



Formal versus informal entrepreneurship in emerging economies: The roles of governance and the financial sector

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ABSTRACT

This study contributes to the existing entrepreneurship literature by demonstrating how formal and informal entrepreneurship in emerging economies are differentially driven by the interplay between financial development and good governance. The following findings are obtained through the two-step system Generalized Method of Moments: (i) there exists an unconditional positive (negative) impact of financial development on formal (informal) entrepreneurship; (ii) the conditional effect of quality of governance increases formal entrepreneurship and decreases informal entrepreneurship; (iii) the net effects on formal entrepreneurship from the interactions of financial development with the indicators of governance quality are mostly positive, indicating that the quality of governance can be employed to enhance the positive weak effect of financial development on formal entrepreneurship; and (iv) the net effects on informal entrepreneurship from the interactions between financial development and the indicators of governance quality are negative for most estimated models, indicating that good governance can be used as a policy variable that improves the potentially weak impact of financial development on reducing informal entrepreneurship. Theoretical and empirical contributions, policy and practical implications are also discussed.

1. Introduction

Positioning a research study on the relevance of good governance in enhancing the financial sector for better entrepreneurial activity in emerging economies is motivated by at least five strands in scholarly and policy circles, namely: (i) the focus on entrepreneurship activity in emerging markets?; (ii) the impact of governance quality on entrepreneurial activities (formal and informal); (iii) concerns about financing entrepreneurial activities in these economies; (iv) the role of governance quality in the development of financial sector development; and (v) gaps in previous literature. We discuss these concepts in further detail below.

First, entrepreneurship is becoming a worldwide phenomenon of great importance, particularly since 1990, although its extent, nature, and contribution to socioeconomic development differ depending on the context in which it occurs. Initially, researchers only focused on entrepreneurial activity in developed nations. However, due to the availability of public datasets provided by institutions, such as the World Bank Global Entrepreneurship Survey (WBGES) and the Global Entrepreneurship Monitor consortium (GEM), we now have a better comprehension of the worldwide trends in entrepreneurial activities as

well as in emerging countries, i.e., countries that are increasingly moving toward market orientation and seeking to rapidly advance economically (Bruton, Ahlstrom, & Obloj, 2008). There are two reasons for the interest in entrepreneurial activities in emerging economies. First, these economies are characterized by an increasingly important market orientation and an expanding economy, in which entrepreneurship plays a key role in economic development (Ahlstrom & Bruton, 2008; Bruton et al., 2008). Although populations in these economies (especially China) are well known for their entrepreneurial excellence, research into understanding their entrepreneurial and organizational methods is only recent (Chen, 2001). Bruton et al. (2008) point out, in a recent special issue devoted to this topic, that knowledge of the scientific community about this context remains to be developed. Second, the level of entrepreneurship is much higher in emerging economies than in developed ones, pushed by less difficult entry barriers and high levels of need for entry, particularly in the informal sector. It is predicted that, by 2050, the economies of Brazil, China, India, and Russia (BRIC) will be larger than that of the G6 (France, Germany, Italy, Japan, U.K., and United States) countries (Wilson & Purushothaman, 2003). Similarly, Dana (2007) notes that emerging countries in East Asia appear to have a greater capacity than Western

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countries to reap multiple benefits from entrepreneurial activity: faster GDP growth, greater jobs and wealth, value of women and minority groups, and a general improvement in the quality of societal life. It is, therefore, interesting to develop an understanding of entrepreneurial activities in emerging economies.

Second, the concept of good governance has recently become a buzzword in the circles of both scholars and political decision-makers (UN, 2013; World Bank, 2014). Although it is defined as institutions through which the government in a country is exercised (Ong, 2006), it occupies an important place in the entrepreneurial literature in emerging economies. For instance, Ahlstrom and Bruton (2006, p.299) state that “emerging economies are characterized by fundamental and comprehensive institutional transformations as their economies begin to mature.” Therefore, understanding the link between governance quality and entrepreneurship has been an important domain for policy discussion and research in recent years (ADB, 2013). In this context, Havrylyshyn (2001) and Kaufmann, Kraay, and Mastruzzi (2006) claim that formal entrepreneurship is encouraged by several factors, such as good economic and political institutions, efficient regulation of the economy, and well-defined property rights and solid laws. However, encouraging people to register their businesses through the improvement of governance quality may not be achievable in the case of economies in early stages of development (Thai & Turkina, 2014). There are rich empirical studies supporting the evidence that governance quality has a major impact on entrepreneurship activities in emerging countries.¹

Third, several existing studies that have been carried out on economies with different levels of development agree that well-functioning financial sectors promote entrepreneurship activity and new business registration (see, for example, Evans & Jovanovic, 1989; De Soto, 2000; Thai & Turkina, 2014; Wujung & Fonchamnyo, 2016). It also strengthens demand and upsurges the accessibility of funding for newly registered businesses and of the economic and technological infrastructure required to engage in the formal sector (Thai & Turkina, 2014). Entrepreneurship in the informal sector is an important part of the economic activity of most emerging economies, employing more than 50% of the workforce on average (La Porta & Shleifer, 2008). In this context, De Soto (1989, 2000) documents that businesses operating in the informal sector are potential sources of economic growth that are inhibited by a lack of access to infrastructure and finance. Bugelsijk (2007) argues that financial development significantly boosts new business-registered ventures and dramatically reduces informal entrepreneurship by a lack of funding from banks.

Fourth, one of the key factors affecting the development of the financial sector of countries is governance (Sayılır, Dogan, & Soud, 2018). Kaufmann, Kraay, and Mastruzzi (2007) define governance as “the traditions and institutions by which authority in a country is exercised. This includes the process by which governments are selected, monitored and replaced; the capacity of the government to effectively formulate and implement sound policies; and the respect of citizens and the state for the institutions that govern economic and social interactions among them.” Recently, scholars have shown increased interest in relating governance and financial development (see, for example, De Soto, 2000; Girma & Shortland, 2008; Huang, 2010; Law & Azmani-Saini, 2012). They provide convincing evidence to support the view that good governance is a key factor in determining financial development. Accordingly, since both governance and financial development are interrelated, and each of them has a positive impact on entrepreneurship activity, we aim to demonstrate how good governance enhances financial development to influence formal and informal entrepreneurship in emerging economies, i.e., good governance is used as a policy variable that can enhance the financial sector for better entrepreneurship activity. To the best of our knowledge, this is the first

study that seeks to demonstrate how the interaction between governance quality and financial sector development can improve entrepreneurial activity, particularly in emerging economies.

Finally, this study also addresses relevant gaps in the prior literature. First, prior empirical studies only focused on individual or particular groups of variables, such as economic conditions, resources and ability, or culture (Klapper, Amit, Guillén, & Quesada, 2007), and did not consider all these variables together. To our knowledge, no empirical study has taken into account the combined impacts of these variables on entrepreneurship. Second, some conceptual studies propose entrepreneurial models at the macro-level (e.g., Wennekers, Uhlaner, & Thurik, 2002) without distinguishing between both forms of entrepreneurship nor how they are conducted differently. Third, the existing literature has largely focused on either the governance-entrepreneurship relationship (Manolova, Brush, & Edelman, 2008; Tracey & Phillips, 2011; Thai & Turkina, 2014; Williams & Shahid, 2016) or financial development-entrepreneurship nexus (Dutta & Sobel, 2018; Munemo, 2018; Thai & Turkina, 2014; Wujung & Fonchamnyo, 2016) without acknowledging how macro-level governance conditions may enhance the financial sector for better entrepreneurship activities in emerging economies.

In light of the above motivations, our inquiry provides several theoretical and empirical contributions to the ongoing literature. First, from a theoretical viewpoint, based on the eclectic theory of entrepreneurship (ETE), this inquiry contributes to the previous literature by demonstrating how both forms of entrepreneurship are driven differently by demand-side factors (economic opportunities), supply-side factors (resources and abilities), and governance quality. As a contribution to the demand-side factors of ETE, this study extends the previous entrepreneurship literature by demonstrating how good governance enhances financial development, which, in turn, encourages formal entrepreneurship and discourages informal entrepreneurship. Furthermore, regarding the impact of demand-side factors on both forms of entrepreneurship, our findings show strong support for Schumpeter's theory of economic development that stresses the inherent disequilibrium nature of market dynamics, which plays a significant role in understanding the nature of entrepreneurial activities and their function in the economic system. They also support the arguments of models using endogenous growth theory, in which social mobilities, investments in human and physical capital, R&D and foreign investment produce spillover impacts, which, in turn, foster new business creation. Regarding the supply-side factors (resources and abilities), our study strongly supports the population theories, which stress that people are the key actors of economic and social change. Second, from an empirical viewpoint, this inquiry also contributes to the prior entrepreneurship literature by the computation and discussion of the net effects on both forms of entrepreneurship from the interactions between financial development and six indicators of good governance, namely, government effectiveness, regulatory quality, political stability, voice and accountability, control of corruption, and rule of law. More specifically, we used good governance as a conditional variable that enhances financial development to influence both formal and informal entrepreneurship, i.e., governance can modulate the weak effect of financial development on both forms of entrepreneurship in emerging economies. This paper also extends previous studies in this area by focusing on emerging economies. Moreover, two forms of entrepreneurship (formal and informal) are included in our analysis to show how these forms are driven differently. There are several reasons why we cannot ignore informal entrepreneurship: (i) according to Schneider, Buehn, and Montenegro (2010), informal commercial activities account for more than 30% of the worldwide average economy; (ii) informal entrepreneurship exists in all economies regardless of their levels of economic development (Thai & Turkina, 2014); and (iii) it can also be at risk of being unethical (e.g., exploitation of workers, abuse of the natural environment, corruption, etc.). As mentioned above, we believe that emerging economies provide a significant framework to

¹ See, for instance, Tracey & Phillips, 2011; Williams & Shahid, 2016.

investigate such interplay, given that entrepreneurship is essential for the growth and development of these economies.

