Does financial development reduce the size of the informal economy in Sub-Saharan African countries?

Njangang, Henri and Ndeffo Nembot, Luc and Ngameni, Joseph Pasky

The Dschang School of Economics and Management, LAREFA, University of Dschang, Cameroon

4 November 2018

Does financial development reduce the size of the informal economy in Sub-Saharan African countries?

Njangang Henri

ndieupahenri@gmail.com

The Dschang School of Economics and Management, LAREFA, University of Dschang, Cameroon

Abstract

This paper contributes to the understanding of the other neglected effects of financial development by investigating the relationship between financial development and the size of the informal economy using an unbalanced panel data of 41 Sub Saharan African countries over the period 1991-2015. Empirical evidence is based on Ordinary Least Squared, Fixed effects and system Generalized Method of moment. The results show that financial development measured by broad money and domestic credit to private sector have a negative and statistically significant effect on the informal economy. This clearly suggests that financial development reduces the size of the informal economy.

Keywords: Financial development, the informal economy, panel data, SSA

JEL Classification: G20, O17, O55

1. Introduction

In several developing countries the informal sector has a sometimes worrying proportion, often exceeding 50% (Medina and Schneider, 2017). The informal sector in sub-Saharan Africa is one of the largest in the world with an average of 38 percent of GDP (Medina et al., 2017), employing no less than 90% of non-agricultural employment and accounting for 70% of production. However, as shown in Figure 1, there is generally a slight decline in the size of the informal sector in all areas of the world.

Over the last decades, there has been a substantial studies on the determinants of the informal economy (Dabla-Norris et al., 2008; Joo, 2011; Goel and Nelson, 2016; Dell'Anno, 2016; Medina et al., 2017). Tax burden is considered in the literature as one of the most important causes leading to proliferation of informality. Other factors such as institutional quality and trade openness were identified as key determinants of the informal economy. In recent years, limited access to credit has been identified as one of the major factors explaining the development of the informal economy in Africa. Thus, facilitating access small firms to credit can be an effective mean to encourage informal small firms to shift from informal economic activities to formal economic activities.

Although a large amount of literature has examined the impact of financial development along various dimension of economic development, namely: inequality (Jauch and Watzka, 2016; De Haan and Sturm, 2017; Baiardi and Morana, 2018), poverty reduction (Abosedra et al 2016; Uddin et al., 2014), productivity (Moretti, 2014; López, 2017), innovation (Ferreira et al., 2012; Hsu et al., 2014), and most importantly economic growth (Asteriou and Spanos, 2018; Ibrahim and Alagidede 2017; Durusu-Ciftci et al., 2017; Uddin et al., 2013), not too many studies focus on the link between financial development and the informal economy. As we know that financial development might affect the informal economy through several channels. For example, financial development, by lowering the barriers to obtaining credit, facilitate entrepreneurs access to needed credit, increases the opportunity cost of producing in the underground economy, and thus provides an incentive to informal firms to transition towards formal economy (Blackburn et al., 2012; Bose et al., 2012; Capasso and Jappelli, 2013).

There is little literature on the effect of financial development on the informal economy. Among the studies that focus specifically on the impact of financial development on the informal economy, we distinguish between macro and micro studies. At the macro level, Bose et al. (2012) empirically investigate the dynamic relationship between financial development

and the shadow economy in 161 countries over the period 1960-2009. By using a panel vector autoregressive model they found that financial development reduces the size of the shadow economy. More recently, Berdiev and Saunoris (2016) for a sample of 161 countries over the period 1960-2009 found that financial development reduces the size of the shadow economy. In line with macro-level studies, the work done at the micro level confirms the importance of financial development for the reduction of the informal economy. Beck and Hoseini (2014) use firm-level survey data in Indian manufacturing sector and investigate the impact of financial deepening and bank outreach on the informal economy. They found that bank outreach, by cutting barriers to entering the formal economy, has a stronger effect on reducing the incidence of informality, especially for smaller firms. However, authors show that financial deepening has no significant impact on informal sector firms. Capasso and jappelli (2013) use a micro data for Italy and analyse the relationship between financial development and the size of the underground economy, they found that financial development can reduce tax evasion and the size of the underground economy.

