



Attitude toward business activity risk; Evidence using logit models for two groups of OECD countries

Actitud hacia el riesgo de la actividad empresarial; evidencia utilizando modelos logit para dos grupos de países de la OCDE

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Abstract

In this article, an approach is made to the issue of aversion to the risk of failure that a person faces when making the decision to be an entrepreneur. The information included in the reports of the Global Entrepreneurship Monitor helped to verify, through the non-linear models of probability logit and four sub-periods understood from 2001 to 2016, whether the factors of education, experience, knowledge, skills, age, among others, directly influence and remain constant for a person to make the decision to start a business. This analysis was carried out for two groups of OECD member countries: the first world and Latin America. The results obtained made it possible to detect and compare the most distinctive factors in each of these groups. In addition, in each group, odd ratios were detected that increase the likelihood of a person feeling aversion to the risk of failure at the time of undertaking.

JEL Code: C25, F2, G32, O34

Keywords: risk aversion; entrepreneurship; logit models; Global Entrepreneurship Monitor; OECD

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Resumen

En este artículo se realiza un acercamiento al tema de la aversión al riesgo de fracasar que enfrenta una persona al tomar la decisión de ser un emprendedor. La información integrada por los reportes del Global Entrepreneurship Monitor sirvió para que, a través de los modelos no lineales de probabilidad logit y cuatro subperiodos comprendidos de 2001 a 2016, se compruebe si los factores educación, experiencia, conocimiento, habilidades, edad, entre otros, influyen directamente y permanecen constantes para que una persona tome la decisión de emprender un negocio. Este análisis se realizó para dos grupos de países miembros de la OCDE: el primer mundo y Latinoamérica. Los resultados obtenidos permitieron detectar y comparar los factores más distintivos en cada uno de estos grupos. Además, en cada grupo se detectaron las *odds ratios* que incrementan la probabilidad de que una persona sienta aversión al riesgo de fracasar al momento de emprender.

Código JEL: C25, F2, G32, O34

Palabras clave: aversión al riesgo; emprendimiento; modelos logit; global entrepreneurship monitor; OCDE

Introduction

The study of entrepreneurship is relatively new: The first important contribution on this topic was made in 1934 by Joseph Schumpeter with the book “The Theory of Economic Development” (This book was originally published in 1911 under the name “Theorie der wirtschaftlichen Entwicklung,” while its first English translation was made in 1934). The central argument of his thinking, roughly speaking, is that he associates the most important role of entrepreneurship with a person’s inseparable and intrinsic innovative character (Croitoru, 2012). Since then, multiple research works have addressed, from various perspectives, the theory proposed by Schumpeter on entrepreneurship (Callegari & Nybakk, 2022). This theory by Schumpeter created the basis for the fact that today, the entrepreneur has gone from being a reckless entity to being considered an important factor in generating economic growth in a country or region (Ahlstrom *et al.*, 2019). At the end of the 20th century, Porter (1990) considered entrepreneurship the heart of national priority. Undoubtedly, this is because entrepreneurship contributes to economic performance through the introduction of innovations and the creation of new capabilities, increases competitiveness, and is even seen as a generator of employment and social equity (Martín-Navarro *et al.*, 2023; Chadha & Dutta, 2020).

In this context, the European Commission (European Commission, 2015) defines entrepreneurship as a person’s ability to transform ideas into actions. This entrepreneurship includes creativity, innovation, risk-taking, and the ability to plan and manage projects to achieve objectives. In turn, Ahmed *et al.* (2020) assert that entrepreneurship is a function of several factors: personality traits, education, experience, social and economic conditions, and public order, among others. Thus, entrepreneurial entrepreneurship became a buzzword, especially among young people aged 18-34 (Princitta & Amirtha Gowri, 2015). At the beginning of the 21st century, the influence of research related

to entrepreneurship was perceived worldwide (Kuratko, 2003). Also, in many universities in the USA, Europe, East Asia, and Latin America, programs and courses on entrepreneurship were implemented, and curricula were designed entirely oriented toward entrepreneurial education (Wang *et al.*, 2011; Maheshwari *et al.*, 2022). Entrepreneurial education has undoubtedly had a positive impact on the entrepreneurial mindset of young people (Volkman *et al.*, 2009), especially on their intentions regarding entrepreneurship, their employability, and their role in society and the economy (Steyaert & Hjorth, 2008; Adeel *et al.*, 2023).

The poor quality of jobs today and their scarcity have led to the need for entrepreneurship. As a result, people have ceased to be employees to become entrepreneurs. Many authors have devoted themselves to investigating why new companies are created, as well as the inherent characteristics of the entrepreneurial individuals who are, in turn, responsible for making these companies. Undoubtedly, the concept of entrepreneur deserves a broader and deeper meaning, which is not limited only to the generation of employment and the creation of new companies. Gartner (1988) commented that entrepreneurs have distinctive and specific personality traits. Of course, the entrepreneurial person has important positive characteristics such as the proliferation of creativities, persuasiveness, development of innovations, increased self-confidence, creation and development of technology, creation of wealth, and growth of public welfare. Therefore, the entrepreneur's personality traits have a great impact on various entrepreneurial activities, including the intention to create a new business, business success, and even the increase of a given set of companies (Metallo *et al.*, 2021; Korez-Vide & Tominc, 2016). Moreover, in recent times, entrepreneurship has been identified as a mechanism that converts economic knowledge into economic growth (Kang *et al.*, 2022; Carlsson *et al.*, 2009).

