurrent Expenditure	(8) Capital Expenditure
Constant	171.9	1.759	122.5	-93.87	-57.97***	-69.93***	-82.96***	-49.40*
	(0.176)	(0.993)	(0.494)	(0.779)	(0.000)	(0.000)	(0.000)	(0.052)
$\log(\text{Aid}_{t-1})$	-0.131***	-0.116	0.002	-0.307**	-0.061***	-0.094***	0.065**	-0.321***
	(0.006)	(0.123)	(0.969)	(0.022)	(0.004)	(0.001)	(0.024)	(0.000)
$\log(\text{Revenue}_{t-1})$	0.534***	0.488***	0.313**	0.721***	0.610***	0.511***	0.381***	0.707***
	(0.000)	(0.000)	(0.012)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
$\log(\text{ Income per capita }_{t-1})$	1.263***	1.236***	0.206	2.867***	0.912**	1.127**	-0.108	2.935***
	(0.002)	(0.004)	(0.704)	(0.002)	(0.040)	(0.013)	(0.850)	(0.044)
$\log(\text{Openness}_{t-1})$	0.028	-0.513*	-0.682**	-0.171	-0.233*	-0.594***	-0.916***	-0.120
	(0.875)	(0.097)	(0.025)	(0.757)	(0.062)	(0.000)	(0.000)	(0.716)
log(Population)	-10.26	-0.475	-6.789	3.985	2.99***	3.657***	5.052***	1.423
	(0.160)	(0.967)	(0.505)	(0.834)	(0.000)	(0.000)	(0.000)	(0.208)
$\log(\text{Debt Service}_{t-1})$	0.026	0.024	-0.021	0.179	-0.053	-0.001	-0.091	0.195**
	(0.634)	(0.724)	(0.758)	(0.114)	(0.250)	(0.986)	(0.114)	(0.017)
time	0.352*	0.120	0.315	-0.068	-	-	-	-
	(0.081)	(0.723)	(0.263)	(0.892)				
Adj. R-Squared	0.994	0.990	0.991	0.972	0.994	0.990	0.991	0.973
Durbin-Watson	1.94	1.57	1.67	0.975	1.97	1.61	1.74	0.963
Schwarz Criterion	2.83	22.56	22.09	61.80	2.81	19.09	20.26	58.15

F-Value	3333	890.1	1123	417.8	3496	1031	1314	381.8
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Autocorrelation: Breusch-Godfrey test (order 1)	0.0385	1.949	1.058	13.37	0.010	1.161	0.632	14.08
	(0.846)	(0.173)	(0.312)	(0.001)	(0.921)	(0.213)	(0.432)	(0.001)

*Note: * **, **,* denote significance at 1%, 5% and 10% level of significance respectively. Values in the parenthesis are the P-values*

On the other hand, an increase in debt service is shown to be associated with an insignificant reduction in government expenditures, except its capital component. This result is not surprising since increase in debt servicing obligation leaves the government with limited amount of resources for expenditure. But the fact that it tends to exert a significant positive impact on capital expenditure requires further inquiry into which component of capital expenditure increases and why. At the moment, we keep this explanation in view.

A surprising result from Table 1 (RHS) is the fact that trade openness is significantly associated with a reduction in government expenditure. This result is contrary to our a priori expectations and it contradicts the results of Shelton (2007), Rodrik (1998) and Shonchoy (2010). Several factors could account for this. For one, this result is probably because Nigeria is "a consuming economy" with a weak productive base. Trade openness or liberalization, which reduces trade barriers or restrictions, are suppose to encourage more foreign trade. Since Nigeria's export volume may not respond to trade openness vis-à-vis its imports bills, the resources accruing to government shrinks and therefore its expenditure. Second, more trade openness could imply less tax revenue to governments such that the size of the public sector shrinks rather than expands. This finding is consistent with the results of Benarroch & Pandey (2011).

Tables 2 and 3 (LHS) offer more illuminating insight into the determinants of government recurrent expenditure in Nigeria. The results largely support the earlier results presented in Table 1. The bottom part of Table 2 shows that the problem of autocorrelation is ruled out in the models. As shown in the table, an increase in foreign aid is significantly associated with increase in government recurrent expenditure in general administration, health, agriculture, construction and other unclassified economic services by as much as over 20%. Its impact on education was insignificant and negative. We also obtain a significant but negative relationship between aid and other undisclosed social and community services. On the aggregate, the LHS of Table 3 shows that foreign aid is not a significant factor that explains government recurrent expenditure on social and community services as well as economic services in Nigeria. Rather increase in foreign aid is

significantly channeled to finance government recurrent expenditure on administration (about 25%). This is suggestive that aid inflow to Nigeria may have been used to finance government recurrent consumption which is not poverty reducing or growth inducing.

Table 2: Determinants of Government Recurrent Expenditure: Basic Specifications (*with functional categories*)

Variables	(1) General Admin.	(2) Health	(3) Education	(4) Other Soc. & Comm. Services	(5) Agriculture	(6) Constructio n	(7) Transport & Commu.	(8) Other Economic Services.	(9) Transfers
Constant	-113.6***	14.09	-19.41	-155.5**	-76.99*	-216.3***	-132.66**	-227.50***	-55.123***
	(0.000)	(0.772)	(0.740)	(0.027)	(0.073)	(0.000)	(0.043)	(0.000)	(0.005)
$\log(\text{Aid}_{t-1})$	0.226***	0.222***	-0.182	-0.225***	0.251***	0.274***	0.088	0.205***	0.023
	(0.000)	(0.000)	(0.274)	(0.008)	(0.003)	(0.001)	(0.188)	(0.010)	(0.510)
$\log(\text{Revenue}_{t-1})$	0.130	1.025***	0.994***	0.320	0.620***	-0.297*	0.252	-0.182	0.483***
	(0.166)	(0.000)	(0.001)	(0.363)	(0.009)	(0.081)	(0.462)	(0.558)	(0.000)
$\log(\text{ Income per capita }_{t-1})$	-0.422	-3.193**	-0.577	0.011	0.306	0.795	-1.622	1.129	0.432
	(0.523)	(0.046)	(0.794)	(0.996)	(0.826)	(0.715)	(0.349)	(0.572)	(0.513)
$\log(\text{Openness}_{t-1})$	-1.287***	-0.947**	-0.961**	0.242	-2.027***	-0.475	-1.034**	-0.590	-0.571***
	(0.000)	(0.047)	(0.042)	(0.602)	(0.000)	(0.468)	(0.020)	(0.175)	(0.002)
log(Population)	6.886***	0.852	1.601	8.783***	4.110*	11.638***	-8.502***	12.06***	3.081***
	(0.000)	(0.689)	(0.557)	(0.008)	(0.068)	(0.000)	(0.005)	(0.000))	(0.001)
$\log(\text{Debt Service}_{t-1})$	-0.171**	-0.290*	-0.067	-0.212	-0.073	-0.056	-0.377***	-0.276	0.102
	(0.019)	(0.076)	(0.735)	(0.194)	(0.602)	(0.829)	(0.004)	(0.103)	(0.161)
Adj. R-Squared	0.986	0.968	0.950	0.965	0.941	0.936	0.962	0.956	0.986
Durbin-Watson	1.90	2.10	1.32	1.60	1.48	1.73	1.84	1.52	1.79
F-Value	1442	1197	414.9	289.0	156.3	361.4	410.3	1015	912.9
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

Autocorrelation: Breusch-Godfrey test (order 1)	0.085 (0.773)	0.098 (0.756)	3.977 (0.055)	1.046 (0.314)	2.855 (0.101)	0.642 (0.429)	0.181 (0.674)	2.038 (0.163)	0.432 (0.516)

*Note: * **, **,* denote significance at 1%, 5% and 10% level of significance respectively. Values in the parenthesis are the P-values*

Table 3: Determinants of Government Recurrent and Capital Expenditure: Basic Specifications (*with Broad categories*)

