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Universitat Autònoma de Barcelona

**Linking institutions, entrepreneurship,
and economic development: An
international study**

DOCTORAL THESIS

Author

Sebastian Aparicio

Supervisor

David Urbano

International Doctorate in Entrepreneurship and Management

Bellaterra (Cerdanyola del Vallès), June 2017



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Preface

Preface

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I hope all of you enjoy reading this thesis.

Sebastian Aparicio

Bellaterra, June 2017

Abstract

Abstract

There is a consensus that entrepreneurship is an important element in explaining the economic development process of countries. Among other reasons, scholars and policy makers have been interested in what factors might determine entrepreneurial activity. Although a vast amount of disciplines have analyzed entrepreneurship antecedents, the institutional approaches have gained relevance due to their capacity to provide a framework in which entrepreneurs make decisions based on the context where they are embedded. Particularly, this theoretical view was designed to explain the economic development differences across countries. Therefore, it turns out that institutional economics is useful for comprehending why individuals decide to become entrepreneurs, and at the same time, how they contribute to the economic development to better the social conditions.

Thus, this investigation explores the institutional factors that encourage entrepreneurial activity to achieve higher economic development across developing and developed countries. The methodology used is quantitative and mostly regards the estimations of various equations simultaneously (multiple regression, instrumental variables, and three-stage least-square). Thus, for the equation dealing with institutions and entrepreneurship, this research employed data from Global Entrepreneurship Monitor (GEM) to measure different variables of entrepreneurial activity. Concerning the institutional factors, this thesis used data from Doing Business, Worldwide Governance Indicators, World Values Survey, Indices of Social Development, the Hofstede Centre, the United Nations Development Programme, the National Experts Survey of GEM and the Center for System Peace. Regarding the equation of entrepreneurship and economic development, information was used from the World Development Indicators (World Bank) and Social Progress Imperative.

The main findings of this thesis suggest that effectively there is a causal chain that runs from the institutional context, affecting entrepreneurship and ultimately economic development. In this sense, it is found that the informal institutions are more important for entrepreneurship than the formal ones. The intentionality toward progress constitutes an institutional characteristic that encourages the type of entrepreneurial activity needed to achieve higher growth and development, where, in addition, inclusive processes are created.

Finally, this research has theoretical and public policy implications. In terms of the theoretical debate, this thesis may provide empirical evidence for the idea that economic development embraces not only those determinants that explain growth directly, but also those fundamental factors that condition the decisions of economic agents. In this sense, entrepreneurship is proven to be affected by institutional factors, and at the same time, to influence outcomes such as economic growth and development. Thus, policy makers that are constantly creating strategies should take into consideration that any policy implemented affects entrepreneurial decisions, and at the same time, the development path of countries.

Keywords: Entrepreneurship, Entrepreneurial Activity, Institutional Economics, Economic Growth, Economic Development.

JEL classification: B52, L26, M13, O00, O17, O40.

Chapter 1

General Introduction

1. General Introduction

1.1. Problem statement and research objectives

During the last two decades, as a research field, entrepreneurship has expanded its frontiers toward new knowledge in academia, managerial learning and public policies design (Audretsch, 2012; Audretsch et al., 2015b; Blackburn & Kovalainen, 2009; Welter et al., 2017). Although most literature has provided evidence for developed countries, there has been a growing interest in exploring entrepreneurial activity on emerging economies, which enables an international comparison (Bruton et al., 2010). The explorations at a theoretical level from different disciplines have allowed pioneer scholars to define a starting point by exploring those factors that affect entrepreneurial activity, as well as those ones caused by entrepreneurship (Thornton et al., 2011; Carlsson et al., 2013). For instance, it has been argued that there a relationship exists between entrepreneurship and psychological (McClelland, 1961), economical (Schumpeter, 1911) and managerial (Shane & Venkataraman, 2000) elements. Bruton et al. (2010) and Alvarez et al. (2015), among others, have suggested that there is still a factor drawing the attention of many scholars in the recent past years. Accordingly, formal and informal institutions have found it to be crucial to understand how individuals behave and make decisions in order to become entrepreneurs, especially if differences across countries are taking place and shaping entrepreneurial activity (Alvarez et al., 2015; Veciana & Urbano, 2008). In this regard, Acs et al. (2010) and Bruton et al. (2009) have argued that institutional barriers might explain the existing gap of entrepreneurship between developing and developed countries, in which the former group tends to exhibit an enduring and better quality of entrepreneurship, while the latter is plagued by a high rate of unofficial economy and higher corruption levels.

The type and quality of entrepreneurship that is conditioned by the institutional context has prompted questions at the public policy level, since entrepreneurship is linked to economic growth and development (Desai, 2016). Although in this thesis there is an awareness that economic growth is a necessary condition (but not sufficient) for economic development, it is believed that measures such as gross domestic product (GDP) (aggregated and per capita), labor productivity and the recent index of social progress are accurate approaches of development (Acemoglu, 2009; Barro & Sala-i-Martin, 2003; Porter et al., 2014). In this sense, Acs et al. (2012), Audretsch (2007), Audretsch and Keilbach (2004a,b,c, 2005, 2007, 2008) and Audretsch et al. (2008), among others, have provided empirical evidence about the importance of entrepreneurship in enhancing economic change and progress. Accordingly, entrepreneurship contributes to cluster formation (Rocha, 2004) and new jobs creation (van Praag & Versloot, 2007; van Stel & Storey, 2004). In this

regard, many scholars have been interested in exploring whether entrepreneurial activity affects the economic development of developing and developed countries alike (Blackburn & Smallbone, 2008; Valliere & Peterson, 2009). Some studies in this line of research have tackled this question by analyzing different samples at a country level. For instance, Carree et al. (2002, 2007) and van Stel et al. (2005) have found that entrepreneurship and GDP per capita have a U-shaped relationship. This means that at a certain point in the distribution of countries, entrepreneurial activity might not exert any influence on economic development. Nonetheless, from a certain point onwards, entrepreneurship relates positively to economic change. Wong et al. (2005), Wennekers et al. (2005) and van Stel et al. (2005) suggest that, depending on the type of entrepreneurship, national productivity (as another measure of development) might be further enhanced. Arshed et al. (2014), Reynolds et al. (2005) and Shane (2009) discuss the importance of analyzing why some countries are encouraging the entrepreneurial activity that tends to survive across time, while others are interested in increasing only the global rates. The previous evidence has shown that those countries with a lower income level exhibit larger rates of entrepreneurship driven by necessity, while more developed countries have an entrepreneurial structure based upon opportunity recognition and innovation (Acs et al., 2008a).

From the extant literature in entrepreneurship and economic development, it is suggested that scholars are effectively facing a complex phenomenon (Terjesen et al., 2016). One important conclusion derived from these studies concerns the necessity of an institutional framework to explain how entrepreneurial activity is configured in each location. This idea is also claimed by Bjørnskov and Foss (2013) and Nissan et al. (2011), who find that institutions affect economic growth, specifically legal institutions, such as procedures or the time needed to create a new business, indicating that regulation can influence the context in which entrepreneurship affects social and economic progress. Audretsch and Keilbach (2008) and Baumol and Strom (2007) discuss the importance of understanding how entrepreneurship is configured by taking into account culture, beliefs and social values, among other factors, to obtain the best understanding of the role of entrepreneurship in economic development. In that sense, Bruton et al. (2010), Thornton et al. (2011) and Urbano and Alvarez (2014), among others, suggest that institutional economics could be useful for understanding which socio-cultural factors encourage entrepreneurship behavior in order to increase the economic growth rate.

In terms of the causal chain that goes from institutions to entrepreneurship and economic performance, there are studies that have theoretically and empirically analyzed this complexity (cf. Bjørnskov & Foss, 2012, 2016; Castaño-Martinez et al., 2015, 2016; Méndez-Picazo et al., 2012; Terjesen et al., 2016). Although this literature has been useful for expanding the knowledge frontier in entrepreneurship research, many questions remain in terms of the importance that institutions bring

to entrepreneurial activity within each country. Effectively, Bjørnskov and Foss (2016) and Terjesen et al. (2016) discuss that entrepreneurship is conditioned by institutions, which in turn affects economic growth. However, what types of institutions do these authors refer to? Are these effects similar between developed and developing countries? So far, the extant literature has addressed the causal chain by empirically exploring the simultaneity between institutions, entrepreneurship and economic growth only in developed economies (e.g. European countries); and only analyzing formal institutions such as economic freedom (Bjørnskov & Foss, 2012) and policies and governance structure (Castaño-Martinez et al., 2015, 2016; Méndez-Picazo et al., 2012).

Despite the previous findings and theoretical discussions, there are some aspects in the literature of this causal chain that might require further understanding. Although it is not purely entrepreneurship, there are works discussing and providing evidence about the importance of productive factors, which absorb institutional changes in order to contribute to the national productivity and progress. Basically, Acemoglu et al. (2014) and Gleaser et al. (2004) argue that institutions do not cause growth. Instead, according to these authors, institutions condition those mechanisms that are directly linked to growth and development (e.g. human capital). Here, any law and cultural setting create a distortion in the relationship between the productive factors and economic growth. Translating this idea into the entrepreneurship field, Baumol and Strom (2007) and Aghion and Festré (2017) argue that laws, regulations, etc. are important for defining a legal framework needed for entrepreneurial activity. Nonetheless, the role of some conditioning factors such culture, beliefs, progress intention and so on, also take place in the environment where entrepreneurs are constantly making decisions. Hence, the few works found in this regard suggest that more empirical studies dealing with the sequence from institutions and entrepreneurship to economic development are needed (Thornton et al., 2011). Studies along this line might serve to integrate the thus-far separated streams within entrepreneurship research (Carlsson et al., 2013). By analyzing this causal chain, policy and theoretical implications could be discussed regarding institutional economics as a framework for understanding the link between entrepreneurship and economic progress (Bruton et al., 2010).

Overall, the main objective of the thesis is to explore the institutional factors that encourage entrepreneurial activity to achieve higher economic development across developing and developed countries. In this regard, this thesis places particular emphasis on different types of entrepreneurship and economic development measures, as well as on specific contexts.

The specific objectives of the research are outlined below, with each specific objective corresponding to a different research phase:

- 1) To explore the content and evolution of both the isolated relationships between institutions and entrepreneurship, and how the latter is linked to economic progress as well as the whole causal chain that goes from institutions to entrepreneurship and economic development (phase 1).
- 2) To examine the influence of social intentionality, as a particular informal institution, on different types of entrepreneurship (phase 2).
- 3) To analyze the effect of entrepreneurship types, as capital factors, on economic growth (phase 3).
- 4) To comprehend the complex view of economic development influenced by entrepreneurship, which depends on institutional factors (phase 4).

1.2. Research contribution

The objectives established above address some areas explored in entrepreneurship research, which may generate further knowledge for the policy debate and theoretical discussion. In particular, this section presents some existing gaps that create the opportunity to continue investigating the entrepreneurship phenomenon. In this sense, some explanations and motivations of each specific goal are provided.

First, given the growing recognition of entrepreneurship to achieve higher economic growth, as well as the fertile grounds that extend our understanding of institutions and entrepreneurial activity (Bruton et al., 2010; Carlsson et al., 2013), recent literature analysis is needed to look at and comprehend the existing trends in the field. By conducting a systemic literature review it is possible to identify what previous scholars have defined as possible pathways to keep exploring. In this regard, the first specific objective of this research (Chapter 2) explores the content and evolution of both the isolated relationships between institutions and entrepreneurship, and how the latter is linked to economic progress, as well as the whole causal chain that goes from institutions, entrepreneurship and economic development. Along with bibliometric indicators (the number of authors dealing with these topics, the journals publishing related works and the amount of theories, methods, etc. used), the literature analysis enables observation of the most accurate frameworks to support the empirical exercises, which in turn, allow the discussion of future research lines, public policy agenda and managerial implications. Although Bjørnskov and Foss (2016) conduct a similar literature analysis, the discussion on the type of institutions, in which the informal factors are highlighted (cf. Urbano & Alvarez, 2014), might serve to explore further their influence on the link between entrepreneurship and development.

Second, the works of Uhlaner and Thurik (2007) and Stephan and Uhlaner (2010) have served to argue that different characteristics of a society define the level and quality of entrepreneurship, as well as the social support for this activity.

Accordingly, Thornton et al. (2011) and Urbano and Alvarez (2014) suggest that this social thinking and behavior turns out to have a higher relevance to entrepreneurship than governmental strategies to increase (or improve) the rate of new business creation. However, the idea of intentionality toward progress is still implicit in the analysis conducted so far. In this regard, the second specific objective aims to examine the influence of social intentionality, as a particular informal institution, on different types of entrepreneurship (Chapter 3). To this end, institutional economics is used as a theoretical framework, which is suggested to be the most accurate one, according to the previous chapter. Thus, social progress orientation might be the concept that moves forward the idea of intentionality, which could establish the long-term basis to achieve and perform hard and complex activities such as, among others, entrepreneurship.

Third, it is argued that the traditional long-term analysis of growth and development has mostly relied upon neo-classical growth models (Solow, 1956; Swan, 1956). Drawing on this, Audretsch and Keilbach (2004a,b,c, 2005, 2007, 2008) developed the concept of entrepreneurship capital. Accordingly, this new capital factor suggests that depending on how economic agents (households, government, incumbent firms, etc.) are articulated, economic growth might be more affected. Based upon the idea of social capital (which is considered another informal institution – cf. Aidis et al., 2008; De Clercq et al., 2010), entrepreneurship capital is included in the traditional growth models to empirically assess the effect of entrepreneurial activity on economic growth. Although Audretsch and Keilbach (2004a,b,c, 2005, 2007, 2008) have explored this new capital factor in depth, the analysis remained at a regional level (in Germany) and tested only the startup density rate as entrepreneurship capital. Thus, total entrepreneurial activity (TEA), and its driving motivations (opportunity and necessity TEA) might be used and proposed as other capital types that could be assessed in the production function. On these bases, the third specific objective aims to analyze the effect of entrepreneurship types as alternative measures on economic growth. Complementary to the previous specific objective, which posits that society defines the entrepreneurial behavior, through Chapter 4 it is possible to provide evidence on how entrepreneurship capital types may differ between developed and developing countries, and therefore, how it may serve to discuss policy implications depending on the development stage of each country.

Finally, Bjørnskov and Foss (2016), Baumol and Strom (2007) and Terjesen et al. (2016), among others, make an important attempt to discuss and suggest the relevance of embracing the complexity that exists between the antecedents of entrepreneurs and their aggregated effect on economic development. Similar to Rodrik (2003), the complex economic growth and development process may be approached through the inclusion of institutions as conditioning factors of those productive elements (in which entrepreneurship and international trade take place) that are contained within the national production function. Based on these ideas, the

fourth specific objective aims to comprehend the complex view of economic development influenced by entrepreneurship, which depends on institutional factors. By empirically testing this, it is possible to combine the two previous specific objectives in one single model. This might allow the understanding of how the endogenized entrepreneurial activity (through institutions) becomes a factor affecting growth and development. Hence, this thesis delivers a series of chapters that seek to address such analyses on institutions, entrepreneurship and economic development (Chapters 5, 6, 7 and 8). Although literature exists that conducts analysis on institutions, entrepreneurship and economic growth, these chapters provide further evidence regarding the higher importance of informal institutions on increasing entrepreneurial activity driven by innovation and opportunity recognition, which at the same time influences statistically and positively economic growth as well as alternative measures of development (i.e. inclusive growth and social progress).

1.3. Conceptual framework: Institutional economics

As mentioned before, institutional economics as a theoretical framework could provide an accurate perspective for understanding the institutional determinants of entrepreneurial activity and its differences across countries (Carlsson et al., 2013). This section presents an illustrative scheme of the growth/development process guided by entrepreneurship, which is, at the same time, affected by institutions.

In general terms, institutions define the environment in which individual intentionality is created and developed (North, 2005). According to North (1990, 2005), institutions are the “rules of the game in a society, or more formally, [...] the constraints that shape human interaction” (North, 1990, p. 3). These institutions can be either formal, such as regulations, contracts, procedures, etc., or informal, such as the culture, values or social norms of a particular society. As North (1990) suggests, formal institutions intend to reduce the transaction costs based on regulations, whereas informal institutions exist to reduce the uncertainty caused by the decision making of all individuals (North, 2005). One additional conclusion of this framework is related to the interactions between formal and informal institutions, whereby some regulations could be efficient depending on the cultural values and the intentionality of a society. Thus, informal institutions constrain the nature of formal institutions and vice versa. Meanwhile, formal institutions can change in a short period of time; however, informal institutions change more slowly (Williamson, 2000).

By considering institutional economics, Bruton et al. (2010) have analyzed the relevance of institutions to boost or hamper entrepreneurial behavior, which is related the level of economic development. Thereby, future research lines could provide a broader comprehension of the link between institutions, entrepreneurship and economic development (Bjørnskov & Foss, 2016). In what

follows, this thesis explains very briefly how institutions are conceived to determine entrepreneurial activity, as well as how they create an environment to channelize the aggregated effort of entrepreneurs toward socioeconomic outcomes (for more information, see Chapter 2 of this thesis).

1.3.1. The institutional determinants of entrepreneurship

The intentionality of individuals toward entrepreneurial decisions could depend on the context in which they are involved and it can lead to different patterns of growth (Bruton et al., 2010, p. 426). As mentioned before, the entrepreneurial decisions made by human behavior are influenced by institutional factors (Thornton et al., 2011). This idea has been expanded into the field of entrepreneurship research, in the sense that both formal and informal institutions could either constrain or foster the decision to create a new business based on opportunity perceptions (Alvarez & Urbano, 2011). Thus, some scholars propose the application of institutional economics to the analysis of entrepreneurship (Aidis et al., 2008; Alvarez & Urbano, 2011; Salimath & Cullen, 2010; Thornton et al., 2011; Urbano & Alvarez, 2014; Veciana & Urbano, 2008; Welter, 2005; among others).

From a theoretical perspective within the entrepreneurship and organizational fields, authors such as Gnyawali and Fogel (1994) and Scott (2008) suggest that the institutional pillars may frame entrepreneurial activity. For instance, Gnyawali and Fogel (1994) discuss the importance of government policies and procedures, social and economic factors, entrepreneurial and business skills, financial assistance to businesses and non-financial assistance, whereas Scott (2008) suggests dimensions such as cognitive, normative and regulative structures, which provide stability and meaning in social behavior. In a general sense, these pillars are under the frame of institutional economics. Here, formal institutions are subordinated to informal ones. It implies that formal settings are used to structure the interactions of a society in line with the norms and values. The long-term results of these social actions lead again to the evolution of informal institutions. North's definition implies that the strategies and policies designed to change formal institutions regardless of the measures taken to adjust the informal institutions in compatible ways will have only marginal success (Thornton et al., 2011).

The balance between institutional settings, entrepreneurship and economic development is relevant to design effective and particular policies according to the context of each country or region (Ács et al. 2014). Some authors have related institutional capacity to the level of economic development in order to explain the differences of entrepreneurship rates across countries (Amorós et al., 2012; Terjesen & Amorós, 2010), and other authors have found that entrepreneurial activity has a U-shaped relationship with economic growth (Carree et al., 2002, 2007; Wennekers et al., 2005). However, these authors do not differentiate between the impact of institutions on entrepreneurship and the relative importance of this factor on economic growth. Similarly, van Stel et al. (2007) have studied the effect

of business regulation on nascent and established entrepreneurs, whose decision of regulation depend on political legacy and development stage of each country. Some important conclusions could be derived from these works: (i) there is correlation between institutions and economic development, (ii) given the capacity and efficiency to create norms and laws, the entrepreneurial activity would increase or decrease, and therefore (iii) entrepreneurship would have a higher impact in some countries than others. Thus, institutions may represent an accurate framework to explore how entrepreneurial activity and development interact, as well as how entrepreneurship, as an intermediary, may transfer the effects of institutions into the development process.

1.3.2. Institutions: the backward link of entrepreneurship and economic development

As Audretsch and Keilbach (2004a,b,c, 2005, 2008) and Audretsch et al. (2008) claim, the endowment of entrepreneurship capital and its consequences on economic growth could depend upon the institutional settings of each country. However, according to the neo-classical theory, economic growth relies upon physical capital and labor as driving factors to achieve higher rates (Solow, 1956; Swan, 1956). This perspective has changed since Romer's (1986) study, which included new variables in the neo-classical model in order to improve the way for analyzing national productivity through a new family of growth models. Following the evolution of this approach, many scholars have emphasized the importance of the accumulation of knowledge in the process, and hence the creation of knowledge capital (Romer, 1986). Therefore, this new class of growth model recognizes some aspects of social factors that are also important in the generation of economic growth. According to this literature, entrepreneurship could be an important factor that explains the rates of growth at national and regional level (Audretsch & Keilbach, 2004a; Minniti & Lévesque, 2010), and therefore it should be encouraged where investments in social capital are greater (Amin, 2000; Simmie, 2003; Lawton Smith, 2003).

Authors such as Minniti and Lévesque (2010) use this idea to incorporate entrepreneurship behavior into the Solow-Swan growth model. They develop a mathematical framework for demonstrating how different types of entrepreneurship could lead to a long-term equilibrium, and therefore, achieve convergence across countries. Other studies, such as those by Audretsch and Keilbach (2004a,b,c, 2005, 2008), Bjørnskov and Foss (2013) and Iyigun and Owen (1999), provide empirical evidence concerning the effect of entrepreneurship on economic growth, and its differences or similarities in regions or countries. In the case of Audretsch and Keilbach (2008) and Audretsch et al. (2008), they show that entrepreneurship based on knowledge tends to have a higher influence on regional economic growth than entrepreneurship driven by necessity and survival reasons. These authors assess entrepreneurship as a new input into the Solow-Swan model to find its weight in the growth process and convergence. Additionally, Carree et al.

(2002, 2007) determine how disequilibrium in the entrepreneurship rate could affect growth in OECD countries.

Looking at the history of economic thought, the relationship between entrepreneurial decisions and economic growth was explored by Schumpeter (1911), who argued that innovative entrepreneurs are capable of generating shocks in the economy, creating new and higher long-term equilibria. This author also suggested that these innovations implemented within the markets lead to new path dependency and encourage new entrepreneurs, which will sustain the development process. However, some other papers have used institutions as direct determinants to understand the economic growth and development process. In fact, North (1990) suggests that institutions might affect the growth and explain the differences across countries. Following this idea, Acemoglu (2006) and Acemoglu and Robinson (2008) explore the development path of several countries based upon their institutional settings. According to these authors, institutions affect the individuals and firms in the regions and countries. Nevertheless, Rodrik (2003) suggests that institutions are an antecedent of those factors that affect economic development directly. According to Rodrik (2003), economic development has three main components: i) endogenous factors, which contain the determinants that are directly related to national income, ii) partly endogenous, which could have some interactions prior to affecting economic development, and iii) exogenous which concern geography and natural resources. One of the endogenous factors suggested by this author deals with entrepreneurial behavior, especially behavior that is based on knowledge that is capable of generating employment and diversifying the national production. By understanding this process, we can embrace the impact of institutions on entrepreneurship that allows achievement of social progress as well, entering into the broader concept of economic development. Drawing on these ideas, Bjørnskov and Foss (2012, 2013, 2016), Castaño-Martinez et al. (2015, 2016), Méndez-Picazo et al. (2012) and Nissan et al. (2011) open new directions to study the interplay between institutions, entrepreneurship, and economic growth.

1.4. Structure of the research

In this section, the contents of the thesis are briefly presented, divided into four phases and eight chapters (in addition to the general introduction and conclusions). Specifically, the main objectives and methodologies of each phase are highlighted and in particular, the objective, methodology and main results are introduced.

To identify the trends and discussions within the entrepreneurship field, this research project begins with a literature review phase (Chapter 2), which explores the extant literature at the theoretical and empirical level of analysis. Motivated by some of those gaps found, phase 2 (Chapter 3) focuses on the role of institutional factors for different entrepreneurship types, in which the concept of social progress orientation becomes relevant for underlining the importance of informal

institutions to increase the entrepreneurial activity. In phase 3 (Chapter 4), an analysis is provided of entrepreneurship capital types as key factors for achieving economic growth in developed and developing countries, as well as for before and after the economic crisis. Finally, in phase 4 (Chapters 5, 6, 7 and 8), the whole causal chain is assessed by simultaneously estimating the effects of institutions on different types of entrepreneurship and their consequences on economic development.

Phase 1: Literature review and empirical evidence regarding the institutional determinants of entrepreneurship and its link with economic development

Through synthesizing disparate strands of literature over the period 1992-2016, Chapter 2 identifies an emergent stream of research that sheds light on the institutional factors that shape entrepreneurial activity and their effect on economic growth. This integrative analysis spans a broad spectrum of disparate literature, enabling a distinction between two different research lines in the entrepreneurship field. The findings of this chapter enable a broader comprehension of these two separate lines of research, which allows for an analysis of the interaction between institutions, entrepreneurship and economic development.

Phase 2: Institutions and entrepreneurial activity: the role of social progress orientation

Chapter 3 examines the influence of social progress orientation on entrepreneurship from an international perspective. Using a multiple linear regression model with cross-sectional information from the Global Entrepreneurship Monitor, the Indices of Social Development, the World Values Survey, the Hofstede Centre, the United Nations Development Programme and World Development Indicators, this chapter hypothesizes that social progress orientation dimensions such as voluntary spirit, survival vs. self-expression, values and power distance are related to entrepreneurial activity.

Phase 3: Entrepreneurship as a key capital factor to achieve higher economic growth

Chapter 4 analyzes the effect of entrepreneurship capital types on economic growth. In this chapter, an augmented Cobb-Douglas production function is used, which allows for the introduction of variables such as entrepreneurship capital into the analysis of growth as an endogenous factor. In particular, this work seeks to be differentiated from the previous studies by using panel data analysis, with 43 countries in the period from 2002 to 2012, and different measures of entrepreneurship capital.

Phase 4: Building a complex view for economic development influenced by entrepreneurship, which depends on institutional factors

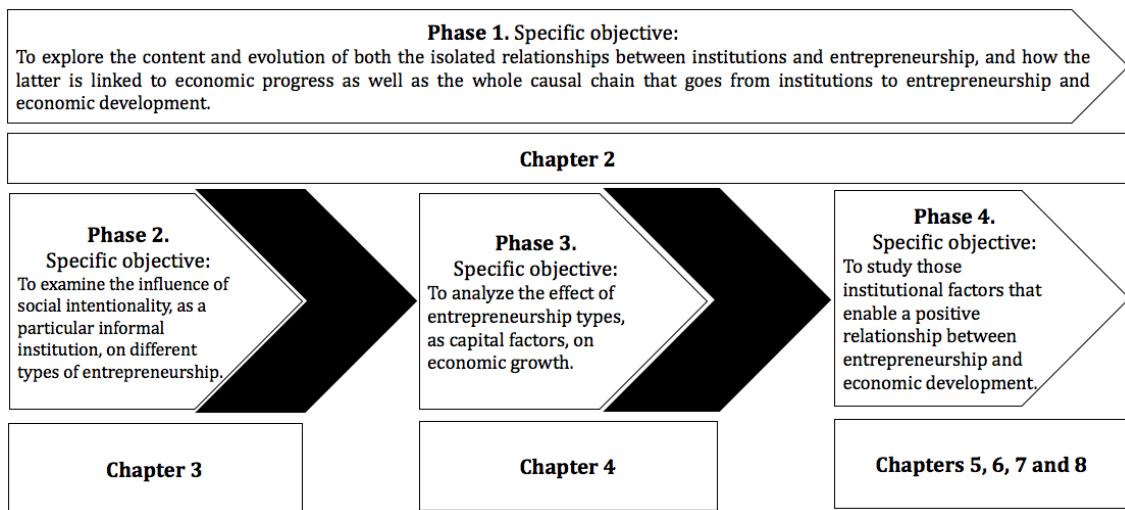
Chapter 5 explores the institutional factors that encourage opportunity entrepreneurship in order to achieve higher rates of economic growth. In this sense, it is argued that institutions may not have an automatic effect, as is typically assumed in models of endogenous growth. Rather, a mechanism is required to serve as a conduit to the society for those institutional factors that affect productive behavior, such as entrepreneurial activity. Thus, opportunity entrepreneurship might be one mechanism that impacts on economic growth. Using a three-stage least-square method through unbalanced panel data with 43 countries (2004-2012), this chapter hypothesizes that informal institutions have a higher impact on opportunity entrepreneurship than formal institutions.

Chapter 6 investigates the links between institutional context, export-oriented entrepreneurship, and economic performance using simultaneous-equation panel data models for a sample of 43 countries over the period 2004-2012. This chapter focuses on the differences between developed and developing countries through interaction effects. Based on the literature regarding institutions, international entrepreneurship and economic development, the existence of directional causality running from institutions to the different levels of export-oriented entrepreneurship is suggested, which is linked to economic growth.

Chapter 7 examines how social progress orientation (SPO) through entrepreneurship driven by innovation and opportunity recognition affects inclusive growth, which is a proxy for economic development. Using an unbalanced panel data of 132 observations (63 countries) and the three-stage least-squares method (3SLS), this chapter seeks to provide empirical evidence that SPO measured through civic activism, voluntary spirit, and interpersonal safety and trust might exert a positive effect on innovative and opportunity entrepreneurship, which in turn, affect economic growth that reduces poverty.

Finally, Chapter 8 examines how a country's institutional context influences the way in which entrepreneurial activity affects social progress. Following the theoretical approach of institutional economics, the hypothesis is tested using pooled data from 62 countries (2012 and 2014) and a simultaneous-equation model estimation. In this respect, it may be possible that business regulations decrease entrepreneurial activity, while established democracies provide a government context conducive to entrepreneurship. Additionally, the chapter hypothesizes that the entrepreneurial activity is positively linked to the Social Progress Index, which is an alternative measure of economic development. Finally, Figure 1.1 summarizes the different phases of the thesis.

Figure 1.1. Main phases of the thesis



Chapter 2

Institutional Antecedents of Entrepreneurship and its Consequences on Economic Growth: A Systematic Literature Review

2. Institutional Antecedents of Entrepreneurship and its Consequences on Economic Growth: A Systematic Literature Review

2.1. Introduction

As mentioned above, entrepreneurship research calls for the attention of many scholars from different social sciences (Blackburn & Kovalainen, 2009; Fried, 2003; Landström et al., 2012; Teixeira, 2011) in terms of cross-national variation in entrepreneurial activity, the reasons behind this phenomenon, and its possible consequences on the economy (Baumol & Strom, 2007; Carlsson et al., 2009; Terjesen et al., 2016). On the one hand, some authors suggest that part of the reasons lie in the country-specific institutional contexts in which the entrepreneurs operate (Aidis et al., 2008; Busenitz et al., 2000; Dana, 1987; Mueller & Thomas, 2001; Reynolds et al., 1999, 2000, 2001; and Urbano & Alvarez, 2014; among others). On the other hand, regarding the consequences, scholars such as Wennekers and Thurik (1999) and van Praag and Versloot (2007) have summarized those studies that empirically assess the effect of entrepreneurship on economic growth.

Although previous studies focused separately on the institutional factors behind entrepreneurship, and on its possible effects on the economy, there is limited understanding of the role that the institutional context plays in economic growth through the influencing of entrepreneurial activity. For instance, one important conclusion derived from the studies by Bjørnskov and Foss (2016), Wennekers and Thurik (1999) and van Praag and Versloot (2007) is that the institutional environment needs to be explicit in order to understand why the effect of entrepreneurship on growth differs across regions and countries. In other words, the question is: how does the institutional environment affect entrepreneurship, which is one of the key factors that enhances economic growth? According to Aidis et al. (2008), Bradley et al. (2016), Bruton et al. (2010), and Thornton et al. (2011), among others, institutions have proven to be especially helpful in understanding how entrepreneurial activity is shaped and how entrepreneurs make decisions in order to improve the economy. However, Naudé (2011) claims that the understanding of the complete chain from institutions to economic growth and development remains unexplored. Audretsch et al. (2008) also highlight this idea, stressing the need to include the entrepreneurship factor into the neoclassical production function to assess its effect on economic growth. Although Audretsch et al. (2008) find that entrepreneurship has a positive impact on growth, they suggest not only new research in this line but also improving the measurement of the entrepreneurship variable. In fact, these authors are explicit in stating that institutions are required to explain the endowment of entrepreneurship in each region and country, which could be useful to understanding not only the difference

in growth across countries but also why entrepreneurship has different effects on some countries compared with others (Acs et al., 2008a). Additionally, Audretsch (2012) concludes that to perceive the phenomenon of entrepreneurship and economic growth together could better encourage discerning the dynamic in both the entrepreneurship and economic fields (at the micro and macro levels). Thus, not only is understanding both complex relationships and their possible sequence useful for planning strategies and public policies, but it is also useful for advancing and providing new insights in these research fields, which could be complementary and interdisciplinary.

Therefore, the objective of this chapter is to identify an emergent stream of research shedding light on the institutional factors shaping entrepreneurial activity and its effect on economic growth. In particular, the chapter focuses on the analysis of the literature about: (a) the institutional factors affecting entrepreneurship; (b) the entrepreneurship impacts of these factors on economic growth; and (c) the overall sequence from institutions to the relationship between entrepreneurship and economic growth.

Concerning the methodology, we selected articles from the journals included in the Web of Science (WoS) database. This systematic literature analysis covered articles from 1992 to 2016. In order to identify high-quality journals, we considered only journals with a five-year impact factor higher than 0.1 according to Journal Citation Reports (JCR) for 2015. We conducted three types of searches, with the aim of exploring the two relationships and the overall sequence. We started with keywords that relate institutions with entrepreneurship, and then entrepreneurship with economic growth. Finally, for the overall sequence we combined all keywords from institutions to economic growth. In this last search, we found 451 articles that most commonly represent the second relationship. To conduct the search of the first relationship, we used the following keywords found in the title, abstract, and text of the articles: “institutions,” “institutional theory,” “institutional economics,” “institutional approach,” “institutional dimensions,” “institutional perspective,” “institutional pillars,” “institutional analysis,” “institutional drivers,” and “institutional economic theory” which were combined with “entrepreneurship capital,” “entrepreneurial activity,” “ownership firms,” “self-employment,” “business ownership,” “entrepreneurship,” “new firm creation,” “new firm formation,” “new business creation,” and “new venture creation.” We obtained 5,459 articles, which were filtered through business economics and related research areas, and taking only into account articles and reviews written in English (Merigó et al., 2016; Simo & Sallan, 2010). Since we are interested in the causality from institutions to entrepreneurship at a macro level, we have not included in the literature analysis those papers that have studied institutions from the organizational level (cf. DiMaggio & Powell, 1991). In this regard, concepts such as institutional entrepreneurship, institutional logics, institutional work, among others, were not considered. Thus, the final sample consisted of 103 articles. By using the same

criteria, we explored the second relationship with the following keywords: “entrepreneurship capital,” “entrepreneurial activity,” “ownership firms,” “self-employment,” “business ownership,” “entrepreneurship,” “new firm creation,” “new firm formation,” “new business creation,” and “new venture creation,” which were combined with “economic growth,” “economic development,” “economic performance,” “economic outcome,” “regional growth,” and “regional development.” We obtained 2,684 articles and we considered 81 articles, which are focused upon the impact of entrepreneurship on economic growth.

After this brief introduction, the chapter is structured as follows. In Section 2, we walk through the theoretical framework, which is useful for understanding what institutional factors affect entrepreneurial activity by enhancing economic growth. In Section 3, we present the results in terms of both relationships (institutions-entrepreneurship and entrepreneurship-economic growth), also discussing the structural view that concerns the overall sequence. In this section, we analyze papers per author and journal, theoretical frameworks, and techniques used. Finally, Section 4 concludes and highlights the main implications of the article¹.

2.2. Institutional factors, entrepreneurship and economic growth

The debate about the determinants of economic growth still remains open (Easterly & Easterly, 2001; Helpman, 2004). Since the work of Solow (1956) and Swan (1956), there has been a need for understanding the complexity of growth phenomena, whose initial factors such as physical capital and labor and human capital, among others, allow the possibility to study economic growth and the differences across countries. Apart from classical factors, since the late 1980s this debate has turned to other types of determinants that consider new elements in classical production function (Aghion & Howitt, 1992; Romer, 1986). For instance, North (1990, 2005) provides a theoretical advance, suggesting the importance of institutions in the analysis of economic growth and development. According to North, institutions shape the progress intentionality of individuals in each society. From this idea, a new discussion arises to understand the role of institutions in the economic growth process (Rodrik, 2003). As mentioned in Chapter 1, Rodrik (2003) suggests that institutions are not linked directly with the aggregated output, but they are behind the endogenous factors of economic growth. Key questions arise from the finding that the institutional context influences the individual choices that generate economic dynamics. Rodrik (2003) and Hausmann and Rodrik (2003) suggest that the links between entrepreneurship and industrial development imply that productive factors are highly influenced by the institutional environment.

Focusing on the entrepreneurship phenomenon, since the late 1990s authors such as Wennekers and Thurik (1999) have linked entrepreneurial activity with

¹ It is important to highlight that we only focus on articles dealing with a country’s or region’s gross domestic product (GDP—total or per capita) or GDP growth, as well as labor productivity or total factor productivity (TFP) (van Praag & Versloot 2007).

economic growth. Since their study, entrepreneurship has been considered as an important mechanism to generate economic growth (Acs et al., 2012; Audretsch & Keilbach, 2004a, 2008). Audretsch and Keilbach (2004b) concretely tested the effect of entrepreneurship capital as an endogenous factor on economic growth. In this research line, they assessed the same relationship several times (Audretsch & Keilbach, 2004a,b,c, 2005, 2007; Audretsch et al. 2008), concluding its importance in the economic growth process for each region and country considered. However, in all of these papers, a possible limitation is that entrepreneurship capital assumes the institutional context inside this measure. As recommended by Audretsch et al. (2008), future research should incorporate new measures of entrepreneurship capital as well as the understanding of how different institutions help to draw entrepreneurship that affects economic growth positively. Hence, the institutional approach² provides a broad insight into understanding how institutions are related to entrepreneurial activity as well as which institutions are most important for explaining entrepreneurship rates that enhance economic growth (Veciana & Urbano, 2008). From a general perspective, the institutional approach argues that both the legal and socio-cultural environment determine the individual's decision to start a business (Aldrich & Zimmer, 1986; Berger, 1991; Busenitz et al., 2000; Manolova et al., 2008; Shapero & Sokol, 1982; Steyaert & Katz, 2004; Stephen et al., 2009; van Stel et al., 2007; among others).