The risk of failure is undoubtedly an important factor that should be considered concerning the topic of company entrepreneurship (Breivik *et al.*, 2020). To this end, a question of importance in this research is: Why does a person risk creating a new business? Multiple studies have also studied the answer to this question (Shou & Olney, 2020; Maheshwari, 2022; Linton, 2019; Al-Qadasi *et al.*, 2021). Of course, the characteristics of an entrepreneur may vary from region to region (Dubey & Sahu, 2022; Chaudhary, 2017). Nevertheless, it can be said that, in general terms, the entrepreneurial person has a greater need to achieve results, has a marked tendency toward risk-taking behaviors, and also has the conviction that people can take their destiny into their own hands (Gielnik *et al.*, 2021; Anjum *et al.*, 2021). Thus, the specialized literature on entrepreneurial entrepreneurship has made considerable progress in explaining a) Some determinants of entrepreneurship, b) The main relations within entrepreneurship, and c) The economic growth associated with entrepreneurial activity. In this context, the individual's behavior in the face of the risk of starting a business can be an intangible factor that explains, in turn, a person's attitude when deciding to become an entrepreneur. Multiple factors directly or indirectly

influence a person's aversion (fear) to starting a business; nonetheless, the greater the risk aversion, the longer the person will seek to remain an employee (Baluku *et al.*, 2021).

A person's attitude toward risk has been considered a determinant factor for entrepreneurship in different countries. To this end, individual characteristics and differences in regulation across countries have been studied for entrepreneurs, such as gender, age, employment status, significance of social networks, self-assessment skills, and attitude toward risk (Rosado-Cubero *et al.*, 2022; Lerner & Schoar 2010; Ahmed *et al.*, 2020). In turn, some research concludes that regulation (from regulation in product markets to regulation in labor markets and the legal system) plays a crucial role in a person's decision to start a new business. Moreover, both in individual characteristics and in the regulation of the country in question, the attitude toward risk is a preponderant factor among the most relevant factors (Almodóvar-González *et al.*, 2020). Apart from the work of Filmina and Mayangsari (2020), it is clear that little has been studied on the determinants that influence a person's attitude toward the risk of starting a business. Undoubtedly, the person who decides to become an entrepreneur is the key element required for creating a business. Therefore, multiple factors must interact simultaneously and converge with the same purpose. In other words, the aspects associated with an individual's personality (attitudes, actions, aspirations toward entrepreneurship, among others) as well as the factors of their environment (social, political, economic, geospatial, among others) are important to understand the creation of new businesses in a country or region.

Thus, the main objective of this paper is to find out some factors that explain the aversion to the risk of failure that a person faces when deciding to become an entrepreneur in two groups of OECD member countries. That is, the main contribution of this paper is to find these latent factors for the case of these two groups of countries with homogeneous intra-group economies that, however, are heterogeneous between groups. The information compiled by the Global Entrepreneurship Monitor (GEM)¹ reports (Bosma *et al.*, 2017) is the main input to show through non-linear logit probability models (Greene, 2018), during the period 2001-2016, whether the factors called education, experience, knowledge, skills, age, among others, directly influence² (besides being statistically significant during the period 2001-20016) a person to feel or not feel aversion toward the risk of failure when deciding to start a new business in some

¹ In particular, the information in the Open Population Survey (APS), which allows the levels of entrepreneurial activity in a country to be characterized according to three main elements: attitudes, actions and aspirations toward entrepreneurship.

² It is assumed that each factor collects all the information involved in its measurement and that it is not partially influenced by one or more other factors. That is, in this work it is assumed that the relation of all the variables involved is linear. In other words, each factor involved has a direct influence in explaining the fear of failure that a person feels when starting a business in some OECD countries. This is because the relation between the dependent variable (fearfail) and all the exogenous variables in the nonlinear logit regression model is 1 to 1.

OECD countries³: the first group of countries is made up of the USA, China, Japan, Switzerland, Germany, and France, while the second group of countries is made up of Spain⁴, Italy, Brazil, Chile, Argentina, and Mexico. Subsequently, the statistically significant variables that increase the probability (odds ratios) in each group of countries that a person feels an aversion to the risk of failure when starting a new business during the 2001-2016 period were detected. The scope of this analysis is to reinforce the fact that a high level of education is not a prerequisite to starting a business. Therefore, the hypothesis of this paper is H₀: the factors of education, experience, knowledge, skills, and age, among others, are not dominant factors in the two groups of OECD member countries to define whether or not a person feels aversion to the risk of failure when deciding to start a new business. The only limitation of this research is the study period; more recent data would provide a better appreciation of the phenomenon under study. Nonetheless, in the absence of more recent data, it is considered that the study period is representative and in no way detracts from the results found with this data analysis.

After this introduction, the present work is divided into four sections: the first presents a literature review, followed by the study method, the results obtained, and, finally, the conclusions section.

Review of the literature

Entrepreneurship is a complex activity; it is a limited view to see it only as a high-risk investment where decisions are made regarding remuneration on investment (Fellnhöfer, 2017). Entrepreneurship in a changing world does not require only one special skill or factor. On the contrary, several elements influence this decision (Åstebro *et al.*, 2014). Entrepreneurship has the potential to empower and transform. It is important for individual and organizational prosperity in an increasingly dynamic world (Brieger *et al.*, 2019). While the study of entrepreneurship is relatively new, its benefits should not be reduced to the impetus for creating innovative companies, economic growth, and new jobs (Galindo & Méndez, 2014). Entrepreneurship is a beneficial competency for all and helps individuals be more creative and self-confident in everything they initiate (Mathews, 2018).

