ASSESSMENT OF GOOD GOVERNANCE INDICATORS ON THE PERVASIVENESS OF SHADOW ECONOMY: EMPIRICAL INSIGHTS FROM NIGERIA

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Abstract: *This study focused on the relationship between good governance and the shadow economy in Nigeria from 1996 to 2020. Employing the autoregressive distributed lag modelling approach, the study found that only the regulatory quality index was found to be consistent in taming the size of the shadow economy in Nigeria in both situations. Other indicators, such as the control of corruption, government effectiveness index, political stability index, and perception of the rule of law, had a short-run desirable impact on the shadow economy but portended serious boosters to the prevalence of shadow economic activities in the long run. This points to the prevalence of very weak institutional quality. The Nigerian government should improve more on its legislative quality to consolidate on the gains of regulatory quality. Again, the need for willful desire and action of all Nigerians to build stronger institutions to lay a solid foundation for an enduring system.*
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JEL Classification: *O16, O17, G34, G38*

Introduction

While the problem of shadow economy may not be a problem of underdeveloped countries to the exclusion of their developed counterparts (who still suffer a significant level of illicit economic activities), the extent and intensity of economic activities of shadow nature tend to be greater in underdeveloped countries (Schneider et al, 2010; Schneider & Enste, 2002). However, there appears to be a conflict of a clear conceptualization of economic activities of shadow nature. It has variously been referred to as the shadow economy, informal sector economy, parallel economy, clandestine economy, hidden economy or black economy (Mughal et al, 2018; Wu & Schneider, 2019). Incidentally, despite its long list of demeaning nomenclature, economists believe that shadow economic activities are accompanied by some economic and social benefits, such as employment creation, income generation and an increase in national output. Activities

of a shadow nature, however, thrive best where there is a generally high level of corruption in governance and the public sector (Öğünç & Yilmaz, 2000; Zaman & Goschin, 2015). According to Schneider and Buehn (2018) and Schneider and Williams (2013), a shadow economy has the capacity for all productive activities that ordinarily would bring about social contributions and yield tax revenue to the government. However, such activities are deliberately hidden from tax authorities to evade tax. Medina et al. (2018) explained that "the shadow economy includes all economic activities which are hidden from official authorities for monetary, regulatory, and institutional reasons. Monetary reasons include avoiding paying taxes and all social security contributions, regulatory reasons include avoiding governmental bureaucracy or the burden of the regulatory framework, while institutional reasons include corruption law, the quality of political institutions and weak rule of law". In Nigeria, all economic activities outside the direct control purview of the government are regarded as shadow economies. These economic activities may include very legal productive economic activities that, if they were recorded, would have contributed to the growth of national output.

Similar to many other developing countries, Nigeria is equally yoked with the problem of poor governance and very weak institutional quality (Utile et al, 2021). Achebe (1983) lamented that "the trouble with Nigeria is simply and squarely a failure of leadership...". This failure of leadership and hence governance may be a breeding ground for shadow economic activities. This is due largely to the fact that good governance is believed to have both "intrinsic and instrumental developmental value" to ensure justice and rule of law, curb corruption and engender accountability in the public financial management of the state (Earle & Scott, 2009). Good governance has been singled out as the way through which the institutional quality of a state can be improved. A higher level of institutional quality of an economy is by no means a lesser panacea for eliminating illicit economic activities and trade (Roy & Tisdell, 1998). Similarly, UNDP (1997) explained that the primordial means to curb poverty and ensure human development on a sustainable basis is none other than good governance. In addition, Andrii and Dmytro (2020) blamed the emergence of the black market economy on a slow rate of economic advancement, a high level of unemployment and ineffective government policies. This underscores the link between good governance and its implications on the preponderance of the shadow economy in Nigeria and even elsewhere and hence the need for this research.

Although economic activities of illicit nature contribute greatly to the growth of Nigeria's national output, it does not take away the fact that such activities have very damaging consequences on general wellbeing. It breeds and fertilizes the informal sector, rendering both monetary and fiscal policies of the government ineffective, just as it leads to loss of tax revenue. Studies by Omodero (2019) and Fleming et al. (2019) have highlighted some of these consequences.

However, focusing on the consequences rather than the root cause of an ailment may not solve the problem. The preponderance of the shadow economy in Nigeria may be linked with the strength or otherwise of different indices of good governance. This link has not been adequately explored in Nigeria, especially within a dynamic modelling framework and hence the need for this study.

The rest of the paper is structured as follows: section 2 focuses on the theoretical framework and a review of the empirical literature, while section 3 focuses on the methodology adopted by the study. Finally, section 4 addresses the analyses and

interpretation of the results, and section 5 concludes and makes policy recommendations based on the findings of the study.

Literature Review

Theoretical Framework

There is no clear unified theory linking the prevalence of the shadow economy to good governance. However, a set of theoretical propositions have clearly linked them together. Locke (1689) believed that men could live in harmony within a society according to reason without any need for anyone to superintend over them. However, Hobbes (1651) foresaw that life was a quest and that men could inadvertently be constantly at war with one another due to conflicts of interest on who should get what. This gave birth to "the social contract" where men surrendered some of their rights to form a government to superintend over them. This came with an administrative cost that warranted tax payment (Asue, 2017), but shadow economic activities tend to evade or avoid tax payments.

With the passage of time and following the establishment of the UN in 1945 to avert the experiences of World Wars I and II, there is a constant global push for "good governance" as a vehicle of development. According to the United States Center for International Business (USCIB) (2015), "good governance ensures that political, social and economic priorities are based on broad consensus in society and that the voices of the poorest and the most vulnerable are heard in decision-making over the allocation of development resources". The UN (2007) described good governance as "the exercise of authority through political and institutional processes that are transparent and accountable, and encourage public participation". This implies that the government ought to be very open and predictable, with an ethically imbued professional bureaucracy and a responsible and accountable executive arm, without neglect of civil society participation and adherence to the rule of law (World Bank, 2000). As observed by the UN (2007), good governance and human rights are intrinsically mutually reinforcing, and the former is a sin qua non for the actualization of the latter.

