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**FORMAL INSTITUTIONS AND THE DEVELOPMENT OF
ENTREPRENEURIAL ACTIVITY - THE CONTINGENT ROLE OF
CORRUPTION IN EMERGING ECONOMIES**

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TITLE: FORMAL INSTITUTIONS AND THE DEVELOPMENT OF ENTREPRENEURIAL ACTIVITY - THE CONTINGENT ROLE OF CORRUPTION IN EMERGING ECONOMIES

ABSTRACT:

The paper aims to analyse the interplay between formal and informal institutions' and their impact on entrepreneurship rates in emerging economies.

This study expands previous research in examining the moderating effect of control of corruption on the relationship between formal institutions and the development of the entrepreneurial activity. The study utilizes longitudinal analyses of a dataset from 41 emerging economies over 11 years (2006-2016).

Findings provided robust support for the study's hypotheses. The results suggested lower levels of corruption positively moderate the effects of a country's number of procedures and education and training on the rates of entrepreneurial activity, while negatively moderating the effects of firm-level technology absorption on the rates of entrepreneurial activity.

The study has considered only one particular aspect of high-growth entrepreneurship, which is newly registered firms with limited liability. Although newly registered firms are recognized as one of the critical drivers of entrepreneurial activity. Future research should seek to examine other aspects of growth-oriented entrepreneurship such as activities involving a high level of innovation, corporate entrepreneurship or technology developments.

This study advanced the existing theories in the field of entrepreneurship and Institutional Economics as it merged the two theories as a driving framework in the design of the study in the context of emerging economies.

The study tested a theoretical model by expanding the number of emerging economies in the study and found comparable findings that explain factors that may influence the likelihood of individuals entering entrepreneurship.

This article adds to the current literature as it highlights the importance of the interplay of formal and informal institutions in determining their impact on entrepreneurship rates in emerging economies. This is of particular importance to policy-makers, and the business world as the empirical results of this study show the benefits of control of corruption in boosting entrepreneurial rates in these economies, which strive for economic diversification in their developmental endeavours.

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3 **FORMAL INSTITUTIONS AND THE DEVELOPMENT OF**
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5 **ENTREPRENEURIAL ACTIVITY - THE CONTINGENT ROLE OF CORRUPTION**
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8 **IN EMERGING ECONOMIES**
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13 **Introduction**
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16 This study considers the interplay between formal and informal institutional factors that
17 might affect entrepreneurial activity levels in emerging economies. The literature to date has
18 highlighted the importance of the institutional environment to increase the rates of
19 entrepreneurial activity (Fuentelsaz et al., 2018; Urbano et al., 2018). While reforming formal
20 institutions is integral to overall institutional effectiveness, such improvements do not
21 necessarily guarantee increased entrepreneurial activity in the case of emerging economies
22 (Bruton *et al.*, 2013).
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32 On the surface, governments in emerging economies pass laws and regulations similar
33 to those seen in developed economies. However, these commercial laws that are conducive to
34 entrepreneurship are not implemented efficiently (Aidis *et al.*, 2008; Tonoyan *et al.*, 2010;
35 Smallbone *et al.*, 2014). In this realm, De Clercq *et al.* (2010) suggested that emerging
36 economies that adopt rules and regulations from developed countries to accelerate the
37 entrepreneurial activity may not find them useful without understanding the power of informal
38 institutions such as local cultures and traditions.
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48 In this vein, recent studies supported this argument and showed that informal institutions
49 influence entrepreneurship more than formal ones (Urbano and Alvarez, 2014; Aparicio et al.,
50 2016). Informal institutions such as cultural values (Hayton and Cacciotti, 2013; Fernández-
51 Serrano and Romero, 2014); social networks (De Clercq et al., 2010; Estrin et al., 2013;
52 Stenholm et al., 2013), media attention (Stenholm et al., 2013), social recognition (Stenholm et
53 al., 2013; Urbano and Alvarez, 2014; Castaño-Martínez et al., 2015; Castaño et al., 2015), and
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3 role models (Álvarez and Urbano, 2011), and these informal institutions' impact on
4 entrepreneurial activity have seen considerable attention in the literature. However, while
5 corruption has been purported to be among the most important negative indicators for
6 entrepreneurship, to date, literature focusing on the interaction effect of corruption with other
7 formal institutions is significantly underrepresented in the literature (Anokhin and Schulze,
8 2009; Aidis *et al.*, 2012).

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17 Corruption is defined as the informal abuse of public assets for private gains that impact
18 the allocation of the resources (Aidis *et al.*, 2012; Payne *et al.*, 2013; Chowdhury *et al.*, 2015).
19 It is argued that widespread corruption becomes embedded into the culture and subsequently
20 forms into the social norm of behaviour (North, 1990; Williamson, 2000). In this vein, this
21 study follows the work of Aidis *et al.* (2012) in considering corruption as an informal institution
22 that impacts the entrepreneurial rate through interacting with formal institutions.

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31 Concerning the methodology, the study incorporated a panel (longitudinal) data analysis
32 to examine the interaction effect of formal and informal institutions of entrepreneurial activity
33 in line with the methodology adopted by Ghura *et al.* (2019) and expanded the study population
34 of the study to include 41 emerging economies over the years 2006-2016. Such panel data
35 analysis was selected to enhance the validity of the findings by Ghura *et al.* (2019) by expanding
36 the number of countries while considering sufficient controls to account for institutional
37 differences in the context of emerging economies (Bruton *et al.*, 2008; Levie and Autio, 2011).

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47 This paper proceeds as follows. First, we theorise about the interactions of formal
48 institutions, and informal institutions and their impact on entrepreneurial activity and
49 subsequently offer a framework that is conducive for entrepreneurial activity. Second, we
50 explain our sample data and methodology. Third, we present and discuss the statistical results
51 and finally, we present the conclusion and future research recommendations.

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Theoretical Background

Recent trends in entrepreneurship research have heightened the need for understanding the variations of entrepreneurial activity through the lens of institutional theory in the case of emerging economies. However, the review of both the theoretical and empirical literature has revealed that most studies addressing the development of entrepreneurial activity have neglected to consider the interaction effect of formal and informal institutions in emerging economies (Acs et al., 2014a, b; Aparicio et al., 2016; Urbano et al., 2018). Moreover, Boettke and Coyne (2009) highlight the lack of a clear understanding of the role institutional environment play in influencing entrepreneurship. Specifically, scholars have raised questions in regards to the role of institutions in increasing entrepreneurship and which institutional dimensions are most important for explaining entrepreneurial activity rates (Bruton *et al.*, 2010; Levie and Autio, 2011).

North (1990), posits that institutions are “rules of the game in a society, or more formally, the constraints that shape human interaction” (North, 1990, p. 3). Institutions can be classified into formal factors such as contracts, regulations and laws, and informal factors such as culture, values, and social norms of a given country. Moreover, he elaborated that formal institutions exist to decrease the transactional costs caused by laws, where the role of informal institutions is to reduce the uncertainties of human interactions.

In this vein, Williamson (2000) argued that formal institutions take a relatively short period to change, while informal institutions take longer to change than formal ones. Culturally derived informal institutions might limit the intended improvements of formal institutions and vice versa (North, 1990; Williamson, 2000). Therefore, the interactions between formal and informal institutions produce outcomes that have significant implications for increasing “productive” entrepreneurial activity (Baumol, 1990; North, 1990).

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3 Therefore, building on North's (1990) and Williamson's (2000) argument, the
4 efficiency of formal institutions, such as new laws and regulations, could depend on the
5 cultural values in a particular society. An example of this interaction could be seen in the case
6 of enforcing traffic laws in a specific country. Although traffic laws are generally standard
7 across countries, the effectiveness of these formal laws depends on to what extent large
8 numbers of drivers voluntarily adopt and accept such rules through prolonged self-
9 commitment. Therefore, effective social norms such as honesty, hard work, and integrity can
10 lower the cost of transactions and make productive outcomes possible (North, 1990; Boettke
11 and Coyne, 2009).
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24 This idea was examined recently by Krasniqi and Desai (2016), who examined the
25 interaction effect of formal institutions (measured by the tax administration, trade and
26 customs regulations, tax rate, and business licensing/permits), and informal institutions
27 (measured by the functioning of the judiciary/courts, anti-competitive practices of
28 competitors, policy uncertainty, and corruption) on the rates of high growth firms (HGFs) in
29 28 emerging economies. The authors found that the interaction effects between formal and
30 informal institutions, rather than direct effects, positively impact the development of HGFs. In
31 particular, informal institutions are positively associated with HGFs in emerging economies
32 where formal institutions have slower reform conditions. This suggests that informal
33 institutions have a slower rate of change and could hinder the development of formal
34 institutions by greasing the wheels. On the other hand, when emerging economies have fast-
35 reforming formal institutions, informal institutions have less influence on the facilitation of
36 transactions (Krasniqi and Desai, 2016).
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54 Relatedly, using the Global Entrepreneurship Monitor (GEM) survey in 42 countries
55 (including both developed and developing countries) for 2001-2006, Estrin et al. (2013) found
56 that higher levels of corruption (as an informal institution), weaker property rights and larger
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3 size of the government significantly hinder the rates of entrepreneurial growth.

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5 Simultaneously, local social networks (as an informal institution) alleviate the effects of some
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7 of these institutional deficiencies (Estrin et al., 2013). These findings (Estrin et al., 2013;
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9 Krasniqi and Desai, 2016) were in line with Thornton *et al.* (2011) and Aparicio *et al.* (2016),
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11 who contended that informal institutions, although they are less dynamic, could influence
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13 entrepreneurship rather than formal institutions.
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17 To this end, the study of institutional environment's dynamics with entrepreneurship
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19 is necessary to offer a better understanding of the various rates of entrepreneurial activity
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21 among emerging economies. In the next section, a new conceptual model is developed.
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23 24 **The Developed Framework**