In this context, business entrepreneurship contains the ability of a person to transform ideas into actions, so they must assume certain risks to achieve their goals. Different studies, from various perspectives, try to identify these elements that influence the decision, its implementation, and the

³ The definition of these two groups of countries, members of the OECD, was intended to differentiate the predominant factors to explain the aversion to the risk of starting a business (fearfail variable) between the most representative economies of the first world and the most similar economies of the Latin American countries.

⁴ Spain is included in this group because of its economic similarity to Latin American countries. Although China has a Human Development Index (UNDP, 2022) equal to 79, its most recent economic development indicators are solid enough for this country to be considered in the first group of countries.

consequences of entrepreneurship (Rauch, 2014; Kerr *et al.*, 2014). As already mentioned, there are works where it is concluded that entrepreneurship is a function of multiple converging factors (Soomro & Shah, 2015), and some of these studies even claim that entrepreneurs are individuals with distinctive and specific personality and health traits (Nikolova, 2019; Caliendo *et al.*, 2014). On the other hand, Fitzsimmons and Douglas (2005) asked a very important question: Why do some people engage in entrepreneurial activities while others do not? The answer to this question is complex. Nevertheless, multiple investigations have delved into the possible reasons behind it (Brinckmann & Kim, 2015). Some of these investigations have answered this question from the perspective of the individuals themselves and others from the standpoint of economic factors and their environment (Moya-Clemente *et al.*, 2020; Kong *et al.*, 2020).

Some works have investigated people's choice of self-employment over traditional career opportunities (Wan, 2017). Thus, several authors argue that individuals choose self-employment as a career option if the economic gains derived from this option are superior to the financial gains of employment (Al-Qadasi *et al.*, 2021). On the other hand, being an entrepreneur is a trend in different economic sectors worldwide that has mainly influenced the business field (Wiklund *et al.*, 2019). This dynamic has facilitated generations of youth and adults entering the entrepreneurial social sector (Halvorsen & Morrow-Howell, 2017). Consequently, higher education institutions have become interested in training entrepreneurs and offering novel courses and programs to students or interested individuals to prepare them for the future (Killingberg *et al.*, 2021). In other words, all over the world, programs of study, courses, and workshops, among other activities, have been offered to train entrepreneurs, which provide students with the tools to think creatively, solve problems effectively, analyze business ideas objectively, and evaluate almost any imagined project (Valerio *et al.*, 2014; Eurydice, 2022). According to this trend, it is necessary to identify and understand the different factors that encourage students to start businesses and take risks (Abbasianchavari & Moritz, 2020).

Thus, the importance of the educational process has been recognized as one of the critical factors that foster a proactive attitude toward the decision to start a business (Gámez Gutiérrez & Garzón Baquero, 2017; Banha *et al.*, 2022). Nevertheless, entrepreneurship should not be linked only to the educational context, much less to those degrees related to business or economic sciences (Burton *et al.*, 2016). What can be said is that entrepreneurship emphasizes an activity that promotes creativity, innovation, technology transfer, and self-employment in multiple areas of knowledge (Grimm, 2019; Block *et al.*, 2017). Consequently, the attitude toward entrepreneurial risk has been considered a determinant factor for entrepreneurship in different countries or regions (Sorenson, 2017; Lange & Schmidt, 2021). Nevertheless, in general terms, it can be said that the entrepreneur has a greater need to achieve results but also has a marked tendency toward risky behaviors (Brachert *et al.*, 2015).

Study method

The relationships and determinants of entrepreneurial activity in a country or region are complex, and their effects cannot be considered homogeneous, much less predictable (or constant) in different economies. Therefore, the selection of variables was focused on those that would provide the most information and that together would involve the educational level and preparation of the person interviewed to explain the factor that GEM calls “fearfail” (fear of failure would prevent them from starting a business). This variable selection was carried out annually from 2001-2016 (see Table 1). The information compiled by the GEM was used as input so that the direct factors most relevant in a person’s behavior regarding aversion to the risk of failure when starting a business in two defined groups of OECD member countries could be identified first through the non-linear logit probability model.⁵ The non-linear logit probability model calculation was carried out for each country in four periods, i.e., the information on each country compiled by GEM was considered for 4 years from 2001-2016. 48 non-linear logit probability models were calculated to detect the statistically relevant variables for each country involved in this analysis. Subsequently, it was verified, for each of these OECD member countries and in the 4 periods of 2001-2016, whether the statistically relevant variables of each estimated non-linear logit probability model remain constant and whether these relevant variables increase the probability that a person feels fear (aversion) of failure when starting a business.

The non-linear logit probability model

In order to prevent the estimated endogenous variable from taking values outside the interval [0,1], the alternative is to use a non-linear probability model, where the specification function guarantees an estimation result between the range 0-1. Since such a distribution function guarantees that the estimation result is bounded between 0 and 1, the possible alternatives are several, among the most common being the logistic distribution function, which has given rise to the logit model (Greene, 2018). In this context, the non-linear logit probability model measures the intensity of the explanatory variables involved in the model. Each logit model aims to make up a set of individually statistically relevant variables that help explain the dependent variable (in this case, “fearfail”).

⁵ In every logit model, the method used to select the subset of variables is the Forward Wald method. This stepwise method uses the statistics of the Rao efficient score test and the Wald statistic, which are used to verify the variables that should be included or excluded in every logit model. The advantage of the Forward method is that the researcher does not decide which variables to introduce/extract in the model, as it begins with a model with no explanatory variables.

