



POLITICAL INSTABILITY AND INFORMALITY IN UGANDA: AN EMPIRICAL ANALYSIS

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Abstract:

In this paper, we analyzed the long-run relationship between political instability and the shadow economy in Uganda using the autoregressive distributed lag bounds testing approach to cointegration. We found a negative and statistically significant relationship between political instability and the shadow economy, in both the long-run and short-run. This implies that an improvement in political processes that creates stability in the incumbent regime significantly reduces the shadow economy, consistent with the view that political institutions play a crucial role in facilitating political processes, which in turn reinforce the allocation of economic resources and the provision of public goods and services that improve the welfare of the citizens. This makes it less attractive for the citizens to operate in the shadow economy as the formal economy can now provide much of the needed goods and services. The practical implication of these results is that any attempts by policy makers to reduce activities in the shadow economy should also involve reforming the political system and encouraging civic engagement between the political elites and the citizenry or voters. Additionally, policy makers should formulate policies that reinforce the functioning of political institutions independent of any interference from political elites with rent-seeking behavior.

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INTRODUCTION

Over the last two decades or so, there has been increasing evidence that activities in the shadow economy¹ are expanding in many economies of the world (Medina & Schneider, 2018). Across many countries, the growth of the shadow economy has persisted and many policy makers are acknowledging its impact on the size and growth of the formal economy (Medina & Schneider, 2018; Berdiev, Pasquesi-

1 Also known as shadow economy, or informal economy/ sector, or underground economy. In this paper, we use these words to denote the same thing.



Hill, & Saunoris, 2015; Orsi, Raggi & Turino, 2014). During the early 1950s through 1970s, activities in the shadow economy were considered activities that happened on the fringes of the formal economy because of low development and backwardness. Thus, as economies start to record substantial economic gains resulting from growth and development, shadow economy activities start to decline and eventually shrink as the formal sector can provide the much needed goods and services (Kanbur, 2017). However, there is mounting empirical evidence indicating that activities in the shadow economy are increasing, implying that this sector plays a key role in the production and distribution of goods and services and should not be considered a temporary or momentary sector (Fourie, 2018; Esaku, 2020). For example, Medina & Schneider (2018) provide estimates of the size of shadow economy around the world and suggest that shadow economy activities have been expanding in both the developing and developed economies. Similarly, Alm & Embaye (2013) provide estimates of the shadow economy for 111 economies that show that the informal economy is a substantial part of production. This provides evidence that substantial level of productive activities does take place outside the radar of government regulators and tax bodies (Elgin, 2020). Some of the reasons suggested by the literature for the increase in shadow economy activities include overregulation, higher taxes, underdevelopment, income inequality and financial development among others (Buehn & Schneider, 2012a; Esaku, 2021a; Goel & Nelson, 2016; Hajilee, Stringer & Metghalchi, 2017; Luong, Nguyen & Nguyen, 2020).

The increase of activities in the shadow economy causes serious distortions and undermines governments' ability to collect taxes which could facilitate the provision of public goods and services. Allowing shadow economy activities to crowd out production and distribution of goods and services is detrimental for economic planning because of biases introduced by these activities into the economy wide indicators like unemployment, inflation, income, consumption expenditure, among others, which in turn distorts the real economic situation of the country (Capasso & Jappeli, 2013). For instance, Blackburn, Bose & Capasso (2012) suggest that because of the economic distortions caused by the shadow economy, relying on statistics produced by economies with large shadow economies could be misleading since not all economic activities in such countries have been fully accounted for in the national accounts. Thus, relying on data with the above distortions affects governments' planning processes (Capasso & Jappeli, 2013). Consequently, there is a growing interest among researchers to investigate the drivers of the shadow economy so as to ameliorate its adverse impacts. In line with the above mentioned, a number of studies have examined the size, causes and impact of activities in shadow economy (Bucek, 2017; Buehn & Schneider, 2012a; Mugoda, Esaku, Nakimu & Bbaale, 2020). The bulk of studies that examine shadow economy activities have mainly focused on investigating how public finance and public administration such as the burden of taxes, overregulation, government spending and others affect the size of the shadow economy (Goel & Nelson, 2016). Recently, a new line of research has emerged that analyses how the shadow economy interacts with economy wide variables. One strand of literature investigates the importance of the financial sector in shaping shadow economy. For example, Berdiev & Saunoris (2016) analyzing the dynamic link between the shadow economy and financial development. Their results indicate that a developed financial sector is important in reducing the size of shadow economy.

Correspondingly, some studies have emphasized the role of institutions in influencing the growth of shadow economy (Elgin & Oztunali, 2014; Huynh, Nguyen & Nguyen, 2020). This literature suggests that institutions impose constraints that regulate activities in the shadow economy and determine how economic agents participate or organize social, political and economic engagement. The importance of institutions cannot be overemphasized.



Another line of research analyzes the relationship between corruption and the shadow economy. For instance, Buehn & Schneider (2012b), in a sample of 51 economies around the world investigate the relationship between corruption and the size of shadow economy and find evidence that corruption increases the size of shadow economy. González-Fernández & González-Velasco (2014) provide evidence of a positive relationship between the size of shadow economy and corruption.

