# PUBLIC SPENDING AND ECONOMIC GROWTH: THE ROLE OF INSTITUTIONAL QUALITY

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## A B S T R A C T

The study examined the effect of institutional quality on the relationship between public spending and economic growth in Nigeria. Annual data for the period 1986 to 2016 were sourced from the Central Bank of Nigeria (CBN) Statistical Bulletin, World Development Indicators and the International Country Risk Guide using the autoregressive distributed lag (ARDL) Bound testing approach.The long run estimates revealed that corruption affects the relationship between capital expenditure and economic growth while it has negative but significant impact on the relationship between recurrent expenditure and economic growth. Democratic accountability has a negative and significant effect on the relationship between the capital expenditure and economic growth but a positive and significant relationship between recurrent expenditure and economic growth. Similarly, law and order has negative and significant effect on the relationship between recurrent expenditure and economic growth while it has positive relationship with capital expenditure and growth.

## 1.    INTRODUCTION

Government expenditure remains an important demand management tool and, if well-managed, it could put an economy on a long-term sustainable growth and development trajectory. Prudent government spending, through an efficient allocation of its resources to the different sectors of the economy, translates into an inclusive and sustainable growth pattern, which serves as a driver for eradicating poverty and inequality within the society (Ayodele 2014).Nigeria had her urgent priority to reduce poverty through sustainable economic growth that benefits the poor and Africa especially. Nigeria major objective is to attain stability, material prosperity, peace and social progress. However, this has been hampered as a result of internal problems. These include inadequate human development, primitive agricultural practices, weak infrastructure, and uninspiring growth of the manufacturing sector, a poor policy and regulatory environment and mismanagement and misuse of resources caused majorly by the inefficiency of economic institutions in the country (UNDA 2007).The analysis of the composition of government spending and it effect on growth has been an important topic of debate which has brought argument among many scholars. Some scholars argue that increase in government expenditure on socio–economic and physical infrastructures encourage economic growth. For example, government expenditure on health and education raises the productivity of labour and increase the growth of national output. In the same way, expenditure on infrastructure such as roads, communications, power, etc, reduces production costs, increase private sector investment and profitability of firms, thereby fostering economic growth. However, some scholars are of different opinion and therefore claim that higher government expenditure may slow down overall performance of the economy (Okoro 2013).

Many studies on the determinants of growth confirm the relevance of the quality and economic development of institutions (see, for example, Tavares and Wacziarg, 2001; Acemoglu *et al.* 2004; Easterly *et al.* 2004; Rigobon and Rodrik, 2004). In fact, in the past few years, even though we have witnessed a resurgence of research into the sources and channels through which institutions may affect the economic performance of a country or region, no clear evidence has been established (Pistor, 2001; Weder, 1995, etc.). The relationship between institutional qualities and economic performance has been the subject of several theoretical and empirical works. Since the pioneering work of (North 1990) great attention has been drawn to why institutional factors are important in achieving good results in terms of growth and economic development. Empirically, to study the relationship between institutional qualities and economic growth, a sound institutional environment is able to provide a positive climate that encourages economic agents, both domestic and foreign, to invest more in activities with high added value. On the contrary, institutions of poor quality can increase uncertainty,

unpredictability, instability, corruption and transaction costs. In an institutional setting like this, private enterprise is discouraged especially in terms of tangible and intangible investment. The result is certainly vulnerable economic performances, as the growth mechanisms are blocked and the country's potential is limited (Hadhek and Mohammed 2009).

Wilhelm and Fiestas (2005) argue that countries' institution setting determines the feasibility of policy interventions, and that high quality public sector institutions improve public service delivery. In line with this, the World Bank means that although public resources are allocated on the right goods and services, it is hard to achieve desired growth outcomes if the budget institutions are malfunctioning. The World Bank further argues that poor public financial management (PFM) systems is one of the main explanatory factors to why governments face difficulties in transforming public spending into efficient growth (World Bank, 2003 in Rajkumar and Swaroop, 2008). Although, the quality of institutions and the PFM system is assumed to affect efficiency of public spending, few studies have been carried out in this area. Rajkumar and Swaroop (2008) as well as Wilhelm and Fiesta (2005) argue that the role of institution constraint on public spending needs to be further examined. Studies like Alexiou *et al* (2014) and Gobin Nankani (2012) also affirmed the need for a further study in this area. Olulu (2014) argued that increase in public expenditure on socio-economic and physical infrastructures encourages economic growth. Similarly, expenditure on infrastructure such as roads, communications, power, etc, reduces production costs, increases private sector investment and profitability of firms, thus fostering economic growth. In support of this view, studies conducted by Al-Yousif, 2000; Ranjan and Sharma, 2008; Cooray, 2009; Abu and Abdullahi, 2010, all concluded that expansion of public expenditure induce economic growth positively. Statistics however, reveals that as much as government expenditure increases in Nigeria, it has not been commensurate with growth due to lack of workable institutions which many of these scholars have not put into consideration and which could have been an important factor why the huge public spending have not translated into a reasonable growth, therefore the study examined how institutional quality can affect the relationship between government spending and economic growth in Nigeria.

## 2. THEORETICAL ISSUES AND EMPIRICAL REVIEW

Hadhek and Mohamed (2009) studied the effect of institutional factors on economic growth of a set of 37 developed and developing countries for six successive periods of five years, from 1975until 2000, using a static panel data model. The key findings generated by this empirical test stipulate a dominant effect exerted by economic institutions on economic growth of the total sample of countries and developed countries. As for developing countries, the political and economic institutions do not seem to be related to economic growth. This is expected since the institutions of these countries are vulnerable. Hence, the impossibility that they can influence economic performance.Rodrik et al. (2004) stressed the role of institutions in determining the economic growth as compared to other factors. Institutions refer to formal rules (constitutions, laws and regulations, political systems, etc) and informal rules (value systems, beliefs, social norms, etc) that humans use when interacting within a wide variety of repetitive and structured situations at multiple levels of analysis. Ali and Crain (2002) explained the interconnections among economic freedom, institutional distortion and economic growth. Using a sample of 199 countries for the period from 1975 to 1998, they concluded that civil liberty and political administration have no significant impact on economic growth. However, economic freedom played significant role in enhancing economic growth. Adkins et al. (2002) investigated the determinants of inefficiency employing stochastic frontier analysis by using two samples one having seventy-three and the second having seventy-six countries. They found that institutions were helpful in enhancing economic freedom and efficiency which in turn increases economic growth.