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26 As above-mentioned, there is a need to understand the variations of entrepreneurial
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28 activity through the lens of institutional theory (e.g., Acs *et al.*, 2014a, b; Aparicio *et al.*,
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30 2016) by focusing on the interaction effects between formal and informal institutions (Acs *et*
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32 *al.*, 2014a, b; Urbano *et al.*, 2018). Therefore, in this section, we can present a new
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34 institutional framework that permits the development of entrepreneurial activity based on the
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36 interplay between formal and informal institutions. This paper does not attempt to offer a
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38 complete institutional environment for entrepreneurship. We hope, however, that this study
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40 could contribute to the previous conceptual models of new business activity by developing a
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42 conceptual model that can help to explain the varying in rates of entrepreneurship in emerging
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44 economies.
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49 In line with the discussion above, the criteria for developing the study's institutional
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51 framework for entrepreneurship were as follows:
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54 First, to organise our discussion of the institutional factors included in our model, we
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56 rely on the model of Gnyawali and Fogel (1994). Gnyawali and Fogel (1994) suggested an
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58 entrepreneurial framework inclusive of five dimensions of the entrepreneurial environment:
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3 (1) government policies and procedures, (2) social and economic factors, (3) entrepreneurial
4 and business skills, and (4) financial and (5) non-financial assistance to businesses. In this
5 regard, recent empirical studies found Gnyawali and Fogel's (1994) framework conducive in
6 examining the impact of institutional dimensions on entrepreneurial activity (Álvarez and
7 Urbano, 2011; Fuentelsaz *et al.*, 2015; Aparicio *et al.*, 2016).
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15 Therefore, in the government policies and procedures dimension, this study focused
16 specifically on whether and how government procedures affect new business start-ups. Next,
17 the entrepreneurial and business skills dimension is proxied by society's education and
18 training. As regards financial assistance, access to credit in an economy is discussed in this
19 part. Also, non-financial assistance is identified through technology absorption by firms.
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21 Finally, social conditions are explained through the level of corruption in a specific country.
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23 The choice in selecting these institutional variables was informed by considerable evidence
24 that these institutions are significant in shaping "productive" entrepreneurial activity (Álvarez
25 and Urbano, 2011; Stenholm *et al.*, 2013; Aparicio *et al.*, 2016). Moreover, following the
26 model, economic development related to GDP growth is included as a control variable in this
27 study (Álvarez and Urbano, 2011; Levie and Autio, 2011; Álvarez *et al.*, 2014; Chowdhury *et*
28 *al.*, 2015).
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43 Second, the interaction between formal and informal institutions was presented in the
44 framework (North, 1990; Williamson, 2000). Williamson (2000) suggested a hierarchy of
45 institutional frameworks to differentiate the level of formal and informal institutions. Thus,
46 our conceptual framework extends North's (1990, 2005) propositions on institutional
47 dynamics, as well as Williamson's (2000) concept of the hierarchy of institutions. Recent
48 studies used the ideas of North (1990, 2005) and Williamson (2000) to offer a better
49 understanding of the institutional dynamics and their effect on increasing entrepreneurship
50 rates (Aidis *et al.*, 2012; Estrin *et al.*, 2013).
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3 As a result, government procedures, education and training, access to credit and
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5 technology absorption are considered as formal institutions, whereas corruption is considered
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7 as an informal institution in this study. Moreover, considering that corruption is located in the
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9 highest level of the hierarchy of institutions, the study's conceptual framework is designed to
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11 analyse the moderating effects of corruption on the relationship between formal institutions
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13 and entrepreneurial activity in emerging economies.
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17 Finally, this framework attempted to develop hypotheses worth pursuing to be tested
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19 empirically using panel (longitudinal) data analysis, as suggested by the literature (Bruton *et*
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21 *al.*, 2008; Levie and Autio, 2011, Ghura *et al.*, 2019).
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24 Since the direct effect of formal institutions: the number of procedures (Urbano and
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26 Alvarez, 2014; Castaño-Martínez *et al.*, 2015; Chowdhury *et al.*, 2015; Fuentelsaz *et al.*, 2015;
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28 Aparicio *et al.*, 2016), Access to credit (Castaño-Martínez *et al.*, 2015; Fuentelsaz *et al.*, 2015;
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30 Aparicio *et al.*, 2016), tertiary education (Castaño-Martínez *et al.*, 2015; Chowdhury *et al.*,
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32 2015; Fuentelsaz *et al.*, 2015; Aparicio *et al.*, 2016), Technology absorption (Stenholm *et al.*,
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34 2013; Acs *et al.*, 2014b), as well as effects of country-level corruption (El Harbi and
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36 Anderson, 2010; Aidis *et al.*, 2012; Estrin *et al.*, 2013; Chowdhury *et al.*, 2015) on
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38 entrepreneurship has been empirically established, we refrained from engaging in a lengthy
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40 review of those effects. Thus, the study's conceptual framework is designed to analyse the
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42 moderating effects of control of corruption on the relationship between formal institutions and
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44 entrepreneurship activity, as shown in Figure 1.
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49 Insert Figure 1 here.

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51 By doing so, this study is able to extend the current literature, which only addresses
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53 these institutional variables separately (Stenholm *et al.*, 2013; Fuentelsaz *et al.*, 2015;
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55 Aparicio *et al.*, 2016; among others). It does this by designing a model that can help to
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57 explain the differences in entrepreneurial activity in emerging economies. This study is
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3 building on Ghura et al. (2019), which explicitly argues that the impact of formal institutions
4 on the development of entrepreneurial activity is more robust in the presence of lower levels
5 of corruption and aims to ascertain whether similar results are accurate in terms of the impact
6 of the interaction between formal and informal institutions on entrepreneurial activity albeit
7 an expanded group of emerging economies.
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17 **The Importance of Control Corruption as a Moderator between Formal Institutions** 18 **and Entrepreneurship (Hypotheses Development)** 19

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21 The current literature is discrepant when it comes to ascribing the role of corruption
22 on entrepreneurship activity and economic growth (Dutta and Sobel, 2016). On the one hand,
23 grease the wheel theory, suggests that corruption can help entrepreneurship by shortening the
24 start-up process for aspiring entrepreneurs (Aidt, 2009; Dreher and Gassebner, 2013; Krasniqi
25 and Desai, 2016). On the other hand, a larger body of research has demonstrated the overall
26 negative impact of economic development in the long run, primarily due to rent-seeking from
27 entrepreneurs by corrupt officials (Aidt, 2009; Anokhin and Schulze, 2009; Aidis et al., 2012;
28 Avnimelech et al., 2014; Aparicio et al., 2016; Dutta and Sobel, 2016).
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40 Consequently, in light of the current difference in the literature, hypotheses formed
41 in this section aim to expand the understanding of the indirect effect of corruption as a
42 moderator between formal institutions and entrepreneurial activity (Pathak *et al.*, 2015) as an
43 expanded empirical study of Ghura et al., (2019). Consistent with assertions of the signalling
44 theory (Spence, 1973), formal institutions (e.g., business regulations) are likely to have a
45 more positive impact on entrepreneurial activity in a corruption-free environment (Levie and
46 Autio, 2011). In other words, if corruption is low, formal institutions are likely to have a
47 better impact on entrepreneurial activity. However, high levels of corruption, may undermine
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3 entrepreneurs' confidence in the reform of formal institutions and, therefore, it will affect
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5 their decisions to start and grow their ventures (Levie and Autio, 2011).
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8 Although corruption is positively correlated with the rule of law that differentiates
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10 developed from emerging economies (Payne *et al.*, 2013), legal (i.e., formal) institutions that
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12 enforce the rule of law may not offer a better understanding of the interaction between formal
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14 and informal institutions (North, 1990). In particular, De Clercq *et al.* (2010) suggested that
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16 Western conceptualisations about the "need" for a strict rule of law may not be useful in
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18 emerging economies; this is because it underestimates the power of local cultures and
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20 traditions that could be more effective in maintaining close business relationships. Therefore,
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22 corruption is categorised in the highest level of the institutional hierarchy that may take a
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24 more extended period to change and hinder other formal institutional reforms (North, 1990;
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26 Williamson, 2000).
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30 Therefore, corruption is probably the most important (negative) indicator of an
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32 informal institution that is likely to influence entrepreneurial activity through the interaction
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34 with other formal institutions. This is because it "undermines the foundations of institutional
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36 trust that are needed for the development of trade and entrepreneurial and innovative activity"
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38 (Anokhin and Schulze, 2009, p. 1). This argument is supported by Griffiths *et al.* (2009, p.
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40 627), who stated that "few studies have investigated how macro-environmental variables
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42 augment the individual-level perceptions of culture on influencing individual intentionality".
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44 Moreover, Pathak *et al.* (2015) suggested that there is a need to test corruption as a moderator
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46 as most previous studies treated corruption merely as a control variable.
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51 In the following sections, therefore, this study proposes that corruption may have a
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53 moderating effect on the relationship between formal institutions (i.e., number of business
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55 procedures, education and training, access to credit, and firm-level technology absorption)
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3 and entrepreneurial activity in the context of emerging economies (Payne *et al.*, 2013). A
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5 number of hypotheses are developed in the following sections.
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10 **Moderating Effect of Control of Corruption between the Number of Procedures** 11 12 **Entrepreneurship**

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14 Governmental policies and procedures consist of legislative proceedings that can
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16 affect market mechanisms. These policies and procedures can encourage the market to
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18 function more efficiently throughout the life of the business by minimising market barriers
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20 and the rigid application of strict regulations (Gnyawali and Fogel, 1994; Álvarez *et al.*,
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22 2014).
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26 The above observations about the impact of procedures on entrepreneurship are
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28 particularly crucial in the context of emerging economies since aspiring entrepreneurs in such
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30 economies must tackle issues such as volatile or ineffective regulations (Aidis *et al.*, 2008).
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34 In this realm, Klapper and Love (2010) found that government policy reforms in
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36 regards to reducing the number of procedures are more effective in countries with a better
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38 business environment. Conversely, the authors contended that improvements in procedures
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40 need much work in countries with a less favourable business environment. In accordance with
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42 Klapper and Love's (2010) findings, lower levels of corruption are one factor that could be
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44 beneficial to society regarding the promotion of greater trust in government reform policies
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46 and, as such, encourage aspiring entrepreneurs to formally register their ventures (Aparicio *et*
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48 *al.*, 2016). This argument is further supported by Naudé (2008), who suggested that reducing
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50 corruption levels will ultimately lead to better and more efficient entry procedures and thus,
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52 allow for increased market entry of new ventures. Accordingly, the following hypothesis is
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54 proposed:
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3 **H1: The negative relationship between the number of procedures and**
4 **entrepreneurship within an emerging economy is moderated by the country's level of**
5 **corruption, such that this negative relationship is stronger at lower levels of corruption.**
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12 **Control of Corruption as a Moderating Effect between Tertiary Education and**
13 **Entrepreneurship**
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17 Entrepreneurship education and training have been widely recognized to enhance
18 entrepreneurial activity levels (Gnyawali and Fogel, 1994; Levie and Autio, 2008; Fuentelsaz
19 et al., 2015). In particular, a tertiary education system that focuses on developing skills and
20 competencies in the areas of market analysis, product and service development, and business
21 and financial literacy, enables entrepreneurs to establish and manage high growth ventures
22 (Bowen and De Clercq, 2008; Danis et al., 2011; Jiménez et al., 2015). Therefore, an
23 educational system with a focus on entrepreneurship is more likely to equip entrepreneurs
24 with the necessary skills for business design and growth strategies and consequently, enable
25 them to better exploit entrepreneurial opportunities in the market (Levie and Autio, 2008;
26 Fuentelsaz et al., 2015).
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41 Literature suggested that educated workforce is an important ingredient for higher
42 rates of entrepreneurship in the context of emerging economies (Baumol et al., 2007; Aidis et
43 al., 2008; Valliere and Peterson, 2009). However, educated entrepreneurs may not react
44 similarly to opportunities in all contexts, but rather their reactions may be conditioned by the
45 institutional environment especially in the context of emerging economies (Baumol et al.,
46 2007; Autio and Acs, 2011; Danis et al., 2011; Acs et al., 2014b). For example, Manolova et
47 al. (2008) found that while some emerging economies, such as Bulgaria, Hungary and Latvia
48 have higher levels of education, these countries tend to exhibit lower rates of entrepreneurship
49 due to entrepreneur's lack of confidence and required skills to start new businesses. Apart
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3 from the fact that this low confidence could be explained by the political and social transition
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5 (Manolova et al., 2008), literature suggested that improving education would be more
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7 effective on increasing entrepreneurship activity levels if it is accompanied by more control of
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9 corruption (Álvarez and Urbano, 2011; Aparicio et al., 2016).
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12 In this realm, Aparicio et al. (2016) contended that control of corruption increases
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14 trust in the system and as such, will create a better alliance between government policies and
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16 educational system. Moreover, Álvarez and Urbano (2011) suggested that control of
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18 corruption could allow future entrepreneurs to gain a greater share of their generated revenue
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20 and therefore, propel higher levels of entrepreneurial activity. In addition, control of
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22 corruption would allow an increase in the amount of budget allocated to the education
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24 infrastructure and research and development (R&D), which are extra variables to support
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26 entrepreneurship activity (Aparicio et al., 2016). Therefore, the primary challenge for
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28 policymakers in emerging economies is to overcome the high levels of corruption to improve
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30 the tertiary education effects on entrepreneurial activity (Acs *et al.*, 2014a; Castaño *et al.*,
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32 2015; Aparicio *et al.*, 2016). As a result, this study proposes the following hypothesis:
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40 **H2: The positive relationship between education and training and**
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42 **entrepreneurship within an emerging economy is moderated by the country's level of**
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44 **corruption, such that this positive relationship is stronger at lower levels of corruption.**
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49 **Control of Corruption as a Moderating Effect of Access to Credit and** 50 51 **Entrepreneurship** 52