Recently, some studies have started to investigate the role of governance in shaping the size of shadow economy. For instance, Teobaldelli & Schneider (2013) examine the effect of direct democracy on the shadow economy across 57 democracies around the world and find that democracy reduces the size of shadow economy. The rise in the level of democratization significantly reduces the size of shadow economy since democracy strengthens fiscal policy formulation and implementation leading to efficient collection of revenue and provision of public goods and services, such as security and infrastructure. The implication of this finding is that some components of governance, such as democracy, are important in hindering the increase in the shadow economy.

Whilst previous studies have examined shadow economies around the world, much of their focus has been on the underlying proximate causes of shadow economy with less attention paid to its inter-relationships with other phenomena like the business and political environment. Not much is known about how political processes in a given country drive shadow production of goods and services. This paper investigates the relationship between political instability and the shadow economy in Uganda. Specifically, how does political instability shape the size of the shadow economy in a less developed country like Uganda? Since its independence from British colonial rule in 1962, this East African country has experienced political instability which has slowed economic growth and development for nearly four decades. Starting with the military coup of 1971 that brought in the government of Idi Amin, the country introduced many radical changes that caused political instability.

The Amin regime declared 'economic war' which resulted into the expulsion of (within ninety days), British-Asians and confiscation of their property and businesses. This was followed by the clamping down of any dissenting voices and 'perceived enemies' of the state, which further complicated the economic situation in the country. Consequently, businesses began to operate underground to avoid being labeled by the government as *mafuta mingi*, a *kiswahili* slang at the time, which meant 'rich and fat' businessmen/ women who were profiteering by not paying taxes. For nearly 10 years, the country was plunged into political chaos where different factions were fighting for the control of government. The situation was compounded by Uganda's attack on neighboring Tanzania, in which Tanzania retaliated by invading Uganda in October 1978. Amin's government was overthrown in June 1979 and a new government came into power after the general elections of 1980. However, the results of the general elections were disputed resulting into another war, this time, a protracted bush war that brought in the regime of Museveni into power in January 1986. Throughout the 1980s and 1990s, the new government faced a lot of resistance from elements of previous regimes, resulting into nearly two decades of conflict and political uncertainty. However, when multiparty system of governance was reinstated in the 2000s, political party activities brought in competition and political engagement amongst the population.

Thus, the study of how political instability shapes the size of shadow economy is important especially in the geographic contexts, like Uganda, that have experienced a lot of political uncertainty for some extended periods of time. One can argue that government policies that influence the size of shadow economy are a result of political processes taking place in the country. Theoretical models have previously suggested that political environment in which businesses operate in, are a result of government policies that reinforce the growth of shadow economy (Elbahnasawy, Ellis, & Adom, 2016).



Furthermore, the relationship between political instability and the size of shadow economy is possible given that the incumbent government may find difficulty in tax administration in situations of polarization and political instability in the country. A reduction in the levels of taxes or efficiency in tax administration will impact negatively on the provision of essential goods and services. This leads to the growth of shadow economy as the population struggles to meet the daily needs as a result of low provision of public goods and services. Given that tax evasion and failure to collect taxes by the government are some of the proximate causes of the shadow economy, we investigate how the political system shapes the shadow economy in Uganda.

This paper makes three main contributions to the literature. First, we explore an important relationship between political instability and the size of shadow economy. To the best of our knowledge, except for the study by Elbahnasawy *et al.* (2016), this might be the first attempt to explore this relationship outside of a developed economy. Second, this paper provides evidence of the relationship between political instability and the shadow economy in Africa, a context that has experienced turbulent political periods for decades. We believe that Africa offers the best testing ground for our empirical ideas on the relationship between the shadow economy and political instability. Third, this paper uses a robust econometric technique (autoregressive distributed lag, ARDL- bounds testing approach) for testing the long-run and short-run relationship between our variables and analyzing time series data where the sample size is small (Tang, 2010). Furthermore, this technique can be used regardless of the order of integration, that is, whether the variables are integrated of order zero and/ or one, that is, $I(0)$ s and/ or $I(1)$ s. Moreover, this technique is recommended because of its ability to correct for any possible endogeneities among the explanatory variables (Ali, Law & Zannah, 2016).

The remainder of the paper is sequenced as follows; section 2 presents the data and descriptive statistics, section 3 is the methodology. Section 4 reports the findings and discussion, while section 5 presents the conclusion.