Zhuang et al. (2010) highlighted the role of institutions and governance in enhancing economic progress. The study emphasized the measurement of institutional quality and its impact on economic performance. The results of the study indicateda two waylong run relationships between institutional quality and economic performance. Khan and Khawaja (2011) explore the relation among predation, quality of institutions and economic growth by using game theory model. They find that predation is significant hurdle in the way of economic progress as it reduces per capita consumption, enhances inequality and reduces overall output. Predators have comparative advantage in predation and high quality institutions eliminate this comparative advantage and enhance economic growth. James and Halit 2008 studied the impact of government expenditure on economic growth, emphasizing how government effectiveness in developing nations influencing the productivity of government spending. The effects of categories government spending in growth are also examined. No significant positive effects are found for defense, education and health variables. Consumption expenditure have negative growth effect in developed and developing nations, with a more detrimental impact in developing nations, with capital expenditures. They recommended that developing nations should limit their government's consumption spending and invest in infrastructure in order to stimulate growth. Cooray (2009) used an econometric model that takes government expenditure and quality by governance into consideration, in across-sectional study that includes 71 countries. The results revealed that both the size and quality of the government are associated with economic growth. Paul (2006), examined the impact of quality of governance on growth by looking at various dimensions of the concept of governance by using dynamic panel estimator and various indicators of governance to estimate the impact of governance on growth. He also looked at a possible transmission mechanism of the effect of governance on growth through the composition of expenditures. As such, the author estimated a seemingly unrelated regressions (SUR) model with shares of three functional categories of public expenditures which are education, defense and health in total spending as the dependent variables. The

result shows that high quality governance leads to a higher share of education and health expenditure and a lower share of defense expenditures in total expenditures. He further examined the impact of governance on public capital spending. The result suggests that high quality governance is associated with a smaller share of capital expenditures in total expenditures.Ndulu and O'Connell (1999) observed that authoritarianism is closely associated with poor economic performance. Good governance that allows for participation of the citizens in the political process and the general running of public affairs may be associated with a feeling of empowerment, which in turn may enhance productivity.

Isham et al (1997) using data from the World Bank's Operations Evaluation Department (OED), looked at the performance of government projects. They concluded that "increased citizen voice and public accountability results into greater efficacy in public actions". It is also argued that institutional factor exerts direct growths through other variables such as capital flow, business investment decisions, and trade policy (Batra, Kaufman and Stone 2003).Gyimah-Brempong (2002), using a sample of African countries and corruption to proxy for institutional quality, finds that corruption affects economic growth indirectly through decreased investment in physical capital and in education. He also finds corruption to be positively correlated with income inequality.The New Institutional Economies (NIE) literatures indicates that countries which saw improvement in institutional quality also witnessed their per capita incomes improving (Acemoglu and Johnson 2005; Afonso and Jalles 2011). Actually, NIE points out that institutional quality improves when an environment is created (for example by reducing transaction costs through providing better education, protecting property rights, providing better environment for business mainly through ensuring enforcement of contracts, improving rule of law) that incentivize people to invest in the economy, and in turn contribute to economic growth.Busani (2006) studied the relative impact of volatility and institution of governance on growth of real per capital GDP consisting of four SSA countries between 1994 – 2002; using a 3-year overlapping averages, Cob-Douglas production function and employing the standard deviation approach using data from World Bank Governance Indicators, found amongst other things that institutional quality (political stability and absence of violence, government effective and regulatory quality) exhibit a consistent significant positive impact on economic growth. Dang (2009) while employing the stochastic production frontier analysis to estimate efficiency plus the effects of institution in transition economics found that better institutions are associated with efficiency. Institutional quality proxy used includes political rights, civil liberties and index of economic freedom and also using panel estimate of 28 countries from 1995 – 2005.

## 3. METHODOLOGY

### 3.1 Theoretical Framework and Model Specification

The theoretical framework for this study is motivated by the endogenous growth. According to Barro and Salai-Martin (1992) endogenous growth theory, government can influence both the level of output path and the steady state growth rate of the economy through its expenditure or investment in physical capital, human capital and technology. The exponents of endogenous growth models opined that the growth rate of output is endogenously determined within the economic environment. Barro (1990) introduced government expenditure as a public good into production function of individual firms. In this way the rate of return to private capital increased, which in turn stimulates private investment and growth.

Following Barro (1990) and Afonso and Jalles (2011), the production function is modelled as interaction between stock of physical capital K and total spending G.

$$Y_{t=}K_t^\alpha G_t^\beta (A_t L_t)^{1-\alpha-\beta}, 0<\alpha<1, 0<\beta<1, 0<\alpha+\beta<1 \tag{1}$$

Y is the final good, used for private consumption, G is public consumption expenditure which proxies for government size, and K is the stock of physical capital. We consider the case of no depreciation of physical capital. A is the labor augmenting factor, reflecting the level of technology and efficiency in the country and it grows at the exogenous constant rate u, that is we have

$$A_t = A_0 e^{\mu t + I_t \rho_i} \tag{2}$$

with I being a vector of institutional quality, political regimen, legal origin and other related factors that may affect the level of technology and efficiency in the country at time t, and p is a vector of (unknown) coefficients related to these variables. In this framework, the state of labour-augmenting technology (A) depends not only on exogenous technological improvements determined by μ, but also on the level of institutional quality such as the rule of law, the degree of democratic political foundations etc. Institutions may be critical in facilitating technological breakthroughs, which may not occur without appropriate sound institutional environments. The presence of efficient effective institutions ensures that labour can be used for productive purposes, instead of being wasted with red tape or rent seeking activities (North, 1990; Nelson and Sampat, 2001).Also, many studies have established that growth of any economy is not only dependent upon government investment on human capital, physical capital and also access to modern technologies, but these three factors are also affected by institutional factors such as organisation and functioning of the productive sector, the distribution of political and civil rights, the quality of the legal system, government effectiveness etc. (Schmiegelow and Schmiegelow, 2014).Based on theoretical postulations, in specifying the relationship between government activities or fiscal operations and economic growth, many scholars such as Acemoglu (2007) and Young and Sheehan (2014) have established that economic growth is also affected by institutional quality.

The combination of equation (1) and (2) is represented in equation 3.3 which gave

$$\text{GDP}_t = f(\text{GEXP}_t, \text{INST}_t) \qquad (3)$$

It therefore follows that from equation (1), $Y_t = \text{GDP}_t$ i.e total output, $K_t^{\alpha} G_t^{\beta} = \text{GEXP}_t$ i.e total government expenditure and $(A_t L_t)^{1-\alpha-\beta}$ from equation (2) that is represented by $A_t = A_0 e^{\mu t + I_t \rho_i}$ is taken to be institutional proxy.

For this study, the institutional quality is proxy by corruption (CORUP), law and order (LAOR), and democratic accountability (DEAC) while GEXP is known as Government Expenditure and it is disaggregated into CEXP i.e. Capital expenditure and REXP, recurrent expenditure.

In line with Alexiou, Persefoni and Hashim (2014), Akpan and Dominic 2013, other variables such as inflation and public debt affect the composition of output in an economy, in that the amount used in servicing debt can reduce what the government spend and inflation can as well reduce the value of government consumption. Incorporating these variables in (3) gives

$$\text{GDP}_t = f(\text{CEXP}_t, \text{REXP}_t, \text{INFR}_t, \text{PDBT}_t, \text{CORUP}_t, \text{LAOR}_t, \text{DEAC}_t) \qquad (4)$$

Where GDP is the variable that measures economic growth, CEXP is the capital expenditure, REXP is the recurrent expenditure, INFR is the inflation rate, PDBT is the public debt while CORUP, LAOR and DEAC are the institutional quality index at time t.

