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Effect of corruption and crime on growth-oriented informal firms

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Abstract

Traditionally, informal firms have been perceived to be unproductive, lacking skills, and static by necessity, while low institutional quality has been shown to increase their prevalence. However, this research draws on institutional theory to explain the effect of corruption and crime on growth-oriented informal firms that emerge due to opportunities and make decisions voluntarily rather than out of necessity. We construct a logistic regression model using a unique representative dataset of informal firms from the 2019 Zambia Informal Sector Business Survey (ISBS). We find that growth-oriented informal firms pay bribes to remain unregistered (i.e., engage in corruption) and that crime decreases the number of these firms. Our research suggests that policymakers consider the particularities of growth-oriented informal firms when designing policies for entrepreneurs. Growth-oriented informal firms are more likely to consider formalization if they perceive the benefits of formality, and policymakers should be aware that crime could push these firms to subsistence or surveillance, thereby increasing inequality among all firms. Furthermore, researchers should explore the development process of these growth-oriented informal firms, managers in legal firms should consider collaborating with these firms, and the government should support such collaboration.

Keywords Informal entrepreneurship · Corruption · Crime · Informal firms · Growth oriented

Introduction

Informal entrepreneurship involves firms that avoid paying taxes and do not offer social benefits to their employees (Williams & Nadin, 2012; Williams & Shahid, 2016a, b; Assenova & Sorenson, 2017; Bu & Cuervo-Cazurra, 2020). In emerging economies, this informal economy accounts for "over half of the gross domestic product (GDP)" (Misati, 2010:222), 60% of total employment, and 80% of firms

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(Narula, 2020), while informal entrepreneurship operates "outside formal institutions" but "within informal institutions" (Webb et al., 2009, 2013a, b:2; Castro et al., 2014; Ault & Spicer, 2020). Entrepreneurs start informal firms out of necessity in an involuntary way and earn little money because they have neither alternatives for their survival nor opportunities for good jobs in the formal economy (Jolevski & Karalashvili, 2022; Maloney, 2004; Yamada, 1996). In contrast, self-employment can also be a voluntary, rational decision based on a business opportunity for growth (Amin, 2010a, b; Jolevski & Karalashvili, 2022; Maloney, 2004; Yamada, 1996). These contrasting views (voluntary vs. necessity) on participation in the informal economy are linked to different antecedents and effects (Ault & Spicer, 2020).

That is, the institutional factors that influence formal entrepreneurship are the opposite of those that affect necessity entrepreneurship in the informal economy (i.e., social welfare, gross national income (GNI) per capita, and regulations) (Ault & Spicer, 2020). Some institutional factors increase the prevalence of growth-oriented informal firms, while others decrease it. For example, social welfare, GNI per capita, and regulations foster growth-oriented informal firms' avoidance of the formal economy (Ault & Spicer, 2020); the absence of social welfare, democracy and security push growth-oriented informal firms into subsistence entrepreneurship (Ault & Spicer, 2020). Previous research has focused on the formal institutional factors that influence growth-oriented informal firms (Ault & Spicer, 2020), but researchers have paid less attention to the effects of informal institutions, i.e., corruption and crime—factors that influence growth-oriented informal firms (Ault & Spicer, 2020; Bruton et al., 2021; Matti & Ross, 2016; Williams & Youssef, 2014).

Pozsgai-Alvarez (2020:4) defines corruption as the "abuse of entrusted power for private gain." Corruption, measured as the "freedom of corruption," negatively influences the informal economy at the country level (considering legal and illegal activities) (Mara, 2012). Researchers have found a substitutive relationship between the shadow economy and corruption; an increase in the shadow economy decreases the level of corruption (Virta, 2010) due to a decrease in the number of bribe requests by officials to firms able to transition to informality (Virta, 2010). In addition, researchers have found a complementary effect of corruption on the shadow economy at the country level (in terms of necessity and opportunity motivations, illegal activities, etc.) (Goel & Saunoris, 2014; Wiseman, 2016) and observed that corruption depends on world geography (Virta, 2010). A few papers have also linked corruption with informal firms based on self-employment and household surveys (Francis, 2019), revealing that corruption increases firm performance (Lavallée & Roubaud, 2019). An exception to this is a study that explores corruption (paying bribes to remain unregistered) with a representative survey of informal firms and finds that managers in informal firms, motivated by necessity, positively influence the probability of these firms engaging in corruption (Francis, 2019).

As the above paragraphs suggest, researchers have offered mixed results on the relationship between corruption and the informal economy (without considering the division between growth-oriented informal firms and necessity-driven informal firms). Most studies have linked corruption with informal firms based on self-employment and household surveys; meanwhile, the few studies providing empirical findings at the firm level assume that informal firms participate in the informal

economy out of necessity. We therefore aim to go further and focus on the business level, paying attention to growth-oriented informal firms that voluntarily participate in the informal economy by paying bribes. The present study therefore fills this first gap in the research by addressing our first research question: How does corruption impact growth-oriented informal firms?

Research on crime in entrepreneurship begins with the rule-of-law index, which "captures the quality of contract enforcement and the likelihood of crime and violence" (Nnyanzi et al., 2016: 17), and influences entrepreneurial activity in the formal economy (i.e., number of registered firms) (Lv et al., 2020). Additionally, a country's weak rule of law influences the prevalence of its informal economy (Johnson et al., 1998). Furthermore, the literature on the effect of crime on firms has focused on formal firms (World Bank, 2014). Hence, evaluations of the effect of "harassment and crime" by officials on the informal economy are scarce due to a lack of data, while the firms in this economy do not enjoy the public goods of protection due to their informal status (Francis, 2019; Narula, 2019). Researchers have also found different effects of crime on self-employment, whereby crime either negatively influences participation in self-employment (World Bank Group, 2002; Cichello et al., 2006; McDonald, 2008; Joshi et al., 2014) or does not influence participation in self-employment (Grabrucker & Grimm, 2017).

