Small Bus Econ (2016) 47:835–851
DOI 10.1007/s11187-016-9738-5

# Entrepreneurship and strategies for economic development

**Salustiano Martínez-Fierro · José María Biedma-Ferrer · José Ruiz-Navarro**

Accepted: 18 April 2016 / Published online: 2 May 2016


**Abstract** In this work, we analyse the characteristics of the entrepreneurial environment and examine whether a relation exists between these characteristics and the country's stage of economic development. For this purpose, we use the national experts' opinions from the Global Entrepreneurship Monitor Project. We aim to identify whether the experts' opinions are in line with the different stages of economic development, or more specifically, whether we can see patterns in their opinions that reflect the different stages in the entrepreneurial environment of countries. If this proves to be the case, the information provided by the national experts in terms of facilitators of, and obstacles to, entrepreneurship and their recommendations for boosting entrepreneurial activity, would be useful to national governments in the design of entrepreneurial policies to help the country to move up to a higher stage of economic development. We use data from the survey of 1259 GEM project national experts from the 67 countries that participated in 2013. Our results confirm the existence of patterns that could be useful for policymakers dealing with entrepreneurship.

S. Martínez-Fierro · J. M. Biedma-Ferrer (✉)
Department of Management, University of Cadiz, Avda. de la Universidad, 4, 11408 Jerez de la Frontera, Cádiz, Spain
e-mail: josemaria.biedma@uca.es

J. Ruiz-Navarro
Department of Management, University of Cadiz, Duque de Nájera, 8, 11002 Cádiz, Spain

**Keywords** Entrepreneurship · Entrepreneurial environment · Economic development · GEM · NES

**JEL Classifications** L26 · O5 · O57

## 1 Introduction

The impact of entrepreneurship on the economic growth of countries has been analysed from a large number of perspectives (Audretsch and Keilbach 2004, 2008; Acs and Varga 2005; van Stel et al. 2005; Wong et al. 2005; Galindo et al. 2010). The literature on entrepreneurship has studied this relation, which has become one of the main lines of research in this field (Serrano et al. 2014). Moreover, entrepreneurial activity responds to different environmental conditions related to the country's level of competitiveness (Amorós et al. 2012). Most of the work published on these topics focuses on a comparison of the impact of entrepreneurship between countries (Audretsch and Peña-Legazcue 2012), or on identifying the entrepreneurial conditions of the entrepreneur (Acs et al. 2013). But fewer studies start out from the environmental conditions in an attempt to classify countries according to their stage of development (Coduras and Autio 2013). The current work follows this approach. In view of this gap in the literature, our work analyses how the characteristics of the

entrepreneurial environment of countries vary in function of their stage of economic development. Thus, our aim is to group the experts' opinions by stage of economic development and examine their utility for the design of strategies for economic development. More specifically, we aim to determine whether we can see patterns in their opinions that reflect the different stages in the entrepreneurial environment of the countries. If this proves to be the case, the information provided by the experts in terms of facilitators of, and obstacles to, entrepreneurship and their recommendations for boosting entrepreneurial activity, would be useful to national governments in the design of entrepreneurial policies to help the country to move up to a higher stage of economic development.

To carry out this work, we used the data from the GEM[1] (Global Entrepreneurship Monitor) Project's National Experts Survey (NES) from the 67 countries participating in 2013, exploiting the explanatory power of this qualitative information (Coduras and Autio 2013). In total, we have responses from 1259 experts. As antecedents of the current work, a number of authors have noted the scarcity of empirical studies using these experts' opinions—only 5 % according to Álvarez and Urbano (2011), for whom the data from this source are a research opportunity to exploit.

Our results show that in the opinions of the experts consulted there is a pattern of behaviour in the characteristics of entrepreneurship in the different stages of economic development. This information, in terms of facilitators of, and obstacles to, entrepreneurship and the experts' recommendations in each stage, could be used by the authorities to design strategies to help the country to move up to a higher stage of economic development.

The rest of this work is structured as follows. In the next section, we analyse the relation between economic development, competitiveness and entrepreneurship. The third section looks at the entrepreneurial environment, and the fourth describes the methodology used. The results follow, and the work ends with a discussion of the results and finally the main conclusions of this research.

[1] See www.gemconsortium.org for more information on the GEM Project.

## 2 Economic development and entrepreneurship

The relation between entrepreneurship and economic growth has been of interest to researchers since the mid-1990s (Sternberg and Wennekers 2005). Much has been studied about both areas (Acs and Storey 2004; Fritsch 2008; Audretsch and Peña-Legazcue 2012), and considerable debate exists about entrepreneurship's real impact on a country's economic development and competitiveness (Acs and Storey 2004; van Stel et al. 2005; Acs and Amorós 2008; Amorós et al. 2012). Other studies find evidence that entrepreneurship's impact on economic development differs between regions in the same country (Audretsch and Keilbach 2004; Lee et al. 2004; Belso 2005; Audretsch and Peña-Legazcue 2012). The large number of studies and special editions of prestigious journals is proof of this, for example Reynolds et al. (1994), Van Dijk and Pellenbarg (2000), Acs and Storey (2004), Acs and Szerb (2007), Fritsch (2008), and Audretsch and Peña-Legazcue (2012). Indeed, the relation between entrepreneurship and economic development is one of the main lines of research in business organisation (Serrano et al. 2014).

Nevertheless, development economics emerges with Rostow (1963), who suggested that countries evolve through stages. Lloyd-Ellis and Bernhardt (2000) took up this idea and described how an economy passes through different stages of economic development. According to Erken et al. (2009: p. 9), "with increasing economic development the importance of entrepreneurship decreased quantitatively but increased qualitatively". These qualitative aspects have also been analysed from the different levels of freedom of the market. In this line, studies have compared countries with different levels of economic development to analyse the influence of entrepreneurship (Carree et al. 2002; Van Stel et al. 2005; Wennekers et al. 2005; Carree et al. 2007; Amorós et al. 2012). Some authors point out that managed economic regimes predominate in less developed countries and entrepreneurial economic regimes prevail in more developed countries (Audretsch and Thurik 2001; Wennekers et al. 2005, 2010). In parallel, the competitiveness of countries is attracting increasing attention, and authors relate it to the country's stage of economic development. In this line, Porter (1990) and Porter et al. (2002) distinguish between three specific stages of economic

development—the factor-driven, efficiency-driven and innovation-driven stages—as well as two transition stages between them. What stage the country has reached depends on its level of GDP per capita and the extent to which it is driven by productivity and competitiveness. We use this classification in the current work because of the significant explanatory power it has shown for the evolution of entrepreneurial behaviour in the face of the different changes in economic development in countries (Acs and Szerb 2009; Bosma et al. 2009; Bosma and Levie 2010).

The characteristics of the countries in each of these three stages are as follows (Porter et al. 2002):

1. *Factor-driven stage* In this stage, the economy is mainly based on the primary sector, or the extractive industries. Production and factors, and in particular human capital, are considered elements capable of improving productivity and competitiveness. Countries lack institutional support to maintain the necessary conditions to create productive firms. The economy is based on natural resources and an unqualified workforce. Firm competitiveness and consequently wages and salaries are low.
2. *Efficiency-driven stage* In this stage, economies of scale are the engine of economic development. Entrepreneurship drops because large firms hire most of the workers. The productive sectors start to offer more jobs, and the motivation to create new firms begins to decline. These countries are more competitive and productive. Wages and salaries rise and economic development advances. Countries need to start developing more efficient processes, to produce more efficiently and to increase product quality.
3. *Innovation-driven stage* In this stage, the economy is characterised by the production of new goods and services. The services sector becomes very important and firms no longer have to be large to be competitive. This means that intention to start a new business increases as a result of the increase in opportunities. Wages and salaries are high as long as firms are able to compete by producing new goods and different services with more sophisticated production processes.

In general, entrepreneurship is considered a resource (Audretsch and Keilbach 2004, 2008) or regional capability that is positively related to the level of competitiveness (González-Pernía et al. 2012) and development (Amorós et al. 2012), which in turn encourages and strengthens entrepreneurial activity (Acs et al. 2005).