53 As we mentioned earlier, financial support availability is among the most important
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55 pillars for entrepreneurs to start and grow their ventures (Gnyawali and Fogar, 1994). Van
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57 Auken and Neely (1999) underscored the inadequacy in financial structure poses major
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3 obstacle to venture creation, as with no access to credit, individuals are unable to materialize
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5 their ideas, and as a result, the entrepreneurial activity decreases. Although new businesses
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7 may depend on personal funds received from informal investors such as family and social
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9 networks (Szerb et al., 2007), financial resources such as venture capital and bank loans are
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11 integral for aspiring entrepreneurs who seek to expand their businesses either locally or in
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13 foreign markets (Bowen and De Clercq, 2008; Korosteleva and Mickiewicz, 2011; Stenhom
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15 et al., 2013; Fuentelsaz et al., 2015; Aparicio et al., 2016). To this end, various studies have
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17 suggested policies to improve access to bank credit through lowering capital requirements;
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19 credit with low-interest rates, and credit guarantee schemes, to promote new venture creation
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22 (Gnyawali and Fogel, 1994; Álvarez and Urbano, 2011; Bowen and DeClercq, 2008;
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24 Castaño-Martínez et al., 2015; Fuentelsaz et al., 2015; Aparicio et al., 2016).

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28 Yet, the extent to which the financial system supports entrepreneurship activity in
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30 terms of providing resources to start and grow the business varies substantially across
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32 countries (Levie and Autio, 2008; Korosteleva and Mickiewicz, 2011; Chowdhury et al.,
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34 2015). In the context of emerging economies, the availability of financial resources is limited
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36 due to the lack of development in the financial institution (Aidis et al., 2008; Acs and Correa,
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38 2014). In this regard, prior research suggested that higher levels of corruption and bribery
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40 adversely impact the development of a country's financial infrastructure (La Porta et al.,
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42 1999), and this uncertainty caused by corruption could generate distrust among entrepreneurs
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44 in the financial system, preventing its maturity (Aparicio et al., 2016). On the contrary, the
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46 prevalence of trust has been found to positively influence entrepreneurs to engage in high-
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48 growth business activities (Bowen and DeClercq, 2008). This suggests a potential interaction
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50 effect between a country's level of corruption and financial development on the one hand, and
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52 the new firm start-ups rates within its borders on the other (Bowen and DeClercq, 2008;
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54 Chowdhury et al., 2015).

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3 In relation to the study's context, Johnson et al. (2002) analysed entrepreneurship in
4 post-communist emerging economies and found that extra-legal payments (bribes) hinder
5 entrepreneurial activity more than the lack of financing. Therefore, corruption (as well as
6 other deficiencies in the governance of a country) may increase transaction costs while
7 limiting the income for entrepreneurs (Álvarez and Urbano, 2011). Based on the previous
8 discussion, it is more likely that emerging economies that are characterised with lower levels
9 of corruption and a more developed financial system can provide higher availability of
10 financial resources for entrepreneurs to pursue their ambitions towards new ventures.
11 Accordingly, this reasoning leads to the proposition of the following hypothesis:
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26 **H3: The positive relationship between access to credit and entrepreneurship**
27 **within an emerging economy is moderated by the country's level of corruption, such**
28 **that this positive relationship is stronger at lower levels of corruption.**
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35 **Corruption as a Moderating Effect of Technology Absorption and Entrepreneurship**

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37 The last formal institution analysed in this study is technology absorption (Gnyawali
38 and Fogel, 1994). The diffusion of new technology, as well as the capacity for firms to absorb
39 it, is an important factor for innovation and high growth ventures (Stenholm et al., 2013; Acs
40 et al., 2014b). In this realm, improvements in information and communication technology
41 (ICT) via the internet (e.g., cloud computing, social media, internet of things, mobile phone
42 services and big data analytics) may motivate individuals to start new businesses due to
43 potential for higher returns such as better exchange information, fewer expenses and less time
44 consuming (Acs 2006; Acs et al., 2008a). Hence, public policies that allow faster access to
45 information and Internet may further lead to more entrepreneurial activity and more
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3 innovation in the context of emerging economies (Acs and Szerb 2007; Audretsch and
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5 Belitski, 2016).

6
7 Therefore, as suggested by the literature, it is essential to remove barriers that hinder
8
9 the development of technological infrastructure policies in the context of emerging economies
10
11 (Acemoglu and Robinson, 2006; Pathak *et al.*, 2015; Audretsch and Belitski, 2016). In
12
13 particular, these barriers may point to efforts by the political elite to block technological and
14
15 institutional development to protect their benefits under the *status quo* system (Acemoglu and
16
17 Robinson, 2006). Thus, corrupt countries tend to benefit less from Foreign Direct Investments
18
19 (FDI) by high tech companies, which are uncertain about expanding their businesses in
20
21 markets that are characterised by higher potential costs of corruption (Anokhin and Schulze,
22
23 2009).

24
25 As a result, it is believed that corruption and access to foreign technology interact to
26
27 produce significant outcomes for the rates of entrepreneurial activity in emerging economies.
28
29 In particular, emerging economies that have lower levels of corruption may facilitate the
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31 transformation of technical knowledge through FDI that ultimately fosters innovation and
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33 higher rates of entrepreneurial productivity (Audretsch *et al.*, 2008; Anokhin and Schulze,
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35 2009; Pathak *et al.*, 2015). Therefore, this study proposes the following hypothesis:

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45 **H4: The positive relationship between technology absorption and**
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47 **entrepreneurship within an emerging economy is moderated by the country's level of**
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49 **corruption, such that this positive relationship is stronger at lower levels of corruption.**

50 51 52 53 **Data and Methodology**

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55 Similar to other studies (De Clercq *et al.*, 2010; Danis *et al.*, 2011), the research
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57 population for this study consisted of all possible emerging countries that fit the
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3 characterisations of emerging economies, as suggested by Hoskisson *et al.* (2000). In this
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5 context, emerging economies are described as low-income countries that go through
6
7 encouraging private enterprise development and increased economic liberalisation (Hoskisson
8
9 *et al.*, 2000). In this sense, the selection criteria for emerging economies consider transition
10
11 economies, such as post-communist countries, that are characterised by the encouragement of
12
13 private enterprise and increasing liberalisation, as well as developing countries in Latin
14
15 America, Asia and Africa that have gone through the adoption of a free-market system and
16
17 economic liberalisation (Hoskisson *et al.*, 2000). While these countries shared common
18
19 histories with respect to their pervasive corruption problems and inherited underdeveloped
20
21 institutional legacies, differences in the pace and extent of economic liberalisation and
22
23 institutional development provided the basis for our key research question (De Clercq *et al.*,
24
25 2010; Kiss *et al.*, 2012): Do formal institutions in emerging economies affect entrepreneurial
26
27 activity levels in the same way under both conditions of endemic corruption and freedom
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29 from it?
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35 In addressing our research question, we analysed the moderating effect of control of
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37 corruption as an informal institution on the relationship between formal institutions (i.e., the
38
39 number of procedures for starting a business, education and training, access to credit, and
40
41 technology absorption by firms) and entrepreneurial activity. The final sample consisted of 41
42
43 emerging economies using a panel of data for the period 2006–2016 in which data were
44
45 available for all key variables (i.e., dependent and independent variables) of the study.
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49 The data for this study is procured from different sources (see Table 1). The
50
51 dependent variable related to entrepreneurial activity was derived from the New Entry Rate
52
53 (NER) of the World Bank entrepreneurship dataset which tracks the new entry rate of
54
55 registered firms with limited liability companies (LLCs) in government authorities (Acs *et al.*,
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3 2008b). This index is often used in the literature to compare entrepreneurial activity across
4
5 countries (Acs et al., 2008b; Belitski et al., 2016; Dvouletý, 2018).
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8 The data about the informal institution, control of corruption (CC) as the independent
9
10 variable, was obtained from the Worldwide Governance Indicators (WGI) project. Control of
11
12 Corruption (CC) captures perceptions of the extent to which public power is exercised for
13
14 private gain, including both petty and grand forms of corruption, as well as “capture” of the
15
16 state by elites and private interests. The scores in this database lie between -2.5 and 2.5, with
17
18 higher scores corresponding to better outcomes of the institutions (Álvarez and Urbano, 2011;
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20 Aparicio et al., 2016).
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24 Moreover, the source of data for the independent variables of formal institutions such
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26 as the number of procedures for starting a business (PRO) was taken from the World Bank’s
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28 Doing Business project which provides the number of procedures that are officially required
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30 for an entrepreneur to start up and formally operate an industrial or commercial business
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32 (Álvarez and Urbano, 2011; Aparicio et al., 2016). The second formal institution for the
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34 education and training variable (TEDU) was measured as the percentage of the population
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36 with tertiary education in the country, as obtained from the UNESCO database, indicating the
37
38 percentage of the population with business and entrepreneurial skills (Álvarez and Urbano,
39
40 2011; Chowdhury et al., 2015). The third formal institution for access to credit (AC) was
41
42 measured from the overall domestic credit to the private sector provided by banks as a share
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44 of GDP; it comes from the WDI dataset (Álvarez and Urbano, 2011). A final dimension of the
45
46 formal institution is the availability of the latest technologies in a country (TA). This variable
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48 was measured from how favourable the environment is for the diffusion of technological
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50 change and was obtained from the Global Competitiveness Report (GCR) (Acs et al., 2008b;
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52 Stenholm et al., 2013).
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3 Finally, given that the level of economic development of countries is considered a
4 critical factor in explaining entrepreneurial activity (Wennekers et al., 2005; Acs et al.,
5 2014a), this study controlled the country's annual percentage growth rate of GDP at market
6 prices (GDPg). In line with other studies, this data source was obtained from the World Bank
7 (Bowen and De Clercq, 2008; Levie and Autio, 2011; Fuentelsaz et al., 2015).
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12 Table 1 presents a list of dependent and independent variables used in this study,
13 including their sources. Based on the availability of published data of entrepreneurship and
14 institutional variables related to the study framework, the final sample consisted of a balanced
15 panel of 41 countries over the years 2006 to 2016 (11 years). Also, the data were grouped by
16 country and year, resulting in 451 country-year observations (see Appendix 1 for a list of
17 emerging economies with their mean values).
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22 Insert Table 1 here.
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27 As the study's dataset deal with a relatively substantial number of cross-sectional
28 units (41 emerging economies) with different characteristics (e.g., cultural values, religions,
29 social norms, and using different currencies), it is more likely to have heterogeneity in panel
30 data (Wooldridge, 2012). Therefore, the authors applied the fixed effects (regression) model
31 (FEM), which allows controlling for unobserved heterogeneity across countries that are fixed
32 over time.
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37 Accordingly, this study proposed the general model given below for the hypothesis's
38 analyses; this indicated that a FEM provided a better fit for our data. However, this study
39 takes into account that the FEM uses only within-country variation, which impacts the
40 interpretation of the results (Aidis *et al.*, 2012).
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$$NER_{it} = \beta_i + \beta_1 II_{it} + \beta_2 FI_{it} + \beta_3 CV_{it} + \beta_4 II_{it} FI_{it} + \varepsilon_{it}$$