The initial model used in this work is the so-called dichotomous logit, which is used when the number of alternatives is two and they are mutually exclusive. For this research, the alternatives will be aversion to the risk of starting a business and no aversion to the risk of starting a business. Thus, in the framework of a binary response logistic model, it is assumed that the dependent variable only takes as values 1 (aversion) or 0 (no aversion), that is, if the probability of $y=1$ is considered to be p and the probability of $y=0$ to be $(1-p)$, then the expected value of y is the probability of the event occurring (Hsiao, 1992):

$$E(y) = p \cdot 1 + (1 - p) \cdot 0 = p \quad (1)$$

If this probability is now considered as a function of a vector of explanatory variables x and a vector of unknown parameters β , then the general binary choice model will be:

$$\text{Prob}(y = 1 | x) = F(\beta'x) \quad (2)$$

The estimator of the vector β , under this specification, enables the construction of a logistic model as follows:

$$F(\beta'x) = \varphi(\beta'x) = \frac{e^{\beta'x}}{1 + e^{\beta'x}} \quad (3)$$

where:

$\varphi(\beta'x)$ - calculated probability.

x - is the vector that integrates the values of the k - t independent variables.

β - is the vector of individual indicator coefficients.

It was decided to use the logit model because the probability of a new individual belonging to one group or another is obtained. On the other hand, this being a regression analysis, it also identifies the most important variables (statistically significant) that explain the differences between groups. Thus, once the estimation of the model has been performed, the significance of the independent variables is found using the Wald statistic (Basu *et al.*, 2017), which is precisely the square of the Student's t statistic and has an asymptotic distribution of a Chi-Square with one degree of freedom. With the Wald statistic, the null hypothesis for model (3) is tested as $H_0: \beta_k=0$ (with $k=1, \dots, n$). Therefore, the explanatory variable will be statistically significant if the significance level is less than 0.05 (two-tailed), i.e., the null hypothesis that $\beta_k=0$ is not accepted at 90% confidence.

Data standardization

Table 1 presents the variables used in this work, which the GEM compiled in its reports entitled *Entrepreneurial Behavior and Attitudes*⁶ (Individual Level Data). These variables were compiled annually from 2001 to 2016 for each OECD member country of the two groups analyzed and previously defined.

Table 1
 Variables used in each dichotomous logit model, 2001-2016

No.	Variable	Concept	Values
1	year	Year when the survey was carried out	2001, 2002,, 2016.
2	country	OECD member country	Numeric code assigned to each country
3	fearfail	Fear of failure would prevent them from starting a business.	0=No; 1=Yes
4	age	What is your current age (in years)?	15, 17,, n
5	gender	What is your gender?	1=Male; 2=Female
6	gemeduc	Education level	0=None; 111=Unfinished secondary school; 1212=Secondary school; 1316=Unfinished high school; 1720=Graduated
7	gemwork	Employment status	1=Full or part-time (includes self-employment); 2=Part-time only; 3=Retired, disabled; 4=Homemaker; 5=Student; and 6=Not working/Other
8	nbgoodc	In my country, most people consider starting a new business a desirable career choice.	0=No; 1=Yes
9	nbstatus	In my country, people who start a successful business have high status and respect.	0=No; 1=Yes
10	suskill	You have the knowledge, skills, and experience to start a new business.	0=No; 1=Yes
11	teasic4c	Company type	1=Extractive; 2=Processing; 3=Business services; 4=Consumer oriented; 9=Unclassified
12	teayynec	Participates by necessity in the business activity.	0=No; 1=Yes

Source: created by the author with information from GEM 2001-2016

The data were used as presented in the GEM annual reports called *Entrepreneurial Behavior and Attitudes* (Individual Level Data), i.e., the data reported by GEM during 2001-2016 were not statistically

⁶ Not all entrepreneurs are the same. The Adult Population Survey (APS) analyzes the characteristics, motivations and ambitions of people who start businesses, as well as social attitudes toward entrepreneurship.

processed.⁷ These data were the input in each non-linear logit probability model for each OECD member country that made up the two groups of countries. Thus, 400 623 useful records were integrated and processed in each logit model, and the results were generated using the IBM SPSS statistical package (Field, 2018).

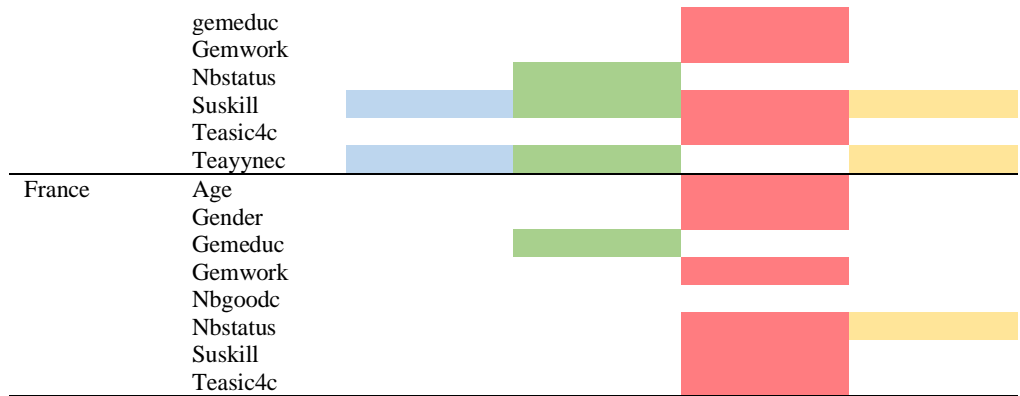
Results

Based on the information in the GEM reports, during the 2001-2016 period, 400 623 useful records were obtained (33.2% in first-world countries, while 66.8% were counted in Latin American countries) for the two groups of countries defined in this analysis. Table 2 presents the statistically significant variables, through the logit models, for the group of developed countries and OECD members. Similarly, Table 3 presents the statistically significant variables, through the logit models, for the group of Latin American countries and OECD members.

