# Knowledge and entrepreneurship creation: what is the connection?

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## Abstract

**Purpose** – With this work, the authors seek to advance knowledge in this field mentioned above. The purpose of this paper is to stress the role of two groups of components related to individuals' knowledge: the intrinsic base of existing knowledge and exposure to external knowledge.

**Design/methodology/approach** – The present study examined the impact of knowledge in the business creation process. Data came from aggregated panel data at the country level taken from the Global Entrepreneurship Monitor over a five-year period (2009-2013).

**Findings** – Results show that knowledge affects the business creation process. The research identifies the following factors as influential: detection of capabilities, entrepreneurial experience, and experience investing in other firms.

**Research limitations/implications** – The limitations of the research relate to the data aggregation at the country level. Future research should examine disaggregated GEM data for the three economic stages at the classification level.

**Practical implications** – The perception of self-efficacy appears to be critical in understanding the planning of intentional behavior because of its influence on the formation of intentions through situational perceptions of viability.

**Originality/value** – Generally, the literature that emphasizes the role of knowledge and entrepreneurship in small firms is theoretically limited and focuses solely on the role of knowledge in the decision to start a business.

**Keywords** Entrepreneurship, Knowledge, GEM, New business

**Paper type** Research paper

## 1. Introduction

The study of factors that lead to the creation of start-ups has been an important topic in the literature for many years. Researchers have attempted to identify differences in personality traits between entrepreneurs and non-entrepreneurs (Brockhaus and Horwitz, 1986), emphasizing elements including decision processes (Gartner, 1985), personal circumstances (e.g. employment status), the availability of opportunities (Shane and Venkataraman, 2000), and even risk propensity (Gartner, 1985; Shane and Venkataraman, 2000). Our central research question is as follows:

*RQ1.* What are the knowledge-based factors that affect an individual's propensity to become an entrepreneur?

Numerous studies have shown the importance of knowledge in improving collaborators erformance (Arthur, 1994; Boselie *et al.*, 2001; Fernandes and Ferreira, 2013; Huselid, 1995).

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Likewise, scholars have suggested that factors related to knowledge also improve new firms' performance (Brüderl and Preisendörfer, 1998; Cooke and Wills, 1999; Liedholm, 2002; Van Praag and Cramer, 2001). Generally, the literature that emphasizes the role of knowledge and entrepreneurship in small firms (Clerq and Arenius, 2013) is theoretically limited and focuses solely on the role of knowledge in the decision to start a business. With this paper, we aim to advance knowledge in this field and fill the aforementioned research gap. We stress the role of two groups of components related to individuals' knowledge: the intrinsic base of existing knowledge and exposure to external knowledge. The need to study these two components is justified by the fact that possession of and access to knowledge is crucial for an individual to gain confidence in his or her skills to successfully start a company.

To determine the factors that influence the proportion of individuals that create businesses, we used five years (2009-2013) of aggregated panel data at the country level from the Global Entrepreneurship Monitor. Combining panel data (aggregated for each year) and cross-sectional data (each year individually) marks, in our view, an innovative contribution to the literature on this topic.

The empirical evidence additionally reveals how some characteristics of the entrepreneur, that is, viewing entrepreneurship as a good career option, viewing entrepreneurship as a good opportunity, and media attention on successful entrepreneurs (entrepreneurship receives considerable the media attention), positively influence the launching of new businesses. Furthermore, and in global terms, the entrepreneur's intrinsic knowledge constitutes a critical factor in new entrepreneurship and reflected in how each new generation is better qualified and more able to value the knowledge acquired than the previous generation was.

Therefore, our research seeks to contribute in two different ways: by reporting knowledge on the intrinsic and extrinsic characteristics of the individuals bringing about greater interest in setting up a company; and by adding to the body of literature on the theoretical implications and relevance of this research issue.

