

The Influence of Formal Institutions on the Relationship Between Entrepreneurial Readiness and Entrepreneurial Behaviour: A Cross-Country Analysis

Abstract

Purpose –The purpose of this study is to use a unique set of measures from Holmes *et al.* (2013) to clarify the relationship between entrepreneurial readiness and entrepreneurial behaviours across countries and determine whether formal institutions moderate this relationship.

Design/methodology/approach – This paper uses data collected by the Global Entrepreneurship Monitor (GEM), the Index of Economic Freedom (IEF), Political Risk Services (PRS), and the Freedom House and Political Constraint Index (POLCON) to test a theoretical model. A multilevel analysis is performed based on set of 377,356 observations from fifty-one countries spanning eight years (2001-2008).

Findings – The results suggest that entrepreneurial readiness has a strong relationship with entrepreneurial behaviour (as measured by entrepreneurial entry and opportunity-based entrepreneurship) and that this relationship strengthens with increases in political democracy, government regulations, financial capital availability, and market liquidity.

Research limitations/implications – The study is based on Holmes *et al.*'s (2013) institutions that are most important for society, uses satisfactory sample size and multi-level modelling. However, many more institutional conditions that remain to be considered might affect entrepreneurial activities.

Practical implications – For policy-makers, our results show that political democracies, government regulations, financial capital availability, and market liquidity correlate favorably with entrepreneurial behavior when individuals have a high level of entrepreneurial readiness. Policy-makers should introduce policies that provide a secure environment to individuals to start their own ventures.

Originality/value – The current study is among the first to examine the three dimensions of formal institutions—political, regulatory, and economic institutions—in a single study. Using the three dimensions, the study explains theoretically and examines empirically the effect of individual-level entrepreneurial readiness on entrepreneurial behaviour.

Keywords – Entrepreneurial entry, Opportunity-based entrepreneurship, Entrepreneurial readiness, Formal institutions, Multilevel

Introduction

Entrepreneurship is broadly connected with economic growth (Acs and Szerb, 2007), but the entrepreneurship rate is not the same around the globe (Freytag and Thurik, 2007). Entrepreneurship scholars are keen to understand which factors influence entrepreneurship, particularly knowledge-based entrepreneurial activities (Thornton *et al.*, 2011). National-level institutions are most likely to explain the rate of entrepreneurship at both the individual level and the country level (Acs *et al.*, 2012; Audretsch and Keilbach, 2008). Recently, scholars have put particular attention on explaining the differences in entrepreneurial activities in countries that have national-level institutional environments (e.g., Kim and Li, 2014; Pathak *et al.*, 2015a; Stenholm *et al.*, 2013; Walter and Block, 2016); however, more consideration of these differences is required (Schillo *et al.*, 2016). The institutional environment of any country is complex and is composed of a number of formal institutions with a few institutions being most important. Holmes *et al.* (2013) argue that political, regulatory and economic institutions are the most important in establishing and defining the environment in which business operates; thus, they build and test a unique set of measures of formal institutions and offer suggestions for future research.

We conduct a rigorous systematic review of seventeen years of literature in order to identify studies that have empirically explored the impact of these three formal institutions on cross-country entrepreneurial behaviour. We found sixty-one studies that have considered the effect of political, regulatory, and economic institutions, separately or collectively, on the various types of entrepreneurship. However, no study has addressed entrepreneurial behaviour and political, regulatory and economic institutions in a single study, along with each institution's characteristics that are relevant to entrepreneurship. (See table 1.)

Empirical evidence has explained that new businesses are influenced by country-level institutions (e.g., Autio and Acs, 2010; Bowen and De Clercq, 2008) and micro-level factors like people's resources (e.g., Bhagavatula *et al.*, 2010; Davidsson and Honig, 2003). Entrepreneurial cognition (Lim *et al.*, 2010; Mitchell *et al.*, 2000) mediates between institutions and entrepreneurship such that it creates institutions, changes individuals' perceptions, and influences entrepreneurship or the opportunities available in an environmental setting (Terrell and Troilo, 2010). The present research responds to the demand for multilevel cross-country investigations

of the interaction between individual-level characteristics and institutions, emphasizing entrepreneurial behaviour (De Clercq *et al.*, 2013; Stenholm *et al.*, 2013; Schillo *et al.*, 2016).

This study emphasizes a unique set of measures for formal institutions developed by Holmes *et al.* (2013). To the best of our knowledge, our study is among the first to theoretically explain and empirically examine the effect of individual-level entrepreneurial readiness on entrepreneurial behaviour and how three unique measures of formal institutions—political democracy (PD), government regulations (GR), financial capital availability (FCA), and market liquidity (ML)—are contingent on this relationship. However, previous research on this relationship has focused on a single attribute of formal institutions (e.g., Fuentelsaz *et al.*, 2015; Kim and Li, 2014; Nystrom 2008), while the current study emphasizes compressed measures of formal institutions. Further, most studies have focused on single institutional framework conditions, for instance regulatory institutions (e.g., Kim and Li, 2014; Pathak *et al.*, 2015a) or economic intuitions (e.g., Hessels *et al.*, 2008; Pathak *et al.*, 2016), while others have considered two institutional conditions (Autio and Fu, 2015; Goltz *et al.*, 2015; Walter and Block, 2016).

The current research contributes to the entrepreneurship literature by focusing on the effect of individual-level entrepreneurial readiness on entrepreneurial behaviour, and then moving to the cross-level interaction effects of institutions and suggesting that the relationship between individual-level entrepreneurial readiness and entrepreneurial behaviour is positively moderated by PD, GR, FCA, and ML. The study extends the literature by explaining the effective role of individual-level entrepreneurial readiness in the context of formal institutions in entrepreneurial behaviour. Cross-level interaction findings suggest that institutional factors are linked to differences in individuals' entrepreneurship based on an individual's level of entrepreneurial readiness. This insight shows policymakers that a strong institutional environment and entrepreneurial readiness encourage entrepreneurship and can help to increase the quality of entrepreneurship. The study uses cross-national-level data obtained from the Global Entrepreneurship Monitor (GEM), the Index of Economic Freedom (IEF), Political Risk Services (PRS), and the Freedom House and Political Constraint Index (POLCON) for fifty-one countries.

The next section's examination of the existing literature is followed by the theory and hypothesis development. Subsequently, the methodology used in the research is explained along with a description of the data used and how the model is implemented. The results are then

delineated and discussed. The paper concludes with a discussion of the findings in light of theory followed by implications for practice and possible avenues for future research.

Literature, Theory and Hypothesis Development

Formal institutions refer to regulations, formally accepted rules and their supportive apparatuses (enforcement agencies, regulatory bodies, etc.) which have been executed to establish the legal and economic systems of a country. Formal institutions create boundaries for entrepreneurship. Holmes *et al.* (2013) suggest that three formal institutions are most important for businesses: political, economic and regulatory institutions.

In connection to the above discussion, we have conducted a 17 year systematic literature review (1 January 2000 to 31 March 2016) in order to determine how many studies that have empirically explored the impact of three formal institutions on cross-country entrepreneurial behaviour are available. With this aim, we have considered the published articles in journals included in the Social Sciences Citation Index®. We continued our search with relevant keywords. After the selection process, 61 articles were strictly empirical to the selection criteria. We then proceeded with coding of the research topic and different methodologies used. During our systematic review process, we found that 46% of the studies emphasized regulatory institutions, 21% related to economic institutions, 21% of studies collectively considered economic and regulatory institutions, 7% considered both political and regulatory elements, and finally 5% explored economic and political institutions. However, the number of previous studies proves that institutions are the most important element for any society. We have been unable to find a single article which has explored the effect of all three formal institutions on entrepreneurial behaviour.