When people's rights are ensured, they tend to obey the laws and do what is generally adjudged to be right. People are born with intrinsic moral traits to obey inherited societal norms to maintain their self-esteem and resent deviants. However, where people perceive the government to be predatory in tax revenue collection without enhancing the supply of public goods and services, they may tend to be more involved in shadow economic activities to avoid taxes (Kanniainen et al, 2004). Shadow transactions could be household production, gambling, illicit drug deals, dealing in stolen goods, dishonest financial reports by firms and neighbourhood help (Schneider & Enste, 2002).

There is a growing consensus that an expansion of the shadow sector of any economy is usually due to ineffective government policies where there is a high level of unemployment and a low level of economic development (Andrii & Dmytro, 2020). Consequently, the World Bank has constructed six Worldwide Governance Indicators (WGIs), which are used to gauge the performance of governance. These are Control of Corruption, Political Stability and Absence of Violence, Voice and Accountability, Government Effectiveness, Regulatory Quality Index and Rule of Law. On the other hand, the shadow economy is measured as a percentage of the contribution of the informal sector to gross domestic product (GDP).

It then follows that, with improvement in the indices of good governance, the proportion of the nonformal sector of the economy should shrink. That is, as man has innate tendencies to conform to the norms of society and to maintain his self-esteem, he abhors being tagged a deviant except when he feels his rights are not guaranteed and he is cheated.

Empirical Literature

In a study by Kanniainen et al. (2004), the focus was placed on exhuming the causes of the shadow economy in market economies for 21 developed countries that are members of OED for the period 1989/90 to 2002/0. The econometric results indicated that there was a percentage rise of the shadow component to the official GDP from 13.2% in 1989/90 to 16.8% in 1999/2000. The study thus classified the sampled OECD countries into moderate, medium-sized and large shadow economies. Williams et al. (2010) carried out a survey of 331 start-up entrepreneurs between 2005 and 2006 in Ukraine and discovered that 90% of the entrepreneurs operated either completely off-the-books or partially off-the-books. However, even the reluctant entrepreneurs who started their operations off the books due to the necessity to survive in business became more willing to operate legally as they become more established.

Schneider et al. (2010) estimated the extent of the shadow economy in 162 countries of the world for the period 1999 to 2006/2007. The study took the weighted average of the shadow economy as a percentage of official GDP and found that the size of the shadow in Sub-Saharan Africa is 38.4%; in most transition countries of Europe and Central Asia, it was 36.5%, while in the high-income OECD countries, it was 13.5%. The weighted average size of the shadow economy was found to have decreased for the 162 countries from 34.0% to 31.0%. The study also found that the high tax burden, quality of public goods and services, state of the economy and labour market regulations remained the dominant drivers of shadow economic activities. In another study by Ogbuabor and Malaoulu (2013) to determine the magnitude of loss attributed to the informal sector of the Nigerian economy, the focus was placed on the size, causes and development of the shadow economy. The study used the Error Correction Multiple Indicators, Multiple Causes (EMIMIC) model to estimate both short-run and long-run relationships among the variables for the period 1970 to 2010. The study found a huge average size of the informal sector to be 64.6% of the GDP during the period under review. It was also found that unemployment, government regulation, tax burden and inflation remain very key drivers of the shadow economy in Nigeria.

Wu and Schneider (2019) examined the nonlinear relationship between the shadow economy and economic development using annual panel data that covered 158 countries from 1996 to 2015. Using a wide range of econometric techniques, the study found a U-shaped relationship between the shadow economy and economic development (using GDP per capita as a proxy for economic development). The study found that, having controlled for key institutional, economic and policy variables, the underdeveloped countries witnessed an inverse relationship between GPD and the nonformal sector, but where GDP per capita exceeded the threshold, there was a rise in the size of both the nonformal economic sector and GDP per capita. It was also concluded that, with increased levels of economic development, there are usually high levels of institutional quality and quality supply of public utilities such that the proportion of the nonformal economic sector tends to shrink.

Omodero (2019) used annual data from 1996 to 2018 to examine the effects of clandestine economic activities and corruption on revenue in Nigeria. The study adopted an ordinary least squares approach and found that corruption and the informal economy were inimical tax revenue in Nigeria, thereby rendering most fiscal responsibilities of government ineffective. Medina et al. (2018) used the Multiple Indicators, Multiple Causes (MIMIC) approach to unveil the mean size of the shadow economy for the period 1991 to 2015 in 158 countries. The average size was found to be 31.9% of relative GDP, and the study categorized the causes of the shadow economy as related to policy, economic, institutional and regulatory factors.

Nguyen and Duong (2021) investigated the relationship among the shadow economy, corruption and economic growth in the countries of Brazil, Russia, India, China and South Africa (BRICS) for the period 1991 to 2017. The authors employed the Bayesian regression approach to estimate the effect of corruption, shadow economy and other indicators, such as public expenditure, trade openness, inflation, foreign direct investment and tax revenue, on economic growth. It was found that while public expenditure and trade openness had a very high probability of boosting the GDP of BRICS economies, tax revenue, foreign direct investment and inflation exhibited some form of ambiguous positive influence. It was also found that the control of corruption and the shadow economy had a positive effect on the GDP of BRICS countries.

It is clear from the review of the empirical studies that the issue of good governance on the preponderance or propagation of shadow economy has not been adequately investigated. The present study is a great leap toward filling such a gap, especially as it relates to the Nigerian economy.

