

Speed of pro-market reforms and entrepreneurial innovation

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Abstract

This paper integrates the dynamic institution-based view of the firm in the analysis of entrepreneurial innovation. Given that pro-market reforms are important to understand entrepreneurial decisions and their subsequent effect on firm performance, we focus on the role that the speed at which the changes take place has on entrepreneurial innovation to fully understand the phenomenon. We also postulate that this relationship is contingent on entrepreneurial self-efficacy and on being a new entrepreneur. We use individual GEM data about the innovative behavior of entrepreneurs for the period 2009-2018 and our results mostly confirm our hypotheses: a high speed of pro-market reforms positively influences entrepreneurial innovation and this relationship is (partially) strengthened by entrepreneurial self-efficacy and is also stronger in the case of new (compared to established) entrepreneurs.

Keywords: Entrepreneurial innovation, speed of institutional change, GEM

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INTRODUCTION

Innovation is one of the main drivers of economic development and an important source of competitive advantage and business survival (Barney, 1991; Baumol, 2002; Lengnick-Hall, 1992), and entrepreneurs play a key role in the creation of new products or services (Schumpeter, 1934). As a consequence, understanding the determinants of entrepreneurial innovation is essential. Academics have tried to deepen on of this phenomenon and have identified antecedents both at the individual (Koellinger, 2008) and the country level (Autio, Kenney, Mustar, Siegel, and Wright, 2014; Fuentelsaz, Maícas, and Montero, 2018). Regarding the latter, empirical evidence has confirmed that there are important differences in the level of entrepreneurial activity between countries (Acs, Estrin, Mickiewicz, and Szerb, 2018; Welter, 2011; Zahra, 2007) and one of the key determinants of these differences is the institutional development (Bjørnskov and Foss, 2016; Duran, Van Essen, Heugens, Kostova and Peng, 2019; Wan and Hoskisson, 2003). As a consequence, during the last two decades we have witnessed numerous attempts in many countries to provide an environment that favors business activity in general and entrepreneurship in particular. Therefore, understanding the influence of the environment and of environmental institutional changes will be key in the analysis of entrepreneurial innovation. Most of these changes (though not always) have sought to remove restrictions on economic activity, making it easier for companies to do business. Although the idea that pro-market reforms (i.e., “the improvement of rules and regulations that facilitate market transactions and limit the role of government in the economy” (Cuervo-Cazurra, Gaur, and Singh, 2019: 598) matters is gaining traction in global strategy and business research (Cuervo-Cazurra, et al., 2019), it remains unclear how institutional changes impact entrepreneurial decisions, among which is entrepreneurial innovation.

One of the reasons that may explain why the impact of institutional changes on entrepreneurial decisions is not clear, and which has received recent attention in the literature, is that as important as pro-market reforms is the speed at which the changes take place (Banalieva, Eddleston, and Zellweger, 2015; Cuervo-Cazurra, et al., 2019). Previous studies have shown that when institutional changes occur at a high speed, firm performance can be negatively harmed (Banalieva et al., 2015; Banalieva, Cuervo-Cazurra, and Sarathy, 2018), or the decision on the entry mode to internationalize can be affected (Chen, Cui, Li, and Rolfe, 2017). Similarly, Mickiewicz, Stephan, and Shami (2021) highlight that entrepreneurial entry varies depending on the short-term change in the rule of law. In addition, certain strategic resources, such as previous experience (Chen et al., 2017; Fuentelsaz, Garrido, and González, 2022) or being a family firm (Banalieva et al., 2015) can help firms face these situations.

According to the dynamic institutional-based view (Banalieva et al., 2015), when pro-market reforms take place quickly, country entry barriers are rapidly removed, giving rise to new market spaces (Chen et al., 2017; Havrylyshyn, 2007). In addition, the arrival of new competitors with novel technologies will shorten the life cycle of existing products. These rapid pro-market reforms seem key to opening up new market opportunities, reflecting the need to incorporate this institutional dynamism perspective into the phenomenon of entrepreneurial innovation.

Therefore, this paper aims to provide a new theoretical perspective incorporating the institutional dynamism in the analysis of entrepreneurial innovation. In this way, it will be possible to better understand the contexts where greater opportunities for entrepreneurs to innovate emerge and what entrepreneurs are more likely to take advantage of them. Furthermore, we understand that not all entrepreneurs are equally affected for the speed of institutional change, and we posit that the relationship between

speed of change and entrepreneurial innovation is contingent to several skills and resources possessed by the entrepreneur. In particular, we posit that entrepreneurial self-efficacy and being a young entrepreneur positively moderate the above-mentioned relationship.

We test our hypotheses on a sample of 109,075 observations that correspond to entrepreneurs who have their activity in 65 countries for a period of ten years (2009-2018). Our results confirm that a high speed of change of pro-market reforms will positively increase the innovative activity of entrepreneurs. In addition, if entrepreneurs have skills that help them in the process, or if they are more flexible because they have just started their activity, the relationship will be amplified.

The main contributions of this paper are threefold. First, this is the first attempt to our knowledge to integrate the dynamic institution-based view in the analysis of entrepreneurial innovation. Given the influence that the rapid pro-market reforms have on the generation of opportunities and the opening of market spaces, it seems that it may be a crucial factor in the analysis of entrepreneurial innovation. In this sense, the paper delves into the new vision of institutional dynamism, expanding recent studies that focus on the entrepreneurial phenomenon (Mickiewicz et al., 2021), focusing on a key fundamental entrepreneurial decision, such as innovation. Second, our study deepens on the debate about the differences between young and established entrepreneurs, showing that the flexibility of being at the beginning of the entrepreneurial career constitutes a key skill when pro-market reforms take place. Finally, we provide new empirical evidence at a global level on the relevance that the speed of institutional change has on strategic decisions, with an empirical analysis that covers a total of 65 countries.

THEORETICAL FRAMEWORK AND HYPOTHESES

Dynamic institution-based view

The institutional environment in which firms compete influences firm decisions by facilitating or restricting their activity (North, 1990; Peng, Sun, Pinkham, and Chen, 2009; Peng, Wang, and Jiang, 2008), with the subsequent effect on firm performance. (Cuervo-Cazurra, Mudambi, and Pedersen, 2019; Dikova and Brouthers, 2016; Hernández, Nieto, and Boellis, 2018; Wan and Hoskisson, 2003). As a consequence, it plays a key role in entrepreneurial activity (Bjørnskov and Foss, 2016).