DATA AND DESCRIPTIVE STATISTICS

This paper uses annual time series data from internationally recognized sources that cover the period from 1991 to 2015. Data on our dependent variable, the shadow economy (Se), comes from Medina and Schneider (2018). The above authors use a variety of estimation methods to derive new estimates of the shadow economy that cover a span of 20 years. The data for our core independent variable - political instability, which is proxied by regime durability index, (dur), comes from the Center for Systemic Peace (Polity5 Version) which reports a measure of authority trends in a given period of time. In this case, regime durability is the duration since it is the last regime alteration that changes authority characteristics of a given state (Elbahnasawy *et al.* 2016). Further, we also control for a number of other proximate measures of the shadow economy in line with the extant literature. We include the following variables: financial development (dob), which is proxied by domestic credit by banks as share of gross domestic product (GDP); institutionalized democracy (demo); fractionalization (Frac); annual growth rate of gross domestic product (GDP) which we denote as (growth); and the ratio of government spending to GDP (gov/gdp). Institutionalized democracy measures the existence of political institutions and processes that facilitate citizens with a means to express preferences about the type of leadership and leaders they want, which puts administrative constraints on the exercise of power by the executive arm of government.



Our measure of fractionalization index (frac) is from the World Bank’s Database of Political Institutions (Cesi, Keefer & Scartascini, 2015) while institutionalized democracy data comes from the Center for Systemic Peace (Polity5 version data, 2019). The value of this index ranges from -10 denoting strongly autocratic to +10, denoting strongly democratic. The remaining variables, domestic credit by banks to private sector (dob), growth (gw) and government spending (gov/gdp), are from World development indicators of the World Bank (2020).

In Table 1, panels (a) and (b), we report the summary statistics and correlation matrix, respectively. From Table 1, we observe that the average values of the key variables are: shadow economy (Se) is 38.743, regime durability (dur) is 5.280, domestic credit (dob) is 7.985, institutionalized democracy (Demo) is 0.440, fractionalization (frac) is 0.393, growth (gw) is 3.344, and government spending (gov/gdp) is 11.775. Besides summarizing statistics, we also present the correlation matrix in panel (b). Panel (b) shows a negative correlation between the size of the shadow economy and all the three indicators that measure political processes, that is, dur, demo and frac. However, negative correlation does not necessarily indicate that political instability does reduce the size of shadow economy. We need to formally test this relationship using an empirical model, which this paper attempts to implement in the next section.

Table 1. Summary statistics and correlation matrix

	Se	Dur	Dob	Demo	Frac	Gw	Gov/gdp
Panel (a): Summary statistics							
Mean	38.743	5.280	7.985	0.440	0.393	3.344	11.775
Median	40.720	5.000	7.702	0.000	0.550	3.080	11.757
Maximum	43.250	11.00	13.786	1.000	0.687	8.140	16.792
Minimum	31.880	0.000	3.529	0.000	0.000	0.030	6.636
Std.Dev.	4.009	3.260	3.191	0.507	2.245	2.245	3.005
Skewness	-0.521	0.003	0.276	0.242	0.360	0.360	-0.178
Kurtosis	1.679	1.956	1.770	1.058	2.280	2.280	1.878
#Obs.	25	25	25	25	25	25	25
Panel (b): Correlation matrix							
Se	1.000						
Dur	-0.202	1.000					
Dob	-0.893	0.289	1.000				
Demo	-0.905	-0.078	0.866	1.000			
Frac	-0.496	0.056	0.369	0.354	1.000		
Gw	0.143	-0.458	-0.028	-0.007	-0.009	1.000	
Gov/gdp	0.584	0.012	-0.234	-0.411	-0.273	0.374	1.000

Source: Author’s calculation



METHODOLOGY

Model specification

This section presents the empirical model for testing the long-run and short-run relationship between political instability and the size of shadow economy. Thus, we suggest that the shadow economy is a function of variables that can be expressed as:

$$Se = F(dur, dob, demo, frac, growth, gov / gdp) \quad (1)$$

Where Se is the size of shadow economy, dur is a measure of regime durability, dob is domestic credit by banks to private sector, $demo$ is institutionalized democracy index, $frac$ is the index for fractionalization, $growth$ is annual rate of GDP per capita growth, and gov/gdp is the share of government spending to GDP.

The choice of these explanatory variables stems from a number of factors as reviewed in the literature. Recently, studies have shown that the political processes determine what policies come into place, or are enacted, which in turn influences public administration. Political process can either create instability and conflict or generate consensus which results into weak (strong) political and democratic institutions (Elbahnasawy *et al.* 2016). Thus, the political system can therefore affect the welfare of citizens through its impact on the size of shadow economy activities. As shown in the introduction section of this paper, financial development is important for the proper functioning of the financial sector (Berdiev & Saunoris, 2016) and as such it's a key indicator of the level of informality in the economy (Cahn & Thanh, 2020). Additionally, governance is important for the successful allocation of productive resources and provision of public goods and services hence we include ($demo$) variable to proxy for governance in the country (Teobaldelli & Schneider, 2013). Furthermore, the level of a country's development is also important in the provision of public goods and services that have the potential to improve the quality of life of the citizenry, thereby reducing their desire to operate in the shadow economy (see, Baklouti & Boujelbene, 2020; Esaku, 2021b). Some studies use the log of GDP per capita, and in some cases they use GDP growth rate per capita. This study uses GDP growth rate per capita to proxy for the level of economic development. Correspondingly, recent studies have shown that government spending is a proximate cause of the shadow economy (see Buehn & Schneider, 2012b). Accordingly, we include this variable in the main estimation equation. In what follows, we present the econometric methodology in the next section.