In sum, firm creation is important for the development of countries (van Stel et al. 2005; Acs and Amorós 2008; Bosma and Levie 2010), and the entrepreneur is the best agent for this change (Acs and Amorós 2008; van Stel et al. 2005) when he or she introduces innovation, increases rivalry and creates competition (Wong et al. 2005; Acs and Armington 2006; Bosma and Levie 2010), and drives the transition towards a higher competitive state (González et al. 2010; Curbello and Peña 2012). Minniti and Lévesque (2010) argue that entrepreneurs are the essential facilitator in the growth process. They show that high economic growth emerges when the number of research-based entrepreneurs or imitative entrepreneurs, or both, increases. The most important type of entrepreneur depends on the country's level of economic development (Goel and Ram 1994; Gong and Keller 2003; Minniti 2012), so entrepreneurship's characteristics vary from one stage to another in the economic development of countries. In this respect, Wennekers and Thurik (1999) suggest that a U-shaped relation exists between the number of self-employed workers and the stages of economic development. Van Stel et al. (2005) show that entrepreneurs' entrepreneurial activity in early stages affects economic growth, but the effect depends on the per capita income, which suggests that entrepreneurship plays a different role in countries at different stages of economic development. On the other hand, the different levels of development determine the environment in which entrepreneurial decisions are taken, and hence the type, quality and quantity of entrepreneurial activity (Minniti 2012).

## 3 The entrepreneurial environment

As mentioned above, some studies look at the different types of relation between the variables measuring the level of entrepreneurship and economic growth and competitiveness (Wennekers et al. 2010). These relations depend to a large extent on the specific conditions of the environment at the national level, which in turn are related to many aspects that include economic, institutional and sociocultural factors

(Valliere and Peterson 2009; Wennekers et al. 2010; Amorós et al. 2012). The institutional aspects, which can be formal or informal, are particularly important in explaining this environment (North 1990; Álvarez et al. 2011). In particular, the informal aspects shape the environment and influence entrepreneurship and the country's level of competitiveness and economic development.

The context of the entrepreneur has evolved over time and has been studied and discussed from various perspectives (Coduras and Autio 2013). One reflection of the changes can be seen in the modifications that the original GEM project model has undergone, which have improved our understanding of entrepreneurship's impact on the country's economic development (Bosma et al. 2009; Bosma and Levie 2010). In this respect, and considering that entrepreneurs' potential contribution to economic development depends on the country's stage of development (Wennekers et al. 2005; Gries and Naude 2008), and the fact that the Global Competitiveness Index has evolved substantially since the end of the 1990s (Bosma et al. 2012), a more subtle distinction has been introduced between the stages of economic development following Porter et al.'s (2002) typology presented above (Fig. 1).

The GEM project was set up by Babson College (USA) and the London Business School (UK) in 1999 as an observatory of individuals' attitudes towards entrepreneurship and to evaluate entrepreneurial activity in a large number of countries. The àim was to overcome the lack of international information about entrepreneurial activity (Reynolds et al. 2004) and to promote research into this topic.

The project aims to analyse the relation between entrepreneurship and the economic growth of countries. Researchers can use its results to compare entrepreneurial activity between countries, estimate the role of entrepreneurship in the economic growth of the country, identify the factors explaining the different levels of entrepreneurial activity between countries and facilitate efficient and effective policies for promoting entrepreneurship (Reynolds et al. 2005).

GEM uses three sources of information: a survey of the adult population, a panel of experts and sources of secondary information from each country.

This revised model indicates that certain environmental conditions that are specific for innovation and business creation are more evident in economies driven by innovation. Also, the relative importance of the conditions of the entrepreneurial environment can vary depending on the country's stage of economic development (Bosma and Levie 2010). Thus, entrepreneurship responds to different environmental conditions depending on the country's level of competitiveness (Amorós et al. 2012).

Following the previous reasoning, we propose that entrepreneurship in countries is determined by their environmental conditions and that these conditions differ in function of the country's level of competitiveness or stage of economic development. Thus, it is the set of environmental conditions that favours an entrepreneurial activity that can act as a lever for a country to transition to a higher level of economic development (see Fig. 2).

Analysing—in function of the stage of economic development—the GEM national experts' opinions on the importance of the environmental conditions of each country, as well as the main facilitators of, and obstacles to, entrepreneurship, and their recommendations for boosting entrepreneurial activity in their country, will give us guidelines for identifying those environmental conditions that drive the country's competitiveness.

## 4 Methodology

### 4.1 Source of data

We use data from the GEM Project's National Experts Survey (NES) 2013, which is regarded as having a high explanatory power (Coduras and Autio 2013). A large number of authors have used GEM data in the field of entrepreneurship (Liñan et al. 2013; Acs and Amorós 2008; Álvarez and Urbano 2011; Coduras et al. 2008; Wennekers et al. 2005).

The revised GEM model groups countries into three blocs corresponding to the pillars that are used to build the three sub-indices of global competitiveness making up the Global Competitiveness Index or GCI (Porter et al. 2002). The information about each country's environment is obtained annually by the NES. The panel of experts in each country consists of a select group of people familiar with the entrepreneurial phenomenon because of their academic background and experience. A minimum of 36 experts sit on each country's panel. These experts respond to closed questions, but also open questions asking for

