

# DEMYSTIFYING RISING INCOME INEQUALITY INFLUENCE ON SHADOW ECONOMY: EMPIRICAL EVIDENCE FROM NIGERIA

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## **Abstract:**

We investigate whether rising income disparity contributes to the proliferation of shadow economy. Using data from 1991 to 2018, we used the ARDL cointegration approach to study the short- and long-run effects of income inequality on the growth of the shadow economy. We find that increasing income inequality leads to an increase in the size of Nigeria's shadow economy in both the short and long run, other things being equal. We also find that the large income gap between the rich and the poor in Nigeria is one of the causes driving the poor into informal economic activity, mostly for survival, and that unemployment partly contributes to informality. Our findings suggest that unemployment may be both a result of and a cause of rising income disparity in Nigeria, leading to an expansion of the shadow economy. Our findings indicate that regulating the proliferation of shadow economic activities in Nigeria will necessitate, among other things, stronger institutions and the development of financial services such as credit to the informal sectors.

**Keywords:** Income inequality; shadow economy; taxation; government spending; income distribution

*JEL:* E26, H26, O17, H20, I30

## 1. INTRODUCTION

Studies have associated several consequences, economic or otherwise, with shadow economic sectors (also known as the underground economy, “black market”<sup>1</sup> economy, parallel economy, illicit economy, hidden economy, or unofficial economy<sup>2</sup>), often characterized as the component of production of goods and services undetected by the government. For instance, studies have shown the shadow economy to be associated with lower tax revenues, increased inflation rate (Mazhar and Meon, 2017), higher unemployment rate (Dell’Amo, 2016), financial development (Capasso and Jappelli, 2013), puts a dent on a country’s credit ratings and leads to inefficient utilization of resources (Schneider and Enste, 2000). The consequences of these has distorted development blue-print of most developing nations where shadow economic activities seem to be prevalent (Veiga and Rohman, 2017). Although, the informal sector plays a major role in the economies of low-income African countries. In emerging markets and developing economies (EMDEs), the informal sector averagely accounts for a third of GDP (Elgin et al. 2021). According to Medina and Schneider (2019), the average size of the shadow economy in 158 countries between 1993 and 2018 was 33.4% of GDP; with Africa accounts for roughly 40.3% of GDP (with Zimbabwe about 60% of GDP and Mauritius accounting for 23% of GDP), Asia-Pacific accounts for nearly 30% (with Azerbaijan reporting for 57% of GDP and Japan accounting for 11% of GDP), and Europe accounting for approximately 25% of GDP (with Bolivia about 66% of GDP and Chile accounts for nearly 19% of GDP).

According to the OECD/ILO (2019), rural households represents the higher share of the overall population in Africa and are much likely to be completely informal. For example, the report mentioned that the share of informal employment including agriculture is above 90% in Benin, Burkina Faso, Cameroon, Ghana, Madagascar, Niger, Tanzania, and Togo, which represents 90.6% based on 2014 labour force survey data and 86% based on 2012/13 National Panel Survey data. In Nigeria, shadow economic activity is more prevalent, on average between 1991 and 2018, the share of shadow economy is around 57.1% of GDP (Medina and Schneider, 2020). These comprises of farmers, petty traders, artisans and craftsmen, road side mechanics, and professionals, which majorly are self-employed or work for small-scale family-owned enterprises. Shadow economy is usually linked with lower income workers than the official economy, as it employed over 60% persons between the ages of 15 and above (ILO, 2018a). It is however, not surprising to find that a large share of shadow economy can lead to increases in income inequality and a drastic collapses of government efforts to mobilize tax revenues. In this paper, we are interested to investigate the extent to which income inequality associated with the size of the shadow economy. Therefore, the objective of this paper is to investigate the possible relationship between increasing income inequality and the size of the shadow economy in Nigeria from 1991 to 2018. Considering the growing tendency of shadow market operations in Africa, one critical question is whether rising income inequality contributes to the proliferation of hidden economic activity. This paper seeks to contribute to this body of knowledge by examining the consequences of income inequality on the shadow economy.

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<sup>1</sup> The term “black market” is widely used in African countries, and it refers to market transactions that are carried out illegally, either at night or in a location where the authorities are not present.