Insert Table 1 about here.

The present study embraces the perspective of social cognitive theory and institutional theory that individuals' knowledge structures are key mechanisms that underlie the effects of institutions. Social cognitive theory suggests that observational learning results in "knowledge

structures representing the rules and strategies of effective action” that “serve as cognitive guides for the construction of complex modes of behaviour” (Bandura, 1997). Recent studies in the entrepreneurship literature consider individuals to be a relatively homogeneous set of actors in terms of a set of typologies: individuals’ capabilities, intentions, and cognitions are all designed by institutions and have an impact on economic development (Veciana and Urbano, 2008). Social cognitive theory is the main theoretical perspective for examining individuals’ behaviours and motivations (He and Freeman, 2010).

Institutional theory is a useful theoretical framework with which to explore a number of topics of interest to entrepreneurship-oriented scholars (Bruton *et al.*, 2010). Institutional environments are complex, polycentric, and multidimensional and are also often interdependent (see, e.g. North, 1990; Ostrom, 2005; Scott, 1995). Studies in science and technology, economics, and strategy demonstrate that issues related to economic activities, the legal environment, and traditions affect industrial development and entrepreneurship and are related to firms’ success within industries (Aldrich and Fiol, 1994; Baumol *et al.*, 2007). These institutional factors are country-level processes that affect individuals’ behaviour (Aldrich, 2011) and are characterized by structures that encourage creative, wealth-generating entrepreneurship. Institutional theory provides a conceptual model that handles the entrepreneurial phenomena of macro-level institutions and individuals’ attributes.

Management and economics scholars pay special attention to institutional theory in explaining cross-country variations (see, e.g. Aparicio *et al.*, 2016; Baumol and Strom, 2007; Bruton *et al.*, 2010; Stenholm *et al.*, 2013). As they relate to individuals’ capabilities and the societal environment, social cognitive theory and institutional theory highlight the growth of value-based relationships in societal culture and how these relationships enhance individuals’ capabilities. Thus, institutional theory and social cognitive theory support each other and describe how institutions converge and diverge.

Insert Figure 1 about here.

Entrepreneurial readiness and entrepreneurial entry

Entrepreneurship scholars repeatedly highlight the characteristics of individual entrepreneurs (Eesley, 2016). Research claims that individuals' social resources (Estrin and Mickiewicz, 2011) and willingness to be self-employed (Mitchell *et al.*, 2002) are essential elements in their ability to start a new business. Entrepreneurial readiness is an important element for entrepreneurial activities, with scholars paying special attention to entrepreneurial readiness (see, e.g. Olugbola, 2017; Coduras *et al.* 2016). Lau *et al.* (2012) introduce the definition of entrepreneurial readiness, to which Schillo *et al.* (2016) add two components. Schillo *et al.* (2016) definition of entrepreneurial readiness, which is based on individuals' social capital, opportunity perception, risk aversion, and self-efficacy, is adopted in the present research.

Social capital is a private and isolatable asset that derives from an individual's network of social associations (Portes, 1995). Social capital networks are the key facilitators in the process of new-venture creation; however, the ability to recognize opportunities is also vital in entrepreneurship (see, e.g. Short *et al.*, 2010). Empirical studies have indicated that the entrepreneurial process starts with individual execution and opportunity identification (Shane and Venkataraman, 2000). Risk aversion has an important influence on individuals' aspirations to achieve professionally (Burnstein 1963) and decisions regarding whether to explore a new-venture opportunity (Welpé *et al.*, 2012). Risk aversion also influences the entrepreneurship rate at the regional level (Vaillant and Lafuente, 2007). Self-efficacy is an individual's belief in his or her ability to execute a specific behaviour and to perform the actions necessary to achieve goals (Bandura, 1997; Chen *et al.*, 1998; Gist and Mitchell, 1992). Moreover, Wennberg *et al.* (2013) find that an individual's perception of self-efficacy is positively linked with entrepreneurship. Individuals who have these characteristics are more likely than others are to contribute to the potential outcomes that accumulate from creating a new business.

H1: An individual's entrepreneurial readiness is positively related to his or her likelihood of entrepreneurial entry.

The relationships between entrepreneurial readiness, PD, and entrepreneurial entry

Several scholars have found that political institutions provide power and support to economic actors (Dobbin and Dowd, 1997; Guler and Guillen, 2010). Political institutions deliver a context that affects the growth and alteration of other institutions by manipulating societal members, possibly changing perceptions and the degree to which these alterations are required and how

they are ratified (Di Maggio, 1988). Governments introduce values and rules that affect political processes (Hillman and Keim, 1995) and the power disseminated by political institutions (Di Maggio and Powell, 1991). In autocratic institutions, power is limited to preferred individuals and bypasses the other citizens involved, while democratic institutions allocate authority to multiple individuals and inspire other citizens to become involved (De Mesquita and Siverson, 1995; Ross, 2001). Democratic laws, legislative content, and legislative rules explain that power belongs not only to politicians but also to each individual citizen (Persson, 2002).

Some studies investigate how the ability of political institutions to implement policy enables or obliges entrepreneurial processes and regulates entrepreneurial consequences (Fukuyama, 2004). Entrepreneurship-related political institutions include demographic inclusiveness, which provides access to opportunity for all (Acemoglu and Robinson, 2012), political heterogeneity and involvement, and governmental functioning and independence in the democratic process (Autio and Fu, 2015). Government representatives in democratic structures rely on trust when the economy is strong, and government and business relationships are more flexible in democratic structures in comparison to autocratic structures (Hillman and Keim, 1995). From this perspective, countries with high levels of PD may be capable of facilitating individuals in starting their own businesses.

Furthermore, countries with strong political institutions have government representatives and judicial authority selected by fair elections. Individuals in these societies tend to feel secure under strong and high-quality political institutions because they are not worried about misuse when they are interested in registering their businesses; individual capability, willingness and benefits of registration should encourage the creation of new businesses. These countries are unlike those with low-quality or weak political institutions, where citizens feel insecure because of their limited and poorly protected political rights. Democratic political institutions make opportunities available and influence government representatives through lobbying and elections (Hillman *et al.*, 2004). Individuals in democratic political environments who can recognize opportunities have more chances of success compared to those in autocratic political environments. Thus, stable political institutions can help economic growth (Temple, 1999).

H 2: The relationship between individuals' entrepreneurial readiness and their likelihood of entrepreneurial entry is positively moderated by their countries' PD.

The relationships between entrepreneurial readiness, GR, and entrepreneurial entry

Regulations are rules and laws that regulate the activities of the domestic and foreign organizations that function in a country. Such regulations contain government policies and laws that deliver support for new ventures, minimize the risk for individuals who are interested in starting new firms, and assist entrepreneurs in attaining resources (Busenitz *et al.*, 2000). Schumpeter (1961) claims that regulatory protection is most important for individuals who pursue new-venture creation since the protection of intellectual property is of prime importance for entrepreneurship. Bowen and De Clercq (2008) extend this literature by claiming that regulatory protection at a country level is important to entrepreneurial activity.