## 2. Theoretical background

### *2.1 The role of skills and entrepreneurial knowledge*

Schumpeter (1934, 1939, 1942) argues that the entrepreneur is the main driving force behind economic development, able to create innovations that allow for profit-making by taking the risks inherent in such "creations." Kirzner (1973) advocates another approach to the entrepreneur's role, arguing that the entrepreneur is a dynamic agent of market equilibrium and that activity is essential for competitiveness, which is inherent in the entrepreneurial process (Fuller-Love 2009; Schindehutte and Morris 2009; Fuentes *et al*., 2010; Chiles *et al.,* 2010). McClelland (1961) conducted research on the entrepreneur's personality, documenting the characteristics that lead entrepreneurs to create innovative businesses. For McClelland (1961), entrepreneurship is related to the will for personal achievement through business activity, whereby the entrepreneur can take different kinds of risks and achieve economic success because of skill rather than luck. During the sixties and seventies, the idea that entrepreneurs were different from other members of the population arose (Kilby, 1971). During this period, scholars emphasized the personality of the entrepreneur because of his or her ambition and propensity for risk exposure (Kihlstrom and Laffont, 1979). Interest in the entrepreneur's personality traits intensified during the 1980s (Gartner, 1988). The idea that arose at that time was that entrepreneurs came from a homogeneous group with different psychological traits from the rest of society (Hebert and Link, 1989). Only recently have scholars recognized the need to establish a relationship between entrepreneurs' decisions and traits such as profession of parents, gender, race or ethnicity, educational

qualifications, years of experience in a certain sector and age (Mitchell *et al.*, 2002; Lafuente *et al.*, 2010).

However, interest in entrepreneurship is increasingly a focal issue for governments (NCOE, 2001), entrepreneurs, decision makers (Galbraith, 1985; Hansen, 1987; Felsenstein, 1996; Sternberg and Arndt, 2001), and researchers (Hisrich *et al.*, 2007; Audretsch, 2007; Mahbubani, 2008). Indeed, since the nineties, public bodies have been mindful of entrepreneurship's importance in regional growth, particularly in rural areas. Similarly, there is growing interest and demand in creating and forming new businesses, which is a key element in the development and renewal of certain European areas (Rosell and Viladomiu, 2001). Thus, entrepreneurship is a genuine economic development mechanism capable of ensuring a supply of goods and services to the community while generating employment and wealth, thereby leading governments to develop policies that support this phenomenon (Audretsch and Fritsch, 2002). Gast *et al.* (2016) conclude that small firms seem to nurture environments in which employees in low-management positions strongly benefit from knowledge spillover effects as they gain an education in the necessary skills, knowledge and expertise while able to build up networks conducive to entrepreneurship even if not accessing the multifaceted opportunities for advancement as in large companies. According to the Global Entrepreneurship Monitor (GEM) (2014) report, the phenomenon of entrepreneurship is immeasurably complex, and the range of concepts related to entrepreneurship is vast. Before a firm begins to operate, the entrepreneurial process will have already begun. Notably, there are two types of entrepreneurs: the individual who wishes simply to venture into business and tries to succeed in a competitive market despite having no aspirations of major growth; and/or the individual who has owned a given business for a certain period and tries to innovate within the business during the same period. This individual is an entrepreneur. Werner *et al.* (2014) reports that employees who perceive their current wage levels as very unfair are more likely to hold higher entrepreneurial intentions. However, the closer the actual wage gets to the wage levels perceived as fair, the more likely the employees are to remain in their current employment situation. The GEM report (2014) also lists some characteristics inherent to the entrepreneur. These characteristics include motivation, innovation, and the entrepreneur's desire to achieve high growth. Thus, the skills of each individual and his or her characteristics may act as the drivers of business creation. Hence, we posit the following hypothesis (Figure 1):

*H1.* The entrepreneur's level of knowledge is positively related to the likelihood that the entrepreneur engages in new business activity.

### *2.2 The role of network knowledge*

For Varga (2000), the following three mechanisms may trigger the transfer of academic knowledge: networks (regular personal contact) between universities and industry professionals; technology diffusion and the formalization of business relations (mutual trust); and university infrastructures such as libraries, laboratories, ICT facilities, and research centers within the university, all of which allow the sharing of research costs (mutual competition). Hughes *et al.* (2015) argue that slack resource availability positively influences entrepreneurial orientations while networking effectiveness partially mediates the relationship between entrepreneurial orientation and firm performance in addition to how the firm performance thus far positively influences slack resource availability.