Alternatively, researchers have evaluated the effect of crime on the productivity of agricultural and nonagricultural informal workers (i.e., number of working hours) who have been victims of or fear being victims of crime (Calvo, 2020). Victims of crime reduce their time spent working, regardless of their sector. In contrast, their fear of crime increases individuals' working hours in the agricultural sector but reduces their working hours in the nonagricultural sector (Calvo, 2020). Researchers have also approximated the number of informal firms through self-employment surveys, which provide a good but not exact approximation (Francis, 2019; Jolevski & Karalashvili, 2022). Accordingly, we conclude that researchers have found that the opposite effects of the rule of law foster or decrease informal firms in general (without considering the division between growth-oriented informal firms vs. necessity informal firms). Most studies that link crime with the prevalence of informal firms have therefore provided mixed results on the relationship between crime and the informal economy when using self-employment and household surveys. However, the World Bank has collected a unique representative dataset of managers in informal firms, which allows testing the effect of antecedents on growth-oriented informal firms (Francis, 2019; Jolevski & Karalashvili, 2022). Accordingly, the present study fills this second research gap by addressing the following question: How does crime impact growth-oriented informal firms?

We argue that the division between voluntary and necessity participation in the informal economy is relevant, as most entrepreneurs in informal firms are less productive than those in formal firms; however, there is a group of growth-oriented informal firms that resemble formal firms in terms of productivity, which need to be accounted for when government policies are considered (Aga et al., 2021). This 7.6% of growth-oriented informal firms represents many employees in the informal economy (10.6%) (Aga et al., 2021:3). Thus, understanding the drivers of these

firms is essential because they differ from those of necessity informal firms (Aga et al., 2021). Furthermore, growth-oriented informal firms have access to external sources of technology from small and medium-sized enterprises that influence innovation (Nyaware, 2019) positively, while their motivation for growth increases their performance, i.e., labor productivity, twofold compared to that of informal firms motivated by necessity (Amin, 2010a, b). This is because they have distinct modes of operation, stemming from their motivations, which are linked to specific antecedents, i.e., financial access, size, and infrastructure (Amin, 2010b). In addition, innovation among growth-oriented informal firms exists (Kabecha, 1998), whereby informal firms implement both technological and nontechnological innovations that positively influence their productivity (Fu et al., 2018; Mulibana & Rena, 2022; Nyaware, 2019).

To address our two research questions regarding the effects of corruption and crime on growth-oriented informal firms, following institutional theory, we posit that corruption and crime are linked; both are informal institutions (Belitski et al., 2021a, b) that capture the historical and social factors embedded in emerging economies (Bu et al., 2022; North, 1991) and influence the behavior of informal firms when individuals select either opportunity or necessity entrepreneurship (Ault & Spicer, 2020). The present study therefore tests the effects of corruption and crime on growth-oriented informal firms with a representative dataset of informal firms from the 2019 Zambia Informal Sector Business Survey (ISBS). This dataset includes a sample of 914 informal firms in Zambia, an emerging economy with high corruption and informality and a low institutional level (Barnard, 2020).

Our results indicate that corruption influences the prevalence of growth-oriented informal firms and that crime reduces the probability of the existence of growth-oriented informal firms. Therefore, we contribute to extant findings on the different impacts of crime and corruption on necessity entrepreneurship, self-employment, and informal firms as a whole (Francis, 2019; Grabrucker & Grimm, 2017; Lavallée & Roubaud, 2019; McDonald, 2008; Wiseman, 2016) and regarding the relation of other activities, i.e., "unpaid domestic work," "undeclared work" and criminal activities (Salvi et al., 2022:3). Therefore, our research contributes in three ways to the literature on growth-oriented informal firms. First, we provide empirical evidence from Zambia on the impact of crime and corruption on growth-oriented informal firms according to a representative sample at the city level, in contrast with previous research based on self-employment and household surveys (Aga et al., 2022; Jolevski & Karalashvili, 2022). Second, we advance the literature on the effect of informal institutions on growth-oriented informal firms, which has thus far focused on the impact of formal institutional drivers on growth-oriented informal firms (Ault & Spicer, 2020). Third, our study provides practical implications for policymakers in emerging economies in sub-Saharan Africa, particularly Zambia, underscoring the importance of addressing corruption and crime by considering the diversity of informal firms, particularly growth-oriented informal firms, when designing and implementing policies to improve the likelihood of these firms formalizing.

The remainder of this paper is organized as follows: The first section is a Literature review, and the second section presents the study's Theoretical background. The third section explains the adopted Methodology. The fourth section discusses the

Results and Conclusions of the research. Finally, the study's Limitations and some directions for Future research are presented in the fifth section.

Literature review

First, the literature has focused on the antecedents of recognized and exploited opportunities in the informal economy via conceptual papers (Murnieks et al., 2019; Webb et al., 2013a, b); few works have empirically studied the macrolevel factors (i.e., formal institutions and economic factors) that motivate the prevalence of informal entrepreneurship (Autio & Fu, 2015). Such factors include the effect of trade liberalization on informal entrepreneurship transition (Moore & Dau, 2021), drivers of the degree of business informalization (Williams & Shahid, 2016a, b), and strategies for formalizing informal entrepreneurship (Floridi et al., 2020; Jessen & Kluve, 2021). Second, researchers have studied the effect of antecedents (i.e., pro-market reforms and organized crime) on the motivation to start a business as an unregistered firm that then transitions to a formal one—firm "delayed registration" (Williams et al., 2017; Adbi & Shukla, 2022:16; Mallon & Fainshmidt, 2022). Third, studies have looked at the effects of firm "delayed registration" on innovation, access to global value chains, and the adoption of external knowledge and performance (Assenova & Sorenson, 2017; Williams et al., 2017; Costamagna et al., 2019; Bu & Cuervo-Cazurra, 2020; Adbi & Shukla, 2022:16; Colovic et al., 2022; Escobar et al., 2022). Fourth, researchers have principally used the Global Entrepreneurship Monitor (GEM) dataset to explain the country-level factors (i.e., corruption) (Lv et al., 2020) and institutional factors (i.e., the voice of accountability) that influence the level of entrepreneurial activity in a formal economy (Lv et al., 2020), finding that the individual-level antecedents of opportunity and necessity entrepreneurship in the formal economy are extensive (Amorós et al., 2016; Lecuna et al., 2016; Van der Zwan et al., 2016; Amorós et al., 2019; Jafari-Sadeghi, 2019; Murnieks et al., 2019; Bilaliib et al., 2020).