Governments initiate various programs to facilitate entrepreneurship (Gnyawali and Fogel, 1994). The entrepreneurship literature shows that countries' laws and regulations reward and directly impact the achievement of entrepreneurial initiatives (Baumol *et al.*, 2009), as well as the economy (De Soto, 2000). Empirical research also demonstrates that legal provisions that facilitate entrepreneurial activity include intellectual property rights (McMullen *et al.*, 2008), start-up regulations (Stel *et al.*, 2005), bankruptcy regulations (Lee *et al.*, 2011), the role of corruption (Pathak *et al.*, 2015a), and corruption and the rule of law (Levie and Autio, 2011). A strong legal structure enhances the effectiveness of business dealings, decreases transaction costs, and allows individuals to profit from their businesses (Whitley, 1999).

The entrepreneurship literature repeatedly emphasizes the features of the individual entrepreneur, focuses on individual resources, and finds that entrepreneurs with high levels of human capital and individual resources are most likely to succeed (Beckman *et al.*, 2007). Countries with more effective GR facilitate entrepreneurship for individuals with strong entrepreneurial readiness, which in turn facilitates the relationship between individuals' entrepreneurial readiness and entrepreneurial entry.

H 3: The relationship between individuals' entrepreneurial readiness and their likelihood of entrepreneurial entry is positively moderated by their countries' GR.

The relationships between entrepreneurial readiness, FCA, ML, and entrepreneurial entry

Economic institutions control countries' financial systems, which in turn affect the rate of economic growth. An economy's financial system is an essential element in its level of new-venture creation (Levie and Autio, 2008). FCA and ML are used to explain economic institutions

(Holmes *et al.*, 2013) as both factors influence individuals' and organizations' decisions regarding capital investment by affecting their access to capital. Retaining high money supplies and reducing interest rates build circumstances that diminish a country's currency (Burdekin and Weidenmier, 2001), and a decline in currency values reflects that these countries have high liabilities and low liquidity.

Beck, Demirgüç-Kunt, and Levine (2007) propose that development in the financial sector enhances individuals' economic opportunities and prevents the adverse effects that are connected with efforts to achieve certain outcomes. Financial capital helps entrepreneurs to attain the resources they need to expand and launch businesses, but financial capital conditions vary from country to country (Bygrave *et al.*, 2003). We expand the argument that the economic institutions oriented toward entrepreneurship can influence the resources individuals need for new-venture creation. Abundant financial and human resources improve entrepreneurship performance (Millan *et al.*, 2014) and decision formation (De Clercq *et al.*, 2013), which facilitates entrepreneurship for individuals with the appropriate skills, capabilities, and willingness and enhances the relationship between individuals' entrepreneurial readiness and entrepreneurial entry.

H 4a: The relationship between individuals' entrepreneurial readiness and their likelihood of entrepreneurial entry is positively moderated by their countries' FCA.

H 4b: The relationship between individuals' entrepreneurial readiness and their likelihood of entrepreneurial entry is positively moderated by their countries' ML.

Methodology

Sample and Data Collection

We used a cross-sectional panel dataset in this study to test the hypotheses. Both dependent variables and all individual-level variables are based on data from the GEM's adult population survey for the years 2001 through 2008. GEM is an international project that examines various entrepreneurial activities across borders, including the activities of countries that are responsible for their level of entrepreneurship. The GEM studies explores, how entrepreneurial activities impact countries' economic growth and prosperity. The GEM's annual dataset comes from a minimum of 2,000 randomly selected respondents aged between 18 to 64 years old, who are

asked questions concerning their engagement in and attitude to entrepreneurship. GEM data are particularly reliable, valid, and rich, and cross-country entrepreneurship research relies heavily on it (e.g. De Clercq *et al.*, 2013; Pathak *et al.*, 2016).

The country-level data on government regulations, economic institutions, and political democracy used in the present study originates from commonly accepted sources, including the IEF (Gwartney *et al.*, 1996), PRS, and the POLCON for fifty-one countries. GEM data serves as an anchor for our data collection activities. A combination of GEM data with data on formal institutions provides 377,356 individual interviews. Four control variables at the individual level were obtained from GEM, two control variables at the national level were obtained from Hofstede's (1980) cultural dimensions study, and one control variable was obtained from PRS.

Measures

Dependent variable (entrepreneurial entry)

The dependent variable used in our study is individuals' total early-stage entrepreneurial activity, obtained from the GEM dataset. GEM identifies three types of entrepreneurs: nascent entrepreneurs are those who are in the process of attempting to start a business and have expectations for full- or part-time ownership; new entrepreneurs are owner-managers of start-ups who have paid wages for between three and forty-two months; and established entrepreneurs are those who started businesses that have paid wages for more than forty-two months. Since our focus is on entrepreneurial entry, we emphasize new and nascent entrepreneurs, which the GEM's adult population survey refers to this cohort as total early-stage entrepreneurial activity (TEA). Our dependent variable observation is coded 1 if the individual qualifies as a nascent or new entrepreneur, and 0 otherwise.

Dependent variable (opportunity-based entrepreneurship)

Our second dependent variable, opportunity-based entrepreneurship, is obtained from GEM's adult population survey. Opportunity-based entrepreneurs are 18-64-year-olds who are either nascent or new entrepreneurs who claim to be driven by opportunity instead of necessity; they also indicate that the main driver for being involved in this opportunity is to be independent or increase their income. Opportunity-based entrepreneurship is a binary variable that is coded 1 if the respondent is an opportunity-based entrepreneur and 0 otherwise.

Insert Table 2 about here.

Independent variables (entrepreneurial readiness)

An individual's inspiration and perceptions are important predictors of entrepreneurial entry (Krueger and Carsrud, 1993). Entrepreneurial cognitions are "the knowledge structures that people use to make assessments, judgments, or decisions involving opportunity evaluation, venture creation, and growth" (Mitchell *et al.*, 2002). In this study, entrepreneurial readiness is measured by using four items—whether one knows an entrepreneur (social capital), perceived opportunity, self-efficacy, and fear of failure. These items have also been employed by Schillo *et al.* (2016).

Whether one knows an entrepreneur (social capital) is a binary variable measured as 1 if the respondent answers positively to the question, "Do you personally know someone who started a business in the past two years?" and 0 otherwise. Empirical research finds that "knows an entrepreneur" is a strong predictor of entrepreneurial activity (De Clercq *et al.*, 2013).

Since the likelihood of entrepreneurial activity is linked to the availability of opportunities in the environment (Shane and Venkataraman, 2000), the "perceived opportunity" binary variable is measured as 1 if the respondent replies positively to the question, "In the next six months there will be good opportunities for starting a business in the area where you live," and 0 otherwise. Previous studies have asserted that opportunity perception is a strong facilitator of entrepreneurial entry (Stenholm *et al.*, 2013).

Entrepreneurship research shows that individuals' perceptions of their ability to identify opportunities and their self-efficacy regarding entrepreneurial activity are positively linked to increasing the extent of entrepreneurial activity (Wennberg *et al.*, 2013). "Entrepreneurial self-efficacy" indicates whether the respondents believe that they have the knowledge, skills, and experience required to start a new business (0 = No, 1 = Yes).

"Fear of failure" is commonly used in research on entrepreneurial behaviours (see, e.g. Wennberg *et al.*, 2013). This variable is captured using a dummy variable that measures individuals' confidence in their ability to survive, with exogenous and endogenous uncertainty

linked with new businesses. “Fear of failure” is a binary variable measured as 1 if an individual is fearful of failure, and 0 otherwise.