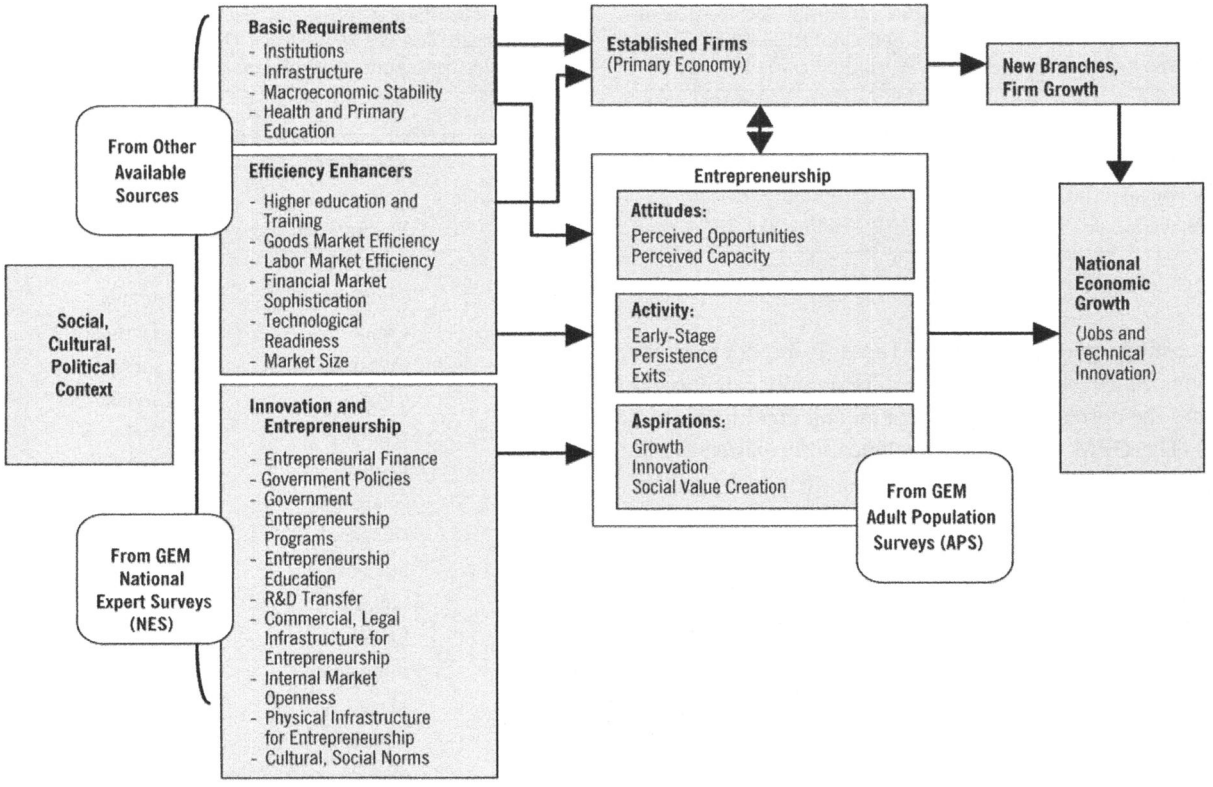


**Fig. 1** Revised GEM model. *Source*: Adapted from Bosma and Levie (2010)

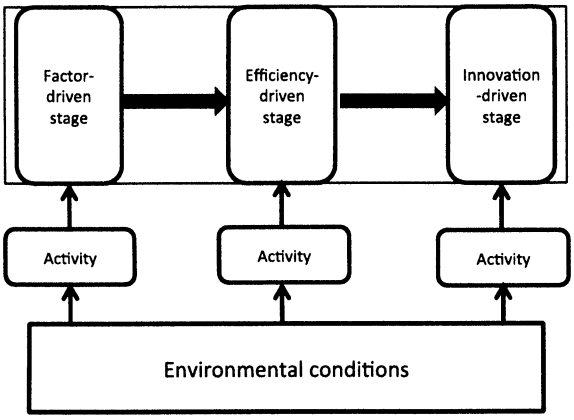


**Fig. 2** Proposed model of environmental conditions and economic development. *Source*: the authors

their opinion about the elements and factors favouring and/or inhibiting firm creation in their country. A large number of academic studies have used GEM databases (Schøtt and Sedaghat 2014; Bosma 2013; Schøtt 2013).

This survey offers information about economic, political and sociocultural aspects that disaggregate into nine conditions of the entrepreneurial environment: financing, government policies, government programmes, entrepreneurial education, R&D transfer, physical and commercial infrastructure, internal market openness, physical and service infrastructure, and social and cultural norms. Each of these conditions is evaluated through a number of items on 5-point Likert scales. We assumed that the information for each condition could be summarised, so we ran a principal components analysis to reduce the number of items to one or two observed factors for each condition. We managed to reduce three of the nine conditions to two factors: government policies, entrepreneurial education and internal market openness. The remaining conditions could be summarised by a single factor. In addition, each expert was asked to mention—for their country—three conditions that facilitate entrepreneurship, three obstacles to entrepreneurship and three recommendations for

**Table 1** Identification of stage of economic development in function of GDP per capita. *Source*: 2012–2013. Global Competitiveness Index Report, World Economic Forum

| Stage of development | GDP per capita (US$) |
|---|---|
| Factor-driven | <2999 |
| Efficiency-driven | 3000–17,000 |
| Innovation-driven | >17,000 |

boosting entrepreneurship. These were open questions, and each response was subsequently categorised into the corresponding environmental condition.

The GEM project also includes information about the stage of economic development that each country has reached in a categorical variable created for this purpose. GEM uses the criterion of the World Economic Forum's (WEF) Competitiveness Report, which classifies countries by stage of economic development using the GDP per capita. Table 1 summarises this classification for the year 2013, while Table 2 lists the 67 GEM 2013 countries having NES data available.[2] In 2013, 1259 experts from 67 countries participated in the survey.

The sample of GEM countries is smaller than that of the GCI so we follow Coduras and Autio (2013) and use the classification of countries in three stages, ignoring the transitions between each stage.

## 4.2 Data analysis

In our first analysis, we looked at the subjective information provided by the national experts about the conditions of the entrepreneurial environment of each country to determine whether these conditions could explain the stage of economic development that each country had reached. For this purpose, we built a general multivariate linear model. The conditions of the entrepreneurial environment were independent variables and were represented by continuous variables equal to the mean of the principal components of each factor obtained in each condition for each country. The stage of economic development was the dependent variable and was represented by a categorical variable that classifies each country into one of the three stages. We then ran a discriminant analysis to see how the experts' opinions about the environmental conditions in a country allow us to classify it by its level of competitiveness by analysing the importance the experts assign to each condition according to the country's stage of development.

In a second analysis, we used the information from the experts' opinions about the conditions that are facilitators of, and obstacles to, entrepreneurship in their country, as well as their recommendations for boosting entrepreneurial activity in their country, to

**Table 2** Distribution of countries by stage of economic development. *Source*: 2012–2013. GEM & Global Competitiveness Index Report, World Economic Forum

| Factor-driven | Efficiency-driven | Innovation-driven |
|---|---|---|
| Algeria | Argentina | Belgium |
| Botswana | Barbados | Canada |
| Ghana | Bosnia & Herzegovina | Czech Republic |
| India | Brazil | Finland |
| Iran | Chile | France |
| Libya | China | Germany |
| Malawi | Colombia | Greece |
| Nigeria | Croatia | Ireland |
| Philippines | Equador | Israel |
| Uganda | Estonia | Italy |
| Vietnam | Guatemala | Korea Rep. |
| Zambia | Hungary | Luxembourg |
| | Indonesia | Netherlands |
| | Jamaica | Norway |
| | Latvia | Portugal |
| | Lithuania | Puerto Rico |
| | Macedonia | Singapore |
| | Malaysia | Slovakia |
| | Mexico | Slovenia |
| | Namibia | Spain |
| | Panama | Sweden |
| | Peru | Switzerland |
| | Poland | UK |
| | Romania | USA |
| | Russia | |
| | South Africa | |
| | Suriname | |
| | Thailand | |
| | Trinidad & Tobago | |
| | Turkey | |
| | Uruguay | |

[2] Japan did not complete the NES in 2013, and Taiwan's data are not comparable to the other countries'.

analyse how they explain the country's level of competitiveness. We first built three general multivariate linear models, the dependent variables of which were facilitators, obstacles and recommendations, respectively. We then carried out three discriminant analyses to see how each variable allows us to classify the countries according to their stage of economic development. This second series of analyses allowed us to identify a pattern in the characteristics of the entrepreneurial environment at each stage of economic development. The aim is to offer guidelines from these patterns for the design of policies to boost economic development.

## 5 Results

### 5.1 Conditions of entrepreneurial environment

We first looked at the GEM national experts' opinions about the environmental conditions of each country. Table 3 reports the results from our analysis of variance, which allows us to analyse how the conditions of the entrepreneurial environment explain each country's level of competitiveness.

According to these results, the following conditions of the entrepreneurial environment are significant: government policies: support and priorities; government policies: bureaucracy and taxes; government programmes; R&D transfer; access to professional and commercial infrastructure; internal market dynamics; and access to physical infrastructure. In other words, significant differences exist in these seven environmental conditions in function of the country's stage of economic development. These results show that the subjective information given by the experts about their country's environmental conditions can explain its stage of economic development. Thus, we can say that the set of characteristics of the conditions of the entrepreneurial environment of each group of countries is different, and if we know the conditions, we can identify the corresponding stage of economic development. These results are coherent with those of Coduras and Autio (2013), who show that the information contained in the NES data can explain 70.5 % of the GCI.

Specifically, for countries that have a higher level of competitiveness and are more oriented to innovation, the most important conditions are access to physical infrastructure, R&D transfer, government programmes and access to professional and commercial infrastructure. In contrast, internal market dynamics and government policies are more important in less competitive countries.

Given that the environmental conditions differ depending on the stage of economic development, a discriminant analysis of those conditions will allow us to classify the countries by their level of competitiveness (Table 4). The results indicate that 73.5 % of the countries can be classified correctly by knowing the characteristics of the conditions of their entrepreneurial environment. Thus, we can say that the NES provides sufficient information about the level of competitiveness of countries. In the current work, the experts' opinions are more representative of the factor-driven countries, of which 90 % have been correctly classified. These results are in line with Coduras and Autio (2013).

The results offer two canonical functions that explain 100 % of the variance, the first involving the majority of the characteristics of the entrepreneurial environment and the second involving higher education, barriers to accessing internal market, internal market dynamics and social and cultural norms. The values of the functions in the centroids of the groups indicate that as a country's level of competitiveness rises, the majority of the conditions of the entrepreneurial environment are considered more important. The conditions with the greatest weight in the first function are access to physical infrastructure, R&D transfer, government programmes and access to professional and commercial infrastructure. These variables are considered the most important according to the analysis of variance carried out earlier. As regards the conditions of the second function, their values increase as we pass from the factor-driven to the efficiency-driven stage, but drop again as we pass to the innovation-driven stage, though without reaching the levels seen in the first group. These results are consistent with the analysis of the entrepreneurial activity and the conclusions of the GEM project.

