

Journal of Sustainable Development Studies

ISSN 2201-4268

Volume 7, Number 1, 2014, 36-51



Institutions and the Resource Curse in Nigeria

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Abstract. The objective of this study is to look at the relationship that exists between institution and resource curse in Nigeria using secondary data from 1986 to 2012. The study used descriptive statistics and the unit root test was tested using Augmented Dickey Fuller (ADF). Granger causality was also carried out in addition to correlation and regression analyses. However, Economic Freedom of the World (EFW) was represented by strong institution and Gross Domestic Product (GDP) and crude oil export (OE) as resource curse, Results showed that there is a negative relationship between strong institution of Nigeria and resource curse with coefficients of 0.003874 between EFW and OE .

The results concluded that there is a need to strengthen the institutions (Size of government, legal structure and security of property right, regulation of credits etc) in Nigeria with a view to avoiding the pitfall of resource curse.

Key Words: Resource Curse, Institutions, and Economic Freedom of the World (EFW)

1.0 Background to the study

Nigeria, known to be the most populous country in Africa also account for about 18% of the continents total population, at as at 2008. Nigeria has a population of over 150 million with different endowment of natural resources such as Natural Gas, Petroleum, Tin, Iron Ore, Coal, Limestone, Niobium, Lead, Zinc, Arable land (CIA World Fact book as at July 26, 2012). Nigeria is known to be the 12th largest exporter of oil and at the same time ranked among 15 poorest nations in the world which necessitate finding solution to the problem of a country that has many natural resources and still facing economic problems; having low per capital income, poor education, poor transportation and communication to cap it up Nigeria is still been referred to as a poor nation or what we can call an under-developed country (Erika and Pauline, 2006).

The nexus between strong institution and resource curse problem in Nigeria needs to be addressed, so as to determine the role of a very strong institution to resource curse problem in Nigeria. The research problem now is that ‘ is Nigeria resource endowment a curse or a blessing? There is therefore need to study the role of strong institutions (Political, Economic, Legal and Social Institutions) in relation to economic growth in the country.

Nigeria resource endowment has been observed to cause lots of problems, which includes among others: Long term decline in terms of trade, Revenue Volatility, Dutch disease, Poor governance, Corruption and Rent Seeking behaviour. All of these are part of the problems enhancing resource curse in Nigeria. Many possible solutions have also been suggested over the years back, such as stabilization of spending of oil funds, political reforms, Investment Policy, Revenue Sterilization, Diversification etc, all of these have been suggested over the years as possible solutions to resource curse in Nigeria but the role of institutions have not been adequately captured. The focus on natural resource in this research work is on crude oil (petroleum) because it is the main source of foreign exchange and sources of income in Nigeria (Gbadebo, 2007).

1.1 Statement of the Research Problem

Looking at Nigeria's economic situation, the level of poverty in the country with abundant natural resources, one will definitely be forced to think about natural resources as a curse to the Nigeria economy. General economic theory implies that larger revenues from natural resources should generate wealth, yet much evidence suggests the opposite for Nigeria which suffers from "resource curse". Thus, large revenues occurring from natural resources should not only generate wealth for an economy but also promote economic progress and reduce poverty. The question now is: does it mean that resource- rich countries appear to have experienced a curse performance in terms of economic progress and poverty reduction than countries that have little or no resource endowment? (Steven, 2008).

1.2 Research Questions

1. What is the nexus between strong institutions and resource curse problem in Nigeria?
2. What is the contribution of oil revenue to Nigeria's economic growth i.e. the contribution of oil to (GDP)?

1.3 Objectives of the Study

The main objective of this research is to analyze the relationship between strong institutions and the resource curse in Nigeria. The specific objectives are to:

1. determine the direction of causation between institutions and resource curse in Nigeria.
2. determine the relationship between resource dependence and economic growth in Nigeria.
3. examine the interaction between institutions and natural resources in Nigeria

1.4 Justification of the Study

This study is very topical in view of the vast abundance of oil endowment in Nigeria and the high dependence of Nigeria on oil revenue, yet, little in terms of growth and development. Besides, an extensive empirical literature has emerged recently; cross-country and country specific investigating the issue of Paradox of Plenty i.e. Poverty in the midst of plenty termed 'the Resource Curse Problem'. There is need

for Nigeria to learn from other countries that have reversed the resource curse problem. This work therefore, fills the gap by focusing on role of strong institutions in turning resource endowment to blessing. Lastly, this study is justified on the ground that it will help the Nigerian policymakers in their efforts to accelerate the growth rate of the Nigerian economy.

