Chapter 1
Entrepreneurship and Innovation in a Context of Crisis

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Abstract There is no consensus in the literature on the effects of an economic crisis on entrepreneurial activity. Some authors consider that situations of weak growth, recession, or stagnation may favor discovery of opportunities and innovation; whereas others claim that economic slowdowns have a negative effect on entrepreneurial attitude, reducing discovery of opportunities and investment in innovation. This chapter, by relating entrepreneurs with their experience, specific business management skills and knowledge, their innovation practices, attitude, and perception of opportunities, postulates that entrepreneurs with these characteristics and practices, embodying entrepreneurship in the fullest sense, will maintain an entrepreneurial attitude in situations of economic crisis. The study is based on Global Entrepreneurship Monitor data which show a positive, significant relationship between this type of entrepreneur and entrepreneurial performance during the economic crisis.

1.1 Introduction

Based on data from the Global Entrepreneurship Monitor (GEM) 2009, obtained in a context of economic crisis in Spain, this research seeks to establish whether entrepreneurs, that are characterized by the recognition of opportunities and innovation initiatives, maintain an attitude of entrepreneurial orientation in a situation of stagnation or weak growth of the economy.

There is no consensus in the literature on the effects of the economic crisis on entrepreneurial activities. For some authors such as Filippetti and Archibugi (2010) situations of weak growth, recession, or stagnation of GDP may promote discovery

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and innovation opportunities, while for others the economic slowdown adversely affects entrepreneurship, reducing opportunity discovery and innovation investment (Klapper and Love 2011). In a broad conception of entrepreneurs (Wennekers et al. 2005), it seems clear that the destruction of industry, typical of a slowdown or drop in GPD, implies a decrease in the number of entrepreneurs or in their activity. But this empirical finding concerns all the entrepreneurs that form the economic basis of a country, and does not distinguish how the canonical characteristics of entrepreneurs can moderate this general slowdown in entrepreneurial activity.

Thus, discovery of opportunities for certain entrepreneurs in an economic crisis is not incompatible with less entrepreneurial activity. It depends on the concept of entrepreneur (and the type of entrepreneur) we are considering. Entrepreneurs with a strong entrepreneurial profile with specific business management knowledge and skills, an ability to detect opportunities, and a willingness to introduce innovation practices are expected to maintain their entrepreneurial attitude and expectations of growth even in an economic crisis.

This is the core of this investigation, in which the main objective is to determine whether, in times of crisis, entrepreneurs with a strong entrepreneurial profile find more difficulties in starting a business or if they have better or worse expectations of business growth. In other words, this research studies whether entrepreneurs with a clear profile of entrepreneurship, as noted in the previous paragraph, maintain their entrepreneurial orientation in times of economic crisis.

The structure of this work is as follows. The next section provides the theoretical framework and the hypotheses, developing the two basic characteristics of entrepreneurship: intuition, willingness or ability to discover opportunities, and capacity to create those opportunities. We then discuss the empirical methodology employed, present the empirical study, and finally we discuss the results, highlighting the contributions, limitations, and future research of the work.

1.2 Theoretical Framework and Hypotheses

Some of the literature on entrepreneurship has identified the individual or social characteristics that characterize the entrepreneur, including desire for personal fulfillment, need for power and wealth, desire for independence and autonomy, and improvement of the cultural and social status of the family. But the most important individual characteristics that place entrepreneurial behavior within the entrepreneurship function are related to the entrepreneur's natural tendency to be open to the environment and external challenges, willingness to take risks, cognitive abilities, and creativity (Baum and Bird 2010; Cuervo 2005). These characteristics are linked to the ability to discover opportunities, as a fundamental aspect of entrepreneurship.

For Shane and Venkataraman (2000) and Shane (2012), this is the specific research field of entrepreneurship, from which scholars can make contributions to the field of management. In the words of Shane and Venkataraman (2000: 218) what characterizes the economic entrepreneurship is "the study of sources of Opportunities,

the Processes of discovery, evaluation, and exploitation of Opportunities, and the set of Individuals who discover, Evaluate, and exploit them." Consequently, the authors say (Ibid: 218), "we define the field of entrepreneurship as the scholarship examination of how, by whom, and with what effects opportunities to create future goods and services are discovered, evaluated, and exploited." This concept of entrepreneurship, with different variants, is developed by many other authors (Cuervo 2005; Shane et al. 2003).

In line with this approach, which emphasizes the ability to discover opportunities as the fundamental characteristic of entrepreneurship, we formulate the following hypothesis:

H1

Opportunity recognition ability increases entrepreneurship in a context of economic crisis.