### 5.2 Facilitators, obstacles and recommendations for boosting entrepreneurship

According to the above analysis, the conditions of the entrepreneurial environment are different depending on the country's level of competitiveness, so it seems

**Table 3** ANOVA of conditions of entrepreneurial environment. *Source*: the authors

| | Dependent variables (conditions of entrepreneurial environment) | *B* | Sig. | $R^2$ |
|---|---|---|---|---|
| 1 | Financing | 1.014 | .369 | .030 |
| 2.1 | Government policies: support and priorities | 2.376 | .101 | .068 |
| 2.2 | Government policies: bureaucracy and taxes | 2.898 | .062 | .082 |
| 3 | Government programmes | 7.859 | .001 | .195 |
| 4.1 | Primary and secondary education | .395 | .675 | .012 |
| 4.2 | Higher education | 1.808 | .172 | .053 |
| 5 | R&D transfer | 10.334 | .000 | .241 |
| 6 | Access to professional and commercial infrastructure | 7.552 | .001 | .189 |
| 7.1 | Internal market dynamics | 2.500 | .090 | .071 |
| 7.2 | Barriers to accessing internal market | 1.309 | .277 | .039 |
| 8 | Access to physical infrastructure | 11.845 | .000 | .267 |
| 9 | Social and cultural norms | .047 | .955 | .001 |

worthwhile to analyse the GEM national experts' subjective opinions about the characteristics of the environment in their country that are facilitators of, and obstacles to, entrepreneurship, as well as their recommendations for boosting it. We now show the results of the three analyses of variance and discriminant analyses corresponding to the facilitators of, and obstacles to, entrepreneurship and the recommendations for boosting entrepreneurship for each group of countries (Table 5).

The facilitators of entrepreneurship according to the experts with significant differences depending on the country's stage of economic development are financing, government programmes, entrepreneurial education, internal market openness and access to physical infrastructure. The conditions with the biggest differences are internal market openness and government programmes.

If we look at the percentage of experts considering that these conditions are facilitators, these conditions seem to facilitate entrepreneurial activity more in factor-driven countries. Although financing and internal market dynamics are facilitators in innovation-driven countries, they have a greater impact in earlier stages (Table 6).

The environmental conditions representing obstacles to entrepreneurship that show significant differences depending on the country's level of competitiveness are as follows: financing, entrepreneurial education, R&D transfer, internal market openness, access to physical infrastructure and social and cultural norms. The conditions with the biggest differences are access to physical infrastructure and social and cultural norms.

All the conditions are considered bigger obstacles in the factor-driven countries except social and cultural norms, which are a greater obstacle in innovation-driven countries (Table 7).

As regards the experts' recommendations for boosting entrepreneurship in their country, the results show significant differences depending on the stage of economic development in the following conditions: financing, government programmes, internal market openness and access to physical infrastructure, with financing and access to physical infrastructure showing the biggest differences.

In the factor-driven countries, the experts recommend improving the financing, the internal market dynamics and access to physical infrastructure. In the innovation-driven countries, they recommend more and improved government programmes. Interestingly, two recommendations coincide in all three groups of countries: improve government policies and entrepreneurial education.

We now show the results of the discriminant analyses carried out to show how the countries are classified according to their level of competitiveness based on the experts' opinions about the facilitators of, and obstacles to, entrepreneurship in their country and their recommendations for boosting it (Table 8).

In the case of the facilitators, the model correctly classifies 60.3 % of the countries, which makes the fit weak. The group of countries that is most difficult to classify with this information is the group at the

**Table 4** Discriminant analysis according to conditions of entrepreneurial environment. *Source*: the authors

| Function | Eigenvalue | % of variance | | Canonical correlation |
|---|---|---|---|---|
| 1 | 1.140 | 86.1 | | .730 |
| 2 | .184 | 13.9 | | .394 |
| Test of functions | Wilks' lambda | $\chi^2$ | *df* | Sig. |
| 1–2 | .395 | 55.290 | 24 | .000 |
| 2 | .845 | 10.025 | 11 | .528 |

| Structure matrix | Function 1 | Function 2 |
|---|---|---|
| Access to physical infrastructure | .562[a] | .163 |
| R&D transfer | .528[a] | −.052 |
| Government programmes | .457[a] | .135 |
| Access to professional and commercial infrastructure | .446[a] | .172 |
| Government policies: bureaucracy and taxes | .276[a] | −.114 |
| Government policies: support and priorities | .253[a] | .025 |
| Financing | .165[a] | .023 |
| Primary and secondary education | .103[a] | −.027 |
| Higher education | −.053 | .535[a] |
| Internal market dynamics | −.211 | −.379[a] |
| Barriers to accessing internal market | .127 | −.347[a] |
| Social and cultural norms | −.032 | .038[a] |

| Value of canonical functions in centroids of groups[b] | Function 1 | Function 2 |
|---|---|---|
| Stage 1: Factor-driven (including countries in transition to Stage 2) | −1.606 | −.776 |
| Stage 2: Efficiency-driven (including countries in transition to Stage 3) | −.428 | .369 |
| Stage 3: Innovation-driven | 1.350 | −.223 |

| Results of classification[c] | Factor-driven | Efficiency-driven | Innovation-driven | Total |
|---|---|---|---|---|
| Original | | | | |
| Factor-driven | 9 (90.0 %) | 1 (10.0 %) | 0 (0.0 %) | 10 (100.0 %) |
| Efficiency-driven | 6 (17.1 %) | 24 (68.6 %) | 5 (14.3 %) | 35 (100.0 %) |
| Innovation-driven | 1 (4.3 %) | 5 (21.7 %) | 17 (73.9 %) | 23 (100.0 %) |

[a] Greater absolute correlation between variable and discriminant function

[b] Non-standard canonical discriminant functions evaluated on means of groups

[c] Goodness of fit: 73.5 % of original groupings correctly classified

second stage of economic development. The values of the first canonical function show that as the country's level of competitiveness rises, internal market dynamics, government programmes, financing and education have less impact as facilitators according to the experts. As regards access to physical infrastructure, which is contained in the second canonical function, this condition has less impact as a facilitator when we pass from the factor-driven to the efficiency-driven stage, but has a greater impact again in the innovation-driven stage (Table 9).

In the case of the experts' opinions about which environmental conditions are obstacles to entrepreneurship, the two canonical functions, which explain 100 % of the variance, correctly classify 73.5 % of the countries. This fit is very similar to the one achieved with the data from the GCI sub-indices and the importance of the environmental conditions of each country according to the experts. According to the partial results of the discriminant analysis, it is more difficult to classify the factor-driven countries. The values of the functions in the centroids of the groups indicate that as the country's level of competitiveness rises, entrepreneurial education, internal market dynamics and access to physical infrastructure hinder entrepreneurship less according to the experts. In

**Table 5** ANOVA of facilitators of entrepreneurship. *Source*: the authors

| | Dependent variables (facilitators) | *B* | Sig. | $R^2$ |
|---|---|---|---|---|
| 1 | Financing | 3.102 | .052 | .087 |
| 2 | Government policies | .219 | .804 | .007 |
| 3 | Government programmes | 6.485 | .003 | .166 |
| 4 | Education | 2.989 | .057 | .084 |
| 5 | R&D transfer | 1.987 | .145 | .058 |
| 6 | Access to professional and commercial infrastructure | .294 | .746 | .009 |
| 7 | Internal market openness | 10.348 | .000 | .242 |
| 8 | Access to physical infrastructure | 2.744 | .072 | .078 |
| 9 | Social and cultural norms | 1.939 | .152 | .056 |