Methodology

Data and Variables Measurements

This study relied on annual time series sourced from the World Bank for the period 1996 to 2020. Data on the contribution of the shadow economy to GDP (CSG) measure how much of Nigeria's GDP is contributed by the informal sector of the economy. It is measured as a percentage of the total real GDP per annum. The data on Control of Corruption (COC) measures the perception of the extent to which people use public office to appropriate private gains for themselves both in matters of petty and pronounced forms of corruption. Data on Government Effectiveness Index (GEI) measures the quality of public services, civil service and the degree of independence from political pressures. It is also concerned with the quality of policy formulation and implementation and how committed various government agencies are in keeping the standards high. Data on the Political Stability Index (PSI) measure how the political atmosphere is relatively stable and free from military intervention or politically motivated violence. The Regulatory Quality Index (RQI) measures the ability of the government to formulate and implement policies and rules that permit and promote private sector growth and development. The data on Rule of Law (ROL) measure how all citizens (irrespective of social status), institutions and the state are accountable under the same laws of the land, while the data on Voice and Accountability Index (VAI) measure how citizens of a country can secure their rights, indicate their preferences and place demands on the government for quality service delivery and achieve better results. All the data on the Worldwide Governance Indicators

(government effectiveness index, political stability, regulatory quality, rule of law, and voice and accountability) range between -2.5 (weak) and 2.5 (strong).

Model Specification

Given that the preponderance of the shadow economy can be linked with the strength or otherwise of different indices of good governance (control of corruption, government effectiveness index, political stability, regulatory quality, rule of law, and voice and accountability), the functional form of the variables of the model is as follows:

$$CSG = f(COC, GEI, PSI, RQI, ROL, VAI) \quad (1)$$

where: CSG = Contribution of Shadow Economy to GDP, COC = Control of Corruption, GEI = Government Effectiveness Index, PSI = Political Stability Index, RQI= Regulatory Quality Index, ROL= Rule of Law, and VAI = Voice and Accountability Index.

The stochastic form of the model is:

$$CSG_t = \beta_0 + \beta_1 COC_t + \beta_2 GEI_t + \beta_3 PSI_t + \beta_4 RQI_t + \beta_5 ROL_t + \beta_6 VAI_t + \xi_t \quad (2)$$

where - β_0 - β_6 are coefficients and ξ_t is the error term.

Given that these variables are essentially, percentages and indices ranging between -2.5 and 2.5, they need not be logged. Thus, the generic form of the ARDL model $(p, q_1, ..., q_k)$ is specified as:

$$y_t = \alpha_0 + \alpha_1 t + \sum_{i=1}^{p} \psi_i y_{t-i} + \sum_{j=1}^{k} \sum_{l_j=0}^{q_i} \beta_{j,l_j} x_{j,t-l_j} + \varepsilon_t \quad (3)$$

where ε_t stand for innovations, α_0 is a constant, and α_1, ψ_i and β_{j,l_j} are coefficients of the respective linear trend with lags of y_t, while lags of k regressors $x_{j,t}$ are such that $j = 1, ..., k$. Following the general specification to equation (3), it can be stated as:

$$\begin{aligned} CSG_t = \alpha_0 + \alpha_{1t} + \sum_{i=1}^{p} \beta_0 CSG_{t-i} + \sum_{j=0}^{q} \beta_1 COC_{j-q} + \sum_{j=0}^{q} \beta_2 GEI_{j-q} + \\ \sum_{j=0}^{q} \beta_3 PSI_{j-q} + \sum_{j=0}^{q} \beta_4 RQI_{j-q} + \sum_{j=0}^{q} \beta_5 ROL_{j-q} + \sum_{j=0}^{q} \beta_6 VAI_{j-q} + \xi_t \end{aligned} \quad (4)$$

Furthermore, given that, the study seeks to estimate the relationship between regressand y_t on both its lags just as the contemporaneous and lag values of k regressors $x_{j,t}$. Equation 4 can be stated as:

$$y_t = \alpha_0 + \alpha_1 t + \sum_{i=1}^{p} \psi_i y_{t-i} + \sum_{j=1}^{k} \beta_j(1) x_{j,t} + \sum_{j=1}^{k} \beta_j(L) \Delta x_{j,t} + \varepsilon_t \quad (5)$$

where $\Delta = (1 - L)$ is used to denote the first difference. Since the above equation (5) does not clearly solve for y_t, it is simply a regression of intertemporal dynamics. Thus, the ideal regression setting of the above model that uses theoretical coefficients is specified as:

$$CSG_t = \alpha_0 + \alpha_1 t + \sum_{i=1}^{p} \beta_1 CSG_{t-i} + \beta_2 COC_t + \beta_3 GEI_t + \beta_4 PSI_t + \beta_5 RQI_t + \beta_6 ROL_t + \beta_7 VAI_t + \sum_{j=1}^{k} \lambda_{1,j} \Delta COC_{t-j} + \sum_{j=1}^{k} \lambda_{2,j} \Delta GEI_{t-j} + \sum_{j=1}^{k} \lambda_{3,j} \Delta PSI_{t-j} + \sum_{j=1}^{k} \lambda_{4,j} \Delta RQI_{t-j} + \sum_{j=1}^{k} \lambda_{5,j} \Delta ROL_{t-j} + \sum_{j=1}^{k} \lambda_{6,j} \Delta VAI_{t-j} + \xi_t \quad (6)$$

Equally, "the conditional error correction form and the bounds test" is usually expressed as:

$$\Delta y_t = \alpha_0 + \alpha_1 t - \psi(1) EC_{t-1} + \left(\psi^*(L) \Delta y_{t-1} + \sum_{j=1}^{k} \beta_j(L) \Delta x_{j,t-1} \right) \quad (7)$$