1.5 Research Hypotheses

The research hypotheses are:

- 1 H_0 : Strong institutions does not cause resource curse in Nigeria.
 H_1 : Strong institutions cause resource curse in Nigeria.
- 2 H_0 : Resource dependence does not contribute to economic growth in Nigeria.
 H_1 : Resource dependence contributes to economic growth in Nigeria.

2.0 Literature Review and Theoretical Framework

2.1 Resource abundance and economic growth

Studies on the “curse of natural resources can be seen as an extension of the standard endogenous growth theory where natural resource abundance is one of the main drivers of economic growth, Karabegović, (2009). “In endogenous growth models, economic growth is determined within a model by factors such as economic institutions and policies and the accumulation of human capital. In exogenous growth models, on the other hand, the long-run economic growth is determined by factors outside of the model such as the rate of technological progress”. Karabegović gave an exhaustive review of the literature on the “curse” of natural resources and a detailed explanation of many of the theories about the topic.

Sachs and Warner (1995) developed a model of the Dutch disease to explain why a resource curse may exist in resource-rich nations. This influential, seminal paper restarted the debate on the effect of natural resources on economic growth. Sachs and Warner examined the impact of natural resources on economic growth using data for a large number of nations (varying from 40 to 95 depending on the specific regression) from 1970 to 1989. To measure resource abundance, they used primary

product exports as a percentage of GDP or GNP. However, their results indicated that, after controlling for a number of factors, natural resources had a negative impact on economic growth.

Sachs and Warner's initial paper (1995) measures natural resources as primary-product exports as a percentage of GDP in 1971. The main controls used by Sachs and Warner were the following: initial per-capita income; trade policy; government efficiency (measured as an average of three indices: efficiency of the judiciary, lack of red tape, and lack of corruption); investment rates (measured as average investment to GDP). Sachs and Warner's results were also robust to different measures of natural-resource abundance, such as share of mineral production to GDP, primary exports intensity (measured as fraction of primary exports to total exports), the log (natural logarithm) of land area per person, and natural resource wealth in total wealth. This negative impact, according to them, was likely due to the effects of the Dutch disease on the manufacturing sector, (Sala-i-Martin, X, & Arvind, S., (2003) and Beland and Tiagi 2009).

Several papers following Sachs and Warner's work distinguished between different categories of resources and point out their different effects upon growth (see, Auty, 1997; Woolcook *et al.*, 2001; Isham *et al.*, 2005, Brunnschweiler, 2006; Boschini *et al.*, 2007). The general argument is that "point source" resources such as minerals are more likely to have a negative effect upon economic growth than "diffuse" natural resources such as rice and wheat. Whether a natural resource is "point" or "diffuse" depends on its geographical concentration. For example, forests are considered diffuse resources since they cover a significant area on a map. Minerals, on the other hand, occur in small areas and are therefore considered point resources (Lujala, 2003).

A study by Boschini *et al.* (2007) examined the impact of natural resources on economic growth, by using different measures of natural resources. These include the value of primary exports; value of exports of ores and metals plus fuels; value of mineral production (not including fuels); and value of production of gold, silver, and diamonds; all as a percentage of GNP or GDP for 80 nations from 1975 to 1998.

Their results indicate that gold, silver, and diamonds have the strongest negative impact on economic growth.

2.2 Institutions and Economic Growth

There is substantial research on the association between institutions and economic growth in a country. By creating an environment that encourages voluntary transactions, risk-taking, and engaging in productive activities in general, institutions spur economic growth (North, 1990). In a recent paper, Acemoglu and Robinson (2008) argued that institutions are the fundamental cause of economic growth and, therefore, of the differences in different levels of economic development across countries. Further, the differences in institutions across countries may help explain differences in human capital, physical capital and technology across countries, all of which bring about economic growth.

