

## **Social and human capital as determining factors of entrepreneurship in the Spanish Regions<sup>1</sup>**

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### Abstract

Entrepreneurship, innovation and creativity are considered key factors of the economic growth because they usually bring on behaviors aligned with the market development, productivity and social cohesion. This study aims to analyze the factors that influence the entrepreneurial role, and provide a better understanding of this behavior from a dynamic perspective, in order to support policies for encouraging entrepreneurship. To do this we used the data presented in the report of the Global Entrepreneurship Monitor (GEM), in its 2011 edition, which is based on an empirical analysis of a sample of 27.000 Spanish citizens.

The results confirm that the perception of market opportunities, and having the skills and knowledge required to create new companies are explanatory factors of the entrepreneurial activity. However, it is also possible to assert that the increase of the entrepreneurial activity rate motivated by the need of self-employment of the entrepreneur influences the increase of fear of failure, and this could generate a dynamic harmful to the business creation in the medium term.

Our model aims to support the decisions of public institutions about the incentive measures for entrepreneurs. This work contributes to the study of entrepreneurship and business creation from a multidisciplinary perspective, incorporating psychological, sociological and economic approaches from a dynamic perspective. It also allows an in-depth analysis of factors undetected with other methodologies.

We examined the determining factors of entrepreneurship by estimating a logit model based on entrepreneur's social capital (networking) and the geographical location (region) of the business activity. This analysis has shown significant differences of these factors according to the stage of the entrepreneurial process. These results have let

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discuss the implications for the entrepreneurial dynamic, in order to support new policies in favor of entrepreneurship.

## 1. INTRODUCTION

Entrepreneurship is one of the main drivers of innovation, competitiveness and economic growth. For this reason, in the current economic dynamic, the creation and consolidation of new companies capable of moving the market has become one of the biggest challenges to be faced by political institutions.

Some factors play a key role in the entrepreneurship process. The detection and exploitation of the market opportunities, overcoming the administrative and financial obstacles or the need to acquire new knowledge and skills are some of the many variables involved in the process.

For this reason, entrepreneurial motivation is conditioned by a set of factors acting as stimulus or barrier in developing the entrepreneurial spirit in individuals. These factors usually are grouped for analysis into three groups: socio-demographic factors, perception variables and contextual factors (both social and economic). All have been the subject of numerous studies in recent decades, due to increased interest emerged around entrepreneurship and the design of measures to promote it in different countries.

One of the most important variables when conducting empirical studies is the ability to perceive economic opportunities of the new business (Shane, 2003:105; Lundström & Stevenson, 2005;), because the core of entrepreneurship usually is related with the focus on the market opportunities. Thus, an individual will be encouraged to set up a new company if he or she detects that there is a business opportunity that can be exploited (Shane, 2003).

This study aims to analyze the determining factors of entrepreneurship, that is, what are the variables that have a greater influence on the individual when deciding to carry out an entrepreneurial activity. Our evidence is based on the database provided by the GEM project survey (Global Entrepreneurship Monitor) to assess the level of entrepreneurial activity, aspirations and attitudes of individuals across a wide range of countries.

This study is organized as follows. Section 2 introduces a review of the previous studies which were focused on the determining factors of entrepreneurship. Section 3 details the methodology used and the definition of the variables included in the econometric model. Then we discuss the results obtained and we present the conceptual model that shows the entrepreneurial dynamic using the variables detected (Section 4). Finally, in Section 5 the conclusions of the study are provided and incentive measures are proposed to promote a favorable entrepreneurial dynamics for future business creation.

## 2. DETERMINING FACTORS OF ENTREPRENEURSHIP

According to the focus of the decisional models of career choice, entrepreneurship behavior is considered as a result of a complex decisional process through which the individual chooses his professional future between the alternatives of starting his own business or work for others (Baumol, 1990, Campbell, 1992; Douglas & Shepherd, 2000).

In recent years, there has been growing interest in studying the relationship between innovation, entrepreneurship and economic development. In fact, it is a general assumption that innovation directly affects the economic development of the countries. For this reason, one of the factors to take into account when analyzing the success of entrepreneurship is its innovative character. Actually, the success or failure of a new business may be mostly determined if the entrepreneur is able to detect this innovative opportunity that lies in the environment.

Following the approach of the previous studies, we consider that the factors influencing the individual decision of running an own business instead of choosing paid employment can be classified as:

- **Individual factors:** such as demographic characteristics (sex, age, marital status, family status), health, income, current job status, individual human capital (education, experience), personal psychological characteristics (attitudes, optimism, preference for independence), analyzed by the authors involved in the psychological approach of entrepreneurship, (McClelland 1961; Carsrud & Johnson, 1989). In addition to previous studies, Guerrero, Scepter, M. J. & Urban, D. (2008) focus their work on the perception that college students have of the desirability and financial viability of running a business project.
- **Social factors:** those related with the existence of social capital and social performance standards that support entrepreneurial initiatives. This factors have been discussed from the sociological approach of entrepreneurship (Shapero & Sokol 1982; Aldrich & Zimmer 1986, Busenitz et al. 2003; Doh et al ., 2011).
- **Macroeconomic factors:** such as per capita income, the financial system and credit rating or the economic cycle. Their influence on entrepreneurship is studied from the economic approach, (Audretsch & Thurik 2001, Audretsch & Keilbach 2004; Sternberg; Wennekers 2005).

The review of the literature shows that there is no consensus on the effect of each of these factors on the entrepreneurial decision. The authors' conclusions differ, depending on the scope of analysis, either among the countries studied or depending on the industry addressed.

In this paper we integrate the psychological, sociological and economic approaches of entrepreneurship, analyzing on the first place the characteristics that differentiate entrepreneurs (psychological approach), and later integrating this analysis in other issues identified in sociological and economic approaches.

As starting point of the analysis, it is necessary to identify the relevance of the variables age, gender, education, perception (confidence and risk aversion) and macro-economic context in previous studies of entrepreneurship.