This chapter focuses on institutional economics (North, 1990, 2005), which allows us to understand the institutional environment that affects new business creation (Aidis et al. 2008, 2012; Bruno et al. 2013; Bruton et al. 2010; Busenitz et al. 2000; Thornton et al. 2011; Welter & Smallbone, 2011; among others). As broadly discussed in Chapter 1, under this umbrella, institutional factors are the driving conditions for entrepreneurship, distinguishing between formal and informal factors.

According to North (1990, 2005), both types of institutions contribute to the crucial conditions conducive to economic growth. Following this idea, Acemoglu et al. (2014), Baumol (1990), and Rodrik (2003) suggest that institutions could affect economic growth and development in an indirect way rather than through a direct effect. Through this insight, we understand institutions as precedents of entrepreneurship, which is related to the proportion of small businesses in a country and their dynamism, economic growth, and economic activity diversity (Aparicio et al. 2016a; Sobel, 2008).

The next section provides the results according to the content of each article, which are analyzed under the institutional lenses. The details of our final sample are contained in Appendix 1 and Appendix 2.

² In this chapter it is used indistinctively institutional approach, institutional perspective, institutional theory, institutional analysis, institutional economics and institutional economic theory.

2.3. Results of the literature review

2.3.1. *Entrepreneurship and its institutional determinants*

After applying the filters described in the introduction of this chapter, 103 articles from the empirical (89), theoretical (10), and introduction to special issues (4) literature were identified and selected to explain the relationship between institutions and entrepreneurship (see the details in Appendix 1). All these articles propose (explicitly or implicitly) hypotheses with the sense that institutions affect entrepreneurship, and overwhelmingly find compelling empirical evidence supporting those hypotheses. Thus, in our analysis, we focus only on those results that identify journals, years, authors, theoretical frameworks, and methods used to relate institutions with entrepreneurship. Also, according to the theoretical framework mentioned in the previous section, we identify those articles that use formal, informal, or both types of institutional factors.

Regarding the authors who have published the most articles focusing on this relationship, we found that Urbano has fifteen articles, followed by Estrin (seven), Mickiewicz (six), Stephan (five), Audretsch (four), Desai (four), Guerrero (four), Pathak (four), Stephan (four), Aidis (three), Alvarez (three), Chowdhury (three), De Clercq (three), Sobel (three), Toledano (three), and Uhlaner (three). In total, we found 170 authors. Apart from those already mentioned, the rest have published one or two articles in this field.

With respect to those journals that publish articles with this relationship, we found that *Small Business Economics* has published the largest number (18.5 percent), followed by the *Journal of Business Venturing* (13.6 percent), *Entrepreneurship Theory and Practice* (8.7 percent), *International Entrepreneurship and Management Journal* (6.8 percent), and *International Small Business Journal* and the *Journal of Business Research* (3.9 percent each). In addition, the *European Journal of Law and Economics*, the *Journal of Evolutionary Economics*, the *Journal of International Business Studies*, and the *Journal of Small Business Management* have 2.9 percent for each journal. The rest of the journals have published one or two articles, representing 1 (twenty-two journals) or 1.9 percent (six journals) of the total works analyzed. It is interesting to note that most articles hypothesizing that institutions have effects on entrepreneurship were published in the period between 2012-2016 (see Table 2.1). Also, note that in the period 2007-2011 the number of articles published reaches 33, followed by 53 in 2012-2016, indicating that this relationship is a vibrant and current research field of study by an increasing number of scholars. Here it is important to highlight that the *International Entrepreneurship and Management Journal* published an introduction to a special issue in December 2008 about the institutional approach to entrepreneurship. Similarly, *Entrepreneurship Theory and Practice* published in May 2010 a special issue about institutional theory and entrepreneurship; while in April 2011 the *International Small Business Journal* published a special issue on socio-cultural factors and entrepreneurial activity; the *Journal of Business Venturing* dedicated a number to institutions, entrepreneurs, and

community in January 2013; *Small Business Economics* published a special issue about institutions and entrepreneurship in March 2014, and other articles regarding this relationship in April 2014. The *European Journal of Law and Economics* was focused on Regulation, firm dynamics and entrepreneurship in August 2015; and the *Academy of Management Perspectives* dedicated a symposium in August 2016 of institutions, economic freedom and entrepreneurship.

Table 2.1. Journals and published articles per year regarding institutions and entrepreneurship

Articles/Year	1992-1996	1997-2001	2002-2006	2007-2011	2012-2016	Total	%
Small Business Economics	1	0	0	6	12	19	18.45
Journal of Business Venturing	2	1	0	6	5	14	13.59
Entrepreneurship Theory and Practice	1	0	2	3	3	9	8.74
International Entrepreneurship and Management Journal	0	0	0	3	4	7	6.79
International Small Business Journal	0	0	1	2	1	4	3.88
Journal of Business Research	0	0	1	0	3	4	3.88
European Journal of Law and Economics	0	0	0	0	3	3	2.91
Journal of Evolutionary Economics	0	0	0	1	2	3	2.91
Journal of International Business Studies	0	0	0	2	1	3	2.91
Journal of Small Business Management	1	0	0	0	2	3	2.91
Academy of Management Perspectives	0	0	0	0	2	2	1.94
Entrepreneurship & Regional Development	0	0	0	1	1	2	1.94
International Business Review	0	0	0	1	1	2	1.94
Journal of Economic Behavior & Organization	0	0	0	1	1	2	1.94
Journal of Technology Transfer	0	0	0	0	2	2	1.94
Research Policy	0	1	0	0	1	2	1.94
Technological Forecasting and Social Change	0	0	0	0	1	1	0.97
Academy of Management Journal	0	1	0	0	0	1	0.97
Academy of Management Review	1	0	0	0	0	1	0.97
American Behavioral Scientist	0	1	0	0	0	1	0.97
American Economic Review	0	0	0	1	0	1	0.97
Asia Pacific Journal of Management	0	0	0	0	1	1	0.97
Canadian Journal of Administrative Science	0	0	0	1	0	1	0.97
Cybernetics and Systems	0	0	0	0	1	1	0.97
Economic Modelling	0	0	1	0	0	1	0.97
European Journal of International Management	0	0	0	1	0	1	0.97
Feminist Economics	0	0	0	1	0	1	0.97
Journal of Comparative Economics	0	0	0	0	1	1	0.97
Journal of Financial Economics	0	0	1	0	0	1	0.97
Journal of International Management	0	0	0	0	1	1	0.97
Journal of Public Economics	0	0	0	1	0	1	0.97
Management Science	0	1	0	0	0	1	0.97
Organization Science	0	0	0	0	1	1	0.97
Public Choice	0	0	0	1	0	1	0.97
Regional Studies	0	0	0	0	1	1	0.97
Review of Development Economics	0	0	0	0	1	1	0.97
Review of Economics and Statistics	0	0	0	0	1	1	0.97
Service Industries Journal	0	0	0	1	0	1	0.97
Total	6	5	6	33	53	103	100

With respect to the theoretical framework, we found different approaches (see Table 2.2). Given our focus of analysis, the main framework found in our literature

review is the institutional approach (69.9 percent). This approach uses North's (1990, 2005) ideas in terms of formal and informal institutions and their effects on entrepreneurship. Nonetheless, we also found that several papers using the institutional approach refer to this framework through different labels. The difference could be related to the decision on how to operationalize each type of institution (see Table 2.3). For example, formal institutions could be measured as policies, regulations, governmental variables, among others (Aidis et al., 2012; Baughn et al., 2006; Bruton et al., 2009; Busenitz et al., 2000; Chowdhury et al., 2015a,b; Estrin et al., 2013a; among others), and informal institutions could be measured as attitudes, values, social norms, religion, among others (Aidis et al., 2008; Estrin & Mickiewicz, 2012; Field et al., 2010; Levie & Autio, 2008; Meek et al., 2010; Stephan et al., 2015; Urbano et al., 2016; van Hemmen et al., 2015; among others). Similar to formal institutional factors (see Table 2.2), contract theory (6.2 percent) offers a framework to understand how the norm is created and what the possible effects are on entrepreneurial activity. Authors such as Anokhin and Schulze (2009), Bruno et al. (2013), Calcagno and Sobel (2014), Klapper et al. (2006), Román et al. (2011), Stephen et al. (2009), and van Stel et al. (2007) have used this theory to understand how entrepreneurship can be configured ex-ante and ex-post; in other words, what affects the creation of a new business and its subsequent development. Regarding those determinants more related with individual characteristics, occupational choice (5.3 percent) explains from a microeconomic point of view the decision to become an entrepreneur (Gohmann, 2012; Kannianen & Vesala, 2005; Malchow-Moller et al., 2010). Finally, additional theories and perspectives that were found include social capital theory (Estrin et al., 2013b; De Clerck et al., 2010; Hafer & Jones, 2015; Liñán et al., 2011), resource-based view (Guerrero & Urbano, 2012; Guerrero et al., 2014), geographical economics (Freire-Gibb et al., 2014), a dissatisfaction perspective (Uhlaner & Thurik, 2007), Baumol's theory of productive and unproductive entrepreneurship (Sobel, 2008), among others. All of these together, which we classified as "others," represent 18.6 percent of the total articles in Table 2.2.

These theories are helpful in explaining why it is important to use a set of variables from institutions (or institutional environment) that affect entrepreneurial engagement. Since North (1990, 2005) suggested a framework to understand how individuals make decisions (in particular, entrepreneurial choices) based on formal and informal institutions, some scholars have tried to explore different measures of institutions in the field of entrepreneurship. In terms of formal institutions, North (1990) suggests that factors such as contracts, procedures, political structure, and property rights are associated with reductions in the transaction costs based on regulations. In addition to studies that analyze regulatory issues (Busenitz et al., 2000; Calcagno & Sobel, 2014; De Clercq et al., 2010; Meek et al., 2010; Manolova et al., 2008; Spencer & Gomez, 2004; Stenholm et al., 2013; Valdez & Richardson, 2013), others look at procedures that are related to access to stock markets (Bruton et al., 2009), the financial system (Autio & Fu, 2015; Klapper et al., 2006; Peng et al.,

2010), hiring and firing rules and controls (Goltz et al., 2015; Román et al., 2011; van Stel et al., 2007), political structure (specifically corruption) (Chowdhury et al., 2015a,b; Estrin et al., 2013a), democracy (Bruno et al., 2013), and government size and capability (Autio & Fu, 2015; De Clercq & Dakhli, 2009; Estrin et al., 2013a,b). Finally, we found that including measures of property rights is less common in the literature (Chowdhury et al., 2015b). Authors such as Estrin et al. (2013a), Estrin and Mickiewicz (2013), Klapper et al. (2006), Nystro (2008), and Pathak et al. (2013) have tried to explain how this type of regulation fosters entrepreneurship given the idea of warranties to protect goods and services based on knowledge.

Table 2.2. Theoretical framework used in articles

Theory	Articles		Author and year of publication
	No.	%	
Institutional approach	79	69.91	Aidis et al. (2008), Aidis et al. (2012), Aidis et al. (2007), Aldrich and Fiol (1994), Álvarez et al. (2014), Aparicio et al. (2016a), Audretsch et al. (2013), Autio and Fu (2015), Baughn et al. (2006), Bauke et al. (2016), Belitski et al. (2016), Ben Letaifa and Goglio-Primard (2016), Bjørnskov and Foss (2016), Bradley and Klein (2016), Braunerhjelm et al. (2015), Bruton et al. (2010), Bruton et al. (2009), Busenitz et al. (2000), Carbonara et al. (2016), Chowdhury et al. (2015a,b), Davidsson et al. (2006), Davis and Williamson (2016), De Clercq et al. (2010), de Lange (2016), Dutta and Sobel (2016), Eesley (2016), Estrin et al. (2013a), Estrin and Mickiewicz (2011), Estrin and Mickiewicz (2012), Field et al. (2010), Fligstein (1997), García-Posada and Mora-Sanguinetti (2015), Gnyawali and Fogel (1994), Goltz et al. (2015), Guerrero and Urbano (2012), Guerrero et al. (2014), Hayton et al. (2002), Hechavarría (2016), Hechavarría and Reynolds (2009), Hoogendoorn et al. (2016), Hopp and Stephan (2012), Huggins and Thompson (2016), Kibler and Kautonen (2016), Kim and Kang (2014), Kirby et al. (2011), Krasniqi and Desai (2016), Krasniqi and Mustafa (2016), Kuckertz et al. (2016), Lerner et al. (1997), Levie and Autio (2008), Lim et al. (2016), Liñán et al. (2011), Mair and Marti (2009), Manolova et al. (2008), Meek et al. (2010), Michael (2011), Nyström (2008), Pathak and Muralidharan (2016), Pathak et al. (2013), Peng et al. (2010), Shane and Foo (1999), Spencer and Gomez (2004), Stephan and Uhlaner (2010), Stephan and Pathak (2016), Stephan et al. (2015), Stenholm et al. (2013), Toledano and Urbano (2008), Thornton et al. (2011), Uhlaner and Thurik (2007), Urbano and Alvarez (2014), Urbano et al. (2010, 2011, 2016), Valdez and Richardson (2013), van Hemmen et al. (2015), Veciana and Urbano (2008), Welter and Smallbone (2008), Yeganegi et al. (2016).
Contract theory	7	6.19	Anokhin and Schulze (2009), Bruno et al. (2013), Calcagno and Sobel (2014), Klapper et al. (2006), Román et al. (2011), Stephen et al. (2009), van Stel et al. (2007).
Occupational choice	6	5.31	Bauernschuster et al. (2010), Gohmann (2012), Kannianen and Vesala (2005), Lechner and Pfeiffer (1993), Malchow-Moller et al. (2010), Maimone Ansaldo Patti et al. (2016).
Others	21	18.58	Chowdhury et al. (2015a), Collins et al. (2016), Estrin et al. (2013b), Da Rin et al. (2011), De Bauke et al. (2016), Clercq and Dakhli (2009), De Clercq et al. (2010), Freire-Gibb and Nielsen (2014), Guerrero and Urbano (2012), Guerrero et al. (2014), Hafer and Jones (2015), Krasniqi and Mustafa (2016), Liñán et al. (2011), McGrath et al. (1992), Sobel (2008), Storey and Tether (1998), Uhlaner and Thurik (2007), Van de Ven (1993), Watson and Everett (1996), Yeganegi et al. (2016), Zhang (2015).
Total	113	100	

Note: Some articles use various theoretical frameworks, while others do not use anyone explicitly.

In terms of the informal institutional environment, as we mentioned before, North (2005) emphasizes the relevance of belief systems, social norms and culture, and cognitive dimensions in order to reduce the uncertainty caused by individual and

group decisions. Regarding to belief systems, the variable most used is role models, in which one entrepreneur knows another entrepreneur through the socialization process, which could influence choices related to entrepreneurial activity (Aidis et al., 2008; Estrin et al., 2013b; Estrin & Mickiewicz, 2012; Urbano et al., 2011; Urbano & Alvarez, 2014), followed by welfare and society (Field et al., 2010; Kanninen & Vesala, 2005; Urbano et al., 2011). With respect to social norms and culture, some variables such as control of corruption (Anokhin & Schulze, 2009; Aparicio et al., 2016a) and community-wide normatives (Bruton et al., 2009; Sobel, 2008), among others, were found. Cognitive dimensions such as confidence, motivation, and opportunity perception are used by Estrin and Mickiewicz (2012), Hafer and Jones (2015), and Levie et al. (2008). As Thornton et al. (2011) suggest, informal institutions, although they are less dynamic, could impact entrepreneurship more than contracts, procedures, political structure, and property rights, which are related to formal institutions.

According to Blackburn and Kovalainen (2009) and Blackburn and Smallbone (2008), among others, entrepreneurship research has grown in terms of empirical evidence and stylized facts, which have been analyzed through different qualitative and quantitative methods. In this regard, all the previous variables were assessed by the scholars in functions where the dependent variable is entrepreneurship (see Table 3.4 and Appendix 1). The most prevalent estimation method used by the authors is linear regression (19.4 percent), followed by panel data (16.5 percent), binomial and multinomial techniques (logit and probit) (13.4 percent), single/multiple case studies and multilevel estimation (8.3 percent), structural equation models (6.2 percent), and descriptive statistics and hierarchical linear models (5.2 percent). We identify only two articles using instrumental variables (2.1 percent). The rest of the techniques presented in Table 2.4 are classified as “others” (15.5 percent).

Table 2.3. Operationalization of formal and informal institutions in analyzed articles

Institution	Type	Articles		Author and year of publication
		No.	%	
Formal	Political structure	33	19.29	Aidis et al. (2012), Aldrich and Fiol (1994), Autio and Fu (2015), Aparicio et al. (2016a), Bauke et al. (2016), Belitski et al. (2016), Bruno et al. (2013), Bruton et al. (2009), Chowdhury et al. (2015a,b), Carbonara et al. (2016), Collins et al. (2016), Davis and Williamson (2016), De Clercq and Dakhli (2009), Dutta and Sobel (2016), Estrin and Mickiewicz (2011), Estrin et al. (2013a,b), Gohmann (2012), Goltz et al. (2015), Guerrero and Urbano (2012), Guerrero et al. (2014), Huggins and Thompson (2016), Kirby et al. (2011), Krasniqi and Mustafa (2016), Kuckertz et al. (2016), Malchow-Moller et al. (2010), Nyström (2008), Maimone Ansaldo Patti et al. (2016), Román et al. (2011), Stephan et al. (2015), Storey and Tether (1998), Urbano et al. (2010).
	Procedures - Regulations	27	15.79	Aidis et al. (2012), Aparicio et al. (2016a), Autio and Fu (2015), Belitski et al. (2016), Bruton et al. (2009), Chowdhury et al. (2015a,b), Eesley (2016), García-Posada and Mora-Sanguinetti (2015), Kirby et al. (2011), Klapper et al. (2006), Krasniqi and Desai (2016), Krasniqi and Mustafa (2016), Lechner and Pfeiffer (1993), Lim et al. (2016), Mair and Marti (2009), Malchow-Moller et al. (2010), Nyström (2008), Pathak et al. (2013), Peng et al. (2010), Román et al. (2011), Sobel (2008), Stephen et al. (2009), Toledano and Urbano (2008), Urbano and Alvarez (2014), van Stel et al. (2007), Watson and Everett (1996).
	Contracts	24	14.04	Aidis et al. (2007), Baughn et al. (2006), Busenitz et al. (2000), Calcagno and Sobel (2014), Carbonara et al. (2016), Chowdhury et al. (2015a), Davis and Williamson (2016), Da Rin et al. (2011), Davidsson et al. (2006), De Clercq and Dakhli (2009), De Clercq et al. (2010), Estrin and Mickiewicz (2011), Estrin and Mickiewicz (2012), Kannianen and Vesala (2005), Malchow-Moller et al. (2010), Manolova et al. (2008), Román et al. (2011), Shane and Foo (1999), Spencer and Gomez (2004), Stenholm et al. (2013), Stephen et al. (2009), Valdez and Richardson (2013), van Stel et al. (2007), Watson and Everett (1996).
	Property rights	8	4.68	Carbonara et al. (2016), Chowdhury et al. (2015b), Estrin et al. (2013a,b), Klapper et al. (2006), Nyström (2008), Pathak et al. (2013), Yeganegi et al. (2016).
Informal	Social norms - Culture	33	19.29	Aidis et al. (2012), Anokhin and Schulze (2009), Baughn et al. (2006), Bruton et al. (2009), Busenitz et al. (2000), Davis and Williamson (2016), De Clercq et al. (2010), Hayton et al. (2002), Hechavarría (2016), Hechavarría and Reynolds (2009), Hopp and Stephan (2012), Kibler and Kautonen (2016), Kim and Kang (2014), Kirby et al. (2011), Krasniqi and Desai (2016), Lerner et al. (1997), Lim et al. (2016), Liñán et al. (2011), Mair and Marti (2009), Manolova et al. (2008), McGrath et al. (1992), Meek et al. (2010), Pathak and Muralidharan (2016), Spencer and Gomez (2004), Stenholm et al. (2013), Stephan et al. (2010), Stephan and Pathak (2016), Toledano and Urbano (2008), Uhlaner and Thurik (2007), Urbano et al. (2011, 2016), Valdez and Richardson (2013), Welter and Smallbone (2008).

Institution	Type	Articles		Author and year of publication
		No.	%	
	Cognitive dimension	25	14.62	Aldrich and Fiol (1994), Aparicio et al. (2016a), Busenitz et al. (2000), Chowdhury et al. (2015b), Davidsson et al. (2006), De Clercq et al. (2010), Estrin and Mickiewicz (2012), Fligstein (1997), Guerrero and Urbano (2012), Guerrero et al. (2014), Hafer and Jones (2015), Kim and Kang (2014), Kirby et al. (2011), Lerner et al. (1997), Levie and Autio (2008), Lim et al. (2016), Liñán et al. (2011), Mair and Marti (2009), Manolova et al. (2008), Spencer and Gomez (2004), Stenholm et al. (2013), Stephan and Pathak (2016), Urbano and Alvarez (2014), Urbano et al. (2011), Valdez and Richardson (2013).
	Beliefe systems	20	11.69	Aidis et al. (2007, 2008), Audretsch et al. (2013), Ben Letaifa and Goglio-Primard (2016), De Clercq and Dakhli (2009), Estrin et al. (2013b), Estrin and Mickiewicz (2012), Field et al. (2010), Freire-Gibb and Nielsen (2014), Hoogendoorn et al. (2016), Kim and Kang (2014), Kannianen and Vesala (2005), Lerner et al. (1997), McGrath et al. (1992), Stephan et al. (2015), Stenholm et al. (2013), Urbano and Alvarez (2014), Urbano et al. (2011), van Hemmen et al. (2015), Zhang (2015).
	Others	1	0.58	Davidsson et al. (2006).
Total		171	100	

Note: Some articles use both formal and informal institutions, while others use either formal or informal to explain entrepreneurial activity.

Table 2.4. Techniques used in analyzed articles

Methods	Articles		Author and year of publication
	No.	%	
Linear regression	19	19.39	Bauke et al. (2016), Collins et al. (2016), Davidsson et al. (2006), Davis and Williamson (2016), De Clercq and Dakhli (2009), Hafer and Jones (2015), Hechavarría (2016), Hoogendoorn et al. (2016), Huggins and Thompson (2016), Kannianen and Vesala (2005), Klapper et al. (2006), Lerner et al. (1997), Sobel (2008), Stephan and Uhlaner (2010), Stephen et al. (2009), Uhlaner and Thurik (2007), Urbano et al. (2016), Valdez and Richardson (2013), van Hemmen et al. (2015).

Methods	Articles		Author and year of publication
	No.	%	
Panel data	16	16.49	Aidis et al. (2012), Anokhin and Schulze (2009), Aparicio et al. (2016a), Autio and Fu (2015), Belitski et al. (2016), Calcagno and Sobel (2014), Carbonara et al. (2016), Chowdhury et al. (2015a,b), Da Rin et al. (2011), Dutta and Sobel (2016), García-Posada and Mora-Sanguinetti (2015), Krasniqi and Desai (2016), Levie and Autio (2008), Meek et al. (2010), Nyström (2008).
Logit, Probit, Multinomial, Ordered	13	13.40	Aidis et al. (2008), Audretsch et al. (2013), Eesley (2016), Estrin and Mickiewicz (2012), Freire-Gibb and Nielsen (2014), Gohmann (2012), Hopp and Stephan (2012), Krasniqi and Mustafa (2016), Lechner and Pfeiffer (1993), Maimone Ansaldo Patti et al. (2016), Román et al. (2011), Urbano and Alvarez (2014), Zhang (2015).
Single/Multiple-Case studie(s)	8	8.25	Ben Letaifa and Goglio-Primard (2016), Fligstein (1997), Guerrero et al. (2014), Mair and Marti (2009), Toledano and Urbano (2008), Urbano et al. (2010, 2011), Welter and Smallbone (2008).
Multilevel estimation	8	8.25	Estrin et al. (2013a,b), Estrin and Mickiewicz (2011), Kibler and Kautonen (2016), Lim et al. (2016), Pathak and Muralidharan (2016), Stephan and Pathak (2016), Stephan et al. (2015).
Structural equation model	6	6.19	Guerrero and Urbano (2012), Kirby et al. (2011), Liñán et al. (2011), Manolova et al. (2008), Spencer and Gomez (2004), Stenholm et al. (2013).
Descriptive statistics	5	5.15	Aidis et al. (2007), Peng et al. (2010), Storey and Tether (1998), Watson and Everett (1996), Welter and Smallbone (2008).
Hierarchical (non)linear model	5	5.15	Baughn et al. (2006), Goltz et al. (2015), Hechavarria and Reynolds (2009), Pathak et al. (2013), Yeganegi et al. (2016).
Instrumental variables	2	2.06	Field et al. (2010), Hopp and Stephan (2012).
Others	15	15.46	Álvarez et al. (2014), Anokhin and Schulze (2009), Bjørnskov and Foss (2016), Bruno et al. (2013), Bruton et al. (2009), Bruton et al. (2010), Busenitz et al. (2000), De Clercq et al. (2010), Hayton et al. (2002), Kim and Kang (2014), Kuckertz et al. (2016), Malchow-Moller et al. (2010), McGrath et al. (1992), Shane and Foo (1999), van Stel et al. (2007).
Total	97	100	

Note: Some articles use various methodologies, while others (not included) are merely theoretical.

2.3.2. *Linking entrepreneurship with economic growth*

As mentioned previously, the number of articles selected to explain this relationship was 81, classified by three types: (a) empirical (57), (b) theoretical (16), and (c) introduction to special issues (8). As also mentioned, following van Praag and Versloot's (2007) work, these articles are concerned only with a country's or region's GDP (total or per capita), GDP growth, labor productivity, or TFP. In general, the hypotheses posit that entrepreneurship impacts positively on economic growth, and the main findings support these hypotheses. Therefore, in our analysis we focus on the results found by keywords, pointing out journals, years, authors, theoretical frameworks, and methods used to relate entrepreneurship with economic growth. Table 2.5 presents empirical and theoretical papers, and also the introduction to special issues or editorials.

Table 2.5. Decision criteria for selecting papers

Criteria	No. Articles
Entrepreneurship and National Economic Growth	39
Entrepreneurship and Regional Economic Growth	16
Entrepreneurship and Regional Economic Development	12
Entrepreneurship Capital on Regional Economic Growth	6
Entrepreneurship Capital and National Economic Growth	5
Entrepreneurship and Sectorial Growth	3
TOTAL	81

There is no doubt that the link between entrepreneurship and economic growth has been thoroughly analyzed (39 articles), whereas the relationship between entrepreneurship and sectorial growth reports only three articles. Regarding other approaches, this literature review reports that regional economic growth or development has been considered as a dependent variable, which could be explained by entrepreneurship. The number of articles found in both relationships was 16 and 12, respectively. Also, six articles deal with the relationship between entrepreneurship capital and regional economic growth, and five articles are about entrepreneurship capital and national economic growth.

The authors who published the most articles focused on this relationship are Audretsch (sixteen), Acs (seven), Keilbach (seven), and Urbano (six). Authors such as Braunerhjelm, Carree, Thurik, and van Stel have five articles; Desai, and Wennekens four; and Aparicio, Carlsson, Fritsch, Galindo, Guerrero, and Méndez have three. In total, 108 authors were found on this topic. The others have published one or two articles. Note that Audretsch has the most articles published, and proposes (with Keilbach) the concept of entrepreneurship capital as a new variable in the Solow-Swan model.

Clearly, particular journals play a key role in the analyzed relationship; these include *Small Business Economics* (32.1 percent of the articles), followed by *Regional Studies* (7.4 percent), then *Annals of Regional Science* (4.9 percent), *Entrepreneurship & Regional Development*, *Industrial and Corporate Change* and *Strategic Entrepreneurship Journal* (3.7 percent). The rest of the journals published one or two articles in this topic. It is interesting to note that among the articles whose main hypothesis is that entrepreneurship has effects on economic growth and regional development, most were published in the period 2012–2017, indicating that this relationship is a current research field of study by several scholars. Unlike to the previous topic, entrepreneurship and economic growth have called the attention of scholars since early 2000s. An example of this interest could be seen through the special issues, especially those published by *Small Business Economics* and *Regional Studies* (see Table 2.6 and Appendix 2).

Table 2.6. Journals and published articles per year

Articles/Year	1992-1996	1997-2001	2002-2006	2007-2011	2012-2016	Total	%
Small Business Economics	1	1	5	14	5	26	32.1
Regional Studies	2	0	4	0	0	6	7.41
Annals of Regional Science	0	0	1	0	3	4	4.94
Entrepreneurship & Regional Development	0	0	0	2	1	3	3.7
Industrial and Corporate Change	0	1	0	1	1	3	3.7
Strategic Entrepreneurship Journal	0	0	0	2	1	3	3.7
Entrepreneurship Theory and Practice	0	0	1	0	1	2	2.47
Journal of Business Venturing	0	0	0	2	0	2	2.47
Journal of Evolutionary Economics	0	0	1	0	1	2	2.47
Journal of Technology Transfer	0	0	0	0	2	2	2.47
Management Decision	0	0	0	0	2	2	2.47
Research Policy	0	0	0	1	1	2	2.47
Technological Forecasting and Social Change	0	0	0	0	2	2	2.47
World Development	0	1	0	0	1	2	2.47
Academic of Management Perspective	0	0	0	0	1	1	1.23
Econometrica	1	0	0	0	0	1	1.23
Economic Development Quarterly	0	0	0	0	1	1	1.23
Economy and Society	0	0	0	1	0	1	1.23
European Planning Studies	0	0	0	0	1	1	1.23
Growth and Change	0	0	0	1	0	1	1.23
International Small Business Journal	0	0	1	0	0	1	1.23
Journal of Economic Growth	0	1	0	0	0	1	1.23
Journal of Business Research	0	0	0	0	1	1	1.23
Journal of Development Studies	1	0	0	0	0	1	1.23
Journal of Monetary Economics	1	0	0	0	0	1	1.23
Journal of Business Economics and Management	0	0	0	0	1	1	1.23
Oxford Bulletin of Economics and Statistics	0	0	1	0	0	1	1.23

Articles/Year	1992-1996	1997-2001	2002-2006	2007-2011	2012-2016	Total	%
Oxford Review of Economic Policy	0	0	0	1	0	1	1.23
Papers in Regional Science	0	0	0	1	0	1	1.23
R & D Management	0	0	1	0	0	1	1.23
Futures	0	0	0	0	1	1	1.23
International Regional Science Review	0	0	0	0	1	1	1.23
Journal of Economics	0	0	0	0	1	1	1.23
Labour Economics	0	1	0	0	0	1	1.23
Total	6	5	15	26	29	81	100

The special issue that provides an opportunity to deeply explore the relationship between entrepreneurship and economic development was edited by Sternberg and Wennekers (2005). This special issue collects up-to-date research and introduces new empirical evidence using several approaches to entrepreneurship, specifically those based on the Global Entrepreneurship Monitor (GEM) dataset (van Stel et al., 2005; Wong et al., 2005). Also, special issues compiled by Acs and Storey (2004), Fritsch (2008), and Dejardin and Fritsch (2011) allow the possibility to discuss in depth the role played by entrepreneurship in the regional development process. Likewise, Acs and Szerb (2007), Acs et al. (2008a), and Naudé (2010) contribute to the literature by organizing special issues dealing with the public policy discussion that arises through the analysis of entrepreneurial activity and economic growth. Thus, the relationship between entrepreneurship and economic growth has been studied using different theoretical frameworks and methodologies.

Regarding the theoretical frameworks, we find different approaches. The first approach uses a neoclassical economic growth theory that identifies those factors that affect economic growth in the short and long run. Authors such as Minniti and Lévesque (2010) use this theory to explore the role of entrepreneurship behavior in the Solow-Swan growth model. Other authors such as Aparicio et al. (2016a), Audretsch and Keilbach (2004a,b,c, 2005, 2008), Bjørnskov and Foss (2013), González-Pernía and Peña-Legaskue (2015), and Iyigun and Owen (1999) assess the effect of entrepreneurship on economic growth through econometric techniques in a Solow-Swan specification. It is important to mention that this theory does not explicitly take entrepreneurship into account, because it is assumed in production decisions.

The theory that takes into account entrepreneurs and their behavior is Schumpeterian theory (Schumpeter, 1911), which states that entrepreneurship encourages an innovation process that affects development. Some authors such as Agarwal et al. (2007), Aubrey et al. (2015), Audretsch and Fritsch (2002), Biondi (2008), Bjørnskov and Foss (2013), Bosma et al. (2011), Carree et al. (2002, 2007), Low and Isserman (2015), Rocha (2004), Sternberg and Wennekers (2005), van Stel and Carree (2004), van Stel et al. (2005), Wennekers and Thurik (1999), and Wong et al. (2005) use this theory to support the hypotheses that relate entrepreneurship

not only with economic growth but also with economic development. This theory allows for the possibility to consider the role of entrepreneurship in growth and development processes, and to also include, with theoretical support, entrepreneurship variables in growth models.

Taking into account new variables in the economic growth model supported in theoretical frameworks, it is possible to discuss an evolution of neoclassical growth theory, mentioned by Baumol (1993). According to this author, entrepreneurship can be considered an important driver of growth in both the short and long run. Using this idea plus previous approaches, the number of published articles increases considerably because since that time many authors have tested their hypotheses with the most structured theory of growth. Thus, authors such as Acs and Szerb (2007), Acs et al. (2012), Audretsch and Keilbach (2008), Berkowitz and DeJong (2005), Braunerhjelm et al. (2010), Braunerhjelm and Henrekson (2013), Carree and Thurik (2008), Carlsson et al. (2009), Dejardin (2011), Fritsch (2008), Giordani (2015), Gries and Naudé (2010), Guerrero et al. (2015), Hessels and van Stel (2011), Mueller (2007), Noseleit (2013), Stephens and Partridge (2011), Valliere and Peterson (2009), and van Praag and Versloot (2007) prove the link between entrepreneurship and economic growth supported by endogenous growth theory. However, Audretsch and Keilbach (2004b, 2005, 2008), who use both neoclassical growth theory and endogenous growth theory, claim the importance not only of relating entrepreneurship with economic growth, but also the relevance of the context in which this relationship occurs.

Those authors that argue for institutions to consider the context that enhances new firms to positively affect economic growth use institutional economic theory. Baumol and Strom (2007) and Naudé (2010) discuss the importance of this theory. Regarding their discussion, the next step to understanding the link between entrepreneurship and economic growth is through institutions (Aparicio et al. 2016a). In this sense, Bjørnskov and Foss (2013) introduce institutions, specifically regulative institutions, into the production function. Also, Liñán and Fernandez-Serrano (2014) assess the interaction between culture and entrepreneurship, which explains the growth differences across European countries. Overall, these recent articles show that institutional theory apparently is quite an important framework for understanding the relationship between entrepreneurship and economic growth (see Table 2.7).

If most articles use neoclassical economic growth theory, Schumpeterian theory, or endogenous growth theory, we expect a priori that the methodology most used is the time series, because the Solow-Swan model requires a short- and long-run analysis. However, the literature review reports that other types of methodologies are used in order to analyze the relationship between entrepreneurship and economic growth. According to Wooldridge (2010), depending on data, researchers use cross section, time series, or panel data, which have different techniques of estimation. We show in Table 2.8 the type of data and the technique used by each

Table 2.7. Theoretical frameworks used in articles

Theory	Articles		Author(s)
	No.	%	
Neoclassical economic growth theory	11	12.22	Audretsch (2007a), Audretsch and Keilbach (2004b), Audretsch and Keilbach (2005), Audretsch and Keilbach (2007), Audretsch and Keilbach (2008), Bjørnskov and Foss (2013), Capello and Lenzi (2016), Iyigun and Owen (1999), González-Pernía and Peña-Legazkue (2015), Minniti and Lévesque (2010), Prieger et al. (2016).
Schumpeterian theory	20	22.22	Agarwal et al. (2007), Aghion and Howitt (1992), Aparicio et al. (2016b), Aubry et al. (2015), Audretsch (1997), Audretsch et al. (2015a), Audretsch and Fritsch (2002), Biondi (2008), Bosma et al. (2011), Carree et al. (2002), Carree et al. (2007), Castaño-Martinez et al. (2015), Low and Isserman (2015), Rocha (2004), Sternberg and Wennekers (2005), van Oort and Bosma (2013), van Stel et al. (2005), van Stel and Carree (2004), Wennekers and Thurik (1999), Wong et al. (2005).
Endogenous growth theory	29	32.22	Acs and Szerb (2007), Acs et al. (2012), Aparicio et al. (2016a), Audretsch et al. (2008), Audretsch and Keilbach (2004c, 2008), Berkowitz and DeJong (2005), Braunerhjelm et al. (2010), Braunerhjelm and Henrekson (2013), Capello and Lenzi (2016), Carree and Thurik (2008), Carlsson et al. (2009), Dejardin (2011), Etkowitz and Klofsten (2005), Fritsch (2008), Giordani (2015), Gries and Naudé (2010), Guerrero et al. (2015, 2016), Hessels and van Stel (2011), Huggins and Thompson (2015), King and Levine (1993), Mueller (2007), Noseleit (2013), Stephens and Partridge (2011), Urbano and Aparicio (2016), Urbano and Guerrero (2013), Valliere and Peterson (2009), van Praag and Versloot (2007).
Economic development theory	3	3.33	Acs et al. (2008a,b), Alvarez and Barney (2014).
Institutional economic theory	11	12.22	Aparicio et al. (2016a), Baumol and Strom (2007), Bjørnskov and Foss (2013), Bjørnskov and Foss (2016), Castaño et al. (2016), Diaz Casero et al. (2013), Guerrero et al. (2016), Liñán and Fernandez-Serrano (2014), Méndez-Picazo et al. (2012), Naudé (2010), Urbano and Guerrero (2013).
Other	16	17.78	Acs and Storey (2004), Aparicio et al. (2016b), Audretsch and Keilbach (2004a), Belitski and Desai (2016), Blanchflower (2000), Braunerhjelm and Borgman (2004), Carmona et al. (2016), Chang and Kozul-Wright (1994), Danson (1995), Davidsson et al. (1994), Dejardin and Fritsch (2011), Johnson and Parker (1996), Müller (2016), Prieger et al. (2016), Urbano and Guerrero (2013), Yu (1998).
Total	90	100	

Note: Some articles use various theoretical frameworks, while others do not use anyone explicitly.

author(s). Table 2.8 also shows not only traditional econometrics techniques used, but also spatial econometrics and qualitative methods.