Expressing equation (3.4) in econometric form, it becomes;

$$\text{GDP}_t = \alpha + \beta \text{CEXP}_t + \theta \text{REXP}_t + \gamma \text{INFR}_t + \varphi \text{PDBT}_t + \tau \text{CORUP}_t + \rho \text{LAOR}_t + \pi \text{DEAC}_t \qquad (5)$$

In line with the theoretical framework, and in order to achieve the objectives of the study, the log-linear form of the equation (3.5) is expressed in the model below:

$$\text{InGDP}_t = \alpha + \beta \text{InCEXP}_t + \theta \text{InREXP}_t + \gamma \text{INFR}_t + \varphi \text{InPDBT}_t + \tau \text{CORUP}_t + \rho \text{LAOR}_t + \pi \text{DEAC}_t + \varepsilon \qquad (6)$$

Therefore, equation (3.6) forms the theoretical specified model for this study.

### 3.1.1 *Model Specification for the effect of Institutional Quality in the relationship between government spending and economic growth in Nigeria*

This study employs the Auto Regressive Distributed Lag (ARDL) model of Pesaran, Shin and Smith (2001) to examine the effect of Institutional quality in the relationship between government spending and economic growth. The ARDL procedure involves two stages. One, the existence of long-run relation between the variables under consideration will be tested by computing the F-statistics for testing the significance of the lagged levels of the variables in the error correction form of the underlying ARDL model. Two, the analysis is to estimate the coefficients of the long-run relationship and make inferences about their values. In estimating the long-run relationship, a two-step procedure will be utilized. Without having any prior information about the direction of relationship, if the first step predicts that there is a long-run relationship among the variables, the error correction version of ARDL framework pertaining to the variables is formulated and specified as follows:

**Model 1a.** Specification of the effect of corruption on the relationship between government spending and economic growth in Nigeria

$$\Delta InRGDP_t = \alpha_0 + \sum_{j=1}^{p} \phi_j \Delta \ln RGDP_{t-1} + \sum_{j=1}^{p} \lambda_j \Delta \ln CEXP_{t-1} + \sum_{j=1}^{p} V_j \Delta \ln REXP_{t-1} + \sum_{j=1}^{p} \pi_j \Delta \ln PDBT_{t-1}$$

$$+ \sum_{j=1}^{p} \tau_j \Delta \ln INFR_{t-1} + \sum_{j=1}^{p} \varphi_j \Delta CORUP_{t-1}$$

$$+ \sum_{j=1}^{p} \lambda_j \Delta (\ln CEXP * CORUP)_{t-1} + \sum_{j=1}^{p} V_j \Delta (\ln REXP * CORUP)_{t-1} + \delta_1 RGDP_{t-1} + \delta_2 \ln CEXP_{t-1}$$

$$+ \delta_3 \ln REXP_{t-1} + \delta_4 \ln PDBT_{t-1} + \delta_5 INFR_{t-1} + \delta_6 CORUP_{t-1} + \delta_7 (\ln CEXP * CORUP)_{t-1}$$

$$+ \delta_8 (\ln REXP * CORUP)_{t-1} + w_t \qquad \qquad 3.7$$

**Model 1b.** Specification of the effect of democratic accountability on the relationship between government spending and economic growth in Nigeria

$$\Delta InRGDP_t = \alpha_0 + \sum_{j=1}^{p} \phi_j \Delta lnRGDP_{t-1} + \sum_{j=1}^{p} \lambda_j \Delta lnCEXP_{t-1} + \sum_{j=1}^{p} V_j \Delta lnREXP_{t-1} + \sum_{j=1}^{p} \pi_j \Delta lnPDBT_{t-1}$$

$$+ \sum_{j=1}^{p} \tau_j \Delta lnINFR_{t-1} + \sum_{j=1}^{p} \varphi_j \Delta DEAC_{t-1}$$

$$+ \sum_{j=1}^{p} \lambda_j \Delta(lnCEXP * DEAC)_{t-1} + \sum_{j=1}^{p} V_j \Delta(lnREXP * DEAC)_{t-1} + \delta_1 RGDP_{t-1} + \delta_2 lnCEXP_{t-1}$$

$$+ \delta_3 lnREXP_{t-1} + \delta_4 lnPDBT_{t-1} + \delta_5 INFR_{t-1} + \delta_6 DEAC_{t-1} + \delta_7 (lnCEXP * DEAC)_{t-1}$$

$$+ \delta_8 (lnREXP * DEAC)_{t-1} + w_t \qquad\qquad 3.8$$

**Model 1c**: Specification of the effect of law and order on the relationship between government spending and economic growth in Nigeria

$$\Delta InRGDP_t = \alpha_0 + \sum_{j=1}^{p} \phi_j \Delta lnRGDP_{t-1} + \sum_{j=1}^{p} \lambda_j \Delta lnCEXP_{t-1} + \sum_{j=1}^{p} V_j \Delta lnREXP_{t-1} + \sum_{j=1}^{p} \pi_j \Delta lnPDBT_{t-1}$$

$$+ \sum_{j=1}^{p} \tau_j \Delta lnINFR_{t-1} + \sum_{j=1}^{p} \varphi_j \Delta LAOR_{t-1}$$

$$+ \sum_{j=1}^{p} \lambda_j \Delta(lnCEXP * LAOR)_{t-1} + \sum_{j=1}^{p} V_j \Delta(lnREXP * LAOR)_{t-1} + \delta_1 RGDP_{t-1} + \delta_2 lnCEXP_{t-1}$$

$$+ \delta_3 lnREXP_{t-1} + \delta_4 lnPDBT_{t-1} + \delta_5 INFR_{t-1} + \delta_6 LAOR_{t-1} + \delta_7 (lnCEXP * LAOR)_{t-1}$$

$$+ \delta_8 (lnREXP * LAOR)_{t-1} + w_t \qquad\qquad 3.9$$

Where, $\Delta$ is the difference operator and $\alpha$ is the drift component. The expression with summation sign represents the short-run dynamics of the model, while the coefficients $(\delta_1 - \delta_6)$ represents long-run relationship and $\omega_t$ is the serially uncorrelated disturbance with zero mean and constant variance. In order to investigate the existence of long-run relationship among the variables, the Ward or F-statistics which follows a non-standard distribution will be adopted. Therefore, this study obtained the short-run coefficients by estimating error-correction model associated with long-run estimates. The model is specified as follows; Where $\alpha_0$ is the drift parameter; $w_t$ is the error term; $\Delta$ is the difference operator; $\delta_1$ are the long run coefficients; p is the lag length which will be chosen using lag selection criterions. The parameter coefficients such as $\phi_j, V_j, \varphi_j, \gamma j, \rho j$ and $\lambda_j$ are short run coefficients of the model and the coefficient $\Psi$ associated with ECM allows for adjustment back to the long-run equilibrium

