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Institutional Quality and Economic Diversification in Oil-Rich Economies: A Case Study of Nigeria

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Abstract
This paper examines impact of four indicators of institutional quality: government effectiveness, rule of law, political stability and control of corruption on two perspectives of diversification: oil and gas rents as a share of GDP, which measures the relative size of oil resource and non-oil resource sectors' concentration of GDP; and oil exports as a share of total merchandise exports, which measures oil export concentration otherwise export diversification away from oil. Data on these variables were obtained over the period 1996 to 2016. Examination of the data indicated that Nigeria has been more successful in diversifying sectoral composition of her GDP, while export remains stubbornly concentrated on oil. Regression analysis of the data using a reduced form equation and Error Correction Technique shows that: effectiveness of government, strong rules of law, political stability and less corruption are associated with greater GDP and export diversification away from oil. Hence the paper concludes that getting institutions right is key to GDP and export diversification vis-à-vis non-oil resources development in Nigeria.
Keywords: institutional quality, export revenue, diversification, Nigeria.

1. Introduction

Since the 1970s, oil and gas production has enriched many countries but also made them dangerously dependent on these resources for export revenue and government finance. As a result, development experts have counseled such countries to diversify their economies and export bases whereby a growing range of economic outputs are produce as well as increased revenue base away from oil to non-oil sector and trade. The reasons are several. First and most is the boom-and-bust nature of oil and gas revenues, which are determined largely by global prices that are increasingly out of the hands of any actor or subset of actors to manage. As prices fluctuate, there are concomitant effects for export revenues and government finance. For most oil exporters, oil prices are essentially the only important determinants of the relative prices of their exports and imports, with net terms of trade correlating quite strongly with crude oil prices. Similarly, government revenues in oil-dependent states can vary widely based on prevailing market prices. For instance, in Nigeria, total government revenue grew by 18.8 percent on the strength of a 29 percent jump in global crude prices in 2008 only to fall by 27 percent the next year after oil prices fell by 31%. A more diversified economy implies more diversified exports and a more diverse tax base less susceptible to the vagaries of international commodity markets (World Bank, 2016; and Hendrix, 2017).

Second, due to a combination of economic development, lavish consumer fuel subsidies, and rapid population growth, many oil- and gas-rich countries have seen domestic consumption rise much faster than total production. For example, Nigeria's domestic consumption was 13 percent of total production in 1992; by 2015 the share had increased to nearly 32 percent despite a similarly sized increase (32 percent) in total production (British Petroleum Statistical Review 2016).

Third, oil- and gas-led development does not provide sufficient job opportunities to meet the demands of many oil exporting countries' growing and youth-laden populations. The oil and gas sector tends to employ comparatively small, often imported labor forces. For oil exporters in regions with large youth bulges, like Nigeria, a failure to provide meaningful opportunities to work and support families has been and will continue to be met with social unrest, radicalization, and often heavy-handed government responses. Low prices and declining revenues will continue to leave oil- and gas-exporting countries with fewer sticks and carrots to pacify restive populations. The ongoing conflicts in Niger Delta and North Eastern Nigeria makes it clear, the confluence of oil and gas dependence and minimal employment prospects for young people is a combustible mix. A long-term solution to the problems of youth unemployment and lack of opportunity will require growing the non-oil sector of the economy.

Much like individual investors seeking a diverse financial portfolio, oil and gas driven countries must also seek to develop a broad base of employment and wealth generators to comprise its economic portfolio. Diversity-driven strategies are therefore one way that local leaders tend to build a more stable economy in anticipation of economic cycles as well as a strategy for responding to crises when they occur (Hendrix, 2017).

While the benefits of economic diversification are generally acknowledged and virtually all oil and gas-rich countries including Nigeria are and have been for decades rhetorically committed to the policy of economic diversification, and have allocated significant resources to infant industry development and infrastructure projects to boost their economies. But how successful is Nigeria at diversifying her economy?

Data obtained from the National Bureau of Statistics (NBS) (2017) and Central Bank of Nigeria (CBN) Statistical Bulletin (2017), shows that Oil sector contribution to GDP has been on a decreased for over two decades now. Specifically, Oil sector contribution to GDP ranges from 27.2% in 1996 to 10.04% of total real GDP in 2017. While, Oil sector share of total Nigeria export ranges from 98.21% in 1996 to 92.56% of total export in 2017. Hence, while Nigeria has been more successful in diversifying sectoral composition of her GDP, export remains stubbornly concentrated on oil.

