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Abstract

This study investigates the determinants of informal entrepreneurship in Africa. Using a cross-section of 21,954 firms from 47 African countries, the study estimates several multivariate models to examine the factors that are associated with the decision of firms to register at the start of their operation and the length of time to remain unregistered. The findings show that entrepreneurship in the informal sector is complex and context-bound as contextual factors unique to Africa, such as, corruption, political instability, crime rate, infrastructure (electricity and transportation), access to land and finance, influence the entrepreneur's decision to register their firm at the start of its operation. The length of time firms remain unregistered is shown to be positively correlated to access to finance and infrastructural availability and negatively related to crime and political instability. These results vary based on the size of the business with larger businesses being impacted less by these variables.

Keywords: Africa, Informal Entrepreneurship, Socio-Cultural, Corruption, Crime

Introduction

The last decade has seen a surge in research and literature on entrepreneurship in the informal sector by which is meant starting up and/or owning and managing a business which operates outside the boundary of formal institutions but within those of informal institutions (Dobson et al., 2015; Webb et al., 2009, 2013). This is in spite of the traditional view of the informal enterprise as being the ‘poor cousin’ of formal entrepreneurship (Anderson et al., 2013; Bureau and Fendt, 2011). Within this growing stream of literature on entrepreneurship in the informal economy, two broad trends are discernable. First, is a focus on the developed and transition economies in Europe (Marchese, 2015; Williams, 2007, 2008; Williams and Martinez, 2014; Williams and Nadin, 2011; Williams and Round, 2009; Windebank and Horodnic, 2016) and developing economies in Asia and South America (Carneiro-da-Cunha and Rossetto, 2015; Gurtoo, 2009; Gurtoo and Williams, 2009; Nguyen et al., 2014; Warnecke, 2016; Williams, Adom, et al., 2012; Williams and Shahid, 2016) with only a few studies focusing on Africa (Adom, 2014, 2016; Anderson et al., 2013; Delbiso et al., 2018; Eijdenberg, 2016; Ogunsade and Obembe, 2016; Sallah and Williams, 2016). Second, is a focus on who the informal entrepreneur is, why they operate informally and how participation in the informal sector is driven by asymmetry between formal and informal institutions (Welter et al., 2015; Williams, Adom, et al., 2012; Williams, Nadin, et al., 2012; Williams and Shahid, 2016; Williams and Vorley, 2014). Very few studies in this stream explore the macro, socio-political, socio-economic and socio-cultural factors which influence participation in informal enterprise (Berdiev and Saunoris, 2018; Jiménez et al., 2015; Saunoris and Sajny, 2017; Thai and Turkina, 2014; Williams and Shahid, 2016). None of these focuses on Africa.

The limited focus on Africa and the macro and socio-economic, socio-political and socio-cultural factors which influence participation in informal enterprise are not issues to be trivialised. The informal sector in Africa is the largest on any continent accounting for about 55% of Sub-Saharan Africa's GDP and 80% of the labour force (African Development Bank Group, 2013). Indeed, nine in ten rural and urban workers in Africa have informal jobs with most of these being women and youth (African Development Bank Group, 2013). Africa is also unique in a number of ways. It is a "continent endowed with immense natural and human resources as well as great cultural, ecological and economic diversity" (Mentan, 2013, p. xiv), yet it remains underdeveloped. Inspite of the effort and resources invested in crafting numerous development strategies, several African countries continue to suffer from dictatorships, corruption, violence, underdevelopment and severe poverty. Indeed, the majority of countries classified by the United Nations as least developed are in Africa. (Global Policy Forum, 2017). Given that formal institutions in Africa are notoriously weak (Birdsall, 2007; Bratton, 2007; Ejiogu et al., 2018), it is unlikely that these institutions will hold significant explanatory power to enable an understanding of entrepreneurship in the informal sector in Africa.

This article argues that in order to develop an understanding of entrepreneurship in the informal sector in Africa, attention needs to be oriented towards the African context – the unique socio-political, socio-cultural and socio-economic conditions – in which these institutions are embedded. Thus, this article seeks to understand what effect socio-cultural, socio-political and socio-economic variables such as corruption; political stability, education, access to finance and land, infrastructure, etc. have on the entrepreneurs' decision to register his business at inception and the length of time entrepreneurial start-up remain unregistered for. In doing this, it answers Williams and Martinez (2014, p. 1) call for '*more nuanced and context-bound explanations of entrepreneurship in the informal economy*'.

Using a sample of 21,954 firms from 47 African countries and several multivariate regression models, the findings show that entrepreneurship in the informal sector is complex and context-bound as contextual factors (socio-cultural, socio-political and socio-economic) unique to Africa, such as, corruption, political instability, crime rate, infrastructure (electricity and transportation), access to land and finance influence the entrepreneurs' decision to start and remain in the informal sector. The results also show interesting pattern as the relationship between these variables and informal entrepreneurship depends on the firm size. The rest of the paper is structured as follows. The next section provides an overview of the literature on the determinants of participation in the informal enterprise. After that, the sample, variables and the empirical design are described. The analyses and the results are then presented and discussed. In the final section, some concluding remarks are made with respect to contributions and future research directions.