Econometric methodology

We follow three main steps in the estimation process. The unit root tests are done in the first step, while ARDL bounds tests of the existence of both long-run and short-run relationships between the variables are carried out in the second step. In the third step, we conduct empirical estimation of the ARDL model for relationship level among variables, and diagnostics tests to ensure that the results are reliable, stable and not driven by biases. Thus, we follow the ARDL bounds testing approach to cointegration of Pesaran, Shin & Smith (2001). This approach has a number of benefits over traditional cointegration techniques. Firstly, it is a robust econometric method for analyzing time series data even in cases where the sample size is small (Tang, 2010).



Secondly, it can be applied regardless of the order of integration of the variables, whether the variables are integrated of order zero and/ or one. This means that variables can either be I(0)s and/ or I(1)s but not I(2)s. Thirdly, this method allows for the correction of outliers with impulse dummies (Marques, Fuinhas & Marques, 2017). Fourthly, the interpretation of the ARDL bounds testing method and its implementation can be done in a straightforward manner (Bayer and Hanck, 2013).

Given the above benefits of this method, we can specify the ARDL for the empirical model in equation (1) as follows:

$$\begin{aligned} \Delta Se = & \alpha_0 + \sum_{i=1}^n \alpha_{1i} \Delta Se_{t-i} + \sum_{i=0}^n \alpha_{2i} dur_{t-i} + \sum_{i=0}^n \alpha_{3i} \Delta dob_{t-i} + \sum_{i=0}^n \alpha_{4i} \Delta demo_{t-i} + \sum_{i=0}^n \alpha_{5i} \Delta frac_{t-i} \\ & + \sum_{i=0}^n \alpha_{6i} \Delta growth_{t-i} + \sum_{i=0}^n \alpha_{7i} \Delta gov / gdp_{t-i} + \pi_1 Se_{t-1} + \pi_2 dur_{t-1} + \pi_3 dob_{t-1} \\ & + \pi_4 demo_{t-1} + \pi_5 frac_{t-1} + \pi_6 growth_{t-1} + \pi_7 gov / gdp_{t-1} + \varepsilon_t \end{aligned} \quad (2)$$

Where, α_0 denotes the constant term while $\alpha_1, \dots, \alpha_7$ and π_1, \dots, π_7 denote the short-run and long-run coefficients, respectively, and ε_t denotes the error term.

We implement ARDL bounds testing by testing for cointegration among variables using the F-statistic and t-statistic. The null hypothesis of no cointegration ($H_0 = \alpha_1 = \alpha_2 = \alpha_3 = \alpha_4 = \alpha_5 = \alpha_6 = \alpha_7 = 0$), is then tested against the alternative hypothesis that there is cointegration among variables, ($H_1 = \alpha_1 \neq \alpha_2 \neq \alpha_3 \neq \alpha_4 \neq \alpha_5 \neq \alpha_6 \neq \alpha_7 \neq 0$). The outcome of the F-statistic or t-statistic is then compared to the critical values specified in Pesaran *et al.* (2001). The decision rule is as follows: if the calculated values of F-statistic are above the upper critical bound values, the H_0 (the null hypothesis) is rejected and vice versa. However, if the F-statistic values fall within the bounds, then it means that the test result is inconclusive. Before conducting ARDL bounds testing procedure, we first determine the optimal lag length for the ARDL model, which we choose according to the appropriate lag selection criteria based on the Schwartz-Bayesian criterion (SBC).

If the results of the cointegration test on equation (2) show cointegration among variables, we can proceed to express the error correction model (ECM) as follows:

$$\begin{aligned} \Delta Se_t = & \alpha_0 + \sum_{i=1}^n \alpha_{1i} \Delta Se_{t-i} + \sum_{i=0}^n \alpha_{2i} \Delta dur_{t-i} + \sum_{i=0}^n \alpha_{3i} \Delta dob_{t-i} + \sum_{i=0}^n \alpha_{4i} \Delta demo_{t-i} + \sum_{i=0}^n \alpha_{5i} \Delta frac_{t-i} \\ & + \sum_{i=0}^n \alpha_{6i} \Delta growth_{t-i} + \sum_{i=0}^n \alpha_{7i} \Delta gov / gdp_{t-i} + \theta ECT_{t-1} + \varepsilon_t \end{aligned} \quad (3)$$

Where θ denotes the coefficient of the ECT (error correction term) capturing the long-run adjustment to the equilibrium after deviations, while ε_t is the residual error term. The importance of the ECT coefficient is in its size and sign, which denotes the speed of adjustment and validity of the results. Thus, the coefficient of the error correction term (θ) should be negative, less than 1 and statistically significant.



RESULTS AND DISCUSSION

This section reports the empirical investigation of the relationship between the shadow economy and political instability. We report the findings of stationarity tests, ARDL bounds tests, and empirical analysis of the relationship between political instability and the size of shadow economy in the subsequent sections.

