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Oil and Gas Revenue, Control of Corruption and Economic Performance in Nigeria

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Abstract

The research investigated the short and the long-run effects of oil and gas revenue and control of corruption on economic performance in Nigeria. Auto Regressive Distributed Lags (ARDL) was used in achieving the objective of the study. The short-run model reveals that economic performance is significantly explained by the lags of oil and gas revenue, and control of corruption. However, the long-run model coefficients produced result that is contrary to the a priori expectation, though they are statistically insignificant. This indicated that, oil and gas revenue, and control of corruption promotes economic growth in the short-run while reduces it in long run. The research therefore recommends anticorruption policy of establishing a special court attach to anticorruption agencies in order to mitigate corrupt practices and subsequently improve the standard of living in Nigeria.

Keywords: Oil and Gas Revenue, control of corruption, Nigeria

Introduction

Since early 1960s crude oil has been one of the important natural resources that is demanded globally. As such, the economies that are blessed with crude oil deposit beneath their earth surface has emerged to be called oil exporting countries while the economies that purchase this crude oil are called oil importing countries. Statistics has shown that crude oil has accounted for about 40% of the global energy requirement. This has made the price of crude oil to be a point of reference to most related energy prices in the energy market (OPEC, 2012). According to Sachs & Warner (1999), it is an important catalyst for achieving economic growth by the producing countries.

In Africa, Nigeria is one of the leading producers of crude oil that ranked among the tenth countries that export crude oil globally. Its average daily production of crude oil stands at about 2.2 million barrels per day with most of the oil exploration and production concentrated in the Niger Delta region of the country (OPEC, 2012).

Since the oil boom of 1970s, crude oil production had been the main source of foreign exchange earnings and revenue to the Nigerian government. Crude oil is said to have accounted for more than 90% of foreign exchange earnings and accounted for more than 80% of the Federal government revenue (CBN, 2014). Because most of the revenue realized comes from the oil sector, the sector has played important role of providing employment opportunities directly to the country's inhabitants and indirectly through backward linkages with other sectors of the economy.

However, fluctuations in oil prices which are determined by external shocks beyond the control of Nigeria government, such as, excess supply of crude oil to the global oil market between 2014 – 2016; recent oil price crunch to a low as $20 per barrel in April 2020 as a result of the pandemic of corona virus (COVID-19) has necessitate the need to revisit the impact of crude oil revenue generated by the Nigerian government on economic performance. This is because fluctuation in crude oil prices has adverse effects on some economic indicators like investment, exchange rate, interest rate, general prices and cost of production etc.(Adamu, 2015).

Beside oil price fluctuation that affect the revenue earning of the Nigerian government, it is alleged that corrupt practices in the oil sector relating to looting and embezzlement of the revenues generated from crude oil; illegal diversion of crude oil and crude oil theft among others have militated against the equitable distribution of benefit of oil revenue to the country's populace, see (Habib, Abdelmonen, & Khaled, 2018; Thisday, 2019; and William Clowes 2020). Therefore this has also drawn the attention of the country's anti-graft agencies like Economic and Financial Crimes Commission (EFCC) and the Independent Corrupt Practices and Other Related Offences Commission (IPCC).

To investigate the link between oil revenue and economic performance, a tentative plot is presented in Figure 1 that shows the relationship between oil rent, Gross Domestic Product (GDP) growth and GDP per capita. Thus, this study will empirically examine the dynamic relationship between oil and gas revenue, control of corruption and economic performance in Nigeria. The rationale of selecting oil and gas revenue and control of corruption is that they are important determinant of economic performance but are not commonly used in the same framework by most literature. Hence examining the effect of oil and gas revenue and control of corruption on economic performance in Nigeria will contribute to existing body of studies.

Following introduction in chapter one, the rest of the paper is the review some related literature in chapter two, chapter three provide methodology and model specification, chapter four provide result and discussion. Finally chapter five conclude the

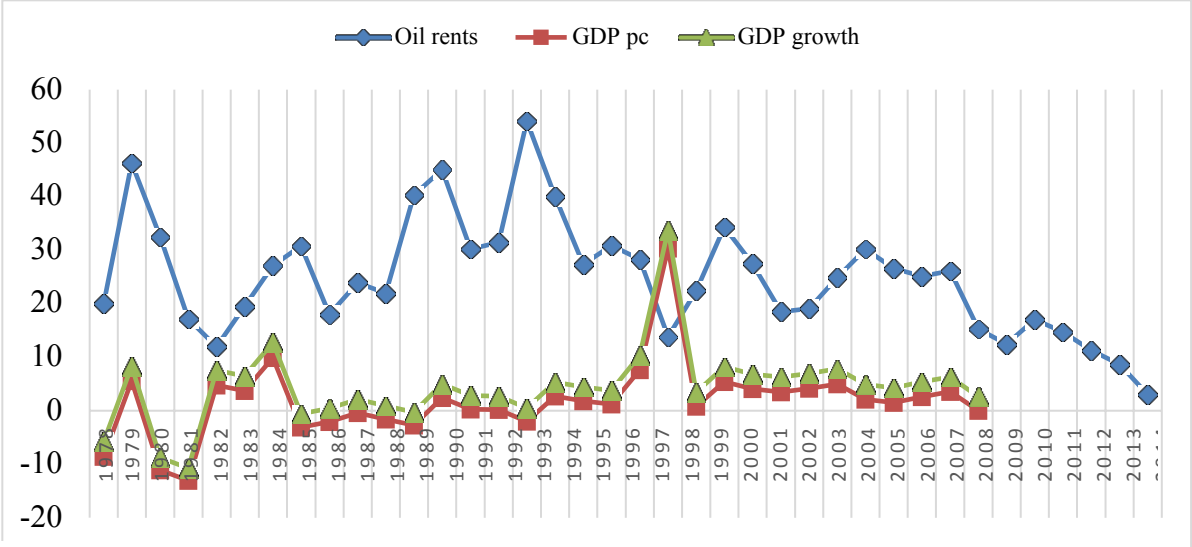

Figure 1: Rent seeking and GDP Trend in Nigeria

study and propose some policy recommendations.