Literature review

Informal Entrepreneurship

At the outset, it is necessary to outline how this article defines an entrepreneur and the informal sector. It adopts the commonly used definition of an entrepreneur as somebody who is actively involved in starting an enterprise or the owner/manager of an enterprise (Chen et al., 2015; Williams and Shahid, 2016). The informal economy goes by a variety of names in the literature which includes: the shadow economy (Sauka and Schneider, 2016), the underground economy (Rezaei et al., 2013a), the irregular economy (Welter et al., 2015), the grey economy (Ketchen et al., 2014). Coupled with the varying names given to the informal economy are a variety of definitions (Webb et al., 2013). However, underlying these definitions is the basic idea that the activities which occur in the informal economy while being illegal (to the extent that they are unregistered and untaxed) are accepted by society as legitimate. Thus, this article adopts a definition of the informal economy which captures this underlying principle in terms of institutional theory proposed by Webb et al. (2013, p. 600) that "*the informal economy is concerned with economic activities that are outside of formal institutional boundaries (i.e., illegal) yet fall within informal institutional boundaries (i.e., legitimate)*" Indeed, these boundaries of formal and informal institutions delineate the informal economy, create the social identities of agents who carry out entrepreneurial activity within its boundaries and define the cognitive schemas and rules governing behaviour (Hogg and Terry, 2000; Misangyi et al., 2008).

Having defined the entrepreneur and the informal economy, what remains then is the question of what influences the entrepreneur to participate in the informal economy i.e. to start up an unregistered business and continue to run the business unregistered. The literature recognizes that participation in the informal economy is driven by both personal and contextual factors (Renooy et al., 2004; Williams, 2006; Williams and Shahid, 2016; Williams and Windebank, 1998). Williams and Shahid (2016) develop three categories of factors which influence participation in the informal economy as personal characteristics, institutional factors and structural factors. Personal characteristics include age (Pedersen, 2003; Williams and Martínez, 2014); level of income (Ahmad, 2008); the entrepreneurs level of education and skill (Copisarow and Barbour, 2004; Jiménez et al., 2015); Gender (Williams, 2009a, 2009b); and exclusion from the formal sector (Taiwo, 2013; Williams, 2009c). Institutional factors include corruption (Berdiev and Saunoris, 2018; Choi and Thum, 2005; Dreher and Schneider, 2010; Friedman et al., 2000; Jimenez et al., 2017; Johnson et al., 1997, 1998) tax system, rigid labour markets, low institutional quality, and excessive regulation in financial and product markets (Abdih and Medina, 2016; Di Nola et al., 2016; Dreher and Schneider, 2010; Joo, 2011; Krakowski, 2005) as well as other economic and political institutions (Autio and Fu, 2015; Saunoris and Sajny, 2017; Thai and Turkina, 2014) which foster good governance and national economic advancement. Structural factors include industry conditions (Siqueira et al., 2016); sector (Castells and Portes, 1989); ease of doing business (Thai and Turkina, 2014) and resistance towards government (Torgler, 2003).

While these studies start to answer the question of what factors influence participation in informal enterprise, there is a growing recognition that such explanations need to be more nuanced and context-specific (Williams and Martinez, 2014). These linkages between informal enterprise and its context are highlighted by a small but growing stream of research. For example, Rezaei et al. (2014) studying migrants and their involvement in the informal economy in Austria found that the form, content and dynamic of the informal economy were specific to its national and other contexts as well as situational being influenced by factors such as migrants' length of residency, year of entry, gender, capitals, government policies, political and public discourse etc. Rezaei et al. (2013b) make similar findings in their study of migrant entrepreneurs in the Kingdom of Belgium. In their study of the entrepreneurial ecosystem in Rankin Inlet, Canada, Mason et al. (2009) find that participation in the informal economy is conditioned by the history as well as the social and economic conditions of the Inlet with most entrepreneurs, in order to supplement their income, engaging in subsistence fishing and hunting and sharing, instead of selling, the food obtained from these activities. Dana (2007) explores entrepreneurship in West-Africa and shows how formal and informal entrepreneurship in Togo and Ghana are tied to the socio-historical context of these countries. Similarly, Dana (2011) studying entrepreneurship in Bolivia also highlights the strong links between context and informal enterprise. Indeed, he notes that

> *"Historical, socio-cultural and economic contexts appear to be important factors affecting the environment for business…In each economy, the nature of entrepreneurship will evolve over time, but one should not expect entrepreneurship to converge across societies. There is*

> *no one formula for a 'best' policy. Culture is embedded in society, and this affects the nature of entrepreneurship."* (Dana, 2011, p. 85)

More recently, this theme is highlighted in the collection of 17 studies on informal ethnic enterprise edited by Ramadani et al. (2018). This collection of studies reveals the nature of informal entrepreneurship in 14 diverse economies, cultures and regions including South America, North America, the Middle East and Africa. Although these studies represent a move towards developing an understanding of the nature of informal entrepreneurship as context bound, there is still much we do not know especially as it relates to Africa.

Given Africa's unique social, cultural, political and economic dynamic, we argue that for a study to understand the entrepreneurship in the informal economy in Africa, one needs to situate such a study in the societal context (Friedland and Alford, 1991) paying particular attention to sociocultural, socio-political and socioeconomic factors and how these determine entrepreneurial behaviour. This is the focus of the next two sections.

The Informal Economy in Africa

In the traditional African society, business activities are carried out without the need for formal registration but within the accepted norms of society. Thus, the informal sector in Africa predates colonial rule (Sparks and Barnett, 2010; Sundström, 1965). With colonisation and later the attainment of independence, came the drive within African nations to formalise and 'modernise' their economies (Bates, 1983; Sparks and Barnett, 2010; Sundström, 1965). In parallel to this drive to 'modernise' the African economies was a growing global interest in the informal economy which picked up in the 1970's (Bangasser, 2000; Fox and Gaal, 2008; Haan, 2006; International Labour Organization, 2002). In spite of this interest in the informal economy its definition and measurement remained contested mainly because the ILO allowed some flexibility in defining the informal sector. In 2002, the continent-wide criteria for measuring the informal economy were agreed (Sparks and Barnett, 2010). However, most African countries have not collected data on the informal economy (African Union, 2008).