Surprisingly, none of these studies deal specifically with the case of Sub-Saharan Africa, which represents the area of the world where the informal sector is more important and more devastating for tax revenue and economic development. Our goal is to bridge this gap by investigating the case of sub-Saharan African countries. More precisely, this paper uses a new estimate data of the size of the informal economy given by Medina and Schneider (2017) that goes from 1990 to 2015, contrary to past studies, and investigates whether the financial development reduces the size of the informal economy in 41 sub-Saharan African countries.

The rest of this paper is organized as follows. Section 2 describes the data and methodology. Section 3 presents and analyses the results. Section 4 concludes.
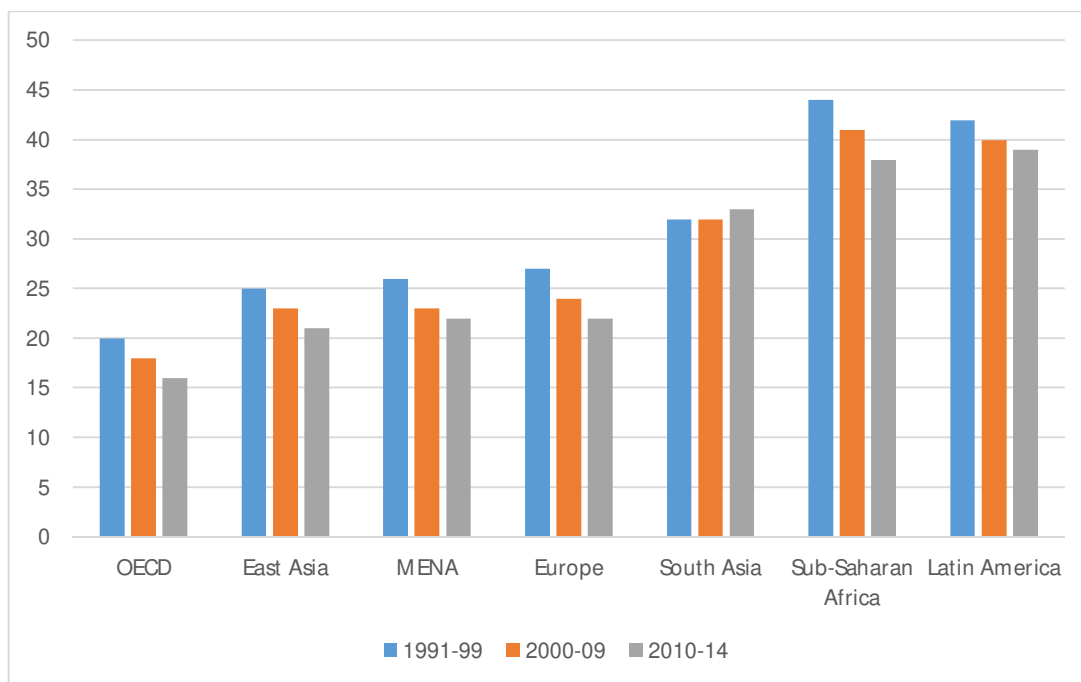
Source: International Monetary Fund (IMF)

Figure 1: Informal economy by region (Average, percent of GDP)

2. Methodology

The empirical approach is designed to assess the impact of financial development on the size of the informal economy in Sub-Saharan African countries. In this section our data is described (section 2.1), model specification is presented (section 2.2) and the estimation strategy is discussed (section 2.3).

2.1. Data

We investigate a panel of 41 Sub-Saharan African countries over the period 1991-2015 with data from different sources. The choice of the selected countries and periodicity for this study are primarily dictated by the availability of reliable data over constraints. The full description of the data is as follows:

The dependent variable is the size of the informal economy. This variable is obtained from Medina and Schneider (2017). These authors applied the Multiple Indicators Multiple Causes (MIMIC) modelling approach to estimate the size of the informal economy as measured as a percentage of GDP. Our main independent variables is financial development. In this paper we use two financial development indicators, namely: domestic credit to private sector as a

percentage of GDP (credit) and broad money as a percentage of GDP. These two financial development indicators are chosen according to financial literature on Africa, as financial sector in most African countries is dominated by bank sector (Uddin et al., 2013; Adeniyi et al., 2015; Coulibaly, 2015). These variables are gathered from World Bank: African Development Indicators. Figure 2 and 3 suggest a negative correlation between financial development indicators (M2 and credit) and the informal economy.