Various literature reviews have also proposed a typology of informal firms based on their socioeconomic status and level of informality, for example, "informal poor," "informal affluent," "semiformal poor," and "semiformal affluent" (Salvi et al., 2022:3), whereby it is necessary to understand the factors influencing their prevalence and growth to support programs and direct policy-makers' efforts (Salvi et al., 2022). Furthermore, Grimm et al., (2012) have determined some characteristics and behaviors of top-performing informal firms in West African countries, specifically, sub-Saharan African countries; individuals' characteristics include being male, having a high education and foreign language skills, and the sector of activity. They also consider infrastructural factors, i.e., a "wealthier household," water connection, electricity connection, telecommunication (landline) infrastructure, and basis in a fixed premises (Grimm et al., 2012:1359). Furthermore, growth-oriented informal firms have more "financial literacy," track their business financial transactions, hire workers from the market rather than family workers, belong to a business association and are more prone to formalize and "actively search for customers" (Grimm et al., 2012:1361).

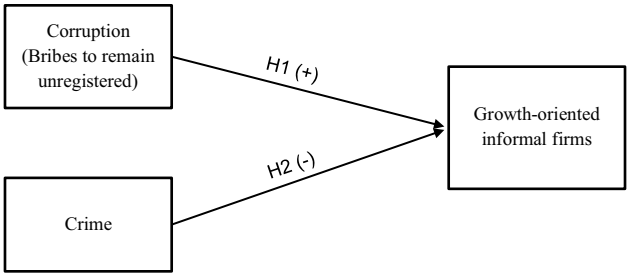

Fig. 1 Effect of corruption and crime on growth-oriented informal firms

Research has also focused on the effect of formal institutions (Ault & Spicer, 2020; Takyi et al., 2022) and infrastructure on the prevalence of growth-oriented informal firms (Ault & Spicer, 2020; Takyi et al., 2022). Moreover, researchers have studied the financial and nonfinancial factors that influence growth-oriented female entrepreneurship by using case studies in the tourism industry in Cameroon (Kimbu et al., 2019). These authors find that growth-oriented informal firms should develop networks to access resources (Kimbu et al., 2019:55). Furthermore, in Nigeria, informal firms in the upper tier that adopt ICT show better performance (labor productivity) than subsistence firms (Danquah & Owusu, 2021). Additionally, growth-oriented informal firms have skills and knowledge in production, service, market orientation, and marketing skills; they speak different languages, innovate, and search for foreign markets (Boafo et al., 2022:639). Furthermore, in Zambia, resources that positively influence the performance of growth-oriented informal firms include links with formal firms, online sources of information and knowledge, and searches for customers outside the local market (Tang & Konde, 2021:1).

Therefore, based on the above research on growth-oriented informal firms in Africa, we seek to understand how two informal institutional factors (crime and corruption) influence growth-oriented informal firms by using Zambia as a case study, as shown in the proposed model in Fig. 1.

Theoretical background

Institutional effects, or the norms and rules of the game, influence the allocation of opportunity and necessity entrepreneurship, particularly in developing economies (Aparicio et al., 2016; Audretsch et al., 2021; Murimbika & Urban, 2020; Petrakis, 2012). These institutional effects allow evaluating informal entrepreneurship (Mallon & Fainshmidt, 2022) and the motivations of such firms for growth-oriented vs. necessity entrepreneurship (Ault & Spicer, 2020). The rules and norms refer to formal institutions, while culture, social norms, conventions, and values refer to informal institutions "*and are embedded in society"* (Alon & Hageman, 2017; Belitski et al., 2021a, b; Choi et al., 2022; Murimbika & Urban, 2020; North, 1991; Petrakis, 2012; Tian et al., 2021); these shape the behavior of firms and entrepreneurs as intangible ways of operating as legitimate and acceptable in society (Peng et al., 2009). Informal

institutions therefore influence entrepreneurs to enhance their outcomes (i.e., innovation), for example, their social cohesion or collaborative culture and long-term horizon (Choi et al., 2022).

Accordingly, corruption and crime are informal institutions that capture the cultural-historical factors that influence the behavior of firms and entrepreneurs (Belitski et al., 2021a, b; North, 1991). Moreover, corruption and crime affect firm response. For example, these two aspects affect firms' investment in security and reduce their production investment in some regions (Bu et al., 2022). Thus, we argue that corruption and crime influence voluntary (growth-oriented informal firms) participation in the informal economy.

Corruption and growth-oriented informal firms

Generally, corruption plays a role in transition economies and influences entrepreneurial motivations (Alon & Hageman, 2017; Audretsch et al., 2021; Belitski et al., 2021a, b). Corruption is not only a prevalent problem that increases business uncertainty, distorts institutions, and deteriorates economic outcomes (Belitski et al., 2021a, b) but also the norm in some societies, guiding the day-to-day interactions embedded in emerging and transition countries (Belitski et al., 2021a, b; Bu et al., 2022; Li et al., 2021; Tian et al., 2021). Pervasive corruption discourages growth-oriented informal firms from transitioning to formality; because these firms do not trust the government (Tian et al., 2021), they do not perceive the benefits of formality (Adbi & Shukla, 2022) due to the high costs of transactions, e.g., paying inspectors when operating as formal firms. For example, when firms request an electrical connection, pervasive corruption can encourage inspectors to request bribes amid low-quality institutions (Tian et al., 2021). In addition, growth-oriented informal firms perceive weak formal institutional support in emerging economies (Adbi & Shukla, 2022), where the process of registration is long and expensive; thus, these firms prefer to use this time and money to learn more about their business (customers and suppliers) (Williams et al., 2017), take advantage of their informal status (Williams & Martinez-Perez, 2014) and avoid paying large bribes to officials (Tian et al., 2021).