2. Theoretical underpinnings and literature review

2.1. Theoretical underpinnings

Over the last three decades, there has been great interest in entrepreneurship and business creation. One reason why policymakers and academic circles have failed to understand why entrepreneurship varies in time and space is that it is an interdisciplinary subject that covers a wide range of areas, including economics, sociology, geography, management, finance, and psychology (Audretsch, Roy, Verheul, & Wennekers, 2002). Although each field may be more suitable to examine any particular analytical observation unit, no field is qualified to analyze all of them.

Thus, to understand why variations of entrepreneurship occur, the eclectic theory of entrepreneurship (ETE), proposed by Verheul, Wennekers, Audretsch, and Thurik (2002), provides an integrated framework of these fields to understand and analyze what drives the entrepreneurial activities in a given country at both micro- and macro-levels. The eclectic theory explains the level of entrepreneurship in a given country by distinguishing between four core categories of factors, namely: demand-side (economic opportunities), supply-side (resources and abilities), quality of governance, and cultural factors. Consistent with ETE, we refer to the economic opportunities as those aspects that are exogenous to entrepreneurs, such as the stages of economic and technological development, financial development, and globalization (Rousseau & Sylla, 2003; Verheul et al., 2002). These factors influence the industrial structure and the (diversity in) market demand leading to entrepreneurial opportunities (Verheul et al., 2002). Rousseau and Sylla (2003) document that countries with well-developed financial sectors provide more economic opportunities. It also affects innovation (Gemünden, Heydebreck, & Herden, 1992; Levine, 1997) and economic growth (Mowery & Rosenberg, 1989). In addition to the economic and financial factors, some other scholars, such as Solow (1957), argue that economic opportunities are highly dependent on innovation capacity. Resources and ability factors are aspects that are endogenous to entrepreneurs, such as characteristics of the population, per capita income, unemployment, and human development (education level and health). From this perspective, potential entrepreneurs can exploit existing opportunities if they have the necessary resources, abilities and preferences (Verheul et al., 2002). Regarding the role of governance quality, scholars, such as Havrylyshyn (2001), Kaufmann et al. (2006), and Thai and Turkina (2014), state that solid laws, transparent registration procedures, and good economic and political governance are positively related to the national rates of entrepreneurship.

In short, ETE offers a framework to understand the factors affecting entrepreneurial activity at the macro-level. Accordingly, as a contribution to the demand-side factors of ETE, this study extends previous studies on formal entrepreneurship (e.g., Dhahri & Omri, 2018; Havrylyshyn, 2001; Kaufmann et al., 2006), informal entrepreneurship (e.g., Williams & Shahid, 2016; Wong, Ho, & Autio, 2005), and formal and informal entrepreneurship (e.g., Autio & Fu, 2014; Dau & Cuervo-Cazurra, 2014) by demonstrating how good governance enhances economic opportunities (particularly financial development), which, in turn, encourages formal entrepreneurship and discourages informal entrepreneurship.

2.2. Literature review

2.2.1. Governance quality and entrepreneurship

In recent years, the concept of good governance has become a buzzword in the circles of both scholars and political decision-makers (UN, 2013; World Bank, 2014). Several definitions of this concept have been documented in previous literature. To summarize, we limit the

discourse to three principal definitions. Kaufmann et al. (2007) define governance as “the traditions and institutions by which authority in a country is exercised. This includes the process by which governments are selected, monitored and replaced; the capacity of the government to effectively formulate and implement sound policies; and the respect of citizens and the state for the institutions that govern economic and social interactions among them.” For Tusalem (2015), governance is an epitome of corruption, political stability, the rule of law, the quality of regulation and bureaucratic efficiency. Méndez-Picazo, Galindo-Martín, and Ribeiro-Soriano (2012) conceive good governance as the existence of appropriate quality of institutions in a given country. To the best of our knowledge, the World Bank World Governance Indicators summarized from Kaufmann, Kraay, and Mastruzzi (2010) are the most widely used in previous literature, which are grouped into three principal classes (see Andrés, Asongu, & Amavilah, 2015)—economic governance (includes government effectiveness & regulatory quality), political governance (includes political stability & Voice and Accountability), and institutional governance (includes control of corruption & rule of law). In line with the current discussion on the need to clarify governance measures for more development results and greater precision in policy implications, we consider the three classes cited above.

Quality of governance occupies an important place in the current entrepreneurial literature. Therefore, solving the puzzle of the link between governance quality and entrepreneurship has been an important domain for policy discussion and research in recent years (ADB, 2013). For instance, prior studies showed that good governance provides the necessary conditions for individuals to start new activities and to introduce innovation and new products or services. Similarly, good governance influences the allocation of different types of entrepreneurship (Baumol, 1990). Havrylyshyn (2001), Kaufmann et al. (2006), Ali, Donna, and Levie (2019), among others, state that solid laws, transparent registration procedures, and good economic and political governance are positively related to the national rates of formal entrepreneurship. Their arguments are supported by the European Commission (2003), which documents that improving economic regulation encourages the movement of entrepreneurs from informal to formal entrepreneurship. Furthermore, Schneider and Enste (2000), Klapper et al. (2007) document that, due to heavy regulations, lack of supervision, and other weaknesses in the business environment, many entrepreneurs have found it optimal to avoid regulation and engage in informal entrepreneurship. Moreover, a research study carried out by Klapper, Lewin, and Delgado (2009) confirms that improved regulation of the business environment boosts entrepreneurs to operate in the formal sector. On the other hand, weak legal structures, bureaucratic shackles of an overregulated market, and unclear rules for creating a formal business drive people to engage in the informal economy (De Soto, 1989, 1990, 2003). Using a structural equation modeling approach based on the ETE, Thai and Turkina (2014) find that good governance increases formal entrepreneurship and decreases informal entrepreneurship in the case of developing countries. For 18 Asia-Pacific countries, Autio and Fu (2014) investigate the effects of economic and political institutions on formal and informal entrepreneurship. Their findings reveal that many of these institutions exercise substantial effects on both forms of entrepreneurship. They also add that a one percent increase in the quality of these institutions could double the rates of formal entrepreneurs and halve the rates of informal entrepreneurs. More recently, in the case of 119 countries over the period 2001–2012, Chambers and Munemo (2019) analyze the impact of startup regulations and institutional quality on entrepreneurship activity. Their findings reveal that new business creation is significantly lower in countries with a lack of high-quality governmental institutions.

2.2.2. Financial development and entrepreneurship

From a theoretical point of view, despite the lack of studies on the relationship between finance and entrepreneurship, the contribution of

Schumpeter (1912) remains the first in this sense. Schumpeter did explicitly analyze the relationship between financial sector development and entrepreneurship, but in his theory of economic evolution, he focused on two main phenomena: entrepreneurship assimilated to the realization of new combinations of production, and therefore to innovation, and the Banker who is the producer of the purchasing power and the negotiator of this loan. Schumpeter emphasizes the important role played by the banker in identifying entrepreneurs with promising innovative processes and, to this end, provides the necessary credit for such innovative activities. Thus, Schumpeter is one of the pioneers in linking finance to entrepreneurship through two of the main functions of banks, selecting the best borrowers and providing the necessary credit for starting and carrying out innovative entrepreneurial initiatives. In his analysis of the role of the financial system, Patrick (1966) confirms the Schumpeterian vision. He argues that the financial system serves two main functions: the transfer of resources from traditional to modern sectors and the promotion of entrepreneurial initiative in the modern sector.