From equation (7), the error correction term, is denoted by EC_t and it also serves the purpose of a cointegrating relationship where y_t and $x_{1,t},...,x_{k,t}$ do not drift apart with the passage of time. Given that the there is no trend from cross examination, the study assumes no trend and restricts the constant inside the cointegrating equation, thus, specifying and estimating a restricted constant with no trend. The model with restricted constant and no trend specification can be specified as:

$$\Delta y_t = \alpha_0 + b_0 y_{t-1} + \sum_{j=1}^{k} b_j x_{j,t-1} + \sum_{i=1}^{p-1} c_{0,i} \Delta y_{t-i} + \sum_{j=1}^{k} \sum_{l_j=1}^{q_j-1} c_{j,l_j} \Delta x_{j,t-l_j} + \sum_{j=1}^{k} d_j \Delta x_{j,t} + \varepsilon_t \quad (8)$$

and

$$EC_t = y_t - \sum_{j=1}^{k} \frac{b_j}{b_0} x_{j,t} - \frac{a_0}{b_0} \quad (9)$$

with $H_0 : b_0 = b_j = \alpha_0 = 0, \forall_j$

Where is a vector and the variables in x_t are allowed to be purely I(0) or I(1); α is a Constant b, c and d are coefficients $j = 1,...,k$; p,q are optimal lag orders and ε_t is a vector of the error terms. Thus, the nonasymmetric error correction model can be specified as:

$$\Delta CSG_t = \sum_{i=1}^{p} \beta_1 \Delta CSG_{t-i} + \sum_{i=1}^{q} \beta_2 \Delta COC_t + \sum_{i=1}^{q} \beta_3 \Delta GEI_t + \sum_{i=1}^{q} \beta_4 \Delta PSI_t + \sum_{i=1}^{q} \beta_5 \Delta RQI_t + \sum_{i=1}^{q} \beta_6 \Delta ROL_t + \sum_{i=1}^{q} \beta_7 \Delta VAI_t + \lambda EC_{t-1} + \xi_t \quad (10)$$

Method of Data Analysis

This study employed both descriptive statistics and econometric approaches to analyse the good governance-shadow economy nexus in Nigeria. Thus, the autoregressive distributed lag (ARDL) modelling approach was adopted since it is a dynamic approach that depicts economic reality, as many dependent economic variables tend to explain their own future values. It thus gives room for the data to speak for itself as it makes use of lags. It is also suitable for use where the data size is relatively small.

RESULTS AND DISCUSSION

Descriptive Statistics

Given that our dependent variable is a percentage and all our explanatory variables are indices lying between -2.50 and 2.50, the easiest form of their description is in graphical trend format to bring out an easy view of their behaviour. Figure 1 shows the graphical representation of the variables.

Figure 1 Shadow economy, formal economy and WDI in Nigeria (1996-2020)

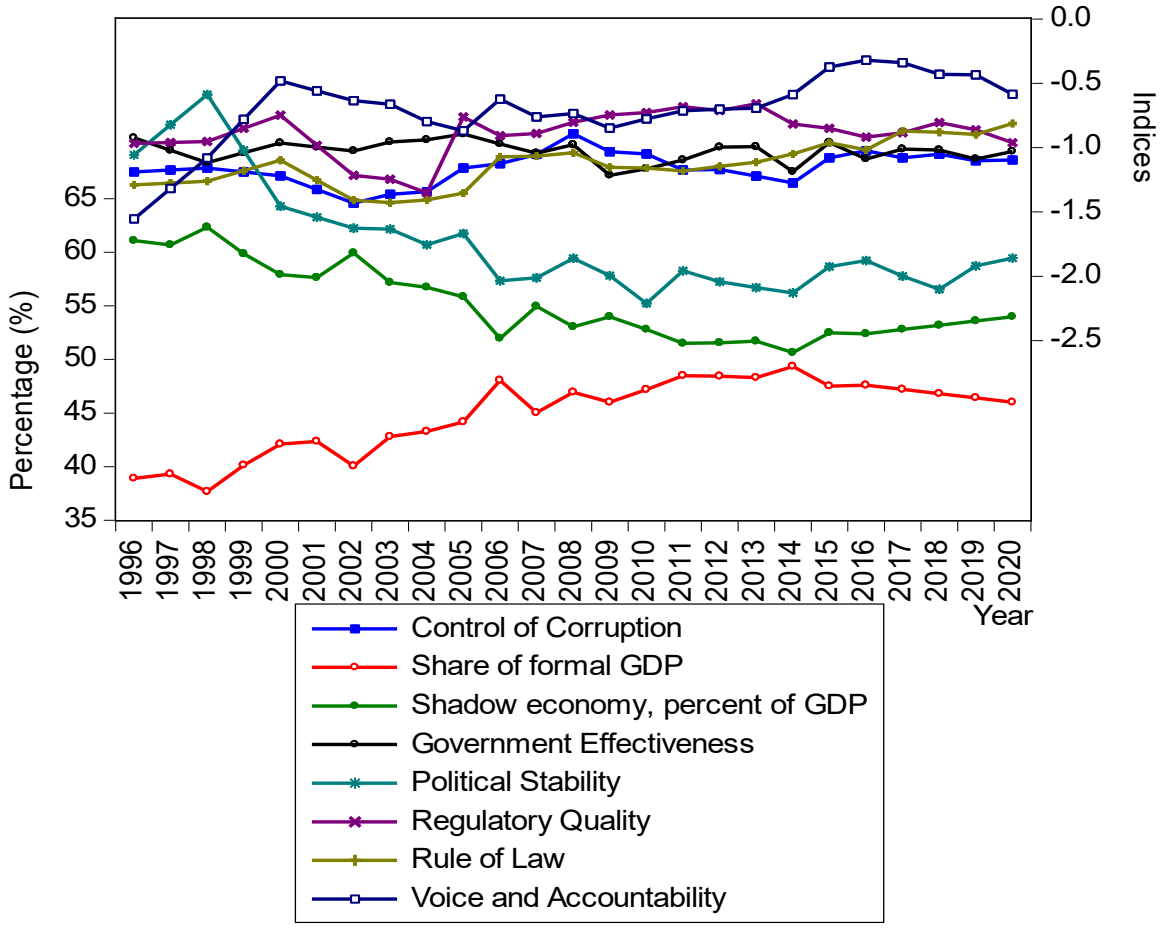


Figure 1 explains the proportion of the shadow economy in Nigeria and the World Governance Indicators (WDIs) over the study period. The trend shows that the shadow economy as a percentage of total annual real GDP declined continually until 2006, when it rose slightly to approximately 55% in 2007, and took another downturn until 2014, when it took an upwards trend throughout the period under study. The proportion of the level of shadow economy declined reasonably between 1996 and 2006, just as between 2007 and 2014. During the period, governance indicators also improved even though none of the indicators recorded a strong index. After 2014, the proportion of the shadow economy increased, implying that there were several sources of income from goods and/or services that are hidden from the government with a view to evading taxes, duties or levies and avoiding complying with particular labour market regulations, such as minimum pay for

employees, social insurance contributions, safety standards, and maximum duration of work hours per period. As highlighted by Gasparėnienė et al. (2016), Loayza and Rigolini (2006) and Medina et al. (2017), workers and firms may opt for informality to avoid taxes and pension or social security payments or labour and product market regulations. It can also be observed that in all situations where the shadow economy declined, the formal economy improved, thereby portending better revenue prospects for the government and a greater likelihood of fiscal and monetary policy effectiveness.