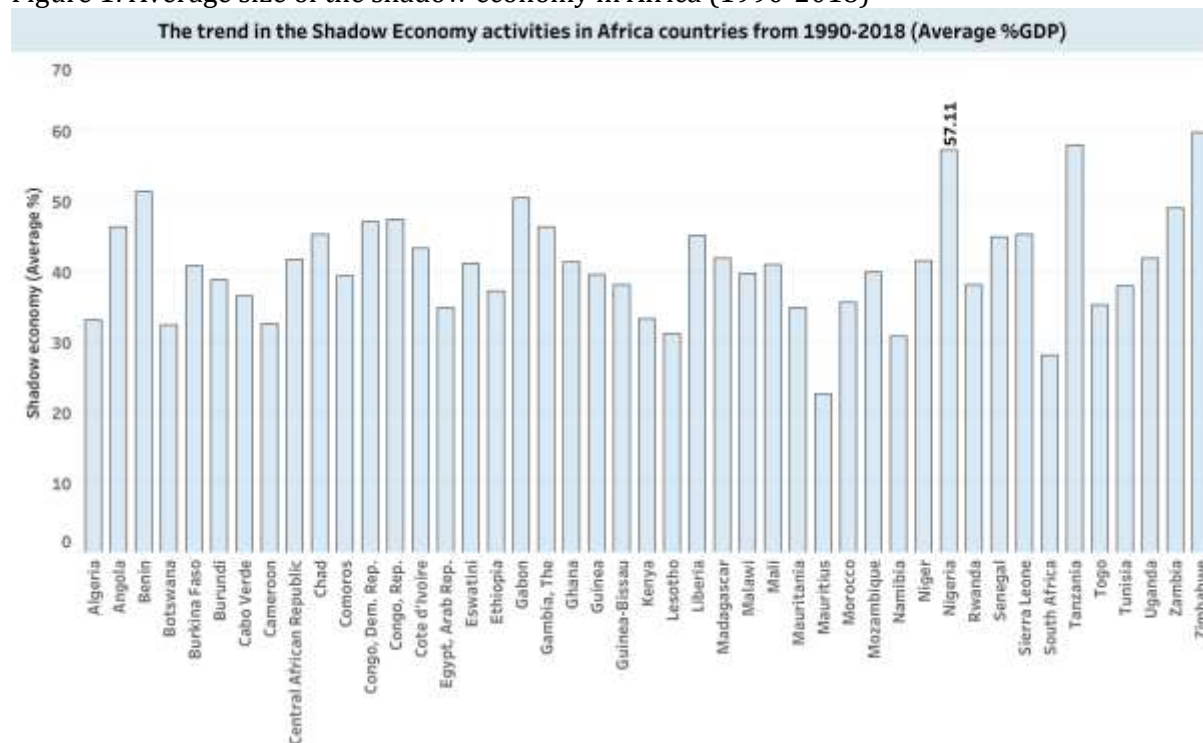
<sup>2</sup> The concepts are used interchangeably in existing literature (Tanzi 1980 1983; Levine 1997; Thomas 1999; Schneider and Enste 2000; Berdiev and Saunoris, 2016).