This institutional environment is not constant, but it evolves over time (Peng, 2003). Some countries, seeking to liberalize the market, implement institutional changes commonly known as pro-market reforms (Cuervo-Cazurra and Dau, 2009; Hoskisson, Eden, Lau, and Wright, 2000; Newman, 2000; Park, Li, & Tse, 2006; Peng, 2003). Pro-market reforms (i.e., “the improvement of rules and regulations that facilitate market transactions and limit the role of government in the economy” (Cuervo-Cazurra, et al., 2019: 598) lead to improvements in national governance and economic liberalization (Dau, 2012). On the one hand, governments seek to reduce market imperfections through improvements in laws and regulations, public goods, and infrastructure. For example, they encourage innovation by improving the protection of property rights (Chen and Puttitanun, 2005) and implement contractual dispute resolution mechanisms that reduce trading risks. On the other hand, pro-market reforms seek to minimize government intervention in the economy through price liberalization and a reduction in industrial and commercial barriers in a country, which allow the entry and operation of additional economic actors, improving the quality of potential exchange partners and favoring competition and innovation (Dau, 2012).

Studies on pro-market reforms analyze how firm strategies and structures evolve in response to variations in the economic, political and sociocultural components of a country (Saka-Helmhout et al., 2016). Nevertheless, the influence of pro-market reforms on business and entrepreneurial decisions, as well as in their performance, remains unclear, and contradictory results have been found (for a review, see Cuervo-Cazurra et al., 2019). This inconclusive evidence led the literature to shift the focus from the scope of reforms to the speed at which those reforms take place (i.e., the rate of market liberalization over time, Banalieva et al., 2015), giving place to the emergence of a dynamic institution-based view to explain the influence of the speed of pro-market reforms on firm-level strategy (Banalieva et al., 2015).

Previous research has shown that when pro-market reforms occur at a high speed, firm performance can be negatively harmed (Banalieva et al., 2015; Banalieva, et al., 2018), or the decision on the entry mode to internationalize is affected (Chen, et al., 2017). Other studies have focused on the strategic resources that can help firms to succeed when pro-market reforms happen quickly, such as previous experience (Chen et al., 2017; Fuentelsaz, et al., 2022) or been a family firm (Banalieva et al., 2015). Research continues to point in this direction, showing that the effect that reforms have on entrepreneurial activities (and also in innovation and knowledge) differs depending on the speed at which they occur. Li and Tang (2021) in their research on the determinants of university technology transfer, show that a high institutional scope can favor technology transfer in universities; however, when the speed at which change occurs is too fast, this transfer will negatively affected. Recently, Mickiewicz, Stephan, and Shami (2021) show that time is also crucial in the entrepreneurial process, reflecting that the entrepreneurial entry varies depending on the short-term change in the rule of law.

As a consequence, the literature seems to confirm that as important as pro-market reforms is the speed at which the changes take place (Banalieva, et al., 2015; Cuervo-Cazurra, et al., 2019). The notion of speed combines the change in the scope of the pro-market reforms (distance traveled) and the time interval between the old and the new scope (duration time). This construct links the static (reforms scope) and dynamic (reform process) aspects of institutional environment, providing the basis for that new institutional dynamic view of business strategy (Banalieva et al., 2015).

Entrepreneurial innovation

Innovation is an important factor in determining competitiveness and economic growth (Wennekers and Thurik, 1999; Audretsch and Thurik, 2001; Acs, 2006; Audretsch et al., 2006; Grilo and Thurik 2005). Further, innovation is crucial as the main driver of business performance and firm survival, particularly in dynamic markets (McDowell, Peake, Coder, and Harris, 2018; Rauch, Wiklund, Lumpkin, and Frese 2009). Ever since the early work of Schumpeter (1934), previous literature has established a direct connection between innovation and entrepreneurship (Audretsch et al. 2006; Colombelli, Krafft, and Vivarelli, 2016), which has popularized the term entrepreneurial innovation, defined as “the implementation of creative ideas through discovery and exploitation of opportunities in entrepreneurial firms” (Hung and Mondejar 2005, p. 120). Nevertheless, it is important to point out that, although innovation is a central feature within the entrepreneurship literature, not all entrepreneurs are innovators. Indeed, innovation rates vary considerably across countries and, therefore, these differences have attracted the attention of scholars and policymakers alike to identify the factors that encourage innovative entrepreneurs.

A stream of research approaches entrepreneurial innovation from a context perspective. The environment in which entrepreneurial behavior is embedded cannot be

ignored because it affects the organization's structures and processes (Scott, 2004). The context determines not only the individual decision to become an entrepreneur but also the characteristics of new ventures, with a subsequent effect on growth levels, innovation, and thus country development (Baumol, 1996; Minniti and Lévesque, 2008). In this sense, the literature has highlighted that the institutional context can influence the level and the type of firms created in a country (Bowen and De Clercq, 2008; Steholm. Acs, and Wuebker, 2013; Autio and Fu, 2015), and can deeply affect enterprises' policy, including the innovation decision (Banjo and Doren, 2013). Zhu, Wittmann, and Peng (2012) evaluated how variations in national institutional environments enable and constrain the strategic options of firms, including innovation (Zhu, et al., 2012). Other works note that innovation depends upon collaborative activity by firms, universities, and scientific establishments (Bruneel, d'Este, and Salter, 2010; Guerrero and Urbano, 2021). Finally, the literature has also analyzed the contingent effect of the institutional context on the relationship between an entrepreneur's characteristics and entrepreneurial innovation (Fuentelsaz, et al., 2018).

The previous literature review reveals that the relationship between institutional context and innovation is well documented (Koellinger, 2008). However, the possible relationship between institutional dynamism and innovation has been less explored. We consider that rapid changes in pro-market institutions produce scenarios on the demand and supply side that facilitate innovation. The speed of institutional changes generates new spaces for opportunities and creates a changeable competition situation, leading companies to react quickly to change by introducing innovations to the market.

Speed of pro-market reforms and entrepreneurial innovation

The institutional environment is constantly changing (Peng, 2003), leading companies and entrepreneurs to continuously adapt to it, mainly when happen pro-market

reforms in a short period raising the uncertainty of the environment (Xu and Meyer, 2013). Rapid pro-market reforms can negatively impact firm performance due to high adaptation costs (Banalieva et al., 2015; Banalieva et al., 2019; Fuentelsaz et al., 2022), such as learning to implement production targets or search for new customers (Hurt, Hurt-Warski, and Roux-Dufort, 2000). Nevertheless, although rapid pro-market reforms increase uncertainty and make business decisions more complex (Banalieva et al., 2015; Chari and Banalieva, 2015), quick market liberalization and turbulence in the business environment may also have positive consequences in terms of entrepreneurial innovation. Accordingly, we argue that the speed of pro-market reforms impacts entrepreneurial innovation both on the demand and the supply side.