The article by Shane and Venkataraman, however, opens the door to broader considerations about entrepreneurship. Economic entrepreneurship is characterized by "the discovery and exploitation of profitable opportunities" (Shane and Venkataraman 2000: 217), and the "new means-ends relationship" (Ibid: 220) or new combinations of factors (Schumpeter 1934). That is, the entrepreneur has to discover the opportunity, but must also organize the productive means to exploit it.

This link between discovery and exploitation of opportunities introduces the concept of corporate entrepreneur in economic entrepreneurship. Corporate entrepreneurs, thanks to the knowledge and experience gained from the relationship with their company and industry, discover opportunities and implement their exploitation or introduce organizational innovations and means-ends relations (Hayton 2005; Lounsbury and Glynn 2001). For entrepreneurs in this corporate context, the most relevant personal characteristics are the feeling of being the author of the improved results, obsession with things that are considered important, and a tendency to develop charisma or leadership (Baum and Bird 2010; Cuervo 2005).

So what characterizes entrepreneurship is not only the discovery of opportunities through innate or socially acquired conditions of individual entrepreneurs, it is also their ability to create new opportunities, manage, and implement different combinations of factors (Schumpeter 1934). These factors involve new combinations of innovative technologies, products, services, and markets, which lead us to formulate the second hypothesis of this research:

H2

The practice of innovation in technologies, products, and services increases entrepreneurship in a context of economic crisis.

In addition to the factors expressed in our two first hypotheses, knowledge and skills to start a business are considered essential in the entrepreneurship literature and research, both as individual characteristics of entrepreneurs and as a key element in the discovery of opportunities in the field of corporate entrepreneurs. Experience

and knowledge improves intuition (Kirby 2003) and facilitates the discovery or identification of opportunities. Furthermore, the corporate entrepreneur's decision to start a new entrepreneurial activity is based on past experiences and knowledge that assure the desirability and feasibility of the activity (Krueger 2000, 2007).

So the experience, knowledge, and skills acquired to undertake a new business or develop a new opportunity are relevant factors to be considered. Consequently, we formulate the third hypothesis of this research:

H3

The entrepreneur's experience, skills, and knowledge required for setting up a business increase entrepreneurship in a context of economic crisis.

In this study the dependent variable in all the hypotheses is the extent of entrepreneurship in a context of economic crisis. Here it is important to define the concept of entrepreneurship and how it is to be operationalized. Entrepreneurship here is defined as a result of the final stage in the entrepreneurial function, that is, the entrepreneur's expectation of starting a new business or growing a current business.

As already noted, there is no consensus in the literature on the effects of an economic crisis on entrepreneurial activities. The crisis may encourage discovery of innovation and opportunities for entrepreneurs with a strong entrepreneurial profile, and, in contrast, may slow entrepreneurial action for those who are less able to discover opportunities, have less knowledge or skills to create the opportunity, or more risk aversion. The outcome will depend on a reality not present in previous studies: the entrepreneurship of Spanish entrepreneurs.

The empirical research presented below, within the limitations of the data available in the GEM survey, attempts to confirm the above hypotheses.

1.3 Methodology

1.3.1 Sample and Data

We used a secondary data source to test our hypotheses. The database selected was the "Individual level data GEM 2009 APS Global" from the Global Entrepreneurship Research Association (GERA). The GEM project is an annual assessment of the entrepreneurial activity, aspirations, and attitudes of individuals across a wide range of countries. This GEM initiative was initiated in 1999 as a partnership between London Business School and Babson College.

The year selected from the database for carrying out our study was 2009, and the analysis was focused on Spain. In this year, Spain was immersed in an economic recession, closing the year with an unemployment rate of 18.8 %. Spain has had the highest unemployment rate in the OECD since 2009. The GDP suffered a decline of 3.6 % and Spain's fiscal deficit was 11.2 % of GDP by the end of the year. Greater

job instability also led to a decline in consumption, with a 1.5 % decline in the second quarter, although it moderated its decline in the third and fourth quarter.

Four hundred and eighty seven cases were selected from the GEM database where the indicators form our variables. All the considered indicators were fulfilled in 206 cases. We were concerned about the possible self-selection bias but no differences were found between the sample selected and the whole sample in the indicators considered.

1.3.2 Measures

The indicators selected from the GEM database for measuring our variables are shown in the Appendix. For the "Innovation" variable we considered three binary items (see Appendix) regarding innovation in technology and products. Due to the clearly different components of the innovations considered, this scale is conceptualized as a formative scale (Podsakoff et al. 2006), and we added these three indicators to form the "Innovation" variable.

The "Experience and Skill" variable was also formed by adding two binary indicators ("suskill" and "suskilyy", see Appendix). The "Opportunity Recognition" variable was also formed by adding two binary items, one about local opportunity recognition ("opport" indicator) and the other about general opportunity recognition ("opportyy" indicator, see Appendix).

