ASSESSING THE LONG-RUN IMPACT OF INSTITUTIONS ON ECONOMIC GROWTH: THE NIGERIAN EXPERIENCE

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ABSTRACT
This paper investigates the long run impact of institutions (proxied by rule of law, property rights and political terror) on Nigeria's economic growth from 1981 to 2017, using the Dynamic Ordinary Least Squares technique on annual data obtained from secondary sources. A long-run relationship was found between the explanatory variables and economic growth. The empirical evidence is in favour of a statistically significant and positive relationship between property rights and growth. Law and order was found to be statistically significant and positively associated with growth, while political terror exerted a negative impact on growth in the period of investigation. Deepening of institutions through well-developed property rights is recommended, including the enthronement of law and order to provide a mechanism for dealing with political terror, strengthen public trust and confidence and thus promote economic growth.

Keywords: Dynamic OLS; Economic Growth; Institutions; Rule of Law; Political Terror; Property Rights.
JEL classification codes: F43, K12, O43, P48.

1. Introduction

Various aspects of institutions, in terms of quality and capacity and their impact on growth have been extensively examined. There is overwhelming evidence that institutional quality acts as an important precondition for growth, and that the institutional setting provides the template upon which the achievement of macroeconomic objectives across regions and countries can be measured and compared (Henrik, 2010).

The study is on Nigeria, which has huge potentials, although it has largely failed to translate its human and natural endowments into development. Nigeria is Africa's largest economy. The country is Africa's highest oil exporter, the tenth largest oil producing country and the 8th highest net oil exporter in the world. Over half a trillion dollars have been earned in oil revenues since 1960. The economy is heavily dependent on natural resources: oil and gas constitute 98% of total exports, 80% of government revenues and around 20% of gross domestic product. Despite enormous economic potentials, Nigeria has largely failed to live up to local and international expectations, especially in light of the projections following the first oil boom era of the 1970s.

Nigeria is bedeviled by poor institutions and based on several institutional indicators, has been consistently ranked among the worst countries in the world. In the present study, emphasis is on property rights, rule of law and political terror, areas in which Nigeria has not

been particularly qualitative. The dismal performance over the years is largely the result of the country's institutional setup, underpinned on the political and economic structures, with corruption leading the pack of channels through which the country's growth and development have been adversely impacted (Akinlabi, Hamed & Awonoyi, 2011; Umeh, Kyarem & Iyoboyi, 2013).

From the foregoing, the paper empirically investigates the long-run impact of institutions on economic growth in Nigeria. A major gap in the empirical literature on Nigeria is the lack of quantitative measures of property rights, the rule of law and political terror in examining the country's growth trajectory. Following the introduction, the rest of the paper is structured as follows. The relevant literature is reviewed in section 2. The methodology is covered in section 3.The empirical results are presented in section 4. The paper is concluded in section 5.

2. Review of Literature

2.1 Conceptual Literature

2.1.1 Institutions

Institutions are defined as constraints devised by humans by which political, economic and social interactions are structured (North, 1990). According to Lin and Nugent (1995), institutions are a set of behavioural rules that shape and govern interactions between human beings, partly by helping them to form expectations. They represent the paraphernalia that fallible economic agents use in changing the incentives that enable them surmount social problems (Ostrom, 2005). Greif (2006) considers an institution as a system of social factors that conjointly generate a regularity of behavior, and considers social factors as man-made, nonphysical factors that are exogenous to each individual they influence, including rules, beliefs, norms and organizations.

Iyoboyi (2017, p. 36) defined institutions as "constraints arising from political, economic and social interactions of members of a society and codified in written and unwritten forms to improve benefits from the exchange process through reducing transaction costs and alleviating market failures." Implicit in this definition is the role of interactions by members of a given society, which can engender various forms of undesirable costs due to the preponderance of self-interest. Because a clash of interest is bound to occur in an attempt to maximize utility, mechanisms that minimize the costs of exchange become imperative. Rather than concentrate only on transaction costs, any definition of institutions that does not account for the collective problems inherent in both developed and undeveloped markets cannot be said to be comprehensive. Thus, institutions should promote not only the lowering of transaction costs, but be effective in removing market distortions and mitigating the adverse impacts of market failure.

2.1.2 Economic Growth

Economic growth is the increase in output, generally measured by the amount of production in a country or region over a given period (Habtamu, 2008). This increment in output may or may not involve technological development. In light of this, growth is the rate of change

of GDP which may be positive or negative. Thus, it can be measured as the percentage change in real GDP per capita (Mo, 2001).