Hence, we argue that the true prevalence of growth-oriented informal firms is hidden due to the perception of weak law enforcement (Assenova & Sorenson, 2017) when the public sector, i.e., the judicial system and police institutions, is unfair and corrupt (Audretsch et al., 2021), which increases the uncertainty of firms in the formal economy (Alon & Hageman, 2017; Amorós et al., 2016; Iriyama et al., 2016; Jiaqi et al., 2019; Jimenez et al., 2017). Thus, officials in emerging economies exploit high levels of bureaucracy and their authority to demand informal gifts or payments to accelerate the issuance of licenses, e.g., electrical and water connections—another cost of doing business that must be paid to officials in the transition of growth-oriented firms toward formality (Alon & Hageman, 2017; Jiaqi et al., 2019; Jimenez et al., 2017; Xie et al., 2018).

Therefore, we also argue that growth-oriented informal firms weigh the costs of paying bribes to remain unregistered (Cavotta & Dalpiaz, 2021) with those of formality—paying taxes and additional fees to inspectors in the formal economy to

obtain permits and the cumbersome paperwork that must be completed to obtain services, such as an electrical connection, for their operations. That is, firms engage in corruption *("bribe to remain unregistered")* due to both financial and nonfinancial costs (Narula, 2020), i.e., the time needed to negotiate bribes and manage relations with officials who represent the formal economy (Audretsch et al., 2021; Ault & Spicer, 2020). Growth-oriented informal firms target inspectors more than other actors because they have more sales than necessity entrepreneurs (Francis, 2019). Thus, we propose the following hypothesis:

H1. Corruption positively influences the probability of the existence of growth-oriented informal firms.

Crime and growth-oriented informal firms

According to Calvo, "Criminal violence is the result of illegal action by an individual or a group of individuals that is harmful to others" (2020: 175). Emerging economies have a high prevalence of crime (Natarajan, 2016), e.g., robberies, intimidation, or quota payments, which remains a growing issue (Pinazo-Dallenbach & Castelló-Sirvent, 2020; Sabet, 2015). In some societies, the money collected by criminals is even institutionalized and embedded in firms' daily operations (Cavotta & Dalpiaz, 2021).

Crime can negatively affect firm sales, and customers can be less prone to do business with affected firms, reducing the possibility of them attracting more customers or discouraging some suppliers from selling products in their area of influence, thus increasing their costs of transport and supply interruption (McDonald, 2008). Additionally, crime influences the decision to invest or expand and increase the number of employees (McDonald, 2008); sometimes, firms even reduce their number of employees when they are affected by crime (McDonald, 2008). Crime also increases the risk of the appropriation of firm resources with impunity, i.e., robbery or assault, a severe threat in an environment with weak judicial enforcement, and discourages entrepreneurs from investing in assets to expand their operations (BenYishay & Pearlman, 2014; Krkoska & Robeck, 2009; Matti & Ross, 2016; Sloan et al., 2016). Moreover, crime affects firms with good growth prospects and ample cash balances more than other firms (Krkoska & Robeck, 2009).

Criminals target growth-oriented informal firms because they are more efficient and perform better and their productivity is two times higher than necessity informal firms (Amin, b; Bhorat & Naidoo, 2017). Crime influences their day-to-day operations and thus discourages growth-oriented informal firms from making long-term investments (contracting more workers and expanding their business) (Bu et al., 2022; McDonald, 2008). In addition, growth-oriented informal firms, due to their legal status, are a target of criminals because they cannot request that their police and judicial systems punish criminal offenders with jail time (Kistruck et al., 2014; Amin & Islam, 2015; Bhorat & Naidoo, 2017; Rajneesh Narula, 2020; Bu et al., 2022; Mallon & Fainshmidt, 2022). Crime distorts firm operations, for example, by interrupting the supply chain and reducing productivity due to the theft of inputs for the production process (Bu et al., 2022). Thus, we argue that criminals perceive growth-oriented informal firms to be more

prosperous and wealthier than informal necessity entrepreneurs. Therefore, informal opportunity entrepreneurs are the most likely victims of crime (Kistruck et al., 2014), whereby we hypothesize the following:

H2. Crime negatively influences the prevalence of growth-oriented informal firms.

Methodology

The adopted methodology for evaluating the hypotheses is a logistic regression model, where the dependent variable is entrepreneurship opportunity (Zi). In addition, a series of independent variables (Xi) and control variables (Yi) are considered. The estimation uses maximum likelihood estimation to obtain the probability of accurately classifying the presence of an event, which means the probability of occurrence of the behavior of entrepreneurship (growth-oriented informal firms). Specifically, a strategy of four "forward" models is used: i) Model 1 is the base or "zero" model with independent variables and control variables, ii) Model 2 considers the base model + the inclusion of the independent variable "corruption," iii) Model 3 is the base model + the independent variable "crime," and iv) Model 4 is the base model + the effect of "corruption" and "crime" (Melovic et al., 2022).