	Recurrent Expenditure				Capital Expenditure			
Variables	(1) Administration	(2) Social & Community Services	(3) Economic Services	(4) Transfers	(5) Administration	(6) Social & Community Services	(7) Economic Services	(8) Transfers
Constant	-65.23***	-47.81	-	-	-63.05*	-33.10	48.99	-104.0
	(0.001)	(0.289)	167.68***	55.123***	(0.087)	(0.382)	(0.291)	(0.335)
			(0.000)	(0.005)				
$\log(\text{Aid}_{t-1})$	0.252***	-0.074	0.092	0.023	-0.102	-0.339**	-0.422***	0.153
	(0.000)	(0.295)	(0.179)	(0.510)	(0.163)	(0.042)	(0.000)	(0.560)
$\log(\text{Revenue}_{t-1})$	0.465***	0.781***	0.037	0.483***	0.637***	0.805***	1.327***	-0.795
	(0.000)	(0.002)	(0.834)	(0.000)	(0.003)	(0.000)	(0.000)	(0.120)
$\log(\text{ Income per capita }_{t-1})$	-2.024***	-0.988	-0.410	0.432	2.440***	3.316	1.786	1.128
	(0.005)	(0.410)	(0.742)	(0.513)	(0.008)	(0.134)	(0.318)	(0.830)
$\log(\text{Openness}_{t-1})$	-1.416***	-1.030***	-1.215***	-0.571***	-1.055***	0.440	-0.164	0.966
	(0.000)	(0.002)	(0.004)	(0.002)	(0.001)	(0.354)	(0.695)	(0.299)
log(Population)	5.022***	3.462	9.934***	3.081***	2.393	0.035	-3.546*	5.186
	(0.000)	(0.119)	(0.000)	(0.001)	(0.204)	(0.983)	(0.067)	(0.212)
$\log(\text{Debt Service}_{t-1})$	-0.289***	-0.196**	-0.292**	0.102	-0.113	0.086	-0.074	0.874*
	(0.001)	(0.048)	(0.028)	(0.161)	(0.159)	(0.645)	(0.691)	(0.099)
Adj. R-Squared	0.987	0.975	0.972	0.986	0.971	0.938	0.937	0.253

Durbin-Watson	1.65	1.58	1.53	1.79	1.99	1.68	1.09	1.93
F-Value	1085	659.6	442.9	912.9	428.3	231.2	204.0	8.199
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Autocorrelation: Breusch-Godfrey test (order 1)	1.282	1.433	2.210	0.432	0.004	0.542	10.31	0.029
	(0.266)	(0.240)	(0.147)	(0.516)	(0.950)	(0.467)	(0.003)	(0.867)

*Note: * **, **,* denote significance at 1%, 5% and 10% level of significance respectively. Values in the parenthesis are the P-values.*

In addition, Table 2 further confirms that revenue remains a major determinant of long-term government expenditure in Nigeria. Returning to the influence of real income per capita on recurrent expenditure, Table 2 demonstrates that not all components of recurrent expenditure may experience a reduction in the long run. However, these components with positive coefficient were not significant. Thus, when we compare this with the results in the RHS of Table 1, we can submit that there is a long run tendency for government to incur less recurrent expenditure as its income increases in favour of more capital expenditure as the demand for infrastructural facilities (especially for administrative purposes) increases (see also the RHS of Table 3, column 5). This result is plausible since government capital expenditures on administration (e.g. defense and internal security) are pure public goods whose full cost for provisioning falls on the government. There is also a likely pressure on government to spend more for expanding its administrative infrastructural capacity as the economy develops while committing less of its resources to recurrent expenditure.

Again, we found in Table 2 that population is also a major determinant of long-term government recurrent spending. As expected, the coefficients are positive (except for transport and communication) and significant (except for health and education). The negative and significant relationship between Nigeria's population and government expenditure on transport and communication could be a manifestation of two effects. For one, we could attribute this to the liberalization of the communication sub-sector, which makes government size in the sector to significantly shrink from its earlier monopolistic (but near moribund) status. On the other hand, the result could be a manifestation of long-term neglect or poor government concern in the transportation sector, especially road and railways transportation, in the face of an increasing population.

The fact that population exerts an insignificant influence on government's health and education expenditures, is a disturbing result. It portrays that with an increasing population and therefore a higher demand for education and health care services, an insignificant amount of government resources would be committed to meet these demands (see also columns 2 & 6 of Table 3). The RHS of Table 3

presents interesting results on the basic determinants of government capital expenditure in Nigeria. Confirming our preliminary results in Table 1, it could be noted that apart from transfers which is not even significant, foreign aid is negatively associated with government capital expenditures and the elasticity is significant when it comes to social and community services (33.9%) and economic services (42.2%). The influence of revenue as well as real income per capita on capital expenditure is also consistent with our earlier results. Worthy of note is the fact that the answer to our earlier puzzle in Table 1 could be found in the RHS of Table 3. The positive and significant association of debt service with capital expenditure comes from government expenditure on transfers – reflecting the increase in the size of government transfers expenses occasioned by government increase in its debt servicing obligations.

3.2 Extended Specifications: with Demographic Variables

Tables 4 to 7 display the results of the extended specifications of the base variables with a set of demographic variables. They revealed the relative influence of the dependent segment of the populations (the young and the aged) and urbanization on the size of government budget in Nigeria. Due to colinearity problem, the total population variable was drop from the list of the basic variables. Since the inclusion of total government expenditure did not significantly alter the results from the behaviour of Federal Government expenditure (see Table 1), we choose to analyze the impact on only Federal government expenditure and then on recurrent and capital expenditures. A summary of the results are contained in Table 4. The coefficients for all the basic variables are consistently the same as in our previous results.

The coefficients of the new demographic variables are of the expected positive signs, except for capital expenditure in column 7 when the aged population (aged 65+) was controlled for. Our result shows that the dependent segments of the populations do not have significant influence on the overall size of Federal Government expenditure in Nigeria (see columns 1 & 2, Table 4). The only demographic factor that causes a significant expansion in Federal Government

expenditure in Nigeria is urbanization. This is not surprising given that Nigeria is reputed as the most populous country in Sub-Saharan Africa, with high rural-urban migration. The attendant migration of people to the urban areas in search of better job opportunities and basic amenities has lead to overcrowding in the urban centers. This in turn causes a positive and significant expansion in the size of federal government budget especially recurrent expenditure (column 6, Table 4). These take the form of expenditure on general administration (column 3, Table 5a), other social and community services (column 3, Table 5b), transport and communication (column 3, Table 5c) and some form of welfare and transfers payments (e.g. subsidies on petroleum products) (see column 9, Table 5c). On the aggregate, it is government expenditure on economic services (e.g. on urban transportation network) followed by administration (e.g. curtailing high level of urban crime rate and social disorder) that causes much of the expansion in government expenditure as a result of increase urbanization(see columns 3 & 9, Table 6).

Table 4: Determinants of Government Expenditure: Extended Specifications (*with Demographic Variables*)

Variables	Federal Gov. Expenditure			Recurrent Expenditure			Capital Expenditure		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Constant	4.140	-11.53	-42.24***	2.800	-0.481	-42.34***	1.992	-31.31	-42.45**
	(0.643)	(0.658)	(0.000)	(0.780)	(0.984)	(0.000)	(0.890)	(0.461)	(0.014)
$\log(\text{Aid}_{t-1})$	-0.075	-0.012	-0.088***	-0.042	0.176***	0.076***	-0.132	-0.282***	-0.322***
	(0.290)	(0.807)	(0.001)	(0.599)	(0.001)	(0.010)	(0.160)	(0.005)	(0.000)
$\log(\text{Revenue}_{t-1})$	0.891***	0.923***	0.477***	0.840***	0.948***	0.354***	0.942***	0.870***	0.661***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
$\log(\text{ Income per capita }_{t-1})$	-0.347	-0.513	1.238***	-1.536**	-2.373***	-0.035	1.533	2.297**	3.109***
	(0..544)	(0.302)	(0.005)	(0.020)	(0.000)	(0.951)	(0.137)	(0.017)	(0.002)
$\log(\text{Openness}_{t-1})$	-0.273	-0.472*	-0.594***	-0.302	-0.733***	-0.903***	-0.226	-0.108	-0.141
	(0.242)	(0.090)	(0.000)	(0.219)	(0.007)	(0.000)	(0.563)	(0.816)	(0.664)
$\log(\text{Debt Service}_{t-1})$	-0.010	-0.087	-0.010	-0.003	-0.206**	-0.106*	0.055	0.150	0.193**
	(0.860)	(0.211)	(0.789)	(0.960)	(0.018)	(0.063)	(0.569)	(0.148)	(0.132)
$\log(\text{Population65 }+)$	2.896	-	-	14.75**	-	-	-13.51**	-	-
	(0.527)			(0.016)			(0.028)		
$\log(\text{Population 15 }-)$	-	5.323	-	-	6.881	-	-	3.295	-
		(0.396)			(0.223)			(0.7400)	
log(Urbanization)	-	-	2.227***	-	-	2.974***	-	-	1.034
			(0.000)			(0.000)			(0.132)
Adj. R-Squared	0.986	0.987	0.992	0.986	0.985	0.991	0.974	0.972	0.973
Durbin-Watson	1.71	1.87	1.63	1.82	2.01	1.76	1.11	1.02	0.960