From the demand side, the literature has emphasized the changing quality of life of people in countries under pro-market reforms (Illner, 1998). Among the many components that constitute the quality of life, civil rights, employment, wages, housing, or the quality of consumption can be mentioned. It has been demonstrated that one of the main changes under processes of institutional transformation such as the pro-market reforms is the change in the individuals' consumption patterns (Illner, 1998). Although goods and services slightly increase their prices, so does the demand for quality and variety. The main reason is the arrival of new competitors in the market given the elimination of entry barriers that takes place under market liberalization (North, 1990). When the reduction of these entry barriers happens quickly, making consumers more sophisticated and demanding, existing products and services will not meet the growing expectations of consumers, which will open up new market spaces that must be covered. These opportunities arising in an uncertain environment will be used by entrepreneurs to innovate.

From the supply side, one of the consequences of pro-market reforms, beyond macroeconomic effects such as price liberalization, has to do with international policy (Del Sol and Kogan, 2007). An increase in pro-market reforms brings an increase in imports, the arrival of foreign direct investment, as well as in the departure of local companies abroad (Del Sol and Kogan, 2007). This will not only increase local competition due to the arrival of new foreign competitors but will also bring new processes and new technologies to the market (Chen et al., 2017; Havrylyshyn, 2007). Technological dynamism, the result of the arrival of new participants, will shorten the life cycle of existing products. In fact, if pro-market reforms take place at great speed, the obsolescence of the products will take place in a short space of time. This new scenario opens the door to new growth opportunities for products that must replace those already obsolete. When this goes hand in hand with the improvement in property rights derived from the rapid reforms (Chen and Puttitanun, 2005), the expected outcome will be an increase in innovation.

As a consequence, the rapid elimination of entry barriers that open up new market spaces and give rise to more sophisticated and demanding consumers (Ilnert, 1980) and the arrival of new competitors to the market with technologies that will shorten the life cycles of existing products, leads to new opportunities for innovation in these uncertain and dynamic environments. In this scenario, entrepreneurs whose characteristics are more inclined to take advantage of open market niches and exploit opportunities, will see their levels of innovation increase. So, we propose our first hypothesis:

Hypothesis 1: A high speed of pro-market reforms positively influences the entrepreneurial innovation

The moderating role of entrepreneurial self-efficacy

Hypothesis 1 proposes that a high speed of pro-market reforms in a country positively influences entrepreneurial innovation because it opens up new markets, providing space for more sophisticated demands for new products and processes. We now argue that this relationship is contingent on the self-efficacy of entrepreneurs. In these changing environments, self-efficacy, or the perception of having entrepreneurial skills and experience, is an essential resource since it explains the role of individual beliefs in their capability to exercise control over the environment. We suggest that self-efficacy, as a personality trait, triggers the alertness of entrepreneurs, allowing them to be more attentive, and exploit new opportunities that open up in the markets due to the speed of institutional change. This leads to higher levels of innovation.

The term self-efficacy is based on social cognitive theory (Bandura, 2001) and refers to a person's confidence in his or her capabilities to perform a given task. The social cognitive theory states that individuals who believe they can generate the desired result through their actions are more likely to achieve them (Bandura, 1997). Thus, self-efficacy regulates motivation and plays a crucial role in determining the individual's choice, level of effort, and perseverance in overcoming obstacles (Bandura and Locke, 2003, Chen, Gully, and Eden, 2004). Self-efficacy plays an essential role in developing intentions, and it has received wide attention in entrepreneurship research because of its close link to entrepreneurial outcomes (Yang and Cheng 2009, p. 430). Entrepreneurial self-efficacy (ESE) is the degree to which an individual is confident that he or she is capable of performing the activities of the entrepreneur (McGee et al., 2009). Empirical research provides evidence that ESE is correlated with several behaviours such as entrepreneurial intentions, opportunity recognition, new venture growth, and innovation (Boyd and Vozikis, 1994; Baum and Locke 2004; Ozgen and Baron, 2007; Wei et al., 2020).

Literature has also shown that self-efficacy is based on tenets of social cognitive theory, where personal factors, behaviour, and environmental influences are all determinants of each other interactively (Bandura, 1997; 2001). This interaction suggests that ESE becomes a relevant moderating factor in the relationships between entrepreneurial behaviour and its antecedents (Boyd and Vozikis, 1994). Ahlin, Dronovsek, and Hisrich (2014) argue that the relationship between the entrepreneur's creativity and product innovation is moderated by self-efficacy, such that individuals with higher self-efficacy will use their creativity better, which positively impacts product innovation. In the same line, Tang (2008) argues that self-efficacy allows entrepreneurs to realize their ability to capitalize on the resources provided by the environment and change the entrepreneurial mental schema to reflect better the new information they observe in the market. Thus, those entrepreneurs with strong self-efficacy are more likely to identify the resources of alertness at their disposal, recognize market disequilibria, and evaluate opportunities appropriately (Tang, 2008).

In the same line of reasoning, recent research reveals that in environments that arise from technological changes and fluctuations in market demand, entrepreneurs with high self-efficacy respond more favourably to uncertainty and have higher cognitive resources to exert more effort and engage in further exploration and refinement of their products and ideas (Schmitt et al., 2018). Accordingly, and starting from the idea that not all firms adapt equally to rapid institutional changes (Banalieva et al., 2015; Fuentelsaz et al., 2022), we suggest that when rapid institutional changes generate more competitive environments (Banalieva et al., 2015), those entrepreneurs with a higher capacity for exploration and whose beliefs in self-efficacy make them see uncertainty as a challenge (Drnovšek, et al., 2010; Jex, et al., 2001) tend to be more innovative. These entrepreneurs, where self-efficacy has improved their alertness to opportunities and confidence in their

ability to innovate and achieve goals, take better advantage of the new business and technological opportunities generated by the greater speed of pro-market reforms.

Based on these arguments, our second hypothesis proposes that:

Hypothesis 2: Entrepreneurial self-efficacy strengthens the positive relationship between the high speed of pro-market reforms and entrepreneurial innovation.

The moderating role of entrepreneurial youth

Our third hypothesis claims that younger firms gain higher innovation benefits from the high speed of pro-market reforms than more mature ones. The main reasons relate to the different capabilities and competencies of these companies.