**Table 6** ANOVA of obstacles to entrepreneurship. *Source*: the authors

| | Dependent variables (obstacles) | *B* | Sig. | $R^2$ |
|---|---|---|---|---|
| 1 | Financing | 2.440 | .095 | .070 |
| 2 | Government policies | 1.021 | .366 | .030 |
| 3 | Government programmes | .388 | .680 | .012 |
| 4 | Education | 3.949 | .024 | .108 |
| 5 | R&D transfer | 3.338 | .042 | .093 |
| 6 | Access to professional and commercial infrastructure | 1.492 | .232 | .044 |
| 7 | Internal market openness | 2.467 | .093 | .071 |
| 8 | Access to physical infrastructure | 13.568 | .000 | .295 |
| 9 | Social and cultural norms | 4.751 | .012 | .128 |

**Table 7** ANOVA of recommendations for boosting entrepreneurship. *Source*: the authors

| | Dependent variables (recommendations) | *B* | Sig. | $R^2$ |
|---|---|---|---|---|
| 1 | Financing | 3.325 | .042 | .093 |
| 2 | Government policies | .190 | .828 | .006 |
| 3 | Government programmes | 2.393 | .099 | .069 |
| 4 | Education | .487 | .617 | .015 |
| 5 | R&D transfer | .932 | .399 | .028 |
| 6 | Access to professional and commercial infrastructure | .420 | .659 | .013 |
| 7 | Internal market openness | 3.243 | .045 | .091 |
| 8 | Access to physical infrastructure | 7.538 | .001 | .188 |
| 9 | Social and cultural norms | 1.927 | .154 | .056 |

contrast, financing and R&D transfer hinder entrepreneurship less in efficiency-driven countries (Table 10).

This third model, which uses information about the experts' recommendations for boosting entrepreneurship in their country, correctly classifies 64.7 % of the countries. As occurs with the facilitators, the greatest difficulty in classification here occurs with the efficiency-driven countries. In this case, the results of the discriminant analysis are also coherent with those obtained with the analysis of variance. The values of the first canonical function indicate that as the country's level of competitiveness rises, the experts see less need to make recommendations about improving access to physical infrastructure, financing, internal market dynamics and social and cultural norms. As regards the second function, the experts make fewer recommendations about government

**Table 8** Discriminant analysis by facilitators of entrepreneurship. *Source*: the authors

| Function | Eigenvalue | % of variance | | Canonical correlation |
|---|---|---|---|---|
| 1 | .679 | 77.9 | | .636 |
| 2 | .193 | 22.1 | | .402 |
| Test of functions | Wilks' lambda | $\chi^2$ | *df* | Sig. |
| 1–2 | .500 | 42.342 | 18 | .001 |
| 2 | .838 | 10.746 | 8 | .217 |
| Structure matrix | | Function 1 | | Function 2 |
| Internal market dynamics | | .683[a] | | −.109 |
| Government programmes | | −.503[a] | | .380 |
| Financing | | .365[a] | | .158 |
| Education | | −.365[a] | | .085 |
| R&D transfer | | −.300[a] | | −.026 |
| Access to professional and commercial infrastructure | | −.112[a] | | .054 |
| Government policies | | .091[a] | | .076 |
| Access to physical infrastructure | | .118 | | .624[a] |
| Social and cultural norms | | .075 | | −.539[a] |
| Value of canonical functions in centroids of groups[b] | | | Function 1 | Function 2 |
| Stage 1: Factor-driven (including countries in transition to Stage 2) | | | 1.120 | .844 |
| Stage 2: Efficiency-driven (including countries in transition to Stage 3) | | | .384 | −.363 |
| Stage 3: Innovation-driven | | | −1.071 | .185 |
| Results of classification[c] | Factor-driven | Efficiency-driven | Innovation-driven | Total |
| Original | | | | |
| Factor-driven | 6 (60.0 %) | 3 (30.0 %) | 1 (10.0 %) | 10 (100.0 %) |
| Efficiency-driven | 8 (22.9 %) | 17 (48.6 %) | 10 (28.6 %) | 35 (100.0 %) |
| Innovation-driven | 1 (4.3 %) | 4 (17.4 %) | 18 (78.3 %) | 23 (100.0 %) |

[a] Greater absolute correlation between variable and discriminant function

[b] Non-standard canonical discriminant functions evaluated on means of groups

[c] Goodness of fit: 60.3 % of original groupings correctly classified

programmes in efficiency-driven countries but more recommendations about this condition in countries in the third stage of economic development.

## 6 Discussion

In light of the results presented above, we can identify patterns in the characteristics of the entrepreneurial environment of countries depending on their stage of economic development according to Porter et al. (2002), by using the experts' opinions about the variables characterising these environments and their relative importance, as well as the facilitators of, and obstacles to, entrepreneurship in their country and their recommendations for boosting entrepreneurial activity.

We can see that the most significant variables in all three stages are government programmes, R&D transfers, access to professional and commercial infrastructure, internal market dynamics and access to physical infrastructure. Nevertheless, some of these variables become more important in function of the country's stage of development.

Figure 3 summarises the pattern of behaviour of entrepreneurship in each stage of economic development. Thus, this discussion is structured by analysing, in each stage, the environmental conditions and the factors that facilitate or are obstacles to

**Table 9** Discriminant analysis by obstacles to entrepreneurship. *Source*: the authors

| Function | Eigenvalue | % of variance | Canonical correlation |
|---|---|---|---|
| 1 | 1.151 | 82.1 | .732 |
| 2 | .251 | 17.9 | .448 |

| Test of functions | Wilks' lambda | $\chi^2$ | *df* | Sig. |
|---|---|---|---|---|
| 1–2 | .372 | 60.401 | 18 | .000 |
| 2 | .799 | 13.680 | 8 | .090 |

| Structure matrix | Function 1 | Function 2 |
|---|---|---|
| Access to physical infrastructure | .558[a] | .485 |
| Social and cultural norms | −.351[a] | .134 |
| Education | .308[a] | −.218 |
| Internal market dynamics | .247[a] | .153 |
| R&D transfer | .253 | −.340[a] |
| Government policies | −.078 | −.311[a] |
| Access to professional and commercial infrastructure | .150 | .283[a] |
| Financing | .223 | .266[a] |
| Government programmes | −.032 | .207[a] |

| Value of canonical functions in centroids of groups[b] | Function 1 | Function 2 |
|---|---|---|
| Stage 1: Factor-driven (including countries in transition to Stage 2) | 1.926 | .764 |
| Stage 2: Efficiency-driven (including countries in transition to Stage 3) | .264 | −.460 |
| Stage 3: Innovation-driven | −1.239 | .368 |

| Results of classification[c] | Factor-driven | Efficiency-driven | Innovation-driven | Total |
|---|---|---|---|---|
| Original | | | | |
| Factor-driven | 6 (60.0 %) | 3 (30.0 %) | 1 (10.0 %) | 10 (100.0 %) |
| Efficiency-driven | 3 (8.6 %) | 25 (71.4 %) | 7 (20.0 %) | 35 (100.0 %) |
| Innovation-driven | 1 (4.3 %) | 3 (13.0 %) | 19 (82.6 %) | 23 (100.0 %) |

[a] Greater absolute correlation between variable and discriminant function

[b] Non-standard canonical discriminant functions evaluated on means of groups

[c] Goodness of fit: 73.5 % of original groupings correctly classified

entrepreneurship as well as the experts' recommendations for boosting entrepreneurial activity.

### 6.1 Factor-driven countries

In the factor-driven countries, the national experts coincide in regarding internal market dynamics as important. This variable is seen as boosting entrepreneurial initiatives. Also, the conditions of higher education, internal market dynamics and social and cultural norms have a negative sign in the analysis, but the effect is weaker than in subsequent stages, which we can interpret as meaning that minimum levels of education, internal market and social and cultural norms are necessary for entrepreneurship in this stage. The high rate of necessity entrepreneurship is a consequence of environmental conditions unfavourable to entrepreneurial activity (Coduras and Autio 2013; Diaz et al. 2013; Kesller and Frank 2009).

For this group of countries, the facilitators of entrepreneurship according to the experts are internal market dynamics, government programmes, financing and entrepreneurial education. Interestingly, and like the innovation-driven countries, access to physical infrastructure is another facilitator for these countries. The poorly developed institutions lead to a negative relation between entrepreneurship and institutional quality that encourages individuals to seek subsistence activities due to the lack of alternative employment opportunities (Diaz et al. 2013).