Consistent with ETE, in analyzing the economic history over the last two centuries, Rousseau and Sylla (2003) reveal that the impact of financial development on entrepreneurship dynamics is one of the main channels through which finance affects innovation (Gemünden et al., 1992; Levine, 1997) and economic growth (Mowery & Rosenberg, 1989). Financial development through the diversification of financial instruments and the improvement of access to financial services makes it possible to reduce the costs of external financing of businesses, favoring growing entrepreneurial dynamics. This is how financial development is a prerequisite for entrepreneurial dynamics. However, the problem of financial constraints on entrepreneurship remains at the center of the debate for both academics and economists. In developing and emerging countries, the lack of access to finance is too often an impediment to the creation, growth and sustainability of these enterprises. In this regard, the World Bank (2013) reports that, of the more than 400 million micro-, small- and medium-sized enterprises in developing economies, more than half have deficient access to finance.² The easy access to finance has been found to have a positive effect on the quality and level of entrepreneurial activity. Many previous studies document that the lack of access to finance encountered by entrepreneurs is often cited as the biggest constraint to the creation and development of new businesses (Choo & Wong, 2006; Goedhuys & Sleuwaegen, 2009; King & Levine, 1993a, 1993b; Omri, Ayadi-Frikha, & Bouraoui, 2015). For instance, Klapper, Amit, Guillén, and Quesada (2008) argue that financial development significantly boosts new business-registered ventures and dramatically reduces informal entrepreneurship by a lack of funding from banks. Aghion, Fally, and Scarpetta (2007) further develop a stylized theoretical model formalizing the effect of loan constraint on the entry and post-entry growth of new businesses. In their model, they predict and emphasize the importance of financial development for entrepreneurship. More specifically, an increase in financial development favors the entry of small businesses, discourages entry by larger firms that do not have better long-term prospects, and promotes the growth of all firms that survive after entry. Moreover, Klapper and Love (2011) claim that financial development boosts new business-registered ventures, suggesting that greater access to finance leads to a more robust private sector.

From an empirical point of view, a body of literature has recently been developed whose purpose is to analyze the relationship between financial development or one of its aspects and entrepreneurship. For instance, using the endogenous growth model, King and Levine (1993a, 1993b) show that financial development positively affects entrepreneurship, its productivity, and successful innovation for sustainable economic growth. Using data from 21 countries, Klapper, Laeven, & Rajan (2006) estimate a Tobit model to investigate the effect of financial development and other regulation on entrepreneurship. They conclude that the entry rates of new businesses is particularly high in the sectors that depend most on external financing for

their growth in the economy, with great levels of financial development. Aghion et al. (2007) confirm the results of Klapper et al. (2006) in their exploration of the effect of loan constraint on entry and post-entry growth of new firms using data from 16 OECD economies. Their findings are also consistent with those of Beck, Demircuc-Kunt, and Levine (2001), Omri and Ayadi-Frikha (2014), who emphasize the importance of the financial sector for the entry and growth of businesses in sectors that depend most on external financing. In the case of Sub-Saharan Africa, Goedhuys and Sleuwaegen (2009) also show that the development of entrepreneurship is constrained by financial development, insecurity, and poor infrastructure. Using data from 41 developed and developing countries, Llussá (2009) investigates the effect of financial development on entrepreneurship, and he finds a positive association between the two variables. The same result was found by Kar and Özşahin (2016) for 17 emerging economies, by Wujung and Fonchamnyo (2016) for Cameroon, by Fan and Zhang (2017) for 31 provinces in China, and by Gu and Qian (2019) for China.

2.2.3. Governance quality and financial development

There is growing recognition that good governance through the quality of institutions is needed to accelerate development of the financial sector. Since the pioneering work of Schumpeter (1912), financial development has become a subject of intense analysis for economists. Several prior studies have assessed the significant role played by institutions in determining financial development. For instance, based on the thesis of Myrdal (1963), shows that it is desirable and necessary to establish a “strong state” and kill the “soft state” characterized by mismanagement, corruption, incompetence and inefficiency of public services, administrative delays, failure to respect laws, and misappropriation of public funds that have prevented financial development in many African countries. In the same context, Girma and Shortland (2008) use data for selected developing and developed countries to investigate how regime changes and democracy contribute to development of the financial sector. They find that the levels of democracy and political stability are key determining factors of financial development. This result was also supported by Baltagi, Demetriades, and Law (2009), who analyze the impacts of trade openness and institutions on financial development in a sample of 42 countries covering the period 1980–2003. By applying the Generalized Method of Moments (GMM), the authors show that institutions account for a large part of the variations in financial development. In a sample of 27 countries—including G-7 countries, East Asia, and Latin America—from 1980 to 2001, Law and Habibullah (2009) conduct the same study and show that institutional quality is an important determinant of development of the financial sector. For Demetriades and Fielding (2009), political instability and the high level of corruption constitute the major challenges for development of the financial sector in West African countries. By expanding the sample of countries, Anayiotos and Toroyan (2009) also show positive impacts of institutional factors, such as property rights protection and political stability, on development of the financial sector in sub-Saharan Africa. Moreover, Béji and Youssef (2010) investigate the nature of the relationship among institutional development, banking regulation and growth for 19 countries in MENA countries during the period 1982–2005. Using several indicators of institutional development and the GMM method, the obtained results indicate an absence of a significant relationship between the level of institutional development and banking development. The authors explain this result by the specificity of the institutional variables that vary slowly over time. This idea was examined further by Huang (2010), who finds a positive association between institutional improvement and financial development in the case of low-income countries. Subsequently, using an endogenous growth model, Minea and Villieu (2010) show that, when “institutional quality” exceeds a certain threshold, the relationship between finance and growth is positive, while it becomes negative below this threshold. The intuitive explanation for this result is that financial development lowers transaction costs on private investment but also reduces seigniorage revenues that can be used for public

² IFC Enterprise Finance Gap Database (2013), World Bank Group.

investment. It favors growth only if the government can raise other revenues to finance the infrastructure, that is, if the institutional quality is sufficient to collect taxes other than by inflationary tax. If the institutional quality is too low, the loss of seigniorage income cannot be offset by the collection of new taxes, and the infrastructure needed for development cannot be programmed. Using data from the Worldwide Governance Indicators and from the World Economic Forum to investigate the empirical association between different aspects of governance quality and various indicators of financial development, Sayılır et al. (2018) show that, using a structural equation modeling (SEM) methodology, there are significant and positive effects of governance indicators on financial development. They conclude that “as governance is enhanced, we may expect financial development to strengthen as well.” More recently, Khan, Abdulahi, Liaqat, and Shah (2019) examine the same subject in the case of the United States using a cointegration approach, and they confirm that institutional quality is a significant prerequisite to financial development.

These three strands of literature show that both quality of governance and financial development are interrelated, and each of them is important for entrepreneurial activity. Accordingly, this study links these concepts and demonstrates how governance quality complements financial development to affect both forms of entrepreneurship in emerging economies, i.e., governance indicators are used as policy variables that can enhance financial development in order to encourage formal entrepreneurship and discourage informal entrepreneurship. To the best of our knowledge, no existing study has gone beyond analyzing the linear relationship between governance, financial development and entrepreneurship to examine the conditional impact of good governance on the relationship between financial development and both forms of entrepreneurship.

Since informal entrepreneurship is particularly relevant to emerging economies, in which the informal sector is on average significantly larger than in developing countries³ (Horvath & Powell, 2016), we expect that, with high quality governance, the growth potential of the financial sector can be exploited to encourage formal entrepreneurship and discourage informal entrepreneurship. Considering the above arguments, we formulate the following two hypotheses. Thus, for each of the two hypotheses, the net impacts from the interplay between governance and financial development on formal entrepreneurship should be positive and negative on the informal entrepreneurship.

Hypothesis 1. Governance fosters financial development, which, in turn, increases formal entrepreneurship.

Hypothesis 2. Governance fosters financial development, which, in turn, decreases informal entrepreneurship.