## 2. DATA AND METHODOLOGY

### 2.1. Data

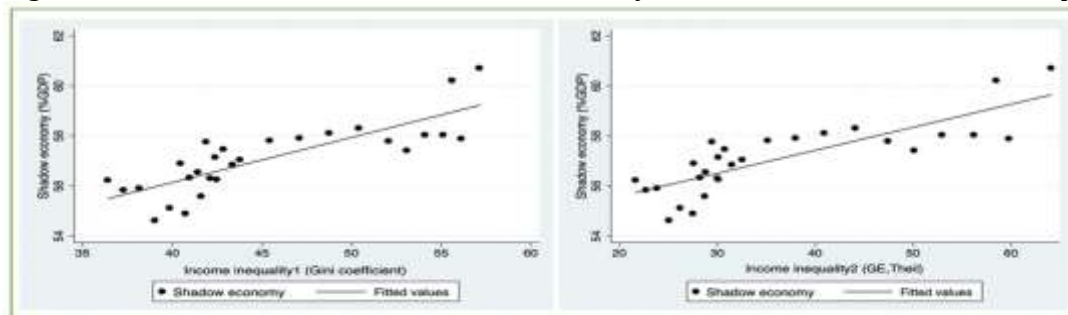
To explore the relationship between income inequality and shadow economy in Nigeria, we curated 28 years annual time-series data ranging from 1991 to 2018 from various sources. Our measure of dependent variable is the shadow economy size as a percentage of GDP sourced from Medina and Schneider (2019) and designated herein as *shadow*. The data is compiled using an indirect measure of informality, namely: the multiple indicator-multiple cause (MIMIC) approach. The MIMIC measure of shadow economy offers more consistent annual data over time compared other direct measures such as labour force and household surveys (Elgin et al., 2021). Our primary explanatory variable is the gini index, designated *gini* and sourced from World Income Inequality Database (WIID) developed by The United Nations University, World Institute for Development Economics Research (UNU-WIDER, 2021). The gini inequality index is the most widely used and cited in the literature that measures the extent to which income distribution within an economy deviates from a perfectly equal distribution; a higher gini coefficient represents a more unequal distribution. To ensure our estimations are robust and stable for informed conclusion, we use the theil index as an alternative measure of inequality also sourced from WIID. Both indices are the most commonly used measures of evaluating income inequality with the gini having the advantage of simplicity and efficient representation of income distribution while the theil is superior in its decomposability quality (Chales-Coll, 2011; Liao, 2016). In addition, we include various control variables that characterize the Nigerian economy, public sector and institutional strength that have the tendencies of affecting changes in the shadow economy. They include unemployment rate (*unemp*) measured as a percentage of unemployed labour force, government final consumption expenditure (*govexpen*) measured as a percentage of GDP, bureaucratic quality (*buqua*) measuring the strength of bureaucratic processes and their autonomic nature from political pressure, the log of corruption (*corr*) measures the perception of corruption, GDP growth rate (*gdpgr*) measured as the annual changes in economic growth and a measure of financial development in its log form (*findev*) indicating the extent of access to formal financial institutions.

Figure 1: Average size of the shadow economy in Africa (1990-2018)



Source: Author's calculation based on Medina and Schneider (2019) dataset

Figure 2: Correlation between the shadow economy and the measures of income inequality



Source: Author's calculation

### 3. Methodology

#### 3.1 Econometric estimation strategy

Our chosen econometric technique is the Autoregressive Distributed Lag (ARDL) bounds testing technique; which is one of the cointegration strategies used in econometrics to determine the existence of a long run equilibrium among variables. The ARDL technique was proposed by Pesaran and Shin (1999) and Pesaran et al. (2001) to investigate the long run

relationship among variables irrespective of their order of integration – either I(0), I(1) or a combination of both - using a bounds test or joint significance of the coefficients of lagged levels of the variables (F-test) and by including the lags of the dependent and independent variables in the model (Awad and Youssof, 2016). While the ARDL process does not require pretesting for stationarity, it becomes analytically weak in the presence of an I(2) series. Hence, pretesting helps avoid futile efforts. As noted in Nkoro and Uko (2016), compared with other cointegration techniques such as the Johansen technique, the ARDL performs better in the presence small sample sizes, accommodates variables regardless of the order of integration and accounts for endogeneity given its dynamic nature.

The general ARDL specification form is given as below:

$$\Delta y_t = \gamma_0 + \sum_{i=1}^p \delta_i \Delta y_{t-i} + \sum_{i=0}^q \beta_i \Delta x_{t-i} + \delta_i y_{t-i} + \beta_i x_{t-i} + \varepsilon_{it}; t = 1,2,3,\dots (3)$$

where  $y$  is the dependent variable;  $\gamma_0$  is the intercept;  $x$  is a vector the independent variables;  $p$  and  $q$  are the lag operators of the dependent and independent variables respectively;  $\beta$  and  $\delta$  are coefficients;  $\Delta$  is the difference operator; and  $\varepsilon_{it}$  is the error term