The techniques used by authors most often are based on cross section, panel data, and time series datasets, with 17, 19, and 9 articles, respectively. Indeed, it is interesting that some authors identify endogeneity problems in their models. Therefore, some of them apply three-stage least-square (3SLS) (Audretsch & Keilbach, 2004c, 2008), and instrumental variables (IV) (Stephens & Partridge, 2011) in cross section analysis. In terms of time series approach, models based on estimations techniques such as autoregressive models (AR) (Carree & Thurik, 2008; Johnson & Parker, 1996), least absolute deviations (LAD) (Berkowitz & DeJong, 2005), and two-stage least-square (2SLS) (Berkowitz & DeJong, 2005; Bjørnskov & Foss, 2013) were also found. Also, dynamic panel data (Dejardin, 2011), 2SLS or

3SLS in panel data (Aparicio et al., 2016a; Gonzalez-Pernía & Peña-Legazkue, 2015), and random/fixed effects (Aubrey et al., 2015; Audretsch et al., 2015a; Bosma et al., 2011; Braunerhjelm & Borgman, 2004; van Stel et al., 2005) were identified.

Table 2.8. Statistical techniques used in analyzed articles

Type of data*	Technique	Articles		Author(s)
		No.	%	
Time series	OLS	3	33.33	Blanchflower (2000), Bjørnskov and Foss (2013), Hessels and van Stel (2011).
	AR	2	22.22	Carree and Thurik (2008), Johnson and Parker (1996).
	2SLS	2	22.22	Berkowitz and DeJong (2005), Bjørnskov and Foss (2013).
	Difference equations	1	11.11	Iyigun and Owen (1999).
	LAD	1	11.11	Berkowitz and DeJong (2005).
Cross section	OLS	10	58.82	Audretsch and Fritsch (2002), Audretsch and Keilbach (2004a,b, 2005), Davidsson et al. (1994), Diaz Casero et al. (2013), Liñán and Fernandez-Serrano (2014), Noseleit (2013), Stephens and Partridge (2011), Wong et al. (2005).
	Descriptive statistics	5	29.41	Acs et al. (2008a,b), Braunerhjelm and Henrekson (2013), Fritsch (2008), Valliere and Peterson (2009).
	2SLS/3SLS	2	11.76	Audretsch and Keilbach (2004c, 2008).
	IV	1	5.88	Stephens and Partridge (2011).
Panel data	Random/Fixed effects, IV, 2SLS, 3SLS, EGLS, threshold, dynamic	11	57.89	Acs et al. (2012), Aparicio et al. (2016a), Aubry et al. (2015), Audretsch et al. (2015a), Braunerhjelm and Borgman (2004), Carmona et al. (2016), Carree et al. (2007), Dejardin (2011), Gonzalez-Pernía and Peña-Legazkue (2015), Méndez-Picazo et al. (2012), Urbano and Aparicio (2016).
	OLS	7	36.84	Bosma et al. (2011), Carree et al. (2002), Mueller (2007), Noseleit (2013), Prieger et al. (2016), van Stel and Carree (2004), van Stel et al. (2005).
	FGLS	1	5.26	Acs et al. (2012).
Pooling data	OLS	2	33.33	Belitski and Desai (2016), Braunerhjelm et al. (2010).
	GLS/2SLS/3SLS	3	50	Braunerhjelm et al. (2010), King and Levine (1993), van Oort and Bosma (2013).
	AR	1	16.67	Braunerhjelm et al. (2010).
Mathematical economics	ME	4	100	Giordani (2015), Gries and Naudé (2010), Huggins and Thompson (2015), Minniti and Lévesque (2010).
Spatial econometrics	GLS	3	100	Audretsch and Keilbach (2007a), Capello and Lenzi (2016), Low and Isserman (2015).
Structural Equation Model	SEM	3	100	Audretsch et al. (2008), Guerrero et al. (2015, 2016).
Partial least square	PLS/fsQCA	2	100	Castaño-Martinez et al. (2015, 2016).
Qualitative	Case study	2	100	Etzkowitz and Klofsten (2005), Urbano and Guerrero (2013).
Descriptive statistics	Median/Frequence	1	100	Chang and Kozul-Wright (1994).
System dynamics	SD	1	100	Aparicio et al. (2016b).
TOTAL		67		

* There are 9 articles using time series, 17 cross section, 19 panel data, 6 pooling data, 4 mathematical economics, 3 spatial econometrics, 3 structural equation model, 2 partial least square, 2 qualitative technique, 1 descriptive statistics, and 1 system dynamics. Each percentage was computed taking into account total articles per type of data.

Note: Some articles use various methodologies, while others (not included) are merely theoretical.

From this sub-section as well as the previous one, two results call for attention. First, among other conceptual works in the field of entrepreneurship (Bruton et al., 2010; Carlsson et al., 2013; Thornton et al., 2011; Veciana & Urbano, 2008; among others) this chapter suggest that the institutional approach has gained relevance in the sense that it seems an appropriate framework for understanding the factors that encourage or discourage entrepreneurial engagement across countries and regions. Indeed, on the one hand authors such as Aidis et al. (2008), Chowdhury et al. (2015a,b), Goltz et al. (2015), and Urbano and Alvarez (2014), among others, have applied explicitly the institutional approach (North, 1990, 2005) to understand the institutional matrix in which individuals become entrepreneurs. On the other hand, authors such as Aidis et al. (2012), Bruton et al. (2009), and De Clercq et al. (2010), Gnyawali and Fogel (1994), among others, have implicitly followed the institutional approach. Concretely, Gnyawali and Fogel (1994) consider five dimensions (government policies and procedures, socioeconomic conditions, entrepreneurial and business skills, financial support to businesses, and non-financial support to businesses) to explain the entrepreneurial behavior.

Second, even though the relationship between entrepreneurship and economic growth follows the Schumpeterian theory or endogenous growth theory, some authors have used the institutional approach to understanding the link between these two variables (Baumol & Strom, 2007; Bjørnskov & Foss, 2013; Naudé, 2010). These two facts indicate that, using the same framework, two separate perspectives of entrepreneurship research could be used to analyze together such a sequence in which entrepreneurship could play an important role.

2.3.3. *Institutions, entrepreneurship, and economic growth*

According to North (1990, 2005), institutions matter for explaining the differences in growth and development across regions and countries. However, we base our analysis on the ideas of Acemoglu et al. (2014), Baumol (1990), Bjørnskov and Foss (2016), North and Thomas (1973), and Rodrik (2003) about entrepreneurship as a conduit of institutions to achieve economic growth and development. In this sense, it is important to highlight the role of institutions on entrepreneurship, and also, how entrepreneurial activity influenced by institutions plays a key role in the growth process (Sobel, 2008). The first one was documented using several articles, whose main results indicate that formal and informal institutional factors encourage or discourage entrepreneurial behavior. In fact, informal institutional factors tend to impact higher and more positively on entrepreneurship than formal factors, as Thornton et al. (2011) suggest. The second one is more implicit. Although authors such as Amorós et al. (2012) and Terjesen and Amorós (2010) relate institutions to

the stage of economic development in order to explain entrepreneurial activity in emerging economies, they still leave space to keep exploring the differentiated impact of institutions on entrepreneurship and this factor on economic growth. In this sense, although Bjørnskov and Foss (2016) conduct a similar literature analysis, this chapter might be complimentary through the idea that informal factors are more relevant for explaining entrepreneurial activity and its economic consequence. Additionally, as Bjørnskov and Foss (2016) discussed, entrepreneurial actions need certain conditions. In this regard, our approach suggests the social norms, culture and so on, are the primary factors that create such conditions.

From another perspective, authors such as Audretsch (2007a), Audretsch and Keilbach (2004a,b,c, 2005, 2007), Audretsch et al. (2008), and Urbano and Aparicio (2016) explore entrepreneurial activity and economic growth assuming that institutions affect the rate of entrepreneurship capital. They find that effectively this factor impacts positively on growth, but at the same time, they claim that more studies are needed to understand better how entrepreneurship capital is configured concerning the institutional context. Even more, they recommend future research that would study entrepreneurship capital, considering the effect of institutions. Hence, institutional factors can be an accurate starting point in which entrepreneurship and economic growth interact (Audretsch et al., 2008). Some empirical evidence is presented by Bjørnskov and Foss (2013) and Nissan et al. (2011), who find that legal institutions (procedures or the time to create a new business) affect economic growth. Nevertheless, as Baumol and Strom (2007) and Audretsch and Keilbach (2004a,c) have discussed, it is important to understand how entrepreneurship is configured by taking into account culture, beliefs, and social values, among other factors, to obtain the best understanding of the role of entrepreneurship in economic growth. In this sense, institutions and economic growth are linked through entrepreneurship. Hence, those institutions shaping entrepreneurial behavior have a vital influence on the growth and innovation that characterizes each economy. At the same time, institutions (formal and informal) motivate those individuals with innovative ideas to set up new businesses, and therefore contribute to economic growth and development.

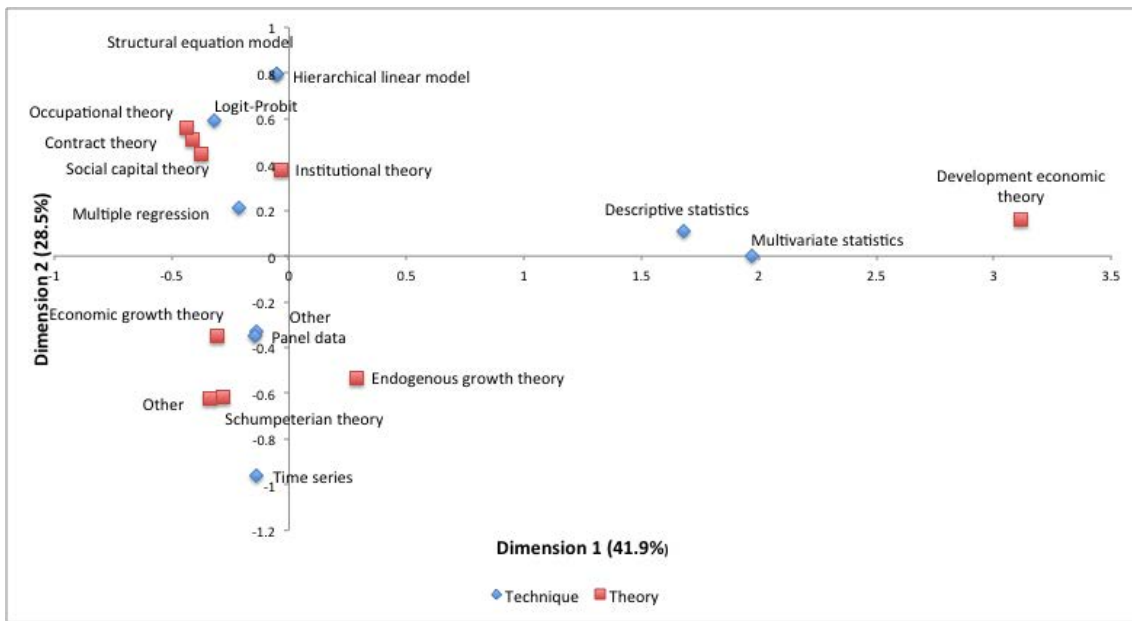
The previous discussion suggests, therefore, that the two separate perspectives could be analyzed together, which could enhance the understanding of the complex system involved in the economic growth and development processes. Thus, as Audretsch and Keilbach (2008) suggest, simultaneity between institutions, entrepreneurship, and economic growth is required. First, the institutional approach offers a comprehension of the determinant institutional environment in which entrepreneurs make decisions for themselves and the entire society, leading to a growth process. Second, because of interaction and interdependence involving high complexity, a unidirectional model will lead to biased results. Therefore, it is worth considering simultaneously the impact of the institutional context on entrepreneurial activity, and this variable on economic growth. The virtue of this

approach is not only in the correction of the statistical bias. By explicitly instrumenting entrepreneurship in a second equation, we are able to analyze how policy could actually influence economic growth by generating more entrepreneurial activity.

In order to complement the graphical representations of the above results, we developed a correspondence analysis. These correspondences allow associations and similarities (Hoffman & Franke, 1986) to be explicitly analyzed and identified in publications dealing with both relationships. For example, we initially examined whether it was possible to establish a statistically significant association between the statistical techniques used in the articles and both relationships presented in the previous section (i.e., entrepreneurship/entrepreneurship-economic growth). The results indicated that the X^2 is 34.66 with eight degrees of freedom and is significant at 0.000. Therefore, we concluded that there is a statistical association between the statistical techniques and the focus of each relationship.

Likewise, we explored the relationship between the technique and the theoretical framework used. The results indicated that the X^2 is 83.76 with 64 degrees of freedom and is significant at 0.049. Therefore, we concluded that there is a statistical association between these two categories. A graphical representation helps to visualize this relationship. Figure 2.1 presents the scatter diagram between the technique and theoretical framework. For each variable on the graph, the distances between the category points reflect the relationship between the categories, with similar categories being closer to each other. Figure 2.1 shows that occupational choice, contract theory, and social capital theory are more associated with the structural equation model and discrete choice model (logit, probit, and so on); institutional theory is related to multiple regression in which simultaneous equations have been used; neo-classical growth theory, endogenous growth theory, and Schumpeterian theory are associated with time series techniques; while development economic theory is related with descriptive and multivariate statistics.

Figure 2.1. Technique vs. theoretical framework



Finally, we also found a statistically significant association of 0.000 (X^2 is 298.35 with 90 degrees of freedom) between the different dependent and independent variables identified in the empirical papers (see Appendix 1 and Appendix 2). This association shows a clear relationship between different measures of institutions, entrepreneurship, and economic growth, which indicates that these types of variables are closely related. Only self-employment and total factor productivity are separated from the rest of the measures.

2.4. Conclusions

Entrepreneurship research has evolved rapidly since its origins (Blackburn & Kovalainen, 2009; Carlsson et al., 2013). According to the literature studied in the current chapter, on the one hand, some scholars have analyzed the determinants that encourage entrepreneurial activity. On the other, entrepreneurship research has focused on the effects of new business creation. The first issue has been studied under psychological, organizational, institutional and economic lenses³. The second issue could be explored using an institutional or economic framework.

Then, in this chapter, a systematic literature review based on an institutional approach was conducted. Using the idea that institutions shape human behavior in

³ Apart from the institutional and economic approaches considered in this chapter, perspectives that involve psychological (Collins et al. 1964; Mclelland 1961; Krueger, 1993, 1994; Shepherd, 2015; among others) and organizational (Alvarez & Busenitz, 2001; Barney, 1991; Barney et al., 2001; Chesbrough, 2003, 2006; Teece et al., 1997; Teece, 2007; among others) approaches are also used in our field of research. However, some studies are starting to consider another level of analysis, just between the organization and the environment; this type of analysis, the entrepreneurship-innovation ecosystems approach, mainly focuses on clusters, business-innovation, or industry (Isenberg, 2010; Mason & Brown, 2014; among others).

order to enhance economic growth, we explored the papers that analyze how institutional factors through entrepreneurial activity affect economic growth. Thus, we studied those articles within the Web of Science in the period 1992-2016, focusing on the relationships between institutions and entrepreneurship, and entrepreneurship and economic growth.

With respect to the theoretical frameworks used in both relationships, we found the predominance of an institutional approach, which increased remarkably during the period 2012-2016. Through quantitative and qualitative techniques, the authors conclude that institutions affect entrepreneurship, but informal institutional factors have a higher and more positive effect than formal factors. Although most of them applied either explicitly or implicitly North's ideas about institutions to the field of entrepreneurship, some scholars have used different approaches such as Scott's (2008) institutional dimensions (regulative, normative and cultural-cognitive). Regarding the impact of entrepreneurial activity on economic growth, we found that neo-classical economic growth theory is used in the majority of the articles. In the analyzed papers, different measures of entrepreneurship and economic growth have been employed, concluding that in general there is a positive effect of entrepreneurship on economic growth and development. Likewise, authors such as Bjørnskov and Foss (2013) and Nissan et al. (2011) found that institutions also affect economic growth, as North (1990, 2005) highlights. However, the discussion about the direct or indirect effect of institutions on economic growth was carried out by Acemoglu et al. (2014), Baumol (1990), North and Thomas (1973), Rodrik (2003), who conclude that institutions affect economic growth through endogenous factors, such as entrepreneurship and industrial development. Following this idea, Aparicio et al. (2016a), Audretsch and Keilbach (2004a,b), Audretsch et al. (2008), Bjørnskov and Foss (2016) and Baumol and Strom (2007) discuss that it is important to understand how institutions affect entrepreneurial activity, and therefore make it possible to identify how entrepreneurship and economic growth interact in different institutional environments (culture, beliefs, social values, etc.).

Therefore, some research questions persist in seeking an understanding of the role of entrepreneurship in the field of economic growth. In this context, an institutional approach can be crucial in order to include institutions as a key variable in the analysis. Then, simultaneous identification is required to understand the dynamic relationship between institutions, entrepreneurship, and economic growth in the short and long term. In particular, we identified that property rights (formal institutions), belief systems (informal institutions), and institutional dimensions should be further analyzed, since there is still a scarcity of evidence dealing with these types of institutions. First, Czarnitzki et al. (2016) claim that studies on property rights are needed since the rapid explosion of entrepreneurs must be balanced in order to encourage innovative entrepreneurship rather than unproductive types. Second, in terms of informal institutions, Audretsch et al. (2013) and Hoogendoorn et al. (2016) suggest that the belief systems such as religion are important elements for understanding the differences of

entrepreneurship across countries. Finally, to develop empirical papers using Scott's (2008) institutional dimensions (regulative, normative and cultural-cognitive) is needed to provide a broader perspective under the institutional lenses (De Clercq et al., 2010; Lim et al., 2016; Urbano & Alvarez, 2014). In addition, we noticed that other measures of entrepreneurship that are not considered in this study could improve the comprehension about the evolution of this research field. For instance, intrapreneurship or corporate entrepreneurship, analyzed from the institutional perspective, could serve to examine how entrepreneurs within firms are shaped by the environment (Gómez-Haro et al., 2011; Toledano et al. 2010; Turró et al., 2014; Turro et al., 2016). With regard to economic growth and development, Blackburn and Ram (2006), Bruton et al. (2013), Farinha et al. (2017) and McMullen (2011) discuss the importance of entrepreneurship to explain not only the economic performance, but also inclusive growth, the alleviation of poverty, and sustainable development. These authors suggest that future research directions should link entrepreneurial activity to measures beyond the traditional GDP, since it is recognized that entrepreneurship brings benefits for the whole society.

Both conceptual and policy implications could be derived from this chapter. First, to consider an integrated model including institutions, entrepreneurship, and economic growth could advance research in the entrepreneurship and economic fields. Also, this model permits distinguishing by type of institution (formal and informal), entrepreneurial activity (necessity, opportunity, etc.) and economic performance (growth, development, etc.). Nonetheless, there is still the necessity to create a conceptual framework that encompasses the complexity involved within the interplay of institutions, entrepreneurship and economic growth. Second, regarding policy implications, by understanding the complete sequence, it is possible to focus attention on particular strategies that reinforce the sustainable creation of new businesses that effectively provide well-being not only for themselves but also for the entire society.

Finally, some of the areas for future research suggested are addressed in the next chapters (particularly the ones that have to do with the institutional antecedents and socioeconomic consequences of entrepreneurship). In this regard, in the next chapter (3) the study focuses on the informal institutions that might condition entrepreneurial activity.

Chapter 3

Social Progress Orientation and Entrepreneurship: An International Analysis

3. Social Progress Orientation and Entrepreneurship: An International Analysis

3.1. Introduction

As discussed in the previous chapters, the specific recognition of entrepreneurial activity nowadays is due to the fact that the phenomenon of entrepreneurship has a positive impact on the generation of economic development and social progress at the country level (Acs et al., 2004; Acs et al., 2008b; Amorós & Bosma, 2014; Aparicio et al., 2016b; Carlsson et al., 2013; Reynolds et al., 2005; van Stel et al., 2005; Wennekers & Thurik, 1999; Wennekers et al., 2005) and at a regional level (Audretsch et al., 2008; Bosma, 2009; Dejardin, 2011; Feldman, 2014; Fritsch, 2011).

Traditionally, the definition of social progress has been based on economic terms (GDP-oriented). However, a more people-oriented approach has been attracting the attention of scholars in recent years (Blackburn & Ram, 2006; Engelbrecht, 2014; Porter, 2013; Stiglitz et al., 2009). For instance, the Social Progress Index (Porter, 2013) aims to measure progress beyond GDP using an index that aggregates three dimensions: basic human needs, the foundations of well-being, and opportunity. Other recent initiatives, such as the Indices of Social Development (ISD) of the Institute of Social Studies (ISS), focus solely on the values that promote human well-being. Building on this initiative, social progress orientation (SPO) can be seen as accounting values beyond economic terms that promote social well-being. The extant literature has examined the impact of factors related to SPO on innovative entrepreneurial activity from different approaches, but has lacked an explicit and integrative approach. In this regard, some authors have used social capital (Anderson et al., 2007; Kwon et al., 2013; Leyden & Link, 2015), others postmaterialist and social values (Turró et al., 2014; Uhlaner & Thurik, 2007), subjective well-being (Naudé et al., 2013), life satisfaction (Naudé et al., 2014), power distance (Shane, 1993) and masculinity vs. femininity (Baum et al., 1993).

Given that the factors that determine entrepreneurial activity are analyzed by academia from different approaches (Bruton et al., 2010; Freytag & Thurik, 2007; Verheul et al., 2002), institutional economics can be a useful approach to understanding the environment created by institutional arrangements and their effect on innovative entrepreneurship at a national level (Aparicio et al., 2016a; Urbano & Alvarez, 2014). Moreover, at a subnational level, the importance of the regional environment for entrepreneurial intentions and activities has been recognized, since there may be cultural differences promoting variation in entrepreneurship and innovation (Bosma, 2009; Feldman, 2014; Fritsch, 2011; Glaeser et al., 2010; Saxenian, 1994; Stuetzer et al., 2014). Nonetheless, although an increasing number of authors make use of it, still only a few empirical studies rely

on this approach (Álvarez et al., 2014; Manolova et al., 2008; Stenholm et al., 2013). According to North (1990, 2005), institutional factors can be categorized as formal (procedures, laws, regulations, constitutions, etc.) and informal (role models, values, beliefs and attitudes commonly known as culture). In this context, SPO is classified among the informal institutions.

Therefore, this chapter seeks to examine the influence of SPO on entrepreneurship. In this regard, entrepreneurship has been deemed the total entrepreneurial activity that includes market innovation, consistent with Schumpeter's (1911) definition of an innovative entrepreneur. Total entrepreneurial activity (TEA) driven by opportunity is another approach for innovative entrepreneurial activity (Aparicio et al., 2016a; Reynolds et al., 2005). According to these authors, entrepreneurs who are motivated by opportunity perceptions tend to experiment with innovative processes to carry out their new businesses, which is another of Schumpeter's (1911) definitions. Nonetheless, given that there also exists the counterpart of opportunity TEA, defined as entrepreneurial activity driven by necessity (Reynolds et al., 2005), these two measures are additionally analyzed for each economy (Acs et al. 2008a; Block et al., 2015a; Fuentelsaz et al., 2015). Cross-sectional data from the Global Entrepreneurship Monitor (GEM) on entrepreneurial activity for the year 2012 is used in this research. For the explanatory variables, the World Values Survey (WVS), the Hofstede Centre (HC) and an unexplored database to date, the ISD, are used. Control variables can play an important role in this study since different levels of development have been associated with differences in the entrepreneurial activity across countries (van Stel et al., 2005; Verheul et al., 2002). Thus, the Human Development Index (HDI) from the United Nations Development Programme (UNDP), as well as the percentage of female population, GDP, health expenditures, age structure of population and unemployment rate from the World Development Indicators (WDI) of the World Bank, serve as controls for the unobserved effects of development not considered in the SPO.

The main findings, on the one hand, demonstrate that high voluntary spirit positively affects entrepreneurial activity; and on the other, voluntary spirit and self-expression negatively impact entrepreneurship driven by necessity, while high power distance increases this sort of entrepreneurship. Thus, this empirical study contributed to the literature by advancing the application of an institutional approach to understanding the determinants of innovative entrepreneurship, and other types of entrepreneurial activity at the country level (especially driven by necessity). Also, these new insights may be useful for the design of policies on the promotion of entrepreneurship based on innovation, and public strategies to control the entrepreneurial activity driven by necessity, with the former considered to be an important driver for economic development (Aparicio et al., 2016a; Audretsch et al., 2008; Baumol, 1990; Carlsson et al., 2013).

The chapter is structured as follows. After this brief introduction, in the second section we review the literature on SPO and entrepreneurial activity, and propose

the hypotheses. The third section presents the details of the research methodology. The fourth section discusses the empirical results of the study, while the fifth section comments on some policy implications. Finally, this chapter points out the most relevant conclusions and suggests future research lines in terms of institutions and entrepreneurship.

3.2. Conceptual framework

According to Schumpeter (1911), innovative entrepreneurial activity is an important element for the creation of development across nations. In this context, the entrepreneur is seen as the agent of change who can contribute toward progress and technology transformation through innovation (Segarra & Teruel, 2014; Teece, 1986). Thus, entrepreneurial activity is a valid conduit for the establishment of new activities that promote economic performance and new jobs, as well as ensuring the well-being of society at regional and national levels (Acs et al., 2012; Audretsch et al., 2008; Avlonitis & Salavou, 2007; Beugelsdijk, 2007; Busenitz et al., 2003; Carlsson et al., 2013; Díaz et al., 2013; Feldman, 2014; Ribeiro Soriano & Peris-Ortiz, 2011; Urbano & Aparicio, 2016; van Praag & Versloot, 2007; Wennekers & Thurik, 1999). As mentioned before, examining the factors that encourage entrepreneurial activity has attracted the interest of academics and others in different fields and with different perspectives (Audretsch, 2012; Shane & Venkataraman, 2000; Thornton et al., 2011; Veciana & Urbano, 2008; Verheul et al., 2002).

We have been interested in analyzing the impact of SPO on innovative entrepreneurial activity, as well as opportunity and necessity driven entrepreneurship. In order to conceptualize SPO, some of the existing definitions and measurements of social progress have been revised as follows. Traditionally, these definitions and measurements have been based on GDP. However, a more people-oriented (well-being and life satisfaction) approach has recently attracted the interest of international organizations and scholars (Alkire & Santos, 2010; Engelbrecht, 2014; Hormiga & García-Almeida, 2016; Porter, 2013; Rojas, 2011; Stiglitz et al., 2009). In this context, the United Nations (UN) defines social progress as a set of economic and noneconomic achievements (poverty, inequality, education, healthcare, nondiscrimination, freedom of choice, among others) for which regions and countries have a duty to fight. This organization annually publishes the Human Development Report in which the HDI plays an important role. Similarly, Porter (2013) proposed the Social Progress Index, which is meant to measure "the capacity of a society to meet the basic human needs of its citizens, establish the building blocks that allow citizens and communities to enhance and sustain the quality of their lives, and to create the conditions for all individuals to reach their full potential" (Porter, 2013, p. 41). This index contains three dimensions: basic human needs (nutrition and basic medical care, air, water and sanitation, shelter and personal safety), foundations of well-being (access to basic knowledge, information and communications, health, wellness and ecosystem sustainability) and

opportunity (personal rights, access to higher education, personal freedom and choice and equity and inclusion). These examples suggest that social progress might be a multidimensional concept. In this sense, existing research deals with some of its dimensions, but still not in an integrative manner and never referring explicitly to SPO.

While some authors have studied the impact of education (Acs et al., 2009; Arenius & Minniti, 2005; Bergmann & Sternberg, 2007; Blanchflower, 2004; Block et al. 2013; Davidsson & Honig, 2003; De Clerq & Arenius, 2006; Koellinger, 2008; Lee et al., 2004; Levie & Autio, 2008; Robinson & Sexton, 1994; Shane, 2000) and the effects of social security entitlements related to welfare on entrepreneurial activity (Freytag & Thurik, 2007; Henrekson, 2005; Hessels et al., 2007, 2008; Parker & Robson, 2004), a substantial part of the existing research has been devoted to economic determinants (Acs & Szerb, 2007; Carree et al., 2002, 2007; Gries & Naudé, 2010; Wennekers et al., 2005; Wennekers et al., 2007; Wong et al., 2005). In this sense, extant research suggests a relationship between early-stage entrepreneurial activity and the level of economic development (Carree et al., 2002; Prieger et al., 2016; Wennekers et al., 2005). Accordingly, entrepreneurial activity, especially innovative entrepreneurship and the TEA driven by opportunity, has been found in highly developed countries (see Appendix 3 and Appendix 4, panel a) characterized by the innovation-driven stage, whereas entrepreneurship driven by necessity was found in low- to middle-income countries characterized by the factor-driven and the investment-driven stage (see Appendix 5, panel a) (Amorós & Bosma, 2014; Gries & Naudé, 2010; Liñán & Fernandez-Serrano, 2014).

The analyzed research offers a broad perspective of social progress based on a set of economic and noneconomic achievements (López-Domínguez et al., 2013). However, the ISD envisions this as only noneconomic outcomes related to certain social norms, such as civic activism, intergroup cohesion, clubs and associations, interpersonal safety and trust, gender equality and inclusion of minorities (Foa, 2011; Foa & Tanner, 2012; van Staveren et al., 2014; Webbink, 2012). Building on this, SPO can be seen as the values beyond economic terms that promote social well-being. In this sense, institutional economics (North, 1990, 2005) can provide the foundations to link SPO with innovative entrepreneurial activity. Institutional economics is considered an appropriate and promising theoretical framework for the analysis of environmental factors that condition new business creation based on innovation and opportunity seeking (Bruton et al., 2010; Hayton et al., 2002; Salimath & Cullen, 2010; Thornton et al., 2011; Urbano & Alvarez 2014). According to North (1990, p. 83), “the agent of change is the individual entrepreneur responding to the incentives embodied in the institutional framework.” The theoretical approach refers to the humanly devised constraints that influence individual behavior. Thus, taking into account the institutional approach as a theoretical framework of reference, SPO pertains to informal institutions. As mentioned, the values behind SPO are beyond economic terms. In this regard, the existing literature examines the impact of subjective well-being and life satisfaction

on innovative entrepreneurial activity and its different types (either opportunity or necessity). For instance, Naudé et al. (2013) found that the difference in favor of opportunity-driven entrepreneurship compared to the necessity-driven one improves with non-economic well-being. Following that perspective, Naudé et al. (2014) found that life satisfaction and innovative entrepreneurial activity follow a bicausal relationship. On the one hand, innovative entrepreneurship impacts life satisfaction, and this impact is characterized by an inverted U-shaped relationship. Similar analysis has found this at a regional level, since it has been argued that hard work and high-ambition generate a better life (Beugelsdijk, 2007; Bosma, 2009). As a result, innovative entrepreneurial activity and entrepreneurship driven by opportunity lead to life satisfaction and happiness (Binder & Coad, 2013; Block & Koellinger, 2009), until a certain point is reached where an excess of these types of entrepreneurial activity can lead to highly competitive market conditions and to dissatisfaction. On the other hand, higher levels of life satisfaction were positively related to entrepreneurship (Naudé et al. 2014). Others authors, such as Florida (2002), Lee et al. (2004) and Turok (2004), posited that enhanced social environments can attract talented human capital, innovativeness, creativity and entrepreneurs. Thus, this combination of factors can lead to a type of entrepreneurial activity that is highly productive for society (Aparicio et al., 2016a; Baumol 1990; Minniti & Lévesque, 2010). Consequently, this type of entrepreneurial activity has been associated more with the innovation and opportunity-driven than necessity entrepreneurship (Amorós & Bosma, 2014; Aparicio et al., 2016a; Hessels et al., 2008; Naudé et al., 2013; Urbano & Aparicio, 2016).

These enhanced social environments within regions and countries could be related to SPO using the dimensions of the ISD. As mentioned, these dimensions focus on the social norms that promote civic activism, clubs and associations, intergroup cohesion, interpersonal safety and trust, gender equality and inclusion of minorities. If we focus on the clubs and association dimensions, the ISD refers to the community ties that act as a safety net for the poor, facilitating economic and social assistance. These social ties and connections, such as those found within families and local communities, help individuals “get by.” Also, this dimension is a measure of the voluntary engagement in memberships, and so it can serve as a measure of voluntary spirit. In light of this definition, it is possible to link this dimension with the social capital approach (Foa, 2011). The existing literature has recognized the positive impact of social capital on innovative entrepreneurial activity (Beugelsdijk, 2007; Davidsson & Honig, 2003; Kim & Kang, 2014; Leyden & Link, 2015; Schulz & Baumgartner, 2013). According to Casson and Della Giusta (2007), the analysis of the entrepreneurship process (opportunity seeking, the creation of new products, acquisition of resources and access to new or existing markets) can help in understanding the mechanism behind the promoting effect of social capital on innovative entrepreneurial activity. Entrepreneurs with access to social capital (clubs, associations, informal networks and other meetings) can also gain access to information about entrepreneurial culture and opportunities and thus take

measures to exploit them in different regions (Audia et al., 2006; Bauernschuster et al., 2010; Beugelsdijk, 2007; Kwon et al., 2013). Others suggest that the trust gained through social capital is key for the acquisition of the financial, material and intangible resources that entrepreneurs otherwise do not possess (Liao & Welsch, 2005; Teckchandani, 2014). Finally, when the entrepreneur tries to access the market, social capital is seen as a valid conduit for transforming opportunities into innovative products (Alvarez & Busenitz, 2001; Anderson et al., 2007), or even to transform necessity into opportunity entrepreneurship (Urban, 2011). These examples enable the association to be made between having access to social capital (associations, clubs, informal networks, among others) and the stages and motives of the entrepreneurial process. For each one of the stages, social capital has been shown as promoting entrepreneurial activity, which at the same time encouraging necessity-driven entrepreneurs in pursuing entrepreneurial opportunities (Urban, 2010, 2011). Other authors have suggested the special importance of social capital for innovation process as a key aspect (Anderson et al., 2007; McFayden et al., 2009; Sorenson, 2003). Thus, the following hypotheses are proposed:

Hypothesis 1. Voluntary spirit positively impacts innovative entrepreneurial activity.

Hypothesis 1a. Voluntary spirit positively impacts entrepreneurship driven by opportunity, although the effect upon the entrepreneurship driven by necessity is negative.

While industrialization has been linked to an emphasis on economic growth at almost any price, the public of affluent societies has placed increasing emphasis on quality of life, environmental protection and self-expression (Inglehart & Baker, 2000, 21). This cultural shift is known as postmaterialism, and it is a universal phenomenon as development takes place (Inglehart, 1977, 1990; Inglehart & Welzel, 2005). Inglehart (1997) found cross-cultural differences in the analysis of 43 countries in the 1990–1991 WVS. These differences involved the views of political, social and religious norms and beliefs across rich and low-income societies. Likewise, Audretsch et al. (2013) found, by analyzing regions in India, that social and religious differences had an effect on entrepreneurial decision. At the country level, Hoogendoorn et al. (2016) provided similar insights in this regard, examining attitudes toward believing and behaving as key elements to explain entrepreneurial activity. From that analysis, traditional and secular-rational orientations toward authority, and survival versus self-expression values have emerged as two dimensions illustrating the polarization across countries (Inglehart & Baker, 2000). According to Inglehart (1997), the traditional vs. secular-rational values depict a continuum where the traditional side is associated with the importance of existential security, traditional family ties, strong presence of religion and hierarchy. Thus, higher secular-rational values mean that societies tend to accept easily issues such as abortion, divorce and euthanasia, among others. However, in terms of development and social progress, the survival vs. self-expression dimension, related

to trust, tolerance, subjective well-being, political activism, and self-expression, emerges in postindustrial societies with high levels of security (Aparicio et al., 2016b). Societies that emphasize survival values show relatively low levels of subjective well-being, report relatively poor health, are low on interpersonal trust, are relatively intolerant of out-groups, are low on support for gender equality, emphasize materialist values, have relatively high levels of faith in science and technology, are relatively low on environmental activism, and are relatively favorable to authoritarian government. Societies high on self-expression values tend to have the opposite preferences on these topics (Inglehart & Baker, 2000, p. 25–28). Thus, one approach to postmaterialism is seen as self-expression values, since it could define a development path across countries (Inglehart & Baker, 2000; Inglehart & Welzel, 2005).

The use of postmaterialism in entrepreneurship research has been limited (Hechavarría et al., 2016, 2017; Morales & Holtschlag, 2013; Uhlaner & Thurik, 2007). In their seminal contribution, Uhlaner and Thurik (2007, 168) suggested that material gains are central or crucial to entrepreneurial activity, and since those gains, by definition, are of less value to postmaterialist individuals, a society that is more postmaterialist is likely to be less entrepreneurial. These authors found that postmaterialist values negatively influenced entrepreneurial activity (nascent entrepreneurial activity and new business formation) when controlling for education, economic development and life satisfaction at the country level. However, the same authors left the door open for further research in order to clarify the interrelations between postmaterialism and the motivations behind entrepreneurial activity because they may differ across countries. The motivations that trigger entrepreneurial activity are distinguished, as mentioned above, between opportunity and necessity according to GEM. Since self-expression, creativity and the full development of the individual are reached in climates of free choice (Inglehart & Welzel 2005, p. 139), new businesses based on innovation and entrepreneurship driven by opportunity may find a better fit in societies oriented to social progress than necessity entrepreneurial activity. As a matter of fact, Scandinavian, Anglo-Saxon and Central European societies rank highly in Inglehart's dimension, have innovative entrepreneurial activity and present a prevalence of entrepreneurship driven by opportunity, rather than entrepreneurship driven by necessity. According to Hechavarría and Reynolds (2009), self-expression values positively impact opportunity entrepreneurship, since the well-being status allows entrepreneurs to more easily perceive the opportunities that could exist in their environment. At the same time, these authors found that self-expression was negatively correlated with necessity entrepreneurship, showing in a cross-country comparison that the higher development of this characteristic may be associated with lower levels of individuals seeking short-term solutions through entrepreneurship. Consequently, in response to the call made by Uhlaner and Thurik (2007) for more in-depth research, the following hypotheses was proposed:

Hypothesis 2. Higher self-expression values positively impact innovative entrepreneurial activity.