**Table 10** Discriminant analysis by recommendations for boosting entrepreneurship. *Source*: the authors

| Function | Eigenvalue | % of variance | Canonical correlation |
|---|---|---|---|
| 1 | .604 | 84.8 | .614 |
| 2 | .108 | 15.2 | .312 |

| Test of functions | Wilks' lambda | $\chi^2$ | *df* | Sig. |
|---|---|---|---|---|
| 1–2 | .563 | 35.085 | 18 | .009 |
| 2 | .902 | 6.267 | 8 | .617 |

| Structure matrix | Function 1 | Function 2 |
|---|---|---|
| Access to physical infrastructure | .583[a] | .498 |
| Financing | .408[a] | .121 |
| Internal market dynamics | .390[a] | −.267 |
| Social and cultural norms | −.298[a] | −.226 |
| Government programmes | −.313 | .364[a] |
| Education | .039 | −.360[a] |
| Access to professional and commercial infrastructure | −.046 | .328[a] |
| R&D transfer | .177 | .300[a] |
| Government policies | −.035 | −.217[a] |

| Value of canonical functions in centroids of groups[b] | Function 1 | Function 2 |
|---|---|---|
| Stage 1: Factor-driven (including countries in transition to Stage 2) | 1.335 | .530 |
| Stage 2: Efficiency-driven (including countries in transition to Stage 3) | .226 | −.297 |
| Stage 3: Innovation-driven | −.924 | .222 |

| Results of classification[c] | Factor-driven | Efficiency-driven | Innovation-driven | Total |
|---|---|---|---|---|
| Original | | | | |
| Factor-driven | 8 (80.0 %) | 1 (10.0 %) | 1 (10.0 %) | 10 (100.0 %) |
| Efficiency-driven | 5 (14.3 %) | 20 (57.1 %) | 10 (28.6 %) | 35 (100.0 %) |
| Innovation-driven | 3 (14.3 %) | 4 (17.4 %) | 16 (69.6 %) | 23 (100.0 %) |

[a] Greater absolute correlation between variable and discriminant function

[b] Non-standard canonical discriminant functions evaluated on means of groups

[c] Goodness of fit: 64.7 % of original groupings correctly classified

The main obstacles to entrepreneurship for this group of countries are financing, entrepreneurial education, R&D transfer, internal market openness and access to physical infrastructure. As the country's level of economic development rises, these aspects hinder entrepreneurship less. The lack of entrepreneurial education and market knowledge is also an obstacle. Financing, which is the aspect that experts most mention as an obstacle to entrepreneurship (Coduras et al. 2008; Roper and Scott 2009), is less of an obstacle in efficiency-driven countries, according to our results.

As regards the experts' recommendations for boosting entrepreneurship, we note that two recommendations are common to all three stages of development: improve government policies and entrepreneurial education. Nevertheless, in the factor-driven countries the stress is on improving the financing, internal market dynamics and access to physical infrastructure. As the country's level of economic development rises, the experts see less need to make recommendations about access to physical infrastructure, financing, internal market dynamics and social and cultural norms.

### 6.2 Efficiency-driven countries

Countries at an intermediate stage of development are fundamentally characterised by a more advanced and highly efficient supply (Porter et al. 2007), thanks to increased investment in infrastructure and education. The national experts regard higher education, internal market dynamics and social and cultural norms as the most important environmental conditions for these

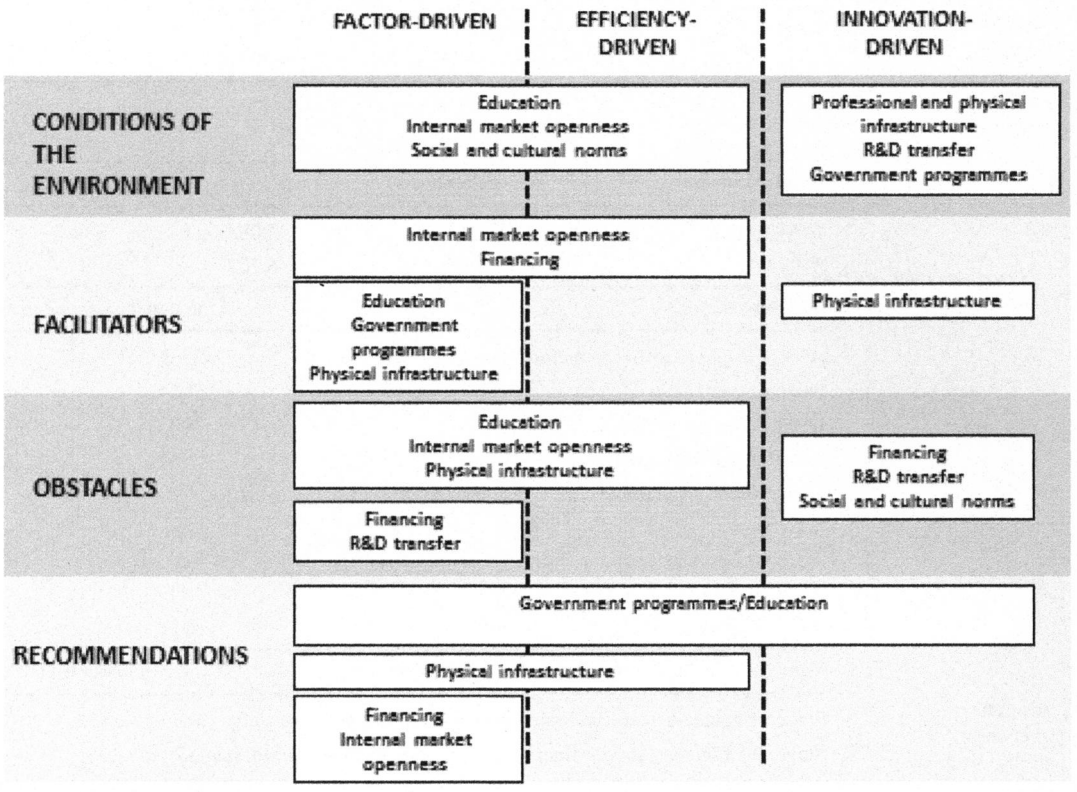


**Fig. 3** Patterns of entrepreneurship in different stages of economic development. *Source*: the authors

countries. Opportunity entrepreneurship increases and is reflected in higher levels of education and a more organised internal market. These countries have significant potential to generate competitiveness via the creation of new firms, but they have not yet been able to consolidate the entrepreneurial dynamic (Kantis 2005).

The experts point to the financing and the dynamics of the internal market that increase access to citizens as the main facilitators of entrepreneurship in this stage.

The experts' main recommendations are to increase investment in physical infrastructure and education to make the market more dynamic and so allow new ventures to emerge. But they also still recommend government policies that consolidate growth via specific programmes for entrepreneurs and a greater attention to entrepreneurial education for the citizens.

### 6.3 Innovation-driven countries

The countries at this stage of economic development have a certain institutional structure that enables knowledge transfer. The most important environmental conditions are those to do with access to any type of infrastructure. The national experts point to access to physical infrastructure, access to professional and commercial infrastructure, R&D transfer and government programmes as characteristic of these countries. Qualitative variables become more important here. In particular, cultural and social norms become a significant determinant of entrepreneurship (Shane 1992, 1993; Davidsson 1995; Hayton et al. 2002).

As with the factor-driven countries, the experts regard access to physical infrastructure as an important facilitator of entrepreneurship in this stage. The main obstacles are financing, R&D transfer and the above-mentioned social and cultural norms.

The experts recommend a greater emphasis on entrepreneurial education and specific government programmes and policies. These government programmes should aim to promote entrepreneurial activity and encourage innovation in entrepreneurs to create new firms using novel business models (Acs and Amorós 2008). These results are consistent with

González et al. (2010), who conclude that education and previous experience in other markets encourage innovative behaviour in entrepreneurs and help a country to move up from the efficiency-driven to the innovation-driven stage. For Moguillanski (2006), education and capability are at the core of the country's innovation strategy.