Established firms have a greater infrastructure that requires formalized procedures and rules and mechanistic organization structures to ensure managerial control and efficiency, consistency, and reliability (Cohen and Elvin, 1989; Rotemberg and Saloner, 1994; Dougherty, 2001). On the one hand, this rigidity limits them when innovating as a resource to face new competitive and market conditions generated by rapid institutional change (Lin, He and Wan, 2018). Furthermore, those that have been in the market for some time become more reluctant to change their routines to new ones needed to face rapid institutional changes, which can lead to the development of new products or services.

Although established entrepreneurs may possess nonmarket resources (for example, informal links with local authorities, suppliers, customers, and legislators) that act as a key source of information under rapid market reforms (Cuervo-Cazurra and Genc, 2011; Henisz and Zelner, 2012; Zaheer, 1995) and may anticipate some rapid institutional changes, this may not be positive for them in terms of innovation. This anticipation of rapid reforms will make them focus their efforts and resources on adapting to the new

institutional scenario to maintain their current activity and positive performance (Banalieva et al., 2015). Focusing the attention on adapting to the new market situation will limit their ability to perceive the new market windows opening and, therefore, will not exploit them.

In contrast, new entrepreneurs are characterized by faster learning, flexibility, and by their vision of the market with an open mind. Entrepreneurial capabilities confer new ventures with the ability to see what established firms do not, such as identifying valuable goods or services to consumers that are feasible to produce (Ireland et al., 2003). Previous literature shows that new ventures are not encumbered by rigid rules and procedures, administrative hierarchy, or bureaucratic inertia, which leads them to adapt better to changes (Höltta-Otto, Otto, and Luo, 2013). These attributes allow them to take advantage compared to established firms by identifying and exploiting new opportunities in the market (Burg et al., 2012), increasing innovation levels. So, we propose our third hypothesis:

Hypothesis 3: Being a new entrepreneur positively moderates the positive relationship between the high speed of pro-market reforms and entrepreneurial innovation.

SAMPLE, VARIABLES AND METHODS

We build our database with information obtained from different sources. First, we use the Global Entrepreneurship Monitor (GEM) to extract the data about the individual innovative behavior of entrepreneurs for the period 2009-2018. GEM collects data through surveys to the adult population (aged between 16 and 64 years old) in a wide number of nations around the world. This allows us to compare between countries with very different patterns of institutional evolution. For country data, we used two different

databases. Pro-market reforms are approached through the Index of Economic Freedom from the Heritage Foundation. The rest of the country-level variables have been obtained from the World Bank. Our final sample consists of 109,075 observations that correspond to entrepreneurs who have activity in 65 countries for a period of ten years.

Dependent variable

Entrepreneurial innovation is approached by means of a variable that takes into account the innovative character of the new product launched to the market. We draw this information from GEM, which asks the interviewees whether “*all, some, or none of your potential customers consider this product or service new and unfamiliar*”. We dichotomize this variable and assign it a value of one when all the customers see the product as new and zero otherwise (Estrin, Korosteleva, and Mickiewicz, 2020).

Independent variable

Speed of pro-market reforms. Similar to previous research (Banalieva et al., 2015; Chen et al., 2017; Fuentelsaz et al., 2022) we build our speed of pro-market reforms variable as a continuous variable as follows. We calculate the ratio between the Actual Speed and the Fastest Speed for each country, where the actual speed takes into account the change in institutions between year t and the base year (in our case, 2009) divided between the lapse of years that have elapsed (i.e., $(Actual\ Speed = scope\ year\ t - scope\ base\ year) / (year\ t - base\ year)$). Since our objective is to measure pro-market reforms, our variable takes value if this ratio is positive. In addition, to correct the variable for the size that the reforms could have, the Actual Speed it is divided by the difference between the maximum value that the reform could take, that is, the maximum scope of the index

(in our case 100) and the institutional level of the base year (*i.e.*, $Fastest\ Speed = Max\ scope\ possible\ (100) - scope\ base\ year$).¹

Entrepreneurial *self-efficacy* is measured through a dummy variable that takes a value of 1 if the entrepreneur considers that he or she has prior entrepreneurial skills to start a new business (Schmutzler, Andonova, and Diaz-Serrano, 2018). It has been calculated according to the GEM question “*Do you think you possess the knowledge, skills, and experience to start a new business*”, where if the answer was yes it takes the value 1, and 0 otherwise.

New entrepreneur. This is a dummy variable that takes a value of 1 if the entrepreneur reports that her venture was launched less than three and a half years ago (the entrepreneurship that GEM considers as TEA) and 0 if the venture is older than three and a half years.

Control variables

Following previous studies, we have incorporated control variables both at the individual and the country level of analysis. Firstly, it has been shown that there are numerous individual characteristics that influence entrepreneurial innovation and that must be included in our study. In accordance with previous studies, men are more likely to be entrepreneurs than women (Kirzner, 1978), thus we control for the *gender* of the entrepreneur (Estrin et al., 2020; Fuentelsaz et al., 2018; Koellinger, 2008). In addition, we consider the positive influence of *education* on entrepreneurial innovation (Fuentelsaz, et al., 2018), with a categorical variable that identifies whether the individual has a secondary, secondary degree, post-secondary or graduate level (Schmutzler, et al., 2019). Furthermore, because young people are more risk-tolerant, we understand that *age*

¹ For a more detailed explanation of this measure, see Banalieva et al., 2015.

also influence the innovative capacity of the entrepreneur (Estrin et al., 2020; Schmutzler, et al., 2019). An important source of knowledge that may influence venture innovation is the network of contacts of the entrepreneur. Knowing other entrepreneurs (*know entrepreneur*) can influence the assessment and detection of opportunities and reduce ambiguity about the entrepreneurial innovative process and the results associated with it (Minniti 2005; Koellinger, 2008). The ability to identify business opportunities (*opportunity perception*) is the most distinctive and fundamental characteristic of entrepreneurship (Kirzner, 1978). As a consequence, we include a dummy variable that takes the value of 1 if the individual expects good business opportunities in the next six months in his or her area of residence, and 0 otherwise (Schmutzler, et al., 2019). In addition, low *fear of failure* is expected to increase levels of innovative entrepreneurial activity (Weber and Williman, 1997). This dummy variable may serve as a proxy for downside risk tolerance given that it collects part of the risk attached to starting a new business (Schmutzler, et al., 2019). We also include a variable that takes into account the *household income* of the entrepreneurs (at low, middle, and upper levels in the home country), because they usually need considerable funding to start an activity, so where this is available, restrictions to innovation will be lower (Fuentelsaz, et al., 2018; Koellinger, 2008).