2. Literature Review

The relationship that exists between oil and gas revenue with macroeconomic variables has been empirically explored by the past literature such as (Ghosh, 2011; Reboredo, 2012; Pershin, Carlos, Perez, and Gracia, 2016). These empirical studies investigates the relationship that exists between oil and gas revenue and economic performance at both country and cross country levels. However, recently there is a paradigm shift to studies on the nexus between oil and gas revenue and institutional quality indicators in which the current study is investigating.

Starting with Smith (2004) which examined the relationship between oil wealth and regime survival using cross-sectional time series data from 107 developing countries between 1960 to1999. Findings revealed a significant positive relationship between oil wealth and regime durability while a negative and significant relationship was explored between oil wealth, political protest and civil war. This may likely be associated with the fact that as government realizes much income from oil exploration, a lot of infrastructural facilities will be in place which will help in smooth running of economic activities as well as increasing welfare and standard of living of the people.

Odularu (2008) analyzed the relationship between the oil sector and Nigerian economic performance from 1970 to 2005 using the Ordinary Least Square (OLS) regression method. The study reveals that oil sector (represented by domestic oil consumption and export) have contributed to the improvement of the Nigerian economy (measured by real GDP). However, despite its positive effect on the growth of the Nigerian economy, there has not been any significant improvement in terms of welfare and infrastructural development in the country which may likely be attributed to many factors such as misappropriation of public funds (corruption) and poor administration. The study recommends that government should implement policies that would encourage active private sector participation in oil sector.

Similarly, Gabriel et al., (2012) evaluated the impact and sustainability of gas utilization and estimated the impact of fine imposition on gas flaring in Nigeria between 1970 and 2010 using Johansen co-integration and Distributed Lag model. Findings revealed that gas utilization has a significant impact on the economy and it is also sustainable. On the other hand, the imposition of fines has no any significant impact on the level of flares. This may likely be as a result of ineffectiveness of the laws in place and gaps in the existing gas legislation. The study recommends among others that government should provide investment-friendly environment as investors will naturally like to go to areas where their assets are safe and profit can be easy to repatriate.

In the same vein, Nathan et al., (2013) conducted a study on institutional quality, petroleum resources and economic growth to examine the impact of the differences in oil sectors and institutional quality on the difference in economic performance between Nigeria, Brazil and Canada from 2000 to 2010. Empirical analysis using pooled Ordinary Least Square proved that corruption is the main cause of Nigeria's economic backwardness. And that quality of institution is indispensable in breaching the gap in economic performance between Canada and Nigeria as well as Brazil and Nigeria. Based on their findings therefore, institutional quality in Nigeria is likely to determine if natural resources are channeled into positive economic growth.

Similar to this, Abubakar et al., (2016) analyzed of the impact of oil revenue on the

Nigerian economy between 1980 and 2010 to objectively examine the Nigeria's oil rent and its impact on the country's national development during the recent democratic era. Using multivariate regression analysis, result indicates that oil has no significant impact on both overall economic development and all individual sectors with the exception of agricultural sector. Even though the result is counter intuitive, but it may likely be associated with the fact that most oil exporting countries (of which Nigeria is included) that have earned huge oil rents also tend to have high socio-economic problems, including high poverty rates, poor health and educational services, high rates of child mortality and poor physical infrastructure which all together make the contribution of the huge oil rent insignificant.

In similar vein to the above findings, Olayungbo and Adediran (2017) studied the effects of oil revenue and institutional quality on economic growth in Nigeria between 1984 to 2014 using autoregressive and distributed lag model. Findings indicate that both oil revenue and institutional quality affect economic growth positively in the short-run but retard it in the long-run. The study concludes that oil revenue has a smaller significant effect on growth in Nigeria compared to institutional quality. This is likely because institutional quality (with low corruption) plays a very vital role in explaining the contribution of oil revenue to economic growth. The study recommends that the government should institute anti-corruption policies to mitigate corruption and to improve institutional quality in the country in order to ensure sustainable growth per capita, protect existing investments, and to attract new investment in the country at large.

In support of the foregoing debate Bergougui & Sami (2017) examined the effect of natural resource abundance and quality of institution on economic development in oil-rich Arab countries between 1996 and 2015 using pooled OLS and generalized least squares regression. Findings indicate that higher quality of institution is connected to higher economic development. While oil resource abundance measured by oil production per capita, is detrimental to economic development. This may likely be associated with the fact that most of the developing countries utilized the huge oil revenue in capital projects which in the recent times were not able to maintain them. This has resulted to infrastructural gap which for a long time affect economic development negatively. The study suggests that policy makers need to strengthen and improve institutional quality, which is likely to deliver much effects on economic performance in these countries.