Hypothesis 2a. Higher self-expression values positively impact entrepreneurship driven by opportunity. However, the impact upon the entrepreneurship driven by necessity is negative.

Hofstede (1980, 2005) and Hofstede et al. (1997) devised a set of dimensions through the study of a multinational firm's cultural setting. Although with mixed results (Bruton et al., 2010; Hayton et al., 2002; Salimath & Cullen, 2010; Spencer & Gomez, 2004), cultural dimensions have been extensively applied to the study of entrepreneurial activity at regional and country levels (Baum et al., 1993; Beugelsdijk, 2007; Bosma, 2009; Davidsson, 1995; Davidsson & Wiklund, 1997; Feldman, 2014; Hofstede et al., 2004; Mitchell et al., 2000; Shane, 1992, 1993; Vinogradov & Kolvereid, 2007, among others). Extant research tends to depict the entrepreneur profile as individualistic, featuring a high power distance, masculinity and low uncertainty avoidance (Busenitz & Lau, 1996; Hayton et al., 2002; McGrath et al., 1992a,b). Among all the cultural dimensions, individualism and uncertainty avoidance are the two most studied by the existing research analyzing regions and countries (Rooks et al., 2016; Salimath & Cullen, 2010). Empirical evidence supporting the idea that individualism favors entrepreneurial activity and innovation has been found by some researchers (McGrath et al., 1992a; Morris et al., 1993; Mueller & Thomas, 2001; Rooks et al., 2016; Shane, 1993). However, challenging this assumption, other authors suggest that a lesser degree of individualism, as well as different sorts of collectivism (patriotism and nationalism) are positively related to innovation and entrepreneurial activity (Aparicio et al., 2016b; Baum et al., 1993; Hunt & Levie, 2002; Taylor & Wilson, 2012; Tiessen, 1997). In fact, Pinillos and Reyes (2011) found evidence that the level of economic development moderated the influence of individualism on entrepreneurial activity. Aligned with the traditional depiction of the entrepreneur, other authors suggest that the entrepreneur's cultural profile is low in uncertainty avoidance (McGrath et al., 1992a; Shane, 1993, 1995). That pattern was confirmed by Urbano and Alvarez (2014), who found that fear of failure negatively impacted the likelihood of becoming an entrepreneur. In contrast, Wennekers et al. (2007) found a negative impact of risk tolerance on the rate of ownership of OECD countries. While the analyzed research showed that individualism and uncertainty avoidance have been widely analyzed and linked to the entrepreneur's profile, the dimensions of power distance and masculinity vs. femininity remain less well explored.

Focusing only on power distance, and drawing from Hofstede (1980) and Hofstede et al. (1997), this dimension expresses the degree to which power is distributed unequally among societies. People living in societies with high power distance are characterized by rules of hierarchy. In societies with low power distance, people have more to say in the decision-making processes and are encouraged to demand

a more equal distribution of power. In terms of its definition, SPO can be conceptualized by low power distance, since people living in such environments can be encouraged to be socially active and to participate in the decision-making process (through a more even power distribution and fewer hierarchical rules). Lyons et al. (2012) suggested that community issues in entrepreneurship, in which all individuals in determined locations, regions and countries are participating together without hierarchies in the policy-making process, is a promising area to explore in this research field. Challenging the traditional approach to the entrepreneur's profile, Shane (1993) found that power distance must be low in order to make innovative and new projects flourish. Others, such as Thomas and Mueller (2000), contradicted the Westernized vision of the entrepreneur and found no empirical evidence of an association between cultural distance in terms of power distance in the US with variances in the level of innovativeness, which is often considered a defining trait of the entrepreneur. Yet, the existing literature has provided us with more examples showing that low levels of power distance positively impact entrepreneurial activity and innovation (Lee & Peterson, 2001; Liñán & Fernandez-Serrano, 2014). Liñán et al. (2013) provided evidence about the effect of hierarchical societies on opportunity and necessity entrepreneurship. These authors found that egalitarian societies more effectively tend to be beneficial for entrepreneurs motivated by opportunities, while hierarchical societies boost the necessity of entrepreneurial activity. Semlinger (2008) found similar results by analyzing how less hierarchy and more regional collaboration may create an appropriate environment to foster the opportunity sought by entrepreneurs located in specific regions. If we look closely, Stephan and Uhlaner (2010) found empirical evidence supporting the hypothesis that a socially supportive culture (SSC) characterized by low power distance encourages innovative entrepreneurial activity and entrepreneurship driven by opportunity. Thus, the following hypotheses were proposed:

Hypothesis 3. High power distance level negatively impacts innovative entrepreneurial activity.

Hypothesis 3a. High power distance level negatively impacts entrepreneurship driven by opportunity. However, the impact upon entrepreneurship driven by necessity is positive.

3.3. Data and methods

As stated previously, the purpose of this chapter is to analyze the effect of SPO on innovative entrepreneurial activity. To this end, we employ the following variables:

3.3.1. Dependent variables

The dependent variables were sourced from GEM for the year 2012. The GEM project is considered to be the most important study on entrepreneurial activity worldwide. Developed jointly by two universities, the London Business School (UK)

and Babson College (USA), it enables cross-national comparisons on the level of national entrepreneurial activity, estimates the role of entrepreneurial activity in national economic growth, determines the factors that account for national differences and facilitates policies that may be effective in promoting entrepreneurial activity (Urbano & Alvarez, 2014).

The use of the GEM dataset has grown recently. By 2012, a total of 106 articles published in Journal Citation Reports (JCR) used the information from GEM and analyzed the entrepreneurial activity through the GEM lenses (Álvarez et al., 2014; Bosma, 2013). According to Álvarez et al. (2014), between 1999 and 2011, 43 articles were found conducting entrepreneurship research at the country level, while seven were found at a regional level. In addition, this dataset has enabled understanding different types of entrepreneurial motives, the factors that may influence them, and the effects they could generate on firm growth and economic development (Bosma, 2013).

In this chapter, innovative TEA, entrepreneurship driven by opportunity (TEA OPP) and driven by necessity (TEA NEC) were used as the dependent variables in different models. Innovative TEA is an indicator of the GEM project, defined as the percentage within TEA of the adult population engaged in the process of setting up a new business or owning an established young business (up to 42 months) considering a new market (few/no business offers the same product). TEA OPP is defined as the percentage of those involved in TEA who claim to be driven by improvement motives (independence or increasing their income). TEA NEC is defined as the percentage of those involved in TEA who are entrepreneurs because they had no other option for work. All these variables, as well as the independent and control variables were provided for country i.

3.3.2. Independent variables

Three different dimensions of SPO were used in this research: voluntary spirit (VOL) measured through the clubs and association dimension from the ISD; Inglehart's postmaterialism dimension of the survival/self-expression dimensions from the WVS; and the Hofstede's cultural dimension of power distance (PDI) from the Hofstede Centre.

By focusing on informal institutions, the ISD has attempted to help researchers overcome the limitations when estimating the effects of social development for a large range of countries (Foa & Tanner, 2012). These indices correspond to a research initiative related to the ISS of the Erasmus University of Rotterdam. Using the method of matching percentiles, they synthesized more than 200 indicators from 25 sources known worldwide into a usable set of dimensions. As mentioned, the VOL is a continuous variable measured through the clubs and association dimension, which measures the membership in voluntary associations, ranging from 0 (low level) and 1 (high level).

Postmaterialism provides a set of measures that reflect the different views of respondents regarding questions about political, religious, marital, community life and self-expression issues (Inglehart & Baker, 2000). Thus, from the work of Inglehart (1997) two dimensions emerged, the traditional vs. secular-rational values and the survival vs. self-expression values, for which each society can be located on a map based on the two dimensions (Inglehart, 1997, p. 81–98). The traditional side of the traditional vs. secular-rational values emphasizes the importance of religion, national pride and authority, while the secular-rational side expresses the opposite. The survival side of the survival vs. self-expression values represents a priority of economic and physical security over self-expression and quality-of-life. The self-expression side expresses the opposite. As mentioned above, survival vs. self-expression could define a socio-economic development path across countries, while postmaterialism is associated with a rise of self-expression values (Inglehart & Welzel, 2005). This is a continuous variable originally ranging from -2.5 to 2.5. However, in order to obtain a straightforward interpretation, we changed the scale from 0 (low self-expression values) to 5 (high self-expression values).

According to Hofstede (2009), the cultural dimensions approach only allows for country comparison (which is the case for this research), as it is not theoretically and technically consistent to use it as a tool for predicting individual behavior. Among the cultural dimensions, power distance was used in this research. Power distance is a continuous variable expressing how power is distributed among the members of a society and their expectation that power is distributed unequally. Societies ranking low in power distance (i.e. close to 0) are characterized by people's empowerment and low hierarchy. On the other hand, a rank close to 100 implies societies with power distance and concentrated hierarchies.

3.3.3. *Control variables*

Although the main focus was on developing an institutional model, other factors may also influence entrepreneurial activity. In some cases, introducing country fixed-effects may help in this regard, although we were not able to do this, since the inclusion of a dummy representing each country would reduce the model's degrees of freedom. Instead, recent research has shown the importance of considering socioeconomic factors in explaining the differences in innovative entrepreneurial activity across countries (Acs et al., 2012; Arenius & Minniti, 2005; Carree et al., 2002; Hartog et al., 2010; Verheul et al., 2002, 2006; Wennekers et al., 2005). The value systems of rich countries differ systematically from those of poor countries (Inglehart & Baker, 2000, p. 29). Thus, the impact of SPO on innovative entrepreneurial activity must be analyzed within the framework of the level of development. For this purpose, the level of development was included as a control variable to ensure that the results were not unjustifiably influenced by such factors. In each model, socioeconomic factors related to economic and noneconomic development (education, health and income per capita) were controlled by the HDI of the UNDP. Also, the percentage of the female population, economic outcome (GDP

per capita in power purchase parity terms), health expenditure, the age structure of population and unemployment rate were used as controls in each model. In Table 3.1, the variables used in this research are described.

Table 3.1. Variables description

Dependent variable	Description	Source^a
TEA innovative	Percentage within early-stage Entrepreneurial Activity (TEA) considering new market (few/no business offer the same product).	GEM, 2012.
TEA OPP	Percentage within early-stage Entrepreneurial Activity (TEA) motivated to pursue perceived business opportunities.	
TEA NEC	Percentage within early-stage Entrepreneurial Activity (TEA) involved in entrepreneurship because they have no better option for work.	
Independent variables	Description	Source^a
Voluntary spirit (VOL)	This dimension measures the membership in local voluntary associations. Values from 0 to 1.	ISD, 2010.
Survival vs. self-expression values (SSV)	Original values rank from -2,5 to 2,5 with higher values corresponding to higher scores of self-expression values. For practical reasons, the values were changed to a 0 to 5 scale.	WVS, 5th wave (2005-2009).
Power distance (PDI)	Societies where PDI is high, rank near 1, meanwhile societies where PDI is low, rank near 0.	HC, 2010.
Control variable	Description	Source^a
Level of development-Human Development Index (HDI)	Societies with a high HDI rank near 100, while societies where the HDI is low rank near.	UNDP, 2012.
Percentage of female population	The percentage of the population that is female. The population is based on the <i>de facto</i> definition of population.	WDI, 2012.
GDP PPP	Gross domestic product per capita converted to international dollars using purchasing power parity rates. Data are in constant 2011 international dollars.	
Health expenditure	Recurrent and capital spending from government (central and local) budgets, external borrowings and grants (including donations from international agencies and nongovernmental organizations), and social (or compulsory) health insurance funds.	
Age structure of population	The proportion of the population ages 15 and older that is economically active.	
Unemployment rate	The share of the labor force that is without work but available for and seeking employment.	

^a Global Entrepreneurship Monitor (GEM): <http://www.gemconsortium.org/>; Indices of Social Development (ISD): <http://www.indsocdev.org/data-access.html>; World Values Survey (WVS): <http://www.worldvaluessurvey.org/wvs.jsp>; The Hofstede Centre (HC): <http://geert.hofstede.com/countries.html>; United Nations Development Programme (UNDP):

3.3.4. Data and the models

The effects of SPO on entrepreneurial activity were analyzed at the country level, using Ordinary Least Squares (OLS) in cross-sectional regression for 2012. For this purpose, we estimated the following model:

$$TEA_i = \alpha + \beta_j SPO_{j,i} + \sum_k \delta_k CV_{k,i} + \mu_i$$

where TEA_i is the vector of the respective dependent variables (innovative, opportunity and necessity TEA); β_j represents the estimation results for each j SPO measure (VOL_i , SSV_i , and PDI_i); and δ_k is the parameter estimated for each k control variable ($CV_{k,i}$), that represents the socioeconomic factors related to the level of development (HDI), economic outcome (GDP ppp), population (percentage of female population), health expenditures, age structure of population and unemployment rate; and μ_i is the error term. Natural logarithms were used in order to obtain a direct interpretation of the coefficients. According to Wooldridge (2012, p. 44), it implies that the percentage of change in the independent variable causes a percentage change in the dependent variable expressed in the respective coefficient.

In this regard, Models 1, 2 and 3 considered the first SPO dimension, namely membership and voluntary local association (VOL) and its effect on innovative, opportunity and necessity TEA, respectively. Models 4, 5 and 6 took into account the SPO dimension related to survival vs. self-expression values (SSV) and the measures of entrepreneurial activity (innovative, as well as opportunity and necessity entrepreneurship). Models 7, 8 and 9 assessed the Hofstede dimension (PDI) on innovative, opportunity and necessity TEA, respectively. All models included the socioeconomic development control variables already defined. See Appendix 6 for a list of countries.

3.3.5. Tests for robustness

To assess for the robustness of the models, two tests were carried out. First, all multiple regression models were calculated for prediction of innovative, opportunity and necessity entrepreneurship for each of 48 and 56 (Model 1, and Models 2 and 3, respectively), 29 and 33 (Model 4, and Models 5 and 6, respectively) and 41 and 51 (Model 7, and Models 8 and 9, respectively) subsamples, omitting one of the countries each time as a test for outlier effects.

In a second test of robustness, a different set of models was estimated substituting the dependent variable. In this case, all SPO variables were used to explain the variability of innovative entrepreneurship based on new product development. Similar to Models 1, 4 and 7, the estimation results (magnitude and sign) remained relatively stable across models (see Appendix 7). These findings showed that our results were stable to various changes applied to the original specification.

Therefore, we are confident that the different measures of SPO we studied had a robust effect on innovative, opportunity and necessity TEA.

3.4. Results

Table 3.2 provides the means, standard deviations and pairwise correlation coefficients for all the variables. As Table 3.2 shows, there was a relatively middle average level of innovative entrepreneurship across countries (44.90%), and the rate of opportunity entrepreneurial activity seemed to be a bit higher than innovative TEA, which had a mean equal to 47.29% in our sample; nonetheless, necessity TEA was about half of the previous entrepreneurship measures (24.96%). Regarding the independent variables related to SPO, most of the countries were characterized by a middle level of voluntary spirit (0.52 on average), self-expression values (2.83 on average), and power distance (59.77 on average). Apart from Table 3.2, which also shows how scattered the countries were, Appendixes 3-5 provided two insightful facts about how the independent and dependent variables were related. First, in order to avoid biased selection, Annexes show the sample was heterogeneous. And second, the countries followed a pattern according to what we expected theoretically in each SPO measure and entrepreneurial activity. On the one hand, Appendixes 3 and 4 (panels b and c) may suggest that voluntary spirit and self-expression values were positively associated with innovative and opportunity TEA. However, these entrepreneurship measures vs. power distance had a negative slope (Appendixes 3 and 4, panel d). Exactly the opposite occurred for necessity entrepreneurship and SPO variables (see Appendixes 5).

Table 3.2. Descriptive statistics and correlation matrix

Variable	Mean	Std. Dev.	Max.	Min.	1	2	3	4
1 TEA Innovative	44.901	9.881	17.951	63.034	1			
2 TEAopp	47.299	13.381	18.000	76.000	0	1		
3 TEAnec	24.955	11.898	4.000	61.000	-0.189	-0.626*	1	
4 Voluntary spirit	0.516	0.102	0,320	0.785	0.265	0.135	-0.164	1
5 Survival vs. self-expression values	2.834	1.064	0.950	4.850	0.391	0.342	-0.673*	0.355
6 Power distance	59.774	20.332	13.000	104.000	-0.283	-0.292	0.407*	-0.265
7 Human Development Index	0.773	0.121	0.411	0.943	0.2723	0.319*	-0.425*	-0.229
8 Percentage female population	50.790	1.152	48.186	54.303	0.172	-0.044	-0.030	-0.454*
9 GDP ppp	4,509.320	17,391.430	739.862	89,153.060	0.275	0.435*	-0.556*	0.096
10 Health expenditure	13.530	4.577	4.297	24.177	0.111	0.034	-0.153	0.167
11 Age structure of population	61.980	8.330	42.400	83.000	0.024	0.137	-0.006	0.250
12 Health expenditure	9.031	6.126	0.700	31.000	0.196	-0.407*	0.313	-0.212
	5	6	7	8	9	10	11	12
5 Survival vs. self-expression values	1							
6 Power distance	-0.649*	1						
7 Human Development Index	0.641*	-0.614*	1					
8 Percentage female population	-0.073	-0.119	0,316	1,000				
9 GDP ppp	0.603*	-0.528*	0.794*	0.128	1			
10 Health expenditure	0.559*	-0.364*	0.148	0.018	0.255	1		
11 Age structure of population	-0.001	0.078	-0.404*	-0.183	-0.221	0.120	1	
12 Unemployment rate	-0.097	-0.234	0.058	0.141	-0.095	-0.100	-0.403*	1

* Significant at $p < 0.01$.

Regarding the correlation matrix, all the results were in accordance with the theory presented above, which also provided the opportunity to explore in depth the hypotheses stated previously. As seen in Table 3.2, the correlation between innovative and opportunity TEA and voluntary spirit was very high, since the entrepreneurial activities increased as this SPO measure grew (0.27, $p < 0.1$; and 0.14, $p > 0.1$, respectively). The same applied to the levels of self-expression values vs. innovative (0.39, $p < 0.05$) and vs. opportunity entrepreneurship (0.34, $p < 0.05$). Concerning power distance, Table 3.2 showed a negative correlation between innovative and opportunity TEA and this SPO variable (0.28, $p < 0.1$; and 0.29, $p < 0.05$, respectively). The opposite happened between necessity entrepreneurship and voluntary spirit (-0.16, $p > 0.1$), self-expression values (-0.36, $p < 0.01$), and power distance (0.41, $p < 0.01$). Therefore, preliminary support was found for the hypotheses.

In Table 3.3, the results of the OLS regression with robust variance estimates are shown. In the final rows, we also reported the number of countries available for each model, the coefficient of determination (R^2), the Root MSE, the variance inflation factors (VIF), the criteria for heteroscedasticity (White's test), the Akaike criterion (AIC), and the Schwarz criterion (BIC). The Root MSE showed that each estimated model had little difference from the real data. In terms of multicollinearity test, all values were substantially below 10, which is the maximum value commonly accepted. The White's test (White, 1980) showed, for all models, that the null hypothesis about zero constant variance in the residuals was not rejected for Models 1, 2, 3, 5, 6 and 7. Nevertheless, we estimated all models with robust standard errors to avoid heteroscedasticity issues.

All the models had high explanatory power, explaining, in the best case, 70.0% of the variance in TEA NEC ratio (for Model 6), 56.7% of the variance in opportunity entrepreneurship (Model 5), and 42.1% of the variance in innovative entrepreneurship (for Model 1). The lowest explanatory power was found for Model 4, where 24.4% of the variance of innovative entrepreneurship and 36.5% (Model 2) of the variance in entrepreneurship driven by opportunity were explained when self-expression values (SSV) and voluntary spirit (VOL) were used as independent variables, respectively.

The results from Models 1 and 3 showed that voluntary spirit (VOL) had a significant influence on innovative and necessity entrepreneurship. In this regard, VOL had a positive and significant influence (Model 1: 0.600, $p < 0.01$, and Model 3: 0.496, $p < 0.1$) on innovative and necessity TEA, respectively. Model 1 explained 42.1% of the variance in innovative entrepreneurship, Model 2 explained 36.5% of the variance in TEA OPP, while Model 3 explained 61.9% of the variance in TEA NEC, indicating that, in terms of R^2 , the three models had a good fit. The results from Models 4, 5 and 6 showed that survival/self-expression values (SSV) had a positive impact on both innovative and opportunity entrepreneurial activity measures, but a negative and statistically significant influence only on TEA NEC (-0.564, $p < 0.01$). Model 4 also explained 24.4% of the variation in innovative entrepreneurship, Model 5 explained 56.8% of the variance in opportunity entrepreneurship and Model 6

explained 69.9% of the variance in TEA NEC ratio, indicating that, in terms of R^2 , these also had a good fit.

The results from Models 7, 8 and 9 showed that the dimension of power distance (PDI), though with the expected sign, was not statistically significant either for innovative entrepreneurship or TEA OPP. However, for TEA NEC, it exhibited a positive and significant impact (0.264, $p < 0.05$). Models 7, 8 and 9 also showed high explanatory power: when innovative entrepreneurship was used as a dependent variable, the explained variance was 25.6%; when entrepreneurship driven by opportunity was used as a dependent variable, the explained variance was 47.8%; meanwhile, when TEA NEC was used as a dependent variable for the PDI, the explanatory power was 63%.

Regarding hypothesis testing, in Model 1 a positive influence of VOL on innovative entrepreneurship (hypothesis 1) was obtained, while in Model 2 and Model 3, a positive influence of VOL on the TEA OPP and a negative influence of VOL on TEA NEC (hypothesis 1a) were predicted. According to the results, hypothesis 1 could not be rejected, but hypothesis 1a was partially supported. Here, we could say that, for each country in our sample, if the VOL increased by 1%, the innovative TEA increased by 0.600%, while TEA NEC decreased by 0.496%, *ceteris paribus*. Consistent with the reviewed literature, VOL was identified as a key factor for the innovative entrepreneurship process (Audia et al., 2006; Bauernschuster et al., 2010; Kwon et al., 2013). As a consequence, innovation, resource mobilization and market access in regions and countries were facilitated through an enhanced associative inclination, especially in sectors of activity characterized by an innovative component (Alvarez & Busenitz, 2001; Anderson et al., 2007; Feldman, 2014; Sorenson, 2003). Beugelsdijk (2007) suggested that collaborations among individuals are a required characteristic to enhance the entrepreneurial activity in regions. Similarly, Bosma (2009) found that those variables related to informal institutions are highly relevant to obtaining a better understanding of the entrepreneurial process in each region, which in turn could define their development path. In this regard, Liñán and Fernandez-Serrano (2014) found that societies with cultural values related to collaboration and connections were significantly associated with lower levels of necessity entrepreneurship. According to these authors, by encouraging the entrepreneurial activity pursuing different motives to necessity, it was possible to obtain greater economic development.

In terms of hypothesis 2, a positive impact of SSV on innovative entrepreneurship was predicted, and hypothesis 2a suggested a positive impact on TEA OPP and a negative impact on TEA NEC. The results showed that SSV positively impacted entrepreneurial activity based on innovation, as predicted, although, no significance was found for the SSV dimension. Therefore, hypothesis 2 was not entirely supported. This result could be due to the material characteristics and motivations

Table 3.3. Social progress orientation predicting innovative, opportunity and necessity entrepreneurship

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Ln TEA Innovative	Ln TEA OPP	Ln TEA NEC	Ln TEA Innovative	Ln TEA OPP	Ln TEA NEC	Ln TEA Innovative	Ln TEA OPP	Ln TEA NEC
Ln Voluntary spirit	0.600*** (0.203)	0.121 (0.160)	-0.496* (0.258)						
Ln Survival vs. self-expression values				0.109 (0.154)	0.080 (0.147)	-0.564*** (0.190)			
Ln Power distance							-0.047 (0.099)	-0.126 (0.094)	0.264** (0.128)
Ln Human Development Index	0.367 (0.630)	-0.781 (0.576)	2.410*** (0.724)	-0.644 (1.286)	-0.410 (1.378)	5.220*** (1.438)	0.062 (1.377)	-0.444 (0.765)	4.295*** (1.158)
Ln percentage female population	3.099* (1.564)	0.586 (1.777)	-2.227 (2.590)	-2.010 (2.855)	-0.835 (2.540)	1.223 (3.064)	1.491 (2.014)	0.936 (1.262)	-0.229 (2.445)
Ln GDP ppp	0.030 (0.116)	0.305*** (0.111)	-0.831*** (0.138)	0.157 (0.207)	0.348 (0.235)	-1.191*** (0.238)	0.121 (0.216)	0.286** (0.127)	-1.102*** (0.159)
Ln health expenditure	-0.009 (0.125)	-0.012 (0.084)	-0.313** (0.130)	0.086 (0.113)	-0.235* (0.129)	-0.312 (0.207)	-0.051 (0.121)	-0.125 (0.100)	-0.247 (0.170)
Ln age structure of population	0.731** (0.283)	0.562 (0.469)	-0.743* (0.441)	-0.425 (0.803)	1.442* (0.717)	-0.387 (0.612)	1.037 (0.689)	0.826 (0.528)	-1.438*** (0.419)
Ln unemployment rate	0.162*** (0.050)	-0.144*** (0.051)	0.224** (0.091)	0.060 (0.060)	-0.154*** (0.050)	0.219 (0.131)	0.149** (0.066)	-0.163*** (0.055)	0.093 (0.101)
Constant	-7.386 (6.695)	-1.689 (7.171)	21.311* (10.627)	9.601 (12.012)	4.328 (10.665)	13.030 (11.910)	-2.055 (8.831)	-2.008 (5.216)	15.006 (10.488)
Observations	48	56	56	29	33	33	41	51	51
R ²	0.421	0.365	0.619	0.244	0.568	0.699	0.256	0.478	0.630
Root MSE	0,204	0,258	0,367	0,222	0,263	0,363	0,234	0,243	0,359
VIF	6,11	5,39	5,39	5,88	6,40	6,40	3,13	3,85	3,85
White's test (p-value)	0,002	0,067	0,026	0,490	0,036	0,107	0,001	0,110	0,207
AIC	9,069	14,563	53,909	1,558	12,247	33,653	4,479	7,675	47,632
BIC	5,901	30,765	70,112	12,496	24,219	45,625	18,187	23,129	63,086

*** Significant at p < 0.01; ** p < 0.05; * p < 0.1. Robust standard errors in parentheses.

can be a powerful driver for new businesses based on innovation (McGrath et al., 1992a; Uhlaner & Thurik, 2007; Thomas & Mueller, 2000). According to Inglehart (1997), a shift from traditional and materialistic values to postmaterialist values requires a persistent increase in economic development.

To shed some light on this, it becomes indispensable to examine the relationship involving entrepreneurial activity and the level of development (Carree et al., 2002; Wennekers et al., 2005). As Appendixes 3 and 4 may suggest (panel a), the fact that innovative entrepreneurship did not increase with the level of development to a point where entrepreneurship driven by opportunity increased, highlights also the different motivations (opportunity or necessity) for engaging in entrepreneurial activity (Hessels et al., 2008; Koellinger, 2008; Liñán et al., 2013). Nonetheless, hypothesis 2a, which on the one hand predicted a positive impact of SSV on TEA OPP, and a negative impact on TEA NEC, on the other hand, was also partially supported. Considering that the SSV dimension is characterized by a preference for quality of life, life satisfaction, happiness, environmental protection, gender equality and participation in public life and decision-making (Inglehart, 1997), our lack of statistical significance could imply that some regional and national regulations are effectively needed to lead individuals toward the constant search for innovation discoveries and the identification of meaningful opportunities (Aparicio et al., 2016a; Fuentelsaz et al., 2015). According to Shane (2009), an increased number of entrepreneurs as the only purpose of a determined policy could hinder long-term entrepreneurial development, since it could generate entrepreneurship with low added value, mostly associated with necessity issues (Reynolds et al., 2005).

Feldman (2014) discussed the importance of the socioeconomic well-being associated with the capacity to innovate in places and regions, which compensates in favor of innovative entrepreneurs, rather than entrepreneurship driven by other reasons (i.e. necessity). In this sense, Hechavarria and Reynolds (2009) also agreed with the fact that if societies have higher levels of cultural values such as self-expression, it is possible that the amount of necessity entrepreneurship could be significantly reduced, though they suggest this type of entrepreneurial activity should not be eradicated. Specifically, in our case, we found that if the SSV increased by 1%, the necessity TEA decreased by 0.564%, *ceteris paribus*. These results were consistent with Naudé et al. (2013), who found empirical evidence for the impact of superior levels of subjective well-being on the TEA NEC, which was negatively affected.

For hypotheses 3 and 3a, Hofstede's cultural dimension of power distance (PDI) was used to predict the negative impact on innovative entrepreneurship, as well as TEA OPP and TEA NEC, respectively. The results of PDI showed no significant impact on new businesses based on innovation, or for entrepreneurship driven by opportunity, while for TEA NEC the result was in accordance with the theory. In this respect, hypothesis 3 was rejected, and the hypothesis 3a was not rejected partially. Notwithstanding this, the signs of the coefficient for

PDI were negative assessing these two variables, as expected. In this line, empirical evidence has suggested that low PDI encourages entrepreneurial activity (Lee & Peterson, 2001). However, similar to the previous case, Liñán et al. (2013) pointed out that some cultural values could mediate the development level with the entrepreneurial activity associated with opportunity seeking and innovation process, but some others do not. In this respect, some cultural variables such as those related to the hierarchy may be embedded to some extent with some political issues that are preventing the movement of societies toward the achievement of egalitarian processes in different social and economic spheres (Liñán & Fernandez-Serrano, 2014). According to Anokhin and Schulze (2009) and Aparicio et al. (2016a), among others, if, for instance, control of corruption was not effective, the effort to encourage an entrepreneurial culture in regions (Beugelsdijk, 2007; Feldman, Blackburn & Kovalainen, 2009, 2001) or countries would not generate significant results in increasing the entrepreneurial activity driven by innovation and opportunity.

Regarding the impact of PDI on the TEA NEC, the results showed a significant and positive influence. In this respect, if the PDI increased by 1%, necessity TEA increased by 0.264%, *ceteris paribus*. This result was in accordance with authors such as Liñán et al. (2013), who found that societies with less egalitarianism could promote harmful concentrations of power in small groups pursuing their own interests. According to Reynolds et al. (2005), necessity entrepreneurship may be plentiful in regions and countries where there are a lack of institutions not reducing the coordination problems across individuals. In this respect, power concentration implies information asymmetries in favor of small interest groups, which cause obstacles in the market performance, and, thus, social problems such as unemployment and poverty. As a result, unofficial economies and necessity entrepreneurship arise as structural responses to overcome the social problems in these regions and countries (Acs & Virgill, 2010; Bruton et al., 2013). As Acs et al. (2008b) underlined, scarce institutional capacity is more seen in most of the countries classified in the factor-driven stage, and some economies in the efficiency-driven group, which contain an entrepreneurial activity not creating social value, but commercial value for short-term periods (Acs et al., 2013).

Finally, one control variable caught our attention: the HDI, which revealed some interesting results. As mentioned before, the HDI aimed to control for the level of development effects (income per capita, education and health). Consistent with the existing literature (Carree et al., 2002, 2007; Gries & Naudé, 2010; Hessels et al., 2008; Wennekers et al., 2005, among others), these results confirmed a relationship between development and entrepreneurial activity. According to this perspective, as societies become more affluent, the mechanism behind this relationship propels the entrepreneurship driven by innovation and opportunity more than the entrepreneurship driven by necessity.

3.5. Policy discussion

The previous results showed a positive effect of VOL on innovative TEA (statistically significant) and opportunity TEA (not statistically significant), and a negative effect on necessity TEA (statistically significant) in a heterogeneous sample (high- middle- and low-income countries). Similarly, SSV had a positive effect on entrepreneurship driven by innovation (not statistically significant), driven by opportunity (not statistically significant) and a negative effect on necessity entrepreneurship (statistically significant). By contrast, PDI was negatively related to both innovative and opportunity entrepreneurship (not statistically significant), and positive and statistically significantly associated with TEA NEC. Hence, each country had different social progress characteristics encouraging innovative entrepreneurship, and diminishing the activity with lower added value. In terms of public policy, our results pointed out the importance of identifying those social characteristics aimed toward common progress, in which innovative entrepreneurship could serve as a conduit to the achievement of socioeconomic development. In addition, our results highlighted, as in the extant literature, the importance of focusing, designing and evaluating appropriate strategies to encourage entrepreneurial activity, otherwise uncertainty in the markets, coordination problems and interest groups could prevent any effort to obtain significant results in terms of the entrepreneurial activity needed for development, as Shane (2009) suggested.

On the above aspect, the public policy design around the entrepreneurial activity should take into account the entrepreneurship dynamics in each region and country (Shane, 2009). Drawing on this, policies fostering any type of entrepreneurship could be harmful in the long-term, since some entrepreneurial activity does not contribute to social value creation (Acs et al., 2013). Although Urbano and Aparicio (2016) cannot conclude anything in terms of necessity entrepreneurship, they found that the entrepreneurial activity related to opportunity seeking had a longer impact on economic growth. Similarly, Acs et al. (2012), Aparicio et al. (2016a), Minniti and Lévesque (2010) and Wong et al. (2005), among others, found that the entrepreneurial activity associated with innovation was positively related to economic growth. In this regard, our findings could contribute to the actual debate about those factors encouraging innovative entrepreneurship types. As Audretsch et al. (2015a) suggested in a recent conceptual effort about entrepreneurship, it is necessary to understand those factors that are dynamic and, in some cases, changing slowly over time.

Congruent with North (1990, 2005) and Williamson (2000), informal institutions, and hence SPO, tend to change more slowly than formal institutions. Here, our results could be useful when discussing policy implications, in which social values contribute to innovative entrepreneurial activity. According to De Clercq et al. (2010) and Holland and Shepherd (2013), personal values and environmental characteristics such as collaborations and community efforts should be considered by policy makers in order to foster entrepreneurial persistence. In line with this idea, short- and long-term public strategies allow for the

achievement of innovative entrepreneurship, capable of creating social value and development.

In this respect, the SPO assessed here could be useful to understand four possible dynamics of innovative entrepreneurship types. Specifically, voluntary spirit, mainly encouraged by social capital, explained (i) increasing innovative entrepreneurship, (ii) opportunity entrepreneurship, or (iii) decreasing necessity entrepreneurship, or (iv) increasing opportunity entrepreneurship and decreasing necessity entrepreneurship. According to Bauernschuster et al. (2010), Estrin et al. (2013b), Kim and Kang (2014) and Minniti (2004), among others, on the one hand, social capital and group activities increased the entrepreneurial alertness among individuals. Here, not only is trust acquired, but also moral support in terms of friendship and family is obtained from the network. Therefore, club associations in different areas and without entry restrictions must be encouraged by governments and society. On the other hand, Ács et al. (2014) also discussed some aspects at the macro level concerning the creation of national systems of entrepreneurship as networks between government, financial system, incumbent firms, entrepreneurs and society. According to these authors, these sorts of systems could guarantee the articulation between the different actors, useful to generate incentives for entrepreneurs, who also could be close to the innovation systems, and therefore, create new businesses based on innovative ideas.

Regarding postmaterialism values, the evidence suggested that in those economies where the autonomy capacity is higher, the socioeconomic development stage tends to be high (Inglehart & Baker, 2000). Inglehart and Baker's (2000) findings were associated with the development segmentation by World Economic Forum (WEF). In this sense, those innovation-driven economies tended to have higher self-expression values than those efficiency- and factor-driven economies. In line with North (2005), the socioeconomic performance was accomplished depending on the intentionality of all individuals toward progress. In this sense, universities play an important role in providing knowledge and managerial skills as links with incumbent firms to acquire experience, as well as serving as an environment for the development of academic spin-offs (Guerrero et al., 2015).

Finally, hierarchical groups generating coordination problems and gender inequality may be some of the consequences of power distance. Regarding hierarchical groups, Anokhin and Schulze (2009), Liñán and Fernandez-Serrano (2014) and Aparicio et al. (2016b) suggested that control of corruption was highly relevant for the entrepreneurial process of discovery, evaluation and exploitation of opportunities. To achieve this, Jetter et al. (2015) suggested a deep economic process involving social advances (e.g. education, health, inclusion, etc.) and industrial transformation, among others, in order to boost economies to scale up the economic development stage, since they found that advanced economies tended to be more democratic and therefore less corrupt. In this sense, fiscal mechanisms to redistribute the wealth and generate social inclusion are crucial. It implies well-defined regulatory actors, as well as the attention and regular participation of the whole society in the design of public

budget and the use of public funds. Regarding gender inequality, literature on female entrepreneurship suggests that the gap between women and men is harmful for social and economic development (Aidis et al., 2007; Baughn et al., 2006; Terjesen & Amorós, 2010, among others). In this regard, Kantor (2005) highlighted that the participation of women entrepreneurs should also be considered in terms of its importance to the home, since it allows for their own development and knowledge transfer to their offspring. To incentivize this process, participation and status improvement of women in the home, job places and society in general, should be achieved. Additionally, Kantor (2005) suggested empowering women in terms of financial resource access, childcare infrastructure and management skills. In this case, policies encouraging female participation in entrepreneurial activity and labor market should take into account characteristics such as marital status, presence of children, age, education level and business type (Lee et al., 2011).

3.6. Conclusions

The purpose of this chapter was to analyze through the institutional lenses the effect of SPO on innovative entrepreneurship from an international perspective. Through an OLS method, the study showed that SPO positively influenced the innovative entrepreneurship and negatively the necessity-driven entrepreneurial activity. Specifically, these findings suggest that societies oriented toward high voluntary spirit (VOL), high self-expression values (SSV) and power distance (low level) exhibited a greater innovative entrepreneurship (only in case of VOL) and a lower TEA NEC.