**Short run specification for model 1a**

$$\Delta InRGDP_t = \alpha_0 + \sum_{j=1}^{p} \phi_j \Delta lnRGDP_{t-1} + \sum_{j=1}^{p} \lambda_j \Delta lnCEXP_{t-1} + \sum_{j=1}^{p} V_j \Delta lnREXP_{t-1} + \sum_{j=1}^{p} \pi_j \Delta lnPDBT_{t-1}$$

$$+ \sum_{j=1}^{p} \tau_j \Delta lnINFR_{t-1} + \sum_{j=1}^{p} \varphi_j \Delta CORUP_{t-1}$$

$$+ \sum_{j=1}^{p} \lambda_j \Delta(lnCEXP * CORUP)_{t-1} + \sum_{j=1}^{p} V_j \Delta(lnREXP * CORUP)_{t-1} + \Psi ECM$$

$$+ w_t \qquad\qquad 3.10$$

**Short run specification for model 1b**

$$\Delta InRGDP_t = \alpha_0 + \sum_{j=1}^{p} \varphi_j \Delta lnRGDP_{t-1} + \sum_{j=1}^{p} \lambda_j \Delta lnCEXP_{t-1} + \sum_{j=1}^{p} V_j \Delta lnREXP_{t-1} + \sum_{j=1}^{p} \pi_j \Delta lnPDBT_{t-1}$$

$$+ \sum_{j=1}^{p} \tau_j \Delta lnINFR_{t-1} + \sum_{j=1}^{p} \varphi_j \Delta DEAC_{t-1}$$

$$+ \sum_{j=1}^{p} \lambda_j \Delta(lnCEXP*DEAC)_{t-1} + \sum_{j=1}^{p} V_j \Delta(lnREXP*DEAC)_{t-1} + \Psi ECM$$

$$+ w_t \qquad\qquad 3.11$$

**Short run specification for model 1c**

$$\Delta InRGDP_t = \alpha_0 + \sum_{j=1}^{p} \varphi_j \Delta lnRGDP_{t-1} + \sum_{j=1}^{p} \lambda_j \Delta lnCEXP_{t-1} + \sum_{j=1}^{p} V_j \Delta lnREXP_{t-1} + \sum_{j=1}^{p} \pi_j \Delta lnPDBT_{t-1}$$

$$+ \sum_{j=1}^{p} \tau_j \Delta lnINFR_{t-1} + \sum_{j=1}^{p} \varphi_j \Delta LAOR_{t-1}$$

$$+ \sum_{j=1}^{p} \lambda_j \Delta(lnCEXP*LAOR)_{t-1} + \sum_{j=1}^{p} V_j \Delta(lnREXP*LAOR)_{t-1} + \Psi ECM$$

$$+ w_t \qquad\qquad 3.12$$

## 3.2 Estimation Technique

To examine the effect of Institutional quality in the relationship between government spending and economic growth,the autoregressive distributed lag (ARDL) Bound testing approach was used.The ARDL was chosen because it is a single-equation method and thus requires the estimation of a fairly small number of parameters: as a consequence, this approach is more efficient, especially with small data samples like this study.The commonly used Johansen Maximum Likelihood method is based on a VAR system of equations that is fairly data intensive and there is a substantial loss of degrees of freedom. It follows, therefore, that most of the hitherto econometric results based on relatively small samples are very likely to be of dubious validity. These limitations do not apply to the ARDL.In order to avoid spurious results, this study tested the stationarity of all the variables because recent discovery in econometric modeling has revealed that most macroeconomic time series are not always at level and first difference of the variables might not be sufficiently represented. Therefore, this study made use of unit roots test such as Dickey-Fuller (DF), Augmented Dickey Fuller (ADF) and Philip-Peron (PP) tests to test for the existence of unit root in data series and controlled for higher order autocorrelation.

**Table 1.** Data: Definition, measurement and sources

| S/N | VARIABLES | MEASUREMENT | DATA SOURCE |
|-----|-----------|-------------|-------------|
| 1 | Real Gross Domestic Product (RGDP) | GDP is computed by dividing the gross domestic product by consumer price index | Word Development Indicators |
| 2 | Recurrent Expenditure (REXP) | The recurrent expenditure is government expenditure on administration such as wages and salaries, interest on loans, maintenance etc. | Central Bank of Nigeria (CBN) Statistical Bulletin |
| 3 | Capital Expenditure (CEXP) | The expenses on capital projects like roads, dams, education, telecommunication, electricity generation, etc. are referred to as capital expenditure | Central Bank of Nigeria (CBN) Statistical Bulletin |
| 4 | Institutional Quality (INST) | Rules of the game such as; Corruption, law and order, and democratic accountability | International Country Risk Guide (ICRG) |
| 5 | Inflation Rate (INFR) | The percentage increase in the price the price of goods and services, usually annually. | Central Bank of Nigeria (CBN) Statistical Bulletin |
| 6 | Total Domestic Debt (TDBT) | The difference between government receipt and spending in a year | Central Bank of Nigeria Statistical Bulletin |

## 4. RESULTS

### 4.1 Unit root tests

To avoid spurious regression, this study employed the conventional Augmented Dickey Fuller (ADF) and the Phillips Perron (PP) tests to check the unit root properties of the variables included in the model estimation. The choice of both unit root tests was informed from the fact that they control for higher autocorrelation in the residuals; besides, the asymptotic distribution of their test statistic is the same as such they have the similar Mackinnon critical values. The tests involve testing the null hypothesis of the presence of unit root against the alternative hypothesis of the absence of unit root to ensure a sound decision rule. The decision rule is that the null hypothesis is rejected in favour of the alternative hypothesis if the absolute value of the test statistic exceeds that of the critical value at 5 percent significant level; or if the probability value of the test statistic is significant at 5 percent level. The results of the unit root tests involving constant only and constant and trends are depicted in Tables 4.3 and 4.4 respectively. The results involving constant only explicitly showed that both the Augmented Dickey Fuller and Phillips-Perron tests exhibited high level of consistency in their results; as such there are no controversies as regard the stationarity properties of the time series data. Specifically, almost all the time series are integrated of order one I (1) except CPI which is stationary at levels when looking at the ADF and inREXP when considering the PP test. These results readily showed that most of the time series data do not exhibit mean reverting behaviors at their levels until they are differenced. However, both tests were not consistent in their results under the unit root tests involving both constant and trend. Considering the unit root properties of these series, the study opted for the Auto regressive Distributed Lag (ARDL) approach to co-integration for model estimation in order to achieve the second objective of this study because of its potency in dealing with series integrated of either order zero I(0) or one I(1) or a mixture of both. However, the choice of case 3 (constant and no trend) in the ARDL co-integration tests was informed from the unit root test involving constant only because both the ADF and PP tests could not show any irregularity in their results. Moreover, the test could not establish any evidence of series integrated of high order exceeding one i.e. I (2) or more I (d). The presence of series of higher order makes the result of the F-statistic generated in the bounds test invalid in the ARDL approach to co-integration (Pesaran et al., 2001).