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3 Where β_i country specific fixed effect, II_{it} matrix of informal institutions in country i
4 in year t , FI_{it} matrix of formal institutions in country i in year t . CV_{it} matrix of the control
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7
8 variable in country i in year t .
9

10 **Results and Discussions**

11
12 Table 2 indicates the means, standard deviations, and correlation coefficients of the
13 variables used in this study. Our descriptive statistics showed that some variables might be
14 highly correlated (e.g., control of corruption with education and training, credit and
15 technology). Hence, to avoid the multicollinearity issues, that could affect the significance of
16 the main parameters in the regressions through Variance Inflation Factor (VIF) computations,
17 we followed Aiken and West's (1991) procedures to assess the interaction effects. In this
18 approach, we formed interaction terms by multiplying the mean-centred values of the
19 interacting variables, then include these terms in one regression equation. This approach was
20 adopted in different studies to minimise the possibility of multicollinearity (De Clercq *et al.*,
21 2010; Danis *et al.*, 2011). As a result, the VIF scores are below the cut-off value of 5, and
22 thus, multicollinearity is not a concern in the analysis (Mehmetoglu and Jakobsen, 2017).
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38 Insert Table 2 here.

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40 Aiming to analyse and compare the role of the institutional environment's effect on
41 entrepreneurial activity, we created two different models. Model 1 included the direct effect
42 of informal and formal factors for entrepreneurial activity, whereas Model 2 included the
43 moderating effect of control of corruption as an informal institution on the relationship
44 between formal institutions and entrepreneurial activity (see Table 3).
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51 In order to estimate all the regressions, we tried to develop a panel data analysis. As
52 earlier discussed, this study assumes that FEM was more appropriate to estimate Model 1 and
53 2. This specification model enables us to study the impact of variables that vary over time
54 (Wooldridge, 2012). Moreover, to address the possibility of heteroskedasticity,
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3 autocorrelation and cross-sectional dependence, we followed Roman's *et al.* (2018, p. 517)
4 study and applied Driscoll and Kraay's (1998) "standard errors for the coefficients estimated
5 by the within-group regression, robust to heteroskedasticity and the very general forms of
6 cross-sectional and temporal dependence".
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12 In Table 3, the results of Model 1 showed that corruption played a significant role in
13 emerging economies as it was significant at the 95% level and with the expected sign. Thus,
14 living in a country where entrepreneurship has a high-level corruption-free environment often
15 increases the probability of entrepreneurial activity (Anokhin and Schulze, 2009; Aidis *et al.*,
16 2012; Avnimelech *et al.*, 2014; Aparicio *et al.*, 2016; Dutta and Sobel, 2016). However,
17 formal factors results were inconsistent in Model 1. In this regard, the effect of the number of
18 procedures for starting a business was highly significant at ($p < 0.01$) with a negative sign.
19 Also, the effect of education and training on entrepreneurial activity was highly significant at
20 ($p < 0.01$). In contrast, the relationship between and access to credit and the firm-level
21 technology absorption with entrepreneurial activity was not significant. The latest findings
22 were contrary to previous studies which have suggested that access to capital (Bowen and De
23 Clercq, 2008; Aparicio *et al.*, 2016) and technology absorption (Gnyawali and Fogel, 1994;
24 Stenholm *et al.*, 2013; Acs *et al.*, 2014b) are a critical success factor when developing new
25 start-ups. The explanatory power, based on the $R^2 = 0.89$, showed a significant, strong
26 correlation between institutions and entrepreneurial activity.
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49 The results of Model 2 (see Table 3) demonstrated that the interaction effect of
50 informal and formal institutions was related to the entrepreneurial activity. In this model, we
51 included control of corruption as the moderating factor between the relationship of formal
52 institutions and entrepreneurship. The results found that the moderating coefficients of the
53 number of procedures in this model were highly significant at ($p < 0.01$), the moderating
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3 coefficient of education and training was significant at ($p < 0.05$). Also, the moderating
4
5 coefficient of technology absorption was highly significant at ($p < 0.01$) with a negative sign.
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7 In comparison with Model 1, the results of Model 2 were indicative that control of corruption
8
9 has both a direct and indirect impact on entrepreneurial activity; thus, we confirmed the
10
11 importance of the control of corruption to promoting entrepreneurial activity in emerging
12
13 economies as it behaved as a moderator as well (Pathak et al. 2015). Moreover, the
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15 explanatory power in Model 2, based on $R^2 = 0.91$, implied a close and robust relationship
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17 between informal and formal institutions' interaction effect and the entrepreneurial activity.
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22 Concerning the hypotheses testing, Hypothesis 1 suggested that the number of
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24 procedures for starting a business has a negative influence on entrepreneurship in each
25
26 emerging economy that has lower levels of corruption. While Model 1 showed that number of
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28 procedures has a negative and significant influence on entrepreneurial activity for each
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30 emerging economy ($\beta = -0.132$; $p < 0.01$), Model 2 showed that the interaction effect between
31
32 the number of procedures and control of corruption has a negative and significant influence
33
34 on entrepreneurial activity for each emerging economy ($\beta = -0.203$; $p < 0.01$). The results
35
36 showed that the interaction effect of control of corruption and the number of procedures
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38 coefficient is higher than the coefficient of the direct effect of the number of procedures in
39
40 each emerging economy, supporting Hypothesis 1. Although the results of Model 1 were
41
42 congruent with the literature (the more days required for the creation of a new firm, the less
43
44 likely it is that the entrepreneurial activity will occur) (Álvarez and Urbano, 2011; Aparicio et
45
46 al., 2016), the results of Model 2 showed that the number of procedures has a better impact on
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48 entrepreneurial activity in emerging economies that have lower levels of corruption as
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50 suggested by the literature (Naudé, 2008; Klapper and Love, 2010; Aparicio et al., 2016).
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56 Hypothesis 2 proposed that lower levels of corruption positively influence the
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58 relationship between education and training with entrepreneurial activity in each emerging
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3 economy. While Model 1 showed that education and training was significant to
4
5 entrepreneurial activity ($\beta = 0.024$; $p < 0.01$), Model 2 showed that the interaction effect of
6
7 education and training with control of corruption coefficient is higher than the coefficient of
8
9 the direct effect of the education and training ($\beta = 0.070$; $p < 0.05$). The results for the
10
11 moderating role of corruption were in line with our expectations, supporting Hypothesis 2.
12
13 Therefore, an educational system with an entrepreneurial focus is more likely to increase
14
15 entrepreneurial activity in emerging economies that have lower levels of corruption rather
16
17 than higher levels of corruption as suggested by literature (Álvarez and Urbano, 2011;
18
19 Aparicio et al., 2016).

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24 Hypotheses 3 suggested that access to credit from banks has a positive influence on
25
26 entrepreneurial activity in the context of each emerging economy that has lower levels of
27
28 corruption. While Model 1 showed that access to credit was not significant to entrepreneurial
29
30 activity, Model 2 also showed that the interaction effect between control of corruption and
31
32 access to credit has no significant influence on entrepreneurial activity. The interpretation of
33
34 the previous results could be explained in three ways. First, the previous results could suggest
35
36 that entrepreneurs who are associated with higher risk levels tend to obtain financial resources
37
38 from social networks and family connections; this may be because existing financial
39
40 institutions are underdeveloped and less likely to support their new ventures (Ho and Wong,
41
42 2007; Chowdhury et al., 2015b; Fuentelsaz et al., 2015; Ghura et al., 2017). Second, another
43
44 interpretation for the findings was suggested by Wennekers et al. (2005), who argued that
45
46 emerging economies have higher rates of necessity entrepreneurship (i.e., informal
47
48 entrepreneurship), which does not require large amounts of credit. Lastly, although this latter
49
50 idea could be right, the results also suggested that entrepreneurs may later depend on
51
52 alternative sources to fund their growing businesses, such as venture capital funds, angel
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3 investors and corporate investors, due to the lack of adequate financial infrastructure (Bowen
4 and De Clercq, 2008; Aidis, 2012; Ghura et al., 2017).

7
8 Finally, Hypotheses 4 suggested that firm-level technology absorption has a
9
10 significant influence on entrepreneurship in each emerging economy that has lower levels of
11 corruption. The results were contrary to the study's expectations as the coefficient regression
12 was not significant in Model 1 and highly significant in Model 2 ($\beta = -0.951$; $p < 0.01$) with a
13
14 negative sign. Although not what we predicted, the previous results could suggest that new
15
16 business activities in emerging economies that have lower levels of corruption are still not
17
18 technology-based and characterised by imitative entrepreneurship. In this regard,
19
20 entrepreneurs in emerging countries tend to copy technologies from developed economies to
21
22 expand their economy of scale (Acs, 2006; Minniti and Lévesque, 2010). Entrepreneurs are,
23
24 therefore, less likely to invest in R&D, even though imitative entrepreneurship is significant
25
26 to economic growth. This is especially true in the case of emerging economies, as they
27
28 increase competition and product availability when the revenues to R&D expenditure are low
29
30 (Minniti and Levesque, 2010).
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38 We also acknowledge the possibility of alternative explanations drawn from the
39
40 literature that suggested educated individuals may work for technology-based corporations to
41
42 seek higher returns in emerging economies with lower levels of corruption. Anokhin and
43
44 Schulze (2009) found that economies with lower costs of corruption are more likely to benefit
45
46 from FDI investment by attracting high tech companies to enter markets (Anokhin and
47
48 Schulze, 2009). Therefore, educated people are free to behave entrepreneurially within
49
50 existing companies, and they enjoy high-wage employment and high remunerations. This
51
52 could suggest that corporate entrepreneurship substitutes for start-up activity and has a
53
54 positive relationship with technology absorption in emerging economies with lower
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56 corruption (Turró et al., 2014).
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3 In general, the estimated coefficient of the control variable of economic growth was
4
5 not congruent with the existing literature (Models 1 and 2), which argued a positive and
6
7 significant influence between economic growth and entrepreneurial activity (Levie and Autio,
8
9 2011; Fuentelsaz et al., 2015).

10
11
12 To this end, the inconsistencies in findings between model 1 and model 2 provided
13
14 quasi support for the conceptual premise that it is pertinent to consider the interactions
15
16 between formal and informal institutions and their impact on entrepreneurial activity (North
17
18 1990, 2005, Williamson, 2000; Acs et al., 2014a; Ghura et al., 2017). These results were in
19
20 line with previous literature and the empirical work by Ghura et al., which this study aimed to
21
22 expand upon and validate in suggesting certain institutional variables such as control of
23
24 corruption can be conducive for entrepreneurial activity levels in the context of emerging
25
26 economies (Aidis et al., 2008; Tonoyan et al., 2010; Bruton et al., 2013; Aparicio et al., 2016;
27
28 Dvouletý and Blažková, 2018).