This chapter contributes to the existing literature in the following ways. By introducing the concept of SPO, it contributes to the application of an institutional approach to the study of the factors that promote or inhibit innovative entrepreneurial activity. As a result, SPO can be a factor to take into account when examining TEA NEC. Second, the ISD, which is an unexplored database for entrepreneurial activity research to date, was used. This database can help with the permanent challenge of finding proxies for informal institutions (Bruton et al., 2010; Veciana & Urbano, 2008).

Also, this research can offer insights and implications for practitioners and policymakers. By understanding and being aware of the factors that promote new firm creation, which is seen as a valid conduit for economic development (Schumpeter, 1911), they could direct actions accordingly. Thus, it may be suggested that reinforcing SPO produces a positive impact on the prevalence of entrepreneurship driven by innovation and opportunity over entrepreneurship driven necessity, which, in turn, can affect development (Audretsch et al., 2008; Baumol, 1990; Noseleit, 2013). Also, these insights may be useful for the design of programs addressed to promote entrepreneurial activity, and especially those driven by innovation. For instance, governments can exploit the potential of SPO related to the voluntary spirit (VOL) by developing incubator centers (Bøllingtoft & Ulhøi, 2005).

Our research had some limitations, such as small sample size (56 countries at its largest) and its particular period of time (2012). Apart from practical reasons, such as the scarcity and the regularity of year-to-year information for all the explanatory variables, the reason the cross-sectional analysis was used in this research is that some authors suggest that innovative entrepreneurial activity may be a structural characteristic of each country's economy (Acs et al., 2004; van Stel et al., 2005). In this vein, others suggested that cultural values are stable over time (Hofstede, 2005; Inglehart & Welzel, 2005). However, the observed relationship between SPO and entrepreneurial activity may be altered if the period of time and the composition of the sample were different (i.e. considering regions or cities). Other limitations included the theoretical validity of the construct of SPO and the lack of explicit past research. Given these limitations, future research should explore the relationship between SPO and innovative entrepreneurial activity in other periods of time and, if possible, through longitudinal analysis to test the construct validity of SPO across time. Also, in further research, other dimensions of the ISD and Hofstede's cultural model, such as civic activism, inclusion of minorities or individualism vs. collectivism and uncertainty avoidance can be considered in order to broaden the understanding of the construct of SPO. This construct may be addressed through factor analysis in order to capture the essence of SPO considering the set of different dimensions listed above. Additionally, regional analysis (Audretsch et al., 2015a) and the importance of community (Jennings et al., 2013) on the entrepreneurial process are promising non-explored areas in entrepreneurship research. In this regard, it may be very important to provide theoretical insights and empirical facts at country, regional and local levels in order to capture the cultural characteristics encouraging/discouraging entrepreneurs affecting long-term growth and development. In isolation, the relationship between entrepreneurial activity and growth is analyzed in the next chapter.

Chapter 4

Entrepreneurship Capital Types and Economic Growth: International Evidence

4. Entrepreneurship Capital Types and Economic Growth: International Evidence

4.1. Introduction

As mentioned before, entrepreneurship has been considered an important mechanism to achieve economic growth (Acs et al., 2012; Acs et al., 2008a; Audretsch & Keilbach, 2004a,b,c, 2008). Previous authors have provided evidence of the importance of entrepreneurship for growth, distinguishing between self-employment, business ownership and new business creation, among others (Blanchflower, 2000; Carree & Thurik, 2008; Carree et al., 2002). Such approaches have used elements of neo-classical economic growth and Schumpeterian theory to link entrepreneurship with economic growth.

As mentioned in previous chapters, Solow (1956) and Swan (1956) based their model of economic growth on the neo-classical production function, the key factors of which are capital and labor. Ever since, researchers have relied upon the model of the production function as a basis for explaining the determinants of economic growth. Lucas's (1988) and Romer's (1986) critique of the Solow approach did not follow the basic model of the neo-classical production function. Instead, they introduced variables such as human capital and externalities into this analysis to differentiate the types of labor. They found that more skilled labor generates positive externalities as well as more economic growth. Acs et al. (2012), Blanchflower (2000), Colino et al. (2014), Iyigun and Owen (1999) and Minniti and Lévesque (2010) used the neo-classical production function taking into account human capital as well as entrepreneurship (or self-employment) as special characteristics of individuals. Hence, entrepreneurship is assessed in an economic growth model to find its impact and complementarity. Second, according to Schumpeter (1911), entrepreneurs are agents capable of generating shocks in the economic cycle through innovation processes. This author develops a theory of economic development based on a creative destruction process generated by entrepreneurial activity. Using this theory, some authors have focused on the relationship between entrepreneurship and economic growth taking into account the stages of development (Carree & Thurik, 2008; Carree et al., 2002; Van Stel & Carree, 2004). Based on these theories, other authors have proposed entrepreneurship as a conduit of knowledge that affects economic growth (Agarwal et al., 2007; Audretsch, 2007a; Audretsch & Keilbach, 2008; Noseleit, 2013).

According to Solow (2007), the inclusion of entrepreneurship as a new capital factor into the growth model implies a relevant evidence about a set of forces that drives economic growth, which may contribute to the theory development. Accordingly, and as it was mentioned in Chapter 1, Audretsch (2007a) and Audretsch and Keilbach (2004a,b,c, 2005, 2008) developed the entrepreneurship capital concept, which includes the social factors in a

production function. However, they were explicit regarding the limitations of entrepreneurship capital measured through firm demography, and suggested for future research that similar studies of other countries, as well as studies based on additional indicators of entrepreneurship capital, should be conducted. According to Audretsch et al. (2008), the new indicators should capture social and other latent factors in entrepreneurial activity over time and be comparable across countries. Thus, we propose in this chapter overall total entrepreneurial activity (TEA), opportunity TEA and necessity TEA as new types of entrepreneurship capital. The Global Entrepreneurship Monitor (GEM) developed these variables, which allow the measurement of new business creation regarding the social context (Wennekers et al., 2005; Wong et al., 2005). According to Acs et al. (2008b), on the one hand, these variables use uniform definitions and data collection across countries for international comparisons, and on the other hand, the variables measure the intention and capacity of a community to create firms in order to determine the relationship between entrepreneurship and national economic growth.⁴ Using large cross-sections and time series of countries spanning a wide range of economic development allows researchers to gain an understanding of the possible differences in groups of countries and particular periods of time (Acs et al., 2008b).

Therefore, the objective of this chapter is to analyze the effect of entrepreneurship capital types on economic growth. We support our hypotheses in the conceptual framework that links entrepreneurship capital with economic growth using a neo-classical production function. Using a panel data model with information over the period 2002–2012 from the GEM and World Development Indicators (WDI), we provide empirical evidence of the impact of overall TEA, opportunity TEA and necessity TEA on economic growth, distinguishing between OECD and non-OECD countries and between pre- and post-crisis periods. Furthermore, following Acs et al. (2012), we overcome the endogeneity problem between entrepreneurial activity and economic growth by implementing some instrumental variables. We find that entrepreneurship capital, measured through overall TEA and opportunity TEA, has a positive and statistically significant impact on economic growth. We also find that the effect of overall TEA on economic growth is higher in OECD countries and in the post-crisis period.

After this brief introduction, the chapter is structured as follows. In section 2, we discuss a conceptual framework that relates entrepreneurship capital with economic growth. In section 3, we present the data and model. In section 4, we discuss the results. Finally, in section 5, we conclude and highlight the future research line.

⁴ Although we focused on these three measures of entrepreneurship capital, we also considered a self-employment and an employers' measure. The problem with these two variables is the lack of information regarding countries and time.

4.2. Conceptual framework: linking entrepreneurship capital with economic growth

As mentioned before, one of the basic questions in economics concerns what drives economic growth. While the neo-classical theory has identified investment in physical capital and labor as the driving factors (Solow, 1956; Swan, 1956), the endogenous growth theory (Romer, 1986) emphasizes the process of the accumulation of knowledge, and hence the creation of knowledge capital. Since Romer's paper, new variables have been included in the neo-classical model. Thus, the new class of endogenous growth model recognizes some aspects of social factors that are also important in generating economic growth.

Putnam (1993) referred to social factors focusing on social capital, which consist of connections among individuals. Using this idea, some authors have linked social capital to entrepreneurship (Aldrich & Martinez, 2003; Thornton & Flynn, 2003). According to this literature, entrepreneurship should be encouraged where the investments in social capital are greater (Amin, 2000; Simmie, 2003; Lawton Smith, 2003). Schumpeter (1911) also mentioned the idea of social capacity, establishing entrepreneurial behavior conceptually as a key factor in driving economic development. Entrepreneurial activity leads to the process of creative destruction (Schumpeter, 1911) by causing constant disturbances to an economic system in equilibrium. These disturbances create opportunities for economic rent. In this way, Schumpeter's theory predicts that an increase in the number of entrepreneurs leads to an increase in economic growth. Hence, it is possible to link entrepreneurship with economic growth (Schumpeter, 1911). Authors such as Minniti and Lévesque (2010) used this idea to develop a mathematical structure in which innovative and imitative entrepreneurship take place. These authors demonstrated how innovative entrepreneurship, mostly seen in developed countries, could impact on the steady state. Similarly, Audretsch and Keilbach (2004a,b,c, 2005, 2008), Bjornskov and Foss (2013) and Iyigun and Owen (1999), by using different econometric techniques upon data at regional and country level, found that entrepreneurship and economic growth are positively related.

As an alternative measure of entrepreneurship, Reynolds et al. (2005) proposed a methodology of which the main indicator is overall total entrepreneurial activity (TEA). This methodology measures the stock of the adult population involved in the entrepreneurship process, and includes economic, social and cultural factors in its framework. In addition, this measure is uniform across countries, which is useful for international comparisons. Liñán and Fernandez-Serrano (2014), van Stel et al. (2005), Wennekers et al. (2005) and Wong et al. (2005), without using the entrepreneurship capital concept, evaluated the effect of overall TEA on economic growth at the national level. However, they also limited their analysis to cross-sectional data. According to Audretsch and Keilbach (2004a,b,c), other types of entrepreneurship capital could explain economic performance, specifically measures that capture entrepreneurial activity in the social context. Overall TEA and other complementary measures, such as opportunity TEA and necessity TEA, used by van Stel et al. (2005) and Wong et al. (2005), among others, could follow Putnam's (1993) statement about social

factors. According to Reynolds et al. (2005), overall entrepreneurship could cause effects on economic performance through the birth and expansion of firms that create jobs. Wong et al. (2005) stated the hypothesis that countries with higher levels of overall TEA will have faster growth rates. Their results showed that overall entrepreneurship is positively related to economic growth but not statistically significantly. According to Reynolds et al. (2000, 2001, 2002), overall TEA and economic growth are conjectured to be positively related. Hence, every person engaged in any behavior related to the new business creation, no matter how modest, is relevant to the national level of activity (Reynolds et al., 2005). In this sense, we propose the following hypothesis:

Hypothesis 1. Overall TEA has a positive effect on economic growth.

In addition, opportunity TEA can be considered as the net result of individual decisions to pursue entrepreneurial initiatives based on knowledge, which may be increased through the awareness of the existing opportunities in the markets (Reynolds et al., 2005). Here, opportunity TEA can be associated with innovation. Some authors have come to recognize the capacities of potential entrepreneurial innovation and growth and their significant contribution to prosperity and economic welfare (Acs & Armington, 2006; Audretsch, 2007b; Hajek et al., 2014; Levie & Autio, 2008; Schramm, 2006). According to Audretsch et al. (2008), entrepreneurs identify opportunities based on their knowledge and experience. The creation of this new ventures generates knowledge spillovers and subsequently higher economic performance (Audretsch et al., 2008). These authors also posited that entrepreneurial activity driven by knowledge and innovative can gain advantage across different markets. Therefore, opportunity entrepreneurship is an important element in the transformation of new knowledge into economic performance (Audretsch et al., 2008). In this sense, Wong et al. (2005) pointed out that the opportunity TEA rates reflect the creation of knowledge and technology and could impact positively on economic growth (Acs et al., 2012; Noseleit 2013; Valliere & Peterson, 2009). Thus, we propose the following hypothesis:

Hypothesis 2. Opportunity TEA has a positive effect on economic growth.

When Reynolds et al. (2005) developed the overall TEA measure in the GEM project, they also split it into two main parts, the first one being opportunity TEA, related to innovative entrepreneurship, as we already explained, and the second one being necessity TEA, which results from market friction and is generally related to non-innovative firms. Campbell et al. (2010) proved that some regulations could cause friction in markets and force workers into survivalist entrepreneurship. Hence, new firm formation does not causally affect economic growth. In terms of public policy discussion, Shane (2009) advocated caution with respect to the entrepreneurship strategy, which could lead to firms with low job creation, generating little wealth. The individuals in this position tend to possess fewer endowments of human capital and entrepreneurial capability (Lucas, 1978). As Wong et al. (2005) suggested, necessity TEA has either no significant relationship or a negative relationship with economic

growth. The authors reported that those individuals motivated by necessity are driven to become entrepreneurs due to a lack of other employment opportunities. According to Audretsch et al. (2001), this type of entrepreneurship (capital) could reflect low creation value in the short-term economy growth. The individuals motivated by necessity tend to possess fewer endowments of human capital and entrepreneurial capability (Wong et al., 2005). Therefore, we propose the following hypothesis:

Hypothesis 3. Necessity TEA has a positive effect on economic growth, however the effect is smaller than that of opportunity TEA.

Although the literature has pointed out the importance of entrepreneurship for economic growth, many authors who have used cross-country analysis have made a distinction between high- and low-income countries, OECD and non-OECD countries, and developed and developing countries (Liñán & Fernandez-Serrano, 2014; Carree et al. 2002, 2007; Wennekers et al., 2005; Wong et al., 2005). For instance, Bruton et al. (2008) suggest that future research lines regarding entrepreneurship should focus on understanding its effects on developing economies. Following this idea, Bruton et al. (2013) have provided evidence about the importance of entrepreneurship to reduce the poverty level in developing countries. According to Bruton et al. (2009), the effect of entrepreneurship on growth is due mainly to institutional differences. These authors have explored this issue in Latin American and Asian countries. The same idea is discussed by authors such as Acs and Amorós (2008), Stenholm et al. (2013) and Stephan and Uhlaner (2010) who differentiated between drivers of entrepreneurship and their effects on economic growth, considering the development stage and cultural factors of each country. In this regard, Contractor and Kundu (2004) conclude that the absence or circumvention of bureaucracy and corruption, as well as nurturing environment could foster entrepreneurship in developing countries such as India, China and Taiwan in order to obtain higher levels of economic development.

The debate about the relationship between entrepreneurship and economic performance regarding the distinction between groups of countries has presented different points of view. On the one hand, Carree et al. (2002, 2007) and van Stel et al. (2005) found a relationship between entrepreneurship and economic growth in a U-shaped form: entrepreneurship in countries with a high-income level tend to be positively related to economic growth, while countries with a low-income level have a negative relationship. They also concluded that low-income countries tend to have higher entrepreneurship rates based on necessity than high-income countries. Carree et al. (2002, 2007) used an OECD data set to assess the relationship; meanwhile, van Stel et al. (2005) analyzed the effect of entrepreneurship on economic growth using the GEM data set. Likewise, Wennekers et al. (2005) used a GEM data set to analyze the U-shaped and L-shaped relations for opportunity and necessity nascent entrepreneurship, separately. They found that in those low-income countries, relatively many nascent entrepreneurs engage in entrepreneurial activity out of necessity. Comparing the two types of data, it is possible to associate high income with OECD countries and low

income with non-OECD countries (Carree et al., 2007; Wennekers et al. 2005). Although these authors identified the absence of an effect of entrepreneurship on economic growth in developing countries, it does mean that entrepreneurship should be discouraged; necessity TEA plus opportunity TEA, for instance, both contribute to lowering unemployment (van Stel et al., 2005). Autio (2008) established a gap regarding whether and how entrepreneurship either contributes or does not contribute to economic growth in developing countries. According to Dejardin (2000), the more innovative entrepreneurs exist in an economy, the faster it will grow. Naudé (2010, 2011) argued that if the demand for entrepreneurship is higher in developing countries, as is normally expected, entrepreneurship could also affect positively the economic growth in these countries. Sanyang and Huang (2010) followed the previous idea, discussing the importance of programs that support the entrepreneurial initiatives in developing economies. Specifically, they studied how EMPRETEC, an entrepreneurship program implemented in some developing countries, encourages entrepreneurial activity in order to enhance the economic development. Some results are perceived from indicators such as more educated and skilled people, employment creation, product diversification and economic growth. Valliere and Peterson (2009) and Wong et al. (2005) assessed empirically the relationship between entrepreneurship and economic growth, considering the hypothesis in which overall TEA has a higher impact on economic growth in high-income countries than in those with a low income. The statement of Dejardin (2000), Valliere and Peterson (2009) and Wong et al. (2005) was established in order to understand the composition of entrepreneurial activities in each country. According to Dejardin (2000) and Wong et al. (2005), countries with higher overall TEA rates will experience better growth performance. Regarding the association of high income with OECD countries and low income with non-OECD countries, we propose the following hypothesis:

Hypothesis 4. Overall TEA has a greater impact on the economic growth of OECD countries than that of non-OECD countries.

Carree et al. (2002, 2007) suggested another distinction related to the time dimension. According to them, through time series it is possible to model the equilibrium adjustment mechanism. This implies understanding the relationship between entrepreneurship and economic performance in each part of the growth cycle (adjustment, boom and crisis). With respect to the recent crisis events, the “World Economic Forum’s Annual Meeting of the New Champions 2009” (UN 2009) pointed out that the decline in global growth started in 2007, highlighting a new crisis period, especially in those countries with a high-income level, and resulted in a contraction in emerging economies.

The recent literature has suggested entrepreneurship as a key element to overcoming the world crisis. Some authors have proposed that entrepreneurship based on innovation tends to survive and grow in an economic crisis and enhances the economic performance through employment (Kraus et al., 2012). Cace et al. (2011) suggested that crisis effects generate institutional change, which is reflected in social entrepreneurship behavior as a mediator of

welfare. Other institutional changes have been perceived, such as incentives to engage in business creation. In this sense, Năstase and Kajanus (2009) suggested that economic crises offer policy makers an opportunity to address structural weaknesses and accelerate change, establishing the foundation for stronger and more durable growth. According to these authors, entrepreneurship can weather the current global economic crisis better than current businesses, and thus increase the economic growth. Based on this study, Onofrei and Lupu (2012) suggested that the fostering of entrepreneurial activity in a crisis period also generates new managerial methodologies, useful to both new and established firms, which contribute to the better performance of firms as well as the economy. As a result, more employment could be obtained through job creation or self-employment. In this sense, Copeland and James (2014) studied a policy framework to guide the European decision until 2020, which includes entrepreneurship policies. According to these authors, entrepreneurial activity based on job creation instead of own-account workers is what improves economic performance. Indeed, Cumming and Li (2013) pointed out the importance of funding through venture capital, such as a complementary policy to entrepreneurship in a crisis period, which could imply more entrepreneurs creating jobs and improving the economic growth. Román et al. (2013) investigated the transition from unemployment to self-employment in the European region during the crisis period. They concluded that self-employed people can be considered a heterogeneous group, among which only those self-employed people who contribute to job creation are important to overcoming the crisis and therefore increasing economic growth, otherwise more self-employment will not necessarily achieve economic growth in the long run. According to Thurik et al. (2008), self-employment based on entrepreneurial ideas is stronger in regard to economic growth than self-employment generated by refugee effects. Taking this into consideration, Năstase and Kajanus (2009) suggested that the new policies derived from an economic crisis generate better entrepreneurship rates than those derived in periods out of the crisis. Thus, we propose the following hypothesis:

H5. Overall TEA has a positive effect on economic growth, however the effect is higher in a post-crisis period.

4.3. Data and methods

As we noted earlier, this chapter analyzes the effect of entrepreneurship capital types on economic growth using an unbalanced panel of data for the period 2002–2012. These types are operationalized through the overall TEA rates, the best-known indicator of the GEM, opportunity TEA and necessity TEA.

The dependent variable is the gross domestic product (GDP) constant at 2005 \$US, which is one of the best-known indicators of economic growth. The source of data to measure this is the World Development Indicator (WDI) of the World Bank. This variable, as well as the

independent variables (except TEA, opportunity TEA and necessity TEA), were transformed through the population aged 15–64 years, following Nicolini (2011).

The data on independent variables, specifically those that are traditionally included in a production function, such as gross capital formation (GKF), government consumption and savings, were obtained from the WDI. The variable GKF, as well as government consumption and savings, are measured in constant values at 2005 \$US. Meanwhile, TEA, opportunity TEA and necessity TEA were obtained from the GEM project. The TEA variable defines entrepreneurs as adults who are in the process of setting up a business that they will at least partly own and/or who currently own and manage an operating young business (up to 3.5 years old). The opportunity and necessity TEA rates differentiate between entrepreneurs who are motivated to pursue perceived business opportunities and those who are driven to become entrepreneurs as a last resort, when other options for economic activity are absent or unsatisfactory.

Table 4.1 presents a list of dependent and independent variables used in this study, including their sources. Our final sample consists of an unbalanced panel with data on 289 observations and 43 countries: 25 OECD countries and 18 non-OECD countries⁵ (see Appendix 8 for a list of countries).

Table 4.1. Description of variables

	Variable	Definition	Source^a
Dependent variable	Gross Domestic Product (GDP)	GDP at purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. Data are in constant 2005 U.S. dollars.	WDI 2002-2012
	Overall Entrepreneurial activity (TEA)	Total early-stage entrepreneurial activity. Percentage of adults aged 18–64 setting up a business or owning–managing a young firm (up to 3.5 years old), including self-employment.	GEM APS 2002-2012
Entrepreneurship capital types	Opportunity TEA	Opportunity TEA is the percentage of adults aged 18–64 setting up a business or owning–managing a young firm (up to 3.5 years old), including self-employment who are motivated to pursue perceived business opportunities.	GEM APS 2002-2012
	Necessity TEA	Necessity TEA is the percentage of adults aged 18–64 setting up a business or owning–managing a young firm (up to 3.5 years old), including self-employment who are involved in entrepreneurship because they have no better option for work.	GEM APS 2002-2012

⁵ We used the classification of the OECD: <http://www.oecd.org/about/membersandpartners/list-oecd-member-countries.htm>

	Variable	Definition	Source ^a
Control variables	Gross capital formation (GKF)	Gross capital formation (formerly gross domestic investment) consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories. Data are in constant 2005 U.S. dollars.	WDI 2002-2012
	Government consumption	General government final consumption expenditure which includes all government current expenditures for purchases of goods and services. Data are in constant 2005 U.S. dollars.	WDI 2002-2012
	Savings	Gross domestic savings are calculated as GDP less final consumption expenditure (total consumption).	WDI 2002-2012
	Population ages 15-64	Total population between the ages 15 to 64 is the number of people who could potentially be economically active.	WDI 2002-2012
Instrumental variables	Age	People younger than 15 or older than 64 that are dependent of to the working-age population. Proportion of dependents per 100 working-age population	WDI 2002-2012
	Age ²	Square of people younger than 15 or older than 64 that are dependent of to the working-age population	WDI 2002-2012

^a WDI. World Development Indicators (WDI) by World Bank. <http://databank.worldbank.org/data/home.aspx>; GEM. Global Entrepreneurship Monitor (GEM). <http://www.gemconsortium.org/>

We use a standard measure of economic performance, labor productivity, i.e., a country's economic output relative to its population aged 15–64 years. Dividing the output by the input of the population aged 15–64 corrects for the size of a country, hence increasing the pertinence of this measure. We link this measure of national economic growth to the traditional factors of capital, government consumption and savings (Bleaney & Nishiyama, 2002), along with our factor of entrepreneurship capital, by using a Cobb–Douglas production function. Dividing each variable by the population aged 15–64 (except E , which is divided by the adult population), and using the natural logarithm to estimate it, we obtain the following equation:

$$\ln y_{it} = \varphi \ln ec_{it} + \beta \ln x_{it} + \ln \alpha_i + \mu_{it} \quad (1)$$

where:

i is the country and t is time.

$\ln y_{it}$: natural logarithm of the GDP per population aged 15–64.

$\ln x_{it}$: natural logarithm of a vector of control variables (GKF, government consumption and savings) per population aged 15–64.

$\ln ec_{it}$: natural logarithm of the entrepreneurship capital types.

$\ln \alpha_i$: natural logarithm of the dummy variable for each country (fixed-effects constant).

μ_{it} : error term.

In this chapter, given the availability of data from 2002 to 2012 (43 countries), we estimated random- and fixed-effects models and we used the Hausman specification test in order to verify the choice of the fixed- or random-effects model. The test suggested the use of the fixed-effects specification for the overall TEA, opportunity TEA and necessity TEA models ($X^2(3) = 44.94$, Prob > $X^2 = 0.00$; $X^2(3) = 44.90$, Prob > $X^2 = 0.00$; $X^2(3) = 45.14$, Prob > $X^2 = 0.00$, respectively), which rejects the null hypothesis that the difference in coefficients is not systematic. Moreover, since heteroskedasticity is detected, we estimate linear regressions with robust variance estimates, which are based on a variable list of equation-level scores and a covariance matrix. Given that it is likely that the level of economic growth in period t is associated with the level of economic growth in period $t-1$, a test is applied to assess the serial correlation in the idiosyncratic errors of a linear panel-data model. We find that autocorrelation problems exist ($F(1,36) = 129.81$, Prob > $F = 0.00$). To control for the possible endogeneity of entrepreneurship and the simultaneous relationship between economic growth and entrepreneurship capital, a two-stage least squares estimation is suggested as appropriate method (Acs et al., 2012). To this purpose as well as autocorrelation problem, we introduce one lagged period of our dependent variable as instrument to explain each entrepreneurship capital type (Audretsch & Keilbach, 2008), and two additional instruments such as those younger than 15 or older than 64 that are dependent of to the working-age population (Age) and the square of this latest variable (Age^2). Some studies such as Acs et al. (2012) and Storey (2003) suggest that demographic variables have shown that individuals in these age cohorts are most likely to undertake entrepreneurial activities, implicating possible valid instruments. To assess their validity, each of the two-stage least squares estimations reports the test of underidentification (Kleibergen-Paap's statistic) and overidentification (Hansen's J statistic). The Kleibergen-Paap's statistic establishes in the null hypothesis that the equation is underidentified. A rejection of the null indicates that the matrix is full column rank (i.e., the model is identified). The Hansen's J statistic for valid instruments is also reported. The joint null hypothesis is that the instruments are valid instruments, i.e., uncorrelated with the error term, and the reported value is the p-value stating the probability that the test statistic is zero, which would imply acceptance of the null hypothesis. The partial instrumental variables R^2 is also reported and describes how much of the squared residuals in the first-stage regression is explained by the instrumental variables. This test together with the partial p-value—i.e., the probability that the joint F value for the instrumental variables is zero—describes how good the instrumental variables are at explaining entrepreneurship.

4.4. Results and discussion

Table 4.2 reports the means, standard deviations, maximum, minimum value and correlation coefficients of the variables used in this study. As Table 4.2 shows, the GDP was significantly correlated with the gross capital formation, government consumption and instruments

(Bleaney & Nishiyama, 2002). Also, as may be seen, the correlation between GDP and overall TEA is very high, since the entrepreneurship capital diminishes as income grows (Carree et al., 2002, 2007). The same applies to the levels of opportunity TEA and necessity TEA. Given the correlations among the independent variables, we tested for the problem of multicollinearity, which might affect the significance of the main parameters in the regressions, through variance inflation factor (VIF) computations. The VIF values were low (lower than 5.03).

Table 4.2. Descriptive statistics and correlation matrix

Variables	Obs.	Mean	Std. Dev.	Min	Max	1	2
1 Ln GDP	289	10.159	1.012	7.124	11.540	1	
2 Ln TEA	289	1.981	0.574	0.336	3.693	-0.478*	1
3 Ln Opportunity TEA	289	1.663	0.562	-0.211	3.387	-0.298*	0.953*
4 Ln Necessity TEA	289	0.258	0.964	-2.365	2.494	-0.726*	0.772*
5 Ln GKF	284	8.668	0.975	5.165	10.283	0.973*	-0.483*
6 Ln Government consumption	289	-13.702	1.699	-18.229	-9.108	0.309*	-0.140
7 Ln Savings	284	8.695	1.021	4.903	10.802	0.897*	-0.407*
8 Age	289	50.139	6.896	35.532	88.493	-0.125	0.254*
9 Age ²	289	2561.337	809.098	1262.541	7831.001	-0.190*	0.284*

	3	4	5	6	7	8	9
3 Ln Opportunity TEA	1						
4 Ln Necessity TEA	0.586*	1					
5 Ln GKF	-0.319*	-0.714*	1				
6 Ln Government consumption	-0.063	-0.352*	0.353*	1			
7 Ln Savings	-0.238*	-0.659*	0.910*	0.304*	1		
8 Age	0.246*	0.129*	-0.269*	0.013	-0.296*	1	
9 Age ²	0.266*	0.174*	-0.331*	-0.025	-0.340*	0.985*	1

* p < 0.01.

Table 4.3 shows the results of the regressions with robust variance estimates. Following Carree and Thurik (2008) and Carree et al. (2002, 2007), we include in some models time fixed effects to account for the business cycle. Thus, in model 1 apart from the control variables, we consider all the countries in the sample, a time fixed effects and the first type of entrepreneurship capital (overall TEA), model 2 we also include time fixed effects and we assesses the second type of entrepreneurship capital (opportunity TEA), model 3 estimates the third type of entrepreneurship capital (necessity TEA), model 4 includes only OECD countries and overall TEA, model 5 includes only non-OECD countries and overall TEA (both

of them with time fixed effects) and model 6 considers the overall TEA only in pre-crisis, while model 7 assesses overall TEA in post-crisis.⁶ All the models are highly significant ($p < 0.01$), which mean that the explanatory variables jointly explain the variance of economic growth.

Table 4.3. Regression analysis explaining economic growth

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Ln GDP	Ln GDP	Ln GDP	Ln GDP	Ln GDP	Ln GDP	Ln GDP
	All	All	All	OECD	non-OECD	All countries	All countries
	countries	countries	countries	countries	countries	before crisis	after crisis
Entrepreneurship capital types							
Ln TEA	0.278*** (0.098)			0.250*** (0.071)	0.089* (0.054)	0.099*** (0.027)	0.120** (0.055)
Ln Opportunity TEA		0.327** (0.131)					
Ln Necessity TEA			0.079*** (0.027)				
Control variables							
Ln GKF	0.168*** (0.061)	0.141** (0.068)	0.196*** (0.049)	0.061 (0.044)	0.338*** (0.046)	0.222*** (0.033)	0.252*** (0.048)
Ln Government consumption	0.176 (0.151)	0.327* (0.183)	0.106 (0.071)	0.085 (0.174)	0.362*** (0.080)	0.336*** (0.110)	0.261** (0.128)
Ln Savings	0.062 (0.045)	0.039 (0.055)	0.101*** (0.024)	0.055 (0.058)	0.024 (0.034)	0.053** (0.027)	0.042 (0.040)
Time fixed effects	Yes	Yes	No	Yes	Yes	No	No
Partial instrumental variables							
R^2	0.045	0.033	0.073	0.083	0.099	0.182	0.096
Partial p-value	0.043	0.100	0.003	0.015	0.218	0.002	0.022
Underidentification test (p-value)	0.051	0.079	0.007	0.011	0.19	0.016	0.024
Valid instruments (p-value)	0.140	0.438	0.000	0.815	0.025	0.498	0.090
Observations	236	236	236	168	68	67	119

*** $p < 0.01$; ** $p < 0.05$; * $p < 0.10$.

Note: Heteroskedasticity corrected standard errors are shown in parentheses. Estimates for time fixed effects dummies are not presented but can be supplied upon request.

The first model considers the first variable of entrepreneurship capital that we defined previously and the traditional variables used in a production function (capital, government consumption and savings). The results show that overall TEA has a positive and significant influence ($p < 0.01$) on economic growth. The second model considers the second variable of entrepreneurship capital. The results show that opportunity TEA has a positive and

⁶ Based on Phelps (2010), we classified the pre-crisis periods as 2002–2006 and the post-crisis period as 2009–2012.

significant influence ($p < 0.05$) on economic growth. With respect to the third model, which considers necessity TEA, the results show that this variable is significant ($p < 0.01$), but the instruments are not valid to explain necessity entrepreneurship (valid instruments $p < 0.01$), and therefore we cannot conclude its impact on economic growth. The fourth model considers the first variable of entrepreneurship capital only in OECD countries. The results show that overall TEA has a positive and significant influence ($p < 0.01$) on economic growth. The fifth model considers overall TEA only in non-OECD countries. Although the results show that overall TEA has a positive and significant influence ($p < 0.1$) on economic growth, the instrumental variables' test indicates that the instruments are not valid (valid instruments $p < 0.05$), and therefore we cannot conclude anything about entrepreneurship capital and economic growth in developing countries. The sixth model considers the first variable of entrepreneurship capital only before crisis period. The results show that overall TEA has a positive and significant influence ($p < 0.01$) on economic growth. The seventh model considers the first variable of entrepreneurship capital after crisis period. The results show that the overall TEA has a positive and significant influence ($p < 0.05$) on economic growth. In this model, we have to mention that we cannot reject the null hypothesis of valid instruments at 5% of significance. Assuming this level, we can make inference about the estimation results.

Concerning the testing of the hypotheses, hypothesis 1 suggests that entrepreneurship capital has a positive effect on economic growth. We found a positive impact of entrepreneurship capital, such as the overall TEA, on economic growth in our sample ($\varphi = 0.278$, $p < 0.01$). Hence, we follow the statement presented by Audretsch (2007a) and Audretsch and Keilbach (2004a,b, 2005), which defines a positive relationship between the new input (entrepreneurship capital) and the economic growth, and include this variable in a Cobb–Douglas production function. However, we use a different variable in order to understand entrepreneurship capital, such as a homogenous measure in all countries, which is consistent with the theory. This result could indicate that entrepreneurial activity is an important factor to achieve economic growth in all the countries contained in our sample. In fact, for each country in our sample, if the TEA increases by 1% through time, the GDP per population aged 15–64 increases by 0.278%, *ceteris paribus*. With respect to Wong et al.'s (2005) findings, our study is differentiated by statistical significance. While Wong et al. did not conclude in terms of overall TEA, we support the importance of this input to the economic growth process. These results contribute to the discussion established by Wennekers and Thurik (1999) that links entrepreneurship with economic growth, assessed through the Solow–Swan model as Audretsch (2007a) suggested. Using this approach, Minniti and Lévesque (2010) concluded that entrepreneurial activity is the action of alert individuals who are willing to incur costs in exchange for expected profits, which is an important process in economic growth.

Hypothesis 2 proposes that opportunity TEA has a positive effect on economic growth. We find that this entrepreneurship capital is positively related to economic growth ($\varphi = 0.327$, $p < 0.05$). As we mentioned earlier, opportunity TEA defines a different characteristic in each country in terms of the innovation process. According to Wong et al. (2005), entrepreneurial activity influenced by opportunities tends to impact positively on economic growth. However, they did not find statistically significant evidence. In contrast, our results suggest that for each country in our sample, if opportunity TEA increases by 1% through time, the GDP per population aged 15–64 increases by 0.327%, *ceteris paribus*. This is consistent with Audretsch and Keilbach's (2004a, 2008) and Audretsch et al.'s (2008) results, according to which the entrepreneurship capital associated with innovation has a positive impact on economic growth. Furthermore, we point out that the effect of opportunity TEA on economic growth does not significantly differ among these countries. This idea, supported by Valliere and Peterson (2009), suggests that those countries that encourage entrepreneurial activity based on innovation could obtain improved outcomes in terms of economic performance. Therefore, we could suggest that entrepreneurship has a relevant role in promoting economic growth, on which social endowment is a factor that has a relevant influence. In addition, according to Braunerhjelm et al. (2010) and Mueller (2007), entrepreneurial activity based on innovation is one missing link in converting knowledge into economically relevant knowledge; therefore, spillovers could be obtained to increase the economic growth.

Hypothesis 3 proposes that necessity TEA has a lower effect on economic growth than opportunity TEA. Here, entrepreneurship capital analyzed in relation to necessity TEA has a significant influence on economic growth ($\varphi = 0.079$, $p > 0.01$). However, as we mentioned before, the Hansen's J statistic rejects the null hypothesis, implicating that the estimation result is not reliable. This result could mean that demographical factors are not accurate to explain the relationship between necessity TEA and economic growth. Also, it is possible to assume that the election of an entrepreneurial career could be a solution in the short run, but not in the long run, especially in the creation of aggregate value in the economy. In this sense, our results are consistent with Wong et al. (2005), who did not find any significance relationship between necessity TEA and economic growth. A possible explanation could be based on the U-shaped form discovered by Carree et al. (2002, 2007), van Stel et al. (2005) and Wennekers et al. (2005), among others, who found that some developing countries have a negative relationship between entrepreneurship and economic growth, while other developing countries have a flatter relationship between these two variables. Valliere and Peterson (2009) found similar results, arguing that a high prevalence of necessity entrepreneurs exists in developing countries, which could not represent significant added value to economic growth. These authors suggested that necessity TEA could contribute to reducing the unemployment rate, but not to increasing the total output (Valliere & Peterson 2009). Furthermore, this could imply that those non-OECD countries tend to have more necessity than opportunity entrepreneurship, as Wennekers et al. (2005) suggested. This

result led to further analysis regarding the distinction between groups of countries and the testing of whether or not non-OECD countries are less influenced by entrepreneurship, assuming that these countries have a higher necessity entrepreneurship rate.