In spite of the difficulty in measuring the extent of the informal economy in Africa, there is evidence to suggest that the informal sector in Africa represents a major share of most economies and industries (Abid, 2016). Indeed, the informal sector in Africa is the largest on any continent accounting for about 55% of Sub-Saharan Africa's GDP and 80% of the labour force (African Development Bank Group, 2013). In particular, the trade-related activities, including street vending are the most common form of activity in Africa's informal sector (Sparks and Barnett, 2010). Given the nature and extent of the informal economy in Africa, it is pertinent to investigate the factors that influence the choices to operate informally.

Determinants of informality

A starting point for this investigation is the recognition that entrepreneurship in Africa is different from entrepreneurship in other geographic locations (Ratten and Jones, 2018) and is influenced by its colonial history, climate, diverse cultures and ethnicities as well as other contextual factors (Dana, 2007; Dana et al., 2018). Given Africa's unique socio-cultural, socio-political and socioeconomic context, there is the need to explore the effect of an expanded range of factors on informality as well as to investigate in more depth, the effect of the factors that are already highlighted in the sparse literature on informality. Drawing on a wider literature on entrepreneurship and Africa, some contextual factors which might affect the informality in Africa are identified and discussed below.

Access to finance

In the entrepreneurship literature, access to finance is described as the supply of quality financial services at reasonable costs (Claessens and Tzioumis, 2006). Traditionally, access to finance is linked to the quality of financial institutions, but these institutions are notoriously weak in Africa (Kauffmann, 2005). For example, Kauffmann (2005) finds evidence in Africa to suggest that, financial institutions are under-developed, capital markets are in their infancy, and non-banking financial intermediaries do not have the resources they need to provide finance to small businesses. However, there is a growing recognition that finance for businesses is obtained through kinship and family ties (Khayesi et al., 2014), as well as remittances from migrants in the Western world (Ratha et al., 2009) as part of the flow of money, information and goods faciliated by migrant networks (Ejiogu, 2018). It is in this context that we expect that access to finance should have a significant influence on informality.

Access to land

The entrepreneurship literature has discussed access to land in terms of concentration or dispersal of land ownership and their effect on entrepreneurial behaviour (Falkinger and Grossmann, 2013; Percoco, 2015). Indeed, dispersed ownership of land is seen as influencing entrepreneurial behaviour because the landowner is less dependent on the income from paid employment since the need for periodic rental payments is reduced or absent and allows for the possibility of self-production outside the market (Anderson, 2002). While land ownership and property rights are well defined in most developed countries, this is not the case in Africa where land is still held communally and usually intertwined with religion, ritual and culture (Shipton, 1994; Shipton and Goheen, 1992). Despite the governments' attempt to reform land tenure in most African countries (Noronha, 1985), land is still held communally. In addition to navigating the formal and informal institutions which gatekeep access to land, entrepreneurs in Africa also have to deal with issues of gender (Chu, 2011) and community acceptance and extortion (Esteves, 2008). Thus, access to land has become more sociocultural than institutional, and therefore we expect it to have a significant influence on informality.

Crime, theft and disorders

While entrepreneurship literature has explored the effect of crime on the location decision of businesses (Rosenthal and Ross, 2010; Sloan et al., 2016), very little has been written about the impact of crime on business activity (Scandizzo and Ventura, 2015) or the nature of business (i.e. formal or informal) which entrepreneurs set up. This issue is highlighted by Gough et al. (2003) who note that while informal entrepreneurs in South Africa operate with the fear of violence and crime, this fear is negligible in Ghana. Given the high crime rates in several African cities (United Nations Office on Drugs and Crime, 2005) and that very little is known about how crime affects entrepreneurship behaviour, it is proposed to use crime as a variable to develop some insight into this area of entrepreneurship behaviour.

Infrastructure

It is acknowledged that the research on infrastructure and entrepreneurship is in its infancy. However, infrastructure enhances connectivity and linkages that facilitate the recognition of entrepreneurial opportunities as well as the ability of entrepreneurs to actualise those opportunities and in so doing enhances start-up activity (Audretsch et al., 2015). Transportation and Electricity are identified in the literature as being critical physical infrastructure necessary for entrepreneurship development in Africa (Nkechi et al., 2012). We therefore, expect transportation and electricity to have a significant influence on informality.

Political Instability

Political instability is acknowledged to be an enduring feature in post-colonial Africa (Kieh, 2009) and has been linked with reduced flows of foreign direct investments (Asiedu, 2006) and reduced rates of economic growth (Fosu, 2002). Given, the macroeconomic impact of political instability in African countries, it is argued that political instability will also generate more micro-level effects. We, therefore, expect political instability to have a significant impact on informality.

Practices of competitors in the informal sector

Competitors unfair practices are linked with imperfections of formal institutions (Tonoyan et al., 2010) and can negatively affect entrepreneurship behaviour both in the formal and informal sectors. Given the prevalence of formal institutional imperfections in Africa, it is argued that these might give rise to high levels of unfair business practices and thus impact on entrepreneurship in the informal sector. We, therefore, expect competition to have a significant influence on informality.

Corruption

The dominant view in entrepreneurship literature is that corruption is bad for entrepreneurship as it erodes trust, increases costs and deters individuals from starting up businesses (Anokhin and Schulze, 2009; Dutta and Sobel, 2016). However, there is a strand of literature which finds that in developing countries, which are usually characterised by formal institutional imperfections, corruption enhances firm performance (Williams and Martinez-Perez, 2016). Indeed, William and Kedir (2016) studying corruption and firm performance in 41 African countries find that corruption is an efficient firm-level strategy as it significantly enhances firm performance. However, while corruption has been shown to affect performance, little is known about its effect on the choice to operate informally. We, therefore, expect corruption to have a significant impact on informality.