Accordingly, we can express equation (1) in ARDL form as follows:

$$\begin{aligned} \Delta shadow_t = & \gamma_0 + \sum_{i=1}^p \alpha_1 \Delta shadow_{t-i} + \sum_{i=0}^q \alpha_2 \Delta gini_{t-i} + \sum_{i=1}^q \alpha_3 \Delta govexpen_{t-i} + \\ & \sum_{i=1}^q \alpha_4 \Delta unemp_{t-i} + \sum_{i=1}^q \alpha_5 \Delta gdpgr_{t-i} + \sum_{i=1}^q \alpha_6 \Delta trans\_corr_{t-i} + \\ & \sum_{i=1}^q \alpha_7 \Delta buqua_{t-i} + \sum_{i=1}^q \alpha_8 \Delta findev_{t-i} + \beta_1 shadow_{t-i} + \beta_2 gini_{t-i} + \\ & \beta_3 govexp_{t-i} + \beta_4 unemp_{t-i} + \beta_5 gdpgr_{t-i} + \beta_6 trans\_corr_{t-i} + \beta_7 buqua_{t-i} + \\ & \beta_8 findev_{t-i} + \varepsilon_{it} \dots \dots \dots (4) \end{aligned}$$

where  $\alpha_1, \dots, \alpha_8$  and  $\beta_1, \dots, \beta_8$  are parameters for short and long-runs, respectively.

Transforming equation (2) into the ARDL form only requires substituting theil for gini in equation (4) above.

The first step in the ARDL approach is to test for the existence of a long run relationship or cointegration among the variables through the F-test of joint significance where the null hypothesis tests the non-existence of a cointegration ( $H_0: \alpha_1 = \alpha_2 = \alpha_3 = \alpha_4 = \alpha_5 = \alpha_6 = \alpha_7 = \alpha_8 = 0$ ) against an alternative hypothesis of the existence of cointegration ( $H_1: \alpha_1 \neq \alpha_2 \neq \alpha_3 \neq \alpha_4 \neq \alpha_5 \neq \alpha_6 \neq \alpha_7 \neq \alpha_8 \neq 0$ ). The reported F-statistic will be compared with the critical values of Narayan (2005) which are specified for small sample size. We also compare them with the critical values of Kripfganz and Schneider (2018) for robustness of cointegration. The null hypothesis is then rejected when the reported F-statistic for both models are above the upper bound critical values of ARDL and conclude there is cointegration in either model. F-

statistic values below the lower bound critical values will signify that there is no cointegration in either model.

The second step is to estimate the Error Correction Model (ECM) upon the verification of the existence of cointegration and valid long run relationship among the variables. The ECM model can be specified by reparametrizing equation (4) as follows:

$$\begin{aligned} \Delta shadow_t = & \gamma_0 + \sum_{i=1}^p \alpha_1 \Delta shadow_{t-i} + \sum_{i=0}^q \alpha_2 \Delta gini_{t-i} + \sum_{i=1}^q \alpha_3 \Delta govexpen_{t-i} \\ & + \sum_{i=1}^q \alpha_4 \Delta unemp_{t-i} + \sum_{i=1}^q \alpha_5 \Delta gdpgr_{t-i} + \sum_{i=1}^q \alpha_6 \Delta corr_{t-i} \\ & + \sum_{i=1}^q \alpha_7 \Delta buqua_{t-i} + \sum_{i=1}^q \alpha_8 \Delta findev_{t-i} + \beta ECT_{t-i} + \varepsilon_{it} \end{aligned} \dots\dots\dots (5)$$

where all variables are as previously defined and  $\beta$  is the coefficient of the speed-of-adjustment or error correction term. It captures how quickly any distortions from the long-run equilibrium per period is corrected. The coefficient must be negative and significant to be valid.

#### 4. RESULTS AND DISCUSSION

**Table 1. Augmented Dickey-Fuller and Philip-Perron Unit Root Tests**

	Level				First Difference			
	Constant		Constant and Trend		Constant		Constant and Trend	
	ADF	PP	ADF	PP	ADF	PP	ADF	PP
Shadow	-3.196***	-2.406	-3.676**	-2.942	-4.213 ***	-6.125***	-4.033***	-6.427 ***
Gini	-2.696***	-0.821	-2.816	-1.177	-1.755**	-3.343**	-1.746	-3.583**
Unemp	0.658	1.301	0.245	0.354	-2.477***	-3.942***	-3.146*	-4.580***
Buqua	-2.834*	-2.230	-2.912	-2.196	-4.894***	-3.829 ***	-5.039***	-3.828**
Gdpgr	-1.742	-2.608*	-1.612	-2.451	-3.786***	-7.072***	-3.975***	-6.985***
Findev	-0.515	-0.748	-2.586	-1.784	-3.156**	-4.182***	-3.092	-4.137 ***
Govexpen	-1.173	-1.291	-1.472	-1.398	-3.619**	-4.724***	-3.565**	-4.625***
Corr	-3.452***	-4.084***	-3.373*	-4.078***				
GE1	-3.623***	-1.128	-2.721	-1.004	-1.609	-3.724***	-1.677	-4.348
Findev	-0.456	-1.03	-2.492	-1.951	-3.455***	-5.300***	-3.373*	-5.216***