3. Data and research design

3.1. Data description and variables selection

Using an unbalanced panel of 19 emerging economies with data from the Global Entrepreneurship Monitor (GEM), the World Development Indicators (WDI), and the World Governance Indicators (WGI) over the period 2001–2014,⁴ this study examines how various indicators of governance can be employed to enhance financial development, which, in turn, boost formal entrepreneurship and reduce the

informal entrepreneurship. The adopted periodicity is based on data availability constraints, whereas the scope of emerging economies is in line with the motivations of the study. Based on the prior entrepreneurship literature (e.g., Autio & Fu, 2014; Ben Youssef, Boubaker, & Omri, 2018; Dau & Cuervo-Cazurra, 2014), two dependent entrepreneurship variables are used, namely, (i) formal entrepreneurship; and (ii) informal entrepreneurship. Formal entrepreneurship is defined as the number of newly registered businesses as a percentage of the working-age population (registered business). The lack of data on informal entrepreneurship leads us to measure it by subtracting formal entrepreneurship from total entrepreneurship, which includes the total number of registered and unregistered businesses per 1000 working-age individuals.⁵ Following Ben Youssef et al. (2018), we measure both formal and informal entrepreneurship as follows:

$$\text{Formal Entp.} = \frac{\text{Number of newly registered businesses}}{\text{Working age population}}$$

$$\text{Informal Entp.} = \frac{\text{Number of Newly Registered} + \text{Unregistered Businesses}}{\text{Working age population}}$$

$$= \frac{\text{Number of newly registered businesses}}{\text{Working age population}}$$

Consistent with prior financial development studies, such as Klapper et al. (2007), Vithessonthi (2014), Omri, Ayadi-Frikha, Buraoui (2015), Vithessonthi and Sriyalatha (2016), we use domestic credit provided by the financial sector as share of GDP (in%) as a measure of financial development (FinD). In accordance with the narrative in Section 2, the Kaufmann et al. (2010) governance indicators' are grouped into three main categories—economic governance (includes government effectiveness & regulatory quality); political governance (includes political stability & Voice and Accountability); and institutional governance (includes control of corruption & rule of law). These six indicators have been also used in the current governance literature (e.g., Andrés et al., 2015; Asongu & Odhiambo, 2018).

Consistent with the recent entrepreneurship literature, we controlled for several macro-economic variables associated with the national rates of formal and informal entrepreneurship. As it has been proven that the wealth of a country regulated the creation of new businesses, we controlled the annual growth rate of gross domestic product (GDP) per capita and GDP growth (Levie & Autio, 2011; Thai & Turkina, 2014). Several studies, such as those of Lucas (1978), Iyigun and Owen (1998), among others, find that increases in economic growth lead to an increase in wage income, which will encourage individuals to be more reluctant to engage for self-employment. Hence, it is expected that an increase in economic growth reduces informal entrepreneurship and increase the formal one. We also take into account the annual growth rate of the country's population and the size of the working-age population (millions) (Autio & Fu, 2014; Levie & Autio, 2011). Following Autio and Fu (2014), we expect that both variables influence positively formal entrepreneurship and negatively the informal entrepreneurship. Consistent with Jiménez, Palmero-Cámara, González-Santos, Gonzalez-Bernal, and Jiménez-Eguizábal (2015), we also controlled for the national education levels. The authors find that both secondary and tertiary educations have a very different impact on both forms of entrepreneurship. Particularly, formal entrepreneurship is positively influenced by secondary and tertiary education, while informal entrepreneurship is only negatively associated with tertiary education. Therefore, we expect that the effect of education level on formal and formal entrepreneurship depends on the stages in which the entrepreneur is trained (Coduras, Levie, Kelley, Saemundsson, & Schott, 2010). The same authors have also included foreign direct investment (FDI) as a determinant of formal and informal entrepreneurship. Their

³ In developing countries, the contribution of the informal sector on GDP is more than 70% (Schneider & Enste, 2000), and the percentage is increasing (Fajnzylber, Maloney, & Rojas, 2006).

⁴ Emerging countries in our study sample include the following: Argentina, Brazil, Chile, China, Columbia, Ecuador, India, Indonesia, Malaysia, Mexico, Pakistan, Peru, Philippines, Poland, Romania, South Africa, Thailand, Turkey and Venezuela, according to the International Monetary Fund (IMF) classification system based on their level of development. The choice of the sample countries is dictated by the availability of time-series data.

⁵ GEM provides data on the total number of businesses without separating them into the formal and informal business.

Table 1
Definition and sources of variables.

Variables	Signs	Definitions	Sources
Formal entrepreneurship	Formal Entp.	Number of newly registered businesses as a percentage of the working-age population.	WDI
Informal entrepreneurship	Informal Entp.	Number of new unregistered businesses as a percentage of the working-age population	Data from GEM and WDI
Financial development	FinD	Domestic credit provided by financial sector as share of GDP	WDI
Political stability (no violence)	PS	“Political stability/no violence (estimate): measured as the perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional and violent means, including domestic violence and terrorism”	WGI
Voice & Accountability	VA	“Voice and accountability (estimate): measures the extent to which a country’s citizens are able to participate in selecting their government and to enjoy freedom of expression, freedom of association and a free media”.	WGI
Government Effectiveness	GE	“Government effectiveness (estimate): measures the quality of public services, the quality and degree of independence from political pressures of the civil service, the quality of policy formulation and implementation, and the credibility of governments’ commitments to such policies”	WGI
Regulation Quality	RQ	“Regulation quality (estimate): measures as the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development”.	WGI
Control of corruption	CC	“Control of corruption (estimate): captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as ‘capture’ of the state by elites and private interests”	WGI
Rule of Law	RL	“Rule of law (estimate): captures perceptions of the extent to which agents have confidence in and abide by the rules of society and in particular the quality of contract enforcement, property rights, the police, the courts, as well as the likelihood of crime and violence”	WGI
GDP growth	GDPg	Gross Domestic Product (GDP) growth (annual %)	WDI
GDP per capita growth	GDPpcg	GDP per Capita growth rate (annual %)	
Population size (Working-age)	PoPs	Population ages 15–64 (in billions)	WDI
Population growth	PoPg	Population growth rate (annual %)	WDI
Primary education	PEdu	School enrollment, primary (% gross)	WDI
Secondary education	SEdu	School enrollment, secondary (% gross)	WDI
Tertiary education	TEdu	School enrollment, tertiary (% gross)	WDI
Foreign investment	FDI	Foreign Direct Investment inflows (% of GDP)	WDI
Innovation	InoV	Total number of resident and non-resident patent applications (in thousands)	WDI
Unemployment	Unmpl	Unemployment, total (% of total labor force)	WDI

Notes: WDI is World Development Indicators; GEM is Global Entrepreneurship Monitor (GEM); and WGI is World Governance Indicators.

findings also reveal that the increase in FDI inflows does have a positive effect on new business entry, while the increased competitiveness of foreign investors can boost entrepreneurs to engage in the informal sector. Accordingly, we expect FDI to encourage formal entrepreneurship and discourage the informal entrepreneurship. The unemployment level has also been employed by previous studies as a determinant of both forms of entrepreneurship. For instance, [Campbell \(1992\)](#), [Serviere \(2010\)](#) consider unemployment as a push factor leading people to operate in the informal sector, particularly when they are influenced by a stoppage, such as disappointment with their current job or job loss. Moreover, [Serviere \(2010\)](#) shows that unemployment is an important factor for necessity entrepreneurship. Informal entrepreneurs, therefore, have been widely assumed to be necessity-driven, driven into this direction by their incapacity to obtain employment in the formal sector and follow such work as a survival strategy ([Castells & Portes, 1989](#); [Gallin, 2001](#)). A highest positive impact of unemployment on informal entrepreneurship compared to the formal one is expected. Finally, previous studies, such as [Ulijn and Brown \(2004\)](#), [Wong et al. \(2005\)](#), among others, show that innovation creates a quality entrepreneurship and significantly boosts new business registration ([Thai & Turkina, 2014](#)). Accordingly, we expect that innovation encourages formal entrepreneurship and discourages the informal entrepreneurship.

The definition and sources of variables are presented in [Table 1](#) whereas Pearson correlation and the summary statistics in [Table 2](#). From the informations provided by summary statistics, we can see that (i) the means of variables are comparable; and (ii) in light of the corresponding standard deviations, we can be sure that reasonably estimated links would appear. Correlation coefficients indicate, on the one hand, that formal entrepreneurship is positively connected to financial development, governance indicators, the growth rate of per capita GDP; GDP growth, secondary and tertiary education, innovation capacity, and unemployment. These results indicate that these variables are key determinants of formal entrepreneurship in emerging economies.

However, formal entrepreneurship negatively correlated with informal entrepreneurship, which means that formal entrepreneurship discourages the informal entrepreneurship ([Thai & Turkina, 2014](#)). On the other hand, informal entrepreneurship is positively correlated with population size and unemployment, while it’s negatively connected to financial development, all indicators of governance, tertiary education. Moreover, the indicators of governance are positively and highly correlated among themselves and with financial development. Finally, economic growth in emerging economies is positively and highly correlates with FDI and innovation capacity. Nonetheless, this intuitive proposition needs a more concise and concrete analysis since correlation coefficients only indicate the strength of the linear relationship between each pair of variables. To this end, the study develops a multivariate model to further investigate this assumption based on the GMM approach.

3.2. Research design

3.2.1. Model specifications

Considering the above two-mentioned hypotheses,⁶ the objective of this study is to explore how the quality of governance fosters financial development for better entrepreneurship activity by using sys-GMM method for 19 selected emerging economies over the full sample period of 2001–2014. Accordingly, we consider the following specification to analyze the impact of various aspects of governance, financial development, and their interactive terms, among other control variables, on formal and informal entrepreneurship. So, the proposed model is specified and written symbolically as follows:

⁶ For the two hypotheses to be tested, the net impacts from the relationship between quality of governance and financial development on formal entrepreneurship should be positive and negative on informal entrepreneurship.