Inadequately educated workforce

The level of education of the individual entrepreneur as a driver of his choice to operate formally or informally has been explored in the literature (Jiménez et al., 2015). However, limited attention has been given to the impact of the level of education of the workforce who the entrepreneur will employ on this choice. It is therefore argued that the more educated the workforce, the more likely they would be to want to work for a formal firm. We, therefore, expect an inadequately educated workforce to have a significant impact on informality.

Sample, variables and the empirical design

Sample and data sources

For our analysis, we employ firm-level data from the World Bank Enterprise Survey (WBES). Starting from 2006, the World Bank collects comprehensive firm-level data on emerging and developing economies. A major merit of this database is that the survey questions are homogenised for all the countries included. Firms are included in the survey based on a random sampling of firms according to three level of stratification: size, business sector and geographic region. The survey contains useful information on firm-level variables such as the size of the firms, the structure of ownership, the type and level of obstacles faced by the firms, year of business registration and the year operation began.

We apply the following rule to the dataset: (i) we include only firms from African countries (ii) only the most recent data wave for each country is included. The variables we are interested in are mainly data related to year the firms were formally registered, the year they began operation and the obstacles the firms face.

Our final sample consists of a cross-section of 21,954 firms from 47 African countries. The list of the countries and a description of the sample can be found in Table 1 and Appendix 1 respectively.

Variable definitions and measurements

Dependent variables

To investigate the influence of the sociocultural, sociopolitical and socioeconomic factors on the informal sector in Africa, we measure informality using two different variables. First, and consistent with Williams et al. (2016), we measure informality as a percentage of firms that were registered at the start of their business in each country using the survey reports from WBES database and therefore *Formally Registered at start (FREG)* is our first informality variable of interest.

Second, and as in the case of Williams et al. (2016), we measure informality using the number of years firms operated without formal registration and therefore *Years Unregistered (YREG)* represents the alternative informality variable of interest. Regressing against the first measure should give an indication of factors which affect the initial choice to engage in the informal sector while regressing against the second should highlight factors which sustain engagement in the informal sector.

Independent variables

The socio-cultural, socio-political and socio-economic factors used as independent variables to explain the level of informality include access to finance, access to land, corruption, crime, theft and disorders, infrastructure, education level of the workforce, political instability and practices of competitors in the informal sector. These variables are developed in response to WBES survey questions asking firms if they perceived them as obstacles to their establishment. It is important to note that all the independent variables used are based on the general perception of owners/managers of the firms across the sampled African countries. We did not investigate the subsets of each of the variables used in this study. We, therefore, measure socio-cultural, socio-political and socio-economic factors based on owners/managers' responses as follows:

Access to finance (FIN) is a dummy variable that takes a value of '1' if business owners/managers perceive access to finance as an obstacle to starting a business and '0' otherwise. *Access to land (LAND)* is a dummy variable that takes a value of '1' if business owners/managers perceive access to land as an obstacle to start a business and '0' otherwise. *Corruption (CORRUPT)* is a dummy variable that takes a value of '1' if business owners/managers perceive corruption as an obstacle to start a business and '0' otherwise. *Crime, theft and disorders (CRIME)* is a dummy variable that takes a value of '1' if business owners/managers perceive crime, theft and disorders as obstacles to start a business and '0' otherwise.

Others include *Infrastructure* which is measured in two different ways as follows: *Electricity (ELECT)* is a dummy variable that takes a value of '1' if business owners/managers perceive access to electricity as an obstacle to start a business and '0' otherwise; and *Transportation (TRANSP)* is a dummy variable that takes a value of '1' if business owners/managers perceive access to transportation as an obstacle to start a business and '0' otherwise. *Education level of workforce (EDUC)* is a dummy variable that takes a value of '1' if business owners/managers perceive an inadequately educated workforce as an obstacle to start a business and '0' otherwise. *Political Instability (POINSTAB)* is a dummy variable that takes a value of '1' if business owners/managers perceive political instability as an obstacle to start a business and '0' otherwise. *Practice of competitors in the informal sector (COMP)* is a dummy variable that takes a value of '1' if business owners/managers perceive practices of their competitors as an obstacle to start a business and '0' otherwise.

Control variables

In order to account for heterogeneity of the firms included in the sample, it necessary to control for other factors that may account for the state of informality of the firms. Four factors are included and controlled for in the regressions. They are ownership, sector, year and size.

In terms of ownership, firms are classed as either foreign or domestic. Increasing share of foreign ownership may increase the likelihood that the business will be formally registered given the legal requirements for foreign investment and repatriation of funds. We, therefore, measure Ownership (*OWN*) as a dummy variable which takes the value of 1 if a firm is owned by foreigners and '0' otherwise. The sector the firm operates in may also affect the level of informality of the firms, hence we also control for sector. Sector is a binary variable that classifies firms into two broad categories—it takes the value of 1 if the firm is in manufacturing and '0' otherwise. The size of the firms is controlled for. The variable is a categorical variable that takes the value of 1 for small firms, 2 for medium firms and 3 for large firms. The year the survey is carried out in the countries is also controlled for.