32 33 34 35 **Conclusion**

36
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38 Given that entrepreneurship is a key driver for economic growth and development (Acs
39
40 et al., 2014a, b; Aparicio et al., 2016; Ghura et al., 2017), understanding which institutional
41
42 variables contribute to fostering and enhancing entrepreneurship appears to be a remarkable
43
44 phenomenon (Levie and Autio, 2011; Stenholm et al., 2013; Fuentelsaz et al., 2018; Urbano et
45
46 al., 2018). In this study, building on the work by Ghura et al., (2019) balanced longitudinal
47
48 panel data (for the period 2006-2016) were used to empirically examine the simultaneous effect
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50 of institutional variables on the development of entrepreneurial activity in the context of 41
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52 emerging economies. By developing a conceptual framework of institutional economics, this
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54 study analysed the interaction effect of informal (i.e., corruption) and formal institutions (i.e.,
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3 the number of procedures involved in starting a business and education and training, access to
4 credit, and technology absorption) on the rates of entrepreneurial activity.
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8 The main findings shed more light on the importance of the environmental factors on
9 entrepreneurship in which formal institutions such as the number of procedures necessary to
10 create a new business, entrepreneurship education and training and technology absorption
11 should have to be accompanied by more control of corruption (Álvarez and Urbano, 2011;
12 Aparicio et al., 2016). Overall, control of corruption showed that it behaves as a moderator
13 between formal institutions and entrepreneurship. Our empirical findings in this study replicates
14 the result of Ghura et al., (2019) in applying the same framework to post-communist emerging
15 economies. In particular, the evidence from this study showed that formal institutions, such as
16 the number of procedures, and education and training, are more likely to encourage individual's
17 choice to become an entrepreneur and start a new business activity in emerging economies that
18 have a perception of lower levels of corruption. Therefore, it is inappropriate for policymakers
19 in emerging economies to rely on the reform changes of the formal institutions without
20 considering the reforms of the informal institutions, such as corruption (Dvouletý and
21 Blažková, 2018).
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40 The study has several contributions. First, it advanced the existing theory in the field
41 of entrepreneurship and Institutional Economics as few empirical papers are grounded in both
42 theories (Acs et al., 2014a, b). Second, we tested a theoretical model by expanding the study
43 the number of emerging economies and found comparable findings that explain factors that
44 may influence the likelihood of individuals entering entrepreneurship. Third, our findings have
45 implications for policymakers who are interested in fostering and promoting entrepreneurship
46 for the benefit of economic and productivity growth in the context of emerging economies.
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56 The generalizability of the study's findings is subject to certain limitations that could
57 become future research lines. First, more accurate measures for both dependent and independent
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3 variables could be used. On the one hand, our study has considered only one particular aspect
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5 of high-growth entrepreneurship, which is newly registered firms with limited liability.
6
7 Although newly registered firms are recognised as one of the critical drivers that entrepreneurial
8
9 activity may make to economic growth (Acs et al., 2008b; Levie and Autio, 2011), future
10
11 research should seek to examine other aspects of growth-oriented entrepreneurship such as
12
13 activities involving a high level of innovation, corporate entrepreneurship or technology
14
15 developments (Bowen and De Clercq, 2008; Turró et al., 2014). On the other hand, using other
16
17 (or more) environmental variables (e.g., national culture) is crucial to understanding
18
19 entrepreneurship in emerging countries where institutional arrangements can vary significantly
20
21 from those in developed countries (Bruton et al., 2008; Hayton and Cacciotti, 2013; Fernández-
22
23 Serrano and Liñán, 2014; Fernández-Serrano and Romero, 2014; Sambharya and Musteen,
24
25 2014; Brancu et al., 2015). Second, the examined models to explain entrepreneurial activity
26
27 through institutions are quite adequate and robust, but it is necessary to complement them and
28
29 consider emerging economies at different levels of economic development (Stenholm et al.,
30
31 2013; Acs et al., 2014a). Third, it is recommended that further research is undertaken in larger
32
33 samples across more countries or in different regions such as resource-based economies,
34
35 African or Asian contexts in which corruption is prevalent in many of those nations (Pathak et
36
37 al., 2015). We hope that our study will inspire further investigations in future into the
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39 interaction's impact between formal and informal institutions on entrepreneurial activity.
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REFERENCES

- 1
2
3
4
5 Acemoglu, D. & Robinson, J.A. (2006), Economic backwardness in political perspective,
6
7
8 *American Political Science Review*, 100(1), 115-131.
9
- 10 Acs, Z. (2006), How is entrepreneurship good for economic growth?, *Innovations, technology,*
11
12 *governance, globalization*, 1(1), 97-107.
13
- 14 Acs, Z.J. & Correa, P.G. (2014), *Identifying the obstacles to high-Impact entrepreneurship in*
15
16 *Latin America and the Caribbean*, The World Bank, 1-32.
17
- 18 Acs, Z.J. & Szerb, L. (2007), Entrepreneurship, economic growth and public policy, *Small*
19
20 *business economics*, 28(2-3), 109-122.
21
- 22 Acs, Z.J., Autio, E. & Szerb, L. (2014a), National systems of entrepreneurship: measurement
23
24 issues and policy implications, *Research Policy*, 43(3), 476-494.
25
- 26 Acs, Z.J., Szerb, L. & Autio, E. (2014b), *The Global Entrepreneurship and Development Index*
27
28 *2014*, The Global Entrepreneurship and Development Institute, Washington, DC,
29
30
31
32
33 120pp.
34
- 35 Acs, Z.J., Desai, S. & Hessels, J. (2008a), Entrepreneurship, economic development and
36
37 institutions, *Small Business Economics*, 31(3), 219-234.
38
- 39 Acs, Z.J., Desai, S. & Klapper, L.F. (2008b), What does entrepreneurship data really show?,
40
41
42 *Small Business Economics*, 31(3), 265-281.
43
- 44 Aidis, R., Estrin, S. & Mickiewicz, T. (2008), Institutions and entrepreneurship development
45
46 in Russia: A comparative perspective, *Journal of Business Venturing*, 23(6), 656-672.
47
- 48 Aidis, R., Estrin, S. & Mickiewicz, T.M. (2012), Size matters: entrepreneurial entry and
49
50 government, *Small Business Economics*, 39(1), 119-139.
51
- 52 Aidt, T.S. (2009), Corruption, institutions, and economic development, *Oxford Review of*
53
54 *Economic Policy*, 25(2), 271-291.
55
56
57
58
59
60

- 1
2
3 Aiken, L.S. & West, S.G. (1991), *Multiple regression: Testing and interpreting interactions*,
4
5 Sage, Newbury Park, CA.
6
7
8 Álvarez, C. & Urbano, D. (2011), Environmental factors and entrepreneurial activity in Latin
9
10 America, *Academia. Revista Latinoamericana de Administración*, 48, 31-45, available
11
12 at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1974138.
13
14
15 Álvarez, C., Urbano, D. & Amorós, J.E. (2014), GEM research: achievements and challenges,
16
17 *Small Business Economics*, 42(3), 445-465.
18
19 Anokhin, S. & Schulze, W.S. (2009), Entrepreneurship, innovation, and corruption, *Journal of*
20
21 *Business Venturing*, 24(5), 465-476.
22
23
24 Aparicio, S., Urbano, D. & Audretsch, D. (2016), Institutional factors, opportunity
25
26 entrepreneurship and economic growth: Panel data evidence, *Technological*
27
28 *Forecasting and Social Change*, 102(C), 45-61.
29
30
31 Audretsch, D. B., Bönte, W., & Keilbach, M. (2008), Entrepreneurship capital and its impact
32
33 on knowledge diffusion and economic performance, *Journal of business venturing*,
34
35 Vol. 23 No. 6, pp. 687-698.
36
37
38 Audretsch, D.B. & Belitski, M. (2016), Entrepreneurial ecosystems in cities: establishing the
39
40 framework conditions, *The Journal of Technology Transfer*, 42(5), 1030-1051.
41
42
43 Autio, E. & Acs, Z. (2011), Intellectual property protection and the formation of entrepreneurial
44
45 growth aspirations, *Strategic Entrepreneurship Journal*, 4(3), 234-251.
46
47
48 Avnimelech, G., Zelekha, Y. & Sharabi, E. (2014), The effect of corruption on entrepreneurship
49
50 in developed vs non-developed countries, *International Journal of Entrepreneurial*
51
52 *Behaviour & Research*, 20(3), 237-262.
53
54
55 Baumol, W.J. (1990), Entrepreneurship: Productive, unproductive, and destructive, *Journal of*
56
57 *Political Economy*, 98(5, Part 1), 893-921.
58
59
60

- 1
2
3 Baumol, W.J., Litan, R.E. & Schramm, C.J. (2007), *Good Capitalism, Bad Capitalism, and the*
4
5 *Economics of Growth and Prosperity*, Yale University Press, New Haven.
6
7
8 Baumol, W.J. & Strom, R.J. (2007), Entrepreneurship and economic growth, *Strategic*
9
10 *Entrepreneurship Journal*, 1(3-4), 233-237.
11
12 Beck, T., Demirgüç-Kunt, A. & Maksimovic, V. (2005), Financial and legal constraints to
13
14 growth: does firm size matter?, *The Journal of Finance*, 60(1), 137-177.
15
16
17 Beck, T., Demirgüç-Kunt, A. & Maksimovic, V. (2008), Financing patterns around the world:
18
19 are small firms different?, *Journal of Financial Economics*, 89(3), 467-487.
20
21
22 Belitski, M., & Desai, S. (2016). Creativity, entrepreneurship and economic development: city-
23
24 level evidence on creativity spill over of entrepreneurship. *The Journal of Technology*
25
26 *Transfer*, 41(6), 1354-1376.
27
28
29 Bjørnskov, C. & Foss, N. (2013), How strategic entrepreneurship and the institutional context
30
31 drive economic growth, *Strategic Entrepreneurship Journal*, 7(1), 50-69.
32
33
34 Brancu, L., Guðmundsdóttir, S., Gligor, D. & Munteanu, V. (2015), Is culture a moderator of
35
36 entrepreneurship motivation? A comparative study of Romania and Iceland,
37
38 *Amfiteatru Economic Journal*, 17(38), 133-147.
39
40
41 Bruton, G.D., Ahlstrom, D. & Obloj, K. (2008), Entrepreneurship in emerging economies:
42
43 Where are we today and where should the research go in the future, *Entrepreneurship*
44
45 *Theory and Practice*, 32(1), 1-14.
46
47
48 Bruton, G.D., Ahlstrom, D. & Puky, T. (2009), Institutional differences and the development
49
50 of entrepreneurial ventures: A comparison of the venture capital industries in Latin
51
52 America and Asia, *Journal of International Business Studies*, 40(5), 762-778.
53
54
55 Bruton, G.D., Ahlstrom, D. & Li, H.L. (2010), Institutional theory and entrepreneurship: where
56
57 are we now and where do we need to move in the future? *Entrepreneurship theory and*
58
59 *practice*, 34(3), 421-440.
60