Table 2
Descriptive statistics and Pearson correlation.

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Mean	0.17	0.22	58.81	-0.59	-0.64	-0.78	-0.75	0.68	-0.74	4.11	4.97	0.21	3.29	101.28	83.29	46.33	5.22	23.53	7.62
Standard Dev.	0.13	0.19	37.44	0.96	0.72	0.61	0.66	0.59	0.65	5.92	8.03	0.32	0.93	9.76	18.81	25.73	2.91	97.07	4.71
1. Formal Entp.	1																		
2. Informal Entp.	-0.48***	1																	
3. FinD	0.21*	-0.26*	1																
4. PS	0.25**	-0.52***	0.23**	1															
5. VA	0.14*	-0.39**	0.11	0.58***	1														
6. GE	0.31***	-0.29***	0.29*	0.62***	0.48***	1													
7. RQ	0.09**	-0.21**	0.30***	0.51***	0.44***	0.50***	1												
8. CC	0.20***	-0.49***	0.38***	0.69***	0.42***	0.66***	0.43***	1											
9. RL	0.17*	-0.44***	0.29***	0.71***	0.47***	0.54***	0.39***	0.62***	1										
10. GDPg	0.34*	-0.19	0.51*	0.20**	0.17	0.11	0.29	0.16	0.22	1									
11. GDPpcg	0.65***	-0.28*	0.80*	0.29*	0.21	0.23	0.08	0.09	0.10	0.21	1								
12. PopS	0.14	0.23*	0.08	0.02	0.12	0.09	0.07	0.02	0.11	0.21**	0.07	1							
13. Popg	0.07	0.18	0.13	0.19	0.14	0.11	0.08	0.18*	0.03	-0.11	0.12	0.27	1						
14. PFDu	0.21	0.08	0.09	0.07	0.10	-0.13	0.09	-0.04	0.11	0.09	0.23**	0.36**	0.21**	1					
15. SFdu	0.16	0.12	0.13	0.16	0.07	-0.09	0.16	0.09	0.10	0.15*	0.34***	0.03	0.14	-0.34**	1				
16. TFDu	0.41***	-0.22***	0.19**	0.22	0.11	0.07	0.14	0.06	0.19	0.33***	0.27**	-0.12	0.16	0.13	0.09	1			
17. FDI	0.028	-0.10	0.29***	0.19**	0.07	0.012	0.02	-0.19*	-0.11	0.59***	0.27**	-0.05	0.01	0.08	0.14	0.21**	1		
18. InoV	0.32***	-0.09	0.54***	0.11	0.07	0.03	0.08	0.15	0.10	0.61***	0.22	0.13	0.06	0.09	0.22*	0.44***	0.66***	1	
19. Unmpl	0.19*	0.47*	-0.23	-0.08*	-0.14	-0.19	-0.04	-0.11	-0.19	-0.15**	-0.43***	0.16	0.20**	-0.05	-0.01	-0.10	0.18	-0.12**	1

Note: ***Shows the significance at 1%. **Shows the significance at 5%. *Shows the significance at 10% respectively.

$Entrp_{it}$ (formal or informal)

$$= \alpha_0 + \alpha_1 \text{FinD}_{it} + \alpha_2 \text{GoV}_{it} + \alpha_3 \text{FinD}_{it} * \text{GoV}_{it} + \sum_{j=1}^K \lambda_j M'_{jit} + v_i + \varepsilon_{it} \quad (1)$$

where $Entrp$ represents the formal and informal entrepreneurship; i ($i = 1, \dots, N = 19$), t ($T = 1, \dots, N = 14$), and α_0 are the i th country, t th time period, and the constant parameter that varies across countries but not overtime, respectively; GoV is the governance indicators; $FinD$ is financial development; $GoV*FinD$ is the interaction between governance and financial development; M' is the other regressors incorporated in the model as a vector of control variables (lagged dependent variable, growth rate of per capita GDP, GDP growth, population size, population growth, primary education, secondary education, tertiary education, FDI, innovation, and unemployment); j is the number of included control variables; v_i is the country-specific effect; and ε is the error term. The signs and significance of α_1 , α_2 , and α_3 are of interest. The coefficient of financial development are expected to be positive and lowest in the case of formal entrepreneurship, whereas negative and lowest in the case of informal entrepreneurship. The coefficients of governance indicators are expected to be positive for the formal entrepreneurship and negative for the informal entrepreneurship. Then, the interaction effect is measured by the coefficient α_3 , and the developmental argument suggests that the sign of this coefficient is expected to be positive in case of formal entrepreneurship and to be negative in the case of the informal entrepreneurship.

Consistent with Brambor, Clark, and Golder (2006), when we have an estimation model with interactive regressions, we should engage some pitfalls linked to these types of regressions. As a result, all the considered variables should be included in the estimated specifications. In addition, to make economic sense and have policy significance for these estimations, it follows that corresponding estimated parameters from the interaction terms should be interpreted as conditional marginal effects.

3.2.2. Method of analysis

The estimation method used in this study is system GMM (sys-GMM). Four reasons motivate us to adopt the GMM method. Whereas the first one consists of conditions for adopting the sys-GMM method, the last-three present its advantages. First, the number of countries ($N = 19$) is higher than the number of years ($T = 14$), which in turn lead to control for dynamic panel bias (Baltagi, 2005; Bond, 2002; Roodman, 2009a). The $N > T$ condition for adopting the GMM method is, therefore, satisfied. Second, compared to the difference GMM (D-GMM) method, sys-GMM produces more efficient estimates by reducing the finite sample bias (Baltagi, 2008). Third, since this method is consistent with a panel data structure, cross-country variations are not excluded in the regressions. Fourth, the estimation method also addresses the reserve causality and endogeneity issues in all regressors. In our estimations, we can have some possibilities of endogeneity as consequences of reserve causality among the considered variables. Besides, omitted variable bias may be another cause of endogeneity. For this reason, S-GMM is suggested to deal with this issue and ensure the reliability of our estimations. To address the issue of endogeneity, a variant of Eq. (1) is adopted. The standard sys-GMM estimation procedures is specified by the following models in levels (2) and differences (3):

$$Entrp_{it} = \alpha_0 + \alpha_1 Entrp_{it-1} + \alpha_2 \text{FinD}_{it} + \alpha_3 \text{GoV}_{it} + \alpha_4 \text{FinD}_{it} * \text{GoV}_{it} + \sum_{j=1}^K \delta_j M'_{jit} + v_i + \varepsilon_{it} \quad (2)$$

$$\begin{aligned} Entrp_{it} - Entrp_{it-1} \\ = \alpha_1 (Entrp_{it-1} - Entrp_{it-2}) + \alpha_2 (\text{FinD}_{it} - \text{FinD}_{it-1}) + \alpha_3 \\ (\text{GoV}_{it} - \text{GoV}_{it-1}) \end{aligned}$$

$$+ \alpha_4 (FinD_{it} * GoV_{it} - FinD_{it-1} * GoV_{it-1}) + \sum_{j=1}^K \lambda_j (M'_{jit} - M'_{jit-1}) + (v_i - v_{i-1}) + (\varepsilon_{it} - \varepsilon_{it-1}) \quad (3)$$

where $Entrp_{it-1}$ entails the lagged value of the dependent variable (formal or informal entrepreneurship) for country i over period t . In dynamic panel data, the introduction of the lagged dependent variable $Entrp_{it}$ as an independent variable $Entrp_{it-1}$ violates the orthogonality assumption, which is due to the fact that the lagged dependent variable is correlated with the error term. Accordingly, [Arellano and Bond \(1991\)](#) propose using the first differences of the considered variables to eliminate country-specific effects, which is also known as standard or difference GMM (D-GMM). However, the issue of correlation between the lagged dependent variables and the error term persists, which requires using of instruments ([Arellano & Bond, 1991](#)). They suggested the use of lagged dependent and independent variables as instruments. Following this fact, [Blundell and Bond \(1998\)](#) argue that D-GMM estimator runs poorly because the previous levels provide small informations about future changes. To resolve this problem, [Blundell and Bond \(1998\)](#) suggest S-GMM estimator, which consists of adding sets of equations in levels with suitably lagged levels as instruments to set of equations in first differences with suitably lagged levels as instruments. According to these authors, S-GMM is preferred to D-GMM because the latter may suffer from serious finite-sample bias due to the use of weak instruments. Another argument in favor of employing S-GMM suggested by [Roodman \(2009b\)](#), is to avoid D-GMM estimation, which has the weakness of widening gaps with an unbalanced panel data, as in our case. In the specific context of this study, we use the [Roodman \(2009a\)](#), [Roodman \(2009b\)](#), extension of [Arellano and Bover \(1995\)](#), which replaces the first-differences by employing forward orthogonal deviations in order to limit lost information when observations are missing, accounts for cross-sectional dependence, and restrict over-identification ([Baltagi, 2008](#)).