F-Value	729.4	1483	1128	1220	1453	1370	309.3	534.2	376.0
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Autocorrelation: Breusch-Godfrey test (order 1)	0.486	0.042	20.68	0.083	0.168	0.558	9.060	11.66	14.2
	(0.491)	(0.839)	(0.801)	(0.776)	(0.685)	(0.461)	(0.005)	(0.002)	(0.001)

*Note: * **, **,* denote significance at 1%, 5% and 10% level of significance respectively. Values in the parenthesis are the P-values.*

The fact that the older segment of the population (aged 65+) exerts a significant and positive pressure on government recurrent expenditure but a negative impact on government capital expenditure (see Table 4, columns 4 & 7) is a bit puzzling . However, the result could imply that as this dependency and unproductive segment of the population increases, the resources available to government to spend on capital projects become lean, due to a likely fall in government taxes and income. However, the recurrent expenditure incurred by government, instead of shrinking expands as the demand for services like housing, health care, pensions and gratuities for this aged population increases (see also Tables 5a-c). Notice that apart from government recurrent expenditure on construction (which housing is a major component), the influence of the aged population on government expenditure on transfers and health care, though positive, were insignificant. This tends to demonstrate that the aged in Nigeria are mostly looked after by family members rather than by governments.

Interestingly, Table 5a (column 7) shows that as the aged segment of the population rises, government expenditure on education significantly falls. This tends to suggest that the more this bracket of the population expands, the less government would have to spend on education, which is normally demanded by the youths. A shocking result, however, is the fact that an increase in this segment also triggers a higher and significant government recurrent expenditure on general administration as well as on transport and communications. Nevertheless, a possibility is that a sizeable number of the elderly population may also constitute some proportion of urban population, and hence their influence on the aforementioned areas of government spending.

An insight into the influence of the younger population on the size of government budget could also be gleaned from Tables 4 to 5. Even though their impact on the overall size of government recurrent expenditure was positive but insignificant (Table 4), subsequent disaggregation of recurrent expenditure into its various components reveals that, apart from transfers, it is only on the unclassified components of recurrent expenditures (other economic services and other social

and community services) was their impact significant (see Tables 5b and 5c). A more disappointing result is that this younger segment of the population is not a good explanatory factor in Nigeria's recurrent expenditure on health and education (see Table 5a, columns 5 & 8). In fact, their impact on health care expenditure was not only insignificant but turns up with the wrong sign.

Table 5a: Determinants of Government Recurrent Expenditure: Extended Specifications (*functional categories with Demographic Variables*)

Variables	General Admin. Expenditure			Health Expenditure			Education Expenditure		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Constant	-5.837	-15.66	-56.59***	0.969	75.78**	23.14	59.43**	-65.95	-10.28
	(0.688)	(0.608)	(0.000)	(0.971)	(0.014)	(0.476)	(0.025)	(0.248)	(0.793)
$\log(\text{Aid}_{t-1})$	0.006	0.397***	0.242***	-0.018	0.176**	0.226***	0.200	-0.047	-0.182
	(0.953)	(0.000)	(0.000)	(0.911)	(0.013)	(0.000)	(0.190)	(0.711)	(0.269)
$\log(\text{Revenue}_{t-1})$	0.720***	0.913***	0.107	0.995***	1.086***	1.039***	1.342***	1.227***	0.954***
	(0.000)	(0.000)	(0.280)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.003)
$\log(\text{Income per capita}_{t-1})$	-2.036**	-3.511***	-0.381	-2.423	-	-3.257**	-2.924	-1.301	-0.425
	(0.045)	(0.000)	(0.565)	(0.129)	3.571***	(0.044)	(0.168)	(0.486)	(0.849)
					(0.003)				
$\log(\text{Openness}_{t-1})$	-0.358	-1.149***	-1.261***	-0.561	-0.552	-0.933**	-1.295**	-1.458**	-0.977**
	(0.119)	(0.004)	(0.000)	(0.216)	(0.243)	(0.047)	(0.018)	(0.163)	(0.039)
$\log(\text{Debt Service}_{t-1})$	0.003	-0.363***	-0.191***	-0.109	-0.190	-0.294*	-0.351*	-0.285	-0.070
	(0.971)	(0.493)	(0.000)	(0.625)	(0.291)	(0.068)	(0.094)	(0.163)	(0.722)
$\log(\text{Population65} +)$	26.00***	-	-	20.37	-	-	-	-	-
	(0.001)			(0.100)			28.82***		
							(0.005)		
$\log(\text{Population 15} -)$	-	13.20	-	-	-11.47	-	-	21.39	-
		(0.112)			(0.160)			(0.108)	
log(Urbanization)	-	-	3.980***	-	-	0.405	-	-	1.106
			(0.000)			(0.748)			(0.493)

Adj. R-Squared	0.979	0.976	0.986	0.970	0.969	0.968	0.954	0.954	0.950
Durbin-Watson	1.84	1.90	1.91	2.11	2.15	2.10	1.41	1.45	1.33
F-Value	876.3	473.6	1502	985.8	1235	1177	387.9	594.2	423.6
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Autocorrelation: Breusch-Godfrey test (order 1)	0.042 (0.839)	0.004 (0.947)	0.058 (0.811)	0.115 (0.736)	0.314 (0.579)	0.107 (0.746)	2.716 (0.109)	2.58 (0.118)	3.93 (0.056)

*Note: * **, **,* denote significance at 1%, 5% and 10% level of significance respectively. Values in the parenthesis are the P-values*

Table 5b: Determinants of Government Recurrent Expenditure: Extended Specifications (*functional categories with Demographic Variables*)

Variables	Other Soc. & Comm. Serv. Expend.			Agriculture Expenditure			Construction Expenditure		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Constant	9.029	-90.28	-83.56*	-5.535	88.49	-50.30*	-75.00	-23.24	-118.8***
	(0.792)	(0.124)	(0.060)	(0.839)	(0.242)	(0.066)	(0.116)	(0.688)	(0.000)
$\log(\text{Aid}_{t-1})$	-0.287	0.075	-0.205**	0.177	0.208	0.254***	-0.426	0.526***	0.303***
	(0.226)	(0.506)	(0.012)	(0.390)	(0.115)	(0.002)	(0.150)	(0.000)	(0.000)
$\log(\text{Revenue}_{t-1})$	1.178***	1.363***	0.284	1.000***	1.009***	0.544**	0.540***	1.007***	-0.327*
	(0.000)	(0.000)	(0.435)	(0.000)	(0.000)	(0.031)	(0.001)	(0.000)	(0.057)
$\log(\text{Income per capita}_{t-1})$	-3.040	-3.933**	0.091	-0.918***	-1.528	0.584	-0.431	-4.423**	0.830
	(0.145)	(0.016)	(0.963)	(0.597)	(0.332)	(0.664)	(0.883)	(0.450)	(0.695)
$\log(\text{Openness}_{t-1})$	1.151*	-0.037	0.271	-1.545***	-1.128	-2.051***	1.516***	-0.031	-0.425
	(0.078)	(0.951)	(0.548)	(0.002)	(0.143)	(0.000)	(0.002)	(0.963)	(0.516)
$\log(\text{Debt Service}_{t-1})$	-0.153	-0.606***	-0238	-0.013	0.079	-0.082	0.486	-0.312	-0.091
	(0.463)	(0.002)	(0.139)	(0.280)	(0.698)	(0.557)	(0.178)	(0.421)	(0.722)
$\log(\text{Population65} +)$	15.62	-	-	10.90	-	-	70.49***	-	-
	(0.363)			(0.000)			(0.002)		
$\log(\text{Population 15} -)$	-	32.62**	-	-	-20.409	-	-	15.05	-
		(0.019)			(0.255)			(0.369)	
log(Urbanization)	-	-	5.110***	-	-	2.697*	-	-	6.680
			(0.008)			(0.056)			(0.000)
Adj. R-Squared	0.955	0.961	0.965	0.939	0.942	0.942	0.941	0.912	0.936

Durbin-Watson	1.34	1.90	1.64	1.57	1.63	1.47	1.85	1.67	1.72
F-Value	200.5	272.9	292.4	244.8	217.37	156.8	207.6	154.5	359.2
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Autocorrelation: Breusch-Godfrey test (order 1)	2.709	0.026	0.805	1.800	1.173	2.97	0.141	0.697	0.671
	(0.120)	(0.872)	(0.376)	(0.189)	(0.287)	(0.094)	(0.710)	(0.410)	(0.419)