Moderating variables (formal institutions)

Political institutions are the means via which government representatives and other individuals endorse changes in the institutional environment. PD are measured using data from POLCON and Freedom House. Two items collected from Freedom House, also employed by Holmes *et al.* (2013), are civil liberties, political rights, while the remaining two items, executive political restrictions and political constraints, have been collected from the POLCON dataset. We reverse-coded the civil liberties and political rights items in order to measure all variables in the same direction, meaning that high-score countries contain more democratic systems and low-score countries more autocratic systems.

Government regulations establish and apply policies and laws that control a country’s business activities. GR are measured using data from the IEF (Gwartney *et al.*, 1996). Seven factors that are also employed by Holmes *et al.* (2013) are trade freedom, fiscal freedom, contract and property rights, financial freedom, regulatory burden, investment freedom, and monetary freedom; each of these IEF variables is graded on a scale from 0 to 100, where a score of 80 or above = a free regulatory environment, a score between 70 and 79.9 = a mostly free regulatory environment, a score between 60 and 69.9 = a moderately free regulatory environment, a score between 50 and 59.9 = a mostly unfree regulatory environment, and scores below 50 = a repressed regulatory environment. Countries that are rated “free” or “mostly free” are two times freer than the average of all other countries and four times freer than the “repressed” countries.

In terms of economic growth, economic institutions are important elements; therefore, the present study seeks to capture a broad view of economic institutions, which are covered by the FCA and ML. A country’s financial system is an essential element of its level of new-venture creation (Levie and Autio, 2008). FCA is the degree to which individuals’ and organizations’ capital investment decisions are influenced by their access to capital and its value, and this factor is measured using six factors from PRS that are also employed by Holmes *et al.* (2013): money supply, capital investments, total foreign debt, nominal GDP, budget balance, and net reserves. ML represents a country’s economic condition at the international level. When debt increases

and liquidity decreases, the value of a country's currency is reduced compared to the international standards and the resultant impact is negative. ML is measured against three items from PRS that are also employed by Holmes *et al.* (2013): liabilities, liquidity, and exchange rate.

Interaction terms

Four interaction terms have been used to test our hypotheses: Mean standardized Z-scores of each dimension of formal institution are multiplied with the entrepreneurial readiness to produce the four interaction terms for entrepreneurial behaviour.

Individual-level and country-level control variables

We include four individual-level and three country-level control variables in our model. From the GEM dataset, we obtained individual-level variables that have not been shown to correlate strongly with entrepreneurial entry while the country-level controls have been gathered from Hofstede's (1980) cultural dimensions study and PRS.

We also included two demographic variables, gender and age. Gender has a strong influence on entrepreneurial entry as women tend to exhibit lower rates of entrepreneurial behaviour compared to men. Gender is coded as 1 if the respondent is male and 2 if the respondent is female, and a. Age is measured as a continuous variable (i.e., number of years). Education and Household income are also associated with entry into entrepreneurship. The GEM dataset records household income using a three-step income tier scale: lower average (1), average (2), and upper average (3). Moreover, we controlled for education with a five-step categorical scale, with none = 0, some secondary = 1, secondary = 2, post-secondary = 3, and graduate experience = 4.

We have also use three country-level control variables in our model; we use two cultural dimensions from Hofstede's (1980) cultural dimensions study because culture influences entrepreneurial entry (see, e.g. Wennberg *et al.*, 2013). Individualism can be defined as a preference for a loosely knit social framework in which individuals are expected to take care of only themselves and their immediate families. The uncertainty avoidance dimension expresses the degree to which the members of a society feel uncomfortable with uncertainty and ambiguity. The third country-level control variable is the size of the country's population, obtained from

PRS. The formal institutions and country-level control variables are z-standardized because they are obtained from different data sources.

Results

Our objective is to examine the individual-level effects of entrepreneurial readiness on individuals' entrepreneurial entry, and the interaction effects by which the three formal institutions moderate the effect of the individuals' entrepreneurial readiness on their entrepreneurial entry. We have adopted a four-step testing strategy to explore this effect.

Table 2 shows the sample descriptive. Table 3 provides the descriptive statistics for all study variables, while Table 4 shows the correlation matrix for the individual-level and country-level controls and predictors used in this study. To check for possible multicollinearity issues, we compute variance inflation factor (VIF) scores for all variables included in the study (Table 4). The VIF scores are below 10, providing evidence of no multicollinearity between study variables (Bowerman and O'Connell, 1990). This demonstrates that the model's analysis is not tainted by multicollinearity.

Insert Table 3 about here.

Table 5, Column 2 highlights the proportion of variance in entrepreneurial entry. The variance of random intercept decreases continuously from the null model. The variance component decreases to 0.44 in the null model, indicating that the individual-level variables explain 22% $\left(\frac{0.44-0.34}{0.44} * 100\right)$ of the country-level variance that exists in the dependent variable. The country level variables in Table 5, Column 4 shows that additionally 35% $\left(\frac{0.34-0.22}{0.34} * 100\right)$ country-level variance exists in entrepreneurial entry.

The random effect logistic regression models described in Table 5 are reported with estimates for the fixed part (estimates of coefficients) and the variable part (variance estimates). We adopt a four-step testing strategy to analyse the effects on entrepreneurial entry. In the first step, we add between-country variance in the dependent variable (entrepreneurial entry) by including no controls and no predictor variables in our random-effect logistic regression model. This random-effect logistic regression model is called the "null model" (Table 5 for

entrepreneurial entry). In the second step, all of the individual-level control and predictor variables are added to the model to estimate the proportion of variance explained by these individual-level variables. This step enabled us to isolate the proportion of the remaining variance. In our third step, we add country-level controls and country-level predictors to estimate their influence on entrepreneurial entry. Finally, in the fourth step, we add the interaction terms of each dimension of formal institutions. Three country-level formal institutions are multiplied with individual-level entrepreneurial readiness to produce the four interaction terms for entrepreneurial entry. The variance components of random intercept decrease from .44 in the null model to .22.

Insert Tables 4 and 5 about here.

Columns 3 and 4 of Tables 5 and 6 present the odds ratio (OR), where $OR > 1$ indicates a positive relationship and $OR < 1$ indicates a negative relationship. Columns 5 to 8 of Table 5 report the beta coefficients of the mixed effect logistic regression. Column 4 of Table 5 shows the direct effect of entrepreneurial readiness and country-level variables on entrepreneurial entry; individuals with high entrepreneurial readiness are, on average, 84% ($OR = 1.84, p < 0.000$) more likely to enter into entrepreneurship than those who have low entrepreneurial readiness. These findings support our individual-level hypothesis (Hypothesis 1) in that individuals' entrepreneurial readiness is positively associated with entrepreneurial entry. However, we did not hypothesize about the direct effects of formal institutions on entrepreneurial entry, instead explaining them in sequence. We find that PD is positively associated with entrepreneurial entry ($OR = 2.19, p < 0.000$), that FCA is positively linked with entrepreneurial entry ($OR = 3.64, p < 0.000$), and that GR and ML have no significant direct effects.

To investigate Hypotheses H2, H3, H4a, and H4b (Table 5), we introduce cross-level moderation effects between entrepreneurial readiness and national-level formal institutions. The estimates in models 5, 6, 7, and 8 are reported as beta coefficients of the logistic regression, as opposed to the ORs reported in models 3 and 4 of Table 5, which reveal statistical significance for all interaction terms. Therefore, unstandardized solutions are plotted for the two-way interactions between two continuous variables for all significant interaction terms. All plotted

figures show the interactions among high and low levels of entrepreneurial readiness and formal institutions. The results of the moderating role of the interactions between entrepreneurial readiness and the formal institutions of PD ($\beta = 0.17$; $p < 0.001$), GR ($\beta = 0.38$; $p < 0.001$), FCA ($\beta = 0.34$; $p < 0.001$), and ML ($\beta = -0.13$; $p < 0.01$) reveal mostly positive and significant relationships. Thus, there is support for H2, H3, H4a, and H4b.