**Table 2.**   Results of Unit Root Test (Constant only)

| | Augmented Dickey Fuller Test | | | Phillips-Perron Test | | |
|---|---|---|---|---|---|---|
| Variables | Level | 1$^{st}$Difference | Remark | Level | 1$^{st}$Difference | Remark |
| InRGDP | 0.867 | -5.439*** | I(1) | 0.816 | -5.398 | I(1) |
| InCEXP | -2.186 | -5.659*** | I(1) | -2.332 | -5.690 | I(1) |
| InREXP | -2.473 | -7.619*** | I(1) | -5.205 | | I(0) |
| INTEXP | -4.409*** | | I(0) | -4.636*** | | I(0) |
| InTDBT | -2.483 | -4.186*** | I(1) | -2.354 | -4.161 | I(1) |
| CPI | -4.103*** | | I(0) | -2.665 | -6.367 | I(1) |
| CORUP | -2.031 | -3.760*** | I(1) | -1.388 | -3.766 | I(1) |
| LAOR | -2.364 | -3.309** | I(1) | -1.788 | -3.260 | I(1) |
| DEAC | -2.227 | -5.250*** | I(1) | -2.153 | -8.109 | I(1) |

*Note: *** ** * denotes 1%, 5% and 10% levels of significance respectively.*
*The Mackinnon critical values for the ADF and the PP tests with constant for 1%, 5%, and 10% levels of significance are -3.670, -2.964, and -2.621 respectively.*

**Table 3.**    Result of Unit Root Test (Constant and Trend)

| | Augmented Dickey Fuller Test | | | Phillips-Perron Test | | |
|---|---|---|---|---|---|---|
| Variables | Level | 1ˢᵗDifference | Remark | Level | 1ˢᵗDifference | Remark |
| InRGDP | -2.140 | -5.292*** | I(1) | -2.139 | -5.273*** | I(1) |
| InCEXP | -0.688 | -7.227*** | I(1) | -0.442 | -7.373*** | I(1) |
| InREXP | -0.849 | -8.530*** | I(1) | -2.164 | -17.906*** | I(0) |
| INTEXP | -0.283 | -10.491*** | I(1) | -0.544 | -12.910*** | I(1) |
| InTDBT | -2.319 | -4.113** | I(1) | -2.648 | -4.079** | I(1) |
| CPI | -3.106 | -3.623** | I(1) | -3.213 | -6.139*** | I(1) |
| CORUP | -1.984 | -3.708** | I(1) | -3.213 | -3.679** | I(1) |
| LAOR | -2.208 | -3.349* | I(1) | -1.398 | -3.188 | I(2) |
| DEAC | -2.823 | -5.189*** | I(1) | -2.565 | -9.381*** | I(1) |

*Note: *** ** * denotes 1%, 5% and 10% levels of significance respectively.*

The Mackinnon critical values for the ADF and the PP tests with constant for 1%, 5%, and 10% levels of significance are -4.297, -3.568, and -3.218 respectively.

## 4.2    Empirical Results and Discussion

### 4.2.1    *Cointegration Test/ARDL Bounds Testing Result*

Table 4  reveals the bound testing results for the model of the study. The value of the F-statistics for model 1a, 1b, and 1c are given to be 4.76, 4.14 and 7.91 respectively as recorded in table 4.2.2. below and shows a level of significance at 5% while the Bounds critical values at 5% for the Pesaran et al. (2001) is 3.32 under the I(0) and 3.50 under the I(1) for the three models under study.Following the guiding rule that at whatever level of significance if the F-statistics is greater than the Upper Bound (I(0)) of the critical value, there reveals the existence of a long run relationship among the variables. It is depicted from the table below that there exist a long run relationship among the variables, since at 5% F-statistics of 4.76, 4.14 and 7.91 are greater than the Upper Bound (I(1)) of the critical value of 3.50 of the Pesaran et al. (2001) in table 4.2.1.

Furthermore, when the F-statistic is compared to the critical values of the lower and upper bounds of the Nerayan (2005) table essentially for small sample size (30 to 80), the null hypothesis of no cointegration is rejected at 5% level of significance.Dependent variable: Log Real Gross Domestic Product

**Table 4.**    ARDL Bounds Test Regression Results

| Source | Lower Bound(LB) I(0) | Upper Bound(UB) I(1) |
|---|---|---|
| Pesaran *et al.* (2001) | 2.32 | 3.50 |
| Nerayan (2005) | 2.88 | 4.45 |

*NB the above critical bounds are at 5% significance level under the unrestricted intercept and no trend as informed by the unit root test.*

### 4.2.2    *Long Run and Short Run Estimates of the Influence of Institutional Quality On the Relationship Between Government Spending and Economic Growth in Nigeria*

In other to achieve the effect of institutional quality on the relationship between government spending and economic growth in Nigeria, we built models 1a, 1b and 1c and each of this models capturing each proxies of the institutional quality (i.e. corruption, law and order and democratic accountability). The model 1a investigated the effect of corruption on the relationship between government spending and economic growth, model 1b examined the effect of democratic accountability on the relationship between government spending and economic growth, while, model 1c looked at the effect of law and order on the relationship between government spending and economic growth in Nigeria.Having proved that there is a long run relationship between the variables in model 1a, 1b and 1c through the bounds tests; this study therefore, estimates the long run and short run relationship among the variables using ARDL technique. The long run ARDL coefficients estimate are presented in Table 4.2.2 to help explain the nature of the effect of corruption, democratic accountability and law and order on the relationship between government spending and economic growth.The result in model 1a, reveals that the relationship between economic growth and capital expenditure is positive but not significant both in the long run and short run. The relationship between economic growth and recurrent expenditure in the long run is positive and significant at 1% level. This implies that 1% increase in recurrent expenditure will bring about 1.2% increase economic growth. Invariably, it means that a higher percentage of government spending is allocated for recurrent activities such as, payment of salaries, maintenance and the likes and that the growth experience by Nigeria can be attributed to recurrent expenditure since that is the area where government spending is felt. This is in line with study of Okoro (2013). Also, the relationship between corruption and economic growth is positive and significant at 5% level. This implies that 1

degree change in the level of corruption, will lead 3.9% increase in economic growth. This is against the study of Aigheyisi (2014) and Keefer and knack (2007).

Furthermore, the result reveals that when corruption interacted with the capital expenditure, that is(CACO), it has negative but insignificant relationship with capital expenditure. However, the effect of corruption in the relationship between recurrent expenditure and economic growth is negative and significant both in the long run and short run at 5% and 10% level respectively. This implies that 1% increase in CACO will bring about 0.43% and 0.22% decrease in RGDP in the long run and short run respectively. This means that corruption has negative influence on the level at which recurrent expenditure contributes to growth in Nigeria. This is in line with relevant theories because we expect that as corruption increases it will continue to affect recurrent expenditure and this is supported by the work of Shuaib and Ogedengbe (2016). Likewise, inflation rate has a negative and significant relationship with growth both in the long run and short run at 5% level. This implies that, as the level of inflation increase by 1 degree it brings about reduction of 0.03% and 0.02% in the RGDP. However, the extent to which inflation affected growth is small.Similarly, taking a look at model 1b, where democratic accountability is taken as a proxy for institutional quality, the result reveals that capital expenditure on its own has a positive relationship with economic growth both in the long run and short run. This is in line with relevant theories because we expect that has capital expenditure increases the country should experience growth via capital projects. However, recurrent expenditure has a negative relationship with real gross domestic product but not significant both in the long run and short run. Likewise, the relationship between democratic accountability and gross domestic product in the long run and short run is negative and not significant. However, incorporating democratic accountability into the relationship between capital expenditure and real gross domestic product (CADE) reveals a negative but significant effect both in the long run and short run at 10% and 10% level respectively. This implies that has CADE increases by 1%, real gross domestic product will reduce by 0.12% in the long run and 0.02% in the short run.