At the country level, we account for the general economic context related to the entrepreneurial innovative process. Several authors have reported the impact of economic development of the country on entrepreneurship (Kuznets, 1971); therefore, our models include *GDP per capita* (Estrin et al., 2020; Koellinger, 2008). Given that entrepreneurs are more likely to launch ambitious projects in downturn periods, we include *GDP growth*, that reflects the evolution of the economic cycle (Koellinger and Roy Thurik, 2012; Maksimov, Wang and Luo, 2017). *Labor costs* are also key in the development of

new business opportunities (Schmutzler, et al., 2018), so we control for this variable, measure as GDP per person employed. Moreover, a larger internal consumer market may also drive innovative entrepreneurship, so we include *country size*, through the log of the population in million inhabitants (Estrin et al., 2020). In addition, given that the literature considers that innovation at the country level is conditioned by the availability of resources and market conditions (Fuentelsaz, et al., 2018), we include the number of patents, to proxy by *country strategic assets*, and also *country natural resources*, such as ores and metals, and fuel exports. Finally, we include the *scope of institutions*, as the degree of economic freedom of a country (ranging between 0 and 100), according to the Economic Freedom Index of the Heritage Foundation (Cuervo-Cazurra, et al., 2019). The list of variables, their description, and their sources are summarized in Table 1.

Insert Table 1 about here

Descriptive statistics

Tables 2 and 3 present, respectively, the descriptive statistics and correlations of the variables used in the analysis. Table 2 shows that 17% of entrepreneurial activities in the sample are qualified as innovative. On average, countries are undergoing pro-market reforms at a speed of 2%, whereas there are countries that reach a speed a speed of change as high as 13%. 81% of the entrepreneurs believe that they have the knowledge, skills and experience to start a new business and 61% of our sample consists on ventures less than three and a half years old (the remaining 39% are established businesses). Regarding the control variables at the individual level, 60% of the entrepreneurs of our sample are men, with an average age of almost 40 years old. 60% know personally someone that has started a new business in the past two years and a 62% considers that there are good opportunities to start a business, while a 30% indicates that fear of failure is a factor that

influences the decision to launch a new venture. Concerning country level controls, the average GDP is close to \$14,000 (but the standard deviation is high) and average GDP growth reaches 3,79%. The GDP per employee is slightly higher than \$48,000, while the variation in the strategic and natural resources in the country where the new venture is based is extremely high.

Insert Table 2 and 3 about here

When we analyze correlations between the different variables (Table 3), we can observe that there is a positive and significant correlation between the innovative behavior of entrepreneurs and the speed of pro-market reforms, as well as with the perception of entrepreneurs of being confident with their skills and with being in an early stage of the venture. Regarding the control variables, we only detected high correlations between the scope of institutions and the GDP per capita and labor cost variables, given that in countries with higher institutional quality, there will be a higher quality of life. To verify possible multicollinearity problems among our variables has been carried out a variance inflation factor (VIF) analysis. The value obtained, a mean VIF near 3 and lower than 10, suggests that multicollinearity problems are not important here (Neter, Wasserman, and Kutner, 1990).

Statistical approach

Given the hierarchical nature of the data, that includes information at two different levels, (individuals at level 1, countries at level 2), we employ a multilevel analytical technique. This allows to control for clustering of individual data for country. Failure to do so would violate the assumption of independent observations (Snijders and Bosker, 2012) and lead to biased standard errors and unreliable regression coefficients (Rabe-Hesketh and Skrondal, 2012; Raudenbush and Bryk, 2002). This multilevel design allows

us to provide information on the variation in the effect of the speed of reforms across countries by allowing the effect to vary at the country level (Hox, 2010). Since we have a dichotomous dependent variable (*entrepreneurial innovation*), we use a logistic regression with random intercepts that vary across countries and over time.

A condition for the use of a multilevel estimation is the existence of sufficient variation at the different levels of analysis (Aguinis, Gottfredson, and Culpepper, 2013). To assess the presence of individual-level variations across countries, we compute a null model (model with intercept only, not reported). The inter-class correlation (ICC) of the null model quantifies the proportion of the total variation in the dependent variable that is due to differences between countries. The ICC is 0.159, indicating that 15.9% of the variance in our dependent variable is attributable to country-level differences, while 84.1% is attributable to individual-level variations. While there is no specific threshold for an ideal ICC, other studies report an ICC between 5% and 30% (Aguinis et al., 2013). Finally, we performed a likelihood ratio test that compares the fit of the multilevel logistic regression model with that of a traditional logistic regression. This test was highly significant, indicating that the model fit is improved.

RESULTS

Table 4 presents the results of the multilevel mixed-effects logistic regression. The first model (Model 1) shows the results of the base model only with the control variables. Model 2 incorporates the variable *speed of pro-market reforms* that allows us to test its positive influence on entrepreneurial innovation (Hypothesis 1). Model 3 incorporates the influence of one of the moderating variables, the effect of entrepreneurial *self-efficacy* (Hypothesis 2). Finally, Model 4 presents the complete specification, incorporating the second of the moderating variables, the effect of being a *new entrepreneur* (Hypothesis 3). As can be seen at the bottom of Table 4, the Wald chi-square values show that all

models are statistically significant and, as indicated by the Akaike Information Criterion (AIC), where a lower value indicates a better fit of the model, the full model specification is preferred. In addition, the likelihood ratio tests that compare the use of multilevel with ordinary linear regression models are shown, confirming, as previously mentioned, that to use of a multilevel technique it is necessary.

Insert Table 4 about here

The results presented in Table 4 remain usually stable and provide us with important information about the role that a high speed of pro-market reforms may have on entrepreneurial innovation, and which entrepreneurs may have advantages in these contexts.

According to Hypothesis 1, we expect that a rapid improvement in pro-market reforms will open up new market opportunities and current technology will suffer rapid obsolescence, with a consequent positive effect on entrepreneurial innovation. As can be seen in Table 1 (Model 4), the effect of the *speed of pro-market reforms* variable is positive and statistically significant ($p < 0.01$), which means that, when reforms occur at a high speed, the probability that entrepreneurs decide to innovate will be greater. This supports Hypothesis 1.

Regarding Hypothesis 2, our argument is that in uncertain environments where pro-market reforms change rapidly and opportunities arise, entrepreneurs who have more confident and perceive they have previous entrepreneurial skills and experience will take better advantage of these new opportunities and innovate more likely. However, the results in Model 4 of Table 1 show that the effect of *entrepreneurial self-efficacy* on the relationship between the speed of pro-market reforms and entrepreneurial innovation is positive but not significant ($p < 0.426$). Therefore, Hypothesis 2 is not supported. This

unexpected result has made us delve deeper into this relationship, as can be seen in the next section, further analysis.