In accordance with the above discussion, the instruments or years that are considered as strictly exogenous affect formal and informal entrepreneurship exclusively via the suspected endogenous variables. In addition, the statistical validity of the suggested exclusion restriction is tested with the Difference in Hansen Test (DHT) for exogeneity of instruments. Accordingly, the null hypothesis of the test should not be rejected for the instruments to explain both forms of entrepreneurship via the suspected endogenous variables. Thus, the hypothesis of exclusion restriction is validated if the alternative hypotheses of DHT corresponding to instrumental variables (IV) (year, eq(diff)) are rejected. The success to reject the alternative hypotheses of Sargan Over-identifying Restrictions (OIR) is a confirmation that strictly exogenous variables affect formal and informal entrepreneurship exclusively via the considered channels ([Beck, Demirgüç-Kunt, & Levine, 2003](#)).

Therefore, a two-step S-GMM method is preferred to the one-step S-GMM approach because it addresses concerns of heteroscedasticity, whereas the latter is consistent with homoscedasticity. However, the two-step S-GMM variant presents estimates of the standard errors tend to be severely downward biased in small samples. To deal with this problem, `xtabond2` command in STATA ([Roodman, 2009a](#)) makes available a finite-sample correction to the two-step covariance matrix developed by Windmeijer (2005), which can make two-step robust estimations more efficient than one-step robust ones, especially for S-GMM. Accordingly, the command `xtabond2` is adopted in this study to run the two-step S-GMM estimations in STATA 15.⁷

4. Empirical analysis

[Tables 3 and 4](#) below provide the sys-GMM findings linked to the empirical association among both forms of entrepreneurship, financial

development, economic governance (models 1 and 2), political governance (models 3 and 4), and institutional governance (models 5 and 6). For each regression, four types of information criteria are employed to evaluate these estimated models. First, the absence of second-order Arellano and Bond autocorrelation test (AR(2))⁸ in residuals must be checked, while a presence of first-order autocorrelation (AR(1)) must be detected. Second, the set of instrumental variables must be uncorrelated with the error terms. This second hypothesis is confirmed by employing Sargan and Hansen OIR tests⁹, which should be insignificant. Third, the test of Fisher is used to check the joint validity of the estimated coefficients. Fourth, the validity of Hansen OIR test is further assessed with the DHT for exogeneity of instruments.

Four principal results can be observed from [Table 3](#). First, with the exception of model 4 (VA) pertaining to political governance, as expected, financial development has a low positive impact on formal entrepreneurship, ranging from 0.003 to 0.019 percent. The lowest contribution of financial development is also supported by [Goedhuys and Sleuwaegen \(2009\)](#) in the case of South Africa, who document that entrepreneurial activity is constrained by financial development, insecurity, and poorer infrastructure. For that reason, [Wujung and Fonchamnyo \(2016\)](#) document that financial development boosts new business-registered ventures, suggesting that greater access to finance leads to a high level and quality of entrepreneurship. So, more investments in financial development to facilitate business transactions via the formal sector could encourage entrepreneurs to more operate in the formal economy ([Klapper et al., 2008](#)). Second, with the exception of the models 2 and 4 pertains, respectively, to economic and political governance, the coefficients of governance indicators show that, as expected, an increase in these indicators will lead to enhancing formal entrepreneurship, ranging from 0.181 to 0.217 percent. The same result was found by [Havrylyshyn \(2001\)](#), [Kaufmann et al. \(2006\)](#), who document that formal entrepreneurship is encouraged by, among other things, the improvement of the economic regulation, good economic and political institutions, and well-defined property rights and solid laws. However, encouraging people to register their businesses through the improvement of governance quality may not be possible in case of economies in the early stages of development ([Thai & Turkina, 2014](#)). Third, we focus on an important gap in the existing studies, i.e. understanding how economic, political and institutional governance foster financial development to promote formal entrepreneurship. For this reason, net effects are calculated to assess the overall impact from this interplay. For instance, in the first column (model 1) of [Table 3](#), the net effect from the interplay between government effectiveness and financial development is 0.592 [(0.010 × 58.81) + (0.004)]. In this formula, 58.81 is the mean value of financial development, 0.010 is the marginal impact from increasing economic governance (government effectiveness), and 0.004 is the unconditional effect of financial development. For each estimated model, a positive net effect indicates that the tested hypotheses are validated, while a negative net effect implies that the tested hypotheses are rejected. [Table 3](#) shows that the net effects on formal entrepreneurship are positive for all estimated models except in models 2 and 4 pertains to the economic and political governance, respectively. This result means that good governance enhances financial development, which, in turn, boosts formal entrepreneurship in emerging economies. This result is in line with [Baltagi et al. \(2009\)](#), [Khan et al. \(2019\)](#), among others, who find that good governance through the quality of institutions is needed to accelerate financial development, which, in turn, strengthens demand and

⁸ It proceeds under the null hypothesis that there is no autocorrelation in first-differenced residuals or that the error term is no serially correlated.

⁹ It examines the joint validity of all instruments by analyzing the sample analog of the moment conditions used in the estimation process. If the moment condition holds, then the instrument is valid and the model has been correctly specified.

⁷ `xtabond2` with options two-step robust small.

Table 3
Governance, financial development and formal entrepreneurship.

	Dependent variable: Formal entrepreneurship (Formal Entp.)					
	Economic Governance		Political Governance		Institutional Governance	
	Model 1(GE)	Model 2(RQ)	Model 3(PS)	Model 4(VA)	Model 5(CC)	Model 6(RL)
Constant	0.099^{**} (0.012)	0.149^{***} (0.000)	0.208^{***} (0.000)	0.162^{**} (0.029)	0.308^{***} (0.000)	0.077[*] (0.059)
Formal Entp. (-1)	0.521^{***} (0.000)	0.987^{***} (0.000)	0.490^{***} (0.000)	0.831^{***} (0.000)	1.119^{***} (0.000)	0.794^{***} (0.000)
Financial development (FinD)	0.004[*] (0.081)	0.019^{**} (0.010)	0.003^{**} (0.048)	0.019 (0.122)	0.008^{***} (0.001)	0.011^{***} (0.000)
Government effectiveness (GE)	0.188^{***} (0.005)	–	–	–	–	–
Regulation quality (RQ)	–	0.055 (0.107)	–	–	–	–
Political stability (PS)	–	–	0.217^{***} (0.000)	–	–	–
Voice & accountability (VA)	–	–	–	0.181^{**} (0.403)	–	–
Control of corruption (CC)	–	–	–	–	0.190^{***} (0.000)	–
Rule of law (RL)	–	–	–	–	–	0.189^{***} (0.004)
FinD × GE	0.010^{***} (0.006)	–	–	–	–	–
FinD × RQ	–	0.007 (0.109)	–	–	–	–
FinD × PS	–	–	0.012^{***} (0.000)	–	–	–
FinD × VA	–	–	–	0.001 (0.238)	–	–
FinD × CC	–	–	–	–	0.017^{***} (0.000)	–
FinD × RL	–	–	–	–	–	0.015^{***} (0.000)
GDP growth	0.087 (0.141)	0.099 (0.114)	0.121[*] (0.056)	0.109 (0.113)	0.097 (0.164)	0.079 (0.204)
GDP per capita growth	0.364^{***} (0.008)	0.287^{***} (0.000)	0.194^{**} (0.011)	0.209[*] (0.052)	0.322^{***} (0.000)	0.285^{***} (0.000)
Population size	–0.075 (0.306)	–0.105 (0.239)	0.099 (0.159)	–0.176 (0.103)	–0.089 (0.143)	0.111 (0.106)
Population growth	0.028 (0.337)	0.040 (0.212)	0.077 (0.239)	0.071 (0.119)	0.100 (0.134)	0.089 (0.144)
Primary education	0.151 (0.146)	0.090 (0.306)	0.078 (0.118)	0.047 (0.229)	0.109 (0.110)	0.089 (0.169)
Secondary education	0.124[*] (0.055)	0.097 (0.111)	0.103^{***} (0.001)	0.105^{***} (0.004)	0.088[*] (0.070)	0.100^{**} (0.012)
Tertiary education	0.206^{***} (0.000)	0.319^{***} (0.005)	0.199[*] (0.088)	0.219^{***} (0.000)	0.304^{***} (0.008)	0.385^{***} (0.000)
Foreign direct investment	0.093^{**} (0.019)	0.109^{**} (0.045)	0.111^{***} (0.001)	0.099 (0.109)	0.080 (0.131)	0.058 (0.207)
Innovation	0.278^{***} (0.000)	0.189^{**} (0.016)	0.227^{**} (0.010)	0.209^{**} (0.018)	0.337^{***} (0.000)	0.301^{***} (0.001)
Unemployment	–0.055 (0.122)	–0.102 (0.116)	0.034 (0.046)	–0.065 (0.337)	0.081 (0.229)	–0.107 (0.141)
Net effects	0.592	n.a	0.708	n.a	1.030	0.893
AR(1)	(0.000)	(0.005)	(0.001)	(0.000)	(0.000)	(0.006)
AR(2)	(0.209)	(0.178)	(0.249)	(0.093)	(0.343)	(0.311)
Hansen OIR test	(0.882)	(0.191)	(0.106)	(0.358)	(0.220)	(0.207)
Sargan OIR test	(0.977)	(1.000)	(0.594)	(0.550)	(0.399)	(0.618)
DHT for exogeneity						
(i) GMM instruments for levels						
HT excluding group	(0.998)	(0.650)	(0.359)	(0.909)	(0.744)	(0.586)
Difference (null HT = exogeneous)	(0.228)	(0.096)	(0.144)	(0.696)	(0.118)	(0.505)
(ii) IV(years, eq(diff))						
HT excluding group	(0.610)	(0.079)	(0.307)	(0.469)	(0.212)	(0.444)
Difference (null HT = exogeneous)	(0.719)	(0.653)	(0.801)	(0.717)	(0.759)	(0.698)
Fisher	991.32^{***}	6193.86^{***}	1422.08^{***}	3092.86^{***}	2670.30^{***}	5279.41^{***}