Also, the table reveals that the presence of democratic accountability in the relationship between REXP and RGDP in the long run is positive and significant at 5% level and also positive and significant at 10% level in the short run. This implies that, in the long run, 1% increase in REDE will bring about 0.21% increase in the RGDP. This is to say that has government becomes accountable in how recurrent expenditure is been disbursed, this will enhance the level of growth experienced in the economy. However, it was discovered that the relationship between REXP and RGDP alone is negative and not significant, while the presence of democratic accountability makes it positive and significant. This is in line with relevant theories that is, when there is accountability, the level of corruption will reduce and recurrent expenditure will produce maximally thereby leading to increase in the gross domestic product.

Furthermore, model 1c reveals the presence of law and order (LAOR) in the relationship between government spending and economic growth in Nigeria. It was discovered that the relationship between capital expenditure (CEXP) and RGDP without the presence of LAOR was negative but not significant in the long run as against the study of Nkechukwu and Okoh (2013) but supported by the study of Akpan and Domonic (2013). However, it was negative and significant both in the current and previous year (lag 1) in the short run at 5%. This implies that in the current year, a 1% increase in the CEXP in the short run, will lead to reduction of about 0.3% in the current year and reduction of 0.11% in the previous year. This is supported by the study of Abu and Abdullahai (2010), and against the study of Okoro (2013) and Aigheyisi (2013). On the other hand, considering the presence of LAOR in the relationship between CEXP and RGDP proxy by CALA, the result reveals that in the long run, the relationship between CEXP and RGDP is positive but not significant. This is in line with theory as we expect that a good and sound law or rules guiding the society should ensure that capital expenditure is well monitored and used judiciously thereby having a positive effect on real gross domestic product.

In the short run, both the current year and previous year value (lag 1) for CALA shows a positive and significant value at 1% level. That is 1% increase in the CALA, will lead to increase in the RGDP by 0.08% and 0.05% in the current and previous year respectively. This implies that a sound legal structure can help monitor the use of capital expenditure and thereby enhancing growth as it were. This is in line with the study of Kilinga (2015). On the contrary, the relationship between recurrent expenditure (REXP) and economic growth (RGDP) is found to be positive and significant in the long run at 1% level. That is, 1% increase in the REXP, it will lead to 1.02% increase in the RGDP. Likewise, in the short run, the relationship between REXP and RGDP was found to be positive and significant at 1% level in the current year but negative and significant at 10% in the previous year. That is, 1% increase in REXP in the current year will lead to increase in RGDP by approximately 0.34%. This implies that, recurrent expenditure has been a major force driving economic growth in Nigeria.Similarly, considering the influence of LAOR in the relationship between REXP and RGDP, that is, RELA, the result reveals that there is a negative but significant relationship between RELA and RGDP at 5% level. This means that a 1% increase in RELA will lead to reduction of about 0.23% in RGDP. The result also shows that inflation rate (INFR) has a negative and significant relationship with RGDP at 10% level in the long run, that is, a change in the INFR by 1 unit, it will reduce RGDP by 0.02%. But in the short run, it still maintains a negative and significant relationship at 1% in the current year while it has positive and significant relationship with RGDP at 1% in the previous year (lag 1). It means that if INFR increases by 1, RGDP will reduce by 0.004% in the current year while it increases by 0.002% in the previous year.

Furthermore, in the long run, domestic debt has a positive relationship with RGDP which is in conformity with theories. We expect that as government borrows more, capital expenditure should increase and this in turn increases capital project which will then affect real gross domestic product. In the short run domestic debt (TDBT) has positive and significant relationship with RGDP at 5% and 1% level in the current and previous year respectively. That is, 1% increase in TDBT will lead to increase in RGDP by 0.03% in the current year and increase of 0.12% in the previous year. This implies that total domestic debt in the short run is beneficial to the Nigeria economy in that when it is well managed it contributed to the real gross domestic product thereby enhancing economic growth.The coefficients of the ECM which signifies the speed of adjustment of the models to equilibrium is found to be negative and significant at 1% level for all the three models further confirming the existence of a long run relationship among the variables under study. The value of the error correction model for model 3, 4 and 5, (-0.512), (-0.375), and (-0.314) shows that 51%, 37% and 31% of disequilibrium errors are corrected in the models. Finally, the $R^2$ and adjusted $R^2$, Durbin-Watson and F-statistics of the influence of institutional qualities on the relationship between government spending and economic growth are in the right magnitude. Dependent Variable: Log Real Gross Domestic Product

**Table 5.** Long Run Estimates

| Series | Model 3 InRGDP ARDL(1,0,1,0,0,1,1,0) | Model 4 InRGDP ARDL(1,0,0,0,0,1,1,1) | Model 5 InRGDP ARDL(1,2,2,2,2,1,2,2) |
|---|---|---|---|
| InCEXP | 0.125 (0.456) [0.273] | 0.166 (0.209) [0.791] | -0.451 (0.248) [-1.815] |
| InREXP | 1.204*** (0.313) [3.848] | -0.085 (0.217) [-0.391] | 1.023*** (0.217) [4.706] |
| InTDBT | 0.006 (0.089) [0.071] | -0.077 (0.073) [-1.050] | -0.218 (0.164) [-1.330] |
| INFR | -0.003** (0.001) [-2.454] | -0.003 (0.002) [-1.789] | -0.020* (0.001) [-1.905] |
| CORUP | 3.931** (1.422) [2.764] | | |
| DEAC | | -0.302 (0.212) [-1.425] | |
| LAOR | | | 1.152 (0.773) [1.490] |
| CACO | -0.154 (0.215) [-0.714] | | |
| CADE | | -0.156* (0.085) [-1.825] | |
| CALA | | | 0.015 (0.168) [0.091] |
| RECO | -0.436** (0.176) [-2.476] | | |
| REDE | | 0.206** (0.084) [2.445] | |
| RELA | | | -0.233** (0.07) [-3.409] |
| Bounds Test (F-Stat) | 4.76 | 4.14 | 7.91 |

*Source: Author's Computation using E-views 10*

NB: INCEXP, INREXP, INTEXP, CORUP, LAOR, DEAC, INTDBT and INFR denote log of capital expenditure, log of recurrent expenditure, log of total expenditure, corruption rate, law and order, democratic accountability, total domestic debt and inflation rate respectively.Figures in '()' and '[]' denote standard Error and t-statistic respectively; while '***' '**'

'*' indicate 1%, 5% and 10% levels of significance. The study opted for the case 3: unrestricted constant and no trend in Pesaran et al. (2001) table as informed by the unit root test.