Table 2
 Statistically significant variables, through a logit model, for the group of developed and OECD member countries, 2001-2016

Country	Concept	2001-2004	2005-2008	2009-2012	2013-2016
United States	Age				
	Gender				
	Gemeduc				
	Nbgoodc				
	Nbstatus				
	Suskill				
	Teayynec				
China	Age				
	nbgoodc				
	Suskill				
	Teayynec				
Japan	Nbstatus				
	Suskill				
	Teasic4c				
	Teayynec				
Switzerland	Gender				
	Gemeduc				
	gemwork				
	Suskill				
	Teasic4c				
Germany	Gender				

⁷ What was carried out for all variables was standardization, i.e., invalid data were omitted. For example, in the AGE variable, negative data were omitted, while for the GENDER variable, records other than 1 (Male) or 2 (Female) were omitted.



Source: created by the author with data from GEM 2001-2016

Note: The colors only determine the period and in no way imply a numerical/statistical result.

Table 3
 Statistically significant variables, using a logit model, for the Latin American and OECD member countries group, 2001-2016.

Country	Concept	2001-2004	2005-2008	2009-2012	2013-2016
Spain	Age			Yellow	
	Gender		Red	Yellow	Yellow
	Gemeduc		Red		
	Gemwork		Red		
	Nbgoodc	Red	Red	Yellow	
	Nbstatus		Red		
	Suskill	Red	Red		Yellow
	Teasic4c		Red		
	Teayynec		Red	Yellow	Yellow
Italy	Age	Red			
	Gender	Red		Yellow	
	Gemeduc	Red		Yellow	
	Nbgoodc	Red			
	Nbstatus	Red			
	Suskill	Red		Yellow	Yellow
Brazil	Age	Red	Red		
	Gender	Red		Yellow	Yellow
	Gemeduc	Red	Red	Yellow	
	Nbgoodc	Red	Red		
	Suskill	Red	Red		Yellow
	Teasic4c		Red		
Chile	Age	Red		Yellow	Yellow
	Gender	Red		Yellow	
	Gemeduc	Red	Red	Yellow	
	Nbgoodc	Red			
	Nbstatus	Red			Yellow
	Suskill	Red	Red	Yellow	Yellow
Teasic4c	Red	Red	Yellow		



Source: created by the author with data from GEM 2001-2016

Note: The colors only determine the period and in no way imply a numerical/statistical result.

For the statistically significant variables in Table 2 and Table 3, a frequency analysis was performed. Thus, Figure 1 shows the share of statistically significant variables for developed and OECD member countries from 2001-2016. In this context, for all the countries considered in this first group, 52 significant variables were counted in the four periods analyzed (see Table 2); the variable suskill (Having the necessary knowledge, skills, and experience to start a new business) was the variable with the highest relative presence in all the countries in this group (33%), while the variable nbgooc (In my country, most people consider starting a new business to be a desirable career option) had a relative share of 4%. In other words, the suskill variable, of all the statistically significant variables, is an important⁸ criterion to explain the fearfail variable (Fear of failure would prevent you from starting a business) in this first group of countries. On the other hand, the variable nbgoodc, although statistically significant for some countries in this first group, is not important in explaining the fearfail variable.

⁸ The suskill variable was counted in 17 periods for all the countries in this first group. The maximum number of frequencies for each variable is 24 (4 periods x 6 countries). So, if the suskill variable is accounted for in all periods for each country (24 times) this would imply that this variable is 100% important in explaining the fearfail variable, during the period 2001-2016. The importance of the suskill variable, for this first group of countries, is 70.8 % (17/24).

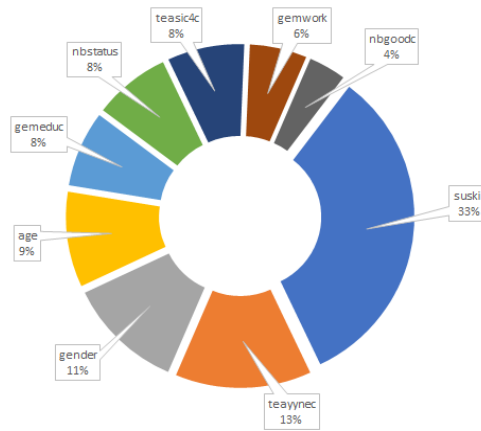


Figure 1. Share of statistically relevant variables for the group of developed and OECD member countries, 2001-2016

Source: created by the author with data from GEM 2001-2016

Figure 2 shows the share of statistically significant variables for Latin American and OECD member countries during the 2001-2016 period. In this second group of countries, it was detected that the suskill variable is also an important criterion (with a relative 24%) to explain the fearfail variable. In comparison, the nbgoodc variable remains a variable of little relevance (with a relative 10%) to explain the dependent variable fearfail. The results in Figure 1 and Figure 2 show that the distribution of the statistically significant variables is quite homogeneous in the two groups of countries. In other words, there are no substantial differences in the distribution of frequencies for the statistically significant variables in the two groups of countries. The most significant result for these two groups of variables is that the variable nbgoodc (In my country, most people consider starting a new business a desirable career option) had a significance of 8.3% for the first world countries. At the same time, this share was 37.5% for the Latin American countries. Similarly, the variable teaynec (Participates out of necessity in entrepreneurial activity) registered an importance of 29.2% for the first group countries, while this share was 54.2% for Latin American countries.