*Note: * **, **,* denote significance at 1%, 5% and 10% level of significance respectively. Values in the parenthesis are the P-values.*

Table 5c: Determinants of Government Recurrent Expenditure: Extended Specifications (*functional categories with Demographic Variables*)

Variables	Transport & Communication Expend.			Other Economic Serv. Expenditure			Transfers Expenditure		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Constant	-12.21	2.166	-61.99	-23.69	-122.0***	-127.1***	7.475	-15.49	-31.06**
	(0.610)	(0.968)	(0.146)	(0.470)	(0.007)	(0.003)	(0.432)	(0.332)	(0.014)
$\log(\text{Aid}_{t-1})$	-0.285	0.280**	0.108	-0.060	0.595***	0.234***	0.041	0.106**	0.029
	(0.119)	(0.019)	(0.117)	(0.761)	(0.000)	(0.004)	(0.601)	(0.032)	(0.406)
$\log(\text{Revenue}_{t-1})$	0.931***	1.209***	0.226	0.910***	01.239***	-0.218	0.803***	0.836***	0.460***
	(0.000)	(0.000)	(0.537)	(0.000)	(0.000)	(0.491)	(0.000)	(0.000)	(0.000)
$\log(\text{ Income per capita }_{t-1})$	-3.150**	-5.434***	-1.579	-2.247	-4.288***	1.185	-0.817	-0.950	0.501
	(0.046)	(0.000)	(0.370)	(0.288)	(0.005)	(0.551)	(0.192)	(0.127)	(0.449)
$\log(\text{Openness}_{t-1})$	0.243	-0.758	-1.001**	0.886	-0.852	-0.541	-0.302	-0.541**	-0.567***
	(0.618)	(0.152)	(0.023)	(0.237)	(0.176)	(0.228)	(0.281)	(0.012)	(0.002)
$\log(\text{Debt Service}_{t-1})$	-0.086	-0.580**	-0.403***	-0.061	-0.778	-0.313*	0.093	0.005	0.093
	(0.578)	(0.017)	(0.002)	(0.772)	(0.000)	(0.058)	(0.221)	(0.941)	(0.194)
log(Population65 +)	40.31***	-	-	35.85**	-	-	2.318	-	-
	(0.003)			(0.033)			(0.678)		
log(Population 15 −)	-	12.63	-	-	40.61***	-	-	7.015**	-
		(0.366)			(0.000)			(0.046)	
log(Urbanization)	-	-	4.903***	-	-	6.951	-	-	1.844***
			(0.007)			(0.000)			(0.000)

Adj. R-Squared	0.958	0.951	0.961	0.939	0.946	0.956	0.983	0.983	0.985
Durbin-Watson	1.84	1.88	1.85	1.45	1.82	1.51	1.86	2.02	1.78
F-Value	363.2	259.9	413.6	217.8	395.7	1094	916.4	1091	957.6
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Autocorrelation: Breusch-Godfrey test (order 1)	0.071 (0.791)	0.001 (0.981)	0.165 (0.687)	2.268 (0.142)	0.150 (0.701)	2.09 (0.158)	0.096 (0.759)	0.017 (0.896)	0.450 (0.507)

*Note: * **, **,* denote significance at 1%, 5% and 10% level of significance respectively. Values in the parenthesis are the P-values.*

Tables 6 and 7 contain the summary of demographic influences on the broad categories of recurrent and capital expenditures in Nigeria respectively. It could be discerned from Table 6 that the younger population's positive and significant impact on government recurrent spending appears to be limited to social and community services, economic services and then on transfers. This is not inconsistent with our earlier results. In other words, following our previous results, these significant influences can only be attributed to some unclassified components rather than the presumed higher spending on education and health care programmes to cater for the needs of this peculiar category of the Nigerian population. The results become more disappointing when we consider the response of government capital expenditure to demographic influences. As shown in Table 7, neither the younger population nor urbanization is significant in accounting for the size of Federal Government capital expenditure. These results are also consistent with our initial results on Table 4.

Overall, the results indicate that while urbanization exert a significant impact on government recurrent expenditure (especially on general administration, transport and communications), its influence on government capital expenditure, though positive, is insignificant; the younger segment of population is not a major or significant determinant of the long run response of government expenditure to education and health care programmes in the Nigerian case; the higher the aged (i.e. elderly population) in the Nigerian society, the higher is government recurrent spending (especially on general administration and construction) and the less resources it commits to education and capital expenditure. Only urbanization has a consistent positive impact on government expenditure in Nigeria.

Based on these, we could deduce that the long-run behaviour of government expenditure in Nigeria does not respond (as expected) to the demographic structure of the nation. It demonstrates that government expenditure decisions does not take into account the demographic compositions or characteristics of the nation. Rather, government seems to be only concerned with the (easily visible) high rate of urbanization. In other words, government fiscal or expenditure decisions tend to focus narrowly on contending with the surging (but uncertain) urban population size, rather than bordered much about the

demographic pattern. This could explain the apparent lack of concrete action plan for the youth and elderly in Nigeria compared to other developed countries like the U.S

Table 6: Determinants of Government Recurrent Expenditure: Extended Specifications (*Broad categories with Demographic Variables*)

Variables	Administration			Soc. & Community Serv.			Economic Services			Transfers		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Constant	3.397	51.77	-24.15**	34.74*	-34.63	-21.54	-21.744	-15.49	-86.93***	7.475	-15.49	-31.06**
	(0.775)	(0.106)	(0.046)	(0.081)	(0.352)	(0.435)	(0.351)	(0.332)	(0.000)	(0.432)	(0.332)	(0.014)
$\log(\text{Aid}_{t-1})$	0.011	0.315**	0.263**	0.043	0.061	-0.069	-0.302*	0.106**	0.114	0.041	0.106*	0.029
	(0.899)	*	*	(0.725)	(0.381)	(0.316)	(0.098)	(0.032)	(0.100)	(0.601)	*	(0.406)
		(0.000)	(0.000)								(0.032)	
$\log(\text{Revenue}_{t-1})$	0.856***	1.003***	0.444***	1.188**	1.201**	0.749**	0.850**	0.836**	-0.009	0.803**	0.836**	0.460**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.004)	(0.000)	(0.000)	(0.962)	(0.000)	(0.000)	(0.000)
$\log(\text{Income per capita}_{t-1})$	-2.833***	-4.272***	-1.975***	-2.840**	-2.544**	-0.885	-2.386	-0.950	-0.297	-0.817	-0.950	0.501
	(0.001)	(0.000)	(0.006)	(0.027)	(0.011)	(0.457)	(0.118)	(0.127)	(0.809)	(0.192)	(0.127)	(0.449)
$\log(\text{Openness}_{t-1})$	-0.636***	-0.968***	-1.400***	-0.853**	-1.236***	-1.030***	0.225	-0.541**	-1.185***	-0.302	-0.541**	-0.567***
	(0.005)	(0.006)	(0.000)	(0.027)	(0.006)	(0.002)	(0.587)	(0.012)	(0.005)	(0.281)	(0.012)	(0.002)
$\log(\text{Debt Service}_{t-1})$	-0.102	-0.316**	-	-	-	-0.205**	0.017	0.005	-0.322**	0.093	0.005	0.093
	(0.280)	(0.018)	0.304**	0.280*	0.383**	(0.033)	(0.920)	(0.941)	(0.016)	(0.221)	(0.941)	(0.194)

			*	*	*							
			(0.001)	(0.028)	(0.001)							
log(Population65 +)	25.45**	-	-	-5.311	-	-	43.72**	-	-	2.318	-	-
	*			(0.580)			*			(0.678)		
	(0.000)						(0.001)					
log(Population 15 −)	-	-2.415	-	-	16.173*	-	-	7.015**	-	-	7.015*	-
		(0.773)			(0.085)			(0.046)			*	
											(0.046)	
log(Urbanization)	-	-	2.925**	-	-	2.106	-	-	5.808**	-	-	1.844**
			*			(0.104)			*			*
			(0.000)						(0.000)			(0.000)
Adj. R-Squared	0.986	0.982	0.987	0.974	0.976	0.976	0.965	0.983	0.972	0.983	0.983	0.985
Durbin-Watson	1.87	1.83	1.66	1.60	1.79	1.60	1.64	2.02	1.54	1.86	2.02	1.78
F-Value	1401	631.6	1173	523.5	783.4	693.8	330.2	1091	443.5	916.4	1091	957.6
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Autocorrelation:	0.089	0.021	1.204	0.947	0.257	1.322	0.902	0.017	2.089	0.096	0.017	0.450
Breusch-Godfrey test	(0.768)	(0.885)	(0.281)	(0.338)	(0.615)	(0.259)	(0.349)	(0.896)	(0.158)	(0.759)	(0.896)	(0.507)
(order 1)												