Note: DHT is the Difference in Hansen Test for Exogeneity of Instruments' Subsets. OIR is the Over-identifying Restrictions Test. AR (1) is the first order autocorrelation of residuals. AR(2) is the Second order autocorrelation of residuals. n.a designates 'not applicable' because at least one estimated coefficient needed for the calculation of net effects is insignificant. The mean value of financial development is 58.81. *** Shows the significance at 1%. ** Shows the significance at 5%. * Shows the significance at 10%, respectively.

Table 4
Governance, financial development and Informal entrepreneurship.

	Dependent variable: Informal entrepreneurship (Informal Entp.)					
	Economic Governance		Political Governance		Institutional Governance	
	Model 1(GE)	Model 2(RQ)	Model 3(PS)	Model 4(VA)	Model 5(CC)	Model 6(RL)
Constant	0.321^{***} (0.000)	0.494^{***} (0.000)	0.396^{***} (0.000)	0.402^{**} (0.000)	0.335^{***} (0.000)	0.299^{***} (0.000)
Informal Entp.(-1)	0.881^{***} (0.000)	0.919^{***} (0.000)	0.876^{***} (0.000)	0.769^{***} (0.000)	0.979^{***} (0.000)	1.201^{***} (0.000)
Financial development (FinD)	-0.010 (0.124)	-0.007 (0.410)	-0.015^{***} (0.000)	-0.019^{***} (0.005)	-0.020^{**} (0.013)	-0.019^{***} (0.000)
Government effectiveness (GE)	-0.208^{***} (0.000)	-	-	-	-	-
Regulation quality (RQ)	-	-0.093 (0.024)	-	-	-	-
Political stability (PS)	-	-	-0.318^{***} (0.000)	-	-	-
Voice & accountability (VA)	-	-	-	-0.271^{**} (0.000)	-	-
Control of corruption (CC)	-	-	-	-	-0.392^{***} (0.000)	-
Rule of law (RL)	-	-	-	-	-	-0.287^{***} (0.001)
FinD × GE	-0.013^{***} (0.006)	-	-	-	-	-
FinD × RQ	-	-0.008 (0.123)	-	-	-	-
FinD × PS	-	-	-0.014^{***} (0.000)	-	-	-
FinD × VA	-	-	-	-0.012^{***} (0.138)	-	-
FinD × CC	-	-	-	-	-0.016^{***} (0.000)	-
FinD × RL	-	-	-	-	-	-0.016^{***} (0.004)
GDP growth	-0.019 (0.141)	-0.078 (0.270)	-0.031 (0.161)	-0.008 (0.333)	-0.039 (0.246)	-0.091 (0.188)
GDP per capita growth	-0.521^{***} (0.000)	-0.418^{***} (0.000)	-0.479^{***} (0.002)	-0.187^{**} (0.022)	-0.603^{***} (0.000)	-0.444^{***} (0.000)
Population size	0.051 (0.192)	0.005 (0.409)	0.028 (0.196)	0.082 (0.109)	0.089 (0.143)	0.041 (0.123)
Population growth	0.077 (0.299)	0.093 (0.180)	0.008 (0.189)	0.033 (0.201)	0.112 (0.190)	0.056 (0.102)
Primary education	-0.139 (0.102)	0.007 (0.541)	-0.022 (0.390)	-0.009 (0.419)	0.018 (0.220)	0.049 (0.299)
Secondary education	-0.124 (0.228)	0.097 (0.301)	-0.103 (0.402)	0.105 (0.183)	-0.088 (0.217)	0.173 (0.104)
Tertiary education	-0.103^{***} (0.000)	-0.215^{***} (0.000)	-0.099^{**} (0.023)	-0.138[*] (0.054)	-0.201^{***} (0.000)	-0.191^{***} (0.003)
Foreign direct investment	-0.103^{**} (0.022)	-0.057[*] (0.073)	-0.172^{**} (0.018)	-0.067 (0.104)	-0.088^{**} (0.029)	-0.129^{***} (0.000)
Innovation	-0.033 (0.209)	-0.093^{**} (0.040)	-0.092^{***} (0.000)	-0.119^{***} (0.008)	-0.077[*] (0.050)	-0.090^{**} (0.022)
Unemployment	0.195^{**} (0.049)	0.102^{**} (0.018)	0.134 (0.120)	0.065 (0.177)	0.181^{**} (0.046)	0.197^{***} (0.008)
Net effects	n.a	n.a	-0.838	-0.725	-0.961	-0.960
AR(1)	(0.091)	(0.103)	(0.062)	(0.031)	(0.029)	(0.000)
AR(2)	(0.302)	(0.117)	(0.269)	(0.218)	(0.249)	(0.290)
Hansen OIR test	(0.341)	(0.391)	(0.204)	(0.149)	(0.415)	(0.192)
Sargan OIR test	(0.492)	(0.587)	(0.603)	(0.813)	(0.726)	(0.403)
DHT for exogeneity						
(i) GMM instruments for levels						
HT excluding group	(0.481)	(0.650)	(0.283)	(0.712)	(0.419)	(0.315)
Difference (null HT = exogeneous)	(0.922)	(0.762)	(0.522)	(0.902)	(0.292)	(0.414)
(ii) IV(years, eq(diff))						
HT excluding group	(0.559)	(0.298)	(0.190)	(0.206)	(0.306)	(0.363)
Difference (null HT = exogeneous)	(0.641)	(0.627)	(0.548)	(0.418)	(0.429)	(0.229)
Fisher	13406.20^{***}	491.01^{***}	6611.19^{***}	10302.72^{***}	1229.62^{***}	873.04^{***}

Note: DHT is the Difference in Hansen Test for Exogeneity of Instruments' Subsets. OIR is the Over-identifying Restrictions Test. AR (1) is the first order autocorrelation of residuals. AR(2) is the Second order autocorrelation of residuals. n.a designates 'not applicable' because at least one estimated coefficient needed for the calculation of net effects is insignificant. The mean value of financial development is 58.81. *** Shows the significance at 1%. ** Shows the significance at 5%. * Shows the significance at 10%, respectively.

upsurges the accessibility of loans for entrepreneurs and of the technological and economic infrastructure required to engage in the formal sector (Beugelsdijk, 2007; Thai & Turkina, 2014). *Fourth*, most of the significant control variables have signed as detailed and expected in Section 3. Secondary education, tertiary education, GDP per capita growth, innovation, and FDI are found to have positive and staistical significant effects on formal entrepreneurship.