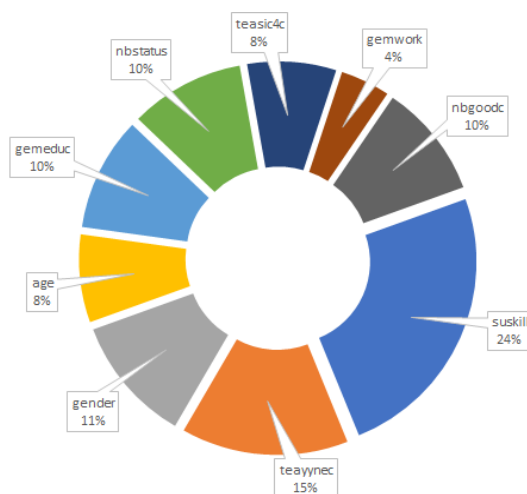


Figure 2. Share of statistically significant variables for the group of Latin American countries and OECD members, 2001-2016

Source: created by the author with data from GEM 2001-2016

These last results enabled performing the arithmetic difference⁹, in the two groups of OECD countries, between the vectors obtained from the frequencies for the statistically significant variables (see Figure 3). Since the frequencies of the statistically significant variables were higher in all of them, for the Latin American countries then the interpretation of the results shown in Figure 3 is as follows: the variable nbgoodc (In my country, most people consider that starting a new business is a desirable career option) showed the greatest distance (7 units, which represented 18% of the vector of distances) between both groups of countries, which indicates that this variable is considered more relevant for Latin American countries when explaining the variable fearfail (Fear of failure would prevent you from starting a business). Similarly, the variable teayynec (Participates out of necessity in entrepreneurial activity) also registered a considerable distance (6 units, representing 16% of the vector distances) between the two groups of countries. In other words, the teayynec variable is also important for Latin American countries when explaining the fearfail variable.

⁹ This arithmetic difference was calculated for each variable and the “absolute value” function was considered in all the results. This is because the difference obtained for all statistically significant variables between developed countries and Latin American countries was always negative. Furthermore, if $a, b \in \mathbb{R}$, then the function $|\cdot|$ is the distance that exists between elements a and b . So it makes sense to take the distance of the vectors including the statistically relevant variables between both groups of countries.

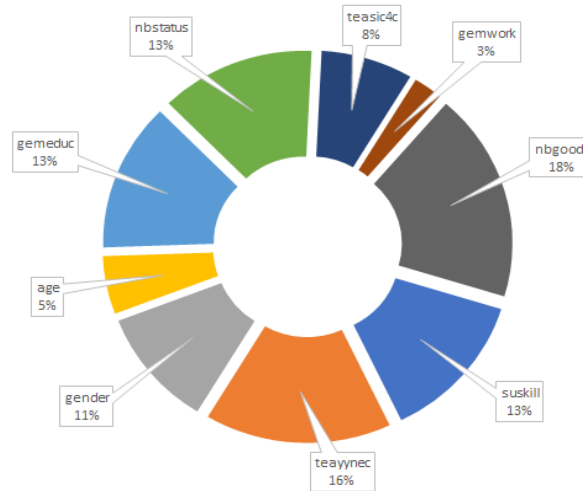


Figure 3. Differences of statistically significant variables between the two groups of countries (OECD), 2001-2016

Source: created by the author with data from GEM 2001-2016

The same analysis can be seen for the other statistically significant variables, where the gemwork variable (employment situation) presented the smallest distance (1 unit, representing 3% of the vector of distances) between the two groups of OECD countries. In other words, employment status has the same importance in both groups of OECD countries in explaining the fear of failure to start a new business. Nevertheless, the importance of this variable did not reach extraordinary levels in each group of OECD countries (12.5% importance—6% of the total frequencies of the statistically significant variables—for the developed countries and 16.7% importance—4% of the total frequencies of the statistically significant variables—for the Latin American countries).

On the other hand, Figure 4 shows the share of the statistically significant variables that also had odds ratios greater than 1. The results of Figure 4 show the variables that increase the probability of the result $Y=1$ for the fearfailure variable, that is, those factors that, in addition to being statistically significant, increase the likelihood that a person feels fear of failure, which would prevent them from starting a business in the country where they lived at the time the GEM data were compiled, are identified. When contrasting the results of the previously mentioned Figure 4, it can be seen that the profiles found for both groups of countries did not show substantive differences. Nevertheless, it is important to mention that the vector of frequencies for the group of Latin American countries and OECD members was greater or equal in all concepts than the vector of frequencies for the developed countries and OECD members. In other words, in the group of Latin American countries, there are seven concepts (two are characteristics of the person: age and gemwork, while five are characteristics of the image and perception of an

entrepreneur: nbgoodc, nbstatus, suskill, teasic4c, and teaynec) that predominate in their population and cause this group of potential entrepreneurs to considerably increase their fear of failure in starting a new business. In this context, two important results can be highlighted (see Figure 4): 1) In underdeveloped countries, the variable nbgoodc (In my country, most people consider that starting a new business is a desirable career option) is added, and 2) The variable suskill (You have the knowledge, skill, and experience necessary to start a new business) presented the highest relative share in both groups of countries (47.8% for developed countries and 40.0% for Latin American countries). This last result implies that a person's knowledge, skill, and experience are ultimately meaningless when starting a new business, i.e., these characteristics could be counterproductive for a person in both groups of countries when starting a new business. What is surprising is that in both groups of countries, the variables that refer to gender and level of education (gemeduc) are not concepts that maximize the probability that a person feels fear of failure when starting a new business.