Stationarity tests

Before implementing the empirical analysis, this paper first tested the variables to determine whether they are integrated of order zero, $I(0)$, or order one, $I(1)$ to enable a valid analysis. Accordingly, we used two different tests for unit root. We used Augmented-Dickey-Fuller test (ADF), and Phillip-Perron (PP) tests, with intercepts and with intercepts and trend. The results of these tests are reported in Table (2). The test results in Table (2) confirm that variables are either stationary in levels or after first differencing, and vary according to the type of test used. We then proceeded to conduct the ARDL bounds testing procedure after the stationarity test was implemented. In Table (3) panel (a), we formally express the equation to be tested, while panel (b) reports the results of the ARDL bounds test for cointegration. We can note that the calculated F-statistic is higher than the asymptotic critical value bounds given in Pesaran *et al.* (2001). This leads to the rejection of the null hypothesis of no cointegration and the conclusion that the variables are cointegrated. Additionally, our diagnostic test shows that these results are reliable and not driven by any biases. After the test, this study proceeded to estimate the long-run and short-run coefficients for the model by first determining the optimal lag length according to the Schwartz information criterion (SIC), which selected ARDL (1,0,0,0,0,0) model.

Table 2. Results of stationarity tests for all variables

	In Levels				First difference:			
	ADF		PP		ADF		PP	
	Intercept	Trend & Intercept.	Intercept	Trend & Intercept	Intercept	Trend & Intercept	Intercept	Trend & Intercept
Se	0.087	-2.128	0.087	-2.047	-5.818***	-6.081***	-5.818***	-6.084***
Dur	-1.579	-2.209	-1.637	-2.255	-5.201***	-5.252***	-5.199***	-5.246***
Dob	-0.874	-5.172***	-1.020	-5.175***	-8.460***	-8.289***	-21.746***	-22.550**
Demo	-0.923	-2.036	-0.923	-2.098	-5.000***	-4.888***	-5.000***	-4.888***
Frac	-2.132	-2.118	-2.132	-2.199	-4.632***	-4.559***	-4.632***	-4.559***
Growth	-3.740***	-3.999**	-3.740***	-3.989**	-5.496***	-5.512***	-10.481***	-17.476***
Gov/gdp	-2.165	-2.739	-2.058	-2.652	-5.588***	-3.650*	-7.822***	-11.472***

Source: Author's calculation. *, **, ***, denote statistical significance at 10%, 5% and 1% levels, respectively.



Table 3. Results of the ARDL Bounds test

Panel (a): The equation to be tested					
Equation	Dependent variable	Function			
Eq. (1)	Shadow economy	F (Se dur, dob, demo, frac, growth, gov/gdp)			
Panel (b): Results of ARDL bounds test					
Model	ARDL	F-Stat.	Diagnostics		
			X ² (Normality)	X ² (Heteroscedasticity)	X ² (Correlation)
Eq. (1)	(1,0,0,0,0,0)	7.848	0.646	0.986	0.641
Actual sample size (T=24)					
Critical values					
		Lower Bound I (0)		Upper Bound I (1)	
10%		2.12		3.23	
5%		2.45		3.61	
2.5		2.75		3.99	
1%		3.15		4.43	

Source: Author's calculation

The long-run relationship between political instability and the size of shadow economy

The results of the long-run relationship between political instability and the shadow economy are reported in Table 4, column 2. The results indicate that political instability and the shadow economy are directly related in the long-run. Thus, the coefficient on regime durability is negative and statistically significant at 1% level, implying that regime durability (our measure of political instability) has a negative impact on the size of shadow economy in the long-run. Specifically, these results confirm that an improvement in regime durability significantly reduces the size of shadow economy by 0.194 units. This implies that more stable political processes or regime durability is crucial for addressing the factors that drive the increase and expansion of the shadow economy in the long-run. Further, our findings seem to bode well with the suggestion that political processes seem to shape the landscape where businesses operate. A more politically stable business environment provides the impetus for the growth and survival of both domestic and foreign businesses. If investors view the business environment as politically unstable, this discourages investment and could even drive out existing businesses from operations.

Given that political processes are important, regimes that last long periods seem to guarantee political stability and economic prosperity, and reduce uncertainty (see Elbahnasawy *et al.* 2016). This might be the case for Uganda considering that the country has been ruled by one regime for nearly 36 years. Regime durability is important because it reduces a country's vulnerability to macroeconomic uncertainty, given that no investor is willing to invest in such uncertain business environments. Indeed, political environments in which businesses operate result from government policies that either reinforce or slow down the growth of shadow economy. These results confirm the expectations of this study and have important implications.



One main implication of this long-run relationship is that political processes that reinforce regime durability provide enabling environment for businesses to operate and produce goods and services that improve the welfare of general population. This implies that citizens with better livelihood opportunities will be less inclined to operate in the shadow economy since there will be better chances of success in the formal economy as shown in Teobaldelli & Schneider (2013). Furthermore, these findings also imply that as political institutions develop, the politicians and bureaucrats are induced to enact and implement fiscal policies that closely offer better chances of utility maximization for citizens as these policies nearly mirror the citizens' choices and preferences. This makes it less attractive for the country's citizens to operate in the shadow economy since the formal economy can now provide most of the needed goods and services.