Finally, Hypothesis 3 posits that being an entrepreneur established in the market for a longer time led to some rigidity when it comes to taking advantage of new opportunities generated by the rapid pro-market reforms. In this sense, the longer-established entrepreneurs may invest time and resources in adapting their activities to rapid changes and not perceive or take advantage of the opportunities. As expected, our results in Model 4 of Table 1 show that being a new entrepreneur enhances the positive relationship between a higher speed of pro-market reforms and entrepreneurial innovation ($p < 0.01$), confirming our Hypothesis 3.

Further analysis

Given the unexpected result of Hypothesis 2 in the analysis, where previous studies have shown that the perception of having entrepreneurial skills or experience can be key in an environment of high speed of pro-market institutions (Banalieva et al., 2015; Chen et al., 2017), we have considered expanding our analysis. In this sense, it may be that having entrepreneurial skills is only key for new entrepreneurs, but it stops being relevant as new knowledge is established on entrepreneurs according to time passes. For this reason, we propose to test our second hypothesis only to consider the sample of being new entrepreneurs. We test again a multilevel logistic regression model, but for the reduced sample, with 67,024 observations. As in the main analysis, the ICC indicates that there are relevant country-level effects, where the ICC is now 0.14 (within accepted ranges).

Insert Table 5 about here

The new results are presented in Table 5. Over again the tests indicate that the full model (Model 3) is the preferred one. When we take only the sample of new entrepreneurs, we do find a positive and significant moderating effect ($p < 0.10$) for those entrepreneurs who have entrepreneurial self-efficacy. As we proposed in our Hypothesis 2, but only for the entrepreneur that has in the early stage of their venture, the positive effect that a high speed of pro-market reforms has on entrepreneurial innovation is enhanced for individuals who feel they have certain entrepreneurial skills, which allows them to take better advantage of opportunities and whose probability of innovating is greater. As a consequence, we find partial support for Hypothesis 2.

DISCUSSION AND CONCLUSIONS

This research advances in the recent literature on institutional dynamism, incorporating this new perspective into the analysis of the phenomenon of entrepreneurial innovation. Specifically, the paper analyzes the positive effect that a high speed of pro-market reforms has on innovative behavior by entrepreneurs. Drawing on the dynamic institutions-based view and the innovative entrepreneurship literatures, we argue that when institutional pro-market reforms occur at high speed, the sudden elimination of entry barriers, the sophistication of consumer behavior, and the arrival of new technologies by foreign competitors quickly generate new market spaces and the obsolescence of the current products. Entrepreneurs seek to take advantage of new opportunities in these highly uncertainty markets to innovate. According to our expectations, we show that a high speed of pro-market reforms increases the likelihood of entrepreneurs to innovate.

Furthermore, previous literature shows that in uncertain situations where pro-market institutional changes occur rapidly, having the skills and abilities to adapt to the new environment may be of great value. In this sense, our results confirm that, in the early

stages of setting up a new company, when initiatives are more flexible, entrepreneurs take better advantage of the opportunities offered by rapid institutional changes and achieve higher levels of innovation than in more advanced stages. On the contrary, in these changing environments, established entrepreneurs are faced with adapting to their current businesses, and their rigidity limits their ability to innovate. Our results also show that those individuals who perceive that they have the knowledge, skills, and experience to start a new business show higher levels of innovation in contexts of uncertainty, but only when they are starting their businesses (early-stage entrepreneurs), where self-efficacy seems to be more important.

From a theoretical point of view, our main contribution is to incorporate the dynamic institution-based view in the analysis of entrepreneurial innovation. The speed of change in pro-market reforms plays a relevant role in the rapid creation of new market spaces, influencing the rapid elimination of entry barriers, the change of more sophisticated consumer behavior, and the rapid obsolescence of existing technology by the arrival of foreign rivals. All these implications mean that the influence that institutions have on business innovation can only be entirely understood if the role of the speed of change is incorporated to have a complete vision of the phenomenon. Given the recent studies that have started to consider the effect of time on institutional change in the entrepreneurial phenomenon (Mickiewicz et al., 2021), this paper goes one step further, deepening on the relevance of this speed in one of the specific results of entrepreneurs, entrepreneurial innovation. In addition, the paper also brings new evidence to the debate on the differences between young and established entrepreneurs, demonstrating that young entrepreneurs may be more adept at innovating in situations of rapid institutional pro-market reform. Finally, this research provides new empirical evidence on the speed

of institutional change on business results (Cuervo-Cazurra et al., 2019), specifically with a positive effect on entrepreneurial innovation for a large multi-country sample.

Our study has also relevant implications from a managerial and policy point of view. This study emphasizes the breeding ground for innovation in environments subject to rapid pro-market reforms. However, it is worth remembering that previous literature (Banalieva et al., 2015; Banalieva et al., 2018; Fuentelsaz et al., 2022) has shown that the speed of institutional change has a negative effect in terms of business performance. As a consequence, governments should take into account that implementing rapid pro-market reforms may become a double-edge sword. On the one hand, they may have a positive effect on market innovation. On the other, they will reduce firm performance. Probably they will wish to maintain a certain balance between the two dimensions, but their choice will condition the speed at which changes takes place in a given country. In addition, entrepreneurs can assess their possibilities for innovation by analyzing the institutional environment in which they compete (or are planning to do it). Innovation will be favored in periods of institutional change (for example, after a change of government). Under this circumstances, established companies should be particularly attentive to market developments and to the behavior of new competitors.

