

Impact of Public Expenditure on Economic Growth: Evidence from Nigeria's Data

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Abstract

The paper investigates the impact of public expenditure on economic growth with evidence from Nigeria's data in a democratic era (2000-2014). Secondary data sourced from the Central Bank of Nigeria was used. Econometric modelling was adopted and the Ordinary Least Square (OLS) was employed as the technique used to analyse the impact of public expenditure on growth in a system of multiple regression equation of the structural model. The result shows that public expenditure has an insignificant positive impact on growth in Nigeria. Corruption has been adduced as the major reason for the insignificant performance. The paper recommends that public expenditure should be directed to priority sectors such as infrastructure, education and power for it to impact significantly on growth in the country. The diversification of the economy has become necessary to diversify non-oil revenue sources and finance public expenditure in the light of falling oil earnings as a result of shocks in oil prices in the world market. The fight against corruption should be deepened and toughened by strengthening institutions that are saddled with the responsibility of fighting corruption, and by introducing stiff penalties such as death by hanging on whoever that is found guilty of corruption and corrupt practices amongst other recommendations.

Keywords:
Public Expenditure,
Investment,
Economic Growth,
Impact, Model,
Economy

JEL Classification:
E62, C22, C32, H50

Background to the Study

Achieving sustained economic growth is clearly a predominant objective of public expenditure policy. The relationship between public expenditure and economic growth is an important subject of analysis and debate (Mitchell, 2005). The concern of fiscal authority is the stimulation of economic activities to facilitate growth and development through government revenue and public expenditure. The extent and depth of poverty and the desire to reduce it in developing countries including Nigeria requires more impetus from fiscal policymakers. The weakness of institutions and the private sector to mobilize and direct savings efficiently, the role of government has become crucial in mobilizing revenue and harnessing the resources for development (Gwartney, Lawson and Holcombe, 1998). It is in view of this that the paper examines the impact of public expenditure on economic growth in Nigeria. Since market signals are imperfect in allocating resources, the state has an important role in allocating investment resources with the expectation that fiscal expenditures would stimulate growth and enhance development of the domestic economy in the long-run.

A central question is whether or not public sector spending increases economic growth in the long-run. The problem of study arises from the fact that Nigeria has over the years been experiencing increasing levels of public expenditure without commensurate growth and development to match such expenditures, especially under the Fourth Republic's democratic system. Despite the huge public expenditures the country has not been developed up till now. The study has attempted to empirically investigate this problem in order to show if government expenditure has actually not matched the expected corresponding increase in domestic output from 2000 to 2014. The choice of the period is to reflect the impact of rising public expenditure on economic growth in Nigeria during a relatively stable democracy.

The objective of the paper is to investigate the impact of public expenditure on economic growth in Nigeria. The foregoing is the introductory section. Section two discusses the literature review including empirical review, conceptual and theoretical frameworks. Section three describes the methodology, states the hypothesis of the study and declares the sources of data. While section four gives the results and discussion of findings, section five concludes with policy recommendations.

Literature Review, Conceptual and Theoretical Frameworks

Conceptual Clarifications

Public expenditure refers to spending made by the government of a country on collective needs and wants such as pension, health services, salaries, provision of infrastructure, etc. Public expenditures are usually broadly categorized into recurrent and capital expenditures. While the former refers to government's purchase of current goods and services (labour, consumables, wages and salaries, etc.), the latter would ideally include not merely investments in infrastructure (roads, schools, hospitals, etc) but also all other expenditures that might contribute to development. In other words, while the recurrent expenditure refers to financial outlays necessary for the day-to-day running of government businesses, the capital expenditure refers to investment outlets that increase

the assets of the state (Agbonkhese and Asekome, 2014).