In this sense, hypothesis 4 suggests that entrepreneurship capital has a greater impact on the economic growth of OECD than non-OECD countries. Although in both groups of countries the effect of entrepreneurship capital is positive, we found that the impact of entrepreneurship capital, such as overall TEA, on OECD economic growth is higher than that in non-OECD countries (model 4: $\varphi = 0.250$, $p < 0.01$ vs. model 5: $\varphi = 0.089$, $p < 0.1$). Here, it is important to notice that Hansen's J statistic is not rejected at 2.5% of significance in non-OECD countries. Greater value implies not valid instruments, and therefore the analysis cannot be performed. Under this assumption, we are in the line of the study by Wennekers et al. (2005), who showed that there appears to be a U-shaped relationship between the level of economic development and the rate of entrepreneurship. The study by van Stel et al. (2005) showed that entrepreneurial activity has a positive effect on economic growth in highly developed countries but a negative effect in developing countries. Although Wennekers et al. (2005) found that those countries with a low-income level tend to have more necessity entrepreneurship, and hence a U-shaped form exist, our results in also suggest that for each country in the OECD group, if the overall TEA increases by 1% through time, the GDP per population aged 15–64 increases by 0.250%, *ceteris paribus*; meanwhile, in non-OECD countries, the change is only 0.089%. These results follow the statement of Dejardin (2000), which argued that high levels of the entrepreneurship rate are associated with high rates of growth. These results could be explained by entrepreneurship capital that creates jobs and adds value, which is expected to be higher in developed countries, as Naudé (2010, 2011) suggested.

To equilibrate the difference between developing and developed economies, non-OECD countries should focus on increasing the human capital, upgrading the technology availability and promoting enterprise development (Acs & Szerb, 2007). It is important to start enterprise development policies early because the main drivers are perceptual variables that are difficult to change in the short run. Moreover, non-OECD countries need an adequate prevalence of large multinational companies that provide external effects, for example, through spin-offs that encourage researchers to create new business and subcontracting to small firms that pull new ventures to the markets, which could improve the productivity and reduce the uncertainty (Wennekers et al., 2005). In addition, these countries should try to exploit scale economies by fostering both internal and foreign direct investment, by promoting the development of infrastructure and management education (Wennekers et al., 2005). In this sense, a higher degree of entrepreneurship capital could guarantee enhanced economic performance and faster rates of economic growth, especially in those countries (low-income) with a high level of the unemployment rate, and hence entrepreneurship could result as an important mechanism to reduce it. Furthermore, these results suggest that at the

microeconomic level, the choices, activities and functions of entrepreneurs may stimulate also the economic growth in non-OECD, regardless of whether individuals are motivated by opportunity or by necessity. What matters is the aggregated effect of entrepreneurship capital on economic growth. As the present analysis is conducted at the aggregative macroeconomic level, we are able to distinguish between these different roles of the entrepreneurs, highlighting the importance that should take this factor in non-OECD countries. As in OECD countries, the policy makers must take into account that the process implies long-term strategies required to high potential entrepreneurship, which should increase in these countries (Wong et al., 2005). According to them, this entrepreneurship takes a long time to obtain results in terms of employment and growth, even more so considering that these countries' poverty rate is higher due to the structural problems (Bruton et al., 2013).

Hypothesis 5 suggests that entrepreneurship capital has a positive effect on economic growth, but the effect is higher after crisis period. Although in both periods the effect of entrepreneurship capital is positive, we found that the impact of entrepreneurship capital, such as overall TEA, on economic growth is higher in the post-crisis than in the pre-crisis period (model 7: $\varphi = 0.120$, $p < 0.05$ vs. model 6: $\varphi = 0.099$, $p < 0.01$). Similar to the previous hypothesis, it is important to assume 9% of significance to avoid the rejection of valid instruments' null hypothesis. The results could reflect the policy framework studied by Copeland and James (2014), who claimed that entrepreneurship policy must be addressed to job creation and productivity growth. This could imply that the change in growth is faster in the post-crisis period. According to Román et al. (2013), the entrepreneurship capital endowment in the post-crisis period could imply both the transition of unemployment to self-employment and the creation of jobs; therefore, entrepreneurship could be an important mechanism to overcome economic growth in the post-crisis period. Moreover, according to Bjørnskov and Foss (2013), entrepreneurship is most effective in terms of raising productivity under resource allocation encouraged by the public sector, which tends to change in post-crisis periods. In this sense, they suggested that states can successfully raise the effectiveness of entrepreneurship in terms of increasing the overall productivity, basically through investments in public "infrastructure services," which improve processes, products and organizations (Bjørnskov & Foss, 2013). In this sense, Năstase and Kajanus (2009) suggested programs that involve business incubators, clusters of innovative SMEs and science and technology parks, in which development agencies play an important role in facilitating appropriate access to financing for SMEs at the local and regional level. This institutional change and a larger amount of private funds could encourage the demand for entrepreneurs in post-crisis periods. Braunerhjelm and Henrekson (2013) claimed that entrepreneurship could be useful to the learning, adoption and adaptation of particular policies from the specific countries and to solving the difficulties involved in pre-crisis and crisis periods. Possible effects of entrepreneurship on growth after the crisis period could be

changes in production methods, which involve the role of absorbing surplus labor, providing innovative intermediate inputs to final-good-producing firms, permitting greater specialization in manufacturing and raising productivity and employment in both the modern and the traditional sector (Gries & Naudé, 2010; Stephens & Partridge, 2011).

Summing up, the results show a positive effect of overall TEA, opportunity TEA (statistically significant) and necessity TEA (not valid instruments) on economic growth in a heterogeneous sample (high- and low-income countries). Hence, what matters is that a country has a relatively high absolute number of at least one type of entrepreneurship capital. Regarding the homogenous sample, we found that entrepreneurship capital is more positively related to OECD countries than non-OECD countries, which could imply that entrepreneurship should be more encouraged in developing countries to obtain similar results as developed ones. This is consistent with the results comparing the pre-crisis and post-crisis periods. Here the change in economic growth after a crisis could be explained in part by entrepreneurship policies that encourage the creation of jobs through self-employment. In terms of public policy, our results point out the importance of entrepreneurship capital to economic growth, especially characterized by the innovation process. In addition, our results highlight, as the extant literature, the importance of focusing on appropriate strategies to encourage entrepreneurial activity, otherwise the effect of entrepreneurship on growth will be null in terms of economic growth, as Shane (2009) suggested.

4.5. Conclusions

In this chapter, longitudinal panel data (for the period 2002–2012) were used to investigate empirically the effect of entrepreneurship capital types on economic growth. Using a conceptual framework to link entrepreneurship capital with economic growth (Audretsch, 2007a; Audretsch & Keilbach, 2004a,b, 2005), we analyzed the influence of overall TEA, opportunity TEA and necessity TEA on economic growth. We also considered the effect of overall TEA on economic growth in OECD and non-OECD countries and pre- and post-crisis periods. We overcame the endogeneity issues through instrumental variables, useful to understand the effect of entrepreneurship capital on economic growth.

The main findings are the following. First, there is evidence of a positive relationship between overall TEA and economic growth. A high level of entrepreneurship capital, measured as overall entrepreneurial activity, is related to high rates of economic growth. Second, we found a positive relationship between opportunity TEA and economic growth. Similar to overall TEA, entrepreneurship capital analyzed according to entrepreneurial activity based on opportunities encourages economic growth, although the impact is lower than that of overall TEA and higher than that of necessity TEA (which is not statistically significant). These results suggest that the entrepreneurship capital types, especially overall and

opportunity TEA, could be key factors in achieving economic growth. In addition, it is important that policy makers redefine the strategies to encourage entrepreneurship in each country. In terms of long-run growth, strategies related to entrepreneurship motivated by the exploration and evaluation of opportunities are important. Otherwise, entrepreneurial activity motivated by necessity could solve short-run problems, but have no effect on long-run economic growth.

Regarding the groups of countries (OECD and non-OECD), we also found that entrepreneurship capital is more related to economic growth in OECD countries than in non-OECD countries, similar to findings of the extant literature. This could imply that entrepreneurship capital endowment fosters faster-developed economies. This result was consistent when we ran a regression considering the pre- and post-crisis periods. We found that the effect of entrepreneurship capital is higher on economic growth in the post-crisis period in all countries than in the pre-crisis period. These results could be useful in terms of public policy that encourages entrepreneurship behavior, especially entrepreneurship behavior that is capable of creating jobs and improving the national productivity.

Finally, according to Valliere and Peterson (2009), the prevalence and economic role of different types of entrepreneurs may vary among specific countries. Part of this variance is due to national conditions and part of it is due to socio-cultural influences. Different types of entrepreneurial activity are therefore likely to play varying roles in the economic growth among emerging and developed countries. Furthermore, according to Copeland and James (2014), a crisis period could cause possible changes in the institutional structure, not only related to the public policy of entrepreneurship, but also possibly associated with the self-motivation of individuals who pursue their own benefit and social welfare. Taking this into account, we identified a possible limitation in our model, which include some demographical variables as instruments in order to differentiate this effect given the heterogeneity of countries in the sample. In some cases (models 5 and 7) were necessary assume a specific significance level to carry out the analysis. The future research lines could consider some variables to control the environmental characteristics. For instance, Urbano and Alvarez (2014) pointed out the importance of institutional factors to understanding the configuration of entrepreneurial activity among countries that have different economic growth rates. Under this approach, it could be possible relax the assumptions presented in this chapter and perform a more precise comparative analysis. The next chapters address this limitation by assessing simultaneity the effect of institutions on entrepreneurship, and subsequently on growth and development.

Chapter 5

Institutional Factors, Opportunity Entrepreneurship and Economic Growth: Panel Data Evidence

5. Institutional Factors, Opportunity Entrepreneurship and Economic Growth: Panel Data Evidence

5.1. Introduction

As discussed above, the fourth specific objective of this research is to comprehend the complex view of economic development influenced by entrepreneurship, which depends on institutional factors. With this aim, we develop Chapters 5, 6, 7 and 8.

Particularly for this chapter, we are motivated by entrepreneurs who, on one hand, have emerged as a crucial source of growth for virtually all of the traditional units of economic analysis, encompassing individual behavior with respect to the firm, region and nation (Acs et al., 2008b; Acs et al., 2012; Audretsch & Keilbach, 2004a,b, 2008). On the other hand, many scholars are interested in understanding those factors that encourage entrepreneurship, and especially entrepreneurial activity based on knowledge (Audretsch & Keilbach, 2008; Thornton et al., 2011). According to these authors, institutional factors are important elements in explaining entrepreneurship rates at the individual and country levels. As it has been discussed in Chapter 3, those societies characterized by strong institutions and oriented toward progress may create an environment that allows for the identification of innovative projects. In general terms, in endogenous growth theory, it is assumed that the entire geographic context, typically a country, will automatically benefit from accurate institutional arrangements (Acemoglu, 2006; Acemoglu & Robinson, 2008). The general underlying assumption of this approach is that better institutions are automatically available to all the agents in the economic process. Since institutions behave like a public good, all agents will benefit from these factors, which will increase the rate of economic growth (North, 1990) in a knowledge-based economy.

In this regard, several articles have contributed to a large literature linking the traditional factors of production, capital and labor to economic growth (Solow, 2007). Particularly, North (1990) suggests that institutions (e.g. rules, norms, culture and so on) might affect the growth and development process and explain the differences across countries. A similar explanation is provided by Rodrik (2003), who suggests that growth and development are achieved depending on endogenous factors, which at the same time are influenced by institutions. One of the endogenous factors suggested by this author concerns entrepreneurial behavior, especially that based on knowledge, which is capable of generating employment and diversifying the national production.

As discussed in the previous chapters, there is a bunch of authors measuring knowledge-based entrepreneurial activity such as opportunity and high-tech entrepreneurship, among others (Acs et al., 2012; Audretsch, 2007a; Audretsch & Keilbach, 2004a,b,c, 2005, 2007, 2008; Audretsch et al., 2008). One important conclusion derived from these studies concerns

the necessity of an institutional framework to explain how the entrepreneurial activity is configured in each location. In that sense, and as mentioned before, Bruton et al. (2010) suggest that institutional economics could be appropriate for understanding which factors encourage opportunity entrepreneurship behavior in order to increase the economic growth rate. Also, according to these authors, there is a lack of studies that consider the importance of informal factors in the entrepreneurial context to achieving higher economic growth. According to Urbano and Alvarez (2014), these factors have more influence on entrepreneurship than formal ones. Future research lines could be studied in order to obtain a broader comprehension of economic growth affected by opportunity entrepreneurship, which at the same time is shaped by institutional factors (Carlsson et al., 2013). According to these authors, studies on this line could unite two separate research fields in entrepreneurship research. Furthermore, Bruton et al. (2010) and Stenholm et al. (2013), among others, suggest that the future studies focusing on solve this problem could pay special attention to emerging economies, given their internal difficulties and government efforts to solve they, in where entrepreneurship of higher impact plays a key role. In addition, policy and theoretical implications could be discussed regarding institutional economics as a framework for understanding the link between opportunity entrepreneurship and economic growth (Bruton et al., 2010), also considering the specific case of emerging economies such as Latin American countries.

Thus, in this chapter, we use institutional economics (North, 1990, 2005) applied to the analysis of opportunity entrepreneurship and economic growth as a conceptual framework. In this context, institutional factors determine entrepreneurial activity by opportunity. These can be identified as formal factors (the procedures and costs to start a business, access to credit, etc.) and informal factors (attitudes towards entrepreneurship, perception of corruption, etc.). Furthermore, to operationalize these factors, we consider the dimensions of the entrepreneurial environment proposed by Gnyawali and Fogel (1994), such as government policies and procedures, socio-economic factors, entrepreneurial and business skills, and financial and non-financial assistance.

Therefore, the purpose of this chapter is to explore the institutional factors that encourage opportunity entrepreneurship in order to achieve higher rates of economic growth. Our specific objectives are first to develop a three-stage least-square (3SLS) model in unbalance panel data to assess the simultaneous effect of institutional factors on opportunity entrepreneurship, which allows the achievement of economic growth. Second, using this model, we provide empirical evidence about the simultaneous effect between institutional factors and opportunity entrepreneurship and its subsequent impact on economic growth, focusing our attention on Latin American countries. These two specific objectives lead to two contributions to the existing literature in terms of theoretical implications regarding the relevance of such an institutional economics framework to entrepreneurship and a policy discussion regarding the importance of institutional (specifically informal) factors to

encourage opportunity entrepreneurship leading to higher economic growth in Latin American countries.

The advantages of using 3SLS are the ability to overcome the endogeneity problem between entrepreneurship and economic growth, as Acs et al. (2012) point out, as well as to assess simultaneously two models that are inter-related, excluding possible biases due to heteroskedasticity problems. Specifically, we use unbalanced panel data for 43 countries in the period from 2004 to 2012 from the Global Entrepreneurship Monitor (GEM), Doing Business, World Development Indicators and Worldwide Government Indicators (World Bank). Analyzing these data through the econometric model, we provide empirical evidence that the informal factors have a greater and more positive effect on opportunity entrepreneurship than the formal factors and that opportunity entrepreneurship is an element that allows higher growth rates. This pattern is similar whether we control for Latin American countries; however, their coefficients are lower than those of the whole sample. Only in the growth model do we find significant differences due to the greater impact of opportunity entrepreneurship on growth regarding only Latin American countries.

In Section 2, we present the theoretical framework concerning institutional economics and the importance of opportunity entrepreneurship to economic growth. In Section 3, the methodology used is described. Then, we discuss and analyze the results in terms of policy implications in Section 4. Finally, in Section 5 we conclude and discuss future research lines.

5.2. Conceptual framework

5.2.1. Institutions and opportunity entrepreneurship

As we mentioned earlier, this chapter focuses on institutional economics (North, 1990, 2005). One approach to this framework is suggested by Gnyawali and Fogel (1994), who proposed five dimensions of the entrepreneurial environment: a) government policies and procedures, b) social and economic factors, c) entrepreneurial and business skills, d) financial assistance to businesses and e) non-financial assistance. Following this study, and adapting the approach of North (1990, 2005), government policies and procedures and financial and non-financial assistance to businesses are related to formal institutions, while social conditions, such as confidence and perceptions of the environment, concern informal institutions.

The distinction between formal and informal institutions, following North (1990, 2005), or as Gnyawali and Fogel (1994) suggest in their dimensions, is necessary because formal institutions reflect the values built into the society that have been reinforced by laws and regulatory norms (Veciana & Urbano, 2008). Furthermore, the relevance of this distinction to entrepreneurial decisions concerns their sensibility to formal and informal factors. As we noted earlier, informal institutions tend to endure for longer than formal institutions.

Although Chapter 3 has focused only on the analysis of informal institutions, in which the social intentionality was highlighted, there is literature suggesting that both formal and informal institutions complement each other (Urbano & Alvarez, 2014). Nonetheless, it is expected that entrepreneurship responds more to informal than formal factors because the social progress orientation characteristic that differentiates one society from another; an idea assessed empirically by Knörr et al., (2013) and Urbano and Alvarez (2014).

In terms of measures, some proxies for informal factors involve the capacity to establish social norms as well as the ability to interpret information regarding entrepreneurial behavior (Stenholm et al., 2013). Some authors find that values, beliefs and social norms, among others, impact on entrepreneurship. For instance, McClelland (1961) in psychology, Collins (1997) and Delacroix and Nielsen (2001) in sociology, Becker and Woessmann (2009) in economics and Urbano and Alvarez (2014) in entrepreneurship research test institutional factors to explain different measures of entrepreneurial activity. As a singular conclusion, they suggest that informal institutions have a greater impact on entrepreneurship than formal ones. Following Stenholm et al. (2013), other measures of informal factors could affect entrepreneurial behavior, referring to the perceptions of the policies and regulations implemented by governments. These regulations and policies are related to the traditions and institutions by which authority is exercised in a particular country. It includes a number of factors: the process by which the government is selected, monitored and replaced; the capacity of the government to formulate and implement sound policies effectively; and the respect of citizens and the state for the institutions that govern the economic and social interactions among them (Djankov et al., 2002; Kaufmann et al., 2008). Although some studies provide empirical evidence concerning the relationship between governance and indicators of economic welfare, including economic growth and development (Acemoglu, 2006; Acemoglu & Robinson, 2008; Kaufmann & Kraay, 2003), other authors suggest that governance factors perceived by society could encourage or discourage the business dynamics in which entrepreneurship is involved (Djankov et al., 2005, 2006; Johnson et al., 1999; Johnson et al., 2000a; McMillan & Woodruff, 1999, 2002; van Stel et al., 2007).

Comparative studies at the country level show positive relationships between favorable governance indicators and entrepreneurial activity (Aidis et al., 2008). According to Douhan and Henrekson (2010), entrepreneurship could be affected by inefficient institutions, represented by mafia and corruption. Méon and Sekkat (2005) claim that corruption distorts the individual perception of the governance capacity, which falls in inefficiency due to a bureaucratic governance structure. Klapper et al. (2006) and Méon and Weill (2010) find that the effect of inefficient institutions is higher when countries have a high level of corruption. Dreher and Gassebner (2013) find that corruption reduces the dynamic of entrepreneurial entry. Thus, countries with higher levels of corruption may affect the development of entrepreneurship negatively (Akimova, 2002). At the same time, Aidis (2005) provides evidence that the informal institutions perceived, such as entry barriers through corruption,

are associated with managerial problems, discouraging the behavior of entrepreneurship. Taking into account the negative influence of this variable, other authors, such as Aidis et al. (2008), investigate how informal institutions, represented by the control of corruption, affect the entrepreneurial activity. This variable is perceived as a good sign by entrepreneurs. In terms of these authors, control of corruption would increase the likelihood of future entrepreneurs to capture a greater share of the revenue they generate, increase the reliability of cash flows and thus motivate higher levels of entrepreneurial activity. In addition, control of corruption could allow an increase in the amount of budget constraints related to the education system as well as research and development (R&D), which are additional factors to encourage entrepreneurship by opportunity. Hence, the importance of controlling this factor could mean more opportunities to create new businesses (Aidis et al., 2008) based on technology and with higher added value.

In terms of groups of countries, Wennekers et al. (2005) provide evidence for developed nations with a high level of control of corruption. According to these authors, greater control of corruption means an accurate institution to increase entrepreneurial activity, in particular, opportunity entrepreneurship (people who start their own business to take advantage of an entrepreneurial opportunity). Concerning developing countries, Aidis (2005) analyzes the effect of corruption on business entry. According to this author, developing countries face a multitude of barriers affecting business operations and creation, in which corruption plays a negative role (Bohata & Mladek, 1999). Johnson et al. (2000b) find that some hiding of the output of businesses in countries such as Poland, Slovakia and Romania is significantly associated with a high level of bureaucratic corruption, discouraging entrepreneurial activity through high entry barriers. Fadahunsi and Rosa (2002) explore the effect of corruption on entrepreneurship, suggesting that this is endemic in most developing countries (Sardar, 1996). They focus specifically on Nigeria. They find that where law enforcement is weak and corruption is prevalent, legal entrepreneurship based on knowledge and capabilities to generate exports is discouraged. Thus, entrepreneurship by opportunity tends to decrease. Regarding other developing countries, such as Latin American countries, Alvarez and Urbano (2011) establish that control of corruption has a positive but lower impact on entrepreneurship by opportunity with respect to developed countries. They argue that these countries are characterized by high rates of unofficial economy and entrepreneurs would assume the payment of bribes and other inefficient market conditions to be a business cost. Following these authors, this behavior leads to more trust in themselves in order to reduce the uncertainty and avoid the higher cost imposed by the government and its possible corruption. According to Acs and Virgill (2010), entrepreneurs redefine their choices regarding the market imperfections and in addition use various gap-filling and, perhaps, second-best solutions (Douhan & Henrekson, 2010). In cases in which market and non-market failures are pervasive, entrepreneurs are pushed within the informal sector (Acs & Virgill, 2010). Consequently, we propose the following hypotheses:

Hypothesis 1. Control of corruption has a positive influence on opportunity entrepreneurship.

Hypothesis 1a. Control of corruption has a positive but lower influence on opportunity entrepreneurship in Latin American countries than in all the countries in the sample.

Another informal factor considered in this chapter is the confidence in skills. This institution is also very relevant to the decision to start a business, in particular, those new businesses that require a high level of knowledge (Estrin & Mickiewicz, 2012). People who believe in their own abilities and skills are used to perceiving a lower level of uncertainty and having more confidence in their role as entrepreneurs and a higher likelihood of starting a new business venture (Estrin & Mickiewicz, 2012).

According to Harper (2003), entry decisions are conditional on individual skills as well as on the national economic context. Some skills related to new business creations are powered by the self-confidence of each entrepreneur (van Hemmen et al., 2013). According to these authors, confidence in skills could promote positive interaction between the groups that form each new firm based on opportunity. Furthermore, self-confidence encourages other entrepreneurs to engage in productive activities (van Hemmen et al., 2013). With respect to the benefits for each entrepreneur, Harper (2003) suggests that confidence in one's skills enhances the feelings of internal control and personal agency, which at the same time promote the alertness in entrepreneurs. This alertness sensitivity leads to opportunity perceptions with a lower level of uncertainty. Thus, confidence in one's skills affects positively the capacity to create new businesses by opportunity with a higher potential for growth. In this sense, Estrin and Mickiewicz (2012) find empirical evidence about the impact of confidence in one's skills on entrepreneurship. According to these authors, a low level of confidence impacts negatively on entrepreneurship. Baron (2000) suggests that the decision to start a new business has a relationship with intentionality and locus of control, which motivate entrepreneurial alertness and self-efficacy and, therefore, lead to more entrepreneurship (Harper, 1998). In addition, Gartner (1985) claims that the entrepreneurial process requires intentional repeated attempts to achieve success in each entrepreneurial endeavor. New business formation is a complex and demanding task requiring self-perseverance. Entrepreneurs and non-entrepreneurs differ in such properties, and entrepreneurs are more likely to have self-confidence than other individuals (Markman et al., 2002; Markman et al., 2005). Hence, individual self-confidence, defined as individuals' belief in their skills and capability to perform a task, affect the development of both entrepreneurial intentions and actions or behaviors (Boyd & Vozikis, 1994; Minniti & Nardone, 2007). According to Verheul et al. (2005), confidence in one's own skills and ability to become an entrepreneur increases entrepreneurial alertness and, therefore, leads to the creation of more new businesses. Therefore, confidence and skills are achieved in the process in which individuals live and, in some cases, lead to entrepreneurial decisions.

According to Koellinger (2008), developing countries present abundant opportunity entrepreneurship in terms of imitative entrepreneurship, which is still potentially profitable. This author attributes the capacity of people in developing countries to manage their confidence in their skills to transform that opportunity into a new business. Koellinger et al. (2007) assess the response of entrepreneurial activity in some developed and developing countries to the confidence in one's skills. Indeed, they find a positive and statistically significant relationship between this factor and nascent entrepreneurship guided by opportunity. Additionally, they find that some countries present overconfidence in setting up a new business, and some developing countries in their sample show this pattern. Stenholm et al. (2013) present similar ideas. Their study focuses on the effect of education and confidence in abilities and skills on opportunity entrepreneurship. They discuss individuals in emerging economies as possibly presenting a higher education level, but having lower abilities and skills in entrepreneurship. Based on Arenius and Minniti (2005), they also argue that less-educated individuals could be penalized by labor markets, which lead to necessity entrepreneurship. Thus, countries with higher levels of confidence in their skills could encourage entrepreneurship driven by opportunity. Bosma and Levie (2010) find that the perception of entrepreneurial opportunities and skills is higher in factor- and efficiency-driven economies than in innovation-driven economies. Additional evidence is provided by Manolova et al. (2008), who find that although some developing countries, such as Bulgaria, Hungary and Latvia, have higher levels of education, they also present lower rates of entrepreneurship due to low confidence and abilities to start new businesses. In part, this low confidence could be explained by their political and social transition. Concerning other types of developing countries, such as Latin American countries, with high rates of unemployment and underemployment and a lower level of education of the people, the possibility of becoming self-employed is a very attractive option (Alvarez & Urbano, 2011). Apart from the socio-economic context, people base their expectations on confidence, generally in their capacity to commercialize. Thus, the availability of entrepreneurial role models would stimulate other members to start a business. Therefore:

Hypothesis 2. Confidence in one's skills has a positive influence on opportunity entrepreneurship.

Hypothesis 2a. Confidence in one's skills has a higher influence on opportunity entrepreneurship in Latin American countries than in all the countries in the sample.

Regarding the formal factors, Gnyawali and Fogel (1994) find that governmental regulations, such as procedures, costs and taxes, among others, are generally perceived negatively by potential entrepreneurs. Some authors show that entrepreneurs may be discouraged from starting a business if they have to follow many rules and procedures (Alvarez & Urbano, 2011; Begley et al., 2005; van Stel et al., 2007). After the studies by Djankov et al. (2002) and van Stel et al. (2007), empirical evidence about the negative effect of the number of procedures on entrepreneurial activity suggested new elements of entrepreneurship policies

around the world. Taking this into consideration, the Doing Business project of the World Bank promotes the reduction of regulation, suggesting simple procedures to stimulate the creation of new businesses. For example, simplifying the formalities of registration was the most popular reform during the years 2007 and 2008, implemented in 49 countries (Alvarez & Urbano, 2011). Moreover, people with the appropriate capacity to start a new business driven by opportunity could be affected negatively in terms of discarding their business idea. According to Djankov et al. (2002) and Tanas and Audretsch (2011), higher regulation of entry is generally associated with greater corruption, less democratic governments without visible social benefits and a larger unofficial economy. In terms of policy implication, some governments and organizations focus their attention upon decreasing the entry “barriers” to the formation of new firms, especially those based on opportunity (van Stel et al., 2007). Gnyawali and Fogel (1994) claim that this type of inefficiency caused by government regulation may be perceived negatively, especially by those interested in starting new businesses and innovative projects.

However, a comparison across countries may lead to different conclusions. For instance, Prantl and Spitz-Oener (2009) explore how entry regulation influences self-employment, and the results are relevant to emerging economies. They find that developed countries tend to have more regulations than developing countries, which at the same time have a greater effect on the entry to self-employment status. Thus, the effect of higher regulation reduces the intention to create new businesses in developed regions with respect to developing ones. Alvarez and Urbano (2011) suggest that Latin American countries have higher rates of unofficial economy than high-income countries. Consequently, several formalities and procedures for starting a business are avoided by entrepreneurs. Basically, in these countries, there is less social and legal pressure to enforce rules and regulations. In this sense, Alvarez and Urbano (2011) provide evidence that the number of procedures to start a business, although impacting negatively on entrepreneurial activity, have a smaller effect in developed economies. Accordingly, the following hypotheses are proposed:

Hypothesis 3. The number of procedures involved in starting a business has a negative influence on opportunity entrepreneurship.

Hypothesis 3a. The number of procedures involved in starting a business has a lower influence on opportunity entrepreneurship in Latin American countries than in all the countries in the sample.

As we mentioned earlier, Gnyawali and Fogel (1994) suggest another factor related to financial assistance, which is another important formal institution explored in entrepreneurship research. In that sense, van Auken (1999) finds that the financial structure presents an obstacle to the creation of new businesses. Here, individuals with no access to the financial system are not able to materialize their ideas, and therefore the entrepreneurial process is interrupted (van Auken, 1999). Hence, various challenges and impediments could

hinder the creation of new SMEs as well as causing the high failure rates of new SMEs (von Broembsen et al., 2005). Several studies conclude that the promotion of entrepreneurship could focus on policies for increasing access to bank credit by lowering the capital requirements, the creation of investment companies, credit with low interest rates and credit guarantee schemes, among others (Alvarez & Urbano, 2011; Argerich et al., 2013; Gnyawali & Fogel, 1994; van Gelderen et al., 2005). The consistency of these types of policies warrants not only the start-up process but also the sustainability capacity and the survival of the SME (von Broembsen et al., 2005). Black and Strahan (2002) find in the U.S. case that the rate of new start-ups increases following the deregulation of branching restrictions and also that deregulation reduces the negative effect of concentration on new start-ups. In addition, the access to credit must be equal in terms of gender in order to encourage entrepreneurial behavior in all nations (Marlow & Patton, 2005). Access to credit could also encourage the capacity to expand the firm or even focus the entrepreneurship on foreign markets. Huyghebaert et al., (2007) find that the presence of trade credit, as well as new businesses focused on foreign markets, urges new businesses to obtain this type of credit instead of bank credit. Therefore, more instruments of credit could imply more opportunities for entrepreneurship.

Regarding developing countries, Wang (2012) finds that some internal reforms in China led to reduced labor mobility costs and alleviated credit constraints in order to achieve higher rates of entrepreneurship. However, reforms in terms of credit access in developing countries require the removal of barriers to obtaining credit even more (Fatoki & Odeyemi, 2010). In that sense, Herrington et al. (2009) and Maas and Herrington (2006) claim that access to finance is a major problem for South African entrepreneurs. According to them, a lack of financial support is one of the main reasons for the low level of new firm creation as well as their failure in South Africa. Fatoki and Odeyemi (2010) argue that many entrepreneurs obtain financial support from their own or their family's savings, which are often inadequate, rather than approaching formal banks or other firms for external finance. Additionally, FinMark (2006) provides evidence that only 2% of new SMEs in South Africa are able to access the financial system. Even worse, Balkenhol and Evans-Klock (2002) provide evidence that only 0.2% of entrepreneurs use trade credit in South Africa. This fact is discussed in a previous work by Stiglitz and Weiss (1981), who claim that agency problems, such as asymmetric information and moral hazards, which are suffered more in developing countries, can impact on the availability of credit and therefore the capital structure of new SMEs. According to these authors, this phenomenon could generate credit rationing. Due to these problems, they argue that the suppliers of finance choose higher interest rates, generating a supplier surplus in this market, meaning that it leaves a significant number of potential borrowers without access to credit. Concerning the context of Latin America, which is characterized by higher rates of unofficial economy, entrepreneurs have even fewer bank guarantees than in the case of developed countries and their access to credit is also more

difficult. Taking this into account, Alvarez and Urbano (2011) establish that although access to credit impacts positively on entrepreneurship, its impact on Latin American countries is lower with respect to other, developed countries. Therefore, the following hypotheses are proposed:

Hypothesis 4. Access to bank credit has a positive influence on opportunity entrepreneurship.

Hypothesis 4a. Access to bank credit has a lower influence on opportunity entrepreneurship in Latin American countries than in all the countries in the sample.

5.2.2. Opportunity entrepreneurship as an endogenous factor in economic growth

As mentioned previously, many scholars emphasized the importance of the accumulation of knowledge in the process, and hence the creation of knowledge capital (Romer, 1986). Therefore, this new class of growth model recognizes some aspects of social factors that are also important in the generation of economic growth, which are influenced by the institutional settings (Acemoglu et al., 2014; Rodrik, 2003). Drawing on this literature, entrepreneurship could be an important factor in economic growth (Minniti & Lévesque, 2010), and therefore it should be encouraged where investment in social capital is higher (Amin, 2000; Simmie, 2003; Lawton Smith, 2003).

According to Carlsson et al. (2013), one important reason to study entrepreneurship is that it is a factor that mediates the growth and development process. According to these authors, one stream of entrepreneurship research is dedicated to exploring those determinants that encourage this behavior. The previous section, as well as Chapter 3, tried to explore the factors that explain entrepreneurship from the institutional approach. The second stream, analyzed in Chapter 2, is related to the effects of entrepreneurship. As discussed in Chapter 4, different types of entrepreneurial activity might be significantly correlated to growth. Authors such as Reynolds et al. (2005) suggest that entrepreneurship based on knowledge could be associated with the capacity to transform an opportunity into a real business, which has high value added. However, the question of the role of opportunity entrepreneurship in economic growth remains unanswered (Urbano & Aparicio, 2016; Wong et al., 2005). The idea behind this question is the capacity to create new firms and to spark knowledge in the society at the same time (Acs et al., 2012). Indeed, Acs et al. (2012) and Audretsch and Keilbach (2008) suggest that entrepreneurship could be a vehicle to transfer knowledge capacity into the society, and therefore obtain economic growth at the regional and national levels.

In contrast to Romer's (1986) idea, Acs et al. (2012) point out that knowledge may not be directly linked to economic growth, as it is assumed in the endogenous models. Therefore, authors such as Agarwal et al. (2007), Audretsch (2007a), Audretsch and Keilbach (2008), Noseleit (2013), among others, have used opportunity entrepreneurship as a conduit of knowledge. In this sense, some authors recognize the capacities of potential entrepreneurial innovation and growth and their significant contribution to development (Acs & Armington,

2006; Audretsch, 2007b; Coad et al., 2016; Levie & Autio, 2008; Schramm, 2006; Segarra & Teruel, 2014). According to Audretsch et al. (2008) and Fernandes and Ferreira (2013), entrepreneurs take knowledge based on opportunities in order to create new products. This guarantees a constant increasing of knowledge spillovers, which has a positive impact on economic performance (Audretsch et al., 2008). Wong et al. (2005) have a similar conclusion, indicating that the opportunity entrepreneurship rates reflect the creation of knowledge and technology, which could impact positively on economic performance (Acs et al., 2012; Noseleit, 2013; Valliere & Peterson, 2009).

Distinguishing the impact of opportunity entrepreneurship on economic growth between groups of countries, little evidence is found in the literature. In general terms, although some authors assess this relationship regarding the importance of being located in developing or developed countries, they do not find any statistically significant results (Valliere & Peterson, 2009; Wong et al., 2005). These studies are based on the idea about the U-shaped form between entrepreneurship and economic growth (Carree et al., 2002, 2007). Following these authors, Valliere and Peterson (2009) and Wong et al. (2005) propose the hypotheses that countries with a higher level of opportunity entrepreneurship will achieve faster growth and emerging economies (which have higher necessity entrepreneurship rates) tend to grow slower. However, authors such as Hoskisson et al. (2000) and Tan (2002) suggest that those developing countries that encourage entrepreneurship based on opportunity tend to be more sensible in terms of growth. These authors suggest that developing countries that focus on generating an appropriate environment for entrepreneurs tend to have positive and higher results in terms of employment, economic growth and development. They emphasize that to achieve these kinds of results it is important to provide permanent support in terms of institutional factors. In this sense, Ács et al. (2014, p. 487) provide evidence that some countries, such as Chile, Colombia and Puerto Rico, among others, could have a balance between entrepreneurship by opportunity and development, in which the national system of entrepreneurship plays an important role. These countries, for instance, are in the first 23 out of the 88 countries that belong to the overall rank according to their measure. These results are consistent with the impact of some endogenous factor on economic growth. For example, Dufrénot et al. (2010) provide empirical evidence about trade activity as a mechanism to encourage economic growth. Using quantile regression approach, they show that those countries with middle-low income tend to have higher coefficients than those countries with high-income level. Thus, it is plausible to expect that the coefficient associated with opportunity entrepreneurship has a higher impact on economic growth. It could mean, as Wennekers et al. (2005) suggest that opportunity TEA, for instance, contributes to lowering unemployment. According to Dejardin (2000), the more entrepreneurs by opportunity exist in an economy, the faster it will grow. Accordingly, this author suggests that countries with higher levels of opportunity entrepreneurship will experience better growth performance.

Following the distinction by the United Nations, Latin American countries are classified as developing regions. Thus, we propose the following hypotheses:

Hypothesis 5. Economic growth is influenced positively by opportunity entrepreneurship.

Hypothesis 5a. Economic growth is influenced positively by opportunity entrepreneurship but its impact is higher in Latin American countries.

5.3. Data and methods

As we noted earlier, this chapter explores the institutional factors that encourage opportunity entrepreneurship in order to achieve higher rates of economic growth, each of which influences the other. The specification of a simple production function assumes implicitly that entrepreneurship is exogenous. However, on the one hand, the inverse causal relationship is at work, i.e. entrepreneurship and economic growth are linked recursively. On the other hand, as we argued above, entrepreneurship is also influenced by formal and informal institutional factors. Taking this into consideration, we specify the first equation in order to take this recursive structure explicitly into account as well as the other variables that affect entrepreneurship. In its general form, this equation is written as:

$$OE_{it} = f(II_{it}, FI_{it}, X_{it}) \quad (1)$$

where II_{it} and FI_{it} are the vectors representing the informal and formal factors, respectively, and X_{it} is the controlling vector that influences opportunity entrepreneurship in country i at time t . The vector of control refers to the economic growth rate. The relationship between economic growth and entrepreneurship is not new and a feedback effect is thought to exist between the two. Although the body of research focuses mainly on the other direction, the impact of entrepreneurship on economic growth (Acs & Szerb, 2007; Audretsch et al., 2008; Mueller, 2007; Noseleit, 2013; Wennekers & Thurik, 1999), the opportunities for entrepreneurs that economic growth can provide are proved empirically by Galindo and Méndez (2014).