Additional analyses

A common approach conducted in empirical research is the robustness check, which is applied to determine how certain “core” coefficient estimates of regression perform when the specification of regression is altered by adding or removing characteristics from the regression. Banos-Caballero *et al.* (2012) argue that, if we do not accommodate these difficulties, the resulting estimations might be affected. We performed a robustness check to examine the relationship between individual-level entrepreneurial readiness and opportunity-based entrepreneurship and how country-level formal institutions moderate the relationships (Table 6). All predictors and control variables are similar in both multilevel regression analyses. The results from opportunity-based entrepreneurship are in the same direction as those obtained for entrepreneurial entry, thus making our study more valuable and well-validated for policy-makers.

Insert Table 6 about here.

Discussion and Conclusion

Institutions are important factors in explaining entrepreneurship rates at the individual level and country level (Acs *et al.*, 2012; Thornton *et al.*, 2011), and entrepreneurship is broadly connected with economic growth (Acs and Szerb 2007; Wennekers and Thurik, 1999). To address the many deficiencies in the extant entrepreneurship literature on social cognitive theory and institutional theory, we investigate the relationship between the formal institutions in which business operates and individuals’ entrepreneurial readiness. Using a cross-sectional panel dataset grouped by country, we examine the cross-level interaction effects between individual-level entrepreneurial readiness and country-level formal institutions on the likelihood of individuals’ entrepreneurial entry and opportunity-based entrepreneurship. While we analyze a large sample of individuals

from fifty-one countries, we also include a number of individual-level respondents and national-level formal institutions and concentrate on analysing a period of eight years from 2001 through 2008. Therefore, there is a good match between the exploratory and response variables in our research.

To explain the moderation effects, we plot all significant interaction terms. The relationship between individual-level entrepreneurial readiness and entrepreneurial entry is positively moderated by *PD*, as shown in figure 2A. By discussing the ending point of lines, it is evident that countries with high entrepreneurial readiness and low PD have a value of 1.164 whereas countries with high entrepreneurial readiness and high PD have a value of 3.116; this explains that the association between persons with high level of entrepreneurial readiness and high PD has a significant effect on the likelihood of entrepreneurial entry. Therefore, the results suggest that the entrepreneurial entry thrives with high entrepreneurial readiness and PD countries, supporting Hypothesis 2. In countries with strong political institutions, where citizens select their government representatives and judicial authorities via fair elections, individuals feel secure and that their rights are protected by the government; on the other hand, those in other countries feel less secure and less protected, which deters them from starting new businesses. In countries with democratic political institutions, opportunities are available to influence government representatives through lobbying and elections (Hillman *et al.*, 2004). Those living in these countries feel secure under their PD system because they have no fear of misuse, and their trust their institutions to help to move them toward entrepreneurial behaviour.

Insert Figure 2 about here.

Figure 2B demonstrates that the relationship between entrepreneurial readiness and entrepreneurial entry is positively moderated by *GR*. By comparing the ending points of lines, it is clear that countries with higher levels of entrepreneurial readiness and low levels of GR are on 1.94, while countries with higher levels of entrepreneurial readiness and high levels of GR are on 2.06. This explains that individuals are associated with stronger GR countries more likely to start their businesses. Therefore, the results affirm our Hypothesis 3. Our analysis theorizes that GR are positively associated with individuals' entrepreneurial readiness and entrepreneurial

behaviour because strong regulations increase individuals' trust in their ability to succeed would add to the positive effect of GR and attitudes.

As shown in figure 2C, we also find that *FCA* has a significant positive moderating effect on individual-level entrepreneurial readiness and entrepreneurial entry. By comparing the ending point of lines, it is evident that individuals associated with high levels of entrepreneurial readiness in countries with low levels of *FCA* countries have a value of 1.027, while those with high levels of entrepreneurial readiness and high levels of *FCA* have a value of 3.782. Therefore, the results suggest that the entrepreneurial entry thrives with high entrepreneurial readiness and high levels of *FCA*, confirming Hypothesis 4a. Countries that provide financial resources at low interest rates accompanied by easy loan processes increase the ease with which individuals can obtain funds to start their own businesses. However, a country which has less financial facility, high interest rates, and complex processes will impede business creation. Access to financial resources and entrepreneurial readiness increase firm creation and entrepreneurial performance.

As shown in figure 2D, we also find support for *ML* on the individual-level relationship between entrepreneurial readiness and entrepreneurial entry. The ending points of lines have been compared, with the difference being that individuals with higher levels of entrepreneurial readiness and low levels of *ML* possess a value of 1.919, while individuals with higher levels of entrepreneurial readiness and high levels of *ML* have a value of 2.220. This explains that individuals who are associated with high entrepreneurial readiness and high *ML* are more likely to engage in entrepreneurial entry, affirming Hypothesis 4b. For example, strong currency rates and low national liabilities could have a positive effect on individuals' intention to create new businesses. A high level of liabilities decreases a country's liquidity and may diminish its currency rate.

In response to the demand for further multilevel cross-country investigations on the interaction between individual-level characteristics and environmental contexts, this research focuses on formal institutions with an emphasis on entrepreneurial behaviours (De Clercq *et al.*, 2013; Stenholm *et al.*, 2013). We were motivated to conduct this research because the role of formal institutions on entrepreneurship (Autio and Fu, 2015; Goltz *et al.*, 2015) is under-researched, requiring additional investigation into the environmental effects that might influence an individual's behaviours towards entrepreneurship.

The current study contributes to the entrepreneurship literature. It has focused on an individual-level measure of the effect of entrepreneurial readiness on entrepreneurial behaviour, finding a strong relationship of entrepreneurial readiness with entrepreneurial entry and opportunity-based entrepreneurship. We have also emphasized the central institutional factors of societies in a single study before moving to the cross-level interaction effects of institutional factors and positing that individual-level entrepreneurial readiness affects entrepreneurial behaviour. We find that strong PD, GL, high FCA and strong ML support entrepreneurial entry, suggesting consistency with the formal institutional perspective.

Limitations and future research

Our research is not without its limitations. Our analysis contains a satisfactory sample size for this kind of study as the sample size affected the accuracy of the statistical process and the method we used to obtain the data. Multi-level modelling, which is comparatively new to the entrepreneurship field, allows scholars to undertake comprehensive statistical analysis of the relationship between national-level institutions and individual-level entrepreneurial behaviour. In a strong institutional environment, the society's PD, GR, FCA, and ML have a significant influence on individual decision-making. However, many more institutional conditions affect entrepreneurial activities that remain to be considered.

Implications

Empirical studies suggest that countries' institutional environments affect how resources contribute to the decision to create new businesses, whilst also indicating that such resources are scarce in some countries (De Clercq *et al.*, 2013). Policy-makers should fully appreciate the risk and struggle associated with entrepreneurial entry in a challenging environment. In order to enhance entrepreneurship in their countries, policy-makers should take a targeted approach to stimulating new venture creation by applying policy tools that support new entrepreneurial activities based on which resources have the most influence. Policy-makers should thus introduce policies that enhance regulations that provide a secure environment for citizens to create new ventures and financial resources to increase entrepreneurship rates. With strong PD, GR, FCA, and ML, it is possible for countries to pursue increased entrepreneurial behaviour among their citizens.