Nevertheless, research into academic knowledge and knowledge transfer only really flourished in the early 1980s, when scholars, policymakers and several practitioners began to pay special attention to the economy and new economic policies (Varga, 2009). This new focus originated from both the emerging new economic geography literature (Krugman, 1991) and the new endogenous growth theory (Romer, 1986, 1990), which highlighted the

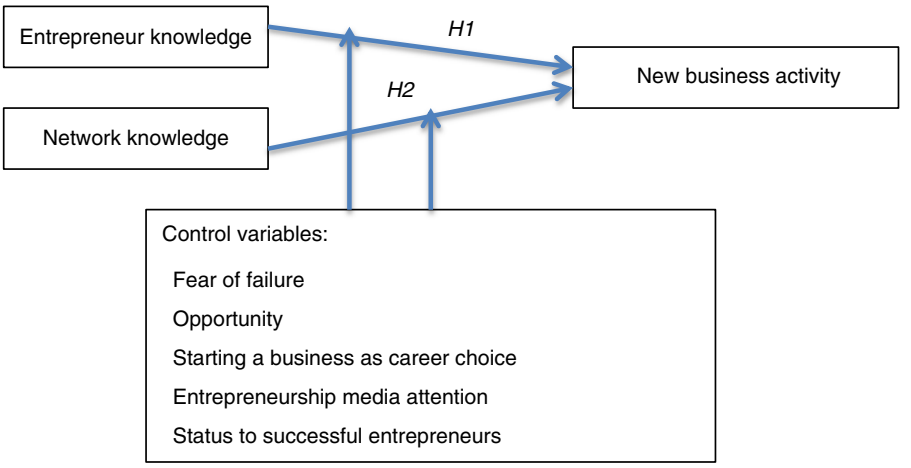


**Figure 1.**
Conceptual model and hypothesis

importance of empirically testing the existence and dissemination of knowledge. There was also growing interest in the "mix" of policies best suited to the creation of university-based regional development like in Silicon Valley or Route 128 (Isserman, 1994; Reamer *et al.*, 2003). Thus, endogenous growth theory began to break away from neoclassical growth theory through its characterization of economic growth not as the result of forces outside a particular economic system, but rather as the result of forces within the economic system itself (Romer, 1990). At the heart of this theory is the view that technology transfer arises from the intentions of certain economic agents to increase their profits (Romer, 1990; Sugerstrom *et al.*, 1990; Aghion and Howitt, 1992). According to Acs *et al.* (2009), however, endogenous growth theory failed to resolve a key point, namely knowledge transmission made by spillovers to entrepreneurship or entrepreneurs. Hence, knowledge by itself is a fundamental condition for firms to grow successfully (Acs *et al.*, 2009).

In Europe, the USA, and Asia, the 1980s witnessed the emergence of several technology centers that were closely linked to regional development in the areas where they were located. The USA devotes 70 percent of its budget to technology programs, which are partially associated with a particular type of participation by universities, thereby enabling the sharing and reduction of R&D costs (Varga, 2002, 2009). As the OECD (2007) advocates, universities play an increasingly important role in knowledge transfer and regional competitiveness. As argued by Clarkson *et al.* (2007), the need for interaction between enterprises and policymakers incorporates the rationale of establishing industrial and service clusters as the motor for sustained regional development. A growing number of analyses on the importance of regional entrepreneurship have found that the basis of new business creation is knowledge, emphasizing knowledge spillovers from universities and other R&D institutions. Hence, we posit the following hypothesis:

*H2.* The level of an entrepreneur's network knowledge is positively related to the likelihood that the entrepreneur engages in new business activity.

## 3. Method

### *3.1 Data*

Data consisted of aggregated unbalanced panel data at the country level. They were gathered from the GEM APS (Adult Population Survey) for a five-year period (2009-2013)

(55 countries in 2009; 59 countries in 2010; 55 countries in 2011; 67 countries in 2012; 63 countries in 2013). A standard questionnaire was translated into each language spoken in the countries under study.

### *3.2 Measures*

*3.2.1 Dependent variable*. The dependent variable was proportion of individuals who were in the process of creating their own business (proportion of people engaged in new business activity) at the time of data collection.

*3.2.2 Predictor variables*. 3.2.2.1 Entrepreneur knowledge. Because there were no aggregated data at the country level to convey respondents' educational attainment, other variables were used instead. Specifically, data were collected on experience in business creation (i.e. proportion of people currently owner-manager of an established businesses) and respondents' perceptions of capabilities to launch a venture (i.e. proportion of people who have knowledge/skills required to start a business).