Table 1: Summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Informal economy	1025	40.20939	8.83774	19.23	69.08
Broad money (%GDP)	973	28.91474	22.06536	2.193856	151.5489
Credit to private sector (%GDP)	971	17.73015	22.69377	.4103563	160.1248
GDP per capita growth	1019	1.775283	8.451303	-47.80555	140.5011
Government expenditure	933	15.39838	8.634759	2.047121	88.98288
Trade openness	969	72.97522	45.16088	20.43091	531.7374
Human capital	843	90.44842	26.53876	21.53095	152.2163
Inflation	952	85.06508	1128.087	-35.83668	24411.03
Labor force participation	1025	69.07436	11.56518	41.763	90.158
Tax revenue	393	14.89982	8.122331	.7797023	58.40779
Population growth	1021	2.601263	1.060286	-6.184857	7.917892

Note. Countries used in this paper are: Angola; Benin; Botswana; Burkina Faso; Burundi; Cabo Verde; Cameroon; Central African Republic; Chad; Comoros; Congo, Dem, Rep; Congo, Rep; Cote d'Ivoire; Equatorial Guinea; Eritrea; Ethiopia; Gabon; Gambia, The; Ghana; Guinea; Guinea-Bissau; Kenya; Lesotho; Liberia; Madagascar; Malawi; Mali; Mauritania; Mauritius; Mozambique; Niger; Nigeria; Rwanda; Senegal; Sierra Leone; South Africa; Tanzania; Togo; Uganda; Zambia; Zimbabwe.

Next to the financial development variables, we include eight control variables, generally considered in the literature as determinants of economic growth: (i) GDP per capita growth; (ii) Inflation rate; (iii) Trade openness; (iv) Population growth; (v) Government expenditure; (vi) Human Capital; (vii) Labor force participation; and, (viii) Tax revenue. Table 1 and 2 present the descriptive statistics and correlation matrix of the variable employed in the analysis respectively. It is apparent from the summary statistics that the variables are comparable from the perspective of mean values. Corresponding standard deviations show substantial variations. Therefore, we can be confident that reasonable estimated nexuses would be obtained from the regressions.

Table 2 : Correlation matrix

|	IS	M2	Credit	GDPPg	Govex	Trade	HK	Inflation	Labforce	Taxrev	PopG
IS	1.0000										
M2	-0.5918	1.0000									
Credit	-0.6070	0.8161	1.0000								
GDPPg	-0.1837	0.0637	-0.0029	1.0000							
Govex	-0.1268	-0.0432	-0.0217	-0.0537	1.0000						
Trade	-0.2137	0.1475	-0.0781	0.1245	-0.0340	1.0000					
HK	0.0152	0.1002	0.0261	0.1482	0.3955	0.0665	1.0000				
Inflation	0.0088	-0.1146	-0.0795	0.0805	0.4461	0.0856	0.4328	1.0000			
Labforce	0.2777	-0.4421	-0.4838	0.0418	0.2192	-0.1112	0.5272	0.2653	1.0000		
Taxrev	-0.4313	0.3177	0.2981	0.1133	0.3216	0.2997	0.1658	0.0406	-0.1134	1.0000	
PopG	0.5506	-0.7498	-0.6241	-0.1572	-0.0401	-0.0897	-0.1505	0.1054	0.3264	-0.5046	1.0000

Note. IS : the informal economy. M2: broad money. Credit: credit to private sector. GDPPg: GDP per capita growth. Govex: Government expenditure. Trade: trade openness. HK: human capital. Labforce: labor force participation. Taxrev: tax revenue. PopG: population growth rate.

2.2. Model specification

The purpose of this paper is to investigate the impact of financial development on the size of the informal economy in 41 Sub-Saharan African countries over the period 1991-2015. To this end, we estimate the following equation:

$$Informal_{it} = \beta_0 + \beta_1 Informal_{it-1} + \beta_2 FinDev_{it} + \beta_3 X_{it} + \mu_i + v_t + \varepsilon_{it} \qquad (1)$$