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Tables and Figures

Table 1. Institutional conditions and indicators of the analyzed articles

Institutions	Articles		Mostly used Indicators	Author and year of publication
	No	%		
Economic conditions	13	21	Availability of bank loans, Corporate tax, Economic freedom index, Economic growth, Economic institutions, Economic participation and opportunity, Finance, Financial capital, Financial capital availability, Financial systems, Foreign direct investment, GDP per capital income, Government consumption, Government expenses, Gross national capital income, Growth competitiveness index, Import tariffs, Indirect tax, Inflation rate, Informal venture capital, Investment on R & D, Inward foreign direct investment, Minimum capital, Outward foreign direct investment, Total international trade, Unemployment support index, Venture capital	Acs and Amoros, (2008). De Clercq <i>et al.</i> , (2008). Hessels <i>et al.</i> , (2008). Ho and Wong, (2007). Gonzalez-Pernia <i>et al.</i> , (2015). Koellinger and Minniti (2009). Pete <i>et al.</i> , (2011). Ovaska and Sobel, (2005). Pathak <i>et al.</i> , (2016). Stel <i>et al.</i> , (2005). Terjesen and Amoros, (2010). Verheul <i>et al.</i> , (2006). Wennekers <i>et al.</i> , (2005).
Regulatory conditions	28	46	Access to credit, Barriers to technology adoption, Business freedom, Business regulations, Corporate governance, Corruption perception index, Control of corruption, Documents required to export, Entrepreneur friendly regulations, Entry regulations, Fiscal freedom, Freedom from corruption, Gender wage inequality, Government corruption, Government regulations, Government policy, Intellectual property rights, Judicial formalism, Labor freedom, Legal system, National governance, Procedures to start a business, Regulatory complexity, Regulatory dimension, Regulatory protection, Rigidity of employment index, Rigidity of hours, Rule of law, Size of government, Time required to export, Trade	Aidis <i>et al.</i> , (2012). Anokhin and Schulze, (2009). Autio and Acs, (2010). Avnimelech <i>et al.</i> , (2014). Bjornskov and Foss, (2008). Bjornskov and Foss, (2013). Bosma and Schutjens, (2011). Casero <i>et al.</i> , (2013). Casero <i>et al.</i> , (2015). Danis <i>et al.</i> , (2011). De Clercq, Danis and Dakhli, (2010). De Clercq <i>et al.</i> , (2012). De Clercq <i>et al.</i> , (2013). Du and Vertinsky, (2011). Elam and Terjesen, (2010). Fuentelsaz <i>et al.</i> , (2015). Gohmann, (2012). Levie and Autio, (2011). McMullen <i>et al.</i> , Palich (2008). Kim and Li, (2014). Nystrom, (2008). Pathak <i>et al.</i> , (2015a). Powell and Rodet, (2012). Schøtt and Jensen, (2008). Stenholm <i>et al.</i> , (2013). Stephen <i>et al.</i> , (2009). Valdez and Richardson, (2013).

Political			freedom Bureaucracy, Constraints on executive, Political stability, Political institutions, Political empowerment, Private bureau coverage		
Economic & Regulatory conditions	13	21			Aparicio <i>et al.</i> , (2016). Bowen and De Clercq, (2008). Block <i>et al.</i> , (2012). Chowdhury <i>et al.</i> , (2015). Dau and Cuervo-Cazurra, (2014). Levie and Autio, (2008). Hartog <i>et al.</i> , (2010). Korosteleva and Mickiewicz, (2011). Murdock, (2012). Pathak <i>et al.</i> , (2013). Pathak <i>et al.</i> , (2015b), Stel <i>et al.</i> , (2007). Walter and Block, (2016).
Economic & Political conditions	3	5			Autio and Fu, (2015). Estrin and Mickiewicz, (2012). Estrin <i>et al.</i> , (2013a).
Political & Regulatory conditions	4	7			Alvarez and Urbano, (2011). Estrin and Mickiewicz, (2011). Estrin <i>et al.</i> , (2013b). Goltz <i>et al.</i> , (2015).

Source: author's own elaboration based on systematic literature review

Table 2. Sample descriptives.

Country	EE	EE=0	EE=1	%EE	%OE
Argentina	5,380	4,886	494	9.18	15.02
Australia	4,340	3,949	391	9.01	10.92
Austria	1,795	1,677	118	6.57	8.47
Belgium	6,745	6,496	249	3.69	4.46
Brazil	5,695	5,240	455	7.99	14.68
Canada	3,553	3,279	274	7.71	10.55
Chile	7,595	6,770	825	10.86	16.22
China	6,839	6,160	679	9.93	17.11
Colombia	4,747	4,031	716	15.08	26.56
Czech Republic	1,627	1,543	84	5.16	7.38
Denmark	13,751	13,140	611	4.44	5.15
Dominican Republic	2,762	2,341	421	15.24	22.95
Ecuador	901	773	128	14.21	20.42
Egypt	1,490	1,283	207	13.89	17.52
Finland	6,256	5,859	397	6.35	7.91
France	9,084	8,880	204	2.25	3.36
Germany	19,838	18,906	932	4.70	6.75
Greece	4,356	4,018	338	7.76	11.25
Hungary	7,524	7,200	324	4.31	6.39
India	5,597	5,164	433	7.74	12.67
Indonesia	1,694	1,366	328	19.36	22.73
Iran	2,227	2,054	173	7.77	11.63
Ireland	3,166	2,884	282	8.91	11.43
Israel	4,958	4,750	208	4.20	6.09
Italy	3,590	3,436	154	4.29	5.63
Jamaica	5,564	4,794	770	13.84	23.35
Japan	5,954	5,746	208	3.49	4.79
Korea	4,287	3,932	355	8.28	14.23
Malaysia	1,247	1,066	181	14.51	16.12
Mexico	5,861	5,451	410	7.00	9.62
Netherlands	8,040	7,532	508	6.32	7.43
New Zealand	1,597	1,408	189	11.83	15.59

Norway	6,183	5,678	505	8.17	9.38
Peru	4,562	3,398	1,164	25.52	36.21
Philippines	1,569	1,358	211	13.45	24.73
Poland	2,660	2,576	84	3.16	5.75
Portugal	1,673	1,554	119	7.11	8.85
Romania	2,616	2,567	49	1.87	3.33
Russia	3,955	3,874	81	2.05	2.73
Singapore	6,141	5,764	377	6.14	7.46
South Africa	7,494	7,081	413	5.51	8.69
Spain	74,712	70,241	4,471	5.98	7.43
Sweden	6,433	6,218	215	3.34	3.95
Switzerland	6,292	5,917	375	5.96	7.34
Thailand	6,589	5,793	796	12.08	18.21
Turkey	4,251	4,069	182	4.28	7.79
UK	54,690	51,336	3,354	6.13	7.66
United Arab Emirates	3,258	3,030	228	7.00	8.35
United States	11,151	9,972	1,179	10.57	12.80
Uruguay	2,571	2,315	256	9.96	15.91
Venezuela	2,496	2,150	346	13.86	22.04

Notes: EE shows the total number of entrepreneurial entry observations per country.

EE=0 represent the individuals in particular country have not considered as entrepreneur.

EE=1 represent the individuals in particular country have considered as entrepreneur.

%EE shows the percentage of individuals per country identified as entrepreneur.

%OE shows the total number of opportunity based entrepreneurial entry observations per country.

Source: Adult Population Survey (APS) from Global Entrepreneurship Monitor (GEM) 2001 – 2008.