- **Age:** entrepreneurial spirit tends to be developed in young people. Thereby, Reynolds et al. (2003) found empirical evidence showing how individuals aged 25 to 34 were the candidates who were more likely to become entrepreneurs.
- **Gender:** regarding gender differences, although some studies have found that factors influencing entrepreneurship of women and men are similar (Langowitz & Minniti, 2007), other studies show the opposite, particularly in relation to perception. Mueller & Conway Dato-On (2008) showed that men feel more attracted to entrepreneurship because they have higher levels of self-confidence for managing this role. Green et al. (2003) claim that women differ from men in their choice of entrepreneurship option. Likewise, Sanchez-Escobedo et al. (2011) analyze the different socioeconomic and psychosocial factors that differentiate men and women throughout the entrepreneurial process. There is research to show that women perceive their environment as more difficult and less appropriate to carry out such entrepreneurial activity, and this perception leads them to reduce their ambition when they run a new firm (Zhao et al., 2005, Carter et al., 2001). Following this approach, women identify entrepreneurial opportunities from another way (DeTiene & Chandler, 2007), and have a different entrepreneurial self-image than men (Verheul et al., 2005). This mix of factors helps us to explain why the rate of entrepreneurship of women is lower than men's in most countries.

In addition to previous studies, Green (2000) refers to the differences in the stock of human capital and social capital between individuals of both sexes, an approach that is confirmed in other studies such as Martinez Mateo et al. (2012). In this sense, the study of Alvarez et al. (2012), based on GEM data, states that informal factors (perceived ability to run a new business, social networks and family role) have a significant effect on the probability of being a woman entrepreneur, while other formal factors as financing, supportive policies (non-economic) and training do not have a differential effect on entrepreneurship in terms of gender.

- **Education:** literature considers education as one of the main indicators of human capital. However, often entrepreneurs stand out more because of his talent than because of the specific education that they have previously received (Murphy et al., 1991; Leazar, 2002). For this reason, the relations between education and the creation of new businesses are uncertain, except for those rich countries that have shown that postgraduate training has positive effects on the implementation of high-tech entrepreneurship (Blanchflower, 2004).

However, entrepreneurs (whether incipient or potential) tend to have a higher educational level on average than the rest of the workforce and also higher than established entrepreneurs (Contin et al, 2007).

- **Perception:** although the influence of socio-demographic and economic factors on entrepreneurship have been extensively analyzed in the literature, it does not

happen with the variables related to the entrepreneur's perception (psychological approach), due to the limited data available and to the complexity of introducing these variables into traditional models of study. Entrepreneur's perception is studied through those factors that describe subjective perceptions and beliefs not explained by objective circumstances. These variables are considered the most important distinguishing features of the behavior of entrepreneurs (Kirzner, 1973, 1979).

- **Confidence and social capital:** literature offers many studies examining the relationship between trust in the individual's skills and his ability to start a new business (Vazquez, Gomez & Vieira, 2010; Doh & Acs, 2010).

Following this approach, other studies emphasize the importance of meeting individuals who have already started new business for the future entrepreneur, i.e., entrepreneurial networks of support. In this sense, Minniti (2004) analyzed the increased confidence of individuals which is generated by the existence of prior entrepreneurship role models, and the effect that this knowledge has in reducing the perception of risk environment for the potential entrepreneur. It also confirms the influence of the lack of entrepreneurial role models in the low rate of entrepreneurship of different groups, such as women (Justo & Diaz, 2012). In the same vein, Doh & Zolnik (2011) built the concept of social capital based on three constructs: trust (generalized and institutional), associative activities (passive and active) and civic norms, and they found out a positive relationship between the stock of social capital treasured by an individual and his entrepreneurial propensity. Going into the analysis of entrepreneurial networks, Bauernschuster et al., (2010) concluded that belonging to small social communities increases the propensity to start a new business more than being member of larger communities.

Entrepreneur's trust on their own skills, belonging to entrepreneurial networks and social norms are variables that allow us to measure the concept of social capital. Social capital can have a positive influence on the exploitation of market opportunities because it facilitates the acquisition of resources and organizing efforts in the implementation of the new business. In this regard, Gonzalez et al. (2012) obtained a positive and significant relationship between social capital and the percentage of the population that finds opportunities for business creation, and they support the idea that social networks can facilitate the identification of opportunities and reduce the cost of the resources required to start a business initiative.

- **Risk aversion:** the relationship between the decision to start a new business and the risk aversion has also been analyzed in the literature. So, some studies state that reduction on failure perception increases the probability of new entrepreneurial initiatives (Weber & Milliman, 1997). The entrepreneurial behavior has been generally associated with moderate levels of individual's risk (McClland, 1961, Sexton & Bowman, 1983). However, there have emerged certain contradictions, as those that explain the relationship between risk propensity and the decision to start a new business. Thus, some empirical studies confirm that entrepreneurs founding their own company have a risk propensity higher than CEOs of existing firms (Begley & Boyd, 1987), while other studies

indicate that entrepreneurs do not have a risk propensity higher than other managers and the general population (Low & McMillan, 1988).

Based on these results, we state that risk aversion is one of the key factors to be considered to differentiate between entrepreneurs and non-entrepreneurs, so worthwhile to study how the individual processes the information coming from the environment and detects market opportunities. In this sense, Palich & Bagby (1995) found evidences that entrepreneurs perceive more positively than other individuals certain scenarios to develop a new business. So, entrepreneurs are more likely to see scenarios with market opportunities where others only see a low return in relation to risk associated. Those perceptions are confirmed based on the results of GEM for Spain. The data showing the fear of failure as an obstacle to start a new business differentiate between the population involved in the entrepreneurial process and those not involved, and indicate that for the first group (entrepreneurs), the fear of failure is not an obstacle to start a new business, as if it would be in the case of the group not involved in the entrepreneurial process. This difference also is being maintained over time, as it is shown in GEM reports (2010, 2011).

- **Macro-economic Context:** the studies based on an economic approach have looked into contextual factors, and show evidences that the decision to create a new business is also influenced by the environment in which it is taken (Chell & Baines, 2000).