Dependent variable: Log of Real Gross Domestic Product (RGDP)

**Table 5.**   Error Correction Estimates

| Series | Model 3 Δ(InRGDP) | Model 4 Δ(InRGDP) | Model 5 Δ(InRGDP) |
|---|---|---|---|
| C | 11.368*** (1.556) [7.305] | 11.657*** (1.711) [6.815] | 9.448*** (0.835) [11.308] |
| Δ(InCEXP) | 0.064 (0.251) [0.254] | 0.062 (0.083) [0.746] | -0.262*** (0.039) [-6.702] |
| Δ(InCEXP(-1)) | | | -0.111*** (0.026) [-4.349] |
| Δ(InREXP) | 0.505*** (0.080) [6.386] | -0.032 (0.085) [-0.376] | 0.336*** (0.029) [11.234] |
| Δ(InREXP(-1)) | | | -0.116** (0.023) [-5.098] |
| Δ(InTDBT) | 0.003 (0.046) [0.070] | -0.030 (0.029) [-0.967] | 0.034** (0.012) [2.783] |
| Δ(InTDBT(-1)) | | | 0.122*** (0.017) [7.099] |
| Δ(INFR) | -0.002** (0.001) [-2.659] | -0.001 (0.001) [-1.670] | -0.004*** (0.000) [-11.499] |
| Δ(INFR(-1)) | | | 0.002*** (0.000) [9.991] |
| Δ(CORUP) | 1.684*** (0.264) [6.386] | | |
| Δ(DEAC) | | -0.030 (0.041) [-0.741] | |
| Δ(LAOR) | | | 0.457*** (0.049) [9.304] |
| Δ(CACO) | -0.031** (0.012) [-2.601] | | |
| Δ(CADE) | | -0.016* (0.001) [-1.978] | |
| Δ(CALA) | | | 0.081*** (0.015) [5.338] |
| Δ(CALA(-1)) | | | 0.052*** (0.010) [5.338] |
| Δ(RECO) | -0.224* (0.109) [-2.049] | | |
| Δ(REDE) | | 0.020* (0.010) [1.905] | |
| Δ(RELA) | | | -0.164*** (0.013) [-11.774] |

| | Model 3 | Model 4 | Model 5 |
|---|---|---|---|
| Δ(RELA(-1)) | | | -0.036*** |
| | | | (0.008) |
| | | | [-4.489] |
| ECT(-1) | -0.512*** | -0.375*** | -0.314*** |
| | (0.070) | (0.056) | (0.028) |
| | [-7.271] | [-6.780] | [-11.253] |
| $R^2$ | 0.72 | 0.69 | 0.98 |
| ADJ-$R^2$ | 0.67 | 0.65 | 0.96 |
| F-statistic | 15.95*** | 14.55*** | 44.07*** |
| Durbin-Watson Stat | 2.72 | 2.61 | 2.04 |

*Source: Author's Computation using E-views 10*

NB: INCEXP, INREXP, INTEXP, CORUP, LAOR, DEAC, INTDBT and INFR denote log of capital expenditure, log of recurrent expenditure, log of total expenditure, corruption rate, law and order, democratic accountability, total domestic debt and inflation rate respectively.Figures in '()' and '[]' denote standard Error and t-statistic respectively; while '***' '**' '*' indicate 1%, 5% and 10% levels of significance. The study opted for the case 3: unrestricted constant and no trend in Pesaran et al. (2001) table as informed by the unit root test.

### *4.2.3    Diagnostic Tests*

The following diagnostic tests were conducted, viz; the model specification test, normality test, secrial correlation test and heteroscedasticity test. Table 4.2.4 shows that the models generally passed all the diagnostic tests. None of the computed statistics is significant which implies that there is no problem of heteroscedasticity, normality and functional form in the model. Since the T-value computed is not significant at any conventional critical level, we reject the null-hypothesis that the model is mis-specified.The results of stability tests such as CUSUM and CUSUMsq are shown in fig. 6.4.2 the results of CUSUM and CUSUMsq tests indicate the stability of the ARDL parameters because all the diagrams for model 3, 4 and 5 are within the critical bounds at 5% level of significance. If the plots of the CUSUM and CUSUMsq stay in the 5% critical bound, then the null hypothesis that all coefficients are stable cannot be rejected. Moreover, if either of the parallel lines is crossed, then the null hypothesis of parameter stability must be rejected at 5% level of significance. The results reveal that both the parameters of the model do not suffer from any structural instability over the period under review.

**Table 6.**    Diagnostic Test Results

| Diagnostic test | Model 3 | | Model 4 | | Model 5 | |
|---|---|---|---|---|---|---|
| | Test-Value | Prob | Test-Value | Prob | Test-Value | Prob |
| Model specification[a] | 0.213 | 0.83 | 0.085 | 0.93 | 0.707 | 0.51 |
| Normality[b] | 6.090 | 0.05 | 4.844 | 0.10 | 2.884 | 0.24 |
| Serial correlation[c] | 3.063 | 0.10 | 2.378 | 0.14 | 1.041 | 0.42 |
| Heteroskedaticity[d] | 1.473 | 0.225 | 0.852 | 0.60 | 0.332 | 0.98 |

*Source Author's computation*

Note:    a Ramsey's RESET test uses the square of the fitted values
b Based on a test of skewness and kurtosis of residuals
c Lagrange multiplier test of residual serial correlation
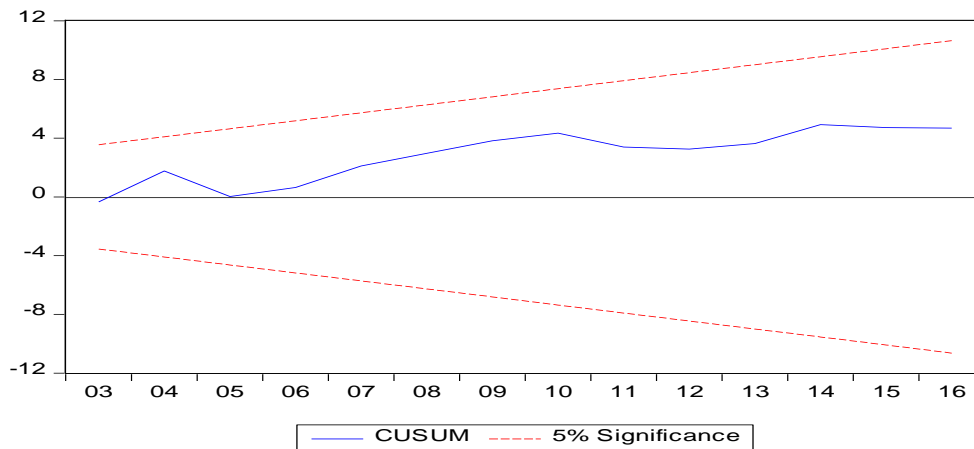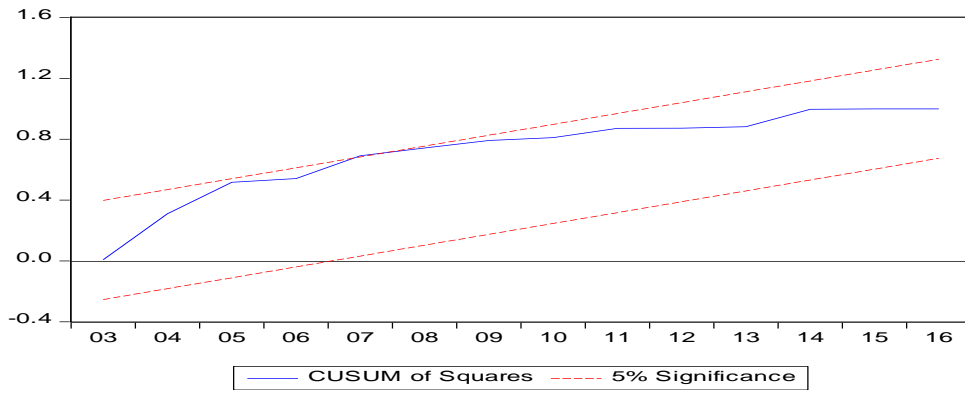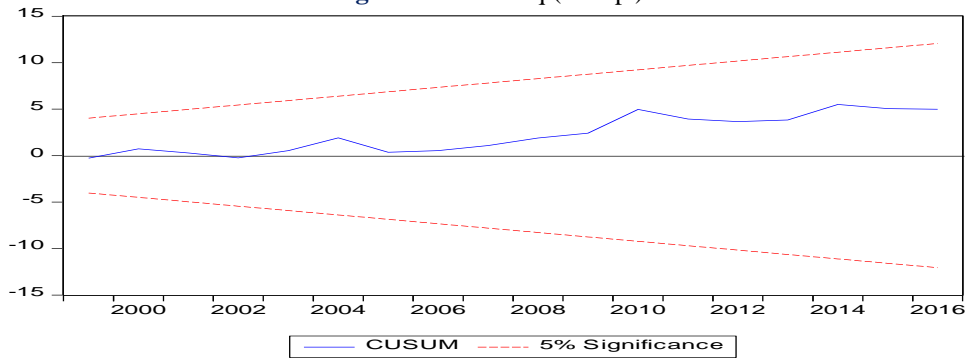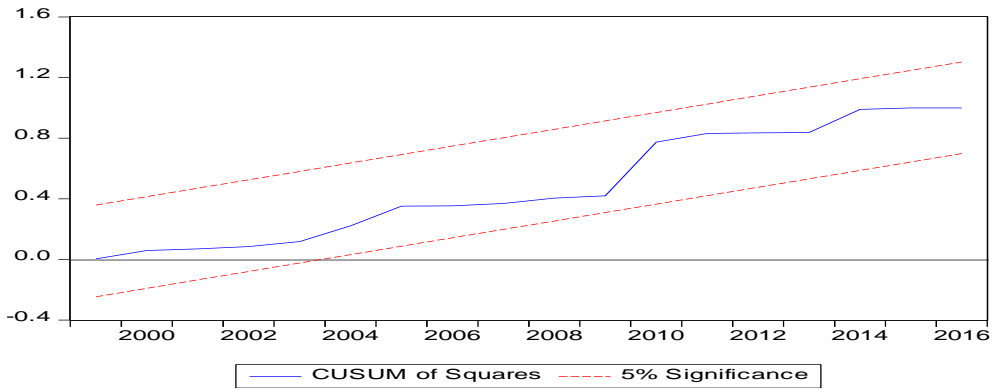d Derived from the regression of squared residuals on squared fitted values