Where $Informal_{it}$ is the size of the informal economy as a percentage of GDP, $FinDev_{it}$ is financial development, X_{it} represents a vector of conditioning information that controls for other factors associated with the informal economy, μ_i is an unobserved country-specific effect, v_t is time specific effect and ε_{it} is the error term.
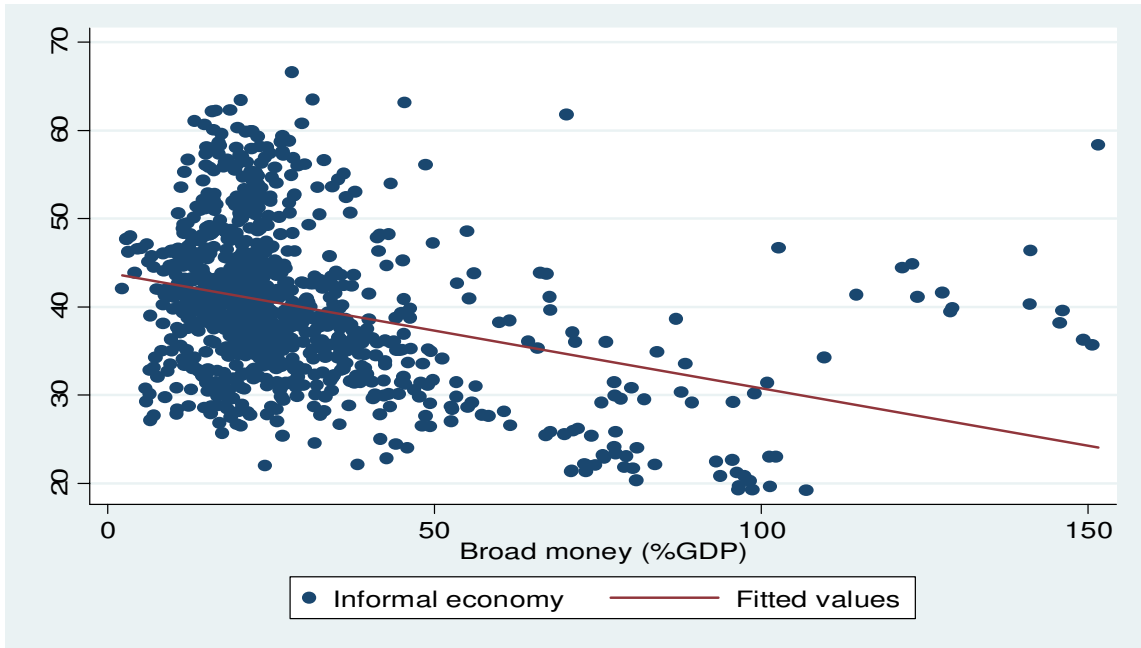
Figure 2: Broad money vs the informal economy
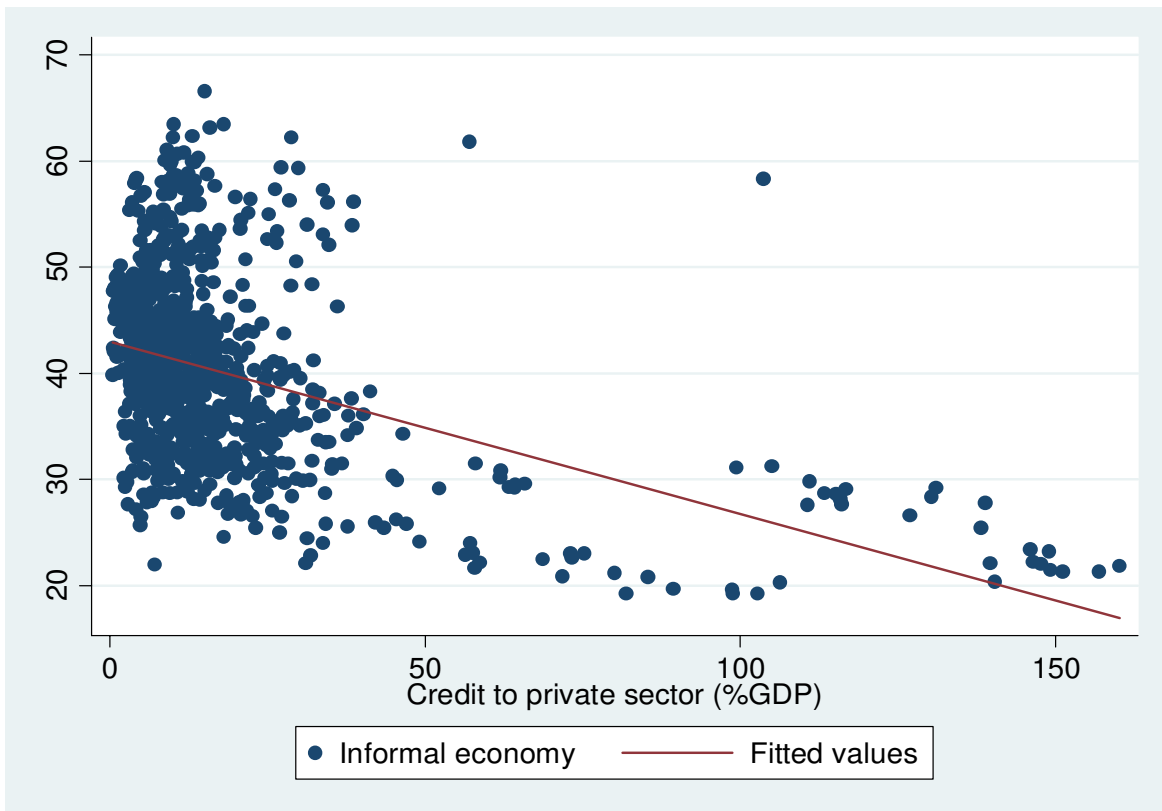
Figure 3: Domestic credit to private sector vs the informal economy