We also discuss the remainder of the results in Table (4). We observe that improvements in financial development (*dob*) and the level of institutionalized democracy (*demo*) reduce the size of shadow economy by 0.384 units and 3.399 units, respectively; all statistically significant at 1%. This confirms the view that a well-developed financial structure and functioning democracy is crucial in limiting the expansion of shadow activities (see Bayar & Ozturk, 2016; Berdiev & Saunoris, 2016; Teobaldelli & Schneider, 2013). Similarly, we find evidence that a rise in fractionalization and economic growth do limit the increase and expansion of shadow activities. The results indicate that an improvement in fractionalization and economic growth significantly reduce shadow activities by 1.418 units and 0.121 units; statistically significant at 1% and 10% levels, respectively. These findings are consistent with previous studies that suggest that the level of economic growth is crucial in reducing shadow activities in the long-run (Baklouti & Boujelbene, 2020; Esaku, 2021b). Government expenditure has the expected effect on the shadow economy. The results indicate that an increase in government expenditure increases the size of shadow economy by 0.379 units; statistically significant at 1% level. This could be due to the fact that more government spending requires that businesses pay up their tax liability, which in turn affects the operations of these businesses, especially if they are start-ups. Indeed, the literature shows that high taxes imposed by governments on businesses could be one of the key drivers of informality around the world (Elgin, 2015; Goel & Nelson, 2016).

As a robustness check, Menegaki (2019) advises the usage of DOLS (dynamic OLS) and FMOLS (fully modified OLS) in order to validate the robustness of the results. This is because the above two econometric techniques generate asymptotically efficient coefficients, since they can address the issue of endogeneity and serial autocorrelation (Menegaki, 2019). We report these results in Table (4) columns 5 and 8. These results are qualitatively and quantitatively similar to the ARDL results. We can observe that an increase in regime durability significantly reduces the size of shadow economy in the long-run, in the case of Uganda. Furthermore, we conduct residual diagnostic to ascertain that the results are driven by bias. Specifically, we conducted Breusch-Godfrey Serial Correlation LM Test, Heteroskedasticity Test (ARCH), and Normality test. The results of these tests are shown on the lower panel of Table 4. These results show that the findings are reliable and not biased.

In sum, it can be concluded that an improvement in political institutions, financial development, institutionalized democracy, fractionalization and economic growth could be viewed as long-run effective remedies to addressing the expansion of the shadow activities in Uganda.



Table 4. Long run relationship between political instability and the size of shadow economy

Explanatory	Dependent variable: The shadow economy								
	ARDL			Fully Mod. OLS (FMOLS)			Dynamic OLS (DOLS)		
	Coeff.	t-stat.	Prob.	Coeff	t-stat	Prob.	Coeff.	t-stat.	Prob.
Dur	-0.194***	-3.967	0.001	-0.188**	-2.866	0.012	-0.194***	-3.967	0.001
Dob	-0.384***	-6.618	0.000	-0.390***	-3.383	0.004	-0.384***	-6.618	0.000
Demo	-3.399***	-4.357	0.001	-3.122***	-3.618	0.003	-3.399***	-4.357	0.000
Frac	-1.418***	-3.594	0.002	-1.198**	-2.814	0.013	-1.418***	-3.594	0.002
Growth	-0.121*	-2.002	0.063	-0.128*	-2.065	0.057	-0.121*	-2.002	0.063
Gov/gdp	0.379***	3.678	0.002	0.045***	6.532	0.000	0.379***	3.678	0.002
Constant	37.516	6.852	0.000	35.104***	8.351	0.000	37.516***	6.852	0.000
R-sq.	0.979			0.976			0.979		
R-bar-sq.	0.969			0.966			0.969		
Durb W.	2.104								
Residual diagnostics									
X ² (Correlation-BG LM Test)									
X ² (Heteroskedasticity-ARCH Test)									
X ² (Normality Test)									

Source: Author's calculation.

Note: *, **, ***, indicate statistical significance at 10%, 5% and 1% levels, respectively. HAC standard errors and covariance (Bartlett kernel, Newey-West fixed bandwidth=3.000) used

The short-run relationship between political instability and the size of shadow economy

The findings of the short-run relationship are shown in Table 5, column 2. We find evidence of a short-run relationship between political instability and the size of shadow economy. We observe that, in the short-run, an improvement in regime durability significantly reduces the size of shadow economy by 0.182 units, statistically significant at 10% level, all else equal. The implication of these results is that political instability could be effective in reducing the shadow economy in the short-run, as well as in the long-run. This is probable given the fact that political processes involve negotiations and building alliances, a process which if done well could create policies that are important in allocation of productive resources and provision of public goods and services.