Econometrics Analysis

As we noted earlier, we use two proxies to define informality, (1) whether the firms were registered at the start of their operations and (2) how many years it took these firms to register. In order to examine the relationship between socio-cultural, socio-political and socio-economic factors and informality of firms in Africa, we estimate two regressions.

$$FREG = \beta_0 + \beta_1\, FIN + \beta_2\, LAND + \beta_3\, CORRUPT + \beta_4\, CRIME + \beta_5\, ELECT + \beta_6\, EDUC +$$

$$\beta_7 POINSTAB + \beta_8\, COMP + \beta_9\, TRANSP + CONTROL + e \qquad (1)$$

$$YREG = \beta_0 + \beta_1\, FIN + \beta_2\, LAND + \beta_3\, CORRUPT + \beta_4\, CRIME + \beta_5\, ELECT + \beta_6\, EDUC +$$

$$\beta_7 POINSTAB + \beta_8\, COMP + \beta_9\, TRANSP + CONTROL + e \qquad (2)$$

where: *FREG* and *YREG* represent the main dependent variables; *FIN, LAND, CORRUPT, ELECT*, *EDUC, POINSTAB COMP* and *TRANSP* are the main independent variables.

We repeated equations (1) and (2) to test the relationship between the variables in small, medium and large firms.

Empirical Results

Descriptive statistics

Table 1 presents detailed descriptive statistics of the sociocultural and socioeconomic factors that are perceived by owners/managers in Africa as obstacles to their operations. As Table 1 shows, the percentage of firms formally registered at the start of operations is 82% while the average number of years firms operated without formal registration was 6 years. About 75% of the firms perceive access to finance, electricity and the incidence of corruption as obstacles to their operation. About 63 % of the firms perceive crime level in their locality and educational level of the workforce as obstacles. Access to land was an obstacle to about 60%

of the firms, while about 65% and 73 % of the firms perceived that political instability and the transportation infrastructure, respectively, represented a business obstacle.

xxxx Insert Table 1 xxxxxx

Results on the sociocultural/economic-informality relationship

Table 2 reports the results of estimating equation (1). Given that the independent variable *FREG* is a binary variable, the results of the Linear Probability Model (LPM), probit model and the logit model are presented in columns (1), (2), and (3) respectively. The regression results show that, except for the variable *EDUC* which has a positive coefficient, the coefficients of all the variables are negative and statistically significant.

xxxx Insert Table 2 xxxxxx

The results in Table 2 presents the relationship between the various sociocultural and socioeconomic factors and firm's informality. However, this relationship is likely to differ across different firm size. There is some evidence suggesting that large firms, for example, perform differently and are affected by different problems than, say, small firms (see, for example, Collins et. al., 2016). Hence, we hypothesize that the relationship between firm informality and the different sociocultural and socioeconomic factors is likely to differ according to size. To test this, we disaggregate the firms into small, medium and large firms.

Tables (3), (4) and (5) present results of the regressions for small, medium and large firms respectively. Regressing for only small firms, we find results that are similar to those obtained in Table 2. The results show that, except for the variable *EDUC* which is positive, the coefficients of the other factors are negative and statistically significant. The only significant difference between the results for only small firms presented in Table 3 and the results for all firms presented in Table 2 is that the variable for political instability *POINSTAB* is not statistically significant in Table 3. This suggests that political instability does not have any significant effect on the informality of small firms.

The results for medium-sized firms only are presented in Table 4. The results show that the coefficients of the variables *FIN*, *CORR*, *CRIME*, *ELEC* are not statistically significant. However, all other variables, apart from *EDUC* which is again positive, have negative coefficients that are statistically significant.

Table 5 presents the result of the regression for large firms only. Not surprisingly, the results are markedly different from all the previous results. As shown in Table 5, the regression results indicate that none of the independent variables has any statistically significant coefficients. These suggest that none of the factors present in the regression model has any effect on the probability of large firms registering at the start of their operation.

xxxx Insert Table 3 xxxxxx

xxxx Insert Table 4 xxxxxx

xxxx Insert Table 5 xxxxxx

We proceed to estimate equation (2) where the independent variable is YREG, which is our second measure of informality. This estimation intends to show how the variables included in the equation affect the number of years that firms that start unregistered remain in the informal sector. The results of the OLS regressions are reported in Table (6). The table presents the results for both the total firms and disaggregation of the firms by size. Column (1) shows the regression result for all the firms in the sample, while columns (2), (3), (4) present the regression results for small, medium and large firms respectively.

When all the firms are included, as shown in column (1), the regression results, surprisingly, show that none of the coefficients of the independent variables is statistically significant. The results are similar to those in column (4) when only large firms are included in the regression. The results show again that none of the variables in the model affects the number of years that large firms remain in the informal sector.

Nonetheless, when small firms only and medium-sized firms only are considered, the regression results, as presented in column (2) and (3) respectively, show that only the variables *FIN and COMP* are statistically significant for small firms, while only the variable *POINSTAB* is significant for medium-sized firms. Given that the coefficients of these variables are also negative, these results suggest that small firms are more likely to remain unregistered for longer the more they perceive lack of finance and the activity of their competitors as obstacles. Medium-sized firms, on the other hand, are likely to remain unregistered the more they perceive political instability as an obstacle.

xxxx Insert Table 6 xxxxxx

Discussion

In the empirical analyses, two measures of informality were estimated: (i) whether the firms were registered at the start of their operations (FREG) and (ii) how many years it took these firms to register (YREG).

For the first measure of informality, FREG, the regression results show that, except for the variable EDUC, the coefficient of the independent variables are negative. What this suggests is that, when corruption, political instability, crime rate, infrastructure (electricity and transportation), access to land and finance are perceived as obstacles, firms are less likely to register their firms at the start of their operation. On the other hand, the positive coefficient of *EDUC* suggests that the perception that the education level of the workforce is an obstacle increases the probability that firms would register formally when starting operations.