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Table 1. Data Description and Sources

Variable	Description	Type	Level	Source
Dependent				
<i>Entrepreneurial innovation</i>	How many (potential) customers consider the product new/unfamiliar? <i>1 = all customers agree that the product/service of this business is new 0 otherwise</i>	Binary	Individual	GEM
Independent				
<i>Speed of pro-market reforms</i>	Measure the speed of time that each country employs during pro-market reforms, given the maximum scope that institutions could evolve (<i>Actual speed of pro-market reforms/Fastest speed</i>)	Continuous	Country	EFI
<i>Self-efficacy</i>	Do you have the knowledge, skill, and experience required to start a new business? <i>1 = Yes 0 = otherwise</i>	Binary	Individual	GEM
<i>New entrepreneur</i>	Is the entrepreneur at an early stage of entrepreneurial activity or not? <i>1 = entrepreneur with less than 3.5 years of activity 0 = entrepreneur with more than 3.5 years of activity</i>	Binary	Individual	GEM
Individual-level control variables				
<i>Gender</i>	Gender of the respondent <i>1 = Male 0 = Woman</i>	Binary	Individual	GEM
<i>Education</i>	Identifies the highest educational degree obtained <i>primary, some secondary, secondary degree, post-secondary, graduate level</i>	Categorical	Individual	GEM
<i>Age</i>	The exact age of the respondent at the time of the interview	Continuous	Individual	GEM
<i>Know entrepreneur</i>	Do you personally know someone who started a business in the past 2 years? <i>1 = Yes 0 = otherwise</i>	Binary	Individual	GEM
<i>Opportunity perception</i>	In the next 6 months, there will be good opportunities for starting a business in the area where you live? <i>1 = Yes 0 = otherwise</i>	Binary	Individual	GEM
<i>Fear of failure</i>	Fear of failure would prevent you from starting a new business? <i>1 = Yes 0 = otherwise</i>	Binary	Individual	GEM
<i>Household income</i>	Entrepreneurs were asked to provide information about their household income <i>lower (1), middle (2), and upper (3) levels of the income distribution of the country of origin</i>	Categorical	Individual	GEM
Country-level control variables				
<i>GDP pc</i>	GDP per capita (current US\$)	Continuous	Country	World Bank
<i>GDP growth</i>	GDP growth (annual %)	Continuous	Country	World Bank
<i>Labor costs</i>	GDP per person employed (constant 2017 PPP \$, in miles)	Continuous	Country	World Bank
<i>Country size</i>	Total population size (ln)	Continuous	Country	World Bank
<i>Country strategic assets</i>	Patent applications (ln miles)	Continuous	Country	World Bank
<i>Country natural resources</i>	Ores and metals exports (% of merchandise exports); Fuel exports (% of merchandise exports)	Continuous	Country	World Bank
<i>Scope of institutions</i>	A value between 0 and 100 which measures the degree of economic freedom of a country (<i>0 low level of economic freedom, 100 maximum level</i>)	Continuous	Country	EFI

Table 2. Descriptive statistics

Variable	N	Mean	SD	Min	Max
Entrepreneurial innovation	109,075	0.17	0.38	0	1
Speed of pro-market reforms	109,075	0.02	0.02	0	0.13
Self-efficacy	109,075	0.81	0.40	0	1
New entrepreneur	109,075	0.61	0.49	0	1
Gender	109,075	0.60	0.49	0	1
Education	109,075	1.98	1.08	0	4
Age	109,075	39.81	12.2	17	90
Know entrepreneur	109,075	0.60	0.49	0	1
Opportunity perception	109,075	0.62	0.49	0	1
Fear of failure	109,075	0.30	0.46	0	1
Household income	109,075	31,259	32,898	33	68,100
GDP per capita	109,075	13,942	16,819	1,024	103,085
GDP growth	109,075	3.79	2.62	-6.03	11.34
Labor Costs	109,075	48.10	30.90	8.08	241.39
Country size	109,075	110M	237M	596.3	1,390M
Country strategic assets (patent application residents)	109,075	19.78	128.1	0	1,393
Country strategic assets (patent application non-residents)	109,075	7.76	16.68	0	148.2
Country natural resources (ores and metals exports)	109,075	10.33	16.66	0.18	81.21
Country natural resources (fuel exports)	109,075	18.07	24.42	0	92.42
Scope of institutions	109,075	65.41	7.26	48.6	89.4

SD=standard deviation; N=number of observations; GDP=gross domestic product

Table 3. Correlations

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1. Entrepreneurial innovation	1.00																		
2. Speed of pro-market reforms	0.03*	1.00																	
3. Self-efficacy	0.03*	0.03*	1.00																
4. New entrepreneur	0.09*	0.03*	0.04*	1.00															
5. Gender	0.01*	-0.01*	0.14*	-0.05*	1.00														
6. Education	0.02*	0.03*	0.07*	0.05*	0.02*	1.00													
7. Age	-0.03*	-0.01*	-0.04*	-0.32*	-0.03*	-0.08*	1.00												
8. Know entrepreneur	0.03*	0.00*	0.25*	0.13*	0.09*	0.08*	-0.14*	1.00											
9. Opportunity perception	0.05*	0.05*	0.21*	0.15*	0.05*	0.03*	-0.08*	0.22*	1.00										
10. Fear of failure	-0.02*	-0.01*	-0.15*	-0.03*	-0.07*	-0.01*	-0.02*	-0.04*	-0.08*	1.00									
11. Household income	0.01*	0.06*	0.10*	-0.03*	0.08*	0.22*	-0.05*	0.11*	0.07*	-0.03*	1.00								
12. GDP per capita	-0.03*	-0.07*	-0.13*	-0.10*	-0.01*	0.25*	0.20*	-0.12*	-0.10*	0.04*	-0.00*	1.00							
13. GDP growth	0.06*	0.11*	0.02*	0.07*	0.01*	-0.04*	-0.09*	0.07*	0.11*	-0.04*	-0.03*	-0.32*	1.00						
14. Labor cost	-0.03*	-0.10*	-0.11*	-0.10*	0.00*	0.23*	0.17*	-0.11*	-0.10*	0.04*	-0.00	0.70*	-0.27*	1.00					
15. Population	0.00*	-0.12*	-0.04*	-0.04*	0.01*	-0.03*	-0.00*	-0.02*	-0.04*	0.01*	-0.01*	-0.17*	0.10*	-0.18*	1.00				
16. Country strategic assets (patents application)	-0.01*	-0.05*	-0.06*	0.00	0.00*	0.04*	0.03*	0.01*	-0.03*	-0.01*	0.01*	0.01*	0.11*	-0.06*	0.41*	1.00			
17. Country natural resources (ores and metals)	0.12*	-0.04*	0.08*	0.09*	-0.00*	-0.04*	-0.03*	0.05*	0.10*	-0.04*	0.02*	-0.20*	0.03*	-0.26*	-0.12*	-0.10*	1.00		
18. Country natural resources (fuel exports)	-0.00	0.27*	0.05*	0.08*	0.02*	0.02*	-0.09*	0.04*	0.08*	-0.02*	0.03*	-0.16*	0.03*	-0.15*	0.00*	-0.10*	-0.08*	1.00	
19. Scope of institutions	0.05*	0.10*	-0.07*	-0.04*	-0.02*	0.19*	0.17*	-0.10*	-0.02*	-0.00*	-0.02*	0.67*	-0.17*	0.59*	-0.21*	-0.08*	0.10*	-0.33*	1.00

p-value * <0.1

Table 4. Multilevel Logistic Regressions (Dependent Variable: entrepreneurial innovation)