Statistical significance is denoted by \*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

##### 4.1 Cointegration Evidence

Sequel to the stationarity test results, we present the results of the cointegration tests for different measures of income inequality in Table 5. Panel (a) of Table 5 presents the models 1 and 2 from equations (5) used for the cointegration test. In panel (b), the optimum lag order for each of the variables in both models are presented and the ARDL bounds test F-statistic values are presented. Notably, both models under different

measures of income inequality have F-statistic values higher than the upper bound critical values of both Narayan (2005) and Kripfanz and Schneider (2018) at the 5% level of significance. For reference, the upper bound critical value for Pesaran et al., (2001) is 3.5. Hence, we reject the null hypothesis of no cointegration and conclude that the variables in both models are cointegrated. We therefore proceed to estimate the long- and short-run alongside the ECM for both models.

**Table 2. Cointegration Results**

<b>Panel (a): Models to be estimated</b>				
Models	Dependent Variable	Explanatory Variables		
1	Shadow	gini	govexpen	unemp gdpgr corr buqua findev
2	Shadow	theil	govexpen	unemp gdpgr corr buqua findev

<b>Panel (b): ARDL Bounds Test Result</b>		
	ARDL	F-statistic
Model 1	(1,1,0,0,0,1,1,1)	5.852
Model 2	(1,1,0,0,0,1,1,1)	5.532

<b>Panel (c): Critical Values</b>				
	Narayan (2005)		Kripfganz and Schneider (2018)	
	Lower Bound	Upper Bound	Lower Bound	Upper Bound
10%	2.384	3.728	2.483	3.934
5%	2.875	4.445	3.062	4.764
1.00%	4.104	6.151	4.567	6.904

#### 4.2 Long-run relationship between income inequality and the shadow economy

We present the results of the ARDL long-run estimation for both models in Table 6. Specifically, the results highlight the long-run relationships between the different measures of income inequality and shadow economy in Nigeria in columns 2 and 3 for gini and theil, respectively. Furthermore, we checked the robustness of this relationship using an alternative long-run estimation technique, namely: Feasible Modified Ordinary Least Squares (FMOLS) for both models and presented the results in columns 4 and 5 of Table 6. Accordingly, both columns 2 and 3 suggest the existence of a positive and statistically significant long-run relationship between the extent of income inequality and the size of the shadow economy in Nigeria. These results confirm our first hypothesis. Specifically, the results show that a unit increase in income inequality measured by gini coefficient and the theil index raises the Nigerian shadow economy size by 0.259 and 0.132 units, respectively at the 1% significance level. This finding agrees with earlier submissions in the literature on the positive correlation between income inequality and shadow economy (Chong and Gradstein, 2007; Mishra and Ray, 2010; Hatipoglu and Ozbek, 2011; Esaku, 2021a).

Moreover, a positive inequality-shadow economy nexus is justified given the extent of inequality in Nigeria and the high tendency of the poor to explore the shadow economy. For instance, an Oxfam (2017) report contextualized income inequality in Nigeria showing that the top five richest Nigerians accounted for more money (29.9 billion USD) in 2016 than is required (24 billion USD) to lift all extremely poor Nigerians out of poverty. Hence, despite being the largest economy in Africa, Nigeria accounts for about

12.1% of the world's extreme poor (World poverty clock, 2021) while almost 41% of its population live in poverty. Furthermore, empirical evidence lends credence to a positive poverty-income inequality nexus in Nigeria (Ogbeide and Agu, 2015). Ergo, for people to survive, engaging in the shadow economy becomes almost irresistible. Igudia et al. (2016) also pointed out that amongst other factors, "the need to survive" drives the size of the shadow economy in Nigeria. Consequently, about 81.3% of Nigeria's labour force, representing informal employment, is employed by microenterprises (Dell'Anno and Adu, 2020). An obvious take from this is that expanding income gap in Nigeria is bound to push more income-disadvantaged individuals and households into the shadow economy either as self-employed or informal employees thereby exerting any negative effect associated with expanding shadow economy such as weak tax revenue, inefficient resource allocation and reduced effectiveness of macroeconomic policies (Dell'Anno and Adu, 2020; Mazhar and Meon, 2017).