In relation to the above findings also, Michael & Oyeyemi (2018) examined the contribution of the oil revenue to Nigerian output growth between 1981 and 2014 using FMOLS regression. Result indicates that Oil revenue does not have short-run impact on economic activities. However, persistent rise in oil revenue ultimately lead to economic growth in the long-run. This may likely be associated to the fact that oil revenue is not fully re-invested in productive areas of the economy and the capital projects undertaken are such that their impact may only be realized in the long-run. It is however recommended that the government should effectively and efficiently utilize the oil fund into strategic developmental projects so as reduce the rate of poverty and facilitate output growth.

Okon & Awara (2018) analyzed the impact of institutional quality on economic diversification in Nigeria between 1996 and 2016 using error correction model (ECM). Their findings revealed that the four indicators of institutional quality; effectiveness of government, strong rules of

law, political stability and less corruption are associated with greater GDP and export diversification. Hence the paper concludes that getting institutions right is key for GDP and export diversification vis-a-vis non-oil resource development.

Similarly, Hassan et al., (2019) explored the role of institutional quality in the relationship between oil wealth and economic growth in oil exporting developing countries between 1984 and 2016 using ARDL model. The finding reveals that there is positive relationship between institutional quality, oil wealth and economic growth. This is not surprising because as oil revenue increases more resources will be available for strategic investment in developmental projects. This coupled with high institutional quality will give a positive outcome on economic performance. The study recommends that, developing countries should adopt appropriate policy measures to improve their levels of institutional qualityand embed their entire oil wealth-generating mechanism in a sound institutional framework.

Siddiqui Kalim (2019) discussed the significant effect of corruption in the developing countries. The study concludes that the negative effects of corruption in developing countries has been quite severe, some of which is that corruption did not only increase public debt and expenditure, but in many instances also changes the composition of such expenditure away from vital sectors such as education and health which may likely be detrimental to social and economic progress.

From the above review of literature, there has been consistency in findings about the significant impact of institutional quality on economic growth and development. But there were mixed findings with regard to the effects of oil and its proceeds on economic growth. Majority of the papers concluded that oil and its proceeds is not significantly contributing and even detrimental to economic progress. However, few explored a significant effect of oil revenue on economic growth.

The insignificant or inverse relationship between oil revenue and economic growth may likely be associated with the fact that, majority of such income are used for capital projects and their impact may reflect more in the long-run. Lack of strategic re-investment in productive areas of areas has also contributed to the persistent problem. The study seeks to narrow the gap and most importantly from the Nigerian experience which is not common in the existing literature.

Methodology

3.1 Theoretical Framework and Model Specification

In order to examine the effect of oil and gas revenue and control of corruption on economic performance in Nigeria, the study used the famous endogenous growth theory developed by Arrow (1961). The endogenous growth theory describes how economic growth is achieve in the long-run, which is initiated from the internal forces of the economic system. For instance, the economic institutions, economic policies, the quality of governance (in our case control of corruption), human capital investment amongst others. Therefore, the study adopt the AK model developed by Arrow (1961) and follows the empirical work of Olayungbo & Adediran (2017) to develop the empirical model as:

$$Q = f(AK) \quad (1)$$

From equation (1), Q represent economic performance (GDP per capita), which depends on the inclusion of capital (K) and technological progress (A). Hence, the linear production function assumes increasing return to scale. By substituting subscript t in equation (1) above, we get a time series

indicating the period of the study (48 years). This led to the specification of equation (2) as follows:

$$Q_t = f(AK_t) \quad (2)$$

According to Romer et al,. (1989) and Aghion & Howitt (1990), the symbol (K) which stands for capital stock is further sub-divided into physical and human capital $(K_{phy(t)}\ K_{hum(t)})$. When integrated into equation (2) yield the following.

$$Q_t = f(AK_{phy(t)}\mathrm{K}_{\mathrm{hum(t)}}) \quad (3)$$

Equation (3) above suggests that the linear production function exhibits an increasing return to scale in both physical and human capital $(K_{phy(t)}\ K_{hum(t)})$.

Therefore, the quality of governance or institutional qualities such as control of corruption do affects both the physical and human capital depending on the magnitude. For instant, higher revenue realized from the sales oil and gas coupled with effective control of corruption will advance both the physical and human capital in the country. More especially, this will narrow the infrastructural gap, improve the general standard of citizens through provision of basic human necessities such as access to safe drinking water, good sanitation, quality education, security, health, income [human capital development] amongst others (Sulaiman, Bala, Tijani, Waziri, & Maji, 2015; Waziri et al., 2018; and Maji & Waziri, 2020) .

On the other hand, higher revenue from oil and gas couples with non-effective control of corruption in the country can increase infrastructure and income gap. Especially, when funds meant for developmental purposes to improve the quality of lives are diverted for unproductive activities, embezzlement and personal aggrandizement. Therefore, high corrupt practices decrease economic performance in terms of growth and development (Shamsuddeen, Aliyu Sa'ad, Mustapha, Waziri, & Maniam, 2017). Hence, our human capital development model $(K_{hum(t)})$ can be represented by governance indicator which is proxy by control of corruption (CC), hence:

$$K_{hum(t)} = f(CC_t) \quad (4)$$

As earlier stated in the introduction, oil and gas revenue (OG) is one of the major contributors to Nigeria's economic growth, and also an important hypothesized-variable of this study. So, including the variables (OG) and (CC) into equation (3) as:

$$Q_t = f(AK_{phy(t)}\ \mathrm{OG_t}\ \mathrm{CC_t}) \quad (5)$$

From equation (5), K represent the physical capital and proxy by Gross Capital Formation (GCF). It is defined by the world development indicators (WDI), gross capital formation (formerly gross domestic investment) consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories.