*Note: * **, **,* denote significance at 1%, 5% and 10% level of significance respectively. Values in the parenthesis are the P-values.*

Table 7: Determinants of Government Capital Expenditure: Extended Specifications (*Broad categories with Demographic Variables*)

Variables	Administration			Soc. & Community Serv.			Economic Services			Transfers		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Constant	9.587	-31.32	-47.56**	-14.55	-60.95	-34.01	26.55	55.82	13.98	-87.42	-57.34	-62.12
	(0.489)	(0.335)	(0.029)	(0.555)	(0.218)	(0.229)	(0.240)	(0.361)	(0.662)	(0.261)	(0.640)	(0.430)
$\log(\text{Aid}_{t-1})$	0.105	-0.039	-0.100	-0.195	-0.300**	-0.340**	-0.043	-	-	-0.532	0.319	0.164
	(0.337)	(0.642)	(0.163)	(0.289)	(0.030)	(0.040)	(0.756)	0.588***	0.436**	(0.211)	(0.234)	(0.530)
								(0.000)	(0.000)			
$\log(\text{Revenue}_{t-1})$	0.979***	0.911***	0.592**	0.879*	0.830**	0.795**	1.152**	0.881**	1.291**	-	-0.185	-0.821
	(0.000)	(0.000)	(0.005)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	0.603*	(0.341)	(0.114)
										(0.047)		
$\log(\text{Income per capita}_{t-1})$	0.589	1.366	2.603**	2.647	3.298	3.357	1.403	3.381**	1.958	2.281	-1.201	1.195
	(0.538)	(0.125)	(0.004)	(0.232)	(0.121)	(0.132)	(0.377)	(0.030)	(0.277)	(0.671)	(0.804)	(0.820)
$\log(\text{Openness}_{t-1})$	-	-1.024**	-	0.261	0.225	0.434	-0.982**	0.201	-0.208	2.328*	0.864	0.981
	1.092***	(0.010)	1.069***	(0.609)	(0.703)	(0.361)	(0.024)	(0.729)	(0.619)	(0.081)	(0.326)	(0.295)
	(0.001)		(0.000)									
$\log(\text{Debt Service}_{t-1})$	-0.265**	-0.186	-0.118	-0.022	0.014	0.087	-0.363*	0.168	-0.061	1.394*	0.661	0.858

	(0.016)	(0.127)	(0.147)	(0.912)	(0.938)	(0.642)	(0.077)	(0.345)	(0.745)	* (0.027)	(0.238)	(0.104)
log(Population65 +)	-13.77* (0.062)	-	-	-11.55 (0.224)	-	-	- 34.84** * (0.001)	-	-	61.46* * (0.034)	-	-
log(Population 15 −)	-	12.63 (0.366)	-	-	7.559 (0.474)	-	-	-21.94 (0.116)	-	-	17.10 (0.495)	-
log(Urbanization)	-	-	1.573 (0.148)	-	-	0.073 (0.940)	-	-	-1.803 (0.112)	-	-	3.043 (0.203)
Adj. R-Squared	0.971	0.970	0.972	0.940	0.939	0.938	0.944	0.975	0.937	0.299	0.247	0.253
Durbin-Watson	2.37	2.19	1.99	1.70	1.72	1.68	1.15	0.975	1.07	1.85	1.85	1.94
F-Value	1761	600.4	430.8	266.5	237.6	230.7	361.02	169.5	183.1	10.05	9.95	8.239
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Autocorrelation:	1.416	0.342	0.003	0.486	0.419	0.546	8.556	12.61	0.10.91	0.182	0.175	0.022
Breusch-Godfrey test (order 1)	(0.243)	(0.563)	(0.959)	(0.491)	(0.522)	(0.465)	(0.006)	(0.001)	(0.002)	(0.673)	(0.679)	(0.884)

*Note: * **, **,* denote significance at 1%, 5% and 10% level of significance respectively. Values in the parenthesis are the P-values*

3.3 Extended Specifications: with Political/Institutional Variables

The results of the extended basic model to incorporate some political and institutional variables are shown in Tables 8 to 10. As revealed in Table 8 below, all the coefficients of our basic variables remain relatively unchanged. The various diagnostic tests at the bottom of the table shows strong evidence that each of the models are robust for policy analysis.

Table 8: Determinants of Government Expenditure: Extended Specifications (*with Institutional and Political Variables*)

Variables	Federal Gov. Expenditure		Recurrent Expenditure		Capital Expenditure	
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	-69.92***	-	-92.15***	-	-28.17	-57.28**
	(0.000)	77.83***	(0.000)	90.65***	(0.232)	(0.012)
		(0.000)		(0.000)		
$\log(\text{Aid}_{t-1})$	-0.097**	-	0.024	0.0367	-0.227**	-0.373***
	(0.014)	0.133***	(0.575)	(0.318)	(0.012)	(0.000)
		(0.000)				
$\log(\text{Revenue}_{t-1})$	0.514***	0.476***	0.353***	0.344***	0.773***	0.675***
	(0.000)	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)
$\log(\text{Income per capita}_{t-1})$	1.128*	1.013**	0.610	0.175	1.869	2.291**
	(0.058)	(0.025)	(0.346)	(0.766)	(0.112)	(0.025)
$\log(\text{Openness}_{t-1})$	-0.470***	-	-0.986***	-	0.242	0.307
	(0.001)	0.451***	(0.000)	0.988***	(0.165)	(0.268)
		(0.003)		(0.000)		
log(Population)	3.575***	4.193***	5.193***	5.369***	0.691	2.234**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.441)	(0.019)
$\log(\text{Debt Service}_{t-1})$	-0.053	-0.033	-0.066	-0.023	0.004	0.107
	(0.365)	(0.467)	(0.305)	(0.163)	(0.965)	(0.245)
SAP	0.233**	-	0.118	-	0.456**	-
	(0.017)		(0.299)		(0.016)	
Regime	-0.080	-	0.049	-0.023	-0.205	-0.477***
	(0.249)	0.220***	(0.694)	(0.801)	(0.120)	(0.001)

	(0.000)					
War	0.005	-	0.195	-	-0.468*	-
	(0.976)		(0.197)		(0.081)	
Election	0.282*	0.310*	0.316**	0.319**	0.203	0.287
	(0.065)	(0.066)	(0.016)	(0.031)	(0.424)	(0.308)
Adj. R-Squared	0.993	0.993	0.992	0.992	0.982	0.979
Durbin-Watson	2.17	1.867	1.75	1.66	1.59	1.23
F-Value	5622	2754	2.430	1163	1349	508.8
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Autocorrelation:	0.277		0.527	1.023	1.479	5.462
Breusch-Godfrey test	(0.603)		(0.474)	(0.320)	(0.234)	(0.026)
(order 1)						
Chow x^2(SAP)	-	6.352	-	102.7	-	109.3
		(0.017)		(0.000)		(0.000)
Chow x^2(WAR)	-	6.201	-	6.859	-	4.408
		(0.045)		(0.032)		(0.110)

*Note: * **, **,* denote significance at 1%, 5% and 10% level of significance respectively. Values in the parenthesis are the P-values*

The result of the effect of the adjustment dummy, SAP, on long-term government expenditure in Nigeria is puzzling. In all the models considered in Tables 8 to 10, the coefficient of this variable, though not significant in some cases, are all positive. This preliminary result tends to contradict the widely held presumption that SAP negatively affects government expenditure in the country. As shown in Table 8, the adjustment programme did have a significant and positive impact on Federal government expenditure through its impact on capital expenditure. Since its impact on recurrent expenditure is insignificant, the result is suggestive that the adjustment policy actually encourages more capital spending and minimal (i.e. insignificant) recurrent spending. However, this conclusion should be accepted with caution since it does not accord with our theoretical expectation. Fundamentally, it negates the core and widely known emphasis of the policy. As pointed out by Umobong & Akpan (2010), among the basic tenet of SAP was handing over the economy to the perceived efficiency of the "invisible

hand" mechanism. According to them, government was encouraged to reduce its expenditure *to curb huge fiscal deficit,* withdraw state subsidies especially concerning social services, fertilizer distribution and petroleum products; establish a "realistic" exchange rate for the naira; restore a healthy balance of payments position; privatize its parastatals, and re-position the economy on the path to sustainable non-inflationary growth and development.