## 7 Conclusions

This research confirms that a relation exists between the characteristics of the entrepreneurial environment and the different stages of development of a country or region. Thus, we have found that the experts' opinions about the entrepreneurial environment in their country can be grouped into categories that are consistent with the three stages of economic development. We have therefore identified patterns of entrepreneurship for each group of countries. These patterns include variables that describe the entrepreneurial environment at each stage of economic development, as well as a set of facilitators of, and obstacles to, entrepreneurship and recommendations for boosting it in each country.

The value added of this research is useful particularly to the agenda in development economics (Rostow 1963), and more specifically for the research into the relation between economic development and entrepreneurship (Acs et al. 2013; Audretsch and Keilbach 2004, 2008; Acs and Varga 2005; van Stel et al. 2005; Wong et al. 2005; Galindo et al. 2010) and environmental conditions (Álvarez et al. 2011; Amorós et al. 2012). This work also provides new, more qualitative evidence for this relation. The GEM national experts' opinions enrich the evidence for the relations identified by adding new perspectives that have rarely been examined in empirical work in this line of research (Álvarez and Urbano 2011), a line which has recently undergone a renaissance (Amorós et al. 2012; Coduras and Autio 2013; Serrano et al. 2014).

Moreover, unlike previous work that also uses GEM experts' opinions, in this paper we use open questions (facilitators, obstacles and recommendations) to classify the countries by stage of economic development.

The results of our research are of clear practical utility to governments for the design of public policies and strategies to boost entrepreneurship, particularly in the question of how to establish priorities to help the country make the transition from one stage of economic development to the next.

Nevertheless, our work suffers from a number of limitations concerning the subjectivity of the information used, a point that earlier researchers also recognise. The opinions of the GEM project experts pass through two subjectivity filters: first, the respondents themselves, who are offering qualitative information, and second, the members of the national GEM teams, who categorise each of the experts' qualitative responses into one of the nine environmental conditions considered by the model. This subjectivity is, however, qualified when we realise that in the more than 15 years that the GEM project has been running, the opinions of the different groups of experts coincide and repeat over time in each country.

As regards future lines of research, we would suggest analysing the characteristics of countries not classified correctly here. Second, it would be useful to extend this study over several years to see whether the results are replicated. And finally, it would be very interesting to follow countries in stages 1 and 2 to see how well the GEM experts' recommendations have worked, how they have moved up a stage in economic development and how long it has taken them.

## References

Acs, Z. J., & Amorós, J. E. (2008). Entrepreneurship and competitiveness dynamics in Latin America. *Small Business Economics, 31*(3), 305–322. doi:10.1007/s11187-008-9133-y.

Acs, Z. J., Arenius, P., Hay, M., & Minniti, M. (2005). *2004 Global Entrepreneurship Monitor.* London and Babson Park, MA: London Business School and Babson College.

Acs, Z. J., & Armington, C. (2006). *Entrepreneurship, geography and American economic growth.* Cambridge: Cambridge University Press.

Acs, Z. J., Autio, E., & Szerb, L. (2013). National systems of entrepreneurship: Measurement issues and policy implications. GMU School of Public Policy Research Paper No. 2012-08.

Acs, Z. J., & Storey, D. J. (2004). Introduction: Entrepreneurship and economic development. *Regional Studies, 38*(8), 871–877. doi:10.1080/0034340042000280901.

Acs, Z. J., & Szerb, L. (2007). Entrepreneurship, economic growth and public policy. *Small Business Economics, 28*(2), 109–122. doi:10.1007/s11187-006-9012-3.

Acs, Z. J., & Szerb, L. (2009). The Global Entrepreneurship Index (GEINDEX), Jena Economic Research Papers, 028.

Acs, Z. J., & Varga, A. (2005). Entrepreneurship, agglomeration and technological change. *Small Business Economics, 24*(3), 323–334. doi:10.1007/s11187-005-1998-4.

Álvarez, C., & Urbano, D. (2011). Una década de investigación basada en el GEM: logros y retos. *Academia, Revista Latinoamericana de Administración, 46*, 16–37.

Álvarez, C., Urbano, D., Coduras, A., & Ruiz-Navarro, J. (2011). Environmental conditions and entrepreneurial activity: A regional comparison in Spain. *Journal of Small Business and Enterprise Development, 18*(1), 120–140. doi:10.1108/14626001111106460.

Amorós, J. A., Fernández, C., & Tapia, J. (2012). Quantifying the relationship between entrepreneurship and competitiveness development stages in Latin America. *International Entrepreneurship and Management Journal, 8*(3), 249–270. doi:10.1007/s11365-010-0165-9.

Audretsch, D. B., & Keilbach, M. (2004). Entrepreneurship capital and economic performance. *Regional Studies, 38*(8), 949–959. doi:10.1080/0034340042000280956.

Audretsch, D. B., & Keilbach, M. (2008). Resolving the knowledge paradox: Knowledge-spillover entrepreneurship and economic growth. *Research Policy, 37*(10), 1697–1705. doi:10.1016/j.respol.2008.08.008.

Audretsch, D. B., & Peña-Legazcue, I. (2012). Entrepreneurial activity and regional competitiveness: An introduction to the special issue. *Small Business Economics, 39*(3), 531–537. doi:10.1007/s11187-011-9328-5.

Audretsch, D. B., & Thurik, R. (2001). What is new about the new economy? Sources of growth in the managed and entrepreneurial economy? *Industrial and Corporate Change, 10*(1), 267–315. doi:10.1093/icc/10.1.267.

Belso, J. A. (2005). Equilibrium entrepreneurship rate, economic development and growth. Evidence from Spanish regions. *Entrepreneurship & Regional Development, 17*(2), 145–161. doi:10.1080/08985620500032633.

Bosma, N. (2013). The Global Entrepreneurship Monitor (GEM) and its impact on entrepreneurship research. *Foundations and Trends in Entrepreneurship, 9*(2), 143–248.

Bosma, N., Acs, Z., Autio, E., Coduras, A., & Levie, J. (2009). *Global Entrepreneurship Monitor, 2008 executive report.* Babson Park, MA: Babson College, Santiago: Universidad del Desarollo, London: Global Entrepreneurship Research Association.

Bosma, N., Coduras, A., Litovsky, Y., & Seaman, J. (2012). *GEM manual. A report on the design data and quality control of Global Entrepreneurship Monitor.* London: Global Entrepreneurship Research Association.

Bosma, N., & Levie, J. (2010). *Global Entrepreneurship Monitor, 2009 executive report.* Babson Park, MA: Babson College, Santiago: Universidad del Desarollo and Reykjavík, Iceland: Háskólinn Reykjavík University, London: Global Entrepreneurship Research Association.

Carree, M., Van Stel, A., Thurik, R., & Wennekers, S. (2002). Economic development and business ownership: An analysis using data of 23 OECD countries in the period 1976–1996. *Small Business Economics, 19*(3), 271–290. doi:10.1023/A:1019604426387.

Carree, M., Van Stel, A., Thurik, R., & Wennekers, S. (2007). The relationship between economic development and business ownership revisited. *Entrepreneurship and Regional Development, 19*(3), 281–291. doi:10.1080/08985620701296318.

Coduras, A., & Autio, E. (2013). Comparing subjective and objective indicators to describe the national entrepreneurial context: The Global Entrepreneurship Monitor and the Global Competitiveness Index contributions. *Investigaciones Regionales, 26*, 47–74.

Coduras, A., Urbano, D., Rojas, A., & Martínez, S. (2008). The relationship between university support to entrepreneurship with entrepreneurial activity in Spain: A GEM data based analysis. *International Advances in Economic Research, 14*(4), 395–406. doi:10.1007/s11294-008-9173-8.

Curbello, J. L., & Peña, I. (2012). Emprendimiento y competitividad regional. *Boletín de Estudios Económicos, 67*, 59–76.

Davidsson, P. (1995). Culture, structure and regional levels of entrepreneurship. *Entrepreneurship & Regional Development: An International Journal, 7*(1), 41–62. doi:10.1080/08985629500000003.

Diaz, J. C., Almodovar, M., De la Cruz, M., Coduras, A., & Hernández, R. (2013). Institutional variables, entrepreneurial activity and economic development. *Management Decision, 51*(22), 281–305. doi:10.1108/00251741311301821.