For the purpose of this study, (A) which represents technological progress in the model is assumed to be determined outside (exogenous variable) the model. This is because Nigeria is a resource-based economy and still adopting technologies from developed countries. Thus, technology is assumed to be constant in the model.

To model economic performance, symbol "Q_t" in equation (5) is replaced with real Gross Domestic Product per capita ($\mathrm{GDP_t}$). The variable population growth "POP" is added as a control variable in the model. Hence, equation (5) is further extended as follows:

$$GDP_t = f(OG_t + CC_t + GCF_t + POP_t) \quad (6)$$

To normalized and reduce the skewness of the variable measurement units, their natural logarithm is taken and presented in equation (7).

$$\ln GDP_t = \ln OG_t + \ln CC_t + \ln GCF_t + \ln POP_t \quad (7)$$

Converting equation (6) into econometric specification which includes an intercept and error term, we arrived at the following equation (8).

$$\ln GDP_t = \alpha_0 + \alpha_1 \ln OG_t + \beta_2 \ln CC_t + \sigma_3 \ln GCF_t + \chi_4 \ln POP_t + \varepsilon_t \quad (8)$$

Where α_0 is the intercept of the slope, while α_1, β_2, σ_3, and χ_4 are the coefficients of independent variables. They define the degree of variation in the dependent variable ($\ln GDP_t$) as a result of variation of independent variables $(\ln OG_t, \ln CC_t, \ln GCF_t \& \ln POP_t)$. Then ε_t is an error term taking care of all other variables that affects $\ln GDP_t$, but not captured by the model (Gujarati & Porter 2009).

3.2 Estimation Method

In order to achieve the objective of the study, the research utilized Auto Regressive Distributed Lags (ARDL) introduced by Pesaran & Shin (1999) and Narayan (2005) respectively. The advantages of ARDL over other methods of estimation in the time series analysis is that, it does not require unit root test result to be stationary at only level I(0) or only first difference I(1) alone. Hence it is possible to conduct the cointegration test whether the result is I (0) or I (1) or mixture of both. Another advantage of the ARDL approach to cointegration is that the long-run results can be simultaneously estimated along with the short-run results and; thereafter, the speed of adjustment to long-run convergence can be identified.

Then Unrestricted ARDL models is presented in (9) as follows:

$$ln\ G\ DP_t = \alpha_0 + \sum_{i=1}^{k} \alpha_i\ \Delta\ ln\ O\ G_{t-1} + \sum_{i=0}^{k} \beta_i\ \Delta CC_{t-1} + \sum_{i=0}^{k} \sigma_i\ \Delta\ ln\ G\ CF_{t-1} + \sum_{i=0}^{k} \chi_i\ \Delta\ ln\ P\ OP_{t-1} + \lambda_1\ ln\ GDP_{t-1} + \lambda_2\ ln\ O\ G_{t-1} + \lambda_3\ ln\ C\ C_{t-1} + \lambda_4\ ln\ G\ CF_{t-1} + \lambda_5\ ln\ P\ OP_{t-1} + \varepsilon_t \quad (9)$$

H_0: $\lambda_1 = \lambda_2 = \lambda_3 = \lambda_4 = \lambda_5 = 0$ (No cointegration)

H_1: $\lambda_1 \neq \lambda_2 \neq \lambda_3 \neq \lambda_4 \neq \lambda_5 \neq 0$ (Cointegration exist)

The null hypothesis is given by H_0 assumes that there is no relationship between the variables while the alternative hypothesis H_1 assumes the existence of cointegration between the variables.

The decision of the existence of cointegration or its otherwise is reached by comparing the value of estimated F-statistics with the tabulated critical values of Narayan (2005). Cointegration exist when the value of the F-statistic is greater than the upper bound critical values. Thereafter, can then proceed to estimate the long-run and short-run models. The short-run and the error-correction model (ECM) are specified as follows:

$$ln\ G\ DP_t = \alpha_1 + \sum_{i=1}^{k} \beta_{1_i}\ \Delta\ ln\ O\ G_{t-1} + \sum_{i=0}^{k} \delta_{1_i} \Delta CC_{t-1} + \sum_{i=0}^{k} \chi_{1_i}\ \Delta\ ln\ P\ OP_{t-1} + \sum_{i=0}^{k} \pi_1\ i \Delta\ ln\ G\ CF_{t-1} + \varepsilon_{1_t} \quad (10)$$

$$ln\ G\ DP_t = \alpha_2 + \sum_{i=1}^{k} \beta_{2_i}\ \Delta\ ln\ O\ G_{t-1} + \sum_{i=0}^{k} \delta_{2_i} \Delta CC_{t-1} + \sum_{i=0}^{k} \chi_{2_i}\ \Delta\ ln\ P\ OP_{t-1} + \sum_{i=0}^{k} \pi_{2_i}\ \Delta\ ln\ G\ CF_{t-1} + \ell \mathrm{ECT}_{t-1} + 2\varepsilon \quad (11)$$

From equation (11) above, "ECT" stand for error correction model which explain the speed of adjustment (captured by ℓ) in which the original model will reach equilibrium in the event of shock. It is also assumed to be less than one in its absolute value, negative and significant as well.