$$Logit\,(Zi) = \beta 1(Xi) + \beta 2(Xi) + \varepsilon i$$

Data and sample

African countries have low institutional quality, facilitating widespread corruption and crime (Barnard, 2020). We focus on Zambia because it is an African country with unique characteristics, such as informal entrepreneurship corruption and crime, which must be considered when assessing management and informal entrepreneurship (Barnard, 2020; Hilson et al., 2018). Informal firms in Zambia contribute 48.9% of GDP and represent "on average, 75% of micro, small and medium-sized enterprises" (MSMEs) in sub-Saharan countries (Assefa et al., 2022:1). In 2019, informal labor in Zambia represented 68.57% of the informal economy (International Labour Organization, 2022). The employed population in Zambia was 2,995,103 (100%), with 941,292 (31.43%) formal employees and 2,053,811 (68.57%) informal employees (International Labour Organization, 2022:11). In addition, in sub-Saharan countries and West Africa, growth-oriented informal firms are large compared to those in other countries (Adoho & Doumbia, 2022; Boafo et al., 2022; Danquah & Owusu, 2021; Grimm et al., 2012; Kimbu et al., 2019; Lavallée & Roubaud, 2019). Therefore, the drivers of these firms are crucial for policymakers when designing, for example, tax programs for such firms (Joshi et al., 2014). In addition, the institutional drivers of growth-oriented informal firms across countries are mixed. Thus, research specific to certain countries is needed to delineate the specific institutional drivers of growth-oriented informal firms, such as corruption and crime (Ault & Spicer, 2020).

Although corruption and informal entrepreneurship are extreme conditions that are typical of African countries, the specific drivers of informal firms remain understudied. We focus on Zambia as a sub-Saharan country and present a broad overview of it in 2019. Zambia ranked 120th out of 140 in the indices of global competitiveness (World Economic Forum, 2019) and 113th out of 180, with a score of 34 out of 100 in terms of the perception of corruption by "public officials and politicians" (Transparency International, 2019). Furthermore, Zambia's[1] control of the crime subfactor of the rule of law index ranked 101th out of 126 countries (Lolas Stepke, 2022). Formal firms in sub-Saharan Africa lost more money due to crime than those in other emerging economies from Latin America (LATAM) (World Bank, 2014). The crime costs for sub-Saharan countries are approximately 1.8% of sales losses, and an average of 2.3% of sales are spent on security (World Bank, 2014).

We employ data from the 2019 Zambia ISBS of 914 informal firms to test the effect of corruption and crime on growth-oriented informal firms. These 914 informal firms are a representative sample of informal firms at the city level. While it has weaknesses, this sample framing is better than the traditional approximation of informal firms according to self-employment household surveys or economic census (Aga et al., 2022). The ISBS conducts face-to-face interviews with managers in informal firms in three cities in Zambia—Lusaka, Kitwe, and Ndola (World Bank Group, 2019)—following the adaptative cluster sampling (ACS) approach (Aga et al., 2022). This approach starts with a delimitation of the total squared area of each city, divides areas into square slots and then defines the number of slots as a function of the total area of the city. In Zambia, the "total number of squares enumerated" is 1,932 (World Bank Group, 2019:11). Second, slots are randomly selected, and the total number of informal firms in these slots is enumerated as "the total number of informal business units," which in Zambia is 8,006 (World Bank Group, 2019:11). Next, the World Bank randomly selects a sample of firms to interview in each slot. The "total number of long interviews completed" is 914, with informal firms interviewed using a 20-min questionnaire (World Bank Group, 2019:11). These steps ensure that the collected data of informal firms are representative because all the processes involve randomly selected informal firms. The ISBS considers firm characteristics, sales, supplies, business practices, crime, corruption, finance, labor, location and infrastructure, registration, and assets. More details on the methodology of this sample framing are provided by Aga et al. (2022).

Nevertheless, our sample has limitations. First, we focus on only one country, Zambia, in the cross-section year 2019. Therefore, our results cannot be generalized to other contexts outside the sample. Nevertheless, we suggest that policymakers in other sub-Saharan African countries with large informal firms and growth-oriented informal firms can benefit from our results, i.e., Ghana, in which "90.5% of establishments are informal" (Boafo et al., 2022:619). The growth-oriented informal firms in Ghana participate, on average, in six different markets because their

[1] https://worldjusticeproject.org/rule-of-law-index/country/2019/Zambia/Order%20and%20Security/.

products are of good quality (Boafo et al., 2022). Growth-oriented informal firms are present in Cameroon (Kimbu et al., 2019) and Nigeria (Danquah & Owusu, 2021). In Congo, "81.5 percent of employment" is found in the informal economy (Adoho & Doumbia, 2022:55), with the presence of "top-performing" informal firms (Adoho & Doumbia, 2022:55), and cities in West Africa are home to "top-performing" informal firms (Grimm et al., 2012; Lavallée & Roubaud, 2019). In any case, researchers should continue exploring the focal effects in other regions or countries with larger samples to define and alert policymakers to improve the growth of growth-oriented informal firms.

Variables

We provide a detailed summary of the operationalization of each variable in Table 1 and a summary of the specific variables in Table 2.

Dependent variable

The dependent variable is obtained from the 2019 Zambia ISBS, which measures the level of opportunities for enterprises to start and develop a profitable business or gain a secondary source of income. To operationalize opportunity entrepreneurship in the informal economy, we use the variable "Please indicate if any of the following were reasons why [owner] started this business or activity: the opportunity to start and develop a profitable business, –(b6b) - Dichotomous (0–1), and to have a secondary source of income, –(b6c) - Dichotomous (0–1) [If the informal firm answers yes to both questions (b6b and b6c), then it is considered an opportunity-based venture]." This dependent variable is dichotomous and has been used in previous studies (Jafari-Sadeghi, 2019; Lecuna et al., 2016). Opportunity entrepreneurship is defined as entrepreneurship in which individuals perceive a business opportunity as being successful (Lecuna et al., 2016; Reynolds et al., 2005).

Independent variables

Concerning the first independent variable, crime, information is obtained from the 2019 Zambia ISBS, which measures whether “this business or activity experienced losses as a result of crime.” This is a dichotomous variable from a previous study (Matti & Ross, 2016; McDonald, 2008). Crime can reduce firm productivity (World Bank, 2014). The second independent variable, corruption, is obtained from the same survey from 2019 and measures whether “this business or activity has to give gifts, informal payments or bribes to remain unregistered.” This variable is also a dichotomous variable that has been used in previous research (Francis, 2019).