The basic question is what determines economic diversification? There are fewer consensuses on what factors allow some countries to succeed and others to fail in it. Key explanations have been geographic, economic, demographic and recent wave of studies has been more alert to the potential effect that institutional quality may have on export diversification (Gelb and Grasmann, 2012; and Bakr, 2015).

Institutions are used by political authority in the exercise of control over a society and the management of its resources for social and economic development (Okoh and Ebi, 2013 and Nathan and Ebi, 2013). World Bank (1989) as cited by Okoh and Ebi (2013) defined institution as an entrepreneur who harnesses materials and human resources and alters the social cultural settings of people through good policies for the achievement of rapid growth and development. This means that institutional functions encompasses institution and structural arrangements, decision making, policy formulation and implementation, information flows, effectiveness of leadership and the relationships between government officials and the public. It attaches to the public authorities an indispensible and potentially active role in establishing the economic environment and determining the distribution of assets and benefits. Where effective institutional qualities are lacking as reflected in corruption of civil servants, may lead to economic dooms.

Despite widespread acknowledgement of the role of institutional variables and the importance of incorporating them into the analysis of such economic outcomes as diversification, our understanding of institutional effect on economic diversification in the developing world and specifically in resource-rich developing countries like Nigeria remains somewhat limited. This is because existing studies are mostly cross-countries studies and more often lump together several institutional variables as single variable, thus leaving unanswered the question of which institutional quality influence diversification and how. Hence, this paper examines impact of four indicators of institutional quality namely: government effectiveness, rule of law, political stability and control of corruption on two perspectives of diversification: oil and gas rents as a share of GDP, which measures the relative size of the resource and non-resource sectors, and fuel exports as a share of total merchandise exports, which measures export concentration in the context of Nigeria.

2. Theory and empirical Literature Review

The paper is anchored on institutionalists economic growth theory, that growth should occur when and where the political and economic institutions facilitate productive investment. Growth in the non-resource sector should be higher in economies where the policy environment is more stable, government bureaucracies are more efficacious and insulated from political pressures, and rule of law obtains (Evans and Rauch 1999; Rodrik, Subramanian, and Trebbi 2004).

Literature on the link between institutional quality and economic diversification are generally scarce. However, some researchers have documented the increasing importance of institutional quality to economic diversification and growth. For example, Hendrix (2017) investigated the correlates of diversification away from oil and natural gas dependence in the context of the 21st century resource boom and bust. Using a sample of 40 oil- and gas-dependent economies, His major findings from regression analysis emphasizes the importance of governance in economic diversification. That more effective, capable bureaucratic structure is associated with greater GDP diversification away from oil and gas though the effects are not uniformly positive. That, for any given level of government effectiveness, stronger rule of law is associated with less GDP diversification and that, internal economic diversification in the 21st century has been less a matter of correct policy formation and implementation and more a matter of factors that shape the policymaking environment, with the findings suggesting a difficult road to economic diversification for the Gulf Cooperation Council economies.

Cortinovis, Xiao, Boschma and Oort (2016) analyzed how formal and informal institutions influence regional diversification using data from 118 European regions for the period 2004 and 2012. They found evidence that institutions matter for regions to diversify into new industries. That bridging social capital is a key driver of regional diversification, and that bonding social capital has a negative impact in regions with a low quality of government.

Brand (2011) submitted that data from Botswana lend support to the theory that countries with good institutional environments can promote sectoral diversification in an economy by subsidizing firms with positive externalities. That good political institution specifically, strong constraints on the executive to prevent corruption will lead to more economic diversification, all other things being equal.

Gani and Prasad (2006) examined the export, import and total trade determinants using reduced form equations for six Pacific Island countries with an institutional focus. Four indicators of institutional quality:

government effectiveness; rule of law; regulatory quality; and control of corruption were chosen. Results of their fixed effects model indicated that improvements in institutional quality variables matter for improved levels of export and general trade.

3.0 Data, Model and Estimation Strategy

3.1 Data

The core data for dependent variables are change in oil and gas rents as a share of GDP (ΔOILGDP), which measures the relative size of the resource and nonresource sectors, and change in oil exports as a share of total merchandise exports (ΔOXPT), which measures export concentration, otherwise diversification if not concentrated. That is decrease in ΔOILGDP will implies less concentration of GDP by oil sector hence, diversification of GDP away from oil. Also, a decrease in ΔOXPT will implies less concentration of export by oil sector hence, diversification of export away from oil. The key independent policy variables are the four measures of institutional quality chosen: government effectiveness (GE), rule of law (RLAW), political stability (PS) and control of corruption (COR). Other independent control variables are educated work force (EDU) captured by adult literacy rate and exchange rate (ER) for international price competitiveness of the export.