3.2.2.2 Level of network knowledge. Individuals' exposure to external knowledge through networks was evaluated based on the following variables. First, proportion of people who know someone who has started a business in the past two-years, and second, proportion of people who have been informal investors in the last three-years.

*3.2.3 Control variables*. The following control variables were included in the model: proportion of people for whom fear of failure would prevent them starting a business, proportion of people who think they have good conditions to start a business (opportunity), proportion of people who consider starting a business a good career choice, proportion of people who think entrepreneurship receives considerable media attention, and proportion of people who attach high status to successful entrepreneurs.

### *3.3 Data analysis and results*

To determine the factors that influence the proportion of individuals in the process of creating their own business, we used multiple linear regressions based on panel data (available for all years) and cross-sectional data (year-by-year). Two advantages of panel data methods (fixed effects and random effects models) are that they can indicate relationships between variables over time and that they avoid biased estimates. The Hausman test was applied to determine which model (fixed effects or random effects) was most suitable. Four models were estimated: (I) a model including the two entrepreneur knowledge variables as independent variables; (II) a model including the two levels of network knowledge variables as independent variables; (III) a model including the control variables as independent variables; (IV) a model including all three sets of variables as independent variables.

Figure 2 illustrates the proportion of individuals who were in the process of creating their own business each year. The data reveal an increase between 2009 (10.6 percent) and 2013 (13.2 percent).

Table I shows the means, standard deviations, and correlations of the variables under study. The variable engaged in new business activity (percent) correlates positively with the current knowledge-based variables: currently owner-manager of established business (percent) and knowledge/skills required to start business (percent). The variable engaged in new business activity (percent also correlates positively with exposure to external knowledge: personally know an entrepreneur (percent) and experience as informal investor (percent). These results provide some preliminary support for the hypotheses. In other words, the entrepreneur's knowledge level and network knowledge positively affect the propensity for new business creation.

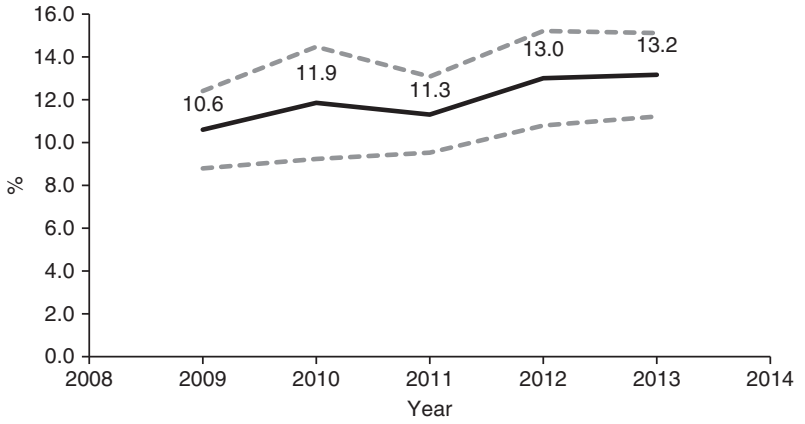


**Figure 2.**
Proportion of individuals who were in the process of creating their own business (CI 95 percent)

Table II displays the Hausman test results, showing the fixed effects models to be most efficient. The results of the estimations with fixed effects show that the models have a good fit ($R^2 \geqslant 0.927$). Models I (entrepreneur knowledge) and IV (all variables) show a significant positive relationship between the proportion of people currently owner-manager of an established business and the proportion of people engaged in business start-up activity (Model I: $b = 0.506$; $t = 10.960$; $p < 0.001$ and Model IV: $b = 0.468$; $t = 9.354$; $p < 0.001$). Results also show the relationship between existing characteristics of entrepreneurs and a propensity to create a new business, thus partially supporting *H1*: The entrepreneur's level of knowledge is positively related to the likelihood that the entrepreneur engages in new business activity.

Model II (level of network knowledge) shows a significant positive association between the proportion of people who have been informal investors in the last 3 years and the proportion of people engaged in new business activity ($b = 0.068$; $t = 2.117$; $p < 0.05$). Hence, the entrepreneur's knowledge as an informal investor greatly affects the creation of new businesses. This finding partially supports *H2*: The level of an entrepreneur's network knowledge is positively related to the likelihood that the entrepreneur engages in new business activity.