	Model 1	Model 2	Model 3	Model 4
	OR (SE)	OR (SE)	OR (SE)	OR (SE)
(H1) Speed of pro-market reforms		514.38*** (405.3)	222.79*** (276.7)	40.706*** (55.56)
Self-efficacy			1.224*** (0.040)	1.223*** (0.040)
(H2) Speed of pro-market reforms *			2.659 (2.932)	2.410 (2.664)
Self-efficacy				
New entrepreneur				1.199*** (0.031)
(H3) Speed of pro-market reforms *				16.461 (14.17)***
New entrepreneur				
Individual-level control (level 1)				
Gender	0.980 (0.017)	0.983 (0.018)	0.977 (0.017)	0.985 (0.018)
Education (secondary)	1.075** (0.037)	1.076** (0.037)	1.066* (0.037)	1.062* (0.037)
Education (secondary degree)	1.072** (0.032)	1.079** (0.032)	1.067** (0.032)	1.055* (0.031)
Education (post-secondary)	1.015 (0.032)	1.025 (0.032)	1.008 (0.032)	0.991 (0.031)
Education (graduate level)	1.063 (0.052)	1.077 (0.053)	1.054 (0.052)	1.031 (0.051)
Age	0.998*** (0.001)	0.998*** (0.001)	0.998*** (0.001)	1.000 (0.001)
Know entrepreneur	1.073*** (0.020)	1.072*** (0.020)	1.053*** (0.020)	1.040** (0.019)
Opportunity perception	1.246*** (0.023)	1.241*** (0.023)	1.217*** (0.023)	1.200*** (0.023)
Fear of failure	0.976 (0.019)	0.974 (0.019)	0.996 (0.019)	0.996 (0.019)
Household income (middle level)	0.961* (0.023)	0.948** (0.023)	0.945** (0.023)	0.951** (0.023)
Household income (upper level)	0.974 (0.022)	0.954* (0.022)	0.949** (0.022)	0.962* (0.022)
Country-level control (level 2)				
GDP per capita	1.995*** (0.210)	2.377*** (0.260)	2.399*** (0.263)	2.464*** (0.271)
GDP growth	1.060*** (0.006)	1.042*** (0.007)	1.042*** (0.007)	1.041*** (0.007)
Labor Costs	0.976*** (0.004)	0.976*** (0.004)	0.976*** (0.004)	0.976*** (0.004)
Country size	1.118 (0.094)	1.262** (0.115)	1.263** (0.115)	1.265*** (0.114)
Country strategic assets (patent application residents)	1.000 (0.001)	1.000 (0.001)	1.000 (0.001)	0.999 (0.001)
Country natural resources (ores and metals exports)	0.973*** (0.005)	0.971*** (0.005)	0.972*** (0.005)	0.971*** (0.005)
Country natural resources (fuel exports)	1.011*** (0.003)	1.008*** (0.003)	1.009*** (0.003)	1.007** (0.003)
Scope of institutions	1.076*** (0.007)	1.077*** (0.007)	1.077*** (0.007)	1.072*** (0.007)
<i>N</i>	109,075	109,075	109,075	109,075
<i>Log likelihood</i>	-44443.534	-44412.543	-44369.07	-44289.403
<i>Wald test (χ^2)</i>	582.87***	640.89***	722.64***	876.17***
<i>LR test vs logistic regression</i>	6731.72***	6773.10***	6695.48***	6569.17***
<i>AIC</i>	88929.067	88869.087	88786.139	88630.806

*Exponentiated coefficients; Standard errors (SE) in parentheses * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$; AIC=Akaike Information Criterion; OR = odds ratio; GDP=gross domestic product*

Table 5. Multilevel Logistic Regressions (Dependent Variable: entrepreneurial innovation by new entrepreneurs)

	Model 1	Model 2	Model 3
	OR (SE)	OR (SE)	OR (SE)
(H1) Speed of pro-market reforms		434.9***(394.6)	61.39***(90.87)
Self-efficacy			1.175***(0.048)
(H2) Speed of pro-market reforms * Self-efficacy			9.095*(12.078)
Individual-level control (level 1)			
Gender	1.016(0.022)	1.019(0.022)	1.013(0.022)
Education (secondary)	1.119**(0.050)	1.123***(0.050)	1.115***(0.050)
Education (secondary degree)	1.102**(0.042)	1.111***(0.042)	1.104***(0.042)
Education (post-secondary)	1.033(0.042)	1.044(0.042)	1.031(0.042)
Education (graduate level)	1.083(0.066)	1.098(0.066)	1.080(0.065)
Age	1.001(0.001)	1.002*(0.001)	1.001(0.001)
Know entrepreneur	1.027(0.023)	1.026(0.023)	1.009(0.023)
Opportunity perception	1.198***(0.028)	1.192***(0.028)	1.174***(0.028)
Fear of failure	0.951**(0.023)	0.950**(0.023)	0.971(0.023)
Household income (middle level)	0.980(0.028)	0.966(0.028)	0.964(0.028)
Household income (upper level)	0.996(0.028)	0.977(0.027)	0.974(0.027)
Country-level control (level 2)			
GDP per capita	1.001***(0.000)	1.001***(0.000)	1.001***(0.000)
GDP growth	1.072***(0.007)	1.055***(0.008)	1.056***(0.008)
Labor Costs	0.980***(0.004)	0.983***(0.004)	0.983***(0.004)
Country size	0.604***(0.073)	0.658***(0.079)	0.666***(0.080)
Country strategic assets (patent application residents)	0.989***(0.002)	0.989***(0.002)	0.989***(0.002)
Country natural resources (ores and metals exports)	0.969***(0.006)	0.967***(0.006)	0.967***(0.006)
Country natural resources (fuel exports)	1.029***(0.003)	1.029***(0.003)	1.029***(0.004)
Scope of institutions	1.059***(0.009)	1.063***(0.009)	1.063***(0.009)
<i>N</i>	67,024	67,024	67,024
<i>Log likelihood</i>	-29614.622	-29592.411	-29566.246
<i>Wald test (χ^2)</i>	394.19***	437.03***	486.92***
<i>LR test vs logistic regression</i>	4097.30***	4134.21***	4079.65***
<i>AIC</i>	59271.243	59228.822	59180.491

*Exponentiated coefficients; Standard errors (SE) in parentheses * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$; AIC=Akaike Information Criterion; OR = odds ratio; GDP=gross domestic product*