While long-term time series data on the two measures of diversification and control variables are available and obtained from the National Bureau of Statistics (NBS) (2017) and Central Bank of Nigeria (CBN) Statistical Bulletin (2017), this is not the case for institutional variables. The measures of institutional variables are available from 1996, hence, the sample time period is restricted to 1996-2016. Proxies for the institutional environment and political violence are from the Worldwide Governance Indicators and Corruption Perceptions Index (2017) by Transparency International.

3.2 Model Specification

Based on institutionalists view on the role of institutional quality on diversification and further theoretical justifications, the impact of institutional quality on GDP and export diversifications in Nigeria is therefore represented by the following reduced form equations.

$$\Delta OILGDP = \alpha 0 + \alpha 1GE + \alpha 2RLAW + \alpha 3PS + \alpha 4COR + \alpha 5EDU + \omega 1 \quad (1)$$

$$\Delta OXPT = \beta 0 + \beta 1GE + \beta 2RLAW + \beta 3PS + \beta\ 4COR + \beta 5ER + \omega 2 \quad (2)$$

Where, ΔOILGDP, ΔOXPT, GE, RLAW, PS, COR, EDU and ER are as defined previously. ω1 and ω2 are the error terms in equation 1 and 2 respectively. Equation (1) is the GDP diversification equation and equation (2) is the export diversification equation.

There lower the change in oil and gas rents as a share of GDP (ΔOILGDP), which measures the relative size of the resource and non-resource sectors, the more diversified the GDP away from oil and the lower the change in oil exports as a share of total merchandise exports (ΔOXPT), the more diversified the export away from oil. Hence, We expect that $\alpha 1$ to $\alpha 5 < 0$; and $\beta 1$ to $\beta 3 < 0$.

That is, improvement in GE, RLAW, PS, COR, EDU indices should reduce ΔOILGDP and ΔOXPT thereby increase GDP and export diversification away from oil.

Government effectiveness (GE), which reflects perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. Government effectiveness index ranges from -2.5 (weak) to 2.5 (strong) government performance (Kaufmann, Kraay, and Mastruzzi, 2011; Nathan and Ebi, 2013).

Rule of law (RLAW), which reflects "perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence" (Kaufmann et al, 2011). Institutions like the judiciary should exhibit characteristics such as fairness and efficiency in its delivery plays an important role in facilitating sound and fair observance of the rule of law, including the maintenance of law and order, limitations on government power to interfere in business activities and trading environment, and impartial enforcement of contracts. The maintenance of law and order, enforcement of contracts and a fair and predictable legal system can have important bearing on a country's overall economic pplicy. Countries that facilitate sound and fair observance of the rule of law are likely to enhance their production and export diversification.

Political stability and absence of violence/terrorism (PS), captured the perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically - motivated violence and terrorism. A stable polity and less violence/terrorism should enhance diversification away from oil.

Corruption index (CI) measures the degree to which corruption is perceived to exist among public officials and politicians. Papyrakis and Gerlagh (2004), institutional quality is often simply controlled for by using a measure of corruption. Transparency international corruption perception index ranges from 0-10. A higher score means less (perceived) corruption.

Consistent with endogenous growth theory, educated populations (EDU) should stimulate greater growth in non-oil sectors than countries with less educated populations. Real exchange rate (RE) is included in the export diversification equation as it is a useful general indicator of a country's international price competitiveness. International price competitiveness is regarded as a key determinant of a country's international export especially non-oil export.

3.3 Estimation Strategy

The estimation technique that is adopted for the study is the Ordinary Least Square (OLS) method. The estimation technique will follow three steps procedures. First, the data are tested for stationary by making use of Augmented Dickey-Fuller (ADF) unit root test in order to correct the presence of seasonal variation. If any of the variables are proven to contain unit root, that variable will be made stationary by appropriate differencing. It is expected that the series do not contain unit root in order to find relationship among the variables in the long run. This will then be followed by the Johansen's co-integration test in order to test for the long run co-movement among the economic variables. Before any useful conclusion could be made regarding relationships between the series it is of importance that co-integration first exists. Moreover, if the estimates happen to show the existence of co-integration their differenced form shall be adjusted back to their long run form by making use of error correction mechanism (ECM).