Although entrepreneurship is a latent construct, according to Covin and Wales (2012), there are several perfectly valid measurement options for its operationalization if they are consistent with the entrepreneurship conceptualization. We can find in the literature different strategies, unidimensional vs. multidimensional entrepreneurship measurement models, as well as formative versus reflective scales. In our study, we consider two different aspects to be included in the entrepreneurship conceptualization, the expectation of growth of the present business, compared to one year ago, and the possibility of starting a new one. In order to include these aspects in the entrepreneurship scale, and constrained by the use of a secondary data source, we measured entrepreneurship as the addition of the indicators "sugrow" and "sustart" (see Appendix), both of them measured in the GEM database on a five-point Likert scale.

1.3.3 Control Variables

We controlled for three variables that could potentially affect entrepreneurship: gender, age, and education. Gender is measure with a binary index (1 = male; 2 = female). Gender can influence important factors in entrepreneurship such as the need for self-realization, unemployment, or career dissatisfaction (Arenius and Minniti 2005; Marques et al. 2011). Age is an essential control variable to be

Table 1.1 Means and standard deviations

	N	Min	Max	Mean	S.D.
Gender	487	1	2	1.34	0.476
Age	486	18	64	38.39	10.07
Education	485	0	6	3.82	1.27
Experience and skills	242	0.00	2.00	1.8760	0.48
Innovation	467	0.00	3.00	1.1820	0.93
Opportunity recognition	221	0.00	2.00	0.90	1.00
Entrepreneurship	481	2.00	10.00	4.64	2.15

Table 1.2 Correlations

	1	2	3	4	5	6
1. Gender						
2. Age	–0.079					
3. Education	0.026	–0.005				
4. Experience and skills	–0.096	0.064	0.138*			
5. Innovation	–0.007	–0.033	0.087	–0.007		
6. Opportunity recognition	–0.091	–0.042	0.050	0.071	0.017	
7. Entrepreneurship	–0.043	–0.064	0.102*	–0.034	0.176**	0.255**

*$P<0.05$; **$P<0.01$

considered when dealing with a subjective scale since nascent entrepreneurs could rely significantly on subjective and often biased perceptions rather than on objective expectations of success (Arenius and Minniti 2005). Finally, education is an important factor in opportunity recognition (van der Sluis et al. 2005) and can be strongly correlated with experience and skill. We measure education with the GEM indicator "harmonized educational attainment" with 8 possible levels (0 = pre-primary education; 1 = primary education or first stage of basic education; 2 = lower secondary or second stage of basic education; 3 = lower secondary or second stage of basic education; 4 = upper secondary education; 5 = post-secondary non-tertiary education; 6 = first stage of tertiary education; 7 = second stage of tertiary education).

Table 1.1 shows the means, standard deviations, maximums, and minimums of the study variables. Table 1.2 shows the correlations about the degree of agreement or disagreement with each component using a five-point Likert scale (1 = strongly disagree, 5 = strongly agree).

1.4 Results

We conducted hierarchical regression analyses in order to evaluate the hypotheses. In all the models (Table 1.3) entrepreneurship was the dependent variable. In Model 1 (Table 1.3) we tested the influence of the control variables first by regressing entrepreneurship on the three control variables. None of the regression coefficients were statistically significant ($p<0.05$). Nevertheless, age was significant at a

Table 1.3 Stepwise regression

	Independent variables	Model 1	Model 2	Model 3	Model 4
C.V:	1. Gender	0.042	0.039	0.054	0.070
	2. Age	–0.099	–0.098	–0.091	–0.079
	3. Education	0.118	0.121	0.108	0.097
	4. Experience and skills		–0.024	–0.013	–0.032
	5. Innovation			0.202**	0.203**
	6. Opportunity recognition				0.232***
	F	1.639	1.253	2.761*	4.409***
	Adjusted R2	0.009	0.005	0.041	0.091
	Change in R2		0.115	8.604*	11.895*

The dependent variable in all the models is "Entrepreneurship." Table entries are standardized regression coefficients

*$p<0.05$; **$p<0.01$; ***$p<0.001$; $N=206$

$p=0.094$. All the control variables were kept in the rest of the models despite their low influence on the dependent variable.

In Model 2, the "Experience and Skills" variable was introduced in the regression model with no significant results. Besides, its effect overlaps with the education control variable, already expected because of their high correlation (see Table 1.2).

In Model 3, the explanatory variable "innovation" was introduced. Its standardized coefficient is significant at $p<0.01$ and the change in R2 of Model 3 in relation to Model 2 is significant at $p<0.05$, although the adjusted R2 of Model 3 remains still low (0.04).