However, when firms are disaggregated by size, we obtain interesting results. The regression results for when only small firms are considered is similar to the previous finding, as the results show that all the independent variables have negative coefficients except for *EDUC* which is positive, and *POINSTAB,* which is not statistically significant. This result supports the earlier finding and suggests that small firms are less likely to formally register their firms at the start of their operations when they perceive the level of corruption, crime rate, infrastructure, access to land and finance as obstacles. Interestingly, however, political instability appears not to have any significant influence on whether small firms register or not.

The results are different when only medium-sized firms are considered. Independent variables such as *FIN CORR CRIME ELEC* were not statistically significant, suggesting that they do not affect the probability of medium-sized firms starting operations unregistered. Other factors in the variables such as *LAND, TRANS, POINSTAB* are negative and statistically significant, which suggests that the probability of medium-sized registering their business at the start of operation decreases when they perceive these variables as obstacles.

Unsurprisingly, when only large firms are included in the regression, the results show that none of the variables is statistically significant. This could be because large firms are less likely to be informal; either because they register their firms in order to grow, or just that firms that will become large are the kind of firms with the characteristics that dispose them to formalising their business.

The second measure of informality, YREG, is also estimated. When all the firms are included in the regression, the results indicate that none of the independent variables is statistically significant. A similar result is obtained when only large firms are regressed. These results suggest that none of the sociocultural and socioeconomic factors affects the number of years that informal firms, especially the large firms, stay unregistered. The results, however, uncover interesting finding when only small firms and only medium firms respectively are included in the regression. The results showing that only the coefficients *FIN* and *COMP* are negative and statistically significant when only small firms are included in the regression suggest that small firms are more likely to remain unregistered for longer the more they perceive lack of finance and the activity of their competitors as obstacles. Meanwhile, when only medium-sized firms are included, the result shows that these firms are more likely to remain unregistered if they perceive instability in the politics of the country.

Taken together, what these analyses show is that socio-cultural, socio-political and socioeconomic factors matter in determining the informality of firms. Not only do these factors matter, but their impact also differs depending on the size of the firm. Crucially, the findings show that, while these factors affect whether firms choose to register or not, and how long they remain unregistered, these effects are important only for small and medium-sized enterprises (SMEs). While most of the factors included in the study have an effect on at least one of the measures of informality defined in this study, however, only a few have a significant effect on the two measures of informality. For small firms, the results show that access to finance (FIN) and the activities of competitors (COMP) are the most significant determinants of informality. While for medium firms, only political instability appears to have a significant effect on the two measures of informality.

Conclusion

This study investigates the determinants of entrepreneurship across the informal sector in Africa focusing particularly on how socio-cultural, socio-political and socioeconomic factors impact on informal sector across African countries. Informality is measured using two proxies—unregistered at the start of operation and the length of time the firm remains unregistered. Using a large sample size from 47 countries between 2006 and 2017, our results show that when corruption, political instability, crime rate, infrastructure (electricity and transportation), access to land and finance are perceived as obstacles, firms are less likely to register their firms at the start of their operation. When the firms are disaggregated by size, we find that these factors are only associated with small and medium-sized firms. We do not find any significant relationship between these factors and informality of large firms.

Furthermore, when all the firms are accounted for, none of the variables appears to have any significant relationship with the length of time firms remain unregistered. However, we obtain a different picture when the firms are subdivided by size. For the large firms, the results show that none of the factors is a significant determinant of informality of large firms. However, for small and medium-sized firms, the results show that while access to finance and practices of competitors were significant determinants of the length of time small firms stay unregistered, only political instability is significantly associated with the number of years medium-sized firms stay without registration.

In sum, while most of the factors included in the study have an effect on at least one of the measures of informality defined in this study, however, only a few have a significant effect on the two measures of informality. For small firms, the results show that access to finance (FIN) and the activities of competitors (COMP) are the most significant determinants of informality. While for medium firms, only political instability appears to have a significant effect on the two measures of informality. Hence, we conclude that these factors are the most significant determinants of informal entrepreneurship in Africa.

Our results have important implications for policymakers such as African governments. For the governments, it is evident from our results that the choice to operate in the informal sector is driven by socio-cultural, socio-political and socioeconomic factors. As such, policy initiatives aimed at increasing levels of formalization need to take these influences into account. Indeed, policies targeted at the informal sector cannot be developed in isolation, they have to be developed and implemented *pari passu* with policies targeted at improving socio-cultural, socio-political and socio-economic conditions in these countries. In terms of specific policies, any policy package targeted at the informal sector needs to create better access to finance for small and medium businesses, develop infrastructure in terms of electricity and transportation networks, guarantee access to land and reduce crime and corruption.

The results also have some implications for entrepreneurship theory. Until now, participation in the informal economy has been thought of as being determined by personal, institutional and structural factors. Our results show that the decision to participate in the informal economy is much more complex as it is influenced by a host of other socio-cultural, socio-political and socio-economic factors. Our results also show that entrepreneurship in the informal economy is context-bound as the socio-cultural, socio-political and socio-economic factors which influence participation in the informal economy are unique to the specific context (in this case, Africa). We hope that this study opens up the space for a more detailed examination of how these factors impact on the informal economy in African as well as in other regions.