2.3. Estimation strategy

To estimate our benchmark model (Eq.1), three different panel methods are used, namely, the Ordinary Least Squared (OLS), fixed effects (FE) and Generalized Method of Moments (GMM). We first use the Ordinary Least Square (OLS) estimator to estimation Equation (1). However, the OLS model does not account for country fixed-effects, and may suffer from omitted variables bias. To deal with country fixed-effects, we subsequently applied a fixed effect model. However, when the FE technique is used to estimate this model, the estimated coefficients are inconsistent and likely to be biased since the lagged value of dependent variable is correlated with the error term (Nickell, 1981). Moreover, given the existence of an endogenous relationship between financial development and the informal economy, to estimate Equation (1) we apply the System Generalized method of moment (GMM) proposed by Arellano and Bond (1991), Arellano and Bover (1995), and Blundell and Bond (1998). GMM is useful for several advantages. First, GMM estimator has been widely used to address the endogeneity problem that appears in panel data estimation of growth regressions (Arellano and Bover, 1995 and Blundell and Bond, 1998). Second, GMM estimator also take into account the biases that appear due to country-specific effects or the presence of the initial GDP in the growth's covariates. Third, GMM also avoids simultaneity or reverse causality problems. The consistency of the GMM estimator depends on two things: the validity of the assumption that the error term does not exhibit serial correlation (AR2) and the validity of the instruments (Hansen test).

GMM method have two variant namely, the one-step estimators and two-step estimators. However, the two-step estimator has been proved to be more efficient than the one-step estimator because it uses optimal weighting matrices (Law et al., 2017). Therefore, this paper applies the two-step system GMM to investigate the effect of foreign direct investment on infrastructure. The use of two-step estimator to a small cross-section dimension may lead to biased standard errors. To correct this bias the Arellano and Bover (1995) extension by Roodman (2009a, 2009b) is applied. This estimation strategy uses forward orthogonal deviations in place of first differences. GMM with forward orthogonal deviation has been proved to account for cross sectional dependence and to limit instruments proliferation (Balgati, 2008).

3. Empirical results

Results are presented in Table 3-6. Table 3 presents OLS, FE and System GMM results of the impact of financial development on the informal economy. Table 4 present the baseline regression with control variables and Table 5 replicates results presented in table 4 with more control variables. The estimation regressions satisfy mutually the Hansen test of the validity of instruments and the serial correlation test (AR (2)).

Table 3: Regression of financial development on the informal economy

	Dependent variable: The size of the informal economy					
	OLS		Fixed Effects		System GMM	
	(1)	(2)	(3)	(4)	(5)	(6)
Broad money	-0.130***		-0.139***		-0.0162**	
	(0.0117)		(0.0148)		(0.00723)	
Credit to private sector		-0.162***		-0.222***		-0.0256***
		(0.0109)		(0.0177)		(0.00506)
Lag dependent variable					0.863***	0.852***
					(0.0222)	(0.0228)
Constant	43.85***	42.96***	44.09***	44.02***	5.608***	5.973***
	(0.426)	(0.314)	(0.448)	(0.339)	(1.046)	(0.996)
R2	0.113	0.186	0.086	0.145		
Hansen test					0.223	0.176
AR(1)					0.00024	0.00026
AR(2)					0.743	0.744
Instrument					11	11
Observations	973	971	973	971	928	926

Note. Standard errors are reported in parenthesis. ***,**,* significant at 1%, 5% and 10% levels respectively.