In the work of Solow (1956), economic growth is a term used to indicate the increase of per capita gross domestic product (GDP) or other measures of aggregate income. Economic growth is the percentage increase in the growth rate of GDP per annum, used in measuring the total output and total income of an economy resulting from production function or factors – capital, labour, land, raw materials and technical knowledge or skills (Begg, Fischer and Dornbusch, 1994). Case, Fair and Oster (2009) described economic growth as an increase in the total output of an economy over a period of time. Similarly, Elhanah (2004) referred to economic growth as annual increases in a nation's total output of goods and services which can be achieved through macroeconomic stability, export growth and market penetration. This implies that economic growth refers to the quantity of goods and services produced in an economy at a given time.

Theoretical Background

Endogenous growth theory propounds that if productivity was to increase, the labour force must continuously be provided with more resources. Resources in this case include physical capital, human capital and knowledge capital (technology). Therefore, growth was driven by accumulation of the factors of production, while accumulation in turn was the result of investment in the private sector (Romer, 1986; 1994, and Lucas, 1988). This implies that the only way a government can affect economic growth, at least in the long run, was via its impact on investment in capital, education, as well as research and development (R&D). According to Romer and Lucas, endogenous growth theory explains long-run growth as emanating from economic activities that create new technological knowledge particularly by the forces that are internal to the economic system, and not external forces such as trade. The idea is that government policies can raise a country's growth rate if they lead to more intense competition in markets, and help to stimulate product and process innovation where R&D is a key source of technical progress. Reduction of growth in these models occurs when public expenditures deter investment by creating tax wedges beyond necessary to finance their investments or taking away the incentives to save and accumulate capital (Folster and Henrekson, 1997).

The paper tracks the theoretical basis on two strands of thought. These are the classical synthesis and the Keynesian model. The classical view government as too big and its huge spending capacity undermines economic growth because it suppresses market forces and transfers additional resources from the productive sectors of the economy to government which uses them less efficiently. According to the classical economists, an expanding public sector complicates efforts to implement pro-growth policies – such as fundamental tax reform and critics can use the existence of budget deficits as a reason to oppose policies that strengthen the economy.

On the other hand, the Keynesian model which postulates that during recession a policy of budgetary expansion should be taken to increase aggregate demand so as to boost domestic output (Gross Domestic Product - GDP). The principle is that an increase in government spending translates into increased employment in the public sector, and

increased orders of products from suppliers and firms in the business/private sector. It implies that as employment rises, income and profits of suppliers and firms increase, and they too, can hire more employees to produce the goods and services needed by the government. The unemployed, who have now found work, whether in the public sector or the private sector, would enjoy an increase in income, and their demand and purchase of products would rise. As a result, firms would begin to make profits, and larger profits also increase the purchasing power of entrepreneurs (firm owners and suppliers) and the overall growth would result in an increased demand for goods and investments. This accelerates economic growth and development in an economy.

Advocates or protagonists of the Keynesian school include Keynes (1936), Longe (1983), Barro (1990), Easterly and Rebelo (1993). According to the Keynesian theory, if demand increases, business concerns produce more merchandise and services, and the result is substantial increase in the GDP, far more than the increase in government spending. This means that budgetary expansion acts as a catalyst to increase demand and production within sectors that do not have direct contact with public demand. Thus, the Keynesian school of thought stresses that utopian society cannot be achieved and as such there is need for government interferences through her fiscal operations, notably expenditure. Although the classical view may have its own place and relevance, the Keynesian theory shapes the theoretical foundation and provides the basis of analysis in this paper.

Empirical Literature

A variety of empirical studies, based on time-series or cross-country data, have aimed at estimating the contribution of public expenditure to economic growth. Some studies relate aggregate public expenditure to economic growth; others focus on the relationship between certain expenditure components, such as public investment, education or health expenditures, or their components, and economic growth. Many studies have aimed at estimating the impacts of public expenditure on economic growth. Empirical studies have yielded conflicting results: some of these studies supported the hypothesis that a rise in the share of public spending is associated with a decline in economic growth (Landau, 1986; Scully, 1989). Others have found that public spending is associated positively with economic growth (Ram, 1986; Diamond, 1990; Odusola, 1996; World Bank, 1993). Yet, other studies have found no significant relationship between public expenditure and growth (Kormendi and Meguire, 1985; and Diamond, 1989). Public expenditures were observed in one study to have no impact on growth in developed countries, but a positive impact in developing countries (Sattar, 1993). Some scholars opined that studies of the relationship between aggregate public expenditure and economic growth have not yielded robust results, as the results of many are sensitive to small changes in model specification (Levine and Renelt, 1992).

A number of studies have tested the effects of certain public expenditure components on economic growth. These studies suggest that public sector consumption does not promote economic growth (Diamond, 1989; Barro, 1991; Grossman, 1990; and Easterly and Rebelo, 1993). A number of studies have found a positive correlation between economic growth and various education indicators or expenditures: primary and

secondary levels of educational attainment (Barro, 1991; Easterly and Rebelo, 1993); the share of expenditures on education in total expenditure (Otani and Villanueva, 1990); and capital expenditures on education (Diamond, 1989). Other studies suggested indirect links between education and economic growth, for example, through the linkage between education expenditures and private investment (Clements and Levy, 1994).

The relationship between public expenditure and economic growth has been extensively treated in the theoretical and empirical literature. The theoretical foundation of this relationship can be traced as far back as of the time of Wagner (1883), Keynes (1936), Peacock and Wiseman (1961), and later to Musgrave (1969). Two schools of thought arose on the direction of causality between public expenditure and economic growth. One is that public expenditure is a consequence of economic growth as posited by Wagner (1883) and the other is by Keynes (1936) who stated that public expenditure is a tool adopted by the government to reverse economic downturns by borrowing money from the private sector and then returning it to them through various spending programmes, hence, economic growth is an outcome of public expenditure. This relationship is considered empirically in the context of the growing public sector and its impact on economic growth which happened universally almost immediately after the World War II.

Empirical researches on the effect of public expenditure on economic growth reported results such as: positive effect, negative effect, mixed results and those who could not establish a relationship between government expenditure and economic growth. There were also cross country studies with diverse results as well such as: Positive effect of government consumption on economic growth could be stronger in lower income countries reported by Ram (1986), government expenditures on education and defense have positive influence on economic growth, while expenditure on welfare has insignificant negative impact on economic growth as indicated by Donald and Shuanglin (1993). Abu-Bader and Abu-Qarn (2003) observed bi-directional (feedback) and long-run negative relationships between government spending and economic growth while civilian government expenditures have positive effect on economic growth for two out of the three countries they considered.

Gregoriou and Ghosh (2007) revealed that countries with large public expenditure tend to experience higher growth, but the effect varies from one country to another. Olugbenga and Owoye (2007) results showed the existence of a long-run relationship between public expenditure and economic growth and a unidirectional causality from government expenditure to growth for 16 out of the 30 countries considered, 10 out of the countries confirmed Wagner's law and 4 countries had feedback relationship between public expenditure and economic growth. Cooray (2009) results revealed that both the size and quality of the government are associated with economic growth. Frimpong and Oteng-Agbaiye (2009) reported that government expenditure does not play a major role in promoting economic growth. Some authors studied the relationship between the composition of public expenditure and economic growth in the context of Wagner's law and Keynesian notion. Singh and Sahni (1984) examined government expenditures on

administration, social and development, and defense and upheld both the Wagnerian and Keynesian notion but Keynesian notion alone for debt servicing.

Ariyo and Raheem (1991) reported that the size and mix of public expenditure is a major determinant of the overall performance of an economy. Ekpo (1994) observed that capital expenditures on transportation and communication, agriculture, health and education had positive impact on economic growth. Ariyo (1996) found that the nature of government expenditure can crowd-in or crowd-out the private sector and Busari (1998) found government capital expenditure to be growth inducing. A disaggregated approach was adopted by Niloy, Emranul and Denise (2003) to investigate the impact of public expenditure on economic growth for 30 developing countries. They found that government capital expenditure in GDP has a significant positive association with economic growth, but the share of government current expenditure in GDP was shown to be insignificant in explaining economic growth while at the sectoral level, government investment and expenditure on education are the only variables that had significant effect on economic growth, especially when budget constraint and omitted variables are included. Devarajan, Swaroop and Zou (2006) studied the relationship between the composition of public expenditure and economic growth for a group of developing countries the result showed that capital expenditure has a significant negative association with growth of real GDP per capita and recurrent expenditure is positively related to real GDP per capita.

Maku (2009) investigated the link between government spending and economic growth in Nigeria by incorporating the model that specifies the effect of government consumption and investment spending, and private investment on real gross domestic product in Nigeria and found that private and public investments have insignificant effect on economic growth during the review period. Ighodaro and Oriakhi (2010) found that increase in total government expenditure as well as specific expenditure on general administration and community and social services that propels economic growth. Adeniyi and Bashir (2011) found that governments spending on agriculture, education, defense and internal security services as well as structural adjustment programme are significant factors that influence economic growth in Nigeria.

Adewara and Oloni (2012) explored the relationship between the composition of public expenditure and economic growth in Nigeria between 1960 and 2008 using the Vector Autoregressive models (VAR). Their findings showed that expenditure on education has failed to enhance economic growth as a result of the high rate of rent seeking in the country as well as the growing rate of unemployment. They also found that expenditure on health and agriculture contributed positively to growth. Other studies carried out country specific study since different countries have different levels of economic development. Such studies include that of Abdullah (2000) and Albatel (2002) in Saudi Arabia, Peter (2003) for Sweden, Mitchell (2005) for the U.S., Verma and Arora (2010) for India.

Empirical works that examined the relationship between government expenditure and economic growth in Nigeria include: Oyinlola (1993) who reported a positive impact of defense expenditure on economic growth. Fajingbesi and Odusola (1999) observed real government capital expenditure has a significant positive influence on real output and real government recurrent expenditure affects growth only by little. Ogiogio (1995) revealed a long-term relationship between government expenditure and economic growth and discovered that recurrent expenditure exerts more influence than capital expenditure on growth. Akpan (2005) used a disaggregated approach to determine the components and concluded that there was no significant association between most components of government expenditure and economic growth in Nigeria. Nurudeen and Usman (2010) result showed that the variables - total capital expenditure, total recurrent expenditure, and government expenditure on education have negative effect on economic growth. While government expenditure on transport and communication, and health, have positive impact on economic growth. From available literature, none of the studies reviewed above investigated the impact of public expenditure on economic growth in Nigeria during a relatively stable democratic rule (2000-2014). This study has filled this gap. The scope of the paper in time perspective begins from 2000 and terminates in 2014, and this enabled us to assess the impact of public expenditure on growth within the ambit of the current Fourth Republic's democratic dispensation in Nigeria.

Methodology and Sources of Data

Secondary data were used in this paper. These pieces of data were sourced from the Central Bank of Nigeria's statistical reports, annual reports and statement of accounts, as well as World Bank reports on Africa development indicators for the period under review. The data were obtained on such variables as public expenditure, GDP, recurrent revenue, capital expenditure and public debt. Econometric modelling was adopted with Ordinary Least Square (OLS) employed as the technique of analysis which was run on a system of multiple regression equation of the structural model. OLS was found to be the suitable analytical technique because a study conducted by Tsenba and Gushibet (2015) revealed a unidirectional causality where government expenditure causes economic growth in Nigeria. It implies that OLS is the best analytical technique since there is no simultaneous equation bias owing to the absence of bilateral causation.

Model Specification

The structural model which provides the basis to measure the impact of public expenditure on economic growth in Nigeria is expressed as:

$$GDP = f (AGRev, AGExp, RecurExp, CapExp, PubDebt) \quad \dots (1)$$

Where; AGRev = Aggregate Government Revenue, AGExp = Aggregate Government Expenditure, RecurExp = Recurrent Expenditure, CapExp = Capital Expenditure, PubDebt = Public Debt

$$GDP = \beta_0 + \beta_1 AGRev + \beta_2 AGExp + \beta_3 RecurExp + \beta_4 CapExp + \beta_5 PubDebt + Demo + e \dots (2)$$

It should be pointed out that it is difficult to obtain a realistic estimate if the equation is used in its nominal form. The model is rather expressed in log form so that the data would be smoothened and the coefficients interpreted as elasticities that give the response of the dependent variable (LogGDP_t) to a unit change in any of the explanatory variables when others are held constant. The estimating equation is therefore transformed into logarithmic form to convert and denominate the different data or values into a common denominator for realistic result, and the equation becomes:

$$\text{LogGDP}_t = \alpha_0 + \alpha_1 \text{AGRev}_t + \alpha_2 \text{AGExp}_t + \alpha_3 \text{RcurExp}_t + \alpha_4 \text{CapExp}_t + \alpha_5 \text{PubDebt}_t + \text{Demo}_t + e \quad \dots (3)$$

Where; α_0 = intercept constant, $\alpha_1, \alpha_2 \dots \alpha_5$ = estimating parameters, Demo = democracy dummy, t = time trend, e = stochastic variable or error term.

A Priori Expectation

From equation (3), the coefficients of determination $\alpha_1, \alpha_2, \alpha_3, \alpha_4, \alpha_5 > 0$. Therefore, α_1 is expected to have a positive sign since government revenue is essential for government to inject it to drive economic growth. α_2 is expected to be positive because an increase in aggregate public expenditure in form of investment in the economy will increase gross domestic product (thereby enhancing the welfare of Nigerian citizenry *via-a-vis* increased standard of living. Again, α_3 is expected to be positively related to gross domestic product in the sense that an increase in the aggregate net wages and running costs of governance is expected to cause a rise in growth. This will lead to more investment and in turn raises aggregate demand via the Keynesian mechanism of income determination. This added investment will lead to a higher level of economic activity (that is more employment and a higher GNP). Thus α_4 is expected to be positive because an increase in capital expenditure is likely to influence economic growth and development. The coefficient α_5 is expected to have a positive sign because public debt would ideally facilitate growth in significant terms when the debt is prudently utilized.

Hypothesis

The paper is based on the understated hypothesis:

H_0 : *Public expenditure has no significant impact on economic growth in Nigeria*

H_1 : *Public expenditure has a significant impact on economic growth in Nigeria*

The hypothesis was tested at 5% level of significance with p-value as the analytical technique of measuring or testing the hypothesis.

Diagnostic Tests and Results

Unit Root Test

Time series characteristics of the data were explored by testing the data for stationarity at levels or in an order of differencing and integration. The Augmented Dickey-Fuller (ADF) test was used for the unit root analysis. The ADF was chosen because of the stability of its critical values as well as its power over different sampling experiments.

Stationarity was attained where the absolute ADF value was higher than any of the absolute Mackinnon critical values at 1%, 5% and 10% levels of significance. The purpose of this was to avoid spurious regression that could not allow precise prediction. Table 1 presents the unit root result:

Table 1: Unit Root Result

Variable	Level of Stationarity	ADF-Statistic	Significant Critical Values (1%, 5% and 10%)
GDP	I(0)	4.59	-4.89, -3.82*, -3.36*
AG Rev	I(1)	-4.08	-4.14, -3.15*, -2.72*
AGEXP	I(0)	2.84	-2.78*, -1.97*, -1.63*
Recur REV	I(2)	-3.26	-4.22, -3.18*, -2.73*
Cap Exp	I(1)	-3.53	-4.14, -3.15*, -2.72*
Pub Debt	I(1)	-1,57	-2.79, -1.97, -1.63*

Note: Dickey-Fuller regressions include an intercept and a linear trend

Where; * = is the stationarity points or levels

Source: *Eviews output of Data in Appendix1*

From table 1 above, some of the data sets of the variables were stationary at level while others became stationary after first and second differencing. It implies that the variables were stationary and integrated at different order of integration. The result showed that GDP is stationary at level with trend and intercept at 5% and 10% levels of significance, aggregate government revenue (AGRev) was stationary at first differencing with intercept at 5% and 10% levels of significance, aggregate government expenditure (AGExp) was stationary at level without intercept and trend at 1%, 5% and 10% levels of significance. Recurrent expenditure (RecurExp) became stationary at second differencing at 5% and 10% levels of significance. While capital expenditure (CapExp) was stationary at first differencing with intercept at 5% and 10% levels of significance, public debt (PubDebt) became stationary at first differencing and at 10% level of significance. This means that the linear combination of the variables in the model was good for analysis

Serial Correlation LM Test

Breusch-Godfrey Serial Correlation LM Test was run and the result (see appendix 3) showed that there was no evidence of serial correlation given the p-value of 0.18 which is greater than 0.05. This means that the estimates are reliable for forecasting and policy making.

Normality Test and Trend

The normality test conducted (see appendix 4) has shown that the Jarque-Bera probability value of 0.10 signifies that the disturbances are normally distributed which is desirable for econometric analysis. This implies that the reliability of the estimates is satisfactory. Furthermore, the trend analysis of public expenditure in Nigeria shows a rising trend over the period under review. This is depicted by the steady upward

movement of the expenditure line graph from left to right in appendix 5. By this, it is expected that public expenditure would stimulate growth in the economy.

Impact Analysis and Findings

This section presents the result obtained from regression analysis of data collected from 2000 to 2014 (see appendices 1 and 2). The slopes of the coefficients of the variables are in line with a *priori* prediction of the paper which is mostly positive, except for recurrent expenditure which possessed a negative sign contrary to a *priori* expectation. For the goodness of fit, the R^2 was used to show the total variation of the dependent variable that can be explained by the explanatory variables used in the paper. The R^2 recorded in the regression result is 0.76 implying that about 76% of changes in the dependent variable (GDP) were actually explained by the independent variables used in the structural model. Durbin Watson statistic of 1.98 (which is closer to 2) further verifies the absence of autocorrelation, and this means that the regressed estimates of the model are robust for analysis and reliable for drawing conclusions.

The coefficient of aggregate government revenue is 0.84 with a p-value of 0.66 (greater than 0.05 or 5% level of significance) which indicates a positive but insignificant impact of total government revenue on economic growth (GDP) during the period under review. The result showed that government revenue does not have significant impact on economic growth in Nigeria. The insignificant effect could be attributable to falling oil prices, weak diversification of non-oil revenue sources and corruption in the country. The coefficient of aggregate government expenditure was 0.67 with a p-value of 0.06 (greater than 0.05) which also implies a positive but insignificant impact of public expenditure on growth in Nigeria. The insignificant outcome could be as a result of misplacement of priorities in government spending, diversion of government appropriated funds to private pockets especially by government officials and politicians, widespread corruption in the country as well as shabby expenditures on such sectors as power, education health and infrastructure.

Recurrent expenditure had a coefficient value of -5.35 with a p-value of 0.08, which implies a negative impact of recurrent expenditure on economic growth in Nigeria during the period under review. This means that salaries paid to workers and running costs of governance had no positive impact on growth but a retrogressive effect on the Nigerian economy in a democracy. It could also mean that increase in wages without a corresponding increase in productivity would affect GDP negatively especially when employees are not spending their earned income on investment in productive sectors or growth enhancing ventures. Capital expenditure has had a coefficient value of 0.01 and a p-value of 0.08 which indicates a positive but insignificant impact of capital expenditure on economic growth of the economy. The insignificant impact of capital expenditure could be attributable to politics in the choice of projects, weak prioritization in selection of capital projects, corruption by politicians and public servants, abandonment of projects accompanying every change of government, as well as feeble expenditures on sectors that will drive the economy such as power, health, education and infrastructures.

The coefficient value of public debt was found to be 1.94 with a p-value of 0.13 (greater than the 0.05 or 5% level of significance) which indicates an insignificant impact of public expenditure on growth in Nigeria. This could be a result of weak utilization of debt liabilities, diversion of borrowed funds to unintended purposes particularly to private pockets (corruption), stringent repayment conditions that consume a significant percentage of the GDP in subsequent years, as well as increased debt burden.

Conclusion

Government expenditure has impacted positively but insignificantly on growth in Nigeria. It means that public expenditure has not led to any significant expansion on growth of domestic output or national income. It is evident that Keynesian theory was validated in this study since it explained that increased government activity and the corresponding increase in government expenditure could facilitate economic growth. This indicates that with increase in government size and expansion in government expenditure, economic growth should have been larger than it was. This implies accepting the null hypothesis that public expenditure has no significant impact on economic growth in Nigeria during the period under review. Since economic growth and development are the main objectives of government expenditure, especially investment in infrastructure and human resources, efforts should be intensified to maintain adequate levels of investment in social and economic infrastructure, health, education and power. It means that government should give priority and promote efficiency in the allocation of development resources through emphasis on private sector participation and increased privatization.

Policy Recommendations

From the findings of the paper, public spending cannot impact significantly on economic growth if corruption is not tackled headlong in Nigeria. Since corruption was reported as contributing to the insignificant impact of public expenditure on economic growth, the paper suggests that further research should be carried out to investigate the lapses in embezzlement level by past leaders and government officials in terms of budgetary inflation, manipulation in imputation and computation of the monetary figures, as well as actual diversion of government funds to private pockets in order to forestall future occurrence.

Again, in so far as the current effort of the Buhari Administration at fighting corruption is laudable, the legal institutions need to be made functional to really hold corrupt people accountable. That is, important gaps in laws and rules need to be plugged, and the institutional mechanisms for implementing laws and rules need to be strengthened, streamlined, and made more efficient and responsive. It implies that the legal system and institutions monitoring and implementing anti-corruption laws in Nigeria such as the Economic and Financial Crimes Commission (EFCC) and the Independent Corrupt Practices Commission (ICPC) should be toughened to fight corruption in the country. To achieve this, stiff penalties for corruption should be introduced; for example, government should pass into law the principle of 'Death by Hanging' for anyone or group of persons however lowly or highly placed that are found guilty of corruption and

corrupt practices in Nigeria – the Chinese example.

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Appendix 1: Nigeria's GDP and Public Expenditures Data 2000-2014 (? 'Million)

Year	GDP	Total Govt Revenue	Total Govt Expenditure	Recurrent Expenditure	Capital Expenditure	Total Public Debt
2000	4,582,127.29	1906.16	701.05	461.60	2394.45	3995.64
2001	4,725,086.00	2231.60	1018.00	579.30	4387.70	4193.27
2002	6,912,381.25	1731.84	1018.18	696.80	3213.80	5098.89
2003	8,487,031.57	2575.10	1225.99	984.30	2416.79	5808.01
2004	11,411,066.91	3920.50	1461.89	1110.64	3512.55	6260.59
2005	14,572,239.12	5547.50	1840.70	1321.23	5194.67	4220.98
2006	18,564,594.73	5965.10	1942.49	1390.10	5523.49	2204.72
2007	20,657,317.67	5727.50	2348.55	1589.27	7592.08	2608.53
2008	24,296,329.29	7866.59	3078.25	2117.36	9608.09	2843.56
2009	24,794,238.66	4844.59	3280.76	2127.97	11528.00	3818.47
2010	29,205,782.96	7303.67	3993.31	3109.44	8838.77	5241.66
2011	37,754,394.00	11116.85	4232.98	3314.44	9185.05	6519.69
2012	41,179,874.10	10654.75	4200.00	3325.16	8748.54	7564.44
2013	49,205,783.84	9759.79	4797.47	3689.08	9108.19	8492.56
2014	6789651142.50	10068.85	5211.42	2530.34	9681.28	9535.54

Source: Central Bank of Nigeria (various issues), World Bank Reports/African Development Indicators

Appendix 2: OLS Result for Impact Analysis

Dependent Variable: LOG (GDP)

Method: Least Squares

Date: 11/20/15 Time: 15:14

Sample: 2000 2014

Included observations: 15

Variable	Coefficien t	Std. Error	t-Statistic	Prob.
C	-18.42878	10.72602	-1.718137	0.1199
LOG(TGREV)	0.842103	1.846832	0.455972	0.6592
LOG(TGEXP)	6.661895	3.202727	2.080069	0.0673
LOG(RECUREXP)	-5.353999	2.785626	-1.922009	0.0868
LOG(CAPEXP)	0.010161	0.665977	0.015258	0.9882
LOG(PUBDEBT)	1.938226	1.158896	1.672477	0.1288
R-squared	0.759909	Mean dependent var	17.32609	
Adjusted R-squared	0.626525	S.D. dependent var	2.203634	
S.E. of regression	1.346698	Akaike info criterion	3.722362	
Sum squared resid	16.32235	Schwarz criterion	4.005582	
Log likelihood	-21.91772	F-statistic	5.697157	
Durbin-Watson stat	1.977739	Prob(F-statistic)	0.012145	

Appendix 3: Diagnostic Test (Serial Correlation LM Test)

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.033412	Probability	0.404343
Obs*R-squared	3.419318	Probability	0.180927

Test Equation:

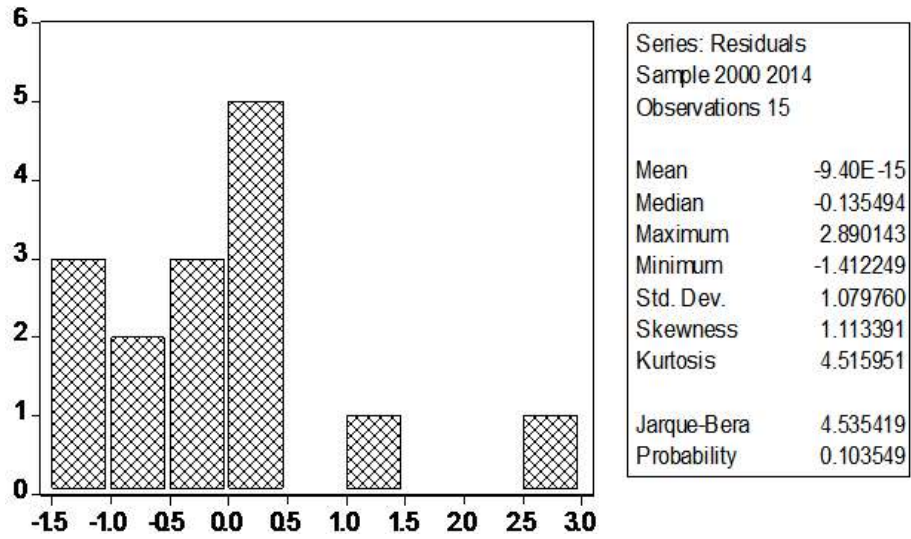
Dependent Variable: RESID

Method: Least Squares

Date: 11/20/15 Time: 15:18

Variable	Coefficien t	Std. Error	t-Statistic	Prob.
C	11.87531	14.10991	0.841629	0.4278
LOG(TGREV)	-0.431318	1.964670	-0.219537	0.8325
LOG(TGEXP)	0.946498	4.266311	0.221854	0.8308
LOG(RECUREXP)	-0.550117	4.464641	-0.123216	0.9054
LOG(CAPEXP)	-0.157539	0.696950	-0.226040	0.8276
LOG(PUBDEBT)	-1.212670	1.440326	-0.841942	0.4276
RESID(-1)	-0.127933	0.569701	-0.224562	0.8287
RESID(-2)	-1.019277	0.708991	-1.437644	0.1937
R-squared	0.227955	Mean dependent var	-9.38E-15	
Adjusted R-squared	-0.544091	S.D. dependent var	1.079760	
S.E. of regression	1.341726	Akaike info criterion	3.730317	
Sum squared resid	12.60160	Schwarz criterion	4.107944	
Log likelihood	-19.97738	F-statistic	0.295261	
Durbin-Watson stat	2.162221	Prob(F-statistic)	0.935038	

Appendix 4: Normality Test



Appendix 5: Trend of Aggregate Government Expenditure (2000-2015)