Appendix 1: Breakdown of countries and survey years

xxxx Insert Table 7 xxxxxx

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Table 1: Descriptive Statistics

Variable	Observation	% of firms : yes	% of firms: No	Minimum	Maximum
FIN	21,336	74.76	25.24	0	1
LAND	21077	60.63	39.37	0	1
CORRUPT	21095	74.71	25.29	0	1
CRIME	21092	63.39	36.61	0	1
ELECT	21796	75.87	24.13	0	1
EDUC	21361	62.91	37.09	0	1
POINSTAB	21208	65.47	34.53	0	1
COMP	20821	72.63	27.37	0	1
TRANS	21388	66.83	33.17	0	1
FREG	21,116	82.40	17.60	0	1
YREG	2862	5.859[a]	7.978[b]	1	147

Notes:

FREG: Formally registered when started operations in the country

YREG: Number of years firms operated without formal registration

FIN: Access to finance as an obstacle

LAND: Access to land as an obstacle

CORRUPT: Corruption as an obstacle

CRIME: Crime, theft and disorder as obstacles

ELECT: Electricity as an obstacle

EDUC: Inadequate education workforce as an obstacle

POINSTAB: Political instability as an obstacle

COMP: Competitors as an obstacle

TRANSP: Transportation as an obstacle

a represents the mean of YREG

b represents the standard deviation of YREG

Table 2

Analysis of the impact of Sociocultural and Socioeconomic factors on whether firms are formally registered at the start of operation (FREG) (all firms)

Variables	(1) LPM	(2) PROBIT	(3) LOGIT
FIN	-0.0133	-0.0593^{+}	-0.114^{+}
	(0.116)	(0.100)	(0.085)
LAND	-0.0206**	-0.0897**	-0.168**
	(0.006)	(0.004)	(0.003)
CORR	-0.0203*	-0.0783*	-0.142*
	(0.022)	(0.031)	(0.029)
CRIME	-0.0164*	-0.0584^{+}	-0.107*
	(0.028)	(0.054)	(0.047)
ELEC	-0.0401**	-0.181**	-0.342**
	(0.000)	(0.000)	(0.000)
TRANS	-0.0406**	-0.186**	-0.329**
	(0.000)	(0.000)	(0.000)
EDUC	0.0207**	0.0923**	0.163**
	(0.005)	(0.002)	(0.002)
POINSTAB	-0.0157*	-0.0539^{+}	-0.0935
	(0.050)	(0.094)	(0.101)
COMP	-0.0206**	-0.102**	-0.189**
	(0.009)	(0.002)	(0.002)
Sector	-0.0779**	-0.290**	-0.518**
	(0.000)	(0.000)	(0.000)
Year	0.0257**	0.106**	0.185**
	(0.000)	(0.000)	(0.000)
OWN	0.0439**	0.184**	0.344**
	(0.000)	(0.000)	(0.000)
Size	0.0931**	0.420**	0.789**
	(0.000)	(0.000)	(0.000)
_cons	-50.98**	-212.1**	-371.2**
	(0.000)	(0.000)	(0.000)
N	14396	14396	14396

R^2	0.068

p-values in parentheses
Significant at $^{+}$ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$
This model includes all the firms in the sample.

Table 3

Analysis of the impact of Sociocultural and Socioeconomic factors on whether firms are formally registered at the start of operation (FREG) (small firms only)

	(1) LPM	(2) PROBIT	(3) LOGIT
FIN	-0.0238^{+}	-0.0942*	-0.167*
	(0.070)	(0.041)	(0.040)
LAND	-0.0260*	-0.0932*	-0.167*
	(0.022)	(0.016)	(0.013)
CORR	-0.0368**	-0.128**	-0.216**
	(0.004)	(0.004)	(0.005)
CRIME	-0.0283*	-0.0967**	-0.161*
	(0.010)	(0.009)	(0.012)
ELEC	-0.0618**	-0.230**	-0.414**
	(0.000)	(0.000)	(0.000)
TRANS	-0.0491**	-0.180**	-0.306**
	(0.000)	(0.000)	(0.000)
EDUC	0.0206^{+}	0.0721*	0.128*
	(0.054)	(0.044)	(0.038)
POINSTAB	-0.00675	-0.0114	-0.0281
	(0.563)	(0.770)	(0.674)
COMP	-0.0282*	-0.102*	-0.180*
	(0.020)	(0.016)	(0.015)
Sector	-0.110**	-0.343**	-0.587**
	(0.000)	(0.000)	(0.000)
Year	0.0344**	0.116**	0.192**
	(0.000)	(0.000)	(0.000)
OWN	0.0616**	0.206**	0.368**
	(0.000)	(0.000)	(0.000)
_cons	-68.36**	-231.5**	-384.4**
	(0.000)	(0.000)	(0.000)
N	8305	8305	8305
R^2	0.055		

p-values in parentheses
Significant at $^{+}$ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$

Table 4
Analysis of the impact of Sociocultural and Socioeconomic factors on whether firms are formally registered at the start of operation (FREG) (medium firms only)

	(1) LPM	(2) PROBIT	(3) LOGIT
FIN	-0.00522	-0.0262	-0.0646
	(0.684)	(0.705)	(0.626)
LAND	-0.0212^{+}	-0.116^{+}	-0.214^{+}
	(0.069)	(0.057)	(0.066)
CORR	0.0107	0.0603	0.111
	(0.449)	(0.414)	(0.431)
CRIME	-0.00599	-0.0293	-0.0509
	(0.612)	(0.638)	(0.666)
ELEC	-0.0200	-0.129^{+}	-0.242^{+}
	(0.127)	(0.074)	(0.090)
TRANS	-0.0386^{**}	-0.223^{**}	-0.424^{**}
	(0.002)	(0.001)	(0.001)
EDUC	0.0280^{*}	0.151^{*}	0.279^{*}
	(0.017)	(0.014)	(0.015)
POINSTAB	-0.0277^{*}	-0.136^{*}	-0.257^{*}
	(0.028)	(0.040)	(0.041)
COMP	-0.0250^{*}	-0.144^{*}	-0.277^{*}
	(0.038)	(0.027)	(0.030)
Sector	-0.0313^{**}	-0.160^{**}	-0.300^{**}
	(0.002)	(0.002)	(0.002)
Year	0.0181^{**}	0.0944^{**}	0.173^{**}
	(0.000)	(0.000)	(0.000)
OWN	0.0317^{*}	0.163^{*}	0.318^{*}
	(0.012)	(0.015)	(0.013)
_cons	-35.56^{**}	-188.5^{**}	-345.1^{**}
	(0.000)	(0.000)	(0.000)
N	4196	4196	4196
R^2	0.022		

p-values in parentheses
Significant at $^{+}$ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$