3.3 Variables and Sources of data

The variables used in this research include Gross Domestic Product per capita (GDP), Oil and Gas revenue (OG), Control of

corruption (CC), which is governance indicator and institutional quality. We used the instrument for managing of oil and gas revenue as Human Capital (K_{hum}) while Gross Capital Formation (GCF) was used as proxy for physical capital (K_{phy}). World Development Indicators (WDI) defines it as fixed asset in a given country which measures capital structures like road network, schools, bridges, Airports, Seaports, railway line, ditches among others. GDP per capita measuring the economic performance. Then control variable of Population growth (POP) is measured by the percentage increase of population per 1000 live birth per annum.

The data for these variables were obtained from the World Development Indicators (WDI) as well as from World Governance Indicators (WGI) data bases. The research also utilized a time series analysis for the period of 48 years from 1970 to 2018. This is also in line with the minimum number of observation which should be not less than 30 observation as expounded in Gujarati & Porter (2009). Therefore, based on the availability of data form WDI and WGI, the research period is long enough to recommend for economic policies to government and stake holders and other concerned authorities.

4. Result and Discussion

4.1 Unit Root Test

Although, economic variables are in many ways inter-related, nevertheless conducting unit root test would enable us to ensure that all variables are stationary (normally distributed). Also to conduct an empirical investigation on the long run and short run cointegration amongst the right and left hand side variables. The method, auto regressive distributed lags (ARDL) is powerful for cointegration test as introduced by Narayan (2005b). Hence the rule of thumb suggest that, the variables must be stationary regardless whether at level I(0), or first difference I(1) and or combination of both I(0) and I(1). However, stationary at second difference is not desirable for ARDL cointegration techniques. Table 1.0 present the unit root test result for Augmented Dickey fuller (ADF) and Philips Peron (PP) respectively.

Table 1: ADF and PP Unit Root Test(s) Result

Variables	I(0)	I(0)	I(1)	I (1)
	ADF	PP	ADF	PP
lnGDP	-0.669(0.120)***	-0.669(0.120)***	-1.397(0.133)***	-1.397(0.133)***
lnCC	-0.311(0.114)*	-0.3109(0.114)*	-2.666(0.403)*	-0.986(0.155)***
lnOG	-0.570(0.144)**	-0.468(-0.468)**	-1.506(0.213)***	-1.115(0.148)***
lnGCF	-0.192(0.083)*	-0.192(0.083)*	-1.484(0.655)*	-1.001(0.149)***
lnPOP	-0.041(0.009)**	-0.119(0.053)*	-0.065(0.050)	-0.120(0.071)*

Figures in parenthesis are standard errors, while *** is p<0.01, ** p<0.05, and * p<0.1 respectively.

4.2 Correlation Matrix

Similarly, Table 2 presents correlation matrix. It explain the relationship between variables used in the study. Variables that are highly correlated are gross capital formation (GCF) and Population (POP) with

71%. While those with low correlation are GDP and control of corruption (CC) with 11%. These values did not violet the rule of thumb since their absolutes value is less than 80% (Prodan 2013).

Table 2 Correlation Matrix

	GDP	OG	CC	GCF	POP
GDP	1				
OG	-0.160724	1			
CC	0.118349	0.443406	1		
GCF	-0.379912	0.469554	0.258866	1	
POP	0.335615	-0.204533	-0.206237	-0.707377	1

4.3 Cointegration Test

The result of cointegration test is presented in Table 3 below. It reveals that F-Statistic (11.03) is greater than the F-tabulated (4.37) of the upper bound value of Narayan (2005) table at 1% significant level. Therefore this implies the rejection of null hypotheses ofno cointegration between Oil and Gas Revenue, Control of Corruption and Economic Performance in Nigeria. Therefore, as a result of presence of cointegration amongst the variables, we can proceed with the short, the error correction term (ECT) and long run estimates of the effect Oil and Gas Revenue, Control of Corruption on Economic Performance in Nigeria respectively.

Table 3: Result Bound Test Cointegration with GDP per Capita (Economic Performance) as Dependent Variable

T-Statistic	Value	K
F-Statistic	11.03	4
Significance	I(0) Lower Bound	I(1) Upper Bound
10%	2.2	3.09
5%	2.56	3.49
2.5%	2.88	3.87
1%	3.29	4.37

K stands for number of independent Variables used in the ARDL Model

4.4 Results of the Short run model, Error Correction Term (ECT) and the Long-run model.

Short run model

The estimated result of the short run model, ECT and the long-run model is presented in Table 4 below. Starting with the short run model, the result reveals that, economic performance is significantly explained by the lags of oil and gas revenue, though at

different level of significance. For example, at lag 3 and 2, economic performance is statistically explained by oil and gas revenue at 10% significance level, whereas at lag 1, the former is statistically explained by the later at 5% level of significance.

This means that at lag 2 and 3 of the short run model, a 10% increase in oil and gas revenue increases economic performance by 7.6%. While at lag 1, as oil and gas revenue increase by 5% economic performance increases by 1.5%. This positive correlation between oil and gas revenue and economic performance may likely be due to the fact that around 2014, the country had the capacity of producing more than 2.5 million barrels of crude oil per day, while crude oil was traded between $100 to $145 per barrel. Therefore, the situation enables the country to accumulate higher foreign earnings from the sales of crude oil from the global market which then reflected in growth of the economy (economic performance). This result validates the findings of Olayungbo & Adediran (2017a) in the case of Nigeria using annual data from 1984 to 2014.

With regard to the second hypothesized variable (control of corruption), the estimated coefficient produced result that is in line with our expectation and also consistent with theoretical provision. The positive coefficients of (CC) implies that, effective control of corruption in the country has corresponding increase in the overall economic performance. For instant, at lag 2 and lag 3 economic performance increases by 3.5% and 9.8% as a result of 10% and 5% increase in the control of corruption in the country.