- 1
2
3 Bruton, G.D., Filatotchev, I., Si, S. & Wright, M. (2013), Entrepreneurship and strategy in
4 emerging economies, *Strategic Entrepreneurship Journal*, 7(3), 169-180.
5
6
7
8 Bowen, H.P. & De Clercq, D. (2008), Institutional context and the allocation of entrepreneurial
9 efforts, *Journal of International Business Studies*, 39(4), 747-767.
10
11
12 Castaño, M.S., Méndez, M.T. & Galindo, M.Á. (2015), The effect of social, cultural, and
13 economic factors on entrepreneurship, *Journal of Business Research*, 68(7), 1496-
14 1500.
15
16
17
18
19 Castaño-Martínez, M.S., Méndez-Picazo, M.T. & Galindo-Martín, M.Á. (2015), Policies to
20 promote entrepreneurial activity and economic performance, *Management Decision*,
21 53(9), 2073-2087.
22
23
24
25
26 Chowdhury, F., Audretsch, D. B., & Belitski, M. (2015). Does corruption matter for
27 international entrepreneurship? *International Entrepreneurship and Management*
28 *Journal*, 11(4), 959-980.
29
30
31
32
33 Chowdhury, F., Terjesen, S. & Audretsch, D. (2015b), Varieties of entrepreneurship:
34 institutional drivers across entrepreneurial activity and country, *European Journal of*
35 *Law and Economics*, 40(1), 121-148.
36
37
38
39
40 Danis, W.M., De Clercq, D. & Petricevic, O. (2011), Are social networks more important for
41 new business activity in emerging than developed economies? An empirical extension,
42 *International Business Review*, 20(4), 394-408.
43
44
45
46
47 De Clercq, D., Danis, W.M. & Dakhli, M. (2010), The moderating effect of institutional context
48 on the relationship between associational activity and new business activity in
49 emerging economies, *International Business Review*, 19(1), 85-101.
50
51
52
53
54 Djankov, S., La Porta, R., Lopez-de-Silanes, F. & Shleifer, A. (2002), The regulation of entry,
55 *The Quarterly Journal of Economics*, 117(1), 1-37.
56
57
58
59
60

- 1
2
3 Dreher, A. & Gassebner, M. (2013), Greasing the wheels? The impact of regulations and
4 corruption on firm entry, *Public Choice*, 155(3), 413-432.
5
6
7
8 Driscoll, J.C. & Kraay, A.C. (1998), Consistent covariance matrix estimation with spatially
9 dependent panel data, *Review of economics and statistics*, 80(4), 549-560.
10
11
12 Dutta, N. & Sobel, R. (2016), Does corruption ever help entrepreneurship? *Small Business*
13 *Economics*, 47(1), 179-199.
14
15
16
17 Dvouletý, O. (2017), Determinants of Nordic entrepreneurship, *Journal of Small Business and*
18 *Enterprise Development*, Vol. 24 No. 1, pp. 12-33.
19
20
21 Dvouletý, O., & Blažková, I. (2018), Entrepreneurship and Corruption: Do Corruption
22 Perceptions Influence Regional Entrepreneurial Activity?, *The 12th International*
23 *Days of Statistics and Economics*, pp. 433-440.
24
25
26
27
28 Dvouletý, O. (2018), How to analyse determinants of entrepreneurship and self-employment at
29 the country level? A methodological contribution, *Journal of Business Venturing*
30 *Insights*, Vol. 9, pp. 92-99.
31
32
33
34
35 El Harbi, S. & Anderson, A.R. (2010), Institutions and the shaping of different forms of
36 entrepreneurship, *The Journal of Socio-Economics*, 39(3), 436-444.
37
38
39
40 Estrin, S., Korosteleva, J. & Mickiewicz, T. (2013), Which institutions encourage
41 entrepreneurial growth aspirations? *Journal of Business Venturing*, 28(4), 564-580.
42
43
44
45 Feige, E. L. (1997). *Underground activity and institutional change: Productive, protective and*
46 *predatory behaviour in transition economies*, *Transforming post-communist political*
47 *economies*, pp. 21-34. National Academy Press, Washington, D.C.
48
49
50
51 Fernández-Serrano, J., & Liñán, F. (2014), Culture and entrepreneurship: The case of Latin
52 America, *Innovar*, Vol. 24(SPE), 169-180.
53
54
55
56
57
58
59
60

- 1
2
3 Fernández-Serrano, J. & Romero, I. (2014), About the interactive influence of culture and
4
5 regulatory barriers on entrepreneurial activity, *International Entrepreneurship and*
6
7 *Management Journal*, 10(4), 781-802.
8
9
- 10 Fuentelsaz, L., González, C., Maicas, J.P. & Montero, J. (2015), How different formal
11
12 institutions affect opportunity and necessity entrepreneurship, *BRQ Business Research*
13
14 *Quarterly*, 18(4), 246-258.
15
16
- 17 Fuentelsaz, L., González, C. & Maicas, J.P. (2018), Formal institutions and opportunity
18
19 entrepreneurship. The contingent role of informal institutions, *BRQ Business Research*
20
21 *Quarterly*, 1-20.
22
23
- 24 Ghura, H., Li, X. & Harraf, A. (2017), Moderating relationship of institutions for opportunity
25
26 entrepreneurship and economic development: Literature review and proposed
27
28 conceptual framework, *World Journal of Entrepreneurship, Management and*
29
30 *Sustainable Development*, 13(4), 350-374.
31
32
- 33 Ghura, H., Harraf, A., Li, X., & Hamdan, A. (2019). The moderating effect of corruption on the
34
35 relationship between formal institutions and entrepreneurial activity. *Journal of*
36
37 *Entrepreneurship in Emerging Economies*.
38
39
- 40 Gnyawali, D.R. & Fogel, D.S. (1994), Environments for entrepreneurship development: key
41
42 dimensions and research implications, *Entrepreneurship Theory and Practice*, 18(4),
43
44 43-62.
45
46
- 47 Griffiths, M.D., Kickul, J. & Carsrud, A.L. (2009), Government bureaucracy, transactional
48
49 impediments, and entrepreneurial intentions. *International Small Business Journal*,
50
51 27(5), 626-645.
52
53
- 54 Hayton, J.C. & Cacciotti, G. (2013), Is there an entrepreneurial culture? A review of empirical
55
56 research, *Entrepreneurship and Regional Development*, 25(9-10), 708-731.
57
58
59
60

- 1
2
3 Ho, Y.P. & Wong, P.K. (2007), Financing, regulatory costs and entrepreneurial propensity,
4
5 *Small Business Economics*, 28(2-3), 187-204.
6
7
8 Hoskisson, R.E., Eden, L., Lau, C.M. & Wright, M. (2000), Strategy in emerging economies,
9
10 *Academy of management journal*, 43(3), 249-267.
11
12 Jiménez, A., Palmero-Cámara, C., González-Santos, M.J., Gonzalez-Bernal, J. & Jiménez
13
14 Eguizábal, J.A. (2015), The impact of educational levels on formal and informal
15
16 entrepreneurship, *BRQ Business Research Quarterly*, 18(3), 204-212.
17
18
19 Johnson, S., McMillan, J. & Woodruff, C. (2002), Property rights and finance, *American*
20
21 *Economic Review*, 92(5), 1335-1356.
22
23
24 Klapper, L., Laeven, L. & Rajan, R. (2006), Entry regulation as a barrier to entrepreneurship,
25
26 *Journal of financial economics*, 82(3), 591-629.
27
28
29 Klapper, L. & Love, I. (2010), *The impact of business environment reforms on new firm*
30
31 *registration*, The World Bank, No. 5493, 1-50.
32
33 Kiss, A.N., Danis, W.M. & Cavusgil, S.T. (2012), International entrepreneurship research in
34
35 emerging economies: A critical review and research agenda, *Journal of Business*
36
37 *Venturing*, 27(2), 266-290.
38
39
40 Korosteleva, J. & Mickiewicz, T. (2011), Start-up financing in the age of globalization,
41
42 *Emerging Markets Finance and Trade*, 47(3), 23-49.
43
44
45 Krasniqi, B.A. & Desai, S. (2016), Institutional drivers of high-growth firms: country-level
46
47 evidence from 26 transition economies, *Small Business Economics*, 47(4), 1075-1094.
48
49
50 La Porta, R., Lopez-de-Silanes, F., & Shleifer, A. (1999), Corporate ownership around the
51
52 world, *Journal of Finance*, Vol. 54 No.2, pp. 471-517
53
54
55 Levie, J. & Autio, E. (2008), A theoretical grounding and test of the GEM model, *Small*
56
57 *Business Economics*, 31(3), 235-263.
58
59
60

- 1
2
3 Levie, J. & Autio, E. (2011), Regulatory burden, rule of law, and entry of strategic
4 entrepreneurs: an international panel study, *Journal of Management Studies*, 48(6),
5
6 1392-1419.
7
8
9
10 Manolova, T.S., Eunny, R.V. & Gyoshev, B.S. (2008), Institutional environments for
11 entrepreneurship: evidence from emerging economies in Eastern Europe,
12
13 *Entrepreneurship Theory and Practice*, 32(1), 203-218.
14
15
16
17 Mehmetoglu, M. & Jakobsen, T.G. (2017), *Applied statistics using Stata: a guide for the social*
18
19 *sciences*, Sage, London.
20
21
22 Minniti, M. & Lévesque, M. (2010), Entrepreneurial types and economic growth, *Journal of*
23
24 *Business Venturing*, 25(3), 305-314.
25
26
27 Naudé, W. (2008), *Entrepreneurship in economic development*, World Institute for
28
29 Development Economics Research, Research Paper 2008/20.
30
31
32 Naudé, W. (2010), Entrepreneurship, developing countries, and development economics: new
33
34 approaches and insights, *Small Business Economics*, 34(1), 1-12.
35
36
37 North, D.C. (1990), *Institutions, Institutional Change and Economic Performance*, Cambridge
38
39 University Press, New York, NY.
40
41
42 North, D.C. (2005), *Understanding the Process of Institutional Change*, Princeton University
43
44 Press, Princeton, NJ.
45
46
47 Pathak, S., Xavier-Oliveira, E. & Laplume, A.O. (2015), Entrepreneurship in transition
48
49 economies: The role of corruption and individual attributes, *Journal of Balkan and*
50
51 *Near Eastern Studies*, 17(4), 427-446.
52
53
54 Payne, G.T., Moore, C.B., Bell, R.G. & Zachary, M.A. (2013), Signaling organizational virtue:
55
56 an examination of virtue rhetoric, country-level corruption, and performance of foreign
57
58 IPOs from emerging and developed economies, *Strategic Entrepreneurship Journal*,
59
60 7(3), 230-251.