Thurik et al. (2002) provide a detailed analysis of those contextual factors that influence the birth of an entrepreneurial initiative, arguing that technology, the level of economic development, culture and institutions influence the detection of market opportunities for the development of a new business. They add that the cultural and institutional factors influence the decision to start a new business because these variables have incidence on the skills, resources and preferences of individuals. Finally, these authors conclude that differences in economic development among countries, cultural and institutional differences, as well as those concerning the different technological development may explain the national differences in terms of level of entrepreneurial activity.

### 3. METODOLOGY

In order to meet the objectives of this study, we have developed a preliminary analysis of the level of entrepreneurial activity in Spain during 2011. These data have allowed us a better understanding of the key factors (socio-demographic, perceptual or contextual) that influence the entrepreneurial process. We have based our study on the database provided by the survey of the Global Entrepreneurship Monitor (GEM) in 2011 for Spain. The GEM project considers as active entrepreneurs all adults between 18 and 64 who are currently involved in the process of setting up a business or company as owner-manager of a new business for more than three months, but not more than 42 months. This definition includes the self-employment option. GEM explores the role of entrepreneurship in national economic growth, unveiling detailed national features and characteristics associated with entrepreneurial activity

This Project is based on a survey for the adult population (18-64), aimed to determine the entrepreneurial intentionality of the population of the countries and regions analyzed. We can distinguish the following stages in the entrepreneurial process:

### **Business Definition**

The first stage of the entrepreneurial process is the business definition, which represents the jump from the entrepreneurial intention (potential entrepreneurship) to the entrepreneurial activity (nascent initiatives).

### **Business Birth (early-stage)**

This stage of the entrepreneurial process permits to calculate the rate most commonly used in the GEM project, the level of the Total Entrepreneurial Activity (TEA), distinguishing between those initiatives that have not yet paid salaries (nascent), and those that are involved in the entrepreneurial process but not more than 42 months of age.

### **Business Consolidation**

This last stage of the process is aimed to analyze the persistence of the entrepreneurial initiatives, encompassing those with over 42 months of activity. At this stage we also study the closing rate of new firms, as well as its causes.

Fieldwork of GEM Project 2011 survey was conducted between April and June 2011 on a sample of 27,000 citizens resident in Spain and aged between 18 and 64 years.

## **3.1. Variables Definition**

### *Dependent Variables:*

The **potential entrepreneurship** is derived from the question "*Are you planning to set up a new business or company either alone or with others in the next three years, including any option of self-employment?*" The answers are grouped between Yes (1) and No (0).

The **early-stage entrepreneurship** or business birth phase is measured by the rate TEA (Total Entrepreneurial Activity Index), which is a qualitative variable that takes values 1 and 0 depending on whether the individual has entrepreneurial attitudes or not.

Finally, in order to measure the **consolidated entrepreneurship** we used the qualitative variable which collects information about people who own or run a business with more than 42 months old. It takes the value 0 and 1 depending on whether or not the individual meets these characteristics.

### *Explanatory Variables*



The variables used to analyze entrepreneurial attitudes, business birth and business consolidation include different aspects such as the socio-economic level of the individual, his perception of the environment, his stock of social capital and the variables that allow us to identify the regions. Following are the variables used:

In relation to the socio-economic context of the entrepreneur, we collected variables such as gender, age, education, occupation and income level.

With regard to the individual's perception of the environment, we analyzed the perception of the market opportunities, the possession of entrepreneurial skills, knowledge or experience to start a business and the perception of the fear of failure.

We analyzed the third group of variables, related to social capital, using multiple proxies depending on availability of the GEM survey in this regard. Thus, we measured two of the three dimensions in which the social capital construct is usually divided and which correspond to the trust and social networks. As measure of the trust we considered that there is *entrepreneurship trust* if the individual answers yes to the question "*In your country, most people consider entrepreneurship as a desirable career choice*", to analyze the degree of trust that exists in the development entrepreneurship. With regard with networks we selected the question that comes closest to the concept of social networks perceived by individuals who answer yes to the question "*Do you know personally someone who started a business in the past two years?*". We considered that the existence of entrepreneurs in the social networks of the individual can help to boost entrepreneurship.

We identified variables dummies for each one of the regions analyzed (all regions, excluding Ceuta and Melilla).

Table 1 shows all the variables used and their values:

Table 1: Description of Variables

Dependent Variables	
<b>Potential entrepreneurship:</b> " <i>Are you planning to set up a new business or company either alone or with others in the next three years, including any option of self-employment?</i> "	No (0), Yes (1)
<b>Early-stage entrepreneurship (Business birth):</b> population aged between 18 and 64 years who are involved in any entrepreneurial activity	No (0), Yes (1)
<b>Consolidated entrepreneurship:</b> Population aged between 18 and 64 years who own and run a company with 42 or more months of existence	No (0), Yes (1)
Explanatory Variables	

<b>SOCIO-ECONOMIC VARIABLES</b>	
Gender	Male (0), Female (1)
Age	18-24 (0), 25-34 (1), 35-44 (2), 45-54 (3), 55-64 (4)
Education	Primary (1), secondary (1), higher education (3)
Job status	Part-time job (1), Retired, Disabled (2), Housework (3), Student (4), Unemployment, others (5), Self-employment(6)
Level of income	Lower than 10.000 € (0), 10.001€-20.000€ (1), 20.001€-30.000€ (2), 30.001€-40.000€ (3), 40.001€-60.000€ (4), 60.001€-100.000€ (5), Above than 100.000€ (6)
<b>PERCEPTION</b>	
Market Opportunities: <i>“Will there be over the next six months good opportunities to start a new business in the area where you live?”</i>	No (0), Yes (1)
Skills <i>“Do you have the knowledge, skills and experience required for the implementation of a new business?”</i>	No (0), Yes (1)
Failure: <i>“In your case, would the fear of failure be an obstacle to set up a new business?”</i>	No (0), Yes (1)
<b>SOCIAL CAPITAL</b>	
<b>Trust</b>	
Entrepreneurship	<i>“In your country, most people consider entrepreneurship as a desirable career choice”</i> No (0), Yes (1)
<b>Networking</b>	
<u>Social networking</u>	<i>“Do you know personally someone who started a business in the past two years?”</i> No (0), Yes (1)
<b>REGIONS</b>	

Regions	Madrid (0), Andalusia (1), Aragón (2), Asturias (3), Islas Baleares (4), Canary Islands (5), Cantabria (6), Castilla y León (7), Castilla La Mancha (8), Catalonia (9), Valencia (10), Extremadura (11), Galizia (12), Murcia (13), Navarra (14), Vasque Country (15), La Rioja (16)
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## 4. RESULTS

### 4.1. Statistical and econometric results

Before of presenting the results obtained from the econometric analysis, the descriptive statistics of dependent variables are shown in Table 2 .