The models containing the control variables – Models III (control variables) and IV (all variables) – show a significant positive association between the proportion of people who consider starting a business as a good career choice and the proportion of people engaged in business start-up activity (Model III: $b = 0.125$; $t = 2.545$; $p < 0.001$ and Model IV: $b = 0.094$; $t = 2.272$; $p < 0.001$). Model III also shows a significant relationship linking the proportion of people who think they have a good opportunity to start a business ($b = 0.084$; $t = 2.656$; $p < 0.01$) and the presence of media attention for entrepreneurship ($b = 0.098$; $t = 2.903$; $p < 0.001$) with the proportion of people engaged in a business start-up activity.

Hence, we can list the characteristics of the entrepreneur: viewing entrepreneurship as a good career option, viewing entrepreneurship as a good opportunity, and media attention for successful entrepreneurs (in my country, entrepreneurship receives considerable the media attention) positively influence the creation of new businesses.

Table III presents data showing how the factors that influence the proportion of individuals in the process of creating their own business change over time. Estimates for each year indicate that the models have a good fit ($R^2 \geqslant 0.779$). The proportion of people who are currently owner-manager of an established business significantly positively affects the proportion of people engaged in new business activity. Consistent with findings from Models I and IV, results for 2009 to 2013 also show a positive relationship between being an

**Table I.**
Means, standard deviations, and correlations

| | Mean | SD | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Engaged in a business start-up activity (%) | 12.05 | 8.19 | 1 | | | | | | | | |
| 2. Currently owner-manager of an established business (%) | 18.08 | 10.88 | 0.818*** | 1 | | | | | | | |
| 3. Knowledge/skills required to start business (%) | 51.42 | 16.27 | 0.706*** | 0.551*** | 1 | | | | | | |
| 4. Personally know an entrepreneur (%) | 39.88 | 12.82 | 0.639*** | 0.542*** | 0.596*** | 1 | | | | | |
| 5. Experience as informal investor (%) | 37.37 | 10.07 | 0.408*** | 0.283*** | 0.487*** | 0.362*** | 1 | | | | |
| 6. Fear of failure (%) | 40.91 | 18.07 | 0.677*** | 0.525*** | 0.648*** | 0.617*** | −0.514*** | 1 | | | |
| 7. Opportunity (%) | 66.51 | 14.18 | 0.451*** | 0.336*** | 0.611*** | 0.344*** | −0.293*** | 0.485*** | 1 | | |
| 8. People consider starting business as good career choice (%) | 60.22 | 14.34 | 0.425*** | 0.394*** | 0.266*** | 0.353*** | −0.331*** | 0.464*** | 0.383*** | 1 | |
| 9. People attach high status to successful entrepreneurs (%) | 70.98 | 10.77 | 0.279*** | 0.357*** | 0.358*** | 0.315*** | −0.215*** | 0.402*** | 0.437*** | 0.379*** | 1 |

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

| | I | II | III | IV |
|---|---|---|---|---|
| *Entrepreneur knowledge* | | | | |
| Currently owner-manager of an established business (%) | 0.506 (10.960)*** | | | 0.468 (9.354)*** |
| Knowledge/skills required to start a business (%) | 0.018 (0.524) | | | 0.007 (0.166) |
| Level of network knowledge | | | | |
| Personally know an entrepreneur (%) | | 0.015 (0.447) | | 0.019 (0.624) |
| Experience as informal investor (%) | | 0.068 (2.107)* | | 0.009 (0.332) |
| *Control variables* | | | | |
| Fear of failure (%) | | | −0.007 (−0.165) | 0.048 (1.276) |
| Opportunity (%) | | | 0.084 (2.656)** | 0.051 (1.914) |
| People consider starting a business as a good career choice (%) | | | 0.125 (2.545)* | 0.094 (2.272)** |
| In my country, entrepreneurship receives media attention (%) | | | 0.098 (2.903)*** | 0.043 (1.552) |
| People attach high status to successful entrepreneurs (%) | | | −0.075 (−1.386) | −0.063 (−1.433) |
| $R^2$ | 0.953 | 0.927 | 0.938 | 0.961 |
| *F*-Statistic | 41.22*** | 25.54*** | 26.81*** | 40.23*** |
| Log likelihood | −593.93 | −661.24 | −578.23 | −517.21 |
| Hausman test | 22.07*** | 78.93*** | 38.43*** | 37.26*** |