**Table 3. Long Run Estimates**

Independent variables	ARDL	ARDL	FMOLS	FMOLS
	Model (1)	Model (2)	Model (1)	Model (2)
	Gini	Theil_index	Gini	Theil_index
Gini	0.259*** (0.039)	0.132*** (0.021)	0.309*** (0.033)	0.154*** (0.017)
Government expenditure	0.118 (0.080)	0.156* (0.084)	0.309*** (0.064)	0.318*** (0.067)
Unemployment	0.558*** (0.119)	0.522*** (0.126)	0.704*** (0.120)	0.647*** (0.121)
GDP growth	0.073** (0.033)	0.074* (0.038)	0.125*** (0.032)	0.131*** (0.034)
Corruption	0.550 (0.748)	0.747 (0.808)	0.361 (0.494)	0.525 (0.515)
Bureaucratic quality	-1.184*** (0.295)	-1.276*** (0.331)	-0.829*** (0.256)	-0.902*** (0.273)
Financial development	-1.714*** (0.475)	-2.005*** (0.514)	-2.179*** (0.456)	-2.310*** (0.477)
Constant	40.942*** (3.588)	47.422*** (2.973)	34.486*** (2.805)	42.95*** (2.357)
Number of observations	27	27		
R-squared	0.955	0.950	0.833	0.826
Adj. R-squared	0.916	0.907	0.772	0.761
F-statistic	24.908	22.281		
Prob	0.000	0.000		

*Standard errors are in parentheses \*\*\* p<.01, \*\* p<.05, \* p<.1*

The long-run results in Table 6 also show that both unemployment and economic growth positively influence the size of the shadow economy in Nigeria in both models estimated. For instance, model 1 shows that a unit increase in unemployment leads to 0.558 unit increase in the shadow economy and changing economic growth by 1 expands the shadow economy by 0.073 units. The former suggests that increasing unemployment levels in Nigeria increases the likelihood of joining the informal economy. This relationship agrees with the findings of Mauleón and Sardà (2017) for Greece and Spain,



Adriana (2014) for Romania and Ogbuabor and Malaolu (2013) for Nigeria. On the coefficient of economic growth, our finding contradicts that of Esaku (2021a) but partly agrees with Elbahnasawy et al. (2016). Other studies (Nguyen and Duong, 2021; Zaman and Goschin, 2015) also reported positive association between shadow economy and economic growth. In the Nigerian context, positive relationship between economic growth and shadow economy is not surprising. The Nigerian economy experienced concurrent increases in both economic growth and unemployment as was common with other African economies around 2002 to 2014 (Dada, 2018). This rise in growth with little job creation (jobless growth) is likely to force the unemployed into the informal economy as a safety net thereby expanding the shadow economy.

Institutional quality and financial development have been argued to curtail the expansion of the shadow economy (Esaku, 2021a; Elbahnasawy et al., 2016; Ruge, 2010). Similarly, our results agree with this claim in that we find both bureaucratic quality and access to financial institutions to inversely affect the size of shadow economy in Nigeria. These suggest that controlling the expansion of shadow economic activities in Nigeria would among other things require stronger institutions and the extension of financial services such as credit to the informal sectors. We checked the robustness of our findings by employing the FMOLS technique following Esaku (2021a) and Menegaki (2019). The results of the robustness check are presented in columns 3 and 4 of Table 6. It can be observed that our first hypothesis is again confirmed by the FMOLS under different measures of income inequality. Accordingly, the results show a significantly positive relationship between income inequality and shadow economy in Nigeria.