Perhaps, a good way of going around the puzzle is to carry out a test for structural break during the adjustment era. We did this for each of the specifications and the results are reported at the bottom of the table. As all the results indicate, the null hypothesis of no structural break cannot be accepted for all the specifications even at the 1% level of significance (see the bottom of columns 2, 4, & 6, Table 8-10). This implies that the slope coefficients of the expenditure functions were significantly different during the adjustment period.

On the other hand, the coefficients of the civil war dummy were evidently insignificant in almost all the specifications in Table 8, especially at the 5% level. Precisely, the impact of the variable on Federal government and recurrent expenditure were positive but insignificant. However, it turns up with a significant negative coefficient at the 10% level for government capital expenditure. We interpret these results as preliminary (but very weak) evidence in support of Peacock & Wiseman (1961) hypothesis.

However, a disaggregation of recurrent and capital expenditures, as shown in Tables 9 and 10 respectively, indicates more re-assuring and qualified results. First, in terms of recurrent expenditure, the civil war accounts for a positive and significant change in government administrative spending. The impacts on other components of recurrent spending were insignificant. This is an expected result given that government administrative spending composed of general administration, defense and internal security, among others. It shows that government administrative expenditure was significantly higher (by 74%)[5] during the war period than would otherwise be the case.

[5] Note that if $\pm\beta$ is the coefficient of a dummy variable, say x_1, when log(y) is the dependent variable, the exact % difference in the predicted y is found by $100 \times \left[exp\left(\pm\hat{\beta}\right) - 1\right]$ (see details in Woodridge, 2004: 219)

Table 9: Determinants of Government Recurrent Expenditure: Extended Specifications (*with Institutional and Political Variables*)

Variables	Administration		Social & Community Services		Economic Services		Transfers	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	-79.44***	-70.67***	-38.59	-58.02	-179.6***	-176.5***	-62.2***	-67.74***
	(0.000)	(0.001)	(0.402)	(0.188)	(0.000)	(0.000)	(0.006)	(0.002)
$\log(\text{Aid}_{t-1})$	0.180***	0.235***	-0.085	-0.123*	0.030	0.056	-0.003	-0.006
	(0.002)	(0.000)	(0.852)	(0.067)	(0.736)	(0.533)	(0.958)	(0.870)
$\log(\text{Revenue}_{t-1})$	0.443***	0.437***	0.777***	0.734**	0.018	-0.005	0.449**	0.446***
	(0.000)	(0.000)	(0.001)	(0.002)	(0.924)	(0.980)	(0.000)	(0.000)
$\log(\text{Income per capita}_{t-1})$	-0.543	-1.674**	-1.975	-1.050	0.771	-0.216	0.707	0.683
	(0.454)	(0.019)	(0.250)	(0.441)	(0.546)	(0.849)	(0.325)	(0.255)
$\log(\text{Openness}_{t-1})$	-1.531***	-1.547***	-0.933**	-0.891**	-1.22***	-1.227***	-0.63***	-0.627***
	(0.000)	(0.000)	(0.025)	(0.026)	(0.008)	(0.005)	(0.001)	(0.001)
log(Population)	5.012***	5.169***	3.479*	4.111*	9.947***	10.36***	3.362***	3.410***
	(0.000)	(0.000)	(0.094)	(0.055)	(0.000)	(0.000)	(0.001)	(0.000)
$\log(\text{Debt Service}_{t-1})$	-0.211**	-0.267***	-0.314**	-0.229**	-0.261*	-0.296**	0.106	0.107*
	(0.027)	(0.003)	(0.025)	(0.042)	(0.087)	(0.027)	(0.117)	(0.058)
SAP	0.206	-	0.084	-	0.273	-	0.019	-
	(0.145)		(0.661)		(0.287)		(0.895)	
Regime	0.183	0.056	-0.195	-0.243	0.077	-0.090	-0.025	-0.037
	(0.135)	(0.552)	(0.463)	(0.220)	(0.762)	(0.613)	(0.828)	(0.709)
War	0.554**	-	-0.577	-	0.438	-	0.004	-

	(0.018)		(0.157)		(0.161)		(0.981)	
Election	0.240	0.232	0.360	0.405*	0.352	0.360	0.312**	0.314**
	(0.301)	(0.392)	(0.125)	(0.075)	(0.388)	(0.424)	*	*
							(0.003)	(0.001)
Adj. R-Squared	0.988	0.987	0.976	0.977	0.971	0.972	0.986	0.987
Durbin-Watson	1.64	1.47	1.78	1.58	1.52	1.47	1.88	1.88
F-Value	3992	1146	3425	654.7	1321	416.5	1335	1035
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Autocorrelation:	1.273	2.975	0.322	1.478	1.983	2.621	0.108	0.119
Breusch-Godfrey test	(0.269)	(0.095)	(0.575)	(0.234)	(0.170)	(0.116)	(0.745)	(0.732)
(order 1)								
Chow x^2(SAP)	-	308.2	-	181.1	-	137.3	-	32.54
		(0.000)		(0.000)		(0.000)		(0.000)
Chow x^2(WAR)	-	9.871	-	10.18	-	2.470	-	18.97
		(0.001)		(0.006)		(0.291)		(0.000)

Note: * **, **,* *denote significance at 1%, 5% and 10% level of significance respectively. Values in the parenthesis are the P-values*

Secondly, looking at capital expenditure, the results in Table 10 reveals that the civil war brought about a significant reduction in all components of government capital spending (except transfers).

Table 10: Determinants of Government Capital Expenditure: Extended Specifications (*with Institutional and Political Variables*)

Variables	Administration		Social & Community Services		Economic Services		Transfers	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	-51.71	-70.10**	8.97	-36.89	70.91	35.66	-34.10	-57.44
	(0.111)	(0.039)	(0.814)	(0.028)	(0.169)	(0.448)	(0.537)	(0.427)
$\log(\text{Aid}_{t-1})$	-0.043	-0.139*	-0.093	-	-0.312**	-	0.343	0.273
	(0.627)	(0.067)	(0.576)	0.342*	(0.036)	0.488**	(0.210)	(0.168)

				*		*		
				(0.028)		(0.000)		
$\log(\text{Revenue}_{t-1})$	0.656***	0.606***	0.877***	0.784**	1.110**	1.267***	-0.330	-0.552
	(0.000)	(0.002)	(0.000)	(0.000)	(0.592)	(0.000)	(0.266)	(0.132)
$\log(\text{ Income per capita }_{t-1})$	1.610	2.224**	1.479	3.889*	1.110	1.611	0.962	-2.789
	(0.161)	(0.026)	(0.493)	(0.085)	(0.592)	(0.360)	(0.821)	(0.427)
$\log(\text{Openness}_{t-1})$	-0.906***	-0.866***	0.075	0.172	-0.011	0.068	2.523**	2.586**
	(0.001)	(0.003)	(0.830)	(0.706)	(0.980)	(0.887)	(0.011)	(0.023)
log(Population)	2.171	2.931*	-1.385	-0.035	-4.525**	-2.650	0.642	4.413
	(0.159)	(0.090)	(0.354)	(0.984)	(0.026)	(0.173)	(0.844)	(0.185)
$\log(\text{Debt Service}_{t-1})$	-0.228**	-0.154	-0.071	0.135	-0.252	-0.128	0.613*	0.592
	(0.045)	(0.132)	(0.708)	(0.455)	(0.210)	(0.501)	(0.080)	(0.108)
SAP	0.169	-	0.121	-	0.556**	-	1.764*	-
	(0.196)		(0.527)		(0.033)		(0.040)	
Regime	-0.152	-0.251*	0.264*	0.199	-0.032	-0.363	0.137	-0.930**
	(0.365)	(0.093)	(0.083)	(0.190)	(0.919)	(0.285)	(0.822)	(0.011)
War	-0.439*	-	-1.455**	-	-0.562*	-	1.308*	-
	(0.083)		(0.025)		(0.060)		(0.082)	
Election	0.225	0.272	0.074	0.176	0.423	0.525	-2.165*	-2.025
	(0.169)	(0.114)	(0.716)	(0.428)	(0.248)	(0.184)	(0.068)	(0.125)
Adj. R-Squared	0.971	0.972	0.945	0.937	0.942	0.941	0.502	0.430
Durbin-Watson	2.46	2.20	2.45	1.76	1.30	1.07	2.46	2.08
F-Value	1406	620.5	600.9	196.81	1439	278.2	10.39	12.67
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Autocorrelation:	2.175	0.457	1.735	0.253	5.278	10.27	1.831	0.051
Breusch-Godfrey test	(0.151)	(0.504)	(0.198)	(0.619)	(0.029)	(0.003)	(0.187)	(0.822)
(order 1)								
Chow x^2(SAP)	-	135.6	-	84.88	-	117.7	-	71.76
		(0.000)		(0.000)		(0.000)		(0.000)
Chow x^2(WAR)	-	9.080	-	7.006	-	5.122	-	11.98

(0.011)	(0.030)	(0.077)	(0.003)

Note: * **, **,* *denote significance at 1%, 5% and 10% level of significance respectively. Values in the parenthesis are the P-values*

Expectedly, the greater burden of the fall in capital spending was borne by the social and community service sectors (76.7%), followed by economic services (43%). These results looks more qualified given that the government could not have embarked upon or commit its resources to any capital projects during the war.