Table 1 Summary of variables

Category	Subcategory	Description	Scale	References
Opportunity entrepreneurship/ growth-oriented informal firms	Opportunity to start and develop a profitable business (b6b)	"Please indicate if any of the following were reasons why [owner] started this business or activity:"	Dichotomous	(Jafari-Sadeghi, 2019; Lecuna et al., 2016)
	Opportunity to have a secondary source of income (b6c)		Dichotomous	
Institutions	Corruption (r5)	"Does this business or activity require the giving of gifts, informal payments or bribes to remain unregistered?"	Dichotomous	(Williams & Shahid, 2016a, b)
	Crime (i1)	"Over the last three months, has this business or activity experienced losses as a result of crime?"	Dichotomous	(Cavotta & Dalpiaz, 2021; Matti & Ross, 2016)
Control variables	Owner age (b9)	"What is the owner's age?"	Numerical	(BenYishay & Pearlman, 2014)
	Firm size (l3)	"In a regular month last year, how many people worked in this business or activity, including paid and unpaid workers?"	Numerical	(Brown et al., 2001)
	Owner experience (b10)	"How many years of experience working in this industry or activity does the [owner] have?"	Numerical	(Lecuna et al., 2016)
	Owner female (b2a)	"Is the owner female?"	Dichotomous	(Dsouza et al., 2006; Fatou, 2020)
	Family ties (c1a2)	"It makes it easier to manage family responsibilities along with work."	Dichotomous	(Cesaroni & Paoloni, 2016; Dsouza et al., 2006)
	Business relations (d14)	"How long has this business or activity worked with the primary supplier of its main input or sales item?"	Numerical	(Lecuna et al., 2016)

Table 1 (continued)

Category	Subcategory	Description	Scale	References
	Fixed assets (n3)	"In its current operations, does this business or activity use any machinery or equipment?"	Dichotomous	(Bhorat & Naidoo, 2017)
	Workforce education (b11)	"What is the owner's highest level of completed education?"	Likert (1–7)	(Lecuna et al., 2016; Parker & Belghitar, 2006; Williams & Shahid, 2016a, b)

The variable descriptions come from the 2019 Zambia ISBS

Table 2 Descriptions of the main variables

Variable	Obs.	Mean	Std. Dev.	Min.	Max.
Opportunity entrepreneurship	844	0.63	0.483	0	1
Corruption	867	0.093	0.291	0	1
Crime	914	0.111	0.314	0	1
Owner age	911	37.712	10.415	16	82
Firm size	909	2.244	1.472	0	9
Owner experience	889	4.917	6.524	1	45
Owner female	708	0.627	0.484	0	1
Family ties	407	0.909	0.288	0	1
Business relations	912	2.157	3.87	1	45
Fixed assets	834	0.194	0.396	0	1
Workforce education	908	3.371	1.166	1	7

Source: 2019 Zambia ISBS

Control variables

Finally, we control for the individual characteristics that influence the entrepreneur's decisions; age is recorded (BenYishay & Pearlman, 2014; Mallon & Fainshmidt, 2022; Melović et al., 2022), and size is measured by the number of employees (Brown et al., 2001). Sex (BenYishay & Pearlman, 2014; Dsouza et al., 2006; Fatou, 2020; Melović et al., 2022) and family ties make it easier for individuals to manage family responsibilities and work (Cesaroni & Paoloni, 2016; Dsouza et al., 2006). Business relations are measured as work with the primary supplier of the firm's main input, which influences informal firm productivity and is closely related to growth-oriented informal firms (Boudreaux et al., 2021; Lecuna et al., 2016). Fixed assets are measured as machinery or equipment (Bhorat & Naidoo, 2017), and workforce education is measured as the owner's highest level of completed education (Lecuna et al., 2016; Melović et al., 2022; Williams & Shahid, 2016a, b). All the above variables are used as independent variables to control for any data variation not explained by the previously discussed variables.

Results

Table 3 provides a correlation matrix of the variables used in the proposed theoretical model. Corruption correlates with opportunity entrepreneurship (0.173, $p < 0.05$); i.e., growth-oriented informal firms have an additional cost. This is in line with Apetrei et al. (2019), who mention that in a corrupt environment, entrepreneurship is not a condition to reduce inequality. Crime is negatively correlated with opportunity entrepreneurship (-0.156, $p < 0.1$); Apetrei et al. (2019) supports this relationship; amid a low rule of law, entrepreneurship is not a condition for reducing inequality. In correlation Table 3, the data show that "family ties" are correlated

Table 3 Correlation matrix of the main variables used in the theoretical model

	1	2	3	4	5	6	7	8	9	10	11
1) Opportunity entrepreneurship	1										
2) Corruption	0.173**	1									
3) Crime	-0.156*	-0.0572	1								
4) Owner's age	0.0901	0.0423	-0.0450	1							
5) Firm size	0.191**	0.235***	0.0420	0.103	1						
6) Owner experience	-0.0133	-0.0600	0.117	0.301***	0.110	1					
7) Owner female	0.0358	-0.0798	-0.0254	0.0334	-0.0770	-0.00945	1				
8) Family ties	0.182**	0.0572	-0.254***	0.0907	0.0730	0.0227	0.141*	1			
9) Business relations	-0.0726	-0.0407	0.117	0.202**	0.0161	0.570***	-0.0347	0.0325	1		
10) Fixed assets	0.0893	0.106	-0.0115	-0.0251	0.109	-0.0415	-0.159*	-0.0275	-0.0251	1	
11) Workforce education	0.0895	0.110	-0.0190	-0.107	0.122	-0.223***	-0.238***	0.0302	-0.102	0.119	1