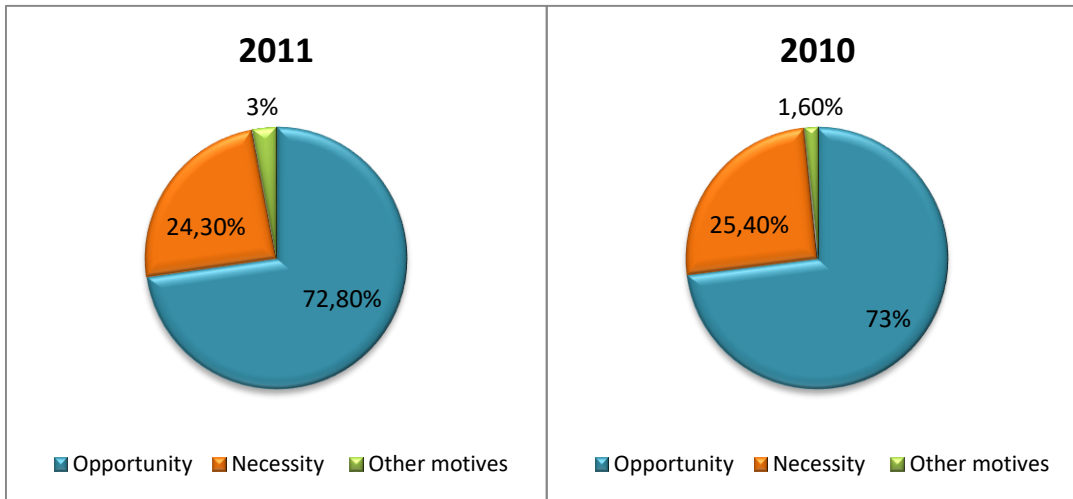
Table 2. Descriptive statistics of dependent variables.

Dependent Variables		Mean	Standard Deviation	Min.	Max.
Potential Entrepreneurship	No (0)	0,905	0,293	0	1
	Yes (1)	0,095	0,293	0	1
Entrepreneurial Activity (early-stage)	No (0)	0,944	0,229	0	1
	Yes (1)	0,056	0,229	0	1
Consolidated Entrepreneurship	No (0)	0,904	0,294	0	1
	Yes (1)	0,096	0,294	0	1

According to these data, the 9.5% of respondents are potential entrepreneurs, 5.6% are fully involved in the entrepreneurial process and the 9.6% are consolidated entrepreneurs.

If we go into the analysis of the entrepreneurial activity, since the survey allows us to discern some reasons that individuals have to start a business, it is observed that a large majority of individuals do it if they perceive a market opportunity, while the entrepreneurship by necessity has changed little over the previous year.

Figure 1. Types of entrepreneurial motivations



The descriptive statistics used (Appendix I) show an overall negative perception of the economic context. Only 14.6% of respondents believe that in the next six months there will be market opportunities to set new companies. This data indicates that the entrepreneurs' perception of the economic context is quite negative, due to the current economic crisis. Even though more than a half believe to have knowledge and skills to start a business (50.8%), the fear of failure is present in a high percentage of them (50.7%).

As regard of the social capital variables, the 66.6% of individuals believe that entrepreneurship is a desirable activity, ie more than a half of respondents consider entrepreneurship as a good career option. With respect to the stock of social networks, only the 28.1% of individuals knew personally someone who had set up a business in recent years and, although this is not a very high percentage, it could act as a motivator on potential entrepreneurship.

The final aim of this study is to explain how variables related with perception and social capital (psychological approach) influence the decision to set up a new business. For this we have developed the following logistic regression with the variables specified above. This regression follows the logistic distribution function:

$$P_i = E(Y_i = 1 / X_i) = \frac{1}{1 + e^{-Z_i}} \quad Z_i = \beta_0 + \beta_i * X_i$$

In this type of models the probability interval ranges from 0 to 1 but  $Z_i$  ranges from  $-\infty$  and  $\infty$ . Moreover, although the logit is linear with respect to  $X_i$ , the probabilities do not have to follow this behavior. Thus, the probability will be lower when  $X_i$  also becomes smaller. However, the probability will be higher when the value of  $X_i$  is bigger (Annex II).

The results show differences among the entrepreneurial variables analyzed. So, being a woman is a negative and significant factor for the stage of consolidated entrepreneurship, but it does have any effect on early-stage or potential entrepreneurship. In terms of age, it appears that older individuals have less probability

of being involved in potential or early-stage entrepreneurship, while the effect is opposite in the case of the consolidated entrepreneurship. Have a secondary or higher education level is significant only in the case of the consolidated entrepreneurship and its effect is also slightly negative, on the basis of not having any studies. Working part time or not having any job is positive for the potential entrepreneurship stage, while having no effect on other stages of entrepreneurial process. Being a student is only significant in the early-stage entrepreneurial activity and the effect is negative. Being autonomous is positive and significant in the case of entrepreneurial activity and the stage of consolidated entrepreneurship. Regarding the level of income, there is a significant positive effect on the consolidated entrepreneurship, while its effect is negative and often insignificant in potential entrepreneurship and entrepreneurial activity.