3.1. Baseline estimators

Table 3 reports results of the preliminary estimation using OLS, FE and GMM. We start with the simplest version of the model by investigating if financial development reduces the size of the informal economy. Given the debate and likely measurement errors in financial development, the estimation is carried out using two different financial development variables, namely domestic credit to private sector and, broad money. The results in Table 3 clearly confirm our hypothesis: financial development reduces the size of the informal economy, ceteris paribus. Both domestic credit and broad money have a negative coefficients and are highly significant in all cases. Results suggest that countries with more developed financial

sector also have a smaller informal economy. For example results in column (1) suggests that a 1 unit increase in broad money decreases the informal economy by 0.130 unit and in column (2), that a 1-unit increase in credit to private sector decreases the informal economy by 0.162 unit. This result can be explained by the fact that financial development makes access to credit easier and cheaper, which facilitates entrepreneurship, increases the opportunity cost of producing in the underground economy, and thus reduces the size of the informal economy. Our results support the empirical findings of Bose et al. (2012); Berdiev and Saunoris (2016); Capasso and Jappelli (2013) which reveal negative significant effect of financial development on the shadow economy.

However the R2 of the regression is extremely low, meaning that a number of important variables are missing. The absence of important determinants of the informal economy could bias the results in the case where the measurement error is correlated with the omitted variables. In order to correct for this attenuation bias, we replicate regression by using System GMM. Results presented in columns (5-6) confirm the negative effect of financial development on the size of the informal economy.

We additionally carry out the estimation with a number of control variables. As the results using fixed effects and system GMM were qualitatively similar, we report only the results for system GMM estimation in Table 4. We report in Table 4 a linear and non-linear specification of the impact of financial development on the size of the informal economy. Results from the linear specification clearly show that financial development (broad money and domestic credit) have the expected negative coefficient and are highly significant, meaning that financial development reduces the size of the informal economy. For example results in column (1) suggests that a 1 unit increase in broad money decreases the informal economy by 0.718 unit and in column (2), that a 1-unit increase in credit to private sector decreases the informal economy by 0.0165 unit. The non-linear coefficient does not turn out to have any statistical effect on financial development.

For the independent variables population growth and inflation, we get a negative sign suggesting that the higher growth rate of population and inflation rate in a country, the lower is the rate of economic growth. The coefficients associated with the independent variable trade openness and human capital have the theoretically expected positive sign and the sign is highly statistically significant (for trade openness), implying that the higher the trade with foreign countries, the higher the rate of economic growth. The coefficient on government expenditure is positive but non- significant.

Table 4 : System GMM estimation with control variables

	Dependent variable: The size of the informal economy			
	(1)	(2)	(3)	(4)
Broad money	-0.0718*		-0.0351*	
	(0.0393)		(0.0178)	
(Broad money)^2	0.000263			
	(0.000259)			
Credit to private sector		-0.0165**		-0.0286**
		(0.00643)		(0.0132)
(Credit to private sector)^2		1.61e-05		
		(2.66e-05)		
GDPP per capita growth	-0.231***	-0.134***	-0.183***	-0.194***
	(0.0210)	(0.0252)	(0.0269)	(0.0426)
Government expenditure	-0.0228**	-0.0199*	-0.0240***	-0.0300*
	(0.0109)	(0.00998)	(0.00801)	(0.0169)
Trade openness	0.00979**	-0.00769***	-0.00383**	-0.0183*
	(0.00474)	(0.00134)	(0.00178)	(0.0104)
Human capital	0.0242	0.00327	0.0318***	0.0140
	(0.0260)	(0.00752)	(0.0105)	(0.0152)
Population growth	0.911**	0.773**	0.717*	1.336**
	(0.436)	(0.342)	(0.419)	(0.571)
Tax revenue	0.103***	0.0140	0.0558***	0.0131
	(0.0334)	(0.0205)	(0.0172)	(0.0734)
Lag dependent variable	0.963***	0.990***	0.941***	0.705***
	(0.0217)	(0.0216)	(0.0316)	(0.0806)
Constant	1.317	2.972**	1.769	9.144***
	(1.213)	(1.100)	(2.708)	(3.305)
AR(1)	0.0101	0.0117	0.0128	0.0100
AR(2)	0.333	0.360	0.341	0.289
Hansen test	0.967	0.991	0.969	0.873
Instrument	28	21	28	21
Observations	268	269	269	268

Note. Standard errors are reported in parenthesis. ***,**,* significant at 1%, 5% and 10% levels respectively.