*p < 0.1; **p < 0.05; ***p < 0.01

Table 4 Logistic regression

Growth-oriented informal firms	(1)	(2)	(3)	(4)
Owner age	0.0173	0.0150	0.0152	0.0131
	(0.0149)	(0.0147)	(0.0150)	(0.0148)
Firm size	0.293***	0.236**	0.317***	0.257**
	(0.101)	(0.105)	(0.109)	(0.110)
Owner experience	-0.00240	0.00931	0.00309	0.0145
	(0.0265)	(0.0271)	(0.0295)	(0.0296)
Owner female	0.146	0.249	0.155	0.263
	(0.334)	(0.346)	(0.334)	(0.347)
Family ties	1.023**	0.990**	0.799*	0.783*
	(0.450)	(0.457)	(0.449)	(0.456)
Business relations	-0.0409	-0.0480	-0.0378	-0.0448
	(0.0478)	(0.0466)	(0.0519)	(0.0500)
Fixed assets	0.807*	0.749	0.859*	0.808*
	(0.464)	(0.467)	(0.457)	(0.462)
Workforce education	0.118	0.130	0.122	0.134
	(0.124)	(0.127)	(0.124)	(0.127)
Corruption		1.462*		1.430*
		(0.775)		(0.798)
Crime			-0.912**	-0.889**
			(0.444)	(0.440)
Constant	-2.567***	-2.459**	-2.342**	-2.256**
	(0.975)	(0.993)	(0.993)	(1.010)
Industry fixed effects	YES	YES	YES	YES
Log-pseudolikelihood	-158.148	-153.245	-156.125	-151.327
Observations	258	254	258	254

Standard errors are in parentheses

*p < 0.1; **p < 0.05; ***p < 0.01

with opportunity entrepreneurship (0.182, p < 0.05). In addition, "family ties" are positively correlated when the owner is female (0.141, p < 0.1). These findings are closely related to the management of two roles as a mother ("family responsibilities") and entrepreneur (Blanco-Gonzalez-Tejero & Cano-Marin, 2022). Furthermore, a business with fixed assets decreases when the entrepreneur is a woman (-0.159, p < 0.1). This signifies women's necessity in helping implement fixed assets. Finally, businesses managed by women tend to be less educated (-0.238, p < 0.01), another challenge among these entrepreneurs. Firm size positively correlates with growth-oriented informal firms (0.191, p < 0.05), whereby firm size increases the likelihood of growth-oriented informal firms expanding. In addition, firm size correlates with corruption (0.235, p < 0.01), suggesting that a large firm is more prone to pay a bribe to remain an unregistered firm; this is related to firms' available resources, such as their fixed assets or human capital (Sheppard, 2023).

Notably, correlation indicates a linear relationship between two variables but does not imply causation, and some variables are dichotomous. Accordingly, the above results should be interpreted carefully.

Table 4 presents the results of the empirical tests of our two hypotheses. Model 1 is the base model. Model 2 considers the effect of corruption on growth-oriented informal firms. Model 3 considers the effect of crime on growth-oriented informal firms. Finally, Model 4 includes the effects of both corruption and crime on growth-oriented informal firms.

The first hypothesis is supported by Model 2 in Table 4: corruption positively affects growth-oriented informal firms ($b = 1.462$, $p < 0.1$). Similarly, our second hypothesis is supported by Model 3 in Table 4: crime discourages growth-oriented informal firms ($b = -0.912$, $p < 0.05$).

Discussion

Our study contributes empirical evidence on the effect of informal institutions such as corruption and crime on growth-oriented informal firms. The literature, however, has thus far focused primarily on the influence of formal institutions (Ault & Spicer, 2020).

We have found that corruption, as an informal institution, influences the prevalence of growth-oriented informal firms. Our results thus complement empirical research conducted in West Africa showing that firms with higher prospects of paying bribes, i.e., "sales per employee," influence the money collected by officials (Lavallée & Roubaud, 2019:1074). Furthermore, in line with qualitative findings in Cameroon, growth-oriented informal firms led by women typically must engage in corruption to continue operations (Kimbu et al., 2019).

Compared to previous research on necessity entrepreneurship, our findings are novel; we determine that corruption is an additional cost for growth-oriented informal entrepreneurs. The novelty of our findings entails that policymakers in Zambia concerned with informal firms that are prone to formalization should understand that these firms do not perceive the benefits of the formal economy, which entails paying money to officials, in contrast to informal firms by necessity, which may pay money to officials (Francis, 2019). However, these firms are not willing to formalize due to their status surveillance.

On the other hand, we find that corruption represents an additional cost for growth-oriented informal firms that do not perceive the benefits of formality. These results support the effect of the threat of crime, corroborating the qualitative findings of Ericina in Sicily suggesting that organized crime by the mafia influences customers to purchase from firms that support the mafia, negatively influencing firms' performance and growth in Ericina (Cavotta & Dalpiaz, 2021:9). In contrast, the effect of crime typically increases the prevalence of informal entrepreneurship as a whole ((Mallon & Fainshmidt, 2022). Nevertheless, by further concentrating on the impact of crime on growth-oriented informal firms, we find that these firms perceive crime to be an additional cost that forces them to transition to surveillance.

In summary, we find that crime and corruption, as informal institutions, influence growth-oriented informal firms in Zambia. Corruption influences growth-oriented informal firms to remain informal; even though they have sufficient resources, they do not perceive the benefits of formality (Gajigo et al., 2012; Shamsuzzoha & Tanaka, 2021). Therefore, policymakers should be aware of the diversity of informal firms and consider them partners to prevent money collection by inspectors and favor the growth of such firms. Concerning crime, the government should support public goods and treat informal firms equally; policymakers could even create clusters (Hung & Hung, 2014; Takyi et al., 2022) of growth-oriented informal firms to reduce the threat of crime, improve knowledge sharing and increase economies of scale (Takyi et al., 2022) to prevent the transition of growth-oriented informal firms to informal survival firms.