To specify the sequence of institutional factors, opportunity entrepreneurship and economic growth, an augmented production function that includes an explicit measure of opportunity entrepreneurship is estimated. On this basis, we are able to test the impact of both informal and formal institutions on opportunity entrepreneurship on the one hand and the impact of this last variable on economic growth on the other. The second equation is a Cobb–Douglas function of the form:

$$Y_{it} = \alpha OE_{it}^{\beta_1} K_{it}^{\beta_2} X_{it}^{\beta_3} LE_{it}^{\beta_4} GC_{it}^{\beta_5} L_{it}^{\beta_6}$$

Our endogenous growth model follows the Romer (1986, p. 1006) assumption about the labor coefficient (β_6) settled in one. This assumption implies that externalities are not internalized, knowledge is given (and expressed through opportunity entrepreneurship) and

capital is foregone consumption. Taking this into account, and dividing output by labor in order to guarantee a function with constant returns to scale, we obtain:

$$Y_{it}/L_{it} = \alpha O E_{it}^{\beta_1} K_{it}^{\beta_2} X_{it}^{\beta_3} L E_{it}^{\beta_4} G C_{it}^{\beta_5} \quad (2)$$

where Y_{it} is the economic output of country i at time t , measured as the gross domestic product (GDP), L_{it} represents the total labor force (hence Y_{it}/L_{it} is labor productivity, a proxy for economic growth), $O E_{it}$ represents its endowment of opportunity entrepreneurship, K_{it} is country i 's endowment of capital, X_{it} is exports, $L E_{it}$ represents the life expectancy and $G C_{it}$ if the final government consumption. Thus, this specifies formally that opportunity entrepreneurship contributes to the economic growth of countries. With equation (2), our approach is an extension of that chosen by Audretsch and Keilbach (2004a,b,c, 2005) and Audretsch et al. (2008), who emphasize that the impact of entrepreneurship on economic growth should take into account institutional factors; therefore, we focus on these two equations. Following the appendix of Wong et al. (2005) and Acs et al. (2012) to linearize the production function, we use the natural logarithm in the variables that represent institutional factors as well as the endowments assessed in our growth model. According to Wooldridge (2012, p. 44), the models using the logarithm on both sides (dependent and independent variables) allow a direct interpretation of their coefficients in terms of the percentage change in the independent variable implying a change in the dependent variable expressed in the respective coefficient. Therefore, we estimate this set of equations simultaneously using three-stage least-squares regression (3SLS) to correct for the simultaneity bias (e.g. Intriligator, Bodkin & Hsiao, 1996). Similar models were assessed through this technique into the field of entrepreneurship and economic growth, unveiling its importance to estimate models with bi-causality (Audretsch & Keilbach, 2008). According to Zellner and Theil (1962) and Wooldridge (2010), the advantage of 3SLS is asymptotically more efficient since it takes into account the correlation among the errors of each of the simultaneous equations of interest. The method also adjusts the weighting matrix for potential heteroskedasticity of the errors by estimating the coefficients within a Generalized Least Square (GLS) framework, an approach outlined by Wooldridge (2010).

Thus, we use unbalanced panel data for the period 2004–2012. Our first dependent variable, opportunity entrepreneurship, is the best-known indicator of the Global Entrepreneurship Monitor (GEM), which is measured through opportunity total entrepreneurial activity (TEA). Opportunity TEA shows those entrepreneurs who are motivated to pursue perceived business opportunities.

The second dependent variable is the economic performance indicator, obtained through the GDP constant at 2005 \$US divided by the total labor force (L), which is one of the best-known proxies for economic growth. The sources of data to measure these dependent variables are the GEM and the World Development Indicator (WDI) of the World Bank.

The data on independent variables, specifically those that are informal and formal institutions, were obtained from the Worldwide Government Indicators (WGI; control of corruption), the GEM (confidence in one's skills) and Doing Business (the number of procedures to start a new business and private coverage to obtain credit). Meanwhile, data on the economic growth rate were obtained from the World Development Indicators (WDI) database. In terms of the measure of each variable, control of corruption is a perception index that captures how the control of corruption is perceived in each country. This variable ranges between -2.5 (low control) and 2.5 (high control). For the purpose of this chapter, this index was rescaled from 0 to 5. With respect to confidence in one's skills, this variable captures the percentage of members of the adult population who manifest confidence in their abilities and skills and who are involved in a new business; the number of procedures to start a new business measures the total number of procedures reported by the chamber of commerce in each economy; and private coverage to obtain credit measures the percentage of the adult population that has any credit with a private bank. Regarding the traditional variable assessed in a production function (Bleaney & Nishiyama, 2002) such as gross capital formation (K), exports (E), life expectancy at birth (LE) and the government consumption (GC), were obtained from the WDI. We use the natural logarithm to estimate the two equations.

Given that different datasets were combined, we could obtain a sample of 43 countries with a regular time series. Additionally to the importance of analyzing our issue regarding Latin America countries, explained before, we find that our final database contains a representative sample of this homogeneous group. Table 5.1 presents a list of the dependent and independent variables used in this study, including their sources. Our final sample consists of panel data with 253 observations and 43 countries (see Appendix 9).

Table 5.1. Description of the variables

Equation 1		
Dependent variable	Description	Source^a
Opportunity Entrepreneurship	Percentage of those involved in TEA (Total Entrepreneurial Activity) who (i) claim to be driven by opportunity as opposed to finding no other option for work; and (ii) who indicate the main driver for being involved in this opportunity is being independent or increasing their income, rather than just maintaining their income	GEM for the period 2004 to 2012
Independent variable	Description	Source
Informal institutions		

Control of corruption	Capturing perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests. The values are between -2.5 and 2.5 with higher scores corresponding to better outcomes of institutions (Kaufmann et al, 2008).	WGI for the period 2004 to 2012
Confidence in one's skills	Percentage of Individuals who answer whether they believed to have the knowledge, skill and experience required to start a new business.	GEM for the period 2004 to 2012
Formal institutions		
Number of procedures to start a new business	The number of procedures that are officially required for an entrepreneur to start up and formally operate an industrial or commercial business and the duration of these procedures.	Doing Business for the period 2004 to 2012
Private coverage to getting credit	Percentage of the adult population that has a least one credit by a private bank.	Doing Business for the period 2004 to 2012
Control variable		
Economic growth rate	GDP growth at purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. Data are in constant 2005 U.S. dollars per capita.	WDI for the period 2004 to 2012

Equation 2

Dependent variable	Description	Source
Labor productivity (Y/L)	GDP at purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. Data are in constant 2005 U.S. dollars. This variable is divided by the number of a country's population that is employed.	WDI for the period 2004 to 2012
Independent variable	Description	Source
TEA Opportunity	Percentage of those involved in TEA (Total Entrepreneurial Activity) who (i) claim to be driven by opportunity as opposed to finding no other option for work; and (ii) who indicate the main driver for being involved in this opportunity is being independent or increasing their income, rather than just maintaining their income	GEM for the period 2004 to 2012
Capital	Gross capital formation (formerly gross domestic investment) consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories. Data are in constant 2005 U.S. dollars.	WDI for the period 2004 to 2012
Exports	It represents the value of all goods and other market services provided to the rest of the world. (% of GDP).	WDI for the period 2004 to 2012
Life expectancy	Life expectancy at birth indicates the number of years a newborn infant would live if prevailing patterns of mortality at the time of its birth were to stay the same throughout its life.	WDI for the period 2004 to 2012

Government consumption

Final consumption expenditure (formerly general government consumption) includes all government current expenditures for purchases of goods and services (including compensation of employees).

WDI for the period 2004 to 2012

^a Doing Business. <http://www.doingbusiness.org/>; GEM. Global Entrepreneurship Monitor (GEM). <http://www.gemconsortium.org/>; WDI. World Development Indicators (WDI) by World Bank. <http://databank.worldbank.org/data/home.aspx>; WGI. Worldwide Governance Indicators (WGI) by World Bank. <http://info.worldbank.org/governance/wgi/index.asp>.

5.4. Results and discussion

Table 5.2 reports the means, standard deviations and correlation coefficients of the variables used in this study. As Table 5.2 shows, opportunity entrepreneurship is significantly correlated with confidence in one's skills and the economic growth rate. Furthermore, labor productivity, the proxy for economic growth, is significantly correlated with gross capital formation, exports, life expectancy and government consumption. The negative correlation between opportunity entrepreneurship and economic growth could be explained by development level. Some literature highlights that opportunity entrepreneurship rates tend to be lower in less developed countries (Carree et al., 2002, 2007). Given the correlations among the independent variables, we test for the problem of multicollinearity of both equations through variance inflation factor (VIF) computations, which might affect the significance of the main parameters in the regressions. Although 3SLS does not allow the VIF to be obtained directly, we compute this test for each equation. The VIF values are low (lower than 1.55 for equation 1 and 1.20 for equation 2).

Table 5.2. Descriptive statistics and correlation matrix

Variable	All countries		Latin American countries	
	Mean	Std. Dev.	Mean	Std. Dev.
1. Ln Labor productivity	10.409	0.982	9.304	0.395
2. Ln TEA opp	1.687	0.558	2.391	0.379
3. Ln Control of corruption	1.172	0.330	0.982	0.259
4. Ln Confidence in one's skills	3.753	0.372	4.136	0.124
5. Ln number procedures to start a business	1.911	0.451	2.287	0.316
6. Ln private coverage to getting credit	3.677	1.010	3.769	0.549
7. GDP growth	2.307	3.900	5.084	2.744
8. Ln Capital	25.086	1.627	24.230	1.369
9. Ln Exports	3.530	0.553	3.217	0.462
10. Ln Life expectancy	4.343	0.078	4.315	0.034
11. Ln Government consumption	2.870	0.301	2.597	0.256

	1	2	3	4	5
1. Ln Labor productivity	1				
2. Ln TEA opp	-0.365*	1			
3. Ln Control of corruption	0.842*	-0.135*	1		
4. Ln Confidence in one's skills	-0.291*	0.646*	-0.129*	1	
5. Ln number procedures to start a business	-0.506*	0.125*	-0.528*	0.187*	1
6. Ln private coverage to getting credit	0.305*	0.102	0.265*	0.019	-0.025
7. GDP growth	-0.322*	0.281*	-0.179*	0.099	0.171*
8. Ln Capital	0.318*	-0.214*	0.119*	-0.326*	0.098
9. Ln Exports	0.197*	-0.159*	0.257*	-0.103*	-0.458*
10. Ln Life expectancy	0.675*	-0.194*	0.645*	-0.133*	-0.204*
11. Ln Government consumption	0.565*	-0.393*	0.433*	-0.221*	-0.223*

	6	7	8	9	10
6. Ln private coverage to getting credit	1				
7. GDP growth	-0.034	1			
8. Ln Capital	0.213*	-0.042	1		
9. Ln Exports	-0.039	-0.030	-0.419*	1	
10. Ln Life expectancy	0.303*	-0.218*	0.230*	0.131*	1
11. Ln Government consumption	0.148*	-0.361*	0.158*	0.055	0.279*

* p < 0.1.

Table 5.3 shows the results of linear regressions with robust variance estimates. We estimate Eq. 1 and Eq. 2 jointly, using OLS, 2SLS and 3SLS estimators as a robustness check. Model 1 considers the linear regression (OLS) with robust variance estimates of the two equations (opportunity TEA is a function of informal and formal factors, and labor productivity is a function of opportunity entrepreneurship and the other control variables), model 2 assesses both equation through 2SLS, while model 3 estimates the simultaneous equations using the method presented in the previous section (3SLS). Models 4, 5 and 6 estimate both equations simultaneously using dummies to control only Latin American countries through OLS, 2SLS and 3SLS, respectively. All the models are highly significant ($p < 0.001$) and have high explanatory power, explaining 69.5% of the variance in opportunity entrepreneurship and 79.5% of the variance in economic growth, respectively. In addition, we compute the Hausman test to compare the coefficients obtained with OLS, 2SLS and 3SLS. The Hausman specification test does not reject the null that there are not systematic differences in coefficients of the 3SLS and 2SLS respect with the OLS estimation. These models estimated through 3SLS and 2SLS are well specified since the results are pretty much similar in both sign and economic significance, and both are different from the OLS. Here, the Hausman test results suggest we consider the 3SLS estimates for inference. Also, as Wooldridge (2010) states, OLS estimators are biased. Therefore, not reject the null hypothesis of Hausman test means that the expected value of the residuals tends to be zero, which implies good

specification of the models (Baltagi, 2005, p. 127). The 3SLS estimators are consistent and asymptotically more efficient than single equation estimators (see that the standard errors of 3SLS are lower than OLS and 2SLS). Thus, 3SLS appears such appropriate technique to produce better results.

As mentioned before, through OLS model 1 analyzes the effect of informal (control of corruption and confidence in one's skills) and formal institutions (the number of procedures to start a business and private coverage to obtain credit) on entrepreneurial activity, controlling for the GDP growth rate (Eq. 1); and the relative importance of opportunity TEA on labor productivity (Eq. 2). The results indicate that the control of corruption, confidence in one's skills, the number of procedures to start a business and private coverage to obtain credit are highly significant and of the expected sign. This model explains 85.3% of the total variation in opportunity entrepreneurship. Regarding the link between TEA opp and economic growth, the estimation through OLS does not report any significance and marginal impact. The model explains 99.9% the total variance in economic growth. Similar to Model 1, the results found in Model 2 show that both informal and formal institutions are related to opportunity entrepreneurship; and the impact of this variable on economic growth is higher respect to model 1, but does have any significant level. Model 2 explains 85.3 and 99.9% of

Table 5.3. Estimating opportunity entrepreneurship and economic growth

	(1)	(2)	(3)	(4)	(5)	(6)
Equation 1	Ln TEA opp all countries (OLS)	Ln TEA opp all countries (2SLS)	Ln TEA opp all countries (3SLS)	Ln TEA opp Latin American countries (OLS)	Ln TEA opp Latin American countries (2SLS)	Ln TEA opp Latin American countries (3SLS)
Informal factors						
Ln Control of corruption	1.525** (0.604)	1.525** (0.604)	1.916*** (0.507)	0.049 (0.101)	0.049 (0.101)	0.140 (0.092)
Ln Confidence in one's skills	0.606*** (0.147)	0.606*** (0.147)	0.554*** (0.125)	0.752*** (0.073)	0.752*** (0.073)	0.706*** (0.068)
Formal factors						
Ln number procedures to start a business	-0.273** (0.133)	-0.273** (0.133)	-0.352*** (0.110)	-0.136* (0.076)	-0.136* (0.076)	-0.162** (0.069)
Ln private coverage to getting credit	0.199*** (0.075)	0.199*** (0.075)	0.182*** (0.062)	0.057** (0.025)	0.057** (0.025)	0.063*** (0.023)
Control variable						
GDP growth rate	0.002 (0.007)	0.002 (0.007)	0.001 (0.006)	0.029*** (0.010)	0.029*** (0.010)	0.029*** (0.009)
Constant	-3.168*** (1.206)	-3.168*** (1.206)	-3.390*** (1.031)	-1.326*** (0.378)	-1.326*** (0.378)	-1.212*** (0.347)
<i>R</i> ²	0.853	0.853	0.852	0.702	0.702	0.695
Equation 2	Ln Y/L all countries	Ln Y/L all countries	Ln Y/L all countries	Ln Y/L Latin American countries	Ln Y/L Latin American countries	Ln Y/L Latin American countries
Ln TEA opp	0.000 (0.009)	0.038 (0.023)	0.037* (0.020)	0.258*** (0.078)	0.594*** (0.118)	0.620*** (0.113)
Control variable						
Ln Capital	0.192*** (0.015)	0.182*** (0.017)	0.188*** (0.014)	0.136*** (0.029)	0.155*** (0.031)	0.140*** (0.029)
Ln Exports	0.065**	0.043	0.066**	0.138*	0.144*	0.109

	(0.030)	(0.035)	(0.029)	(0.075)	(0.078)	(0.073)
Ln Life expectancy	0.738**	0.450	0.603**	5.362***	5.469***	5.318***
	(0.308)	(0.364)	(0.304)	(0.419)	(0.441)	(0.413)
Ln Government consumption	0.055	0.067	0.054	1.139***	1.188**	1.129***
	(0.051)	(0.054)	(0.045)	(0.122)	(0.129)	(0.120)
Constant	2.489**	3.986**	3.128**	-20.245***	-21.883***	-20.600***
	(1.235)	(1.556)	(1.305)	(1.741)	(1.874)	(1.776)
Time fixed-effects	No	No	No	Yes	Yes	Yes
Observations	197	197	197	197	197	197
R ²	0.999	0.999	0.999	0.817	0.799	0.795
<i>Hausman Specification Tests</i>						
2SLS vs. OLS		0.000			0.000	
3SLS vs. OLS		1.000			0.257	
3SLS vs. 2SLS		1.000			0.257	

*** p < 0.01; ** p < 0.05; * p < 0.10.

Note: Heteroskedasticity corrected standard errors are shown in parentheses. Estimates for country and time fixed-effects dummies are not presented but can be supplied upon request.

the variation in opportunity entrepreneurship and economic growth, respectively. Model 3 assess simultaneously through 3SLS the institutional factors in opportunity entrepreneurship and its effect on economic growth. The results indicate that informal and formal institutions are highly significant and have the expected sign. Equation 1 of the model explains 85.2% of the total variation in opportunity entrepreneurship. At the same time, the estimated model shows that opportunity TEA has a positive and significant influence ($p < 0.1$) on economic growth and explains 99.9% of the variation in economic growth. Here it is important to highlight that informal institutions encourage opportunity entrepreneurship more to achieve economic growth. Finally, models 4, 5 and 6 assess through simultaneous equations (OLS, 2SLS and 3SLS, respectively) the institutional factors in opportunity entrepreneurship and its effect on economic growth, focusing on Latin American countries. Here, we include time fixed-effects to capture the business cycle of these countries. In contrast to the previous model, the results indicate that only one informal (confidence in one's skills) and both formal institutions are highly significant and have the expected sign and magnitude. Equation 1 in all models explains 70.2, 70.2 and 69.5% of the total variation in opportunity entrepreneurship. Meanwhile, Eq. 2 shows that opportunity TEA has a positive and significant influence ($p < 0.01$) on economic growth and explains 81.7, 79.9 and 79.5%, respectively, of the variation in economic growth.

Concerning the hypotheses testing, hypothesis 1 proposes that control of corruption has a positive influence on opportunity entrepreneurship and hypothesis 1a suggests that control of corruption has a positive but lower influence on opportunity entrepreneurship in Latin American countries than in all the countries in the sample. Although Model 6 is not significant in this variable, the relationship is expected ($b = 0.140$). Meanwhile, Models 3 shows that control of corruption has a positive and significant influence on opportunity entrepreneurship in all countries ($b = 1.916$, $p < 0.01$). Therefore, hypotheses 1 and 1a are supported by the data. The results show a positive relationship between control of

corruption and opportunity entrepreneurship, similar to the relationship found in previous studies (Aidis et al., 2008; Akimova, 2002; Alvarez & Urbano, 2011).

Hypothesis 2 suggests that confidence in one's skills has a positive influence on opportunity entrepreneurship. This hypothesis is supported by our data, in line with the literature; the presence of self-confidence in abilities and skills increases the rates of opportunity entrepreneurship (Estrin & Mickiewicz, 2012). Hypothesis 2a proposes that confidence in one's skills has a higher influence on entrepreneurship in Latin American countries than in all the countries in the sample. Models 3 and 6 show that confidence in one's skills has a positive and significant influence on opportunity entrepreneurship in all countries ($b = 0.554$, $p < 0.01$) and in Latin American countries ($b = 0.706$, $p < 0.01$). The results show that the confidence in one's skills coefficient in the Latin American model is higher than the coefficient in all countries, supporting hypothesis 2a. As it will be explained later, while in Latin American countries confidence in one's ability and skills is important for facilitating the entry of new firms by opportunity, in other countries business and entrepreneurial education is more relevant. Again, given the social context in Latin American countries, one of the elements characterizing the opportunity entrepreneurship in these countries is the capacity to believe and trust in their abilities and skills. This social intentionality could be seen reflected in higher rates of opportunity entrepreneurship, which at the same time could be synonymous with overcoming the internal problems.

Hypothesis 3 suggests that the procedures for starting a business have a negative influence on entrepreneurship. The coefficient in models 3 and 6 is negative and significant, supporting hypothesis 3; thus, fewer procedures for starting a business would be related to higher entrepreneurial activity. In addition, hypothesis 3a proposes that the procedures for starting a business have a lower influence on opportunity entrepreneurship in Latin American countries than in all countries. The results in model 6 show that the coefficient is negative and significant, in contrast to Alvarez and Urbano (2011). Thus, our data support hypothesis 3a. Models 3 and 6 show that the number of procedures to start a business has a negative and significant influence on opportunity entrepreneurship in all countries ($b = -0.352$, $p < 0.01$) and in Latin American countries ($b = -0.162$, $p < 0.05$). This result is consistent with the paper by van Stel et al. (2007), who suggest that this type of regulation generates entry barriers, discouraging entrepreneurship behavior. In terms of Latin American countries, the lower influence of this variable on opportunity entrepreneurship could be due to the assumptions of the Doing Business project, which suggests that the reaction of entrepreneurs in these countries result from a high percentage of the members of the population being forced to start a business for their livelihood as part of the unofficial economy. In addition, the dynamic of the labor market (entry to and exit from employment or self-employment status), as well as the bureaucratic structure, could lead to the creation of new businesses with a short survival period. Therefore, a governmental structure with policies focused on reducing the procedures that increase the entry cost is needed in Latin American countries.

Hypotheses 4 and 4a, which suggest that access to bank credit has a positive influence on entrepreneurship and that access to bank credit has a lower influence on entrepreneurship in Latin American countries than in all the countries in the sample, respectively, are supported by our results. Models 3 and 6 show a positive effect of access to bank credit on opportunity entrepreneurship in all countries ($b = 0.182$, $p < 0.01$) and in Latin American countries ($b = 0.063$, $p < 0.01$). According to the literature, this effect on Latin American countries is lower with respect to all the countries in the sample, meaning that the rest of the countries could have a more mature financial system, which provides support for entrepreneurs and SMEs. Concerning Latin American countries, the access to credit could be conditioned by internal problems, such as unemployment and underemployment, as Alvarez and Urbano (2011) suggest. This uncertainty caused by social conditions could generate distrust in the financial system, preventing its maturity, according to Stiglitz and Weiss (1981). Comparing our results with those of other papers, such as Alvarez and Urbano (2011), we obtain a consistent coefficient in our hypothesis and sub-hypothesis; meanwhile, they obtain a negative and statistically significant sign of credit access in Latin American countries. They argue their results based on Wennekers et al. (2005), who suggest that emerging economies have higher rates of necessity entrepreneurship, which does not require large amounts of credit. Although this idea could be true, our results suggest even nowadays a lack of financial structure to support entrepreneurial ideas based on knowledge and innovation.

Hypothesis 5 proposes that economic growth is influenced positively by opportunity entrepreneurship. We find that opportunity entrepreneurship is positively related to economic growth ($\beta_1 = 0.037$, $p < 0.1$, in model 3). As we mentioned before, opportunity TEA defines different characteristics in each country in terms of the innovation and knowledge-based activities. According to Wong et al. (2005), entrepreneurial activity influenced by opportunities tends to affect positively on economic outcomes. Nevertheless, they do not find statistically significance evidence. In contrast, our results suggest that for each country in our sample, if opportunity TEA increases by 1%, the GDP per labor population will increase by 0.037% (model 3), *ceteris paribus*. This is in line of the Audretsch and Keilbach's (2004a) results. According to them, entrepreneurship related with innovation has a positive impact on economic performance. Furthermore, we underline the effect of opportunity TEA on economic development does not differ significantly among these countries. This idea, supported by Valliere and Peterson (2009), suggests that those countries that encourage entrepreneurial activity based on innovation could achieve improved outcomes in terms of development. Therefore, our findings could suggest that entrepreneurship is a key factor in generating economic growth, on which institutional endowment is a factor that has a relevant influence through opportunity entrepreneurship. Furthermore, according to Braunerhjelm et al. (2010) and Mueller (2007), innovative entrepreneurs convert knowledge into socio-

economically relevant knowledge; therefore, spillovers could be accomplished across the societies to increase economic development.

Hypothesis 5a proposes that economic growth is influenced positively by opportunity entrepreneurship but its impact is higher in Latin American countries. We find that opportunity entrepreneurship is positively related to economic growth in Latin American countries ($\beta_1 = 0.620$, $p < 0.01$, in model 6). The study by Wennekers et al. (2005) shows that there appears to be a U-shaped relationship between the level of economic development and the rate of entrepreneurship. The study by van Stel et al. (2005) shows that entrepreneurial activity has a positive effect on economic growth in highly developed countries but a negative effect in developing countries, similar to Blanchflower (2000), who finds a negative relationship between entrepreneurship and economic growth in developed countries. Although Wennekers et al. (2005) find that developing countries tend to have more necessity entrepreneurship, and hence a U-shaped form could exist, our results in contrast suggest that for each country in the Latin American group, if opportunity TEA increases by 1% across time, the labor productivity will increase by 0.620%, *ceteris paribus*. According to Dejardin (2000), high levels of the entrepreneurial activity rate are associated with high rates of economic growth, which tend to be higher in developing countries. These results could be explained by opportunity entrepreneurship creating jobs, new economic outcomes and adding value. Thus, a higher degree of opportunity entrepreneurship could assure economic performance and faster rates of economic growth, especially in those Latin America countries with a high unemployment rate and unofficial economy; hence, entrepreneurship could result as an important mechanism to reduce them.

The discussion and analysis of these results in terms of policy implications concern both models assessed simultaneously. Our results provide empirical evidence regarding the scheme proposed by Reynolds et al. (2005, p. 206), who suggest that entrepreneurial opportunities depend on the sociocultural and political context, and its effects are reflected in economic growth. Based on the theoretical framework used in this chapter, these sociocultural factors and political context could be associated with formal and informal institutions. In this sense, Reynolds et al. (2005) suggest that to achieve the appropriate opportunity entrepreneurship to help to increase the economic growth, it is important to have equalized institutions that foster entrepreneurial behavior. This accurate external context could guarantee the endowment of entrepreneurship required for economic growth. Given our results, the governments should be in line with the entrepreneurial intentions of individuals, as well as encouraging the permanent pursuit of opportunities in order to transform them into new businesses. For instance, for our entire sample, control of corruption, as well as confidence in one's skills, are fundamental to generating incentives in terms of opportunity entrepreneurship, which at the same time impact positively on economic growth. Additionally, the financial system is crucial to provide sufficient tools needed by entrepreneurs. Greater coverage of private credit implies more opportunity

entrepreneurship, as our results suggest. Concerning the number of procedures to start a business, all the governments in our sample should find an appropriate match between the capacity of regulation in terms of procedures and maintain the incentives to start a business. This is a particular issue in Latin American countries, which have higher levels of unofficial economy. According to our results, while the number of procedures is increasing, the rate of opportunity entrepreneurship tends to be lower. Although the impact of this variable on opportunity entrepreneurship is higher in all the countries in our sample than only in Latin American countries, the consideration of these emerging economies should be in terms of assuring higher levels of the official economy as well.

Therefore, an ecosystem of entrepreneurship is required within each country in order to motivate the permanent generation of ideas (Ács et al., 2014). According to these authors, every government at the regional and the national levels should pay attention to the systems of entrepreneurship, which are fundamentally networks that are driven by individual-level opportunity pursuit, allowing the creation of new firms. This entrepreneurial infrastructure and its outcomes should be regulated by country-specific institutional characteristics in order to achieve higher outcomes in terms of growth and welfare. It means that governments, the education system, the financial infrastructure, the productive sectors and the civil society must constantly interact to achieve better performance in terms of increasing the number of entrepreneurs by opportunity and hence achieving higher levels of inclusive economic growth. In this sense, Ács et al. (2014) propose an index of national systems of entrepreneurship, which contains the capacity to identify the components that compose the systems, the factors that discourage their performance and the contextualization in which the entrepreneurial systems are embedded. The authors suggest that the national systems of entrepreneurship could complement the national systems of innovation. In that sense, it is possible to figure out a loop between innovative ideas based on knowledge and their subsequent transformation into a new venture. Whether or not the respective institutions support each system accurately, the permanent generation of ideas, as well as the creation of new businesses, could lead to social benefits in terms of growth, employment and competitiveness, among others.

Through the index of national systems of entrepreneurship, Ács et al. (2014) provide some evidence across countries in terms of the balance between entrepreneurship and economic development. According to their results, a higher level of entrepreneurship or income does not mean a perfect combination. They suggest that the optimal result depends on institutional settings that are in harmony with the societal characteristics and needs. They classify the countries according to the index result. Surprisingly, some developing countries, such as Chile, Colombia, Puerto Rico and Uruguay, among others, appear in the top 35 out of the 88 countries analyzed in their sample. Although they emphasize the top position of developed countries in the rank, they find that in some countries (in this case, emerging economies), working harder could achieve the level of entrepreneurship that guarantees

higher and sustainable economic growth. Analyzing these results under the lens of institutional variables utilized by Ács et al. (2014), the main challenge of this type of country is to overcome the high level of corruption, improve the tertiary education and business skills and assure access to the financial system, among others. In this sense, our results support the same ideas in terms of their importance to foster the appropriate entrepreneurship and therefore the economic growth.

Special attention to the national entrepreneurship system in Latin American countries should also be focused on strategies for the science, technology and innovation (STI) system. According to Ács et al. (2014), policies concerning the permanent generation of ideas through the STI infrastructure encourage individuals to explore, evaluate and create start-ups with high potential to survive. These new ventures could help the competitiveness, growth and development of regions and countries. According to Padilla-Pérez and Gaudin (2014), some Central American countries have focused some policies on the infrastructure in order to promote interactions into their innovation systems. Thus, the sensibility of economic growth caused by the dynamics of innovation and opportunity entrepreneurship could be higher in Latin American countries given their capacity to reduce the unemployment, increase the markets, generate interactions among regions and enhance the competitiveness. In addition, the challenge in Latin American countries is to increase the proportion of opportunity entrepreneurship with respect to necessity entrepreneurship. This could be made possible by facilitating the engaging of the society in the productive system, which implies general education and specific skills, and even more importantly, providing confidence to all entrepreneurs based on their own knowledge instead of pointing out cases of failure (Stephens & Partridge, 2011). Our results suggest that confidence in one's skills is positive and higher in Latin American countries, implying that the capacity to provide all the support (governmental, infrastructure, financial system, education, among others) required by entrepreneurs raises their confidence and leads them to achieve prosperous new businesses.

Furthermore, Padilla-Pérez and Gaudin (2014, p. 757) found that the lack of financial structure to support entrepreneurial ideas based on opportunities is a barrier to accomplishing efficient results in terms of science, technology and innovation process in Central American countries. Similarly to Fatoki and Odeyemi (2010), who present results regarding African countries, the authors suggest expanding financial aid to all entrepreneurs and especially to those who are based on knowledge. All the elements discussed above, combined with wide coverage of private credit, could guarantee an increasing number of innovative entrepreneurs with a high likelihood of success, who could pay back the loans at their respective interest rate, assuring the balance in the financial system again. In that sense, the access to credit should be focused on providing support to evaluate new ideas, the growth and development of SMEs, innovative projects in firms and the possibility to explore new local and foreign markets.

Summarizing, for both developed and Latin American countries, the governmental structure must be designed in terms of solving the agency problems. This means always moving toward the social needs and encouraging productive behavior. Here, entrepreneurship could be affected positively by accurate public sector strategies. For example, a lower level of corruption benefits all society in terms of prompting greater trust in the state and raising the number of new entrepreneurs supported by alliances between the educational system and governmental policies and established firms. These alliances could guarantee that the next generation of entrepreneurs has more ideas based on knowledge and opportunity perception, whose market could be assured in part through established firms, which pull new ventures through orders that engage their activity with the services and products offered by new firms. On the governmental side, a low level of corruption and low regulation, such as the procedures to start a business, have a twofold effect. On the one hand, the rate of new business creation increases notably, which could foster firms with survival capability, and on the other hand, the societal benefits could be considered in terms of increased tax payments by entrepreneurs and their employees (encouraging the transition to the official economy), the final result of which could be reflected in the competitive infrastructure. These possible benefits again impact positively on those entrepreneurs who perceive opportunities, who could have more confidence in themselves, in the system and in the structure provided by their state. Thus, informal factors, such those assessed in this chapter, encourage opportunity entrepreneurship much more, at the same time allowing the achievement of higher economic growth. For Latin American countries, this possible loop generates even more positive results due to the impact of opportunity entrepreneurship on their economic growth.

5.5. Conclusions

In this chapter, unbalanced longitudinal panel data (for the period 2004–2012) were used to investigate empirically the simultaneous effect of institutional factors on opportunity entrepreneurship and this variable on economic growth, which also allows overcoming the endogeneity problem. Using a conceptual framework of institutional economics, we analyzed the influence of informal (control of corruption and confidence in one's skills) and formal institutions (the number of procedures involved in starting a business and private coverage to obtain credit) on opportunity entrepreneurship, which at the same time allow the achievement of economic growth. We also considered this simultaneity in Latin American countries. Here, even for all the countries in the sample and Latin American countries, informal institutions present a greater influence on opportunity entrepreneurship than formal ones, meaning, at the same time, more economic growth.

The chapter generated three key results. First, there is evidence of a positive relationship between institutional factors and opportunity entrepreneurship. This follows the recent results of entrepreneurship research, which suggest that institutions play a key role in explaining entrepreneurial activity, especially that driven by opportunity (Álvarez et al., 2014). In addition, our results support the idea that informal factors have a greater impact

on opportunity entrepreneurship than formal institutions, as Thornton et al. (2011) suggest. Second, we found a positive relationship between opportunity TEA and economic growth. Here, entrepreneurial activity based on opportunities encourages economic growth. These results suggest that opportunity entrepreneurship could be a key factor in achieving economic growth. Furthermore, it is important that policy makers redefine the strategies to encourage this type of entrepreneurship in each country. In terms of long-run growth, strategies related to entrepreneurship motivated by the exploration and evaluation of opportunities are important. Otherwise, entrepreneurial activity motivated by necessity could solve short-run problems, but have no effect on long-run economic growth. Third, joining the two sides of entrepreneurship research discussed by Carlsson et al. (2013), it is possible to suggest that informal institutions measured through the control of corruption and confidence in one's skills encourage the entrepreneurship required to foster economic growth. Here, theoretical and policy implications could be derived, concerning the institutional factors, especially informal ones, that affect economic growth (North, 1990) throughout entrepreneurship.

Regarding the Latin American countries, the social context could be improved through the promotion of opportunity entrepreneurship. This promotion could be fostered through informal factors, such as the confidence in their skills to set up a new business guided by the opportunity perception. Thus, higher levels of opportunity entrepreneurship lead to economic growth. Job creation could be obtained, as well as formal economy. Thus, it is possible to suggest additional elements to the policy implications, which could be plausible to obtain economic growth through encouraging the appropriate institutions in order to increase the opportunity entrepreneurship. Additionally, some theoretical issues could be discussed in terms of the importance of institutions such framework to understand determinants and effects of opportunity entrepreneurship.

Finally, some limitations regarding the sample size (especially for Latin American countries), and the static analysis are detected. Other datasets could provide a higher sample for both heterogeneous as well as a specific group of countries, which allow obtaining more precise estimators by analyzing also dynamic effects. Additionally, by exploring new data, it could be possible increase the amount of instruments for the simultaneous analysis. The idea that the more instruments should be considered, it encourages the possibility to extend the objective presented in this chapter, by exploring and including additional institutional factors into the opportunity entrepreneurship equation. Similarly, the empirical evidence provided by this chapter opens new avenues in terms of which other institutions affect the entrepreneurship driven by opportunity, and by other reasons, that allows enhanced economic growth. In that sense, it is possible to follow the studies by Alvarez and Urbano (2012), Urbano and Alvarez (2014) and van Hemmen et al. (2013), in order to analyze how the institutions assessed in these papers could also encourage entrepreneurial behavior and therefore obtain higher economic growth rates. Likewise, Hessels and van Stel (2011) and van Hemmen et al. (2015),

among other, suggest that alternative measures of entrepreneurial activity such as international and innovative entrepreneurship might offer new insights about the relationship between new business creation and economic development. The main challenge is to find the appropriate data at the country level that allow the simultaneous evaluation of the effect of institutions on entrepreneurship and its subsequent impact on economic growth, regarding also dynamic analysis.

Chapter 6

Institutional Context, Export-Oriented Entrepreneurship, and Economic Performance: An International Comparison

6. Institutional Context, Export-Oriented Entrepreneurship, and Economic Performance: An International Comparison

6.1. Introduction

The importance of export-oriented entrepreneurship has rapidly increased during the past two decades in almost every region of the world, thus revitalizing the long debate in both academic and policy spheres about its advantages and related determinants (Cavusgil & Knight, 2015). Indeed, on the one hand, export-oriented entrepreneurial activity may provide direct employment, generate positive externalities through knowledge spillovers, and consequently stimulate economic growth (Branstetter, 2001; Clerides et al., 1998; Coviello et al., 2011; Didia et al., 2015; Hessels & van Stel, 2011). On the other hand, it has been argued that the institutional environment influences those new ventures and small firms oriented toward international activities (Gaur et al., 2014; Kim & Li, 2014; Ojala, 2015; Oparaocha, 2015; Yamakawa et al., 2008; among others). In fact, Coeurderoy and Murray (2008), McGaughey et al. (2016), Nowiński and Rialp (2013), Yamakawa et al. (2008) emphasize that the formation of international new ventures across regions and their subsequent development is attributable to those institutional differences and characteristic of each region. Comparisons at the country level suggest that economic performance, typically measured in terms of GDP or growth, is linked both to the endowment of factors of productions and other resources, as well as aspects involving entrepreneurial behaviour, such as the export orientation by entrepreneurial firms, which in turn is highly influenced by the institutional environment (Terjesen & Hessels, 2009). De Clercq et al. (2008), Hessels and van Stel (2011) and Sternberg and Müller (2010), among others, have found that those types of entrepreneurship are highly influential on economic growth. Thus, a better understanding of the complex interactions between institutions, export-oriented entrepreneurship, and economic performance are need to enhance the efficacy of economic policies (Lee & Peerson, 2001; Terjesen et al., 2016).