The weak index of rule of law throughout the period shows that agents lost confidence in the system and may even be willing to break the rules of society with regard to the quality of contract enforcement, the police, property rights, and the courts. The continuous negative nature of government effectiveness throughout the period also shows the weak quality of public services, civil service, and the weak quality of policy formulation and implementation as well as the incredibility of the government's commitment to such policies. This is coupled with the weak regulatory quality that indicates the inability of the government to formulate and implement sound policies and regulations that permit and promote private sector development in Nigeria.

From the graph, only voice and accountability had relatively higher improvement in the performance explaining the level of citizens participating in the selection of their government as well as freedom of expression, association, and speech. Political stability depicts a relatively worse index throughout the period, indicating volatility in the governance orchestrated by unconstitutional means and terrorist attacks.

Ng-Perron Unit Root Test Results

To ascertain that the variables used in the model exhibited random walk such that they were consistent with the stochastic process, they were subjected to the unit root test proposed by Ng and Perron (2001). A summary of the results of the unit root test is presented in Table 1.

Table 1: Ng-Perron Unit Root Test Results

Variable	**MZa** **-8.1000**	**MZt** **-1.9800**	**MSB** **0.2330**	**MPT** **3.1700**	**Stationarity**	**Remark**
CSG	-1.8854	-0.9136	0.4846	12.2752	I(0)	Not Stationary
D(CSG)	-9.7319	-2.1964	0.2257	2.5534	I(1) **	Stationary
COC	-5.2741	-1.6025	0.3038	4.6998	I(0)	Not Stationary
D(COC)	-11.4502	-2.3927	0.2089	2.1398	I(1) **	Stationary
GEI	-10.6670	-2.3043	0.2160	2.3170	I(0)**	Stationary
PSI	-1.8727	-0.9193	0.4909	12.462	I(0)	Not Stationary
D(PSI)	-10.6987	-2.3122	0.2161	2.2926	I(1) **	Stationary
RQI	-7.6626	-1.9526	0.2548	3.2147	I(0)	Not Stationary
D(RQI)	-11.1965	-2.3465	0.2096	2.2625	I(1)**	Stationary
ROL	-1.6689	-0.5982	0.3586	10.1338	I(0)	Not Stationary
D(ROL)	-11.3429	-2.3574	0.2078	2.2516	I(1)**	Stationary
VAI	-4.1405	-1.3685	0.3305	5.9938	I(0)	Not Stationary
D(VAI)	-9.0511	-1.9925	0.2201	3.1982	I(1)**	Stationary

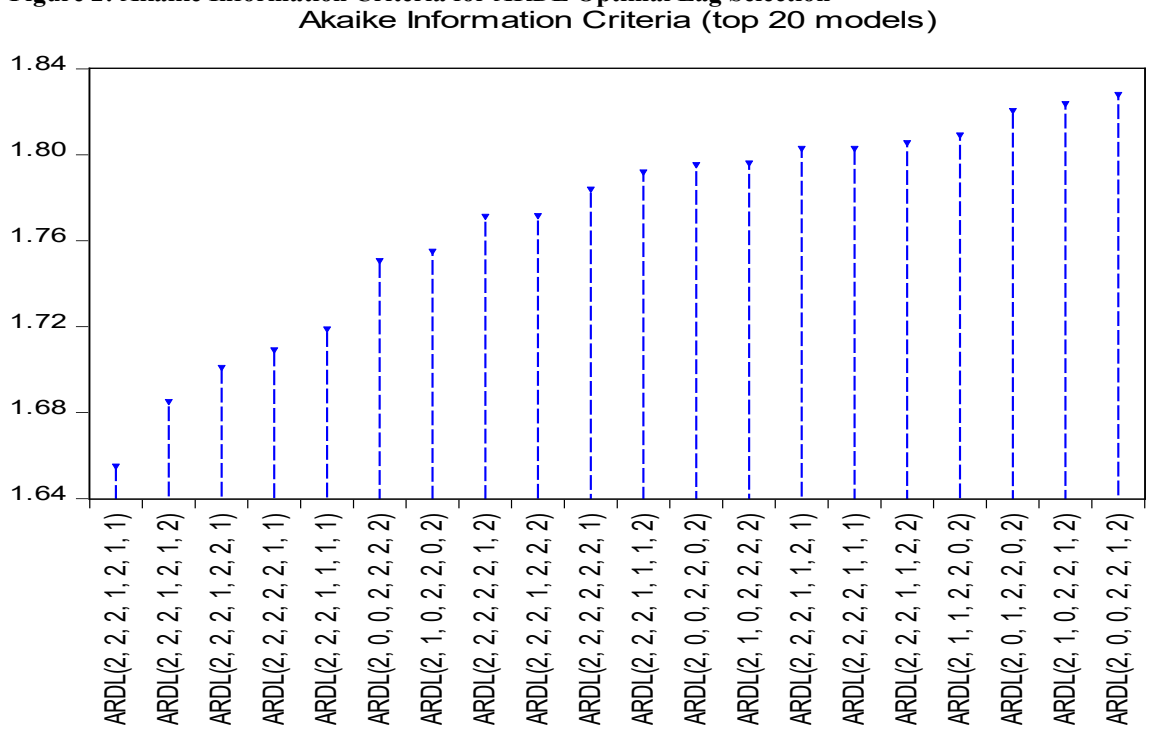
Source: Extracts from E-Views 11

The results of the Ng-Perron unit root test are carried out against the null hypothesis that the variable under examination has a unit root. Stationarity in the Ng-Perron test is attained when all or the majority of the values of MZa, MZt, MSB and MPT statistics are less than their corresponding asymptotic critical values at the 5% level of significance. Thus, it can be observed that all the variables in Table 1 became stationary at first difference except the government effectiveness index (GEI), which was found to be stationary at levels. This shows that there is mixed order of integration. The asterisks (**) indicate that the variable is stationary; otherwise, it is not. Thus, there is a mixed order of integration that is still suitable for use in the ARDL framework.