4. Empirical Result

Table1: ADF Unit Root Test

Variables	Levels	1st Difference	Order of integration	Remark
ΔOILGDP	-2.268778	-7.197319***	1(1)	Stationary
ΔOXPT	-1.360050	-4.746234***	1(1)	
ΔGE	-2.597620	-4.411018***	1(1)	Stationary
ΔRLAW	-1.923567	-4.665662***	1(1)	
ΔPS	-1.255885	-4.403634***	1(1)	Stationary
ΔCOR	-0.383456	-6.901931***	1(1)	
ΔEDU	-1.984480	-5.847438***	1(1)	Stationary
ΔRE	-1.701968	-4.403882***	1(1)	stationary

Source: Author's Extraction from Unit Root Results Provided by E-view
Notes: Mackinnon critical values for ADF: 1% level = -3.808546, 5% = -2.931404 and 10% = -2.603944
****, **, * signifies significance at 1%, 5% and 10% levels respectively*

In table 1, we present the unit root test result. All the variables employed in the study are stationary at first difference. Thus, we can proceed to estimate the error correction model.

Table2: Cointegration Rank Test (Maximum Eigenvalue) for OILGDP Equation

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.940253	53.53508	40.07757	0.0009
At most 1 *	0.917598	47.42668	33.87687	0.0007
At most 2 *	0.788246	29.49428	27.58434	0.0281
At most 3	0.541051	14.79749	21.13162	0.3033
At most 4	0.330069	7.611032	14.26460	0.4196
At most 5	0.031140	0.601072	3.841466	0.4382

Max-eigenvalue test indicates 3 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Source: Author's Extraction from Unit Root Results Provided by E-view

Table3: Unrestricted Cointegration Rank Test (Maximum Eigenvalue) for OXPT Equation

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.980375	74.68798	40.07757	0.0000
At most 1	0.806418	31.19907	33.87687	0.1010
At most 2	0.665259	20.79356	27.58434	0.2889
At most 3	0.520884	13.98046	21.13162	0.3666
At most 4	0.387892	9.326078	14.26460	0.2600
At most 5	0.043006	0.835207	3.841466	0.3608

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level
**** denotes rejection of the hypothesis at the 0.05 level***
*****MacKinnon-Haug-Michelis (1999) p-values***

Source: Author's Extraction from Unit Root Results Provided by E-view

Table 2 and 3 above indicates that there are three cointegrating equations at 5% level of significance for GDP Diversification (ΔOILGDP) equation and 1 cointegrating equation at 5% level of significance for export Diversification (ΔOXPT).Hence; we reject the null hypothesis of no cointegration among the variables. We then conclude that long run relationship exist among the variables employed in the two models at 5% significance level. Tables 4 and 5 present the empirical results of Impact of Institutional Quality on GDP Diversification (ΔOILGDP) and export diversification (OXPT) respectively.

Table4: ECM Results for Impact of Institutional Quality on GDP Diversification (Change in ratio of Oil GDP to Total GDP(ΔOILGDP) is The Dependent Variable)

Variables	Coefficients	Standard Error	T-statistics	Probability value
ΔGE	-7.162197	14.22813	-0.503383	0.6220
ΔRLAW	-16.69121	6.992761	-2.386926	0.0306
ΔPS	-8.567120	3.291219	-2.603023	0.0200
ΔCOR	-1.342356	0.660135	-2.033457	0.0601
ΔEDU	0.433864	0.244124	1.777228	0.0958
$ECM_1(-1)$	-0.240364	0.085351	-2.816182	0.0141
C	59.38853	24.55639	2.418435	0.0288

Adjusted R-squared = 0.602251,
F-statistic = 7.056604
Prob(F-statistic) 0.001413
Durbin-Watson stat =2.128315

Source: Author's Extraction from Unit Root Results Provided by E-view

Table5: ECM Results for Impact of Institutional Quality on Export Diversification (Change in ratio of Oil export to Total export (ΔOXPT) is The Dependent Variable)

Variables	Coefficients	Standard Error	T-statistics	Probability value
ΔGE	-10.08430	3.030733	-3.327348	0.0055
ΔRLAW	-2.980506	1.542253	-1.932567	0.0754
ΔPS	-2.764412	1.560707	-1.771256	0.0999
ΔCOR	-0.813965	0.159704	-5.096703	0.0002
ΔER	-0.030308	0.014109	-2.148081	0.0511
$ECM_2(-1)$	-0.336309	0.106237	-3.164754	0.0092
C	126.7387	5.143139	24.64229	0.0000

Adjusted R-squared = 0.809593,
F-statistic = 14.46435
Prob(F-statistic) 0.000044
Durbin-Watson stat =2.03677

Source: Author's Extraction from Unit Root Results Provided by E-view

The estimates obtained from table4 and 5 seem satisfactory with explanatory power of 0.60 and 0.80 for GDP diversification (ΔOILGDP) and export diversification (OXPT) equations respectively. The F-test statistics of 7.05 and 14.46 were high and significant at less 1% level of significance as adjudged by their p-values of 0.001413 and 0.000044 giving strong evidence joint significance of the explanatory variables in both models. Several variables show the expected sign and 3 were statistically significant at less than 10% level of

significance in GDP diversification equation while all the explanatory variables were significant at less than 10% level of significance in export diversification equation.