Table 3. Descriptive statistics.

	N	Min	Max	Mean	S.D
<i>Individual-level variables</i>					
Entrepreneurial entry	377,356	0	1	.10	.29
Opportunity based entrepreneurship	377,356	0	1	.07	.25
Age	377,356	18	64	40.77	12.47
Gender	377,356	1	2	1.51	.50
Education	377,356	0	4	2.27	1.08
Household income	377,356	1	3	1.90	.79
Entrepreneurial readiness	377,356	0	4	1.52	1.06
<i>Country-level variables</i>					
Population in million	51	2.68	1321.50	91.81	217.85
Individualism	51	8.0	91.0	57.86	23.07
Uncertainty avoidance	51	8.0	100.0	63.22	24.67
Political democracy	51	3.00	15.61	13.78	2.84
Government regulations	51	289.00	616.20	498.95	62.24
Financial capital availability	51	22.29	31819.92	4738.39	5582.72
Market liquidity	51	.93	9472.19	174.46	980.48

Table 4. Correlation matrix

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	VIF
<i>Individual-level variables</i>														
1. Entrepreneurial entry	1													
2. Age	-.067**	1												1.04
3. Gender	-.065**	.014**	1											1.02
4. Education	.029**	-.090**	-.020**	1										1.10
5. Household income	.041**	-.021**	-.082**	.208**	1									1.07
6. Entrepreneurial readiness	.213**	-.091**	-.122**	.099**	.094**	1								1.06
<i>Country-level variables</i>														
7. Population in million	.038**	-.046**	-.031**	-.050**	-.027**	-.001	1							1.82
8. Individualism	-.104**	.121**	.027**	.121**	-.016**	-.067**	-.167**	1						3.59
9. Uncertainty avoidance	-.008**	-.033**	-.022**	-.044**	.029**	-.014**	-.209**	-.408**	1					2.20
10. Political democracy	-.080**	.115**	.018**	.088**	.000	.007**	-.441**	.641**	.095**	1				3.32
11. Government regulations	-.059**	.129**	.028**	.132**	-.013**	-.022**	-.396**	.579**	-.336**	.590**	1			3.03
12. Financial capital availability	-.027**	.095**	.021**	.123**	-.060**	-.042**	.136**	.571**	-.286**	.273**	.476**	1		2.06
13. Market liquidity	.043**	-.051**	-.001	-.057**	-.030**	.024**	.013**	-.211**	.004*	-.279**	-.298**	-.105**	1	1.19

N=377,356 at individual-level and N=51 at country-level, evaluating pairwise correlations between individual-level and country-level variables.

Table 5. Effects on individual-level entrepreneurial entry

	1	2	3	4	5	6	7	8
<i>Fixed part estimates</i>								
Individual-level								
Age			0.99***(0.00)	0.99***(0.00)	-0.01***(0.00)	-0.01***(0.00)	-0.01***(0.00)	-0.01***(0.00)
Gender			0.72***(0.01)	0.72***(0.01)	-0.32***(0.02)	-0.32***(0.02)	-0.32***(0.01)	-0.33***(0.01)
Education			1.09***(0.01)	1.08***(0.01)	0.08***(0.01)	0.08***(0.01)	0.08***(0.01)	0.08***(0.01)
Household income			1.11***(0.01)	1.11***(0.01)	0.10***(0.01)	0.11***(0.01)	0.11***(0.01)	0.11***(0.01)
Entrepreneurial readiness (ER)	H1		1.84***(0.01)	1.84***(0.01)	0.47***(0.02)	0.39***(0.02)	0.56***(0.01)	0.61***(0.01)
<i>Country-level</i>								
Population in million				0.93(0.04)	-0.06(0.06)	-0.04(0.06)	-0.06(0.05)	-0.0(0.05)
Individualism				0.58***(0.04)	-0.54***(0.07)	-0.54***(0.07)	-0.54***(0.07)	-0.54***(0.07)
Uncertainty avoidance				0.79***(0.06)	-0.24***(0.08)	-0.24***(0.08)	-0.24***(0.07)	-0.24***(0.07)
Political democracy (PD)				2.19***(0.28)	0.46***(0.14)	0.83***(0.14)	0.80***(0.13)	0.78***(0.13)
Government regulations (GR)				0.86(0.13)	-0.17(0.15)	-0.96***(0.16)	-0.16(0.15)	-0.16(0.14)
Financial capital availability (FCA)				3.64***(0.35)	1.29***(0.18)	1.29***(0.18)	0.55***(0.12)	1.29***(0.10)
Market liquidity (ML)				1.20(0.42)	0.18(0.35)	0.18(0.35)	0.17(0.35)	0.45(0.36)
Cross-level interaction terms								
ER* PD	H2				0.17***(0.02)			
ER* GR	H3					0.38***(0.03)		
ER * FCA	H4a						0.34***(0.03)	
ER * ML	H4b							-0.13***(0.04)
<i>Random part estimates</i>								
Variance of intercept		0.44(0.08)	0.34(0.07)	0.22(0.04)	0.22(0.05)	0.22(0.04)	0.22(0.05)	0.22(0.05)
<i>Model fit statistics</i>								
Number of observation		377,356	377,356	377,356	377,356	377,356	377,356	377,356
Number of group (countries)		51	51	51	51	51	51	51
Degree of freedom (number of variables)		0	5	12	13	13	13	13
Chi-square			14552.94	14757.44	14828.47	14901.72	14882.56	14766.60
Probability > chi-square			***	***	***	***	***	***
Log likelihood		-114,471	-106,531	-106,407	-106,377	-106,322	-106,343	-106,403
Likelihood ratio (LR) test for goodness of fit		***	***	***	***	***	***	***

Notes: Standard errors are in parentheses. Bold values indicate variables testing the hypotheses. *** p , 0.001, ** p , 0.01, * p , 0.05. ORs in columns 3 and 4 above 1 represent a positive relationship, ORs below 1 represent a negative relationship; columns 5 to 8 explained beta coefficients needed to plot the interactions.