Most entrepreneurs (potential or involved in entrepreneurial activity) are motivated by the market opportunities (as shown by the positive and significant value of the opportunity variable) and all they believe having the skills to set up a new business. Fear of failure can stop potential entrepreneurship and entrepreneurial activity, but it has no effect on the consolidated entrepreneurship, ie, fears about the viability of the project can curb entrepreneurial initiatives. In this sense, it is important to take into account that the Spanish culture often punishes failure, unlike other cultures. Thus, the White Paper on Entrepreneurship in Spain (2011) states that "There is consensus that the culture of Spain does not support entrepreneurship. Although improved, it is still not enough, because of a lack of greater recognition, especially in areas such as social and scientific entrepreneurship. (...) Experts highlight progress in promoting the culture of SMEs, but not a more innovative entrepreneurial orientation. Moreover, in Spain it is believed that "someone" – Government, the Public Administration or community services - has to solve or respond to certain problems or situations, which reduces or eliminates the entrepreneur's role, which could well respond to such situations". It would necessary to minimize that fear of failure of potential entrepreneurial initiatives.

With regard to social capital, trust variable is important for potential entrepreneurship, and not significant in the other two types of entrepreneurship analyzed. The fact of meeting people who are entrepreneurs (social networking) is positive and significant for potential entrepreneurship and entrepreneurial activity, and not significant in the consolidated entrepreneurship. These results indicate the importance of having a good stock of social capital when starting entrepreneurial activities. The existence of a social network as support during the early-stage of entrepreneurial activity is important to carry out such activity. Examples of these social networks could be the so-called business incubators or entrepreneurial support networks, which exist in Spain. Thus, it would be necessary to promote the maintenance and development of these networks to strengthen entrepreneurship. Moreover, the trust on entrepreneurs, another variable of social capital, is important in potential entrepreneurship, that is, individuals overall believe that entrepreneurship is a good thing. It is therefore necessary to promote the idea of entrepreneurship as something attainable and design policies to support the survival of new projects. Such actions can be carried out through seminars, workshops or activities to inform about the resources (or social networks) that are available for entrepreneurs.

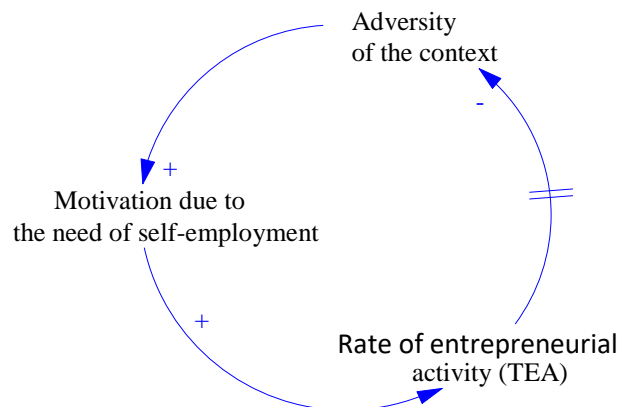
The results obtained in terms of regions are within expectations, taking as reference the Region of Madrid. So, there are negative values for potential entrepreneurship and entrepreneurial activity in almost every region, ie, there is less potential level of entrepreneurship in the region of reference, although few values are significant. Finally, the effects of the region for the consolidated entrepreneurship are the opposite. In the region of Madrid the degree of consolidation of companies is lower than in other regions, something that already pointed the descriptive statistics and now is confirmed by the econometric estimation. In order to analyze why this happens we would have to see what kind of entrepreneurial initiatives are those that are developed, if they are similar to those of other regions or not, etc., in order to assess the potential factors that condition this behavior, information that is not available today.

#### 4.2. Dynamic behavior of the entrepreneurial attitude

Considering the results previously presented, we raised a number of causal diagrams, following the methodology of System Dynamics (Stearman, 2000), that allow us a better understanding of the relationship between psychological factors, sociological and economic context and the total entrepreneurial activity rate (TEA). In the diagrams presented below, and according to the System Dynamics methodology, the positive sign (+) of the arrows indicates a direct relationship between related variables, while the negative sign (-) shows an inverse relationship between them. The double stripe on the arrow (/ /) indicates a time delay in the relationship between the variables indicated.

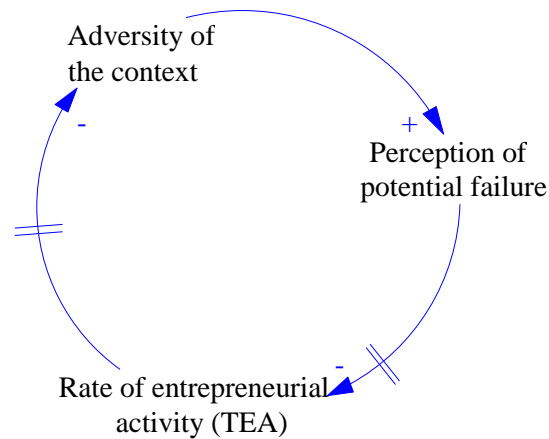
The first loop shows the relationship between the context, the entrepreneurial motivation and the TEA. The perception of a higher adversity of the context for entrepreneurship, measured through the individual's perception of a lesser market opportunities, increases the entrepreneurial motivation due to the need of self-employment (instead of the motivation due to the perception of market opportunities), and this motivation increases the rate of entrepreneurial activity (TEA). This situation, over time, will favour the capacity for being employed of these individuals, offering them new opportunities and reducing their perception of the adversity of context (Figure 2).

Figure 2. Loop 1. Dynamic of entrepreneurial motivation



However, this dynamic needs to be completed with other variables. According to the previous analysis, the adversity of the context also increases the entrepreneur's perception of a potential failure, and this may affect the abandonment of entrepreneurs, thereby reducing the future rate of entrepreneurial activity (Figure 3).