Conclusions

In Zambia, informal firms cannot request police services due to their status. The government should support growth-oriented informal firms by reducing the threat of crime to their operations because they have high growth opportunities; if they lose their income, materials, products, or cash, they can be pushed into the subsistence sector of informal firms and lose their potential to transition to formality. As corruption positively influences growth-oriented informal firms, we suggest that the government integrates growth-oriented informal firms into the formal supply chain rather than focusing on formalization (Rajneesh Narula & Van der Straaten, 2020). In this way, government officials will not exploit their power to request payments from informal firms.

The literature on growth-oriented informal firms has concentrated on understanding their characteristics (Grimm et al., 2012), external drivers (institutions) (Ault & Spicer, 2020) and internal drivers (resources) (Danquah & Owusu, 2021; Tang & Konde, 2021), which influence their growth. We advance this literature by finding two additional constraints (crime and corruption) on Zambia's informal firms, especially growth-oriented firms, which discourage their growth. Our findings thus allow policymakers to direct efforts toward both removing the constraints for these entrepreneurs and considering the diversity of informal firms when they design programs to support them.

Practical implications

Our results can assist other developing countries with extreme informal entrepreneurship, corruption, and crime conditions (Barnard, 2020), such as countries in Latin America. Our results highlight the necessity for policymakers to remove these barriers to prevent and reduce the uncertainty of growth-oriented informal firms, foster entrepreneurship and reduce inequality (Apetrei et al., 2019). For example, concerning corruption, the government should educate growth-oriented firms about the benefits of formalization, reduce bureaucracy, increase transparency, and reduce

the interaction of growth-oriented informal firms with inspectors to prevent bribes (Tian et al., 2021). With respect to crime, policymakers should give equal access to public police goods through a slogan indicating that security access is available to formal and informal firms. The government needs to work closely with growth-oriented informal firms to understand and cocreate mechanisms that remove the threat of crime and hinder the growth of their business or even foster a move to surveillance.

Theoretical implications

We contribute to the entrepreneurship literature by presenting a more nuanced view of the informal economy's primary focus on necessity (Maloney, 2004). We have empirically demonstrated some challenges (crime and corruption) in a new segment of growth-oriented informal firms. In addition, low institutional quality (corruption and crime) increases informal economy firms (including legal and illegal activities) (Goel & Saunoris, 2014; Johnson et al., 1998; Wiseman, 2016). However, we have advanced and demonstrated a more nuanced view of the informal economy, revealing how institutions show a differentiated effect depending on the type of informal firm, i.e., growth-oriented vs. necessity.

We have demonstrated that crime is an additional cost that discourages growth-oriented informal firms. Corruption increases their prevalence, contrary to the expected results, i.e., crime increases the informal economy (Johnson et al., 1998). Greater corruption increases the informal economy as a whole (Goel & Saunoris, 2014; Wiseman, 2016). However, we have shown that a group of informal firms prone to growth are willing to bear the costs of corruption to stay unregistered. This is probably because the benefits of formality are not perceived by these firms (Li et al., 2021) due to the possible taxes that they must pay, including the bureaucracy costs and permits needed to formalize.

Limitations

There are some limitations to our study. First, this study is context specific, as it focuses solely on informal entrepreneurship in Zambia as a case of an emerging economy. Hence, future research should consider other countries for generalization purposes. Second, our study analyses only cross-sections; therefore, future research should consider time series or panel data. Finally, our research focuses on the only available dataset of informal firms in 2019 before the COVID-19 pandemic; therefore, our results would likely be different if we considered the COVID-19 context. For example, the COVID-19 pandemic pushed even formal firms into the informal economy. The government should support these firms with resources that equip them with the tools needed to deal with the uncertainty of COVID-19, such as information technology, which has more of an impact on emerging economies than on developed economies (Heredia et al., 2022; Narula, 2020; Shepherd, 2022). Therefore, future research could explore the effects of information technology adoption on informal firms, for example, by using the most recently released dataset from India and Iraq

in 2021, collected between September 2021 and April 2022, or including enterprise surveys of informal firms post-COVID-19 concerning information technology, which the data for Zambia in 2019 did not include (Jolevski & Karalashvili, 2022).

Future research

First, we focus only on opportunity entrepreneurship in the informal economy. Hence, future research should consider other entrepreneurship motivations, such as social motivations, in the informal economy because their drivers differ from those of traditional entrepreneurship with a focus on economic value (Williams & Nadin, 2012; Méndez-Picazo et al., 2021). Second, some informal firms transition to formality, which negatively influences their innovation (Mendi & Mudida, 2017). Therefore, future research should consider the effect of firms' initially unregistered status on their environmental, social, and governance (ESG) implementation and its effect on firm performance (Lee & Suh, 2022) or investigate whether firms that began as unregistered engage in greenwashing more than similar firms that effectively balance the ESGs (Lee & Suh, 2022). Contrary to previous research showing a negative effect of starting unregistered on innovation, we expect a positive effect on ESG implementation if a growth-oriented informal firm transitions toward formality. For example, one firm found the effect of ESG implementation to be positive: the Green Glass Company, which converts recycled bottles into glass vessels. It started its business with undocumented immigrants and remained an informal firm for three years (Glass, 2019). This firm believes the long-term impact of its products is "to be the better vessels of the world," as they are created from recycled bottles. The Green Glass Company is a firm with a triple-bottom-line impact (economic, social, and environmental) (Urrutia, 2020). Third, future research could consider the governance mechanism and principal-agent problems in this growth-oriented informal model, i.e., the mediated effect of compensation, to assess the innovation process in these firms and their governance mechanisms (Davis et al., 2021; Li et al., 2022). Fourth, we consider only the average effects of crime and corruption on opportunity entrepreneurship. Other researchers could adopt methodologies such as fuzzy-set qualitative comparative analysis (QCA) to determine the effects of the configurational paths of formal and informal institutions on growth-oriented informal firms. Finally, we consider only the impact of external institutional factors (corruption and crime) on informal opportunity entrepreneurship. Future research should thus consider the effects of institutions' "evolution and coevolution" on opportunity entrepreneurship (Li et al., 2021).

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