From the foregoing, economic growth is an expansion of a country's potential GDP or output (Ugur & Dasgupta, 2011). Its focus is on the expansion of productive capacity over time, which requires an increase in human and natural resources, including capital and technology (Shahabad, 2014). Although the GDP is a primary indicator of a country's economic health, it has been criticized on grounds that it is unable to measure income distribution and the quality of life in a country. It may thus hide many fundamentals in a country's living standards.

2.2 Empirical Literature

A critical examination of the literature on the relationships between the rule of law and economic growth essentially focus on those aspects that facilitate economic activities among people, including mechanisms that protect property rights, facilitate lending and incorporation, contract enforcement, checks on corruption within government and horizontal accountability (see Haggard & Tiede, 2011, for an extensive review).

Several cross-national empirical investigations have associated better long-run economic performance with property rights protection (for example, Clague, Keefer, Knack & Olson, 1996, 1999; Acemoglu, Johnson & Robinson, 2001; Asoni, 2008), including micro-level cross-national studies on the effects of property rights on growth, the results of which pointed to a positive impact (Galiani & Schargrodsky, 2006). Knack and Keefer (1995) found that institutions which protect property rights are significant predictors of economic growth and that property rights significantly impact investment and growth and even after controlling for investments, the results indicate faster growth rate than the effect or impact of education. Similarly, Clague et al. (1996) found that all institutional measures have positive and statistically significant impacts on output growth. Kaufmann, Kraay and Zoido-Lobaton (1999), found that a 1-point increase in the 6-point rule of law scale has a correlation with a 2.5-to-4-fold improvement in per capita incomes and infant mortality, and a 15-25% rise in literacy rates. In the same vein and using panel data on Sub-Saharan Africa, Adzima and Baita (2019) reported that governance has a positive and significant impact and that effective governance and the rule of law are important determinants of economic growth in the sub-region. Other aspects of governance such as corruption control and regulation quality have been found to positively impact growth across countries (Sharma & Mitra, 2019; Gründler & Potrafke, 2019).

Pande and Udry (2005) found that countries with more qualitative contracting institutions have faster growth rates. Goldstein and Udry (2008) investigated the investment effects of land property rights enforcement in a setting where such enforcement is carried out informally. The results indicate that the investments intensity is dependent on the individual's security of tenure of that particular plot. Similarly, using panel data of 45 Sub-Saharan African countries covering 1980 to 2013, Doan (2019) reported that institutional quality is crucial for economic development.

Terror of whatever form has been demonstrated to have an adverse impact on economic aggregates. Blomberg, Hess and Orphanides (2004) found that every additional terrorist occurrence per a million persons reduces growth by 0.25 percentage points. Similarly,

Gaibulloev and Sandler (2009) reported that every additional terrorist incident per million people leads to a 1.5% decline in annual economic growth.

Although several empirical studies on the role of institutions on the Nigerian economy have been carried out including Bakare (2013), Iyoboyi & Pedro, 2014; Iyoboyi & Tsauni, 2017), none considered the issues of property rights, rule of law and political terror in a single quantitative framework to investigate the country's economic growth. This study fills that gap.

3. Methodology

3.1 Theoretical Framework

This study follows the framework of North (1990), who stressed the role of secure property rights and effective contract enforcement in the creation of the political conditions of growth. One of the main analytical lessons of the Northean approach is that the evolution of institutions involves not only voluntary organizations that expand and make trade more productive, but also the development of the state in the provision and enforcement of property rights.

It is emphasized that political and economic institutions are the underlying determinants of economic performance, in that they form the incentive structures of a society. In light of this, the present study utilizes both economic and political institutions to account for Nigeria's economic growth. A model that utilizes both economic and political institutions to account for economic performance is consistent with the empirical literature (Greif, 2006).

3.2 Model Specification and Estimation Procedure

A long run growth equation (the focus of the study) is specified as follows:

$$ECONG = \beta_0 + \beta_1 PR + \beta_2 ROL + \beta_3 PT + \beta_4 OPN + \mu_t \quad (1)$$

where *ECONG* is Economic Growth, *PR* denotes Property Rights, *ROL* represents Rule of Law, *PT* is Political Terror and *OPN* is Openness (a control variable). μ is the stochastic error term which is assumed to be a white noise. The choice of variables is in keeping with the theoretical framework, in which the role of secure property rights and effective contract enforcement in the creation of the conditions of growth are stressed (North, 1990).