Starting with institutional variables, government effectiveness matters more to export diversification than GDP diversification. In the GDP diversification equation, the coefficient has a negative sign as expected and was statistically insignificant. Were as, In the export diversification equation, government effectiveness also show a negative coefficient and was statistically significant at less than 1% level of significance as indicated by its p-value of 0.0055. The result of the export equation means that an improvement in government effectiveness will reduce concentration of oil export in the total export.

The rule of law variable has a negative and statistically significant coefficient for the oil GDP concentration equation with a coefficient of -16.64 and statistically significant at 3.06% level of significance. The same effect is also shown in oil export concentration equation, however, with lower coefficient of -2.98 and significant at 3.06% level of significance. The results obtained here certainly suggest that improvement in rule of law strongly oil GDP concentration than oil export concentration in Nigeria.

Political stability variable has the expected negative coefficient for both oil GDP concentration and oil export concentration equations -0.85 and -2.7 respectively. In both cases the coefficients were also statistically significant. Suggesting that political stability are associated with declining in oil and gas shares of GDP and oil and gas shares of export.

The control of corruption variable has the expected negative coefficient for both oil GDP concentration and oil export concentration equations -1.3 and -0.81 respectively. In both cases the coefficients are statistically significant. The results suggest reduction in corruption level tends to reduce oil GDP concentration than oil export concentration in Nigeria.

5. Conclusion

The paper developed a model of GDP and export diversification based on insights from institutional perspectives and found substantial that Governance clearly matters. More effective, capable bureaucratic structures, political stability and less corruption are associated with greater GDP and export diversification away from oil. Hence the paper concludes that getting institutions right is key for GDP and export diversification vis-à-vis non-oil resource development.

References

Bakr, A. A. (2015) Challenges to Production Base Diversification in Saudi Arabia. Saudi Arabian Monetary Agency (SAMA) Working Paper WP/15/8.

Brand, S. (2011) Institutions and Sectoral Diversification in Botswana. Economics Honors Thesis No. 2011□01 Vanderbilt University. Available at www.vanderbilt.edu/econ.

Central Bank of Nigeria (2017), Statistical Bulletin Abuja.

Cortinovis, N.; Xiao, J.; Boschma, R. and Oort, F. (2016) Quality of Government and Social Capital as Drivers of Regional Diversification in Europe. Papers in Evolutionary Economic Geography # 16.10

Evans, P, and Rauch, J. E. (1999) Bureaucracy and Growth: A Cross-National Analysis of the Effects of "Weberian" State Structures on Economic Growth. American Sociological Review 64(5): 748–65.

Gani, A, and Prasad, B.C (2006) Institutional Quality and Trade in Pacific Island Countries. Asia-Pacific Research and Training Network on Trade Working Paper Series, No. 20, (rev. 2/09)

Gelb, A. and Grasmann, S. (2010). How Should Oil Exporters Spend Their Rents? Center for Global Development Working Paper No. 221. 2

Hendrix, C. S. (2017) Kicking a Crude Habit: Diversifying Away from Oil and Gas in the 21st Century. Peterson Institute for International Economics Working Paper WP 17-2

Kaufmann, D., Kraay, A., and Mastruzzi, M. (2011) The Worldwide Governance Indicators: Methodology and Analytical Issues. Hague Journal on the Rule of Law 3(2): 220–46.

Nathan, E. and Ebi, B. O. (2013) Institutional Quality, Petroleum Resources and Economic Growth: A Difference-In-Differences Approach Using Nigeria, Brazil and Canada. International Journal of Humanities and Social Science. 20(1): 198-206

National Bureau of Statistics (NBS), Nigerian Gross Domestic Product Report (2017)

Okoh. S. A. and Ebi, B.O. (2013) Infrastructure Investment, Institutional Quality, and Economic Growth in Nigeria: An Interactive Approach. European Journal of Humanities and Social Sciences 26(1): 1343-1358.

Papyrakis, .E, & Gerlagh R., (2004). the resource curse hypothesis and Its transmission Channels. Journal of Comparative Economics 32(1): 81–93.

Rodrik, D., Subramanian, A. and Trebbi, F. (2004) Institutions Rule: The Primacy of Institutions over Geography and Integration in Economic Development. Journal of Economic Growth 9(2): 131–65.

Transparency International (2017). Corruption Perceptions Index

World Bank World Development Indicators (2016).