Relatedly, this paper also finds evidence confirming that the control variables in the estimation equation are significant determinants of the shadow economy in the short-run. First, this paper establishes that an improvement in financial development is a significant determinant of shadow activities in both the short-run and long-run. We can observe that the coefficient on (dob) is negative and statistically significant at 1% level. This implies that an improvement in the financial structure of the overall economy significantly improves access to financing for businesses, thus reducing their (businesses) incentive to operate informally (see Berdiev & Saunoris, 2016).



Similarly, improvement in institutionalized democracy, growth, and fractionalization significantly limit the expansion of the shadow economy in the short-run as well as in the long-run. We observe that an improvement in democracy, economic growth and fractionalization significantly reduces the size of shadow economy by 3.663 units, 1.938 units and 0.096 units, respectively. This is consistent with previous findings in the literature indicating that improvements in the above variables do improve the welfare of citizens resulting from political processes that rationalize the allocation of resources (see Elbahnasawy *et al.* 2016; Teobaldelli & Schneider, 2013)

Furthermore, these results show that the lagged coefficient of the error correction term (ECT) is negative and statistically significant at 1% level. The ECM results indicate that the shadow economy adjusts to any deviations from long-run equilibrium at a speed of adjustment that is shown by the coefficient of the lagged error correction term being 94.1% and is statistically significant at 1% level.

As a robustness check, we carried out residual diagnostic as before to ensure that the results are not biased. Breusch-Godfrey Serial Correlation LM Test, Heteroskedasticity Test (ARCH), and Normality test were conducted and results reported on the lower panel of Table 5. The results indicate that the ARDL model results are reliable and not biased.

In sum, these results seem to suggest that improvement in political institutions in Uganda could be an effective weapon for addressing the expansion of the shadow economy in Uganda, in both the short-run and long-run, since strong political institutions seem to strengthen citizens' engagement in political processes. The practical implication of these findings is that any attempts by policy makers to reduce activities of the shadow economy should also involve reforming the political system by encouraging political reforms and civic engagement between the political elites and the voters.

Table 5. Short-run relationship between political instability and the size of shadow economy

Explanatory variable	Outcome variable: Shadow economy		
	Coefficient	t-statistic	Probability
Δ Regime durability	-0.182*	-2.090	0.055
Δ Dob	-0.375***	-4.443	0.000
Δ Democracy	-3.663***	-3.107	0.008
Δ Government fractionalization	-1.938***	-3.767	0.002
Δ Growth	-0.096*	-2.042	0.060
Δ Government spending/gdp	0.342***	6.670	0.000
ECM(-1)	-0.941***	-3.759	0.002
Constant	-0.034	-0.239	0.815
R-squared	0.799		
R-bar-squared	0.685		
Durbin Watson	2.193		
Residual diagnostics:			
X ² (Correlation BG LM Test)	0.203		
X ² (Heteroskedasticity-ARCH Test)	0.858		
X ² (Normality Test)	0.603		

Source: Author's calculation.

Note: **, ***, indicate statistical significance at 10%, and 5% levels respectively. Ordinary covariance method is used.



Diagnostic tests

To confirm the reliability of these results we conduct stability diagnostics and report the plots of cumulative sum of recursive residuals (CUSUM) and cumulative sum of squares of recursive residuals in Figures (1) and (2). As shown in these figures, the residual plots are tightly bound within the boundaries at a significance level of 5% and provide additional evidence on the stability of the estimated model. In what follows, we sum up by arguing that these results show evidence of a negative and statistically significant relationship between political instability and the size of shadow economy in both the long-run and short-run in the case of Uganda.

Figure 1. Long-run Plot of Cumulative sum (CUSUM) and Cumulative Sum of Squares (CUSUM) of Recursive Residuals for ARDL model