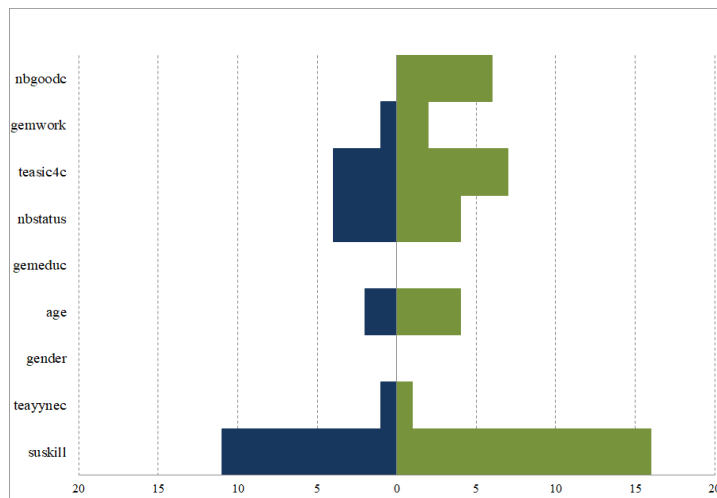


Figure 4. Variables with odds ratios greater than 1 for the group of developed countries (left) and Latin American countries (right) members of the OECD, 2001-2016
Source: created by the author with data from GEM 2001-2016

To conclude this section, Figure 5 shows the concepts resulting from the difference between the vectors of both groups of OECD member countries for 2001-2016 (see Figure 4). In other words, it shows the intensity of the concepts that increase the probability that a person feels fear of failure at the precise moment of starting a business in the country where they were interviewed. Since the vector of frequencies, in all the concepts involved in this analysis, was greater or equal for the group of Latin American countries, the difference in these frequencies should be interpreted in the following way: In Latin American countries

5 concepts predominate (age, teasic4c, gemwork, nbgoodc, suskill), which also exist in developed countries—but with less intensity—that characterize their population of an age to start a new business. Nevertheless, these 5 concepts in no way favor the entrepreneurial spirit in these countries; on the contrary, these concepts generate (increase) greater insecurity (fear of failure) in their population about deciding to create a new business.

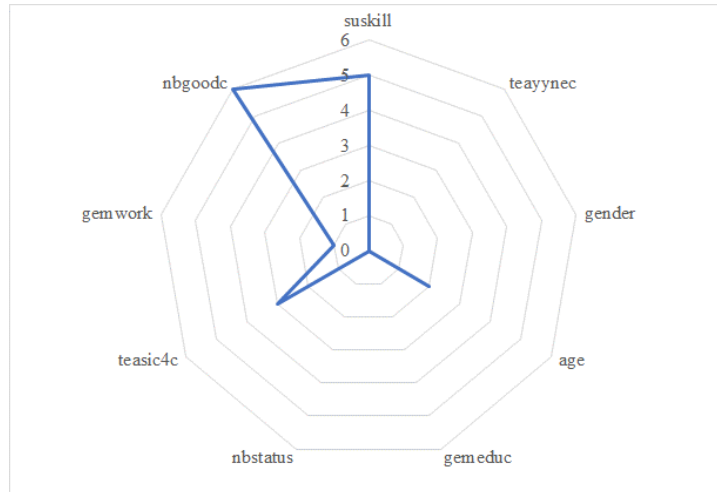


Figure 5. Differences in the resulting concepts between both groups of OECD countries for 2001-2016 increase the probability of the dependent variable fearfail.

Source: created by the author with data from GEM 2001-2016

Nowadays, an entrepreneur has gone from being a reckless entity to being considered a very important component of generating economic growth in a country. Moreover, the entrepreneur has recently been identified as a mechanism that, in conjunction with other elements of an economy, transforms knowledge and experience into economic growth. Undoubtedly, the entrepreneur has a greater need to achieve results, has a certain tendency toward risk-taking behavior and has a strong belief that people can take their destiny into their own hands. Therefore, in many countries, an entrepreneur is seen as a generator of employment, with social and economic status, an indispensable link in innovation, and even a creator of social equity.

Nevertheless, entrepreneurial activity does not merely mean creating companies or jobs. An entrepreneur must face many challenges to achieve their goal, and, as if that were not enough, they must also face the fear of failure at the very moment they have decided to create a business. Consequently, to face the fear of failure that an entrepreneur feels, all kinds of activities should be sought to strengthen their security and entrepreneurial environment. Nonetheless, this does not imply, for example, that maintaining

the entrepreneur's security at a mature age is the best strategy to trigger their entrepreneurial spirit. Knowing over time how an entrepreneur's environment has changed strengthens the entrepreneurial context in any country. Therefore, any study that provides information on the aversion to a person's fear of failure when starting a business will undoubtedly help all the elements involved in an economy.