In an alternative treatment of the impact of the civil war on long-term government expenditure in Nigeria, we also consider the recommendation of Diamond & Tait (1988) and test for structural stability of the expenditure function during the period of the war. As in the case of SAP, the Chow test statistic utilized for this purpose provides evidence that the slope coefficients of the expenditure function were significantly different at the 5% level during the period, except in the case of aggregate capital expenditure and government recurrent spending on economic services (see the bottom of columns 2, 4 & 6, Table 8-10).

Turning to the regime dummy, the results as presented in Tables 8 to 10 contradict our theoretical expectation that civilian administrations spends more than military regimes. Its impact on government recurrent expenditure was conspicuously insignificant (see Tables 8 & 9). Nevertheless, when the adjustment and war dummies were dropped from the specification, Federal government expenditure significantly (and negatively) responds to a change in regime (by 25%). This was brought about by a reduction in capital expenditure (by 61%). What do these imply? For one, it portrays that in the long-term, there is no difference between the military and civilian administration as long as government recurrent expenditure in Nigeria is concerned. Further, the results signify that the military spends more on capital projects than civilian administration in Nigeria. This contradicts sharply with the prediction of Shonchoy (2010) and McGuire & Olson (1996). Rather, our result is consistent with the public choice theory popularized by Buchanan & Tullock (1962) which predicts a shrink in capital expenditure under a democratic regime than under the military. The reasons

for this are not unfounded. As argued by Mahdavi (2004), there is a tendency for politicians to favour allocation of public resources to categories of expenditure that offers tangible short-term benefits to the political class than embark upon capital projects with long term benefits. Furthermore, the military can remain in power much longer than civilian administration, thus given them enough time to embark on capital projects. In Nigeria, and to a larger extent, casual evidence tends to corroborate these submissions. Much of the capital projects in the country were conceived and completed during the military era.

In the case of election dummy, our results shows that election is not a good explanatory factor in explaining government expenditure on capital projects (see Tables 8 and 10). Nevertheless, there is evidence of an increase in Federal government expenditure by as much as 36% during an election period than in other periods (see column 2, Table 8). This evidence is significant at the 10% level. Of course, as other results in the same table have shown, such an increase only arises from increase in recurrent expenditure than from capital spending. During an election period, there is a long-run tendency for public recurrent spending to increase by 38% (see column 4, Table 6). A disaggregation of the results (in Table 9) reveals that government would increase its recurrent expenditure on social and community services as well as carry out other forms of transfers during election period than in other years. These findings are very much consistent with the study of Vergne (2009) who found that election year's public spending would shifts more towards visible current expenditure (especially wages and subsidies) and away from capital spending. As earlier confirmed by Rogoff (1990), the argument is not that recurrent expenditure are intrinsically more visible than capital expenditure, but that they are more immediately visible and thus of more direct political value during an election period. In contrast, capital investments are often seen as long-term projects whose completion may be difficult to coordinate with elections (Vergne, 2009). Moreover, as argued by Block (2002), the high probability of having uncompleted capital projects at election time could create political risks for incumbents, who may be seen as being unable to deliver promised benefits.

3.4 Extended Specifications: with Corruption

In this sub-section, we made a subtle attempt to incorporate the impact of corruption in the analysis. As we have earlier stated in section 3, the corruption perception indices (CPI) utilized in this study were only available for just a few years: 1995-2010. Hence, to proceed, we reduced all our basic variables to the same sample size of 16 years. The estimated results are shown in Tables 11 and 12. Our results indicate that corruption has a positive (but insignificant) influence on Federal government expenditure (column 2, Table 11). However, while it tends to have a significant negative impact on recurrent spending, it influences on capital expenditure turns up to be positive (columns 3 & 4, Table 11). The positive impact of corruption on government capital expenditure was found to be significant on government administrative spending and expenditure on economic service sector (columns 5 & 6, Table 12). For the recurrent expenditure, evidence in Table 12 (column 4) shows that the reduction was only significant for government transfer spending.

These results seem to provide a preliminary support to Mauro's (1998) submission that certain type of public spending are susceptible to corruption. Interestingly, and in line with the prediction of Mauro, the incidence of corruption leads to a bleated capital budget in the Nigerian case but a reduced recurrent spending. This is because the former category of expenditure seems to provide large opportunities for corruption than the latter. Given the illegal nature of corruption and the need to conceal the act, it would be much easier to collect large bribes or inflate the cost of capital projects than do so in the payment of workers' salaries, for instance.

Table 11: Determinants of Government Expenditure: Extended Specifications
(*Reduced Sample with Corruption Variable*)

Variables	(1) Total Gov. Expenditure	(2) Federal Gov. Expenditure	(3) Recurrent Expenditure	(4) Capital Expenditure
Constant	-189.24***	-164.8***	-300.2***	11.07
	(0.000)	(0.010)	(0.000)	(0.903)
$\log(\text{Aid}_{t-1})$	-0.095*	-0.123	-0.165**	-0.168
	(0.093)	(0.213)	(0.020)	(0.359)

$\log(\text{Revenue}_{t-1})$	-0.015	-0.121	-0.406**	0.319
	(0.895)	(0.531)	(0.013)	(0.357)
$\log(\text{ Income per capita }_{t-1})$	-1.347***	-0.599	-2.387***	2.452*
	(0.009)	(0.383)	(0.002)	(0.087)
$\log(\text{Openness}_{t-1})$	0.300	0.411	0.194	1.156*
	(0.161)	(0.220)	(0.440)	(0.063)
log(Population)	11.73***	10.03***	18.62***	-1.688
	(0.000)	(0.006)	(0.000)	(0.732)
$\log(\text{Debt Service}_{t-1})$	0.122	0.122	0.273***	0.048
	(0.110)	(0.358)	(0.007)	(0.841)
Corruption	0.014	0.107	-0.134*	0.381**
	(0.839)	(0.226)	(0.062)	(0.035)
Adj. R-Squared	0.986	0.965	0.984	0.806
Durbin-Watson	2.69	2.84	2.33	2.65
F-Value	992	798	841	240.8
	(0.000)	(0.000)	(0.000)	(0.000)
Autocorrelation: Breusch-Godfrey test (order 1)	1.697	1.06	0.381	1.366
	(0.234)	(0.403)	(0.556)	(0.281)

*Note: * **, **,* denote significance at 1%, 5% and 10% level of significance respectively. Values in the parenthesis are the P-values*

However, there is a serious caveat to these results, which requires cautious interpretation. Our test for cointegration was not possible due to insufficient data problem. Hence, the long-run relationship among the variables, nay the validity of the entire results, could not be guaranteed. There is also a problem of high colinearity among the explanatory variables (see Table A2, appendix).