Table 5

Analysis of the impact of Sociocultural and Socioeconomic factors on whether firms are formally registered at the start of operation (FREG) (large firms only)

	(1) LPM	(2) PROBIT	(3) LOGIT
FIN	0.00341	0.0155	0.0533
	(0.809)	(0.886)	(0.811)
LAND	-0.00683	-0.0517	-0.117
	(0.619)	(0.625)	(0.589)
CORR	-0.00900	-0.0671	-0.132
	(0.592)	(0.603)	(0.621)
CRIME	0.0163	0.137	0.273
	(0.233)	(0.188)	(0.203)
ELEC	0.00837	0.0586	0.133
	(0.573)	(0.603)	(0.569)
TRANS	-0.0211	-0.158	-0.336
	(0.132)	(0.142)	(0.137)
EDUC	0.0181	0.138	0.269
	(0.181)	(0.177)	(0.196)
POINSTAB	-0.0140	-0.108	-0.222
	(0.366)	(0.364)	(0.365)
COMP	-0.00611	-0.0464	-0.0971
	(0.642)	(0.646)	(0.642)
Sector	-0.0203^{+}	-0.157	-0.334^{+}
	(0.099)	(0.102)	(0.096)
Year	0.0124^{**}	0.0902^{**}	0.187^{**}
	(0.001)	(0.001)	(0.001)
OWN	0.0135	0.106	0.218
	(0.294)	(0.290)	(0.297)
_cons	-24.00^{**}	-180.0^{**}	-374.6^{**}
	(0.002)	(0.001)	(0.001)
N	1895	1895	1895
R^2	0.010		

p-values in parentheses
Significant at $^{+}$ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$

Table 6
Analysis of the impact of Sociocultural and Socioeconomic factors on the number of years firm operated without formal registration (YREG)

	(1) YREG	(2) YREG	(3) YREG	(4) YREG
FIN	-0.552	-1.540**	1.033	2.540
	(-1.14)	(-2.97)	(0.82)	(1.02)
LAND	0.0157	0.671	-1.646	-0.724
	(0.04)	(1.67)	(-1.57)	(-0.31)
CORR	-0.197	-0.271	0.846	-3.988
	(-0.44)	(-0.60)	(0.67)	(-1.41)
CRIME	0.351	0.353	0.669	-0.255
	(0.91)	(0.91)	(0.58)	(-0.11)
ELEC	0.0709	-0.368	1.216	2.161
	(0.15)	(-0.76)	(0.88)	(0.89)
TRANS	0.0122	-0.482	1.454	-0.978
	(0.03)	(-1.16)	(1.22)	(-0.41)
EDUC	-0.200	0.102	-1.177	0.506
	(-0.55)	(0.28)	(-1.06)	(0.22)
POINSTAB	-0.692	-0.168	-2.945**	0.602
	(-1.80)	(-0.43)	(-2.64)	(0.26)
COMP	-0.282	-1.253**	1.350	2.343
	(-0.63)	(-2.66)	(1.12)	(1.05)
Sector	1.195***	1.658***	-0.690	2.473
	(3.91)	(5.45)	(-0.77)	(1.16)
Year	-0.0388	-0.0573	0.140	-0.277
	(-0.53)	(-0.77)	(0.68)	(-0.64)
OWN	-1.458**	-0.701	-2.827*	-3.394
	(-2.98)	(-1.28)	(-2.39)	(-1.51)
Size	0.754**			
	(2.70)			
_cons	83.64	122.6	-276.5	562.9
	(0.57)	(0.82)	(-0.67)	(0.64)
N	2275	1711	447	117

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 7

	Country	Year
1	Angola	2010
2	Benin	2016
3	Botswana	2010
4	Burkina Faso	2009
5	Burundi	2014
6	Cape Verde	2009
7	Cameroon	2016
8	Central African Republic	2011
9	Chad	2009
10	Congo, Dem. Rep.	2013
11	Congo, Rep.	2009
12	Côte d'Ivoire	2016
13	Djibouti	2013
14	Egypt, Arab Rep.	2016
15	Eritrea	2009
16	Ethiopia	2015
17	Gabon	2009
18	Gambia, The	2006
19	Ghana	2013
20	Guinea	2016
21	Guinea-Bissau	2006
22	Kenya	2013
23	Lesotho	2016
24	Liberia	2009
25	Madagascar	2013
26	Malawi	2014
27	Mali	2016
28	Mauritania	2014
29	Mauritius	2009
30	Morocco	2013
31	Mozambique	2007
32	Namibia	2014
33	Niger	2017
34	Nigeria	2014
35	Rwanda	2011
36	Senegal	2014
37	Sierra Leone	2009
38	South Africa	2007
39	South Sudan	2014
40	Sudan	2014
41	Swaziland	2016

42	Tanzania	2013
43	Togo	2009
44	Tunisia	2013
45	Uganda	2013
46	Zambia	2013
47	Zimbabwe	2016