### **4.3 Short-run relationship between income inequality and the shadow economy**

The results show that the coefficients of unemployment in both models are positively significant at the 1% level in influencing the size of the shadow economy in the short run. For instance, a 1% increase in unemployment rate increases the size of the shadow economy by 0.519% and 0.471% in models 1 and 2, respectively. This finding reinforces our initial assertion that high unemployment rate is another key determinant of the size of the shadow economy in Nigeria. As Ogbuabor and Malaolu (2013) had asserted, unemployed Nigerians are likely to join the informal economy in order to find means of survival pending when they find gainful employments in the formal economy. Furthermore, we find a somewhat weak evidence of a positive economic growth-shadow economy nexus at the 10% level in model 1 in the short run. We however, do not find strong evidence on the impact of other control variables on the size of the shadow economy in the short-run.

Finally, the reliability of the ARDL technique is conditional on the significance of the long-run disequilibrium correction among the variables in estimated. To check for this, we reparametrize the ARDL model and present the lagged error correction term in Table 7. As is consistent in the literature, the coefficient of the adjustment term must be negative and statistically significant. Accordingly, the ECT coefficients show that any deviation from long-run equilibrium in both model 1 and 2 are corrected with 93% and 90% adjustment speed, respectively and are statistically significant at the 1% level. The fast adjustment speed in both models indicate that all variables quickly converge to long-run equilibrium. We then proceed to check the stability of our estimations and the reliability on our results for informed policy recommendations.

**Table 4. Short Run Estimates**

Variables	Model (1) Gini	Model (2) Theil
Gini	0.669*** (0.162)	0.300*** (0.078)
Government expenditure	0.111 (0.079)	0.141 (0.082)
Unemployment	0.519*** (0.126)	0.471*** (0.127)
GDP growth	0.068* (0.035)	0.067 (0.038)
TRANS_CORR	-0.747 (0.438)	-0.498 (0.448)
Bureaucratic quality	-0.329 (0.277)	-0.386 (0.293)
Financial development	-0.350 (1.126)	-0.511 (1.212)
ECT <sub>(-1)</sub>	-0.932*** (0.137)	-0.903*** (0.143)

*Standard errors are in parentheses \*\*\* p<.01, \*\* p<.05, \* p<.1*

## 5. CONCLUSION

This study investigated the causal relationship between income inequality and shadow economy size in Nigeria. We adopted the ARDL cointegration technique using data from 1991 to 2018 to establish the short- and long-run impact from income inequality to the size of the shadow economy. The findings of the study significantly indicate that increasing income inequality leads to expansion in the size of the Nigerian shadow economy in both the short- and long-runs other things being equal. This finding lends credence to the argument that large income gap between the rich and the poor in Nigeria is one of the factors that pushes the poor into informal economic activities chiefly for survival. Furthermore more, we also found unemployment to partly cause an increase in shadow economy in Nigeria. This finding indicate that unemployment may be both a consequence and a reason for increasing income inequality thereby leading to expanding shadow economy in Nigeria. Moreover, we found that that controlling the expansion of shadow economic activities in Nigeria would among other things require stronger institutions and the extension of financial services such as credit to the informal sectors. Lastly, our findings are robust to different measurements of income inequality and alternative long-run estimation technique.

Our findings have implications for policy design and implementation. For instance, policymakers need to understand that curbing the Nigerian informal economy expansion and expanding government's revenue may require addressing some of the causes of income inequality in the country. One of such causes may be the expanding unemployment level in the country. Hence, providing avenues for gainful employments or deliberate

efforts towards formalizing the small and medium enterprises sector which account for more than 80% of employment in Nigeria should be given renewed attention. This is likely to address both income inequality and economic informality in the long-run. Furthermore, strengthening institutions and easing access to formal financial services such as access to credit for formal enterprise establishment and expansion should also be considered.

Despite our findings, the study is limited for the fact that the literature has indicated multiple causes of the expansion of the informal economy which were impossible to cover in a single study. Furthermore, the study only used data for 28 years which may be too short for understand the historical connections between income inequality and shadow economy in the Nigerian context. Moreover, narrowing the study to Nigeria alone precludes us from making generalized conclusions regarding the relationship between income inequality and shadow economy. However, these limitations lay the foundations for future research. For instance, we are interested in understanding the specific effect of corruption on the size of the shadow economy and how the shadow economy in turn relates with the Nigerian economic growth.

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