Effective control of corruption in an oil-based economy like Nigeria where 60 to 70% of its fiscal responsibilities are linked to oil and gas sector. Thus, tackling corruption, personal aggrandizement and channels the revenue into various economic sub-sectors would definitely improve the performance of the economy. The result validates the findings of Nathan et al., (2013) and Olayungbo & Adediran (2017) in Nigeria, while Bergougui & Sami, (2017) fund that higher quality of institution is connected to higher economic development in the case of oil-rich Arab countries.

Table 4: Results of the Short run model, ECT and Long-run model.

ARDL (4,4,4,4,4,4) GDP per Capita (Economic Performance) as Dependent Variable

Variables	Coefficient	Standard Error	T-Statistics	P-Value
		Short-run Results		
D(lnOG)	-1.0116	0.0799	-1.2658	0.0502**
D(lnOG(-1))	1.5552	0.1489	0.0799	0.0061**
D(lnOG(-2))	7.6971	0.1530	5.02877	0.0127*
D(lnOG(-3))	7.6199	0.1108	6.8711	0.0093*
D(CC)	7.0645	0.5714	1.2363	0.0514**
D(CC(-2))	3.5172	0.4330	8.1221	0.0780*
D(CC(-3))	9.8251	0.7343	0.7342	0.0475**
D(lnGCF(-1))	6.3722	0.4490	1.4191	0.0448**

D(lnGCF(-2))	7.6971	0.1530	5.0287	0.0127***
D(lnPOP)	-8.8672	2.9579	3.7042	0.0212***
ECT(-1)	-0.5585	0.0070	-7.9500	0.0080*
		Long-run Results		
lnOG	-2.5247	1.4724	-2.4108	0.2503
CC	1.0846	4.9489	2.1916	0.2725
lnGCF	-1.3526	5.5007	-2.6264	0.2361
lnPOP	-4.1696	11.6699	-2.2951	0.2616

Note that *** is p<0.01, ** p<0.05, and * p<0.1 respectively.

Error Correction Term (ECT)

The estimated result of ECT has produced coefficient that is consistent with the rule of thumb, it is negative, less than one in its absolute value and statistically significant at 10%. The coefficient 0.558 implies that there is speed of adjustment of about 0.56% per annum in the event of economic performance back to equilibrium after deviation as a result either internal or external shock(s).

Long-run model

The outcome of the long run model produce contrary result when compared with that of short run and ECT models. For example, all the four independent variables are negatively related to economic performance with the exception of population (POP), however none is statistically significance except inthe short run. Starting with the coefficient of oil and gas for instant, despite it is insignificancy, it implies that increase in the oil and gas revenue reduces economic performance by 0.25% in the long run. This situation establishes the resource curse hypothesis in the country, where rentseeking behavior had negatively affects theeconomic growth of oil producing countries (Mitra, 2000).

Similarly, the negative coefficient of gross capital formation (GCF) may be attributed to infrastructural deficit not only in the country, but entire sub-Saharan Africa in general. This is because most of these countries' physical capital were built in 1970s but due to lack of maintenance culture eventually became in functional. The lack of maintenance culture could also be associated with poor institutional quality such as corruption which eventually affect economic performance adversely.

4.5 Diagnostics tests

Finally, Table 5 below presents a diagnostic test. Starting from serial correlation, normality, Heteroskedasticity and then Ramsey tests. Invariably our model has passed all the four tests, since their probability values are greater than 5%. Meanwhile, other graphical diagnostic tests such as Cusum, Cusum of squares amongst others are presented in appendix. For instance, the model has passed both the CUSUM and CUSUM of squares tests at 5% level of significance. Then probability and value of Jarque-Bera are not significant, meaning that model is well specified and the estimated result is not a spurious one as well.

Table 5 Diagnostics tests

Normality test	Serial correlation	Heteroskedasticity	Ramsey reset
0.818	0. 377	0.344	0.473
(0.400)	(0. 426)	(0.325)	(0.638)

5. Summary, Policy Recommendation and Research Gap

The Research investigated the short run, Error Correction Term and the long run effects of Oil and Gas Revenue and Control of Corruption on Economic Performance in Nigeria. Auto Regressive Distributed Lags (ARDL) was employed in achieving its objective. Endogenous growth theory developed by Arrow (1961) was used as theoretical framework. The theory describes how economic growth is achieve in the long-run, which is initiated from the internal forces of the economic system. The short run model conceals that, there is positive correlation between oil and gas revenue, control of corruption and economic performance in Nigeria. However, the long run model reveals that the independent variables are negatively related to economic performance with the exception of population. The study recommends anticorruption policy of establishing a special court attach to anticorruption agencies as to improve the quality of institution and to ensure general improvement in the standard of living in the country.