Based on the objectives of the study, the Dynamic Ordinary Least Squares (DOLS), proposed by Stock and Watson (1993) was used. It is a parametric approach for estimating long-run equations of cointegrating variables (Masih & Masih, 1996). The DOLS approach is an improvement on previous efforts by correcting for endogeneity of regressors and serial correlation, two problems bedeviling the single equation method, while having asymptotic optimality properties. By including leads and lags of first differences of the regressors, the approach improves on the Johansen maximum likelihood procedure, and by using the GLS procedure, it corrects for serial correlation in the stochastic error. Above all, its estimators for small samples are robust.

The DOLS model is a transformation of equation (1), specified as follows:

$$\Delta ECONG_t = X_t Z^{/} + \sum_{i=-m}^{i=m} \delta_1 \Delta ECONG_t + \sum_{i=-n}^{i=n} \delta_2 \Delta PR_t + \sum_{i=-p}^{i=p} \delta_3 \Delta ROL_t + \sum_{i=-q}^{i=q} \delta_4 \Delta PT_t + \sum_{i=-r}^{i=r} \delta_5 \Delta OPN_t + \varepsilon_t \quad (2)$$

where X_t is a vector of regressors; $Z^{/}$ is a subset of I(1) variables of X; $\delta_1 ... \delta_5$ are vectors of long- run coefficients; ε_t is the error term; *m, n, p, q* and *r* are leads of the first difference of regressors; *-m, -n, -p,-q* and *-r* are lags of the first difference of regressors; and Δ is the first difference operator.

Equation (2) was estimated using the Newey and West's Heteroscedastic and Autocorrelation Consistent (hereafter HAC) covariance matrix estimator. HAC has standard errors that are robust, and the inferences about the coefficients of the variables entering the regressors in levels are valid. This is helpful when dealing with the problem of the non-normal distribution of the standard errors of the cointegrating equation. 1 lead and 2 lags of the change in the regressors were included. The lag selection was based on the Schwarz Bayesian Criterion.

The stability properties of the variables employed were first examined in order to determine their order of integration. This is crucial in that it facilitates the determination of the appropriate econometric framework to be adopted for analysis, as well as obviating the phenomenon of spurious regression. To determine the stability properties of the variables, the Augmented Dickey-Fuller (ADF) and the Kwiatkowski-Phillips-Schmidt-Shin (KPSS) tests were used in the study. Owing to the generally acknowledged weaknesses of traditional tests such as low power and size distortion, including not accounting for possible breaks in series (see Hamilton, 1994), the study used the additive outlier model, following the procedure outlined in Perron (1997, 2006), and Perron and Vogelsang (1992a, 1992b). Most time series can be adequately modelled either by Model A (break in intercept) or Model C (break in intercept and trend) (Perron, 1989). In the present study, a structural break in intercept was allowed. The Additive Outlier model (hereafter AOM) represents a change that occurs immediately.

The AOM procedure which allows for a single structural break in the trending series is given by the following specifications:

$$y_t = \mu + \delta t + \theta DU_t(TB)_t + \eta DT_t + y_t^* \quad (3)$$

$$\tilde{y}_t^* = \sum_{i=0}^{k} w_i D(TB)_{t-I} + \alpha \tilde{y}_{t-1} + \sum_{i=1}^{k} c_i \Delta \tilde{y}_{t-i} + e_t \quad (4)$$

where equations(3) and (4) are the first and second-step procedures respectively, and $\tilde{y}_t^*$ is the residuals from the detrending equation (3). Test of cointegration follows the unit root tests using the Johansen (1988) methodology, as the study did not find evidence of significant structural breaks in the unit root test results. Thereafter, the long-run cointegration estimates were considered.

3.3 Variables: Justification and Measurement

The study employed real gross domestic product (RGDP) per capita growth as a proxy of economic growth, consistent with the standard in empirical research. Contract intensive money (CIM), was designed to measure property rights, following Clague et al. (1996, 1999). CIM is calculated as the ratio of non-currency money to broad money supply.

In this study, the 'law and order' index was used. Law and order is a central ingredient for development and progress and is required to guarantee private property rights, in order to allow economic agents comply with the commitments they enter into in a contract. Strong evidence is provided by Brunetti, Kisonko and Weder (1998) indicating that credibility of rules has a large and significant impact on growth, via its effect on investment. According to William and Siddiqi (2008), this variable is perhaps the most widely-used institutional measure.