Table 6. Effects on individual-level opportunity based entrepreneurship

	1	2	3	4	5	6	7
<i>Fixed part estimates</i>							
<i>Individual-level</i>							
Age		0.99***(0.00)	0.99***(0.00)	-0.01***(0.00)	-0.01***(0.00)	-0.01***(0.00)	-0.01***(0.00)
Gender		0.69***(0.01)	0.69***(0.01)	-0.36***(0.01)	-0.36***(0.01)	-0.36***(0.01)	-0.36***(0.01)
Education		1.15***(0.01)	1.14***(0.01)	0.13***(0.01)	0.13***(0.01)	0.13***(0.01)	0.13***(0.01)
Household income		1.20***(0.01)	1.20***(0.01)	0.19***(0.01)	0.19***(0.01)	0.19***(0.01)	0.19***(0.01)
Entrepreneurial readiness (ER)		1.88***(0.01)	1.87***(0.01)	0.54***(0.02)	0.46***(0.02)	0.58***(0.02)	0.63***(0.01)
<i>Country-level</i>							
Population in million			0.99(0.04)	-0.01(0.05)	-0.00(0.05)	-0.01(0.05)	-0.01(0.05)
Individualism			0.60***(0.04)	-0.51***(0.07)	-0.51***(0.07)	-0.51***(0.07)	-0.51***(0.07)
Uncertainty avoidance			0.77***(0.05)	-0.26***(0.07)	-0.27***(0.07)	-0.26***(0.07)	-0.26***(0.07)
Political democracy (PD)			3.35***(0.51)	1.24***(0.10)	1.24***(0.15)	1.23***(0.15)	1.21***(0.15)
Government regulations (GR)			0.77(0.13)	0.43(0.34)	-0.91***(0.18)	-0.26(0.17)	-0.26(0.17)
Financial capital availability (FCA)			3.47***(0.37)	1.29***(0.18)	1.24***(0.10)	0.58***(0.13)	1.24***(0.10)
Market liquidity (ML)			1.53(0.52)	0.18(0.35)	0.42(0.34)	0.42(0.33)	0.70*(0.35)
<i>Cross-level interaction terms</i>							
ER* PD				0.10***(0.03)			
ER* GR					0.29***(0.03)		
ER * FCA						0.30***(0.03)	
ER * ML							-0.12*(0.04)
<i>Random part estimates</i>							
Variance of intercept	0.37(0.07)	0.28(0.05)	0.19(0.04)	0.19(0.05)	0.19(0.04)	0.19(0.04)	0.19(0.04)
<i>Model fit statistics</i>							
Number of observation	377,356	377,356	377,356	377,356	377,356	377,356	377,356
Number of group (countries)	51	51	51	51	51	51	51
Degree of freedom (number of variables)	0	5	12	13	13	13	13
Chi-square		13031.71	13214.59	13243.63	13282.27	13296.84	13221.02
Probability > chi-square		***	***	***	***	***	***
Log likelihood	-92,906	-85,712	-85,597	-85,589	-85,559	-85,558	-85,594
Likelihood ratio (LR) test for goodness of fit	***	***	***	***	***	***	***

Notes: Standard errors are in parentheses. Bold values indicate variables testing the hypotheses. *** p , 0.001, ** p , 0.01, * p , 0.05. ORs in columns 2 and 3 above 1 represent a positive relationship, ORs below 1 represent a negative relationship; columns 4 to 7 explained beta coefficient s.

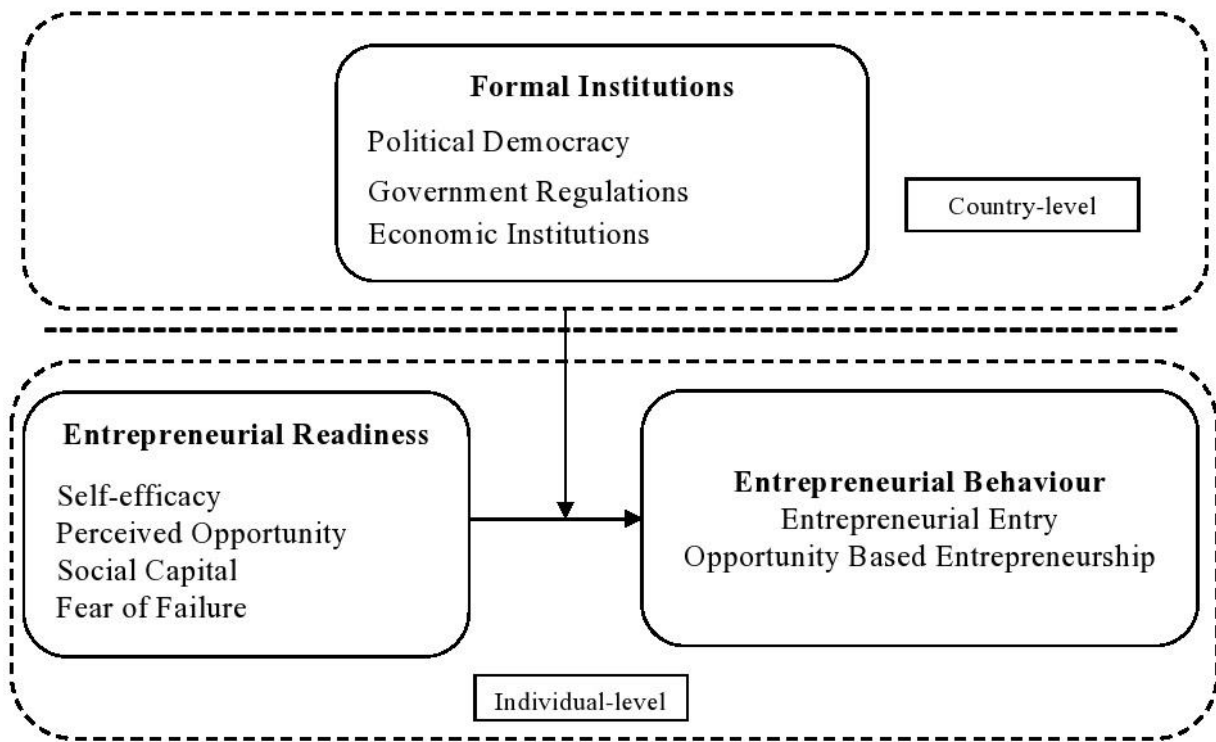
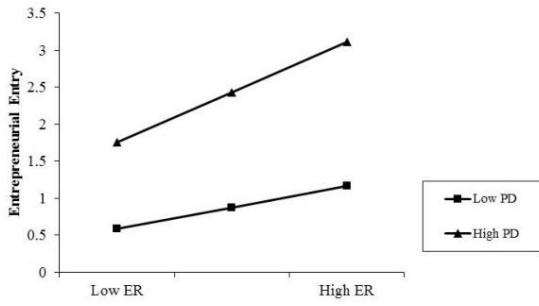


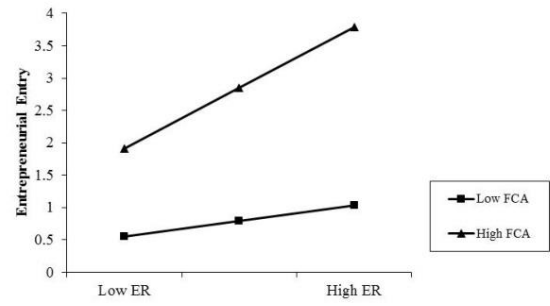
Figure 1. Conceptual Model

A



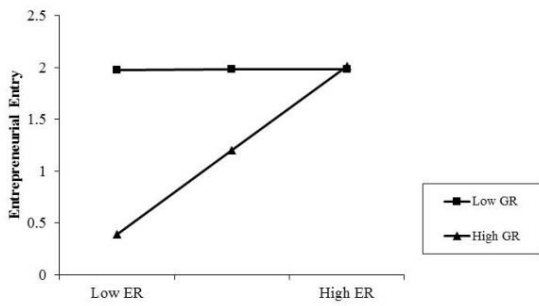
Interaction between individual-level entrepreneurial readiness and country-level political democracy.

C



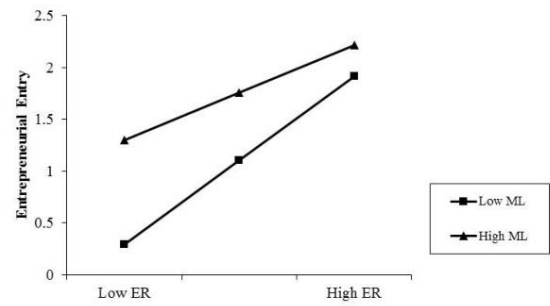
Interaction between individual-level entrepreneurial readiness and country-level financial capital availability.

B



Interaction between individual-level entrepreneurial readiness and country-level performance based culture.

D



Interaction between individual-level entrepreneurial readiness and country-level market liquidity.

Figure 2. Interaction plots of formal institutions (A-D) and entrepreneurial readiness.