Optimal Lag Selection

The beauty of dynamic models such ARDL lies in the use of lag values of both the regressors and the regressand in the explanation of relevant economic phenomena under examination. Usually, it is advisable to make use of optimal lag values to obtain unbiased estimates. With the aid of Akaike information criteria, the optimal lag for the model of this study was estimated to be lag 2, as shown in Figure 2.

Figure 2: Akaike Information Criteria for ARDL Optimal Lag Selection



Source: Extracts from E-views 11

Bounds Test Results for Long Run Relationship

As is the case with all-time series analysis, it is wise to check whether the variables of the model will not drift apart with the passage of time before carrying out the proper estimation of the model. The bounds test was estimated in this study, and the results are presented in Table 2.

Table 2: Results of the Bounds Test

Level of Significance	F- Statistic Value	Lower Bound I(0)	Upper Bound I(1)
10%		2.12	3.23
5%	8.3461	2.45	3.61
2.5%		2.75	3.99
1%		3.15	4.43

Source: Extracts from E-views 11

Table 2 shows that the F-statistic value of 8.3461 is greater than both the lower and upper bounds at the 5% level of significance. The study thus rejects the null hypothesis of no level relationship and infers that there is a long-run relationship among the variables of the model.

Results of the ARDL Error Correction Model

The study estimated the ARDL error correction model, and the results are presented in Table 3.

Table 3: ARDL Error Correction (Short Run) Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	83.3706	7.3815	11.2945	0.0001
D(CSG(-1))	-0.2142	0.0544	-3.9405	0.0110
D(COC)	-4.2652	1.2874	-3.3131	0.0212
D(COC(-1))	-7.7863	1.4826	-5.2516	0.0033
D(GEI)	8.3781	1.5452	5.4221	0.0029
D(GEI(-1))	-6.2448	0.9476	-6.5899	0.0012
D(PSI)	1.9700	0.4884	4.0337	0.0100
D(RQI)	-4.3656	0.6014	-7.2586	0.0008
D(RQI(-1))	-1.7420	0.8213	-2.1211	0.0874
D(ROL)	-10.0057	1.5295	-6.5420	0.0012
D(VAI)	4.8350	0.8285	5.8362	0.0021
ECM(-1)*	-0.9711	0.0857	-11.3371	0.0001
R-squared: 0.9760		Durbin-Watson Stat: 2.1826		

Source: Extract from E-Views 11

The results in Table 3 are short-run estimates of the ARDL error correction model. The peak of adjustment (ECM (-1) factor) is -0.9711 with a probability value of 0.0001. This result indicates that it is statistically significant since it is less than 0.05 at the 5% level of significance. This implies that in an event of any temporal deviation by the variables from the long-run path, there is a 97% chance that they will revert along the long-run path within a year.

The result also indicates that the lag values of the shadow economy are capable of reducing the preponderance of the shadow economy in the short run. This is because CSG's coefficient (-0.2142) and its probability value of 0.011 indicate that it is statistically significant at the 5% level of significance. This shows that the preponderance of the nonformal sector in the short run in Nigeria may be influenced by factors other than previous values of the shadow economy itself. It was also found that Control of Corruption (COC), which is peoples' use of public offices for private gains, does not aggravate the shadow economy in the short run. The short-run current value of COC has a negative and significant relationship with the shadow economy, similar to its lag value. The COC value

of -4.2652 and its lag value of -7.7863 were all statistically significant at the 5% level of significance. This implies that control of corruption does not worsen the prevalence of the shadow economy in Nigeria in the short run.

The government effectiveness index showed that it has a positive effect on the prevalence of the shadow economy in Nigeria in the short run, while its lag value indicated otherwise. Both values have a significant effect on the size of the shadow economy in Nigeria. This implies that government policies in Nigeria are not effective in curtailing shadow economic activities. It takes at least a year in the short run for such policies to yield the needed results, as indicated by the lag value of government effectiveness. The political stability index has a coefficient of 1.97 with a probability value of 0.01, implying that in the short run, as the political atmosphere improves and appears stable, people tend to indulge more in black market economic activities. This is contrary to theoretical expectations, but it remains true in Nigeria.

The short-run results also indicate that both the current and lag values of the Regulatory Quality Index (RQI) were found to be negatively related to the shadow economy in Nigeria, especially since the current value of RQI is statistically significant. This shows that improvements in the quality of laws in Nigeria could yield desirable results towards expanding the size of the formal economy against informal shadow activities. The results also indicate that, in the short run, improvements in the rule of law lead to a reduction in the level of the shadow economy in Nigeria, which is in line with theoretical expectations. This relationship is statistically significant given that its probability value of 0.0012 is less than the critical value at the 5% level of significance (0.05). Finally, in the short run, as people's inputs and demands for government accountability improve, it exacerbates the volume of informal sector activities in the country. That is, they tend to abuse it and indulge more in shadow economic activities.

The ARDL Long Run Results

Ultimate economic analyses reside in the long run and hence the need for the long run results, as presented in Table 4.