To capture the influence of political terror on Nigeria's economic growth, the political terror scale (hereafter PTS) was used (see Wood & Gibney, 2010). The major consideration for the use of the PTS in this study is that it is among the first quantitative datasets on state respect for human rights, and has been the most commonly used indicator of state violations of citizens' physical integrity rights.

3.4 Sources and Description of Data

The study is on Nigeria. Annual data on real gross domestic product per capita growth, contract intensive money, rule of law, political terror and openness for the period 1981 to 2017 were employed in the study. Data on real gross domestic product and openness (total trade as share of GDP) are from the *World Development Indicators* (World Bank, 2018). Data on broad money supply (M2) and currency outside circulation (used to compute the property rights indicator) are from the Statistical Bulletin of the Central Bank of Nigeria (CBN, 2017).

The data on rule of law is from the International Country Risk Guide (Political Risk Services, 2019). The missing data on rule of law from 1981 to 1983 were generated using a 3-year backward moving average. Data on political terror was drawn from www.politicalterrorscale.org. Openness was used as a control variable.

4. Results and Discussion

4.1 Unit Root Tests

The results of the tests for stationarity of the variables employed in the study are presented in Table 1.

Table 1: Unit Root Test Results

Panel 1: Unit Root Test Results (with intercept)

Variable	ADF	KPSS
ECONG	-0.852032	0.570662**
PR	-1.410773	0.446132***
ROL	-1.103145	0.541282*
PT	-2.268931	0.584655**
OPN	-1.731534	0.416722***
Δ ECONG	-3.766729*	0.383054

Δ PR	-3.839725*	0.174768
Δ ROL	-4.641449*	0.101727
Δ PT	-8.925885*	0.221891
ΔOPN	-4.134178*	0.123787

Panel 2: Unit Root Test Results (with intercept and a linear trend)

Variable	ADF	KPSS
ECONG	-1.492412	0.196920**
PR	-2.792573	0.152642**
ROL	-1.685177	0.190212**
PT	-2.646506	0.151020**
OPN	-1.257101	0.183551**
Δ ECONG	-3.681271**	0.136246
Δ PR	-3.902254**	0.096521
Δ ROL	-4.568954*	0.100867
Δ PT	-5.900314*	0.223292
ΔOPN	-4.538600*	0.065882

Panel 3: Unit Root Test Results (Additive Outlier Model)

Variable	t-statistic	Break point
ECONG	-2.649238	2002
PR	-3.948080	2002
ROL	-3.721864	1997
PT	-2.929303	1992
OPN	-2.089816	1994

Note: Critical values in the Additive Outlier Model are: 1%: -4.949133, 5%: -4.443649, 10%: -4.193627. *,** and *** denote rejection of the null hypothesis at 1%, 5% and 10% level of significance respectively.
Source: Researcher's computations.

Panel 1 of Table 1 shows the results of the unit root tests with intercept. For ADF, all the variables are stationary at first difference. For KPSS, the null hypothesis that the variables are stationary in levels is rejected for all the variables.

In Panel 2 of Table 1, the results of the unit root tests with intercept and linear trend are presented. For the ADF test, all the variables are stationary at first difference. For KPSS, the null hypothesis that the variables are stationary in levels is rejected for all the variables. The results of the unit root tests with breaks (the AO Model) and presented in Panel 3 of Table 1 indicate that the null hypothesis of a unit root with break is not rejected for all the variables. It is noteworthy that both tests of unit roots lead to the same conclusion and are thus consistent. It can be seen that the variables employed are integrated of order 1, i.e. I (1).

4.2 Cointegration Test

The results of the test of cointegration are presented in Table 2.

Table 2: Johansen Cointegration Test Results

Hypothesis		Eigen value	λ_{max}	5% critical value	λ_{trace}	5% critical value
Null	Alternative					
r = 0	r ≥ 1	0.663486	38.11905*	33.87687	91.48453*	69.81889
r ≤ 1	r ≥ 2	0.519638	25.66252	27.58434	53.36548*	47.85613
r ≤ 2	r ≥ 3	0.396125	17.65361	21.13162	27.70296	29.79707
r ≤ 3	r ≥ 4	0.194519	7.571050	14.26460	10.04935	15.49471

Results in Table 3 (maximal eigenvalues and trace test statistics) indicate that the hypothesis of no cointegration among the variables is rejected at the 5% significance level. From the result, there are two cointegrating vectors based on the trace test statistics, while for the maximal eigenvalues, there is one cointegrating vector.