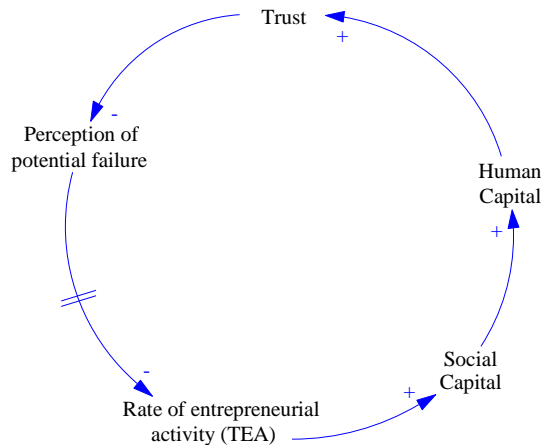
Figure 3. Loop 2. Dynamic effect of the failure perception



The dual effect of the context on entrepreneurial activity adds complexity to the problem, which leads us to analyze in a third loop how trust to possess knowledge and skills (human capital) or a social network of alliances (social capital) can affect the entrepreneurial activity.

As we check previously in the empirical analysis, the capital increase strengthens the perception of entrepreneurs of owning enough knowledge and skills to start a business (human capital), which increases the confidence to create a new business, and it also reduces their perception of potential failure. The increase of the TEA results the increase in the number of new companies, and this increases the set of relationships among organizations (social capital) (Figure 4).

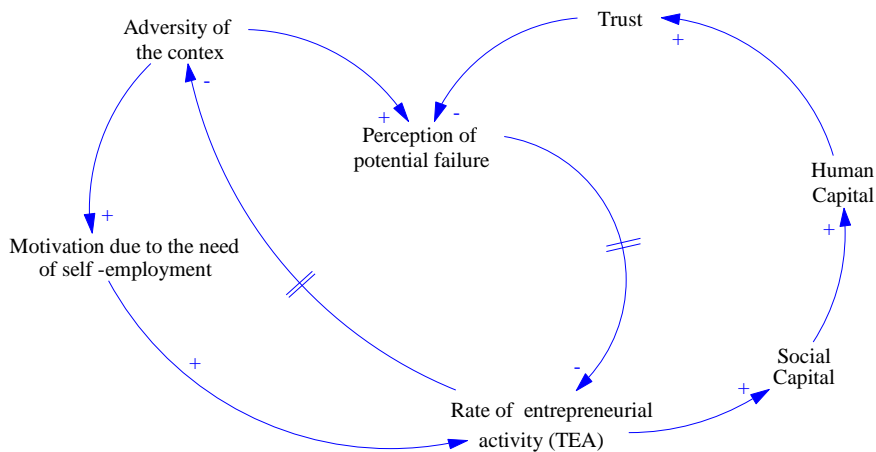
Figure 4. Loop 3. Dynamic effect of trust in entrepreneurship



Finally, we present the global causal diagram explaining the relationship between the variables set as follows (Figure 5).

De manera global, podemos presentar el diagrama causal que explica la relación entre las variables expuestas de la siguiente forma (Gráfico 5).

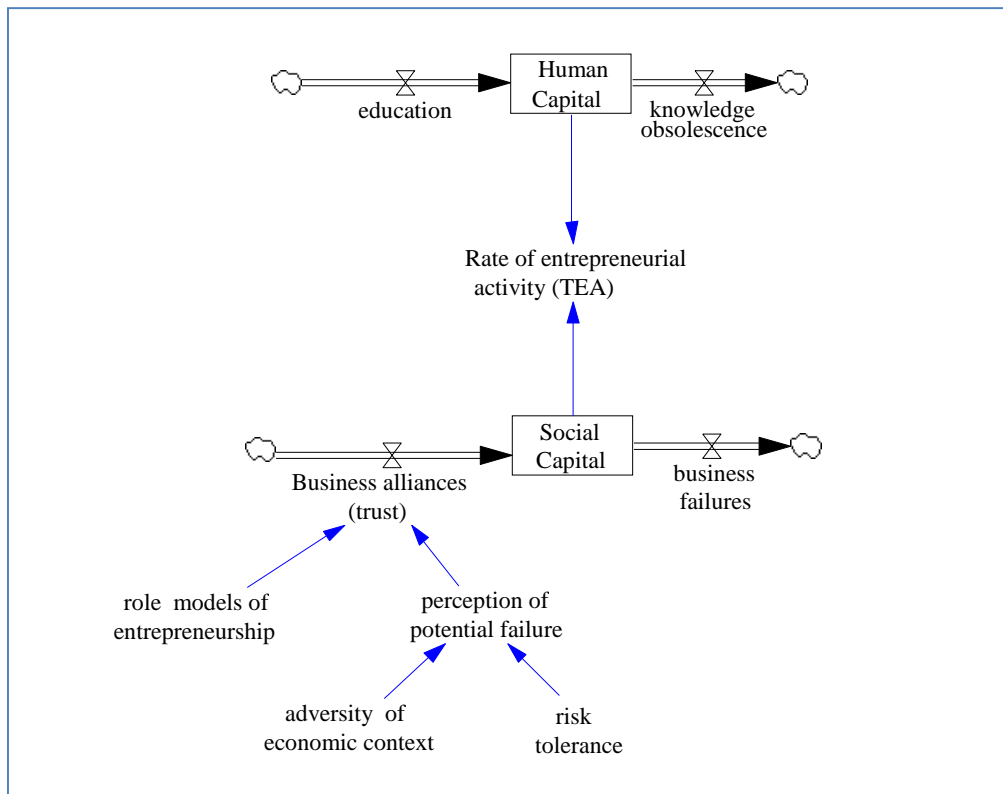
Figure 5. Loop 4. Causal diagram of entrepreneurial willingness



From a dynamic approach, and considering the causal diagram above, we have designed a flow diagram (according to the systems dynamics methodology) that identifies how the stocks of human capital and social capital influence the rate of entrepreneurial activity (TEA). This will let us analyze the influence of the variables in the future (Figure 6).



**Figure 6. Entrepreneurial dynamic based on human and social capital**



The model was designed in order to measure in the future the effect that greater investment in education could have on human capital accumulation available for the entrepreneur, taking into account that the obsolescence of this knowledge will reduce this stock. On the other hand, the existence of successful role models entrepreneurship as reference, and a lower perception of potential failure will increase alliances with other organizations, and this will increase the stock of social capital, which may be reduced, in turn, due to an increase of failures in those agreements.