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

**Table II.**
Regression models (fixed effects) of the proportion of people engaged in business start-up activity (panel data and annual data)

entrepreneur the creation of new businesses. The need for knowledge/skills required to start a business is positively associated with the proportion of people engaged in new business activity in all years except 2011. Unlike Models I and IV, annual figures show that knowledge/skills to open a new business are considered fundamental for entrepreneurs to engage in new business creation. Study of the level of network knowledge variables, which also appear in Model II, show that only for years 2009 and 2010 these variables positively affect the creation of new firms. For 2009, experience as an informal investor is positively associated with the proportion of people engaged in new business activity. For 2010, personally knowing an entrepreneur significantly and positively predicts the proportion of people engaged in new business activity.

Analysis of Model III shows a significant relationship between the proportion of people who think they have a good opportunity to start a business and the proportion of people engaged in new business activity for the years 2011 to 2013. For 2009 only, the variable the media in my country devotes considerable attention to entrepreneurship significantly and positively predicts the proportion of people engaged in new business activity. Finally, the percentage of people who attach high status to successful entrepreneurs negatively predicts the proportion of people engaged in business start-up activity for 2010, 2012, and 2013. Thus, the higher the proportion of people who attach high status to successful entrepreneurs, the smaller the proportion of people engaged in new business activity. In this case, the status variable with an effect in Model III for 2010, 2012, and 2013 does not affect the creation of new firms, but instead exerts a negative influence.

## 4. Discussion and final considerations

For Acs *et al.* (2006) entrepreneurial activity will tend to improve over time in the sense that investments in new knowledge will be relatively high while firms, especially new firms, will call upon the true source of knowledge (i.e. universities and R&D institutions). The current research contributes to the literature in several ways. First, the disaggregated annual data

| | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|
| *Entrepreneur knowledge* | | | | | |
| Currently owner-manager of established business (%) | 0.262 (3.574)*** | 0.516 (9.925)*** | 0.388 (4.503)*** | 0.345 (6.265)*** | 0.321 (3.736)*** |
| Specific skills (%) | 0.099 (1.972)* | 0.101 (2.013)* | 0.100 (1.829) | 0.136 (3.031)** | 0.137 (2.638)* |
| Level of network knowledge | | | | | |
| Personally know an entrepreneur (%) | −0.004 (−0.070) | 0.157 (2.621)* | 0.088 (1.478) | 0.010 (0.200) | 0.039 (0.720) |
| Experience as informal investor (%) | 0.479 (3.919)*** | −0.038 (−0.393) | −0.008 (−0.186) | 0.398 (1.703) | −0.016 (−0.086) |
| *Control variables* | | | | | |
| Fear of failure (%) | 0.017 (0.295) | 0.060 (0.819) | −0.027 (−0.403) | −0.037 (−0.696) | 0.019 (0.255) |
| Opportunity (%) | −0.017 (−0.370) | 0.088 (1.846) | 0.089 (2.118)* | 0.090 (2.219)* | 0.114 (2.483)* |
| People consider starting a business as good career choice (%) | 0.096 (1.987) | −0.008 (−0.167) | 0.095 (1.771) | −0.007 (−0.179) | 0.021 (0.467) |
| In my country there is lots of media attention for entrepreneurship | 0.104 (2.721)** | −0.018 (−0.384) | 0.019 (0.375) | 0.054 (1.491) | 0.055 (1.273) |
| People attach high status to successful entrepreneurs (%) | −0.023 (−0.478) | −0.168 (−2.785)** | −0.08 (−1.283) | −0.125 (−2.861)** | −0.177 (−3.247)*** |
| $R^2$ | 0.779 | 0.899 | 0.790 | 0.900 | 0.810 |
| *F*-statistic | 17.65*** | 47.33*** | 15.05*** | 47.19*** | 22.75*** |

**Table III.**
Regression analysis of the proportion of people engaged in business start-up activity by year (overall sample)