Table 12: Determinants of Recurrent and Capital Expenditure: Extended Specifications (*Reduced Sample with Corruption Variable*)

Variables	Recurrent Expenditure				Capital Expenditure			
	(1) Administration	(2) Social & Community Serv.	(3) Economic Services	(4) Transfers	(5) Administration	(6) Social & Community Serv.	(7) Economic Services	(8) Transfers
Constant	-280.97***	-325.4***	-476.5**	-230.7***	-140.3***	-13.61	17.97	122.4
	(0.008)	(0.002)	(0.011)	(0.008)	(0.004)	(0.889)	(0.894)	(0.632)
$\log(\text{Aid}_{t-1})$	-0.098	-0.366	-0.356	-0.022	-0.110	0.348	-0.395	-3.250**
	(0.494)	(0.132)	(0.391)	(0.912)	(0.423)	(0.218)	(0.186)	(0.037)
$\log(\text{Revenue}_{t-1})$	-0.321	-0.382	-1.105**	-0.132	0.031	0.485	0.440	1.809*
	(0.308)	(0.102)	(0.045)	(0.552)	(0.705)	(0.103)	(0.388)	(0.050)
$\log(\text{Income per capita}_{t-1})$	-2.592*	-1.212	-5.412**	-3.156*	-0.466	-5.669**	3.645	53.75**
	(0.074)	(0.667)	(0.050)	(0.097)	(0.684)	(0.015)	(0.147)	(0.026)
$\log(\text{Openness}_{t-1})$	-0.096	0.373	1.169	0.064	-0.186	0.575	1.529*	10.08***
	(0.818)	(0.339)	(0.295)	(0.843)	(0.584)	(0.560)	(0.082)	(0.003)
log(Population)	17.57***	19.32***	30.22***	14.98***	8.464***	3.787	-2.758	-38.20**
	(0.004)	(0.001)	(0.004)	(0.002)	(0.001)	(0.459)	(0.699)	(0.024)
$\log(\text{Debt Service}_{t-1})$	0.209	0.349	0.193	0.278	0.133	-0.373	0.249	3.064*
	(0.311)	(0.207)	(0.683)	(0.252)	(0.391)	(0.257)	(0.505)	(0.074)
Corruption	-0.002	-0.014	0.059	-0.307**	0.537***	-0.373	0.654**	-0.493
	(0.986)	(0.914)	(0.826)	(0.016)	(0.002)	(0.596)	(0.015)	(0.388)
Adj. R-Squared	0.953	0.934	0.888	0.915	0.965	0.859	0.628	0.470

Durbin-Watson	2.50	1.71	2.43	2.19	2.68	2.66	2.40	2.11
F-Value	478.0	303.9	137.0	209.2	1704	124.4	82.78	8.513
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.004)
Autocorrelation: Breusch-Godfrey test (order 1)	0.840	0.255	0.438	0.311	1.559	1.281	1.019	0.038
	(0.389)	(0.629)	(0.529)	(0.594)	(0.252)	(0.295)	(0.346)	(0.851)

*Note: * **, **,* denote significance at 1%, 5% and 10% level of significance respectively. Values in the parenthesis are the P-values*

4. Conclusion and Lessons for Policy

This study has attempted to identify the long-term determinants of government expenditure in Nigeria. Building on the major hypothesized determinants factors (economic, political and demographic) in the literature, the study incorporates some additional characteristics unique to the Nigerian economy that could have contributed to the marked expansion of government expenditure since independence. Overall, we obtained a variety of qualified and interesting results. Each of these results bears some useful lessons for policy.

Among other results, we found that the inflow of foreign aid to Nigeria leads to expansion of government recurrent expenditure on administration as against capital expenditure and/or social and economic services – a pointer that aid fungability hypothesis might hold for Nigeria. It is thus imperative that foreign aid be spent on designated purpose. For this to be possible, a critical reform and strengthening of the requisite institutional structures is required. As a corollary, we propose that government should make spirited efforts to re-direct much of its foreign aid to the financing of ailing infrastructural facilities. Also the fact that revenue has a significant and positive impact on long-term government expenditure in Nigeria, implies that since much of Nigeria's revenue is from the oil sector, it is important to initiate steps towards the diversification of the Nigerian economy as well as improving the internally revenue generation capacity to cushion the effect of oil price shock on Nigeria's fiscal capacity.

Further, there is qualified evidence that the more open the Nigerian economy, the less revenue accruable to the economy, and therefore the less is government expenditure in the long-term. By implication, there is need to exercise extreme caution in implementing the policy of trade liberalization and openness, unless the productive base of the Nigerian economy is strengthened through the provision of a conducive policy environment. In addition, since debt service obligation reduces all components of government expenditures in the long-run, then to ensure fiscal sustainability in Nigeria, the country should be careful in entering into any further foreign debt to avoid the long-term fiscal constraints on critical sectors of the economy.

Evidence from the study has reveals that the higher the size of the urban population, the higher would be government recurrent expenditure on economic services (e.g. on urban transportation network), administration (e.g. curtailing the ensuing

higher urban crime rate and social disorder) and transfers (e.g. on petroleum subsidies). Given that Nigeria's population growth rate –usually estimated at 2.8% - is considered as one of the highest in the world, population reduction programme or legislation is required in the country. An incentive system that encourages less family size may be useful in this direction. Also, the tide of rural-urban drift in Nigeria must be tamed. Since this trend is often attributed to unequal distribution of socio-economic benefits, government should give priority to rural development initiatives in its budget formulation. Given that the Nigerian civil war significantly accounts for an expansion of government administrative spending (which composed of general administration, defense and internal security, among others) and a significant reduction in all components of government capital expenditure, then Nigerians should embrace peaceful co-existence and respect the multi-cultural diversity of the country to avoid any other outbreak of civil war. Strong peace advocacy project may be required in this direction.

Turning to the influence of election, we have obtained strong evidence that Federal government expenditure (biased towards recurrent expenditure) would increase significantly during an election period than would otherwise be the case. Consequently, an all round effort should thus be made to reduce the cost of election, and therefore unnecessary increase in government expenditure in Nigeria. For one, the country should return to the two-party system. Next, we recommend a six-year-renewable term for political office holders to reduce the pace at which elections are conducted in the country and to give ample space for initiation and completion of long-term capital projects.

Lastly, the current Anti-Corruption Agencies should be further strengthened rather than scraped. An establishment of special anti-corruption tribunal to speedily handle cases of suspected corruption in budget manipulation and other related fraud should be considered.

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Appendix

Table A1: Sample Correlations Matrix in the Basic and Extended Specifications *(full sample)*

	Pop.	Aid	Revenue	Income	Open	Debt	Pop65+	Pop15-	Urban	War	Regime	SAP	Election
Log Population	1.00												
Log Aid inflow	0.38[a]	1.00											
Log Revenue	0.99[a]	0.43[a]	1.00										
Log Income per capita	0.65[a]	0.40[a]	0.67[a]	1.00									
Log Openness	0.60[a]	0.04	0.52[a]	0.60[a]	1.00								
Log Debt service	0.12	-0.20	0.05	-0.74[a]	-0.21	1.00							
Log Population 65+	0.42[a]	0.82[a]	0.47[a]	0.36[a]	-0.12[a]	-0.37[b]	1.00						
Log Population 15-	0.31[b]	-0.44[a]	0.15	0.08	0.57[a]	0.64[a]	-0.62[a]	1.00					
Log Urbanization	0.99[a]	0.36[a]	0.98[a]	0.65[a]	0.62[a]	0.13	0.39[a]	0.34[a]	1.00				
War	-0.40[a]	0.16	-0.44[a]	-0.33[b]	-0.19	-0.26[c]	0.06	-0.28[b]	-0.39[a]	1.00			
Regime	0.23	-0.01	0.27[c]	0.06	0.04	0.03	0.23	-0.12	0.21	-0.40[a]	1.00		
SAP	0.40[a]	-0.16	0.35[b]	-0.06	0.09	0.61[a]	-0.20	0.52[a]	0.41[a]	-0.17	-0.24[c]	1.00	
Election	0.25[c]	0.00	0.26[c]	0.20	0.19	-0.09	0.08	0.01	0.25[c]	-0.12	0.17	0.06	1.00

Note: [a], [b], [c] denotes significance at 1%, 5% and 10% levels respectively (using two-tailed test)

Source: Authors' Computation

Table A2: Sample Correlations Matrix in the Reduced Sample Specification (*with corruption*)

	Pop.	Aid	Revenue	Income	Open	Debt	Corruption
Log Population	1.00						
Log Aid inflow	0.74[a]	1.00					
Log Revenue	0.95[a]	0.77[a]	1.00				
Log Income per capita	0.95[a]	0.40[a]	0.87[a]	1.00			
Log Openness	0.82[a]	0.65[a]	0.54[a]	0.65[a]	1.00		
Log Debt service	-0.78[a]	-0.28	-0.62	-0.81[a]	-0.52	1.00	
Corruption	0.82[a]	0.66[a]	0.69[a]	0.80[a]	0.82[a]	-0.74[b]	1.00

Note: [a], [b], [c] denotes significance at 1%, 5% and 10% levels respectively (using two-tailed test)

Source: Authors' Computation