Table 4: Results of the ARDL Long Run Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
COC	6.3476	4.5701	1.3889	0.2235
GEI	21.1118	6.1831	3.4144	0.0190
PSI	4.5809	1.0647	4.3025	0.0077
RQI	-9.4004	2.6759	-3.5130	0.0170
ROL	3.5370	3.4815	1.0159	0.3563
VAI	-2.7286	2.2496	-1.2130	0.2793

Source: Extract from E-Views 11

The long-run result of the model indicates that the control of corruption (COC) has a positive though nonsignificant effect on the level of the shadow economy in Nigeria. However, this clearly shows that as people use public offices to advance their private gains to the detriment of the generality of Nigerians, it increases the volume and tempo of nonformal economic activities in Nigeria in the long run. Contrary to expectations, the government effectiveness index (GEI) has a positive and very significant positive effect on the preponderance of the shadow economy in Nigeria. This, however, is in agreement with

the empirical reality given that institutional quality in Nigeria is very weak, as already shown in the trend analysis. Thus, it does not tame but aggravates the level of informal sector activities in Nigeria.

Again, it was found that political stability worsens the problem of informal sector activities. Given the weak nature of institutional quality in Nigeria, an improved level of political stability opens up more room for political office holders, their associates and family members to perpetrate shadow economic activities the more fully knowing that the law will not catch up with them. The coefficient of the regulatory quality index (RQI) was found to have an inverse significant control over the shadow economy in Nigeria. This implies that once the quality of legislation in Nigeria improves, people are willing to give up informal economic activities. This is in line with the human self-esteem instinct of man, as highlighted by Kanniainen et al. (2004).

Concerning the rule of law index (ROL), there is a positive relationship between the rule of law and the prevalence of the shadow economy in Nigeria. ROL has a coefficient of 3.5370 with a probability of 0.3563, implying that it is not statistically significant. However, this is expected because the general perception of Nigerians is that the law in Nigeria favours only the rich, and as such, improvements in the rule of law may not necessarily influence many people to give up informal sector economic activities. The Voice and accountability index is negatively related to the shadow economy in Nigeria. Although this relationship may not be statistically significant, it implies that as an increasing number of people perceive that they have a say in the affairs of governance as it affects them, they tend to operate their business formally.

Post Estimation Test Results

It has become a custom to subject econometric models to some basic post estimation tests to ensure that the relationship estimated by the model was correctly specified and to examine whether the residuals did not violate basic assumptions of the least square methods.

Table 5: Ramey RESET, Heteroscedasticity and Serial Correlation Tests

Ramsey RESET Test	Value	df	Probability
t-statistic	0.849820	4	0.4433
F-statistic	0.722194	(1, 4)	0.4433
Heteroskedasticity Test: Breusch–Pagan-Godfrey			
F-statistic	0.274262	Prob. F(17,5)	0.9799
Obs*R-squared	11.09827	Prob. Chi-Square(17)	0.8514
Scaled explained SS	0.337656	Prob. Chi-Square(17)	1.0000
Breusch-Godfrey Serial Correlation LM Test			
F-statistic	7.204084	Prob. F(2,3)	0.0715
Obs*R-squared	19.03634	Prob. Chi-Square(2)	0.0001

Source: Extracts from E-views 11

The results in Table 5 indicate that the relationship between shadow economy and the WGIs was correctly specified given that both the t-statistics and the F-statistic values have their probability values of 0.4433 each. Once the probability values are greater than the 0.05 level of significance, the relationship is correctly specified; otherwise, it is not. Similarly, the result of the heteroscedasticity test shows that the residuals exhibited constant variance in line with the stochastic process and as such can be adjudged to be

homoscedastic. This conclusion also stems from the probability values of the F-statistic (0.9799), observed R-squared (0.8514) and scaled explained SS (1.00), which are all above the 0.05 threshold level. Finally, the serial correlation test indicates a case of partial correlation given that the probability value of the F-statistic is 0.0715 but that of the observed R-squared is 0.0001. However, this does not invalidate the results since the estimates are still unbiased and consistent. All these results confirm that the model performed well and fits the data.

Conclusion and Recommendations

Based on the results obtained by this study, it is clear that if Nigeria must get it right towards taming with the size of the shadow economy in the country, it must continually improve the quality of legislation in the country. It is one indicator with a negative significant impact on Nigeria's informal sector for both short- and long-run analyses. Again, since ultimate economic analysis targets the long-term impact, it can be concluded that WGIs in Nigeria are largely very weak and cannot effectively tame the size of informal economic activities in the country. For instance, COC, GEI, PSI and ROL were all found to have positive impacts on the prevalence of the black market economy. This shows that they are weak and do not effectively translate into convincing the general public to eschew shadow economic activities and operate formally to boost government revenue. Again, with a large nonformal sector, it becomes increasingly difficult for the government to achieve set monetary and fiscal policy targets due to the presence of a largely unregulated sector.

On the basis of the findings of this research, it is recommended that:

Nigeria must improve the quality of its legislation in a way that people will truly believe their interests are protected. The legislative process must be transparent with inputs from a wide spectrum of the public (both low and high class). Again, the minimum requirements for legislative positions in Nigeria must be raised to certificates higher than school certificates or equivalent. It takes a well-developed mind to conceive, debate and pass high-quality laws as it is done in advanced democracies.

The long-term effects of the Worldwide Governance Indicators (WGIs) on the preponderance of the shadow economy in Nigeria have more explicitly exposed the weak nature of Nigeria's institutional quality. This calls for a change in the altitude of both the rulers and the rule towards ensuring that the right thing is done at each point. Let the conscience of all Nigerians stay alive towards administering public offices and holding public office holders accountable for their actions and inactions. Stronger institutions need to be built rather than building stronger individuals because enduring sane systems survive on the platform of institutions and not individuals.

References

1. Achebe, C. (1983). The Trouble with Nigeria. Enugu: Fourth Dimension Publishers.
2. Andrii, Z. & Dmytro, K. (2020). Evolution of theories of shadow economy formation. Technology Audit and Production Reserves. 6 (4(56)), 6-10. doi: 10.15587/2706-5448.2020.218711
3. Asue, E.A. (2017). An empirical analysis of tax revenue and economic growth in Nigeria (1990 2014). Journal of Economic and Social Science Research. 7(1). 181-205.