Recent research on the resource curse has highlighted the crucial role of institutions for countries with an abundance of natural resources. For example, *Mehlum et al.* (2006) argued that countries with abundant natural resources need not be affected by a resource curse if they have strong institutions. Using Sachs and Warner's measure of natural-resource abundance (SXP), they found that the resource-curse effect depends on the quality of the institutions: for countries with weak institutions, natural resources are a curse but, for countries with strong institutions, resources are actually a "blessing," so that their economic growth is greater than that of resource poor nations.

Furthermore, research on countries that have abundant natural resources, such as Botswana (Limi, 2006) and Norway (Larsen, 2006), point to the same conclusion: strong institutions in these countries helped them escaped the resource curse. For example, Limi shows that for Botswana, the coexistence of good governance and abundant diamonds helped the country's economic growth.

For developing countries in general, good governance (specifically, a strong public voice with accountability, high government effectiveness, good regulation, and powerful anticorruption policies) tend to link natural resources with high economic growth (Limi, 2006). Similarly, Larsen (2006) shows that a major factor that

accounted for Norway's rapid growth after the discovery of oil in 1969 was the management of its oil revenues. It was Norway's arrangement of political and economic institutions, a strong judicial system, and social norms that contributed to its escaping the resource curse and the Dutch disease.

3.0 Research Methodology

3.1 Study Area: Nigeria

3.2 Method of Data Collection

Secondary data was collected on GDP and the Export of Crude Oil in the country from 1986 to 2012 from CBN Annual Report and Statistical Bulletin. In addition, average level of Economic Freedom as a proxy for institutional quality in Nigeria within the same period from the Annual Report of Economic Freedom of the World 2012 was used.

3.3 Measuring Institutions

In order to measure institutions, this work used a score for economic freedom between 1986 and 2012 averaged from scores in *Economic Freedom of the World: 2012 Annual Report*, (Gwartney and Lawson, 2012). This is based on the premise that countries with better scores for economic freedom have better institutions that facilitate such freedom.

In *Economic Freedom of the World*, economic freedom is rated on a scale of zero to 10, where a higher score indicates a higher level of economic freedom. The index is comprehensive and includes:

1. Size of government;
2. Legal structure and security of property rights;
3. Access to sound money;
4. Freedom to trade internationally; and
5. Regulation of credit, labor and business.

3.4 Analytical Techniques

Statistical techniques comprising both descriptive and inferential statistics were employed. A causality test was conducted among the variables. On the side of

descriptive statistic, tables, percentage and graphical analysis were carried out. A matrix showing correlations among the variables was used in the model. Unit root test was also conducted on the time series to determine the level of stationarity of each series. In addition, regression analysis was carried out to determine the factors contributing to the economic growth of Nigeria.

3.5 Model Specification

In this model, we have a single equation model and the goal of these econometric techniques is to estimate economic relationships. This is a modified model of Beland and Tiagi (2009).

The functional relationship is

$$\text{GDP} = F(\text{RD}, \text{EFW})$$

$$\Delta \text{GDP}_t = \beta_0 + \beta_1 (\text{RD}_t) + \beta_2 (\text{EFW}_t) + \beta_3 (\text{RD}_t) \times (\text{EFW}_t) + \mu_t$$

Where:

$$\Delta \text{GDP}_t = \text{average annual growth in GDP p.}$$

$$\text{RD}_t = \text{the natural-resource dependence, measured as the ratio of exports of crude oil to GDP. This is proxied by Oil Export (OE).}$$

$$\text{EFW}_t = \text{the average level of Economic Freedom a proxy for institutional quality.}$$

$$(\text{RD}_t) \times (\text{EFW}_t) = \text{interaction between resource dependence and institutional quality.}$$

$$t = \text{time period from 1986 to 2012.}$$

$$\beta_0, \beta_1, \beta_2 \text{ and } \beta_3 = \text{parameters to be estimated.}$$

$$\mu_t = \text{is the error term}$$

3.6 A priori Expectation

From the model above, the a priori expectations are: β_1 measures the resource curse. If $\beta_1 < 0$, then this implies that resource dependence is associated with a decline in economic growth. Further, if $\beta_2 > 0$, then this implies that institutions matter for economic growth: stronger institutions lead to higher economic growth. Finally, the coefficient on the interaction term, β_3 , measures whether better institutions in resource-dependent countries leads to higher economic growth; if $\beta_3 > 0$, then this will be true.