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7 Appendix

Appendices (I)

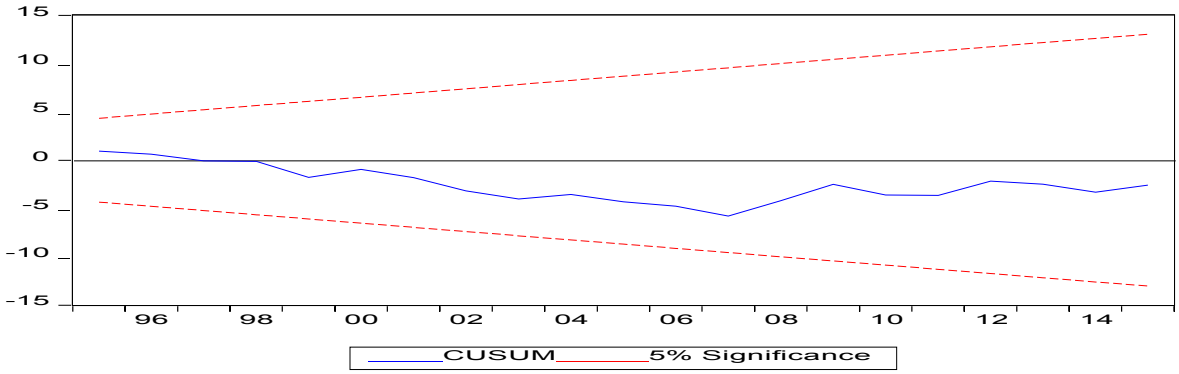


Figure 2: Cusum Diagnostic Test @ 5% Significance

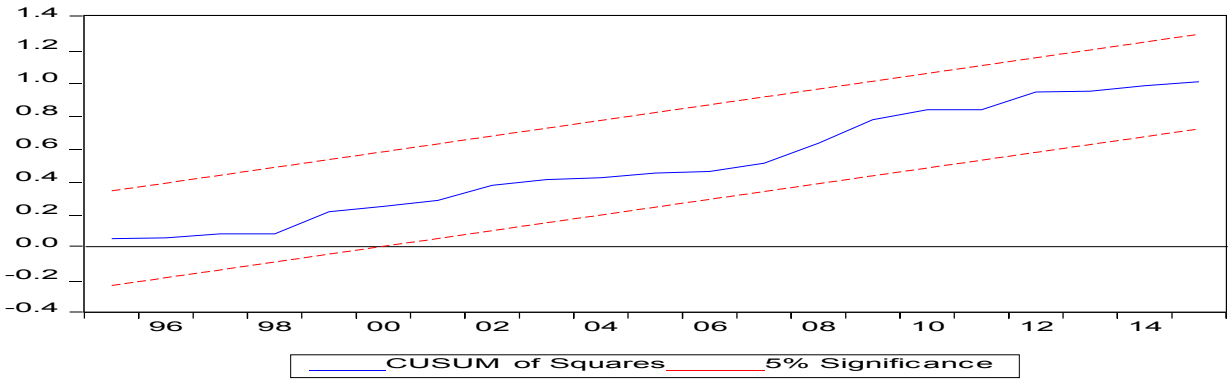
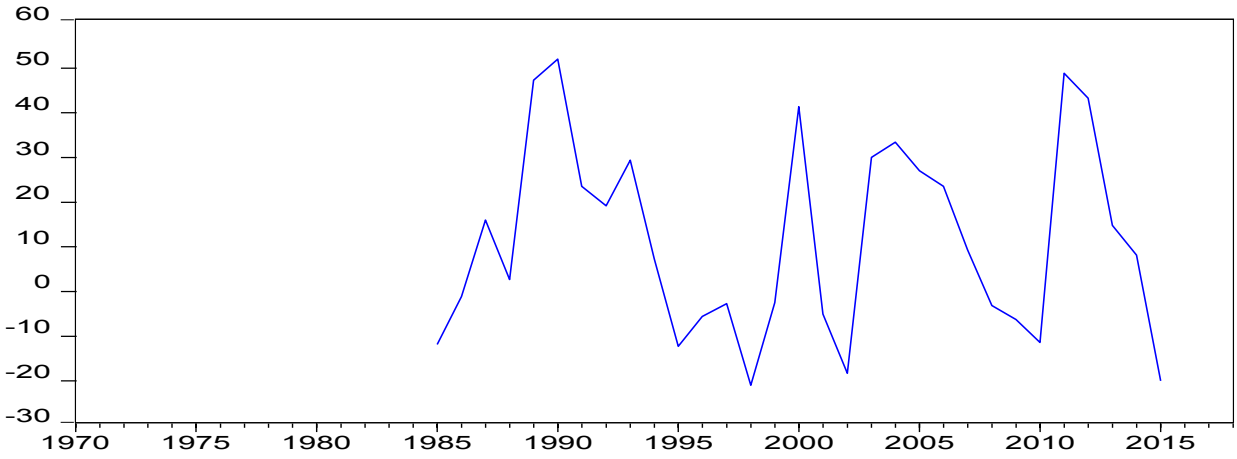
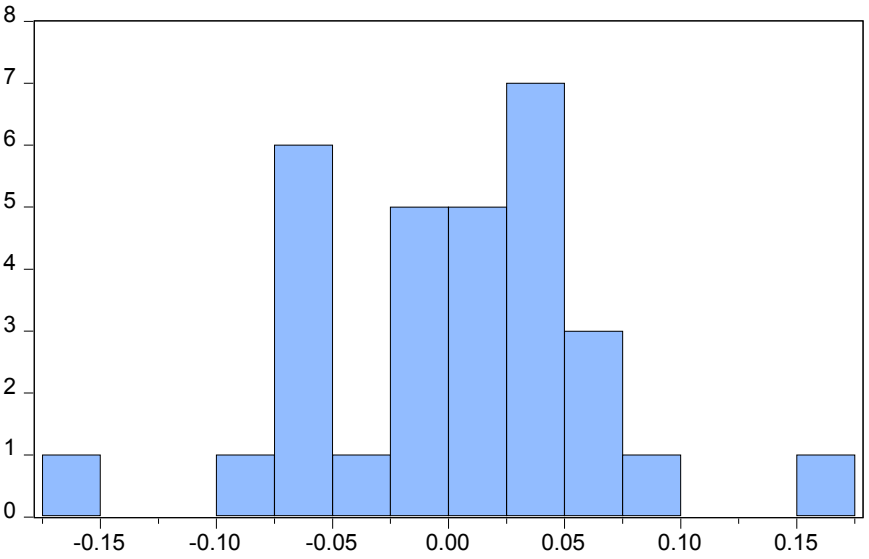