4. Earle, L. & Scott, Z. (2009). Assessing the evidence of the impact of governance on development outcomes and poverty reduction. Birmingham; UK: GSDRC, University of Birmingham http://www.gsdrc.org/docs/open/EIRS9.pdf
5. Fleming, M. H., Roman, J. & Farrell, G. (2019). The Shadow Economy. Loughborough University. Available at https://repository.lboro.ac.uk/articles/journal_contribution/The_shadow_economy/9473264/1/files/17097731.pdf
6. Gasparėnienė, L., Remeikienė, R. & Heikkila, M. (2016). Evaluation of the impact of shadow economy determinants: Ukrainian case. Intellectual Economics, 10(2), 108–113. https://doi.org/10.1016/j.intele.2017.03.003
7. Hobbes, T, (1651). Leviathan. C.B. Macpherson (Ed.) London: Pengium Books.
8. Kanniainen, V., Paakkaonen, J. & Schneider, F. (2004). Fiscal and ethical determinants of shadow economy: theory and evidence. Helsinki Center of Economic Research. Discussion papers No.30.
9. Loayza, N., & Rigolini, J. (2006). Informality trends and cycles. Policy Research Working Paper 4078, World Bank, Washington DC.
10. Locke, J. (1689). Two treatise of government and letter concerning toleration. London: Anshwan Churchill
11. Medina, L., Jonelis, A. & Cangul, M. (2017). The Informal Economy in Sub-Saharan Africa: Size and Determinants. International Monetary Fund, WP/17/156.
12. Medina, L., Schneider, F., & Fedelino, A. (2018). Shadow Economies Around the World: What Did We Learn Over the Last 20 Years? IMF Working Papers, 2018(017), A001. Available at: https://www.elibrary.imf.org/view/journals/001/2018/017/article-A001-en.xml
13. Mughal, K., Schneider, F. & Hayat, Z. (2018). Shadow Economy in Pakistan: Its Size and Interaction with Official Economy. Munich Personal RePEc Archive, MPRA Paper No. 87812. Johannes Kepler University, Department of Economics, Altenbergerstr.
14. Ng, S., & Perron, P. (2001). LAG Length Selection and the Construction of Unit Root Tests with Good Size and Power. Econometrica, 69, 1519-1554. https://doi.org/10.1111/1468-0262.00256
15. Nguyen, D.V. & Duong, M.T.H. (2021). Shadow economy, corruption, and economic growth: Analysis of BRICS countries. Journal of Asian Finance, Economies and Business. 8(4), 665-672. https://doi.org/10.13106/jafeb.2021.vol8.no4.0665
16. Ogbuabor, J.E. & Malaoulu, V. A. (2013). Size and Causes of the informal sector of the Nigerian economy: Evidence from error correction MIMIC model. Journal of Economics and Sustainable Development, 4(1), 85-103.
17. Öğünç, F. & Yilmaz, G. (2010). Estimating the underground economy in Turkey. The Central Bank of the Republic of Turkey, Research Department Discussion Paper.
18. Omodero, C. O. (2019). Tax Evasion and Its Consequences on an Emerging Economy: Nigeria as a Focus. Research in World Economy, 10(3), 127-135. https://doi.org/10.5430/rwe.v10n3p
19. Roy, K.C. & Tisdell, C.A. (1998). Good governance in sustainable development: the impact of institutions. International Journal of Social Economics, 25 (6/7/8), 1310-1325. https://doi.org/10.1108/03068299810212775
20. Schneider, F. & Buehn, A. (2018). Shadow economy: Estimation methods, problems, results and open questions. Open Economics, 1: 1–29. https://doi.org/10.1515/openec-2017-0001
21. Schneider, F. & Enste, D. (2002). The Shadow Economy: An International Survey, Cambridge University Press.
22. Schneider, F. G. & Williams, C. (2013). The Shadow Economy (June 1, 2013). Friedrich Schneider & Colin C. Williams, The Shadow Economy, Institute of Economic Affairs. Available at: https://ssrn.com/abstract=2286334
23. Schneider, F., Buehn, A. & Montenegro, C. E. (2010). Shadow Economies All over the World: New Estimates for 162 Countries from 1999 to 2007. Policy Research working paper; No. WPS 5356. World Bank.
24. United Nations (UN) (2007). Good governance practices for the protection of human rights. Office of the United Nations High Commissioner for Human Rights. New York and Geneva United Nations Publications

25. United Nations Development Programme (UNDP) (1997). Human Development Report 1997: Human Development to Eradicate Poverty. Available at: http://www.hdr.undp.org/en/content/human-development-report-1997
26. United States Council for International Business (USCIB) (2015). Good governance and the Rule of Law. Available at: www.uscib.org/dols/governance
27. Utile, T. I., Ijirshar, V. U. & Sem, A. (2021). Impact of institutional quality on economic growth in Nigeria. Gusau International Journal of Management and Social Sciences. 4(3): 157-177.
28. Williams, C.C., Round, J. & Rodgers, P. (2010). Explaining the off-the-books enterprise culture of Ukraine: reluctant or willing entrepreneurship? International Journal of Entrepreneurship and Small Business, 10(2),165–180. https://doi.org/10.1504/IJESB.2010.033107
29. World Bank (2000). Reforming Public Institutions and Strengthening Governance. A World Bank Strategy. Public Sector Group, Poverty Reduction and Economic Management (PREM) Network. Available at: http://www1.worldbank.org/publicsector/Reforming.pdf
30. Wu, D.F. & Schneider, F. (2019). Nonlinearity between the shadow economy and level of development. IZA Discussion Papers, No. 12385, Institute of Labor Economics (IZA), Bonn.
31. Zaman, G., & Goschin, Z. (2015). Shadow economy and economic growth in Romania. Cons and Pros. Procedia Economics and Finance, 22, 80–87. https://doi.org/10.1016/S2212-5671(15)00229-4