Erken, H., Donselaar, P., & Thurik, A. R. (2009). Total factor productivity and the role of entrepreneurship. Tinbergen Institute Discussion Paper No. 2009-034/3.

Fritsch, M. (2008). How does new business formation affect regional development? Introduction to the special issue. *Small Business Economics, 30*(1), 1–14. doi:10.1007/s11187-007-9057-y.

Galindo, M. A., Méndez, M. T., & Alfaro, J. L. (2010). Entrepreneurship, income distribution and economic growth. *International Entrepreneurship Management Journal, 6*, 131–141. doi:10.1007/s11365-010-0142-3.

Goel, R. K., & Ram, R. (1994). Research and development expenditures and economic growth: A cross-country study. *Economic Development and Cultural Change, 42*(2), 403–412. doi:10.1086/452087.

Gong, G., & Keller, W. (2003). Convergence and polarization in the global income levels: A review of recent results on the role of international technology diffusion. *Research Policy, 32*(6), 1055–1079. doi:10.1016/S0048-7333(02)00136-1.

González, J. L., Jung, A., Gonzalez, J. L., Peña, I., & Anyadike-Danes, M. (2010). Innovation-oriented start-ups in Latin American economies. Fourth Global Entrepreneurship Monitor Research Conference, September 30—October 2. London, UK.

González-Pernía, J. L., Peña-Legazkue, I., & Vendrell-Herrero, F. (2012). Innovation, entrepreneurial activity and competitiveness at a sub-national level. *Small Business Economics, 39*, 561–574. doi:10.1007/s11187-011-9330-y.

Gries, T., & Naude, W. (2008). Entrepreneurship and structural economic transformation. UNU-Wider Research Papers 2008/62.

Hayton, J. C., George, G., & Zahra, S. A. (2002). National culture and entrepreneurship: A review of behavioral research. *Entrepreneurship: Theory and Practice, 26*(4), 33–52.

Kantis, H. (2005). The emergence of dynamic ventures in Latin America, Southern Europe and East Asia: An international comparison. *International Journal of Entrepreneurship and Small Business, 2*(1), 34–56. doi:10.1504/IJESB.2005.006069.

Kesller, A., & Frank, H. (2009). Nascent entrepreneurship in a longitudinal perspective: The impact of person, environment, resources and the founding process on the decision to start business activities. *International Small Business Journal, 27*(6), 720–742. doi:10.1177/0266242609344363.

Lee, S. Y., Florida, R., & Acs, Z. J. (2004). Creativity and entrepreneurship: A regional analysis of new firm formation. *Regional Studies, 38*(8), 879–891. doi:10.1080/0034340042000280910.

Liñan, F., Fernández-Serrano, J., & Romero, I. (2013). Necessity and opportunity entrepreneurship: The mediating effect of culture. *Revista de Economía Mundial, 33*, 21–47.

Lloyd-Ellis, H., & Bernhardt, D. (2000). Enterprise, inequality and economic development. *Review of Economic Studies, 67*, 147–168. doi:10.1111/1467-937X.00125.

Minniti, M. (2012). El emprendimiento y el crecimiento económico de las naciones. *Economía Industrial, 383*, 23–30.

Minniti, M., & Lévesque, M. (2010). Entrepreneurial types and economic growth. *Journal of Business Venturing, 25*, 305–314.

Moguillanski, G. (2006). *Australia y Nueva Zelanda como eje de la competitividad*, Cepal, Serie Comercio Internacional, Naciones Unidas.

North, D. (1990). *Institutions, institutional change and economic performance*. Cambridge: Cambridge University Press.

Porter, M. E. (1990). The competitive advantage of nations. *Harvard Business Review, 68*(2), 73–93.

Porter, M., Ketels, C., & Delgado, M. (2007). The microeconomic foundations of prosperity: Findings from the Business Competitiveness Index Institute for Strategy and Competitiveness, Harvard Business School in *The Global Competitiveness Report 2007–2008 World Economic Forum*, pp. 51–81.

Porter, M., Sachs, J., & Arthur, J. (2002). Executive summary: Competitiveness and stages of economic development. In M. Porter, J. Sachs, P. K. Cornelius, J. W. McArthur, & K. Schwab (Eds.), *The global competitiveness report 2001–2002* (pp. 28–51). New York: Oxford University Press.

Reynolds, P., Bosma, N., Autio, E., Hunt, S., Bono, N. D., Servais, I., & Chin, N. (2005). Global entrepreneurship monitor: Data collection design and implementation 1998–2003. *Small Business Economics, 24*(3), 205–231.

Reynolds, P. D., Bygrave, W. D., Autio E., et al. (2004). *Global Entrepreneurship Monitor 2003, Executive Report*, Babson College/Ewing Marion Kauffman Foundation, London Business School.

Reynolds, P., Storey, D. J., & Westhead, P. (1994). Crossnational comparisons of the variation in new firm formation rates: An editorial overview. *Regional Studies, 28*(4), 343–346. doi:10.1080/00343409412331348306.

Roper, S., & Scott, J. M. (2009). Perceived financial barriers and the start-up decision an econometric analysis of gender differences using GEM data. *International Small Bussines Journal, 27*(2), 149–171. doi:10.1177/0266242608100488.

Rostow, W. W. (1963). *Las fases del crecimiento: un manifiesto no comunista*. Fondo de Cultura Económica. Colección "Sección Obras de Economía", México.

Schøtt, T. (2013). Edited special issue on entrepreneurs' networks. *International Journal of Business and Globalisation, 11*(4), 333–336.

Schøtt, T., & Sedaghat, M. (2014). Innovation embedded in entrepreneurs' networks and national educational systems. *Small Business Economics, 43*(2), 463–476. doi:10.1007/s11187-014-9546-8.

Serrano, A. M., López, M. C., Pérez, M., Palma, M., & García, G. (2014). Estado Actual de la Investigación en Emprendimiento: Desafíos y Soluciones. *III Workshop de la Sección de Función Empresarial y Creación de Empresas de ACEDE Nuevas fronteras en la investigación en emprendimiento y en la docencia del emprendimiento*, pp. 63–77.

Shane, S. (1992). Why do some societies invent more than others? *Journal of Business Venturing, 7*(1), 29–46. doi:10.1016/0883-9026(92)90033-N.

Shane, S. (1993). Cultural influences on national rates of innovation. *Journal of Business Venturing, 8*(1), 59–73. doi:10.1016/0883-9026(93)90011-S.

Sternberg, R., & Wennekers, S. (2005). Determinants and effects of new business creation using global entrepreneurship monitor data. *Small Business Economics, 24*(3), 193–203. doi:10.1007/s11187-005-1974-z.

Valliere, D., & Peterson, R. (2009). Entrepreneurship and economic growth: Evidence from emerging and developed countries. *Entrepreneurship & Regional Development, 21*(5), 459–480. doi:10.1080/08985620802332723.

Van Dijk, J., & Pellenbarg, P. H. (2000). Spatial perspectives on firm demography. *Papers in Regional Science, 79*(2), 107–110. doi:10.1111/j.1435-5597.2000.tb00763.x.

Van Stel, A. J., Carree, M. A., & Thurik, A. R. (2005). The effect of entrepreneurial activity on national economic growth. *Small Business Economics, 24*(3), 311–321. doi:10.1007/s11187-005-1996-6.

Wennekers, S., & Thurik, R. (1999). Linking entrepreneurship and economic growth. *Small Business Economics Journal, 13*(1), 27–56. doi:10.1023/A:1008063200484.

Wennekers, S., Van Stel, A., Carree, M., & Thurik, R. (2010). The relationship between entrepreneurship and economic development: Is it U-shaped? *Foundations and Trends in Entrepreneurship, 6*(3), 167–237. doi:10.1561/0300000023.

Wennekers, S., Van Stel, A., Thurik, R., & Reynolds, P. (2005). Nascent entrepreneurship and the level of economic development. *Small Business Economics, 24*, 293–309. doi:10.1007/s11187-005-1994-8.

Wong, P. K., Ho, P., & Autio, E. (2005). Entrepreneurship, innovation and economic growth: Evidence from GEM data. *Small Business Economics, 24*(3), 335. doi:10.1007/s11187-005-2000-1.