**Notes:** Regression coefficients and corresponding *t*-statistics (in parentheses) are reported. ***$p < 0.001$; **$p < 0.01$; *$p < 0.05$

reveals several factors that positively influence new business creation. These factors are capabilities/knowledge in business creation and the fact that new businesses are created by experienced entrepreneurs with relevant knowledge. Likewise, viewing entrepreneurship as a good career option and a good opportunity and considering that the media attach importance to successful entrepreneurs are factors that positively influence new business creation. Second, in global terms, the entrepreneur's intrinsic knowledge is crucial in new entrepreneurship. This is also explained by the fact that each new generation is more qualified and more able to value any knowledge acquired than the last generation is. Third, there is a relationship between self-efficacy and entrepreneurship, which can be justified for three reasons: people avoid careers and environments that they believe fall outside the scope of their capabilities (without considering the benefits they could obtain) and instead engage in careers they consider within their capabilities (Krueger, 2007); entrepreneurship involves taking risks and coping with difficulties, which implies that entrepreneurs need high levels

of self-efficacy; and self-efficacy predicts career choice, professional interests, perseverance, and personal effectiveness (Krueger, 2007), so self-efficacy must also be related to entrepreneurial activity.

In addition, the emphasis on knowledge should be referred to not just in terms of intrinsic knowledge of the entrepreneur but also in terms of what is obtained through networks, particularly from knowledge spillovers. This is where the entrepreneur's knowledge as an informal investor exerts a greater influence than the fact that the entrepreneur knows other entrepreneurs. A possible explanation for this finding is that investing teaches the entrepreneur how to identify the most profitable business while also providing access to key actors in a particular sector. In other words, new entrepreneurs have not been swayed by hearing the experiences of others but have instead tested the market for themselves. This finding highlights the presence of two kinds of knowledge: tacit (from experience) and explicit (from acquired capabilities). The overlapping of these two kinds of knowledge creates the conditions necessary for business creation.

A growing number of analyses on the importance of location and entrepreneurship at the regional level have shown that the basis for new business creation is knowledge, particularly knowledge spillovers from universities and other R&D institutions. Indeed, knowledge arises from the collaboration between businesses and public research institutions (Audretsch and Lehmann, 2005).

Regarding the contribution of entrepreneurship for economic development, the GEM (2014) reports that the economies of countries with lower per capita income are characterized by small enterprises. In contrast, in countries where there is an increase in per capita income, the characteristics of industrialization and economies of scale are salient and thus play an important role in these countries' economic development. The OECD (2005) reports that 20 to 40 percent of employment in industrialized countries is directly related to a high rate of entrepreneurship. Entrepreneurship is primarily a catalyst for economic growth and national competitiveness (GEM, 2010), and it emerges as a crucial element for economic development (Gartner, 1988; Sarasvathy, 2001; Baron, 2004; Sternberg, 2004; Krueger, 2007). Turning to our research question:

*RQ2.* What are the knowledge-based factors that affect the propensity to become an entrepreneur?

We can confirm that the main knowledge-based factors driving the creation of new businesses are as follows: awareness of possessing the capabilities needed to create new firms; entrepreneurial experience; and experience investing informally in several firms.

In addition, results show that the concept of self-efficacy is associated with entrepreneurship. Because the incentive to act is greater when entrepreneurs believe their actions have attainable results, self-efficacy is a key determinant of successful entrepreneurial behavior. Self-efficacy has a place in planned behavioral intention models in general and in models of entrepreneurial behavior in particular. Furthermore, self-efficacy is often related to perceived behavioral control, as per the work by Ajzen (1991), or perceptions of feasibility studies, according to the model by Shapero and Sokol (1982). Thus, the perception of self-efficacy appears to be critical to understanding the planning of intentional behavior because of its influence on the formation of intentions through situational perceptions of viability.

The limitations to our research stem from both its application of data aggregated at the country level and of secondary data. In this sense, the results obtained here require careful analysis taking into account this specific facet. Through applying GEM data, future research might examine disaggregated GEM data for the three economic stages at the classification level.

In addition, in this study we focused on individuals involved in start-up activities at the time of data collection. These individuals had not yet formally launched their businesses

(i.e. they were emerging entrepreneurs). Future research should accompany these respondents to see if they persist in their efforts and ultimately succeed in creating new businesses.

As Albert Einstein famously said, "All that is valuable in human society depends upon the opportunity for development accorded to the individual."



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