Finally, in Model 4, the "opportunity recognition" variable was introduced. Its standardized coefficient is significant at $p<0.001$, and the F of the model is significant at $p<0.001$ and the change of R2 in relation to Model 3 is significant at $p<0.05$. The "innovation" variable in Model 4 remains significant at $p<0.05$. The adjusted R2 of Model 4 is 0.091, with the final model explaining 10 % of the variance of the dependent variable "entrepreneurship."

1.5 Discussion and Conclusions

The issue of whether entrepreneurial activity slows down or is reinforced in times of economic crisis has not been resolved in the entrepreneurship literature. If we unite the concept of entrepreneur to the creation or destruction of the business structure, characteristics of economic booms, and depressions, the obvious quantitative result is that entrepreneurship declines with the crisis. However, if we refer to entrepreneurs who fully embody the characteristics of entrepreneurship (not directly quantifiable latent variable) empirical studies are scarce and therefore the issue is still open to debate. In this study the latent variable entrepreneur is identified by the independent variables acquired experience and knowledge for starting a business, practice in technology or product innovation, and ability to recognize opportunities.

The general hypothesis of this study, summarized in the three hypotheses, is that a strong entrepreneurial profile (acquired experience and knowledge to start a business, practice in technological or product innovation, and capacity to recognize opportunities) is associated to entrepreneurial expectation, which entrepreneurs maintain during an economic crisis (2009, Spain). If this is fulfilled, we will show that entrepreneurs with relevant entrepreneurship characteristics are significantly related to entrepreneurial activities during an economic crisis or at least have greater entrepreneurial expectation than other entrepreneurs, whatever may happen quantitatively with the business structure and entrepreneurs in general. In the study sample, the empirical findings indicate that for entrepreneurs with a strong profile according to the studied characteristics, the economic crisis has brought about a statistically significant difference in their entrepreneurial activity in relation to the mean. Therefore, they have more expectations of starting new businesses or of obtaining greater growth than entrepreneurs with a weak profile.

These results are, however, more marked according to the characteristic analyzed. Thus, experience and skills (H3) have hardly any influence on improved entrepreneurial expectations after a year of crisis and this low influence (the correlation with entrepreneurship is significant at $p<0.05$, see Table 1.2) is completely masked by the control variable education (see Model 2, Table 1.3). However, the regression coefficients in Table 1.3 (Model 4), for Innovation (0.203; $p^{**}<0.01$) and opportunity recognition (0.232; $p^{***}<0.001$), indicate a positive and significant relationship between these characteristics of entrepreneurs and their entrepreneurial performance during the economic crisis, thereby corroborating hypotheses H2 and H1. Hypothesis H3, corresponding to acquired experiences, skills, and knowledge for starting a business, is not significant (Table 1.3, Model 4), contravening the logic of the study on this point. However, as regards the significant variables innovation and opportunity recognition, the level of variance explained by the model is 10 %, a very significant value taking into account the many variables that influence expectations of growth in a given business or the possibility of creating a new one outside the entrepreneurial function.

The information in the independent variables in this study, based on binary items, may not have enabled sufficiently accurate comparison of entrepreneurs with higher scores in experience and knowledge, technological and product innovation, or recognition of opportunities.

A first conclusion of this work is that the latent variable defined in the theoretical framework, the entrepreneur with a clear entrepreneurship profile, is an important object of study, which would allow a distinction between two types of entrepreneurs. A second conclusion is that the empirical study confirms a positive significant relationship between entrepreneurs with the characteristic features of entrepreneurship and their entrepreneurial activity in times of crisis, which is particularly significant bearing in mind the complexity of the explained variable.

Consequently, in future studies, the authors will extend this study to an international context, enlarging the database in order to compare more accurately the degree of significance between entrepreneurs' entrepreneurial characteristics and their behavior in unfavorable or adverse economic situations.

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Appendix

GEM indicator	Variables and indicators	Range
Control variables		
gender	What is your gender?	1–2
age	What is your current age (in years)	18–99
uneduc	Unharmonized educational attainment	0–7
Experience and skills		
suskill	You have the knowledge, skill, and experience required to start a new business	0–1
suskilyy	Has the required knowledge/skills to start a business	0–1
Innovation		
teayyntc	New technology	0–1
teanpmwk	New product or limited competition	0–1
teayynwp	Product is new to all or some customers	0–1
Opportunity recognition		
opport	In the next six months there will be good opportunities for starting a business in the area where you live	0–1
opportyy	Sees good opportunities for starting a business in the next 6 months	0–1
Business growth expectancies		
sugrow	Compared to one year ago, your expectations for growth are now…	1–5
sustart	Compared to one year ago, starting a business now is…	1–5

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