The following results are established from Table 4 on the empirical association among quality of governance indicators', financial development and informal entrepreneurship in emerging economies. First, with the exception of models pertaining to the economic governance, as expected, all the estimated models show that financial development has a lower contribution to reducing informal entrepreneurship in emerging economies, ranging from -0.015 to -0.020 percent. This result can be explained by the fact that the development of financial sector makes the availability of credits cheaper and easier, which encourages formal entrepreneurship, increases the opportunity cost of production in the underground economy, and thus reduces the size of the informal entrepreneurship (Bugelsijk, 2007). This result is also supported by Thai and Turkina (2014), who document that financial development encourages formal entrepreneurship and discourages the informal entrepreneurship in developed and developing countries. Regarding the weak influence of financial development on informal entrepreneurship, governments that want to reduce the size of informal entrepreneurship should implement some financial reform measures to facilitate access to formal financing channels, such as microcredit. They also called to take further steps to control the use of credit to these businesses and assist them in the passage to the formal sector. Second, with the exception of the model pertaining to the regulation quality, the coefficients of governance indicators show that, as expected, an increase in these indicators decreases informal entrepreneurship, ranging from -0.208 to -0.392 percent. This result confirms the finding of Autio and Fu (2015) in the case of 18 Asia-Pacific countries, who report that an increase in the quality of economic and political governance could double the rates of formal business creation and reduce the rates of the informal entrepreneurship. In this context, De Soto (2003) documents that entrepreneurs choose to operate in the informal economy because of bureaucratic obstacles to legal property ownership, unclear rules for creating a formal business, and lack of legal structures that recognize and encourage ownership of assets. The same result was found by Havrylyshyn (2001) in the case of transitional economies, who argue that formal entrepreneurship is encouraged by, among other things, efficient regulation of the economy, good economic and political institutions, and well-defined property rights and solid laws. However, encouraging people to register their businesses through the improvement of governance quality may not be possible in case of economies in the early stages of development (Thai & Turkina, 2014). *Third*, net effects on informal entrepreneurship from the interactions between quality of governance indicators and financial development is also calculated. For example, in the third column (political stability) of Table 4, the net effect on informal entrepreneurship from the interplay between political stability and financial development is -0.838 [$(-0.015 \times 58.81) + (-0.014)$]. In this formula, 58.81 is the mean value of financial development, -0.015 is the marginal impact from increasing the political governance (political stability), and -0.014 is the unconditional effect of financial development. Net negative effects confirm the validation of our second hypothesis, whereas positive ones lead to reject the hypothesis. The Tables 3 and 4 show that the hypotheses tested are valid / invalid, but depend on the dynamics of governance and financial development. It is apparent from Table 3 that the second tested hypothesis is valid/invalid contingent on governance and financial development dynamics. This table shows that the net effect on informal entrepreneurship and the interactions between financial development and (i) political stability (model 3), (ii) voice and accountability (model 4); (iii) control of corruption (model 5); and rule of law (model 6). These results confirm our second hypotheses and

indicate, overall, that governance quality is a significant factor in the development of financial sector (e.g. Baltagi et al., 2009; Girma & Shortland, 2008; Sayilır et al., 2018), which will, in turn, reduce the national rates of informal entrepreneurship (e.g. Bugelsijk, 2007; Thai & Turkina, 2014). *Fourth*, most of the significant control variables have the expected signs. Informal entrepreneurship is negatively affected by the growth rate of per capita income, tertiary education, and FDI, whereas it is only positively associated with unemployment.

5. Discussions, concluding implications and further research directions

The objective of this paper is to assess how the quality of governance in emerging economies can contribute to formal and informal entrepreneurship via development of the financial sector. Therefore, we have used a sys-GMM approach and nineteen emerging economies in the period from 2001 to 2014. Formal (informal) entrepreneurship is defined as a number of newly registered (unregistered) businesses as a percentage of the working-age population, whereas financial development is defined as domestic credit provided by financial sector (% of GDP). To analyze the policy role played by governance quality, we considered six indicators of good governance grouped into three main categories—economic governance (government effectiveness & regulatory quality), political governance (political stability & voice and accountability), and institutional governance (control of corruption & rule of law).

Before discussing the theoretical and empirical contributions of this study and their policy implications, it is necessary to summarize the main findings. First, there exists an unconditional positive (negative) impact of financial development on formal (informal) entrepreneurship. Second, the conditional effect of quality of governance increases formal entrepreneurship and decreases informal entrepreneurship. Third, the net effects on formal entrepreneurship associated with the interactions of financial development with governance indicators are positive for the most part, indicating that quality of governance can be employed to enhance the positive weak effect of financial development on formal entrepreneurship. Fourth, the net effects on informal entrepreneurship associated with the interactions between financial development and governance indicators are negative for the most estimated models, indicating that good governance can be used as a policy variable to improve the potentially weak impact of financial development on reducing informal entrepreneurship.

This research study contains several contributions to the theoretical and empirical literature on entrepreneurship. First, from a theoretical viewpoint, it contributes to the ETE by demonstrating how both forms of entrepreneurship are driven differently by demand-side factors (economic opportunities), supply-side factors (resources and abilities), and governance quality. With respect to the demand-side factors, it was found that economic opportunities (including financial development, FDI, and innovation), and most governance quality indicators (including economic, political and institutional governance) increase formal entrepreneurship and decrease informal entrepreneurship. As a contribution to the demand-side factors of ETE, this study extends previous studies on formal entrepreneurship (e.g., Dhahri & Omri, 2018; Havrylyshyn, 2001; Kaufmann et al., 2006), informal entrepreneurship (e.g., Naudé, 2009; Williams & Shahid, 2016), and formal and informal entrepreneurship (e.g., Autio & Fu, 2014; Dau & Cuervo-Cazurra, 2014) by demonstrating how good governance fosters financial development, which, in turn, encourages formal entrepreneurship and discourages informal entrepreneurship. Furthermore, regarding the impact of demand-side factors on both forms of entrepreneurship, our findings show strong support for Schumpeter's theory of economic development that stresses the inherent disequilibrium nature of market dynamics, which plays a significant role in understanding the nature of entrepreneurial activities and their function in the economic system (Dean, 2015). They also support the

arguments of models using endogenous growth theory (e.g., Audretsch & Acs, 1994; Acs & Varga, 2005; Romer, 1986), in which social mobilities, investments in the human and physical capital, R&D and foreign investment produce spillover impacts, which, in turn, foster new business creation. Regarding the supply-side factors (resources and abilities), our findings show that: (i) secondary and tertiary education have different impacts on both forms of entrepreneurship. Specifically, formal entrepreneurship is positively affected by secondary and tertiary education, while informal entrepreneurship is negatively associated with tertiary education; and (ii) per capita GDP growth increases formal entrepreneurship and decreases informal entrepreneurship. These findings strongly support the population theories that stress that people are the key actors of economic and social change. Second, from an empirical viewpoint, this inquiry also contributes to the prior entrepreneurship literature by the computation and discussion of the net effects on both forms of entrepreneurship from the interactions of financial development with six indicators of governance quality, namely, government effectiveness, regulatory quality, political stability, voice and accountability, control of corruption, and rule of law. More specifically, we used good governance as a conditional variable that enhances financial development to influence both formal and informal entrepreneurship, i.e., governance can modulate the weak effect of financial development on both forms of entrepreneurship in emerging economies. This paper also extends previous studies in this area by focusing on emerging economies. As mentioned above, we believe that emerging economies provide a significant framework to investigate such interplay, given that entrepreneurship is essential for the growth and development of these economies (Beck, Demirgüç-Kunt, & Maksimovic, 2005; Lim, Oh, & De Clercq, 2016).

In addition to these arguments and contributions, this paper also gives some implications for policymakers and practitioners aimed at improving entrepreneurship activities in emerging economies and offers future research directions. Regarding the demand-side factors of entrepreneurship, our findings show that good governance constitutes a significant condition that enhances financial development, which, in turn, increases formal entrepreneurship and decreases informal entrepreneurship. It seems vital for governments in emerging economies to enhance their governance systems via well-defined property ownership, efficient regulation of the economy, solid laws, reducing bureaucratic obstacles, and good policies to boost new entrepreneurs to operate in the formal economy. Furthermore, enhancing people's resources and abilities constitutes effective tools to discourage informal entrepreneurship and boost formal entrepreneurship. This could be achieved through more incentives for young entrepreneurs (e.g., fiscal policies); easing access to finance; programs aimed at improving education and training, health and living standards; and reducing unemployment. Such programs would boost commitment to Schumpeterian entrepreneurship (opportunity-based) rather than Kirznerian entrepreneurship (opportunity-based), which could lead to a reduction in informal entrepreneurship. For practitioners, our study also suggests that it is important to take into account the national governance environment to decide whether to start in the informal or formal sector. In addition, existing informal entrepreneurs can better understand how the enhancements in national quality of governance can make informal activities difficult, encouraging them to formalize their businesses.

In addition to the contributions and implications provided above, we are careful to note that our results and analyses suffer from several limitations. First, emerging countries are a unique group of economies experiencing a unique process. The above findings are specific to these countries. Therefore, the findings shown during this period cannot be generalized to other economies nor to the same group of economies at a different period. Second, since this study only focused on a panel of 19 economies, and we know that the effect of quality of governance should intuitively be highly contingent on government policy-orientation, future studies may attempt to tackle this issue for a country-specific level

to more targeted policy implications. Third, the scope of this paper is limited to a macro-level analysis, and future studies should analyze the micro-level determinants of formal versus informal entrepreneurship.

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