3.2. Robustness check

As a robustness check, we evaluate our results by including two more control variables, namely: Labor force participation rate, and inflation rate. Results of system GMM estimation are presented in Table 5. Results reinforce our previous findings in Table 4.

Table 5: System GMM estimation with more control variables

	Dependent variable: The size of the informal economy			
	(1)	(2)	(3)	(4)
Broad money	-0.0748***	-0.0822***		
	(0.0161)	(0.0218)		
Credit to private sector			-0.0374***	-0.0606***
			(0.0117)	(0.0106)
GDPP per capita growth	-0.205***	-0.146***	-0.182***	-0.227***
	(0.0265)	(0.0329)	(0.0370)	(0.0446)
Government expenditure	-0.0133	0.00464	-0.00255	0.0413
	(0.00984)	(0.0211)	(0.0203)	(0.0321)
Trade openness	-0.0153***	-0.0232***	-0.0271***	-0.0260***
	(0.00240)	(0.00454)	(0.00496)	(0.00584)
Human capital	0.0215	0.0228**	0.00470	0.00642
	(0.0168)	(0.0107)	(0.00890)	(0.0103)
Population growth	0.104	1.185*	0.235	0.0640
	(0.239)	(0.579)	(0.311)	(0.235)
Tax revenue	0.0950	-0.0113	0.119*	0.189*
	(0.0738)	(0.0577)	(0.0638)	(0.0976)
Inflation	-0.00013***		-0.00014***	
	(8.25e-06)		(9.09e-06)	
Labor force participation		-0.204***		-0.0764***
		(0.0725)		(0.0159)
Lag dependent variable	0.742***	0.722***	0.799***	0.812***
	(0.0463)	(0.0501)	(0.0666)	(0.0551)
Constant	14.07***	27.96***	8.729***	12.09***
	(2.877)	(7.018)	(2.966)	(3.620)
AR(1)	0.00868	0.0132	0.00622	0.00808
AR(2)	0.390	0.435	0.412	0.311
Hansen test	0.877	0.993	0.102	0.114
Instrument	23	25	24	24
Observations	266	267	265	268

Note. Standard errors are reported in parenthesis. ***,**,* significant at 1%, 5% and 10% levels respectively.

These results confirm that the effect of financial development on the size of the informal economy is negative and statistically significant, meaning that, financial development reduces the size of the informal economy. Results in Column (1) shows that a 1-unit increase in broad money leads to a 0.0748 unit decrease in the size of the informal economy, and in column (3) a 1-unit increase in domestic credit to private sector leads to a 0.0374 decrease in the size of the informal economy.

4. Conclusion and policy implications

Does financial development reduce the size of the informal economy? To answer this important economics questions, this paper investigates the relationship between financial development and the size of the informal economy using an unbalanced panel data of 41 Sub-Saharan African countries over the period 1991–2015. Empirical evidence is based on Ordinary Least Squared (OLS), fixed effects (FE) and system Generalized Method of moment (GMM). The results suggest that financial development measured by broad money and domestic credit to private sector has a highly statistically significant negative effect on the informal economy. The negative impact of financial development on the informal economy on economic growth is quantitatively important and robust to the inclusion of more control variables. This clearly suggests that higher level of financial development reduces the size of the informal economy.

Based on the findings from our empirical analysis and given the main objective of this study, we can draw the following policy implications. Governments willing to reduce the size of the informal economy should implemented some financial reform measures with view to facilitating access to formal financing channels such as micro-credit. In addition, the governments of Sub-Saharan African countries must take other measures to control the use of credit extended to these enterprises and assist them in the process of transition to the formal economy.

References

Abosedra, S., Shahbaz, M., & Nawaz, K., 2016. Modeling causality between financial deepening and poverty reduction in Egypt. Social Indicators Research. 126(3), 955-969.