4.0 Results and Discussion

4.2.1 DESCRIPTIVE STATISTICS

The descriptive statistics is presented in table 4.1 below.

Table 4.1 Descriptive Statistics

Sample: 1986 2012			
	GDP	EFW	OE
Mean	427008.0	4.812222	3524719.
Median	312183.5	4.980000	1286216.
Maximum	888893.1	6.570000	12747095
Minimum	204806.5	3.310000	8368.500
Std. Dev.	209743.1	1.164782	4240962.
Probability	0.163575	0.248407	0.094867
Observations	27	27	27

Source: Data Analysis (2013)

Descriptive statistics describe the basic features of the data in this study. It includes the simple summaries about the sample and the measures which are the mean (427008.0, 4.812222, and 3524719) for GDP, EFW and OE respectively, median (312183.5, 4.980000 and 1286216), with maximum, minimum, standard deviation, probability, and the numbers of observations per variable use in the study shown above in the table and graphical analysis shown below. The mean: is average level of all the data in use (GDP, EFW, and OE). The median: is the score found at the exact middle of the set of values. The maximum: is the highest of all variable in use per data, with GDP, EFW and OE of 888893.1, 6.570000 and 12747095 respectively. The minimum: is the lowest of all variable in use per data with 209743.1 for GDP, 3.310000 for EFW and 8368.500 for OE. Standard deviation: is a more accurate and detailed estimate of dispersion, in all GDP has the largest standard deviation. Probability: Observations: is the total number of data input into each variable.

4.2 Correlation Analysis

Table 4.2: Correlation Matrix among the Variables

	GDP	EFW	OE
GDP	1.000000		
EFW	0.898889	1.000000	
OE	0.981787	0.878406	1.000000

Source: Data Analysis (2013)

Correlation is a statistical procedure that compares the relative frequency or size of different variables in order to determine whether there is a relationship between them. Table 4.2 displayed the relationship between the variables. Between GDP and EFW there is a positive correlation of 89%. Between GDP and OE there is 98% positive correlation while it was 87% between EFW and OE.

4.3 Unit Root Test

Unit root test is a statistical test that shows whether a time series variable is non stationary using an autoregressive model.

Augmented dickey-fuller unit root test on GDP

ADF Test Statistic	1.794938	1% Critical Value*	-3.7204
		5% Critical Value	-2.9850
		10% Critical Value	-2.6318

Augmented dickey-fuller unit root test on EFW

ADF Test Statistic	-0.009721	1% Critical Value*	-3.7204
		5% Critical Value	-2.9850
		10% Critical Value	-2.6318

Augmented dickey-fuller unit root test on OE

ADF Test Statistic	1.540896	1% Critical Value*	-3.7204
		5% Critical Value	-2.9850
		10% Critical Value	-2.6318

Source: Data Analysis (2013)

In all unit root test of augmented dickey-fuller above with intercept included in the test equation, test for unit root in level and lagged differences of 1, all ADF test statistics were lesser in absolute term than all the critical value which means all the variables in each were not stationary and there was unit root in all.

Augmented dickey-fuller unit root test on D (GDP, 2)

ADF Test Statistic	-3.303390	1% Critical Value*	-2.6700
		5% Critical Value	-1.9566
		10% Critical Value	-1.6235

Augmented dickey-fuller unit root test on D (EFW,2)

ADF Test Statistic	-6.751855	1% Critical Value*	-3.7497
		5% Critical Value	-2.9969
		10% Critical Value	-2.6381

Augmented dickey-fuller unit root test on D (OE,2)

ADF Test Statistic	-8.202539	1% Critical Value*	-2.6700
		5% Critical Value	-1.9566
		10% Critical Value	-1.6235

Source: Data Analysis (2013)

In all unit root test of augmented dickey-fuller above with none in the test equation, test for unit root in 2nd differences and lagged differences of 1, all ADF test statistic are greater than all the critical values (in absolute terms) which means all the variables in each are stationary, that is there is no unit root in all.