The nexus between institutional context, export-oriented entrepreneurship, and economic growth has been intensively analyzed in a number of studies, but the empirical evidence more often than not remains separated and ambiguous, especially within developing countries that have a paucity of institutions supporting entrepreneurship (Amoako & Lyon, 2014; Kim & Li, 2014). According to Rialp et al. (2005, p. 151), scholars have focused on understanding those factors affecting international entrepreneurship and its subsequent performance in terms of firms, exports and employment growth. In this regard, related past studies may be categorized within two research strands (Carlsson et al., 2013). The first strand focuses on the validation of the determinants of entrepreneurial activity, which postulates that psychological, organizational and, more recently, institutional factors are

related to the quality and quantity of entrepreneurship across regions and countries (Thornton et al., 2011). With regards to just the institutional context, it is argued that depending on the type of regulations, the ability to convert an idea into a new business and the acceptance of entrepreneurs in society, among other characteristics, defines the ability of entrepreneurial activity to contribute to the creation of societal value and economic growth (Aidis et al., 2008; Salimath & Cullen, 2010; Urbano & Alvarez, 2014; Urbano et al., 2016; Welter, 2005; among others).

The second strand of research examines the nexus between entrepreneurial activity and economic growth. As discussed in the previous chapters, most past studies are concerned with questions of whether a higher level of entrepreneurship leads to higher economic growth (e.g. Acs et al., 2012; Audretsch & Keilbach, 2004a,b,c, 2005, 2007, 2008; Carree et al., 2002, 2007; Minniti & Lévesque, 2010, among others). The findings in this strand of the literature often fall into the causal relationship between entrepreneurial activity and GDP. The study by González-Pernía and Peña-Legazkue (2015) try to investigate the simultaneous relationship between those determinants of entrepreneurship and its subsequent effect on economic performance, taking into account regions or specific groups of countries. For instance, Carree et al. (2002, 2007) provided evidence about the relative importance of entrepreneurial activity for economic growth, distinguishing between the different development stages. This literature shows that economic growth requires a more specialised type of entrepreneurial activity, but this activity, in turn, is associated with innovative activity and export orientation, which is enhanced by a more favorable institutional environment (Aparicio et al., 2016a; Audretsch & Keilbach, 2008; Lee & Peterson, 2001). The bivariate links between entrepreneurship and economic performance are not only complex to model, but they can also interact simultaneously in a mutually beneficial reinforcing manner. In particular, even less is known about the simultaneous relationship between entrepreneurship and economic performance in the specific context of developing countries (Acs et al., 2008a).

Therefore, this chapter investigates the links between institutional context, export-oriented entrepreneurship, and economic performance. Although we analyze an entire sample of 43 countries in the period 2004-2012, we attempt to explore, in depth, the previous relationships distinguishing between developed and developing countries through the interactions between these two groups and institutions, as well as the different level of export-oriented entrepreneurship. In particular, our modeling approach relies on the GLS (generalized least square) estimators, which enables us to examine simultaneously the causality between institutional environment, export orientation associated with entrepreneurial activity, both of which are important factors in economic growth. As expected, our results for the entire sample and comparisons between groups of countries provide empirical evidence of simultaneous and rich interactions between the institutional context, export-oriented entrepreneurship, and economic performance. Some factors, such

as the human development context, opportunity recognition and private coverage to obtain credit, are the most significant in explaining the export-oriented entrepreneurship required for economic growth.

The remainder of this chapter is organized as follows. In section 2, we present the theoretical framework drawing from institutional economics. In section 3, we outline the econometric modeling approach and describe the data used. Section 4 reports the results, and section 5 discusses the empirical findings. Finally, we conclude and offer some policy implications in section 6.

6.2. Conceptual framework: Institutional context for export-oriented entrepreneurship and economic performance

As previous chapters, institutional economics (North, 1990, 2005) is used as theoretical framework. Similar to Chapter 5, we follow Gnyawali and Fogel (1994) to analyze the influence of the five institutional environments for international entrepreneurship development. Namely, we focus on social and economic factors, entrepreneurial and business skills, financial assistance, and non-financial assistance, among others (Gnyawali & Fogel, 1994, p. 46). Similar to Chapter 5, we clarify that even though Gnyawali and Fogel (1994) discuss the social and economic factors jointly, in this chapter we consider these conditions separately in order to adapt them to North's (1990) framework.

According to Gnyawali and Fogel (1994), the application of the environment for entrepreneurship development has been used to explore several determinants of entrepreneurial activity across countries, and especially for understanding new business creation in a different development context. Alvarez and Urbano (2011) analyze the effect of the five dimensions on entrepreneurship in a large sample of developed and developing countries, paying special attention to Latin American countries. Likewise, Bruton et al. (2009) analyze the institutional differences between Latin American and Asian countries, and suggest that supportive institutions for entrepreneurship explain the progress in innovation, entrepreneurial activity and industry development in some Asian countries. Also using this approach, Manolova et al. (2008) explore the environmental factors most conducive to entrepreneurship development in the context of developing countries, specifically in Eastern Europe. Similarly, Chowdhury et al. (2015b) provide evidence suggesting that certain institutions, mostly associated with regulations and corruption, have an impact on international entrepreneurship. In particular, they find that depending upon the level of corruption in developed and developing countries, the effect of regulations on export-oriented entrepreneurship may differ considerably, encouraging or discouraging this particular kind of entrepreneurial activity. Heidenreich et al. (2015) also emphasize the importance of complementary policy strategies as institutional mechanisms affecting international entrepreneurship. By analyzing one developing country (Ghana), they argue

that the uncertainty faced by internationally oriented entrepreneurs is influenced by policy interventions which impact the decision-making of investment and market participation.

Following the studies by Alvarez and Urbano (2011) and Manolova et al. (2008), which explore the differences across countries, it is suggested that political, social and economic conditions determine export-oriented entrepreneurship. According to Carree et al. (2002, 2007), the level of economic development partly explains the number of entrepreneurs in each country. In this context, export-oriented entrepreneurship is associated with productive entrepreneurial activity, the most prevalent being found in those knowledge economies, where technology, institutions, socio-political conditions, education, are in abundance for export-oriented entrepreneurs, encouraging them to develop and exploit opportunities (Kim & Li, 2014; Reynolds et al., 2005). In developing countries, which are burdened by institutional weaknesses, individuals make the decision to become an entrepreneur out of necessity for their family to survive or have a minimal of income (Kim & Li, 2014; Reynolds et al., 2005; Smith et al., 2016). According to Acs et al. (2008b), the higher levels of early stage entrepreneurship in developing economies is related to the local institutional and contextual conditions for entrepreneurs and the levels of economic development, which provide higher safety and trust for those entrepreneurs who are pursuing foreign markets. Similarly, Chowdhury et al. (2015b), by controlling for GDP per capita, discuss the importance of strong institutions with a mandate to control corruption and encourage exports. Their evidence suggests that the developing country context is highly sensitive to political, regulatory, social and economic stability; exhibiting, in striving for an of a better quality of life, higher levels of entrepreneurial activity and willingness to incur risks. In providing similar evidence from Latin American countries, Amorós et al. (2012) suggest that the development stage of these emerging economies is a crucial factor to improving the competitiveness of new ventures in order to compete globally. Furthermore, Gittins et al. (2015), González-Pernía and Peña-Legazkue (2015) and Kim and Li (2014) suggest that favorable economic conditions provide greater incentives to incorporate those export-oriented entrepreneurs in the different markets, which are reflected by the benefits of greater access to formal financing and labor contracts, as well as in the tax system and standard living. Similarly, Hessels and Parker (2013) assess the importance of a positive economic environment in increasing the level of international entrepreneurship. In particular, they find that for a large sample of firms located within developed and developing countries in Europe, the stability of the local economy encourages entrepreneurs to engage in international activities. Therefore, we propose the following hypothesis:

Hypothesis 1. A more favorable human development context has a positive effect on export-oriented entrepreneurship; however, this relationship is less pronounced in developed than in developing countries.

Regarding entrepreneurial and business skills, Gnyawali and Fogel (1994) suggest that education, experience, and the ability to recognize opportunities to create new business are

important in overcoming problems in the entrepreneurship process. Additionally, Gnyawali and Fogel (1994) emphasize the importance of this environmental factor in emerging market economies, where there is a lack of basic business skills. According to Jones and Casulli (2014), international entrepreneurship provides better opportunities because of the acquiring experience and reasoning in decision making under conditions of high uncertainty. It has generally been recognized that individuals who have attained a level of knowledge and training tend to easily identify opportunities, which is required to increase the international entrepreneurship (Zahra et al., 2005; Evers & O’Gorman, 2011). To some extent, culture determines how entrepreneurs perceive opportunities not only in local markets, but also in foreign ones as well (Dimitratos et al., 2016). Based on Dimitratos’ et al. (2016) work, it might seem that international new ventures from developed countries are better equipped at identifying international opportunities than are their counterparts located in less developed countries. According to Aidis et al. (2008), opportunity recognition is an institution that results from entrepreneurial alertness, mainly found in social networks. These authors provide evidence of Russian entrepreneurs, for whom networks were an effective source of opportunity recognition that had a positive impact on entrepreneurship. Ciravegna et al. (2014) obtained similar results for international entrepreneurs who enhanced their opportunity recognition through the client–supplier relationships, personal contacts, chance, and network building strategies in the contexts of Costa Rica (emerging economy) and Italy (developed country). Similarly, Kontinen and Ojala (2011) found that trustfulness and ties are networking sources that encourage opportunity recognition, which at the same time is positively related to export-oriented entrepreneurship. Hence, opportunity recognition has been argued to be a tool for detecting meaningful patterns required for valuable entrepreneurial activity (Alvarez et al., 2013; Chandra et al., 2015; Grégoire et al., 2010). Furthermore, according to the literature review by Rezvani et al. (2014), opportunity recognition is a common element in small-business performance and international entrepreneurship. Nonetheless, there are studies arguing that less developed countries tend to face higher barriers in identifying the opportunities for increasing export performance (Cadot et al., 2013; Nowiński & Rialp, 2013). Hausmann et al. (2007) and Bahar et al. (2014) show that developing countries generally have lower levels of export diversification, since their trade policies are not conducive to the type of opportunity recognition needed to expand the export basket. Thereby, we propose the following hypothesis:

Hypothesis 2. Opportunity recognition has a positive influence on export-oriented entrepreneurship; however, the relationship will be stronger in the context of developed countries than in developing countries.

Gnyawali and Fogel (1994) suggest another dimension related to financial assistance. Following this idea, Van Auken (1999) argues that potential entrepreneurs with no access to the financial system tend to face more challenges and have a lower survival rate than do those entrepreneurs with financial support (van Auken, 1999). Various barriers and impediments

could deter the entrepreneurial process as well as cause high failure rates of new business (von Broembsen et al., 2005). Fan and Phan (2007) and Jinb et al. (2015) find that the rate of international new venture creation is positively related to access to financial resources. Regarding the importance of access to bank credit for developing countries, Wang (2012) finds that in the case of China some internal reforms led to reduced labor mobility costs and alleviated credit constraints in order to achieve higher rates of entrepreneurship. Rock and Ahmed (2014) show the importance of financial support from the state to facilitate entrepreneurial access to international fairs and financial sources. However, reforms in terms of credit access in developing countries require the removal of barriers to obtaining more credit (Fatoki & Odeyemi, 2010). In that context, Maas and Herrington (2006) and Herrington et al. (2009) claim that access to finance is a major problem for South African entrepreneurs. They conclude that a paucity of financial support is one of the main reasons for the low levels of new firm creation, internationalization, as well as their high rates of failure in South Africa. Fan and Phan (2010) argue that many entrepreneurs obtain financial support from their own or their family's savings, which are often inadequate, rather than approaching formal banks or other firms for external finance. Taking this into account, the importance of having access to bank credit in developing countries could be more significant for international entrepreneurship development. Therefore, the following hypothesis is proposed:

Hypothesis 3. Access to bank credit has a positive influence on export-oriented entrepreneurship; however, this relationship may be stronger in the developing rather than in the developed country context.

The last context analyzed by Gnyawali and Fogel (1994) is related to non-financial assistance, which involves characteristics such as support services, entrepreneurial networks, incubator facilities, modern transport and communication facilities. They find that developing economies have low levels of these infrastructures, which discourage the decision to be an entrepreneur. Audretsch et al. (2015c) explore how different types of infrastructure impact entrepreneurship. They conclude that although general infrastructure influences entrepreneurial activity, broadband and communications technology are more beneficial for entrepreneurs than are highways and railroads. Kaleka (2012) discusses the importance of communication to enhance the informational capabilities of international new ventures, since it enables an increasing network of costumers and suppliers in the overseas markets. Additionally, Audretsch et al. (2015c) posit that infrastructure enhances connectivity and linkages that facilitate the recognition of entrepreneurial opportunities and the ability of entrepreneurs to actualize those opportunities. In particular, they hypothesize that some types of infrastructure, such as communication technologies (broadband), would be expected to be particularly conducive to entrepreneurial activity in industry contexts such as software. By analyzing export entrepreneurship for different industries in Spain, Navarro-García (2016) find that those resources associated with telecommunications have a positive

influence on international entrepreneurship, as well as the performance of entrepreneurial firms in foreign markets. Sinkovics et al. (2013) find that online sales can improve the performance of born-global firms, though the authors also mention that international new ventures could fall into the “virtuality trap”. In this regard, Eslava et al. (2013) emphasize that public policies related to the provision of stable infrastructure should be in accordance with the capacity of international firms. By analyzing Colombian industries, Eslava et al. (2013) find that increasing prices in the electricity structure deter the export performance, as well as contribute to higher firm exit rates. In their analysis of Central America, Padilla-Pérez and Gaudin (2014) show that the investment in infrastructure for innovation, entrepreneurship and internationalization has increased in the past decade. These authors found in the literature that the different achievements in infrastructure have been so crucial to entrepreneurship and export orientation in these developing countries. Thus, the literature highlights the importance of infrastructure development, such as communications for international entrepreneurial activity, such that the policy should ensure access to the Internet and cell-phone networks, among other things, which are scarce in developing economies. Thus, the following hypothesis is proposed:

Hypothesis 4. Access to communication has a positive influence on export-oriented entrepreneurship; however, this relationship should be stronger in the developing than in the developed country context.

All of the previous institutional factors are argued to influence the level of entrepreneurial activity, which at the same time is conjectured to serve as a key element for economic growth. According to Schumpeter (1911), it is possible to link entrepreneurship to economic growth. As Minniti and Lévesque (2010) and Urbano and Aparicio (2016), among others, demonstrate how entrepreneurship impacts the steady state, depending on the type of entrepreneurial activity in each economy. They find that those entrepreneurs located in developed economies tend to be more innovative, whereas those entrepreneurs in developing economies tend to be more imitative. Similarly, González-Pernía and Peña-Legazkue (2015) and Navarro-García et al. (2015) found that those highly developed regions in Spain tend to exhibit higher levels of export-oriented entrepreneurship, which in turn has a greater impact on regional economic growth. Public policies for lagged regions should take into account those factors encouraging, among other things, international entrepreneurs, which should serve to spur economic growth (Hessels & van Stel, 2011; González-Pernía & Peña-Legazkue, 2015). Sanyang and Huang (2010) concur by emphasizing the importance of programs that support entrepreneurial initiatives in developing economies.

Some authors have come to recognize the capacities of potential export-oriented entrepreneurship and growth and their significant contribution to prosperity and economic welfare (De Clercq et al., 2008; Hessels & van Stel, 2011). According to De Clercq et al. (2008), new ventures’ export orientation takes knowledge-based opportunities and develops them into new products and markets. This increases the amount of knowledge spillovers and has

a positive impact on economic performance (De Clercq et al., 2008). Terjesen et al. (2016), throughout a systemic literature review, found that international entrepreneurship has a positive impact on economic growth, enhancing the learning process of countries, organizations and individuals. Therefore, international entrepreneurship is an important mechanism in the creating and adapting new knowledge into economic performance (De Clercq et al., 2008). In this context, Hessels and van Stel (2011) pointed out that the export-oriented entrepreneurship rates reflect the creation of knowledge and technology and have a positive impact on economic growth (González-Pernía & Peña-Legazkue, 2015; Hessels & van Stel, 2011). Hidalgo et al. (2007) find that countries such as Colombia or Malaysia could achieve similar income level of developed countries by expanding the products space and the complexity of the export basket, which implies a combination of innovation and export-oriented entrepreneurs. Effectively, Aparicio et al. (2016b), by simulating future Colombian scenarios, provide evidence that higher long-term economic growth could be accomplished if there are policies encouraging innovative entrepreneurs oriented toward external markets. Thus, we propose the following hypothesis:

Hypothesis 5. Export-oriented entrepreneurship has a positive effect on economic performance; however, this impact should be stronger in the context of developing than in developed countries.

6.3. Methods

As mentioned in previous chapters, the specification of a simple production function assumes implicitly that entrepreneurship, and in this case, the international one, is exogenous. Nonetheless, an inverse causal relationship has been shown to exist between international entrepreneurship and economic growth (González-Pernía & Peña-Legazkue, 2015). In addition, as we argued above, export-oriented entrepreneurship is influenced by institutions. Taking this into consideration, we specify the first equation in order to take this recursive structure explicitly into account as well as the other variables that affect export-oriented entrepreneurship. In its general form, this equation is specified as:

$$EOE_{it} = f(IC_{it}, v_{it}) \quad (1)$$

where IC_{it} is the vector representing the institutional context, and v_{it} is the controlling vector that influences entrepreneurship in country i at time t . The vector of control variables refers to the national outcome rate.

To establish the causal chain of institutional context, export-oriented entrepreneurship and economic growth, an augmented production function that includes an explicit measure of export-oriented entrepreneurship is estimated. On this basis, we may analyze the effect of the institutional context on international entrepreneurial activity on the one hand, and the

impact of this international entrepreneurial activity on economic growth on the other hand. The second equation is a Cobb–Douglas production function of the form:

$$Y_{it} = \alpha EOE_{it}^{\beta_1} K_{it}^{\beta_2} E_{it}^{\beta_3} GC_{it}^{\beta_4} HE_{it}^{\beta_5} L_{it}^{\beta_6}$$

Similar to Chapter 5, our growth model follows Romer’s (1986, p. 1006) assumption regarding the labor coefficient (β_6) settled in one. Thus, we assume that entrepreneurs are aware and equipped with externalities, knowledge and creativity (Audretsch & Belitski, 2013), and that capital is foregone consumption. Taking this into account, and dividing output by labor in order to preserve a function with constant returns to scale, we obtain:

$$Y_{it}/L_{it} = \alpha EOE_{it}^{\beta_1} K_{it}^{\beta_2} E_{it}^{\beta_3} GC_{it}^{\beta_4} HE_{it}^{\beta_5} \quad (2)$$

where Y_{it} is the economic output of country i at time t , measured as the gross domestic product (GDP), L_{it} represents the total labor force (hence Y_{it}/L_{it} is labor productivity, a proxy for economic performance), EOE_{it} represents the endowment of export-oriented entrepreneurship, K_{it} is country i ’s endowment of capital, E_{it} is the level of exports, GC_{it} is the government consumption and HE_{it} is the health expenditures in each country. Thus, this specifies formally that export-oriented entrepreneurship contributes to the economic performance of countries. With equation (2), our approach enables the analysis of the impact of institutions on international entrepreneurship, and the subsequent effect on economic performance (Aparicio et al., 2016a); hence, we focus on these two equations, which are linearized according to the Wong et al.’s (2005) and Acs et al.’s (2012) appendix. Natural logarithms have been used in the variables that represent institutional factors as well as the endowments assessed in our growth model. In particular, we estimate these two equations simultaneously, using three-stage least-squares regression (3SLS) to correct for the simultaneity bias (e.g. Intriligator et al., 1996).

Thus, we use unbalanced panel data for the period 2004–2012. Our dependent variable for Eq. 1 is export-oriented entrepreneurship, which is measured at three levels: those entrepreneurs selling 0% or their output in international markets; those who ranged between 1-25% interval; and those who have more than 26% of external sales. We use information from the Global Entrepreneurship Monitor (GEM), and more specifically, from the Adult Population Survey (APS). Another dependent variable (Eq. 2) is the economic performance indicator, obtained through the GDP at constant 2005 \$US divided by the total labor force (L), which is one of the best-known proxies for economic growth. The source of data to measure this dependent variable is the World Development Indicator (WDI) of the World Bank.

The data on independent variables, specifically those that represent the institutional context, were obtained from Doing Business (private coverage to getting credit), the United Nations Development Programme (UNDP; Human Development Context), the GEM APS (opportunity recognition) and the National Experts Survey (NES; access to communication). Similarly, data on the rate of GDP growth were obtained from the World Development Indicators (WDI) database. According to Bleaney and Nishiyama (2002), some control variables should be included in the production function such as gross capital formation (K), exports (E), government consumption (GC) and health expenditures (HE), which were obtained from the WDI. The variable K is measured in constant values in 2005 \$US, E is the value of the goods and services sold abroad, whereas GC is a percentage of GDP, and HE is a percentage of government expenditure. We use the natural logarithm to estimate the two equations. The final sample has 43 countries with a regular time series (2004-2012). It should be emphasized that given the availability data regarding the Human Development Context, we match this variable with the entire sample using information from 2005-2013. Table 6.1 presents a list of the dependent and independent variables used in this study, including their sources. Our final sample consists of panel data with 258 observations and 43 countries. See Appendix 10 for a list of countries.

Table 6.1. Description of variables

Equation 1		
Dependent variable	Description	Source^a
Export-oriented TEA 0%	Number of entrepreneurs selling 0% of their output in external markets	GEM APS for the period 2004 to 2012
Export-oriented TEA 1-25%	Number of entrepreneurs selling between 1-25% of their output in external markets	GEM APS for the period 2004 to 2012
Export-oriented TEA 26-100%	Number of entrepreneurs selling between 26-100% of their output in external markets	GEM APS for the period 2004 to 2012
Independent variable	Description	Source^a
Institutional context		
Human Development Context	Human Development Index. Average achievement in three basic dimensions of human development—a long and healthy life, knowledge and a decent standard of living.	UNDP 2005 to 2013
Opportunity recognition	Percentage of individuals who answer whether they perceive good conditions to start a business where they live.	GEM APS for the period 2004 to 2012
Private coverage to getting credit	Percentage of adult population that has a least one credit by a private bank.	Doing Business for the period 2004 to 2012

Access to communications	Average value of experts perception about good access to communications for new or growing firms.	GEM NES for the period 2004 to 2012
Control variables		
Rate of GDP	GDP rate at purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. Data are in constant 2005 U.S. dollars.	WDI for the period 2004 to 2012
Age	People younger than 15 or older than 64 that are dependent of to the working-age population. The proportion of dependents per 100 working-age population.	WDI for the period 2004 to 2012
Age2	Square of people younger than 15 or older than 64 that are dependent of to the working-age population.	WDI for the period 2004 to 2012

Equation 2

Dependent variable	Description	Source ^a
Labor productivity (Y/L)	GDP value at purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. Data are in constant 2005 U.S. dollars. This variable is divided by the employment to population, which is the number of a country's population that is employed.	WDI for the period 2004 to 2012

Independent variable	Description	Source ^a
Export-oriented TEA 0%	Number of entrepreneurs selling 0% of their output in external markets	GEM APS for the period 2004 to 2012
Export-oriented TEA 1-25%	Number of entrepreneurs selling between 1-25% of their output in external markets	GEM APS for the period 2004 to 2012
Export-oriented TEA 26-100%	Number of entrepreneurs selling between 26-100% of their output in external markets	GEM APS for the period 2004 to 2012
Gross capital formation (constant 2005 US\$)	Gross capital formation (formerly gross domestic investment) consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories. Data are in constant 2005 U.S. dollars.	WDI for the period 2004 to 2012
Exports	The value of all goods and other market services provided to the rest of the world. Data are in constant 2010 U.S. dollars.	WDI for the period 2004 to 2012
Government consumption	Government current expenditures for purchases of goods and services (including compensation of employees). It also includes most expenditures on national defense and security, but excludes government military expenditures that are part of government capital formation. (% of GDP).	WDI for the period 2004 to 2012

Health expenditure	Capital spending from government (central and local) budgets, external borrowings and grants (including donations from international agencies and nongovernmental organizations), and social (or compulsory) health insurance funds. (% of government expenditure).	WDI for the period 2004 to 2012
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^a Doing Business. <http://www.doingbusiness.org/>; GEM. Global Entrepreneurship Monitor (GEM). <http://www.gemconsortium.org/>; WDI. World Development Indicators (WDI) by World Bank. <http://databank.worldbank.org/data/home.aspx>; UNDP. United Nations Development Programme (UNDP). <http://hdr.undp.org/en/data>.

6.4. Results

Table 6.2 presents the mean, standard deviation, maximum and minimum values for all countries. Table 6.3 presents the correlation matrix for the variables of the econometric model presented previously for all countries. On the one hand, Table 6.2 shows that in our sample the average of export-oriented entrepreneurship with no external sales is higher than the other levels of export intensity, as expected (González-Pernía & Peña-Legazkue, 2015). Table 6.3 also suggests relationships between the variables analyzed, which in various cases met our expectations.

Table 6.2. Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Ln export-oriented TEA 0%	257	4.370	1.114	1.099	7.365
Ln export-oriented TEA 1-25%	258	3.857	0.960	0.000	6.860
Ln export-oriented TEA 26-100%	255	3.180	0.987	0.000	5.974
Ln Y/L	258	10.409	0.982	7.671	11.751
Ln Human Development context	258	-0.195	0.113	-0.693	-0.058
Ln Opportunity recognition	258	3.491	0.541	1.048	4.449
Ln Private coverage to getting credit	202	3.677	1.010	0.336	4.605
Ln Access to communications	218	1.354	0.138	0.806	1.558
Rate of GDP	258	2.307	3.900	-17.955	12.233
Age	258	50.159	7.228	35.532	88.493
Age2	258	2567.962	850.505	1262.541	7831.001
Ln Capital	253	25.086	1.627	21.244	28.766
Ln Exports	258	3.530	0.553	2.264	5.299
Ln Government consumption	258	2.870	0.301	1.843	3.334
Ln Health expenditure	258	2.640	0.307	1.548	3.226

Table 6.3. Correlation matrix

Variables	1	2	3	4	5	6	7
1 Ln export-oriented TEA 0%	1						
2 Ln export-oriented TEA 1-25%	0.425**	1					
3 Ln export-oriented TEA 26-100%	0.347**	0.765**	1				
4 Ln Y/L	-0.397**	0.106	0.086	1			
5 Ln Human Development context	-0.374**	0.080	0.057	0.907**	1		
6 Ln Opportunity recognition	0.336**	0.251**	0.189**	-0.183**	-0.239**	1	
7 Ln Private coverage to getting credit	-0.159	0.186**	0.020	0.304**	0.375**	-0.013	1
8 Ln Access to communications	-0.175**	-0.043	-0.020	0.093	0.166	0.080	-0.076
9 Rate of GDP	0.214**	0.049	-0.023	-0.322**	-0.284**	0.374**	-0.034
10 Age	0.156	-0.001	-0.024	-0.136	-0.406**	0.300**	-0.139
11 Age ²	0.181**	-0.022	-0.041	-0.201**	-0.463**	0.287**	-0.177
12 Ln Capital	0.075	0.135	-0.093	0.317**	0.291**	-0.301**	0.213**
13 Ln Exports	-0.272**	-0.145	0.057	0.196**	0.251**	0.008	-0.038
14 Ln Government consumption	-0.185**	-0.092	-0.040	0.565**	0.481**	-0.151	0.148
15 Ln Health expenditure	-0.093	0.315**	0.271**	0.507**	0.518**	0.040	0.386**
Variables	8	9	10	11	12	13	14
8 Ln Access to communications	1						
9 Rate of GDP	0.083	1					
10 Age	0.017	0.023	1				
11 Age ²	0.048	0.049	0.985**	1			
12 Ln Capital	-0.237**	-0.041	-0.216**	-0.222**	1		
13 Ln Exports	0.202**	-0.030	-0.246**	-0.217**	-0.419**	1	
14 Ln Government consumption	-0.157	-0.361**	-0.119	-0.187**	0.158	0.055	1
15 Ln Health expenditure	0.111	-0.079	0.048	-0.000	0.184**	-0.012	0.179**

Note: ** p < 0.01.

In order to test for the problem of multicollinearity, we calculated the VIF for each individual predictor. Although 3SLS does not allow the VIF to be obtained directly, we compute this test for each equation. The VIF values are low (lower than 1.44 for equation 1 and 1.18 for equation 2). The regression analysis is presented in Table 6.4, where we report the estimated coefficients, and standard errors in parentheses for the two set of models, which were estimated through 3SLS. All of the models are highly significant (p < 0.001). The first set of models (1-3) presents the regression results for the institutional context and export-oriented entrepreneurship at all levels (Eq. 1) and the link between these variables and economic performance (Eq. 2). All of these models are estimated for all countries, and include time fixed-effects to control for the business cycle. For the purposes of regional analysis, the second set of models (4-6) presents the results for the simultaneous equations by adding interactions terms between a dummy variable representing developed countries and each institution already defined (Eq. 1), as well as interactions between a developed country dummy variable and each level of export-oriented entrepreneurship in order to explain their differentiated importance in the economic growth process (Eq. 2). Finally, following Arenius

and Minniti (2005), Weenekers et al. (2005), Langowitz and Minniti (2007) and Bleaney and Nishiyama (2002), we include control variables related to macro-economic factors in all models estimated (rate of GDP for Eq. 1; and capital, government consumption and health expenditures for Eq. 2) in order to analyze export-oriented entrepreneurship, and its effect on economic performance.

Table 6.4. Results of simultaneous equations

Equation 1.	(1)	(2)	(3)	(4)	(5)	(6)
	Ln export-oriented TEA 0%	Ln export-oriented TEA 1-25%	Ln export-oriented TEA 26-100%	Ln export-oriented TEA 0%	Ln export-oriented TEA 1-25%	Ln export-oriented TEA 26-100%
Institutional context						
Ln Human Development context	11.350* (5.285)	5.116 (5.350)	4.820 (5.791)	9.418 (7.034)	2.850 (7.088)	11.659+ (7.354)
Ln Opportunity recognition	0.302† (0.161)	0.315† (0.170)	0.456* (0.188)	0.315 (0.209)	0.404† (0.216)	0.405† (0.222)
Ln Private coverage to getting credit	0.174 (0.138)	0.329* (0.145)	0.418** (0.158)	0.479** (0.177)	0.555** (0.181)	0.705*** (0.190)
Ln Access to communications	0.660 (0.554)	1.007* (0.600)	1.657** (0.664)	0.279 (0.817)	0.789 (0.846)	1.445+ (0.883)
Control variables						
Rate of GDP	0.001 (0.015)	0.020 (0.015)	-0.017 (0.017)	-0.009 (0.016)	0.020 (0.016)	-0.026 (0.017)
Age	-0.251 (0.317)	-0.660* (0.339)	-1.030** (0.374)	0.055 (0.370)	-0.637† (0.376)	-0.647† (0.390)
Age2	0.001 (0.003)	0.005+ (0.003)	0.009* (0.004)	-0.001 (0.003)	0.005 (0.003)	0.006† (0.004)
Dummy developed countries				0.269 (3.405)	2.891 (3.479)	0.789 (3.592)
Interactions: Developed vs. Developing countries						
Ln Human Development context x Developed countries				0.535 (15.873)	1.221 (16.439)	-23.105 (16.963)
Ln Opportunity recognition x Developed countries				0.224 (0.318)	-0.192 (0.330)	0.188 (0.340)
Ln Private coverage to getting credit x Developed countries				-0.727* (0.310)	-0.479 (0.320)	-0.998** (0.332)
Ln Access to communications x Developed countries				-0.211 (1.171)	-0.318 (1.213)	-0.529 (1.258)
Constant	11.552 (8.597)	20.233* (9.080)	26.592** (10.008)	3.839 (10.414)	18.110† (10.432)	15.552 (10.793)

<i>R</i> ²	0.791	0.778	0.748	0.799	0.783	0.758
Equation 2.	Ln Y/L	Ln Y/L	Ln Y/L	Ln Y/L	Ln Y/L	Ln Y/L
Ln export-oriented TEA 0%	0.043*** (0.011)			0.031** (0.011)		
Ln export-oriented TEA 1-25%		0.026* (0.010)			0.012 (0.009)	
Ln export-oriented TEA 26-100%			0.020* (0.008)			0.019* (0.008)
Ln Capital	0.155*** (0.020)	0.157*** (0.022)	0.164*** (0.022)	0.166*** (0.020)	0.167*** (0.020)	0.163*** (0.022)
Ln Exports	0.098* (0.039)	0.088* (0.041)	0.084† (0.043)	0.095* (0.041)	0.092* (0.040)	0.085† (0.044)
Ln Government consumption	-0.057 (0.065)	-0.057 (0.065)	-0.066 (0.067)	-0.046 (0.065)	-0.057 (0.064)	-0.058 (0.068)
Ln Health expenditure	0.095*** (0.022)	0.092*** (0.023)	0.104*** (0.026)	0.096*** (0.023)	0.094*** (0.023)	0.107*** (0.027)
Dummy developed countries				1.135*** (0.104)	1.031*** (0.100)	1.068*** (0.103)
Interactions: Developed vs. Developing countries						
Ln export-oriented TEA 0% x Developed countries				-0.015 (0.012)		
Ln export-oriented TEA 1-25% x Developed countries					0.006 (0.011)	
Ln export-oriented TEA 26-100% x Developed countries						0.002 (0.010)
Constant	6.477*** (0.690)	6.545*** (0.758)	6.421*** (0.749)	5.148*** (0.625)	5.298*** (0.622)	5.332*** (0.675)
Country fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	173	174	173	173	174	173
<i>R</i> ²	0.999	0.999	0.999	0.999	0.999	0.994

Note: + p = 0.10, † p < 0.10, * p < 0.05, ** p < 0.01, *** p < 0.001 (two-tailed). Standard errors in parentheses. Dep. variable: Dependent variable.

Estimates for country and time fixed-effects dummies are not presented but can be supplied upon request.

With regard to the hypotheses testing, hypothesis 1 suggests that a higher Human Development context has a positive influence on export-oriented entrepreneurship; however, this relationship is not as strong in developed countries as it is in developing countries. Most of the models reveal a positive and significant influence of this variable on export-oriented entrepreneurship, partially supporting hypothesis 1. Although the

interaction term of developed countries and Human Development context in models 4-6 is not statistically significant, the relationship estimated in Model 4 and Model 5 is expected. Based on this result, it is possible to infer that the human development context is a favorable mechanism to enhance the local market and socioeconomic conditions, which reduces at the same time the uncertainty confronting those entrepreneurs contemplating international opportunities (Hessels & Parker, 2013). In spite of the evidence about the importance of socioeconomic conditions for export-oriented entrepreneurship presented in the extant literature (Amorós et al., 2012; Chowdhury et al., 2015b; Gittins et al., 2012; Hessels & Parker, among others), our results may suggest that, in addition, independent of the development stage of each country, the human development context matters for international entrepreneurs.

Regarding the second institutional variable, hypothesis 2 suggests that opportunity recognition has a positive influence on export-oriented entrepreneurship; however, this relationship is stronger in the context of developed than in developing countries. This hypothesis is partially supported by our data, in line with the literature; the capacity to perceive opportunities increases the rates of international entrepreneurship (Ciravegna et al., 2014; Kontinen & Ojala, 2011). All models (except model 4) show that opportunity recognition has a positive and significant influence on export-oriented entrepreneurship in all countries. This variable is not statistically significant in model 4, but the causal relationship is expected. This might imply that, after controlling for different groups of countries, the ability to recognize new opportunities is highly significant for those entrepreneurs pursuing international markets. This idea is confirmed through models 1-3, which show that the significance of this institutional variable increases for those entrepreneurs with a higher portion of external sales. This idea is consistent with Cadot et al.'s (2013) finding that the performance of international entrepreneurship depends on the ability to perceive opportunities, enhancing at the same time the capacity to increase the markets of costumers and suppliers. Similar to the previous hypothesis, we do not find significant differences between groups of countries through the interaction effect. Although Nowiński and Rialp (2013) argue that less developed countries may present barriers to increasing the number of international entrepreneurs, resulting in diminished opportunities to recognise opportunities, the opportunity recognition is still a meaningful tool required to undertake new projects at both the local or international level no matter the type of country (Alvarez et al., 2013; Chandra et al., 2015; Grégoire et al., 2010; Rezvani et al., 2014). The negative interaction found in model 5 may suggest that the number of international entrepreneurs with less than 25% of external sales is higher in developing economies than in developed ones, when opportunity recognition is varying. As Hausmann et al. (2007) and Bahar et al. (2014) find, this difference could be attributable to the propensity for less developed countries to exhibit lower levels of export diversification, and therefore production is oriented towards the local market. By contrast, developed countries tend to

have products with higher complexity and level of innovation, implying a longer duration is required to identify new opportunities and enlarge the export basket (Hausmann et al., 2007).

Hypothesis 3 posits that access to bank credit has a positive influence on export-oriented entrepreneurship, and that the relationship should be stronger in the developing rather than in the developed country context. The hypothesis is highly supported by our results. Models 2-6 show a positive effect of access to bank credit on international entrepreneurship in all countries, and in developing ones the difference is significantly greater than in the developed economies. The magnitude of model 3 (without interactions) and model 6 (with interactions) is higher than in models 1-2 and models 4-5, respectively. As Gnyawali and Fogel (1994) and Van Auken (1999) suggest, access to financial resources is one of the most important elements for entrepreneurial activity, especially if the entrepreneurship is pursuing overseas markets characterized by greater uncertainty. As Fan and Phan (2007) and Jinb et al. (2015) find, our results suggest that by mitigating financial barriers in developing countries