Adeniyi, O., Oyinlola, A., Omisakin, O., & Egwaikhide, F. O., 2015. Financial development and economic growth in Nigeria: Evidence from threshold modelling. Economic Analysis and Policy. 47, 11-21.

Asteriou, D., & Spanos, K., 2018. The Relationship between Financial Development and Economic Growth during the recent Crisis: Evidence from the EU. Finance Research Letters.

Baiardi, D., & Morana, C., 2018. Financial development and income distribution inequality in the euro area. Economic Modelling. 70, 40-55

Beck, Thorsten and Hoseini, Mohammad, Informality and Access to Finance: Evidence from India (September 4, 2014). CentER Discussion Paper Series No. 2014-052. Available at SSRN: https://ssrn.com/abstract=2491466 or http://dx.doi.org/10.2139/ssrn.2491466

Berdiev, A. N., & Saunoris, J. W., 2016. Financial development and the shadow economy: A panel VAR analysis. Economic Modelling. 57, 197-207.

Blackburn, K., Bose, N., & Capasso, S., 2012. Tax evasion, the underground economy and financial development. Journal of Economic Behavior & Organization. 83(2), 243-253.

Bose, N., Capasso, S., & Andreas Wurm, M., 2012. The impact of banking development on the size of shadow economies. Journal of Economic Studies. 39(6), 620-638.

Capasso, S., & Jappelli, T., 2013. Financial development and the underground economy. Journal of Development Economics. 101, 167-178.

Coulibaly, D., 2015. Remittances and financial development in Sub-Saharan African countries: A system approach', Economic Modelling. 45, 249-258.

Dabla-Norris, E., Gradstein, M., & Inchauste, G., 2008. What causes firms to hide output? The determinants of informality. Journal of development economics. 85(1-2), 1-27.

De Haan, J., & Sturm, J. E., 2017. Finance and income inequality: A review and new evidence. European Journal of Political Economy. 50, 171-195.

Dell'Anno, R., 2016. Analyzing the determinants of the shadow economy with a "separate approach". An application of the relationship between inequality and the shadow economy. World Development. 84, 342-356.

Durusu-Ciftci, D., Ispir, M. S., & Yetkiner, H., 2017. Financial development and economic growth: Some theory and more evidence. Journal of Policy Modeling. 39(2), 290-306.

Ferreira, D., Manso, G., & Silva, A. C., 2012. Incentives to innovate and the decision to go public or private. The Review of Financial Studies. 27(1), 256-300.

Goel, R. K., & Nelson, M. A., 2016. Shining a light on the shadows: Identifying robust determinants of the shadow economy. Economic Modelling. 58, 351-364.

Hsu, P. H., Tian, X., & Xu, Y., 2014. Financial development and innovation: Cross-country evidence. Journal of Financial Economics. 112(1), 116-135.

Ibrahim, M., & Alagidede, P., 2017. Nonlinearities in financial development–economic growth nexus: Evidence from sub-Saharan Africa. Research in International Business and Finance.

Jauch, S., & Watzka, S., 2016. Financial development and income inequality: a panel data approach. Empirical Economics. 51(1), 291-314.

Joo, D., 2011. Determinants of the Informal Sector and their Effects on the Economy: The Case of Korea. Global Economic Review. 40(1), 21-43.

López, J. J., 2017. Financial frictions and productivity: Evidence from Mexico. The Quarterly Review of Economics and Finance. 66, 294-301.

Medina, L., Jonelis, M. A. W., & Cangul, M., 2017. The informal economy in Sub-Saharan Africa: Size and determinants. International Monetary Fund.

Moretti, L., 2014. Local financial development, socio-institutional environment, and firm productivity: Evidence from Italy. European Journal of Political Economy. 35, 38-51.

Nickell, S., 1981. Biases in dynamic models with fixed effects. Econometrica: Journal of the Econometric Society. 1417-1426.

Uddin, G. S., Shahbaz, M., Arouri, M., & Teulon, F., 2014. Financial development and poverty reduction nexus: A cointegration and causality analysis in Bangladesh. Economic Modelling. 36, 405-412.

Uddin, G. S., Sjö, B., & Shahbaz, M., 2013. The causal nexus between financial development and economic growth in Kenya. Economic Modelling. 35, 701-707.