Thus, this model allows to analyze the joint effect of the stock of human capital and social capital in the rate of entrepreneurial activity (TEA), supporting the decision process of government in guiding the stimulus measures in favour of entrepreneurship, final goal of this paper.

## 5. CONCLUSIONS

The aim of this study was presented as an analysis of the way of psychological factors influences the entrepreneurial decision. A logit model was estimated using data from the GEM project in 2011 for 16 Spanish regions. The model was proposed to analyze both potential entrepreneurship as entrepreneurial activity and the consolidated entrepreneurship, following the GEM methodology.

The main results obtained from the estimation of the model were the following:

- Social trust on entrepreneurs has proved to be important for potential entrepreneurship, so if the social perception of entrepreneurship as a career option is improved, it could favour the likelihood of an increase of potential entrepreneurs. However, it should be noted that this variable has not been significant on emerging entrepreneurial activity or the consolidated entrepreneurship, that is, once the entrepreneur has started the business, social trust ceases to have a relevant impact in the decision.
- Another of the variables used to analyze the influence of social capital has been whether the entrepreneur knows other entrepreneurs. In this case, the influence of this variable has shown as positive and significant in the case of potential entrepreneurship and nascent entrepreneurial activity. That is, the knowledge of other entrepreneurs increases the likelihood of creating new businesses within a period of three years since entrepreneur took the decision of set up a new company.
- Being a woman seems to adversely affect the consolidated entrepreneurship but however, it does not have a negative effect in the initial stages of the business creation (when the relationship between gender and entrepreneurship turns out to be not significant).
- As noted by other studies, it appears that the older are entrepreneurs, the lower is their potential and nascent entrepreneurial capacity but instead, an older age level enhances consolidated entrepreneurship.
- Other variables with positive effects on potential entrepreneurship are those related with the job status of the individual. Working part time or not working (entrepreneurship motivation due to the need of self-employment), are also variables that have no effect on other types of entrepreneurship.
- Having a secondary or higher education level is significant only in the case of consolidated entrepreneurship and its effect is slightly negative. In this case, although numerous studies find a positive relation between education and entrepreneurship, they usually only consider specific training to set up a business.
- Other variables that have influence in the early stages of the entrepreneurial process (potential entrepreneurship and entrepreneurial activity) were the perception of market opportunities to run a new business, perception of having the skills (both positive and significant effect) or the fear of failure (negative influence).

From the dynamic approach proposed, we analyzed the interactions between psychological, sociological and entrepreneurial context factors and the rate of the entrepreneurial activity, and designed a causal analysis of the entrepreneurial dynamic. Thus, we obtained a better understanding of the following issues:

- The rate of entrepreneurial activity can be increased by reducing the adversity of the environment or increasing the entrepreneurial motivation due to the need of self-employment.
- In turn, adversity of the context may increase the perception of potential failure, which may increase the abandonment of business initiatives, and thereby reduce the rate of entrepreneurial activity.
- An increase of social capital reinforces the perception of entrepreneurs of having enough knowledge and skills to start a business, also increasing the trust (business alliances) and reducing the perception of potential failure. So, the increase of the rate of nascent entrepreneurship will also cause an increase in the number of new businesses,

enhancing the set of relationships between organizations, or what is the same, its stock of social capital.

As final conclusion, the empirical results have enabled the development of a conceptual model that explains some entrepreneurial dynamics, despite being aware of the limitations that the lack of psychological data imposes to the time of delving into this model in more detail.

To sum up, this analysis allows us to make the following policy recommendations in order to support a positive entrepreneurial dynamic:

#### Recommendations:

The influence of variables related with social capital shows the importance of the social recognition of entrepreneurs to maintain a positive entrepreneurial dynamic, so it is very important the dissemination of best practices in local entrepreneurship, not only in the actions of dissemination of entrepreneurial culture but also to the overall society, and in this last case the media must play a key role. These actions are also important as tools to reduce the fear of failure, especially when entrepreneurs share the problems they had to face since the time of launching of the idea, and the solutions that were adopted in the process of business creation.

The existence of social networks is another variable that has shown a significant influence in the entrepreneurial decision. In this sense, the existence of incubators, and the organization of networking activities among entrepreneurs and events where entrepreneurs can share their projects are essential to create and consolidate networks where entrepreneurial activity can be increased and supported.

Finally, the positive influence of the variable perception of market opportunities in the entrepreneurial decision makes relevant to raise the development of a resource base to let potential entrepreneurs identify innovative ideas and potential market niches. Banks of projects, the brainstorming of new trends in innovation and the feasibility assessment of entrepreneurial ideas are key issues, from our point of view, to improve both the likelihood of potential entrepreneurship as the entrepreneurial activity.

The analysis of the Spanish entrepreneurial attitude in relation to the other countries involved in the project is discussed in GEM Report (2011, p. 75), and it concludes that the variables fear of failure and perception of market opportunities has values for Spain very far from the countries of our natural context. And this is relevant, because both aspects are key issues through the entrepreneurial process. To sum up, the change of cultural preferences, so that the population be able to perceive the market opportunities, as it happens in countries with long experience in this field, and reduce the fear of failure, constitute two of the social values to support in order to achieve foster entrepreneurship in Spanish regions.