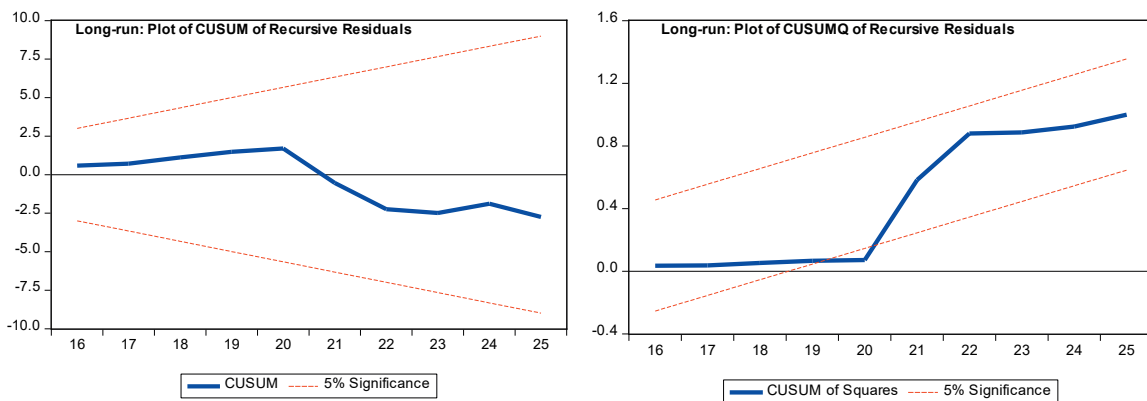
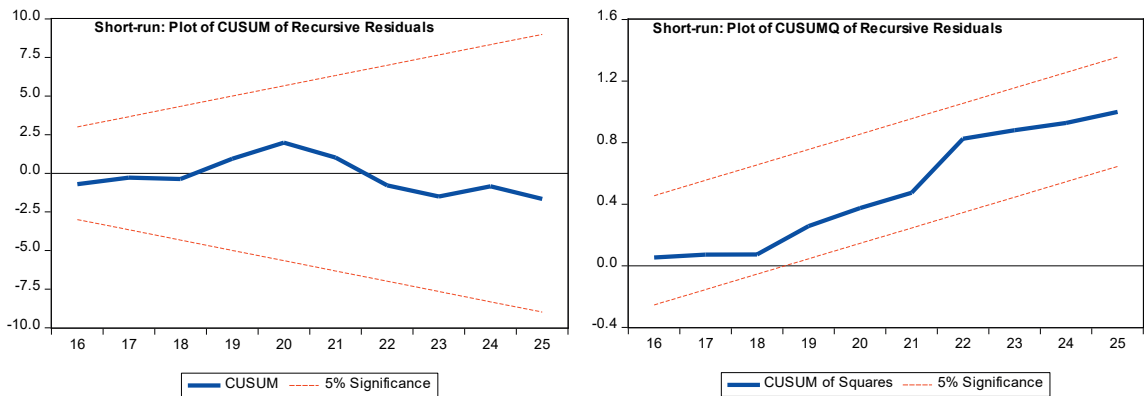


Figure 2. Short-run Plot of Cumulative sum (CUSUM) and Cumulative Sum of Squares (CUSUM) of Recursive Residuals for ARDL model





CONCLUSIONS

This paper analyses the relationship between political instability and the size of shadow economy in a country-level analysis using ARDL modeling technique. We use annual time series data drawn from a variety of data sources, covering the period from 1991 to 2015. The results indicate a negative and statistically significant relationship between political instability and the size of shadow economy, in both the short-run and the long-run. These findings suggest that, in the case of Uganda, an improvement in political processes that creates stability in the regime significantly reduces the size of shadow economy. These results are consistent with the view that political institutions play a crucial role in facilitating political processes, which in turn reinforce the allocation of economic resources and provision of public goods and services that improve the welfare of the citizens. Improvement in citizens' welfare reduces their incentive to operate in the shadow economy and increases citizens' engagement in the political processes.

In sum, this paper provides evidence that improvement in political instability significantly reduces the size of shadow economy in Uganda. These results seem to suggest that improvement in political institutions could be an effective weapon in the long-run, for addressing the expansion of the shadow economy in Uganda since strong political institutions strengthen citizens' engagement in political processes. The practical implication of these findings is that any attempts by policy makers to reduce activities of the shadow economy should also involve reforming the political system by encouraging political reforms and civic engagement between political elites and voters. Furthermore, policy makers should formulate and enact policies that reinforce the operation of political institutions, independent of any interference from the political elites. As is the case with some studies, one main limitation of this study is that it uses data on the size of the shadow economy that covers 25 years. We suggest that future studies use historical data on the size of shadow economy that covers more years.

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POLITIČKA NESTABILNOST I NEFORMALNOST U UGANDI: EMPIRIJSKA ANALIZA

Rezime:

U ovom radu smo analizirali dugoročni odnos između političke nestabilnosti i sive ekonomije u Ugandi koristeći autoregresivni pristup testiranja granica zaostajanja za kointegraciju. Utvrdili smo negativan i statistički značajan odnos između političke nestabilnosti i sive ekonomije, kako dugoročno tako i kratkoročno. To implicira da poboljšanje političkih procesa stvara stabilnost u aktuelnom režimu i značajno smanjuje sivu ekonomiju, u skladu sa stavom da političke institucije igraju ključnu ulogu u omogućavanju političkih procesa, što zauzvrat pojačava raspodelu ekonomskih resursa i obezbeđivanje javnih dobara i usluga koje poboljšavaju blagostanje građana. Zbog toga je građanima manje privlačno da rade u sivoj ekonomiji, jer formalna ekonomija sada može da obezbedi veći deo potrebne robe i usluga. Praktična implikacija ovih rezultata je da bi svaki pokušaj kreatora politike da smanje aktivnosti u sivoj ekonomiji trebao uključivati i reformu političkog sistema i podsticanje građanskog angažmana između političkih elita i građana ili birača. Osim toga, kreatori politike treba da formulišu politiku koja jača funkcionisanje političkih institucija nezavisno od bilo kakvog uplitanja političkih elita u ponašanje koje traži rentu.

Ključne reči:

siva ekonomija,
upravljanje,
demokratija,
neformalni sektor,
politička ekonomija.