In this context, the large amount of data used (400 623 records) in this study made it possible to statistically identify the variables or concepts that predominate in the two defined groups of OECD member countries during the 4 subperiods of 2001-2016. This is to gain a deeper understanding of the characteristics of a person, in particular, their attitude toward risk when they have decided to start a business. In this way, it was found that the 9 variables considered in this analysis turned out to be statistically significant in each of the defined groups of countries; nevertheless, the frequency of all these variables turned out to be heterogeneous (although without major substantive differences in the relative share of each concept). In other words, the first-world countries had a total frequency of 52 statistically significant concepts, while the Latin American countries had a total frequency of 92. The analysis of these total frequencies revealed that in Latin American countries, all the concepts (which can also be called profile or vector of frequencies) that explain the fear of failure of an entrepreneur turned out to be more homogeneous. What coincided in these total frequency vectors is that the 3 variables, *suskill*, *teaynec*, and *gender*, had the highest frequency (relative share) in each group of countries (57.7% for developed countries and 50.0% for Latin American countries). In other words, the skill and experience needed to start a new business, the gender of the person interviewed, and whether this person participates out of necessity in entrepreneurial activity are relevant characteristics to explain the fear of failure of a person who has decided to start a new business.

After discovering the similarity between the total frequency vectors for these 2 groups of countries, it was found that the dominant frequency vector (profile) was the one defined by the Latin American countries. This result is based on the fact that all the concepts of the frequency vector of the Latin American countries were greater than or equal to the concepts of the frequency vector of the developed countries. Consequently, it can be affirmed that entrepreneurs in Latin American countries are more insecure because the predominant environmental factors do not provide them with sufficient security to start a business. Therefore, the resulting profile (arithmetical difference of the total frequencies obtained in each group of countries) of this first analysis was headed by the concepts *nbgoodc* (18%), *teaynec* (16%), *suskill* (13%), *gemeduc* (13%), and *nbstatus* (13%), which had a relative share of 73.7% and where only one attribute (*gemeduc*) is associated with the characteristics of the person interviewed.

Although the vectors of total frequencies for the two groups of OECD countries that were defined by the statistically significant variables did not have large differences, in the analysis of the vectors including the variables with odds ratios greater than 1 (that is, the concepts that increase the probability

that a person feels an aversion to the risk of starting a business), no large differences were found either. Moreover, the variables that increase this probability are almost the same in the two groups of countries, except that in Latin American countries, the concept nbgoodc (In my country, most people consider that starting a new business is a desirable career option) is added. In other words, these variables (see Figure 4) are the concepts that hinder a person and, consequently, they do not feel secure when starting a business: the frequency of all these concepts is slightly higher in Latin American countries, which implies that these concepts are predominant in their population, i.e., in the countries of the first group there are somewhat more secure people (they feel less risk aversion) when starting a business.

This last result was reflected in the resulting vector (see Figure 5), where it can be seen that the concepts nbgoodc, suskill, teasic4c, age, and gemwork are dominant characteristics in Latin American countries. In this resulting vector, which can be seen as a profile, it can be appreciated that 4 concepts refer to the perception or consequences of an entrepreneur (nbgoodc, suskill, teasic4c, and gemwork). In contrast, one concept relates to the characteristics of an entrepreneur (age). What is surprising is that the last characteristic refers to the person's age, which implies that in Latin American countries, this concept plays a negative role in starting a business. In these countries, do older people fear failure when starting a business.? This question, as well as others, will have to be answered in future studies that address this issue of entrepreneurship in different economies.

Conclusions

In many countries, there has yet to be a government strategy at almost all levels of government to stimulate the population to become entrepreneurs. The high level of bureaucracy involved in registering a business has become one of the main obstacles to entrepreneurial activity. In addition, the available support and financial resources do not favor new companies and those in full growth, making entrepreneurship a risky activity rather than one of opportunity. Nevertheless, with the discovery of the relevant factors in the two groups of countries previously defined in this work to determine a person's aversion to failure when starting a business, it was found that there are no major differences between the two profiles. This result confirms that entrepreneurship does not depend on the country since people behave roughly the same way when faced with the fear of starting a business. In other words, fear, particularly the fear of failure, is a characteristic of human beings. The conditions offered by a country to facilitate its entrepreneurial environment do not turn out to be important factors in reducing risk aversion.

Undoubtedly, a person's entrepreneurial activity greatly impacts their country's economy and sometimes has a worldwide effect. Nonetheless, this activity should not be considered only from the perspective of providing greater income or independence to an individual. This paper demonstrates that

some logical concepts associated with a person, such as age, educational level, work experience, status, or image of being an entrepreneur, are not necessarily crucial factors for that person to reduce their risk aversion at the very moment they have made the decision to start a business. The concepts that maximize the probability that a person feels fear of starting a business are almost the same (except for one factor in Latin American countries) in the two groups of countries considered in this research. That is, a person feels, in general terms, equally insecure about starting a business in either a developed country or a Latin American country.¹⁰ Nevertheless, in Latin American countries, some factors predominate in their entrepreneurial environment, increasing people's insecurities about starting a business. The results of this work imply that roughly speaking, the environment for the two groups of countries analyzed and where entrepreneurs carry out their activities are equally insecure and, consequently, do not favor the entrepreneurial spirit.

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¹⁰ Fear is a dichotomous variable, therefore, the country of Spain, with a value of 1 (aversion), could not bias this statement. In addition, the aversion to starting a new business is something inherent to the person but not to the COUNTRY variable.

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