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## ANNEXES

## Anex I. Explanatory Variables Descriptive Statistics.

Explanatory Variables		Mean	Standard Deviation	Min.	Max.
<b>SOCIO-ECONOMIC</b>					
<b>Gender</b>	<b>Male (0)</b>	0,506	0,500	0	1
	<b>Female (1)</b>	0,494	0,500	0	1
<b>Age</b>	<b>18-24 (0)</b>	0,101	0,301	0	1
	<b>25-34 (1)</b>	0,247	0,431	0	1
	<b>35-44 (2)</b>	0,259	0,438	0	1
	<b>45-54 (3)</b>	0,221	0,415	0	1
	<b>55-64 (4)</b>	0,173	0,378	0	1
<b>Education Level</b>	<b>Primary (0)</b>	0,359	0,480	0	1
	<b>Secondary (1)</b>	0,333	0,471	0	1
	<b>Higher (2)</b>	0,308	0,462	0	1
<b>Job Status</b>	<b>Full-time job (0)</b>	0,381	0,486	0	1
	<b>Part-time job (1)</b>	0,084	0,278	0	1
	<b>Retired, disabled (2)</b>	0,065	0,247	0	1
	<b>Housework (3)</b>	0,081	0,273	0	1
	<b>Student (4)</b>	0,074	0,262	0	1
	<b>Unemployed, other (5)</b>	0,165	0,372	0	1
	<b>Self-employed(6)</b>	0,149	0,356	0	1
<b>Income level</b>	<b>Until 10.000 € (0)</b>	0,168	0,374	0	1
	<b>10.001€-20.000€ (1)</b>	0,309	0,462	0	1
	<b>20.001€-30.000€ (2)</b>	0,239	0,426	0	1
	<b>30.001€-40.000€ (3)</b>	0,132	0,339	0	1
	<b>40.001€-60.000€ (4)</b>	0,099	0,299	0	1
	<b>60.001€-100.000€ (5)</b>	0,040	0,196	0	1
	<b>Above than 100.000€ (6)</b>	0,013	0,111	0	1
<b>PERCEPTION</b>					
<b>Opportunity</b>	<b>No (0)</b>	0,854	0,353	0	1
	<b>Yes (1)</b>	0,146	0,353	0	1
<b>Skills</b>	<b>No (0)</b>	0,492	0,500	0	1
	<b>Yes (1)</b>	0,508	0,500	0	1
<b>Failure</b>	<b>No (0)</b>	0,493	0,500	0	1
	<b>Yes (1)</b>	0,507	0,500	0	1
<b>SOCIAL CAPITAL</b>					
<b>Trust</b>					
<b>Entrepreneurship</b>	<b>No (0)</b>	0,334	0,472	0	1
	<b>Yes (1)</b>	0,666	0,472	0	1
<b>Networking</b>					
<b>Social networking</b>	<b>No (0)</b>	0,719	0,450		
	<b>Yes (1)</b>	0,281	0,450	0	1
<b>REGION</b>					
<b>Regions</b>	<b>Madrid (0)</b>	0,114	0,318	0	1
	<b>Andalusia (1)</b>	0,029	0,167	0	1
	<b>Aragón (2)</b>	0,057	0,232	0	1



Explanatory Variables	Mean	Standard Deviation	Min.	Max.
Asturias (3)	0,011	0,106	0	1
Balearic Islands (4)	0,011	0,106	0	1
Canary Islands (5)	0,057	0,232	0	1
Cantabria (6)	0,057	0,232	0	1
Castilla y León (7)	0,011	0,106	0	1
Castilla La Mancha (8)	0,011	0,106	0	1
Catalonia (9)	0,114	0,318	0	1
Valenciana (10)	0,114	0,318	0	1
Extremadura (11)	0,057	0,232	0	1
Galicia (12)	0,114	0,318	0	1
Murcia (13)	0,057	0,232	0	1
Navarra (14)	0,057	0,232	0	1
Vasque Country (15)	0,114	0,318	0	1
La Rioja (16)	0,011	0,106	0	1

## Anex II. Estimation results.

	Potential entrepreneurship	Entrepreneurial Activity	Consolidated Entrepreneurship
Woman (1)	-0,0116	-0,0007	-0,0098**
25-34 (1)	-0,0353**	-0,0377**	0,0125
35-44 (2)	-0,0432**	-0,0432***	0,0505***
45-54 (3)	-0,0734***	-0,0677***	0,0640***
55-64 (4)	-0,1141***	-0,0861***	0,0758***
Secondary education (1)	0,0033	0,0121**	-0,0084
Higher education (2)	-0,0017	0,0193***	-0,0131**
Part-time job (1)	0,0465***	0,0103	-0,0034
Retired, disabled (2)	-0,0643***	-0,0260***	-0,0090***
Housework (3)	-0,0236	-0,0119	-0,0116***
Student (4)	0,0200	-0,0178***	-0,0046
Unemployed, other (5)	0,0737***	0,0205***	-0,0055
Self-employed (6)	0,0030	0,1481***	0,4583***
10.001€-20.000€ (1)	-0,0098	-0,0194**	0,0085
20.001€-30.000€ (2)	-0,0210	-0,0168	0,0164**
30.001€-40.000€ (3)	-0,0289**	-0,0280***	0,0260***
40.001€-60.000€ (4)	0,0008	-0,0154	0,0254***
60.001€-100.000€ (5)	0,0224	-0,0198	0,0313***
Above than 100.000€ (6)	0,0455	0,0243	0,0351**
Opportunity	0,0933***	0,0408***	0,0013
Skills	0,1029***	0,0537***	0,0365***
Failure	-0,0319***	-0,0217***	0,0059
Trust			
Entrepreneurship	0,0181***	-0,0052	-0,0032
Social networks	0,0583***	0,0456***	-0,0197
Andalucía (1)	-0,0376	-0,0205	0,0147

Aragón (2)	-0,0417**	-0,0333***	0,0286***
Asturias (3)	-0,0564	-0,0566***	0,0616***
Baleary Islands (4)	-0,0076	-0,0539***	0,0327
Canary Islands (5)	-0,0114	-0,0119	0,0037
Cantabria (6)	-0,0275	-0,0374***	0,0449***
Castilla y León (7)	-0,0479	0,0355	0,0526**
Castilla La Mancha (8)	0,0089	-0,0129	0,0512***
Catalonia (9)	-0,0271	-0,0080	0,0109
Valencia (10)	-0,0288**	-0,0199	0,0224**
Extremadura (11)	-0,0486***	-0,0269**	0,0363***
Galicia (12)	-0,0109	-0,0158	0,0224**
Murcia (13)	0,0073	0,0128	0,0178
Navarra (14)	-0,0177	-0,0078	0,0299**
Vasque Country (15)	-0,0366**	-0,0393***	0,0284***
La Rioja (16)	-0,0872***	-0,0670***	-0,0187
N	8.536	8.728	8.728
Pseudo-R <sup>2</sup>	0,1395	0,2490	0,5783