- 1
2
3 Roman, A., Bilan, I. & Ciumaş, C. (2018). What drives the creation of new businesses? A
4 panel-data analysis for EU countries. *Emerging Markets Finance and Trade*, 54(3),
5 508-536.
6
7
8
9
10 Sambharya, R. & Musteen, M. (2014), Institutional environment and entrepreneurship: an
11 empirical study across countries, *Journal of International Entrepreneurship*, 12(4),
12 314-330.
13
14
15
16
17 Smallbone, D. & Welter, F. (2001), The distinctiveness of entrepreneurship in transition
18 economies, *Small business economics*, 16(4), 249-262.
19
20
21 Smallbone, D., Welter, F. & Ateljevic, J. (2014), Entrepreneurship in emerging market
22 economies: Contemporary issues and perspectives, *International Small Business*
23 *Journal*, 32(2), 113-116.
24
25
26
27
28 Spence, M. (1973), Job market signaling, *Quarterly Journal of Economics*, 87(3), 355-74.
29
30
31 Stenholm, P., Acs, Z.J. & Wuebker, R. (2013), Exploring country-level institutional
32 arrangements on the rate and type of entrepreneurial activity, *Journal of Business*
33 *Venturing*, 28(1), 176-193.
34
35
36
37 Szerb, L., Rappai, G., Makra, Z. & Terjesen, S. (2007), Informal investment in transition
38 economies: Individual characteristics and clusters, *Small Business Economics*, 28(2-
39 3), 257-271.
40
41
42
43
44 Tanzi, V. (1998), Corruption around the world: causes, consequences, scope, and cures, *Staff*
45 *Papers*, 45(4), 559-594.
46
47
48
49 Tonoyan, V., Strohmeyer, R., Habib, M. & Perlitz, M. (2010), Corruption and entrepreneurship:
50 How formal and informal institutions shape small firm behaviour in transition and
51 mature market economies, *Entrepreneurship Theory and Practice*, 34(5), 803-831.
52
53
54
55
56
57
58
59
60

- 1
2
3 Turró, A., Urbano, D., & Peris-Ortiz, M. (2014), Culture and innovation: The moderating effect
4
5 of cultural values on corporate entrepreneurship, *Technological Forecasting and*
6
7 *Social Change*, Vol. 88, pp. 360-369.
8
9
- 10 Urbano, D. & Alvarez, C. (2014), Institutional dimensions and entrepreneurial activity: an
11
12 international study, *Small Business Economics*, 42(4), 703-716.
13
14
- 15 Urbano, D., Aparicio, S. & Audretsch, D. (2018), Twenty-five years of research on institutions,
16
17 entrepreneurship, and economic growth: what has been learned?, *Small Business*
18
19 *Economics*, 1-29, <https://doi.org/10.1007/s11187-018-0038-0>.
20
21
- 22 Valliere, D. & Peterson, R. (2009), Entrepreneurship and economic growth: evidence from
23
24 emerging and developed countries, *Entrepreneurship & Regional Development*, 21(5-
25
26 6), 459-480.
27
- 28 Van Auken, H.E. & Neely, L. (1999), Obstacles to business launch, *Journal of Developmental*
29
30 *Entrepreneurship*, 4(2), 175-187.
31
32
- 33 van Stel, A., Storey, D.J. & Thurik, A.R. (2007), The effect of business regulations on nascent
34
35 and young business entrepreneurship, *Small business economics*, 28(2-3), 171-186.
36
37
- 38 Veciana, J.M. & Urbano, D. (2008), The institutional approach to entrepreneurship research.
39
40 Introduction, *International Entrepreneurship and Management Journal*, 4(4), 365-
41
42 379.
43
- 44 Williamson, O.E. (2000), The new institutional economics: taking stock, looking ahead,
45
46 *Journal of Economic Literature*, 38(3), 595-613.
47
48
- 49 Wennekers, S., Van Wennekers, A., Thurik, R. & Reynolds, P. (2005), Nascent
50
51 entrepreneurship and the level of economic development, *Small Business Economics*,
52
53 24(3), 293-309.
54
55
- 56 Wooldridge, J.M. (2012), *Introductory econometrics: A modern approach*. South Western,
57
58 Cengage learning, USA.
59
60

World Bank (2017), *World development indicators*. Washington DC: The World Bank.

1
2
3
4
5
6
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8
9
10
11
12
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FIGURES & TABLES

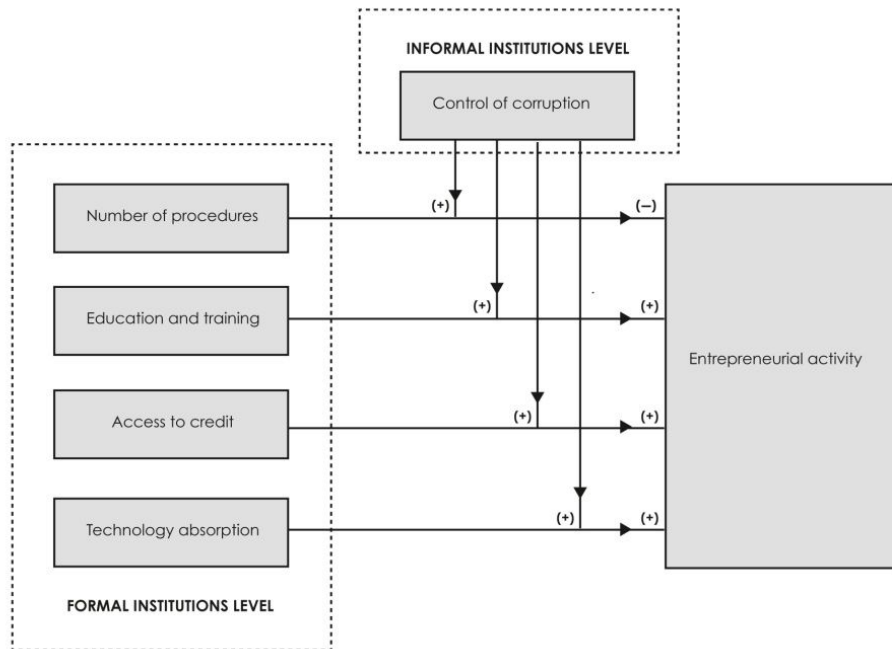


Figure 1: The developed conceptual framework of the study

Source: Ghura et al. (2019)

Table 1: Description of variables and their sources

Variable	Abbreviation	Description	Data source and availability
Dependant variable	New Entry Rate (NER)	“The number of newly registered firms with limited liability per 1,000 working-age people (ages 15-64) per calendar year.”	Doing Business 2006 to 2016 http://www.doingbusiness.org/data/exploretopics/entrepreneurship
Environmental factors	Control of Corruption (CC)	“Control of corruption (CC) – capturing 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. The values are between -2.5 and 2.5 with higher scores corresponding to better outcomes of institutions”.	WGI 2006-2016 https://data.worldbank.org/data-catalog/worldwide-governance-indicators
Environmental factors	Procedures for starting a business (PRO)	“The number of procedures required to legally operate a commercial or industrial firm are recorded, including interactions to obtain necessary permits and licenses and to complete all inscriptions, verifications, and notifications for starting operations. Data are for limited liability companies	Doing Business 2006 to 2016 https://data.worldbank.org/data-catalog/doing-business-database

	with certain standardized characteristics in order to facilitate	
	comparisons between economies.”	
Tertiary	“Total enrolment in tertiary education, regardless of age,	UIS 2006 to 2016
Education	expressed as a percentage of the total population of the five-	https://data.worldbank.org/indicator
(TEDU)	year age group following on from secondary school leaving.”	/SE.TER.ENRR?view=chart
Access to Credit	“Domestic credit to private sector by banks refers to financial	World Bank 2006 to 2016
(AC)	resources provided to the private sector by other depository	https://data.worldbank.org/indicator
	corporations (deposit taking corporations except central	/FD.AST.PRVT.GD.ZS
	banks), such as through loans, purchases of non-equity	
	securities, and trade credits and other accounts receivable, that	
	establish a claim for repayment. For some countries these	
	claims include credit to public enterprises.”	
Firm-level	To what extent do businesses in your country absorb new	Global Competitiveness Report
Technology	technology? [1 = not at all; 7 = aggressively absorb]	2006 to 2016
Absorption (TA)		

<http://reports.weforum.org/global-competitiveness-report-2015-2016/downloads/>

Control variable	GDP Growth (GDPG)	“Annual percentage growth rate of GDP at market prices based on constant local currency. Aggregates are based on constant 2010 U.S. dollars. GDP is the sum of gross value.”	World Bank 2006 to 2016 https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?view=chart
	GDP Per Capita PPP (GDPpc)	“GDP per capita based on purchasing power parity (PPP). PPP GDP is gross domestic product converted to international dollars using purchasing power parity rates.”	World Bank 2006 to 2016 https://data.worldbank.org/indicator/NY.GDP.PCAP.PP.CD

Table 2: Descriptive statistics and correlation matrix

		Emerging economies			
		Mean	Std. Dev.	Min	Max
Informal	1. New Entry Rate (NER)	3.17	3.48	0.20	20.76
	2. Control of corruption (CC)	-0.06	0.65	-1.32	1.58

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2							
3	Formal	3. Procedures for starting a business (PRO)	7.60	3.28	2	18	
4		4. Education and training (TEDU)	47.00	22.47	5.00	104.21	
5		5. Access to credit (AC)	53.00	33.52	3.46	247.52	
6		6. Firm-level technology absorption (TA)	4.73	0.58	3.11	6.15	
7							
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12							
13	Control	7. GDP growth (GDPg)	3.63	4.54	-14.81	34.5	
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	1	2	3	4	5	6	7
1. NER	1						
2. CC	0.586***	1					
3. PRO	-0.356***	-0.249***	1				
4. TEDU	0.275***	0.328***	-0.296***	1			
5. AC	0.253***	0.512***	-0.224***	0.386***	1		
6. TA	0.062	0.539***	-0.007	0.217***	0.474***	1	
7. GDPg	-0.099*	-0.171***	0.242***	-0.251***	-0.182***	-0.036	1

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$

Table 3: Regression analysis explaining entrepreneurial activity (NER)

	Model 1	Model 2
	Coef. (std. error)	Coef. (std. error)
Informal institution		
Control of corruption (CC)	1.276** (0.37)	1.354*** (0.36)
Formal institutions		
Procedures for starting a business (PRO)	-0.132*** (0.021)	-0.157*** (0.02)
Education and training (TEDU)	0.024*** (0.00)	0.021** (0.00)
Access to credit (AC)	-0.000 (0.00)	-0.001 (0.00)
Firm-level technology absorption (TA)	-0.213 (0.23)	-0.233 (0.20)
H1: Control of corruption (CC) x Procedures for starting a business (PRO)		-0.203*** (0.03)
H2: Control of corruption (CC) x Education and training (TEDU)		0.070** (0.01)
H3: Control of corruption (CC) x Access to credit (AC)		0.000 (0.00)
H4: Control of corruption (CC) x Firm-level technology absorption (TA)		-0.951*** (0.25)
Control variable		
GDP growth (GDPg)	0.034 (0.02)	0.033 (0.02)

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3	Constant	4.007** (1.27)	2.485*** (0.14)
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5	Prob.(<i>F</i> -statistic)	0.0027	0.0061
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7	R ²	0.89	0.91
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9	Observations	451	451
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11	Countries	41	41
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17	Notes: Driscoll-Kraay standard errors between parentheses.		
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19	*** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$		
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Responses to the reviewers

We greatly appreciate your constructive comments which have enabled us to improve the paper. For convenience, we reproduced each of your comments in italics below followed in turn by our responses in bold.

Reviewer(s)' Comments to Author:

Reviewer: 1

Recommendation: Major Revision

Comments:

1. The authors may want to link their contribution to Claudia Williamson's work on informal institutions and that by Boettke, Coyne, and Leeson on institutional stickiness. Both have a much clearer analytical understanding of the issues than the one currently in the manuscript.

The authors have added significant explanation from the works of Williamson and Boettke to both introduction and the theoretical segments of the paper. All added elements are highlighted in yellow.

2. The theoretical discussion is lacking. The major problem is that the authors frame corruption as an informal institution. I am not a fan of the distinction between formal and informal institutions in general, especially for analytical purposes. In this case, it is even less helpful since the extent of corruption within a country is an outcome of the existing institutions (i.e., an equilibrium behavior) not an institution. Furthermore, the authors do not discuss the fact that corruption is by definition the result of the lack of enforcement of formal institutions. Thus, the presence of corruption is itself a measure of the quality of the de-facto institutional environment.