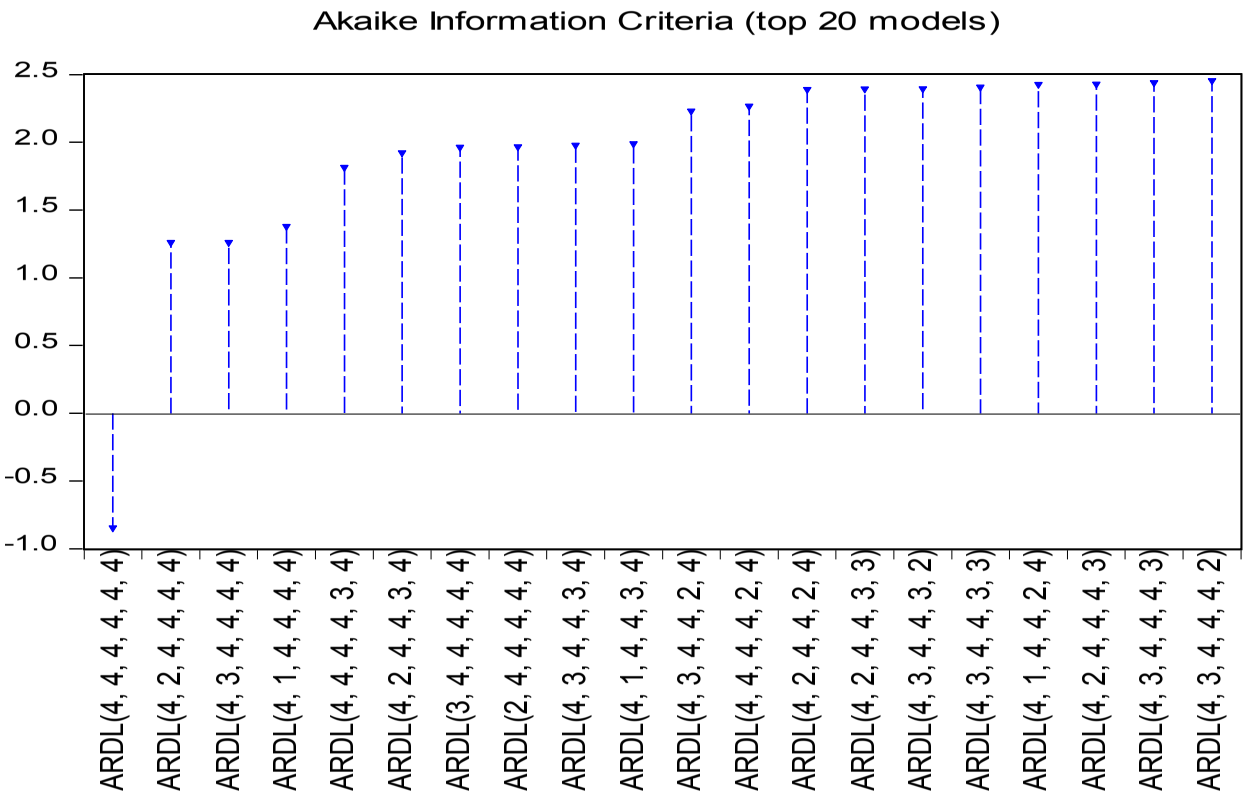
Figure 3: Cusum of Squares Diagnostic Test @ 5% Significance

Cointegration **Graph**





Series: Residuals	
Sample 1985 2015	
Observations 31	
Mean	2.53e-13
Median	0.001059
Maximum	0.153787
Minimum	-0.173081
Std. Dev.	0.061138
Skewness	-0.263411
Kurtosis	4.183894
Jarque-Bera	2.168899
Probability	0.338088


Akaike Information Criteria (top 20 models)
2.5
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
ARDL(4, 4, 4, 4, 4, 4)
ARDL(4, 2, 4, 4, 4, 4)
ARDL(4, 3, 4, 4, 4, 4)
ARDL(4, 1, 4, 4, 4, 4)
ARDL(4, 4, 4, 4, 3, 4)
ARDL(4, 2, 4, 4, 3, 4)
ARDL(3, 4, 4, 4, 4, 4)
ARDL(2, 4, 4, 4, 4, 4)
ARDL(4, 3, 4, 4, 3, 4)
ARDL(4, 1, 4, 4, 3, 4)
ARDL(4, 3, 4, 4, 2, 4)
ARDL(4, 4, 4, 4, 2, 4)
ARDL(4, 2, 4, 4, 2, 4)
ARDL(4, 2, 4, 4, 3, 3)
ARDL(4, 3, 4, 4, 3, 2)
ARDL(4, 3, 4, 4, 3, 3)
ARDL(4, 1, 4, 4, 2, 4)
ARDL(4, 2, 4, 4, 4, 3)
ARDL(4, 3, 4, 4, 4, 3)
ARDL(4, 3, 4, 4, 4, 2)