4.4 CAUSALITY ANALYSIS

Table 4.4: Causality Test

Pairwise Granger Causality Tests

Date: 05/07/13 Time: 15:58

Sample: 1986 2012

Lags: 2

Null Hypothesis:	Obs	F-Statistic	Probability	Causality Decision
EFW does not Granger Cause GDP	25	3.83562	0.03891	Accept
GDP does not Granger Cause EFW		0.23170	0.79529	Reject
OE does not Granger Cause GDP	25	0.16839	0.84621	Reject
GDP does not Granger Cause OE		12.8057	0.00026	Accept
OE does not Granger Cause EFW	25	0.09663	0.90831	Reject
EFW does not Granger Cause OE		1.22482	0.31492	Reject

Source: Data Analysis (2013)

From the results in the table above; there is unidirectional causation between EFW and GDP with causation running from EFW to GDP but not the other way round. Also there is unidirectional causation between OE and GDP, the direction of causation is from GDP to OE, but OE does not granger cause GDP. No causation between OE and EFW.

4.5 REGRESION ANALYSIS

Table 4.5: Regression Results

Dependent Variable: GDP

Method: Least Squares

Sample: 1986 2012

Included observations: 27

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	150544.6	55146.20	2.729918	0.0119
OE	0.067219	0.030499	2.203953	0.0378
EFW	25233.80	14092.36	1.790602	0.0865
OE*EFW	-0.003874	0.004581	-0.845666	0.4065
R-squared	0.970645	F-statistic	253.5014	
Adjusted R-squared	0.966816	Prob (F-statistic)	0.000000	
Durbin-Watson stat	1.374382			

Source: Data Analysis (2013)

Regression analysis is a statistical technique for estimating the relationship among variables, it includes many techniques for modeling and analyzing several variables, when the focus is on the relationship between a dependent variable (GDP) and one or more independent variables, e g (OE and EFW).

In the result above, t-statistic of GDP, EFW and OE are positive and more than 1 and all the probabilities are very low which implies that our result is significant. But the t-statistic of the relationship between EFW and OE is negative which implies that there is no serial correlation between EFW and OE. The coefficient is all negative at -0.003874. This shows that the oil export does not correlate with economic freedom of the world.

The R-squared and the adjusted R-squared is very high which shows the level at which the dependent variable is explaining the independent variable which is

0.970645 and 0.966816 respectively. The F-statistics is significant because the probability of F-statistic is at 1 percent (0.000000). The Durbin-Watson statistic is 1.0374382 which means there is positive serial correlation.

5.0 Summary, Conclusion and Recommendations

5.1 Summary

This study examined the relationship that existed between strong institution and resource curse in Nigeria, using secondary data's from CBN annual report of statistical bulletin and the annual report of Economic Freedom of the World 2012. Statistical techniques comprising both descriptive and inferential statistics were employed which include the mean, causality, unit root test, correlation and regression analyses etc.

The results of the regression carried out shows that, there is a positive relationship between GDP, OE and EFW. But contrary to *apriori* expectation, there is a negative relationship between the interaction of Economic Freedom (EFW) and Oil Export (OE), being a proxy for resource dependence.

5.2 Conclusion

From the study and analyses, the results concluded that the institutions of Nigeria are not strong enough to manage revenue from oil export extensively to have positive impact on the economy rather than it, being a cause to the country.

5.3 Recommendations

From our study, we can see that there is an argument in favor of increasing the level of economic freedom to generate economic growth, many other empirical studies conclude that a high level of economic freedom is a key factor in the growth and prosperity of nations. Here, there is a negative effect of oil dependence in Nigeria to our economic growth, which calls for a strong institution (substantial degree of economic freedom) to turn resource curse of the country to a blessing.

The following are thus recommended with a view to enhancing strong institution:

1. **Stabilization of oil funds:** There should be stabilization in spending of oil revenue to ensure stable and moderate economic growth and also to avoid rent seeking and corruption.
2. **Reinvestment of oil revenue:** Revenue from oil should be reinvested in other sector like agriculture and industrial sector etc of the economy in order to promote employment and increase the standard of living of the people.
3. **Improvement of the rule of law:** Nigeria law should encourage investment, protection of property right and reduction of corruption.

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