The authors have addressed the reasoning behind selecting corruption as an informal institution and have added the related literature in support of this decision. The related literature is added briefly in the introduction and covered in a more-in depth format in the theoretical section of the paper. All added elements are highlighted in yellow.

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6 3. Overall, the authors could improve the clarity of their writing. Especially in the
7 theoretical sections. Just two examples of confusing writing:
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10 "however, if corruption is high, entrepreneurs may undermine confidence in the reform
11 of formal institutions and, therefore, it will affect their decisions to start and grow their
12 ventures" (11) This sentence was rephrased.
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16 "corruption is considered as an interdisciplinary and complex phenomenon that
17 includes political, economic, and socio-cultural backgrounds, and consequences
18 whereby it is not limited to essential effects of a weak rule of law" (12) This sentence
19 was rephrased.
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24 **The authors have edited the paper for improved readability and grammatical**
25 **issues such as for those sections mentioned in examples above.**
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32 4. Finally, there are a few issues in the discussion of the empirical results. One problem
33 is the use of the specifications' r^2 as supportive of the validity of their empirical
34 strategy. By itself, a high r^2 does not mean that the variables of interest really do
35 explain much about the variation in the dependent variable. Another problem lies in
36 the discussion of the coefficient on the interaction between technology adoption and
37 corruption. Since this relationship plays a major role in their theoretical and empirical
38 discussion, the fact that they find a very large and very significant effect of the *wrong
39 sign* warrants more discussion of what it may mean and how it could be reconciled
40 with the theoretical discussion. Instead, the authors offer some unconvincing
41 justification which itself does not seem compatible with the results.
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50 **The recommendations were addressed in the discussion.**
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Reviewer 1 Continued**Additional Questions:**

1. *Originality and appropriateness: Does the paper contain new and significant information adequate to justify publication? Does the manuscript contribute to the reader's understanding of entrepreneurship, public policy, economic development, or a combination of these, as it applies to JEPP's Aims & Scope?: Barely. That is very little that is surprising or new in the manuscript's results.*

We thank the reviewer for the valuable feedback.

2. *Relationship to Literature: Does the paper demonstrate an adequate understanding of the relevant literature in the field and cite an appropriate range of literature sources? Is any significant work ignored?: The authors do a decent job placing the paper in the existing empirical literature.*

We thank the reviewer for the feedback on our use of current literature.

3. *Methodology: Is the paper's argument built on an appropriate base of theory, concepts, or other ideas? Has the research or equivalent intellectual work on which the paper is based been well designed? Are the methods employed appropriate? Are the methods employed correctly?: Not really. The theoretical discussion is confused. For example, they seem to think that corruption is an "informal institution" rather than the equilibrium effect of lack of enforcement for formal institutions. This lack of analytical clarity undermines their empirical investigation as well.*

We thank the reviewer for this comment and have addressed the role of corruption as an informal institution in the above comments. The new support for this decision could be seen in the introduction and theory section of the paper.

4. *Results: Are results presented clearly and analysed appropriately? Do the conclusions adequately tie together the other elements of the paper? Does the paper achieve its objectives?: The discussion of the results is good overall. However, I found the discussion of the specifications' r^2 out of place. By itself, a high r^2 does not tell us very much about the actual explanatory power of the variables of interest. Also, the results tables are almost unreadable.*

We thank the reviewer and the comments have been taken into consideration.

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5. *Implications for research, practice and/or society: Does the paper identify clearly any implications for research, practice and/or society? Does the paper bridge the gap between theory and practice? How can the research be used in practice (economic and commercial impact), in teaching, to influence public policy, in research (contributing to the body of knowledge)? Are the paper's implications consistent with the findings and conclusions of the paper?: Yes, that is probably the strongest feature of the paper.*

We thank the reviewer for their comments in terms of our paper's addition to the literature.

6. *Quality of Communication: Does the paper clearly express its case, measured against the technical language of the field and the expected knowledge of the journal's readership? Has attention been paid to the clarity of expression and readability, such as sentence structure, jargon use, acronyms, etc.?: The writing and clarity of expression can be improved.*

We thank the reviewer for their feedback. The authors have undertaken a comprehensive editorial update in the paper.

Reviewer: 2

Recommendation: Minor Revision

Comments:

Thank you for a thoroughly researched, well-organized submission! You will find suggestions for minor revisions spelled out in item 6 above.

We thank the reviewer for their positive feedback on our paper.

Additional Questions:

1. *Originality and appropriateness: Does the paper contain new and significant information adequate to justify publication? Does the manuscript contribute to the reader's understanding of entrepreneurship, public policy, economic development, or a combination of these, as it applies to JEPP's Aims & Scope?: This paper makes an important contribution to the literature on entrepreneurship and public policy by*

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3 examining the interaction between corruption and five well-established determinants
4 of entrepreneurial activity. While there is a broad existing literature regarding
5 institutional determinants of entrepreneurship, to this reviewer's knowledge there is
6 little if any work on the specific interaction between informal institutions (as
7 characterized by the author(s) in the form of levels of corruption) and formal
8 institutions and the cumulative effects on entrepreneurship and new business formation.
9 Additionally, the paper presents an apparently robust empirical examination of this
10 interplay between various institutional interactions and entrepreneurship. This paper
11 is well in line with JEPP's Aims and Scope and represents a step forward in
12 institutional analysis of entrepreneurship.
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20 **The authors thank the reviewer for the comments on our paper.**

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24 2. *Relationship to Literature: Does the paper demonstrate an adequate understanding of*
25 *the relevant literature in the field and cite an appropriate range of literature sources?*
26 *Is any significant work ignored?: The paper appears to be very well informed regarding*
27 *and the authors show an extensive familiarity with relevant research. Each*
28 *foundational argument presented in the paper is supported with citations to relevant*
29 *literature. The only potential omission of important institutional literature this reviewer*
30 *found was that of the work of Hernando de Soto. De Soto's book, The Mystery of*
31 *Capital, would be a relevant addition to the literature on formal institutions and*
32 *development cited both in the introductory section and the section discussing the effect*
33 *of business registration procedures (De Soto has an extended discussion of the*
34 *retarding impact of lengthy and obtuse licensure and registration requirements on*
35 *business formation and relates this to the prevalence of under-capitalized, informal*
36 *businesses in developing economies.*
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47 **We thank the reviewer for their comments and recommended additions, we have**
48 **used additional references in addressing the suggested points on the effect of**
49 **number of procedures on entrepreneurship.**
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54 3. *Methodology: Is the paper's argument built on an appropriate base of theory, concepts,*
55 *or other ideas? Has the research or equivalent intellectual work on which the paper is*
56 *based been well designed? Are the methods employed appropriate? Are the methods*
57 *employed correctly?: The paper employs regression analysis of longitudinal data to*
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test the interaction of measures of an economy's informal institutional quality (level of corruption) and formal institutional development (measured across four institutional categories established as relevant determinants of business formation) and their impact upon levels of entrepreneurship (measured as the rate of new corporate registrations). While this reviewer is admittedly not as well versed in the econometric techniques used here as is the author(s), the method employed (fixed effects model) appears to be appropriate and is well-grounded in the relevant empirical literature.

The authors thank the reviewer for their comments on the design of our study.

4. *Results: Are results presented clearly and analysed appropriately? Do the conclusions adequately tie together the other elements of the paper? Does the paper achieve its objectives?: The author(s)' hypotheses are clearly stated in a testable manner, and the analysis section clearly applies the regression results to each hypothesis in turn. The paper indeed achieves its objectives in testing the stated hypotheses per the regression model, and the author(s) does an excellent job of summarizing the regression results and evaluating the hypotheses in light of these results.*

The authors thank the reviewer for their comments on the results of our study.

5. *Implications for research, practice and/or society: Does the paper identify clearly any implications for research, practice and/or society? Does the paper bridge the gap between theory and practice? How can the research be used in practice (economic and commercial impact), in teaching, to influence public policy, in research (contributing to the body of knowledge)? Are the paper's implications consistent with the findings and conclusions of the paper?: The paper adds to an refines a large and important body of research regarding institutions, entrepreneurship, and economic growth. This literature has important implications for understanding the conditions under which entrepreneurs can best thrive, and the factors policymakers need to consider in efforts to promote entrepreneurship as a vehicle to economic prosperity. Two particular findings are of great interest to this reviewer and suggest interesting avenues for further research.*
1. *Reinforcing existing literature, the paper finds that legal procedural hurdles significantly hinder entrepreneurship in the form of corporate startups, while*

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3 higher levels of tertiary educational attainment are associated with more business
4 formation. Interestingly, the paper finds that technology absorption rates and
5 formal sector credit access were not significant factors in business formation. This
6 last finding is particularly intriguing as it possibly refutes, at least in part, existing
7 literature on the “finance-led growth hypothesis.”
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12 2. Of even greater interest is the paper’s findings regarding the interplay between
13 corruption levels and the four above-mentioned determinants of formal
14 entrepreneurial activity (legal procedures, education levels, credit access, and
15 technology absorption). Specifically, the paper finds that, as corruption increases,
16 a given level of legal procedures becomes less of a hindrance to business formation.
17 This suggests that entrepreneurs use corruption (bribery) as a workaround for
18 burdensome regulations, and opens an avenue of exploration into entrepreneurial
19 resiliency in the face of uneconomical regulations.
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27 **We thank the reviewer for the comments our study’s contribution.**
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30 6. *Quality of Communication: Does the paper clearly express its case, measured against*
31 *the technical language of the field and the expected knowledge of the journal’s*
32 *readership? Has attention been paid to the clarity of expression and readability, such*
33 *as sentence structure, jargon use, acronyms, etc.?: The only real problem with this*
34 *paper is a lack of clarity. Throughout the paper, the author(s) omit modifiers and/or*
35 *contextual details, abuse punctuation and definite articles, and otherwise write in a*
36 *stilted manner that challenges the reader to discern the intended meaning. This*
37 *reviewer found himself re-reading several passages over and over before grasping the*
38 *author(s)’ point. The prose needs a major overhaul For instance, the author(s)*
39 *repeatedly uses the phrase “number of procedures” or the term “procedures” to refer*
40 *to the legal procedures (regulations) required for registering a business. Likewise, the*
41 *author(s) uses the phrase “education and training” by itself on several occasions at*
42 *the beginning of the paper; only later does it become evident that this is referring to the*
43 *level of tertiary educational attainment in the economy in question. Additionally, the*
44 *authors commit several varieties of grammatical sins, such as misspellings (e.g.*
45 *signaling- p. 11; rationally- p. 23) dangling participles (p. 29—first sentence of the*
46 *conclusion), and omission or superfluous inclusion of the definite article—just to name*
47 *a few. It is highly recommended that the author(s) carefully edit the manuscript for*
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3 *readability and/or obtain the services of a copy editor who can find and correct all such*
4 *errors and make the essay clearer and readable.*
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7 **The authors thank the reviewer immensely for the constructive feedback. The**
8 **authors have made correction in the verbiages used when possible as some of the**
9 **verbiage is part of the verbiage used in the framework. Other spelling and**
10 **grammar issues have been addressed to the best of the authors' ability.**
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18 **Overall, thank you very much again for all your insightful comments which have helped**
19 **us to strengthen this paper.**
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