4.3 Estimated Long-run Results

On the basis of the objective of the paper, the long-run cointegrating estimates are presented in Table 3.

Table 3: Long-run estimates

Dependent Variable: ECONG

Regressors	Coefficient	Std. Error	t-Statistic
Property Rights	4.701548*	0.483178	9.730472
Rule of Law	4.373342*	0.654026	6.686799
Political Terror	-0.025963	0.137789	-0.188428
Openness	0.599307**	0.201213	2.978473
R^2	0.81		
Adjusted R^2	0.52		
S.E. of regression	0.164370		
Long-run variance	0.048515		
Jarque-Bera (χ^2)	0.723595 (prob.: 0.696423)		

Note: * and ** denote rejection of the null hypothesis at 1% and 5% level of significance respectively.

Source: Researcher's computations.

The results in Table 3 indicate that all the estimated coefficients are correctly signed and statistically significant with the exemption of political terror. Thus, property rights, rule of law and the degree of openness are significant variables explaining Nigeria's economic growth within the period of investigation.

Growth is positively related to property rights in the long run and statistically significant at the 1% level. An increase in the property rights indicator by 1 unit is associated with 4.7 percentage point increase in growth. The implication of the result is that property rights institutions is a significant determinant of Nigeria's economic growth. This is in line with the findings of Pande and Udry (2005) which emphasized that improved contracting institutions

result in faster growth rates. It is also consistent with the conclusions in Goldstein and Udry (2008) in which the security of property rights significantly determines economic performance. Thus institutions which protect property rights are significant predictors of economic growth, similar to the findings by Knack and Keefer (1995). The result also corroborates Clague et al. (1996) who reported a significant positive impact of contract intensity on output growth.

The coefficient of rule of law is positively related to economic growth in the long run and is statistically significant at the 1% level. A unit rise in the rule of law indicator results in about 4.37 percentage point increase in growth. The finding is consistent with the evidence by Brunetti, Kisonko and Weder (1998) in which credibility of rules was reported to significantly impact growth, as well as Kaufmann, Kraay and Zoido-Lobaton (1999), who found that a rise in the rule of law scale is positively associated with improvement in per capita incomes.

The relationship between political terror and economic growth is inverse, but not statistically significant. Growth is reduced by about 0.023 percentage point due to a unit rise in the political terror scale. The finding is in line with previous investigations such as Blomberg, Hess and Orphanides (2004) and Gaibulloev and Sandler (2009) linking terror of whatever form to reduced economic growth and aggregates. Finally, openness is positively related to growth and is statistically significant at 5%. About 0.6% point increase in growth is a result of a unit change in the openness indicator. Thus within the period of investigation, the growth of the Nigerian economy is partly attributed to the degree of the country's openness.

The diagnostic statistics for the estimated cointegrating regression equation are quite satisfactory. The Adjusted R^2 shows that the independent variables employed in the model jointly accounted for about 52 percent of the total variation in growth. The model passes the test of normality: the JB statistic and the probability of obtaining the value (70%), implies that the null hypothesis of normally distributed error term cannot be rejected.

5. Conclusions and Policy Recommendations

The study investigates the impact of institutional variables (rule of law, property rights and political terror) on Nigeria's economic growth (proxied by real GDP per capita) for the period 1981-2017, using annual data. To uncover the long-run impact, the DOLS technique was utilized. It was found that economic growth and the associated explanatory variables are cointegrated. Additionally, there is a statistically significant and positive relationship between property rights and growth on one hand and between law and order and growth on the other hand. The relationship between political terror and growth was found to be negative but not statistically significant. Openness was found to positively and significantly impact Nigeria's economic growth within the period of investigation.

The findings necessitate some recommendations. First, there is need to deepen institutions, as a means of improving and sustaining growth in Nigeria. An enhanced institutional framework in the economic and political spheres is required. In light of this, property rights, as captured by contract intensive money and adherence to law and order need to be promoted, in order to ensure individual and collective initiative.

Second, a deepening of institutions should be attuned to growth in the real sector of the economy. Well-developed property rights can impact transaction costs; the enthronement of law and order can promote investment while a political culture devoid of terror can provide the

environment for higher growth. Finally, efforts should be geared towards growth that is inclusive which reduces unemployment and poverty, two phenomena that are implicated in the literature dealing with terror.

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