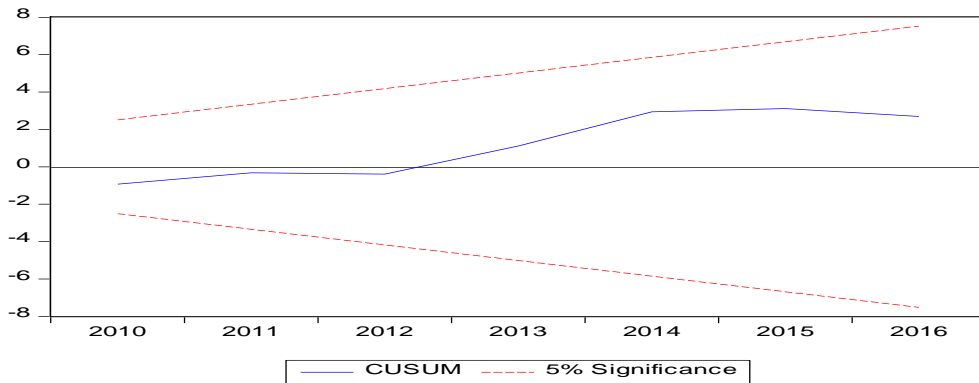**Fig. 1.**   CUSUM (Corup )

**Fig. 2.** CUSUMsq (Corup )



**Fig. 3.** CUSUM (deac)



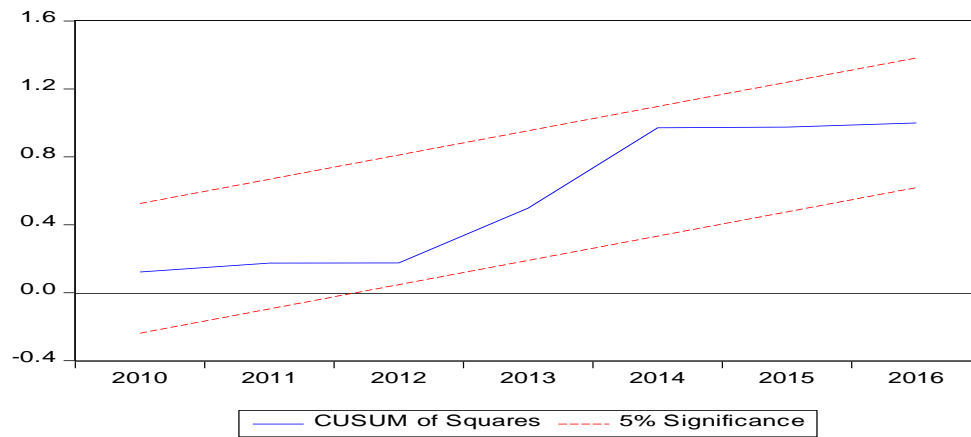**Fig. 4.** CUSUMsq (deac)



**FIG. 5.** CUSUM (LAOR)

**Fig. 6.**  CUSUMsq (LAOR)

## 5.  CONCLUSIONS AND POLICY RECOMMENDATIONS

The study examined the effect of institutional quality on the relationship between public spending and economic growth in Nigeria. The long run estimates revealed that corruption affects the relationship between capital expenditure and economic growth while it has negative but significant impact on the relationship between recurrent expenditure and economic growth. Democratic accountability has a negative and significant effect on the relationship between the capital expenditure and economic growth but a positive and significant relationship between recurrent expenditure and economic growth. Similarly, law and order has negative and significant effect on the relationship between recurrent expenditure and economic growth while it has positive relationship with capital expenditure and growth.To further accentuate the level of growth in Nigeria the government must ensure proper management of capital and recurrent expenditure in order to enhance productive capacity and accelerate the growth process.  A proper surveillance on capital spending is required as this is the best way the country can experience growth and development process and this can be done by having some monitoring agencies who can be entrusted with the duty of ensuring that funds are spent on a particularly project for which it is meant for. Capital spending monitoring and outcome qualification is urgently required as these areas have been grossly neglected, which has resulted in fund misappropriation, white elephant and abandoned projects. Nigerian government should ensure a proactive spending in enhancing the quality of human and social capital and also make sure that there is a follow up system on every project giving out by the government.Finally, the Government should develop functional and sound institutions by making sure that people placed in the position of ensuring proper utilization of funds such as EFCC chairman are appointed based on merit and not by politics as good institution is expected to deliver more real benefits; though the Economic and Financial Crime Commission, Independent Corrupt Practices Commission has achieved a measure but there is need to strengthen institutions and ensure that they are devoid of political influences in order to mitigate the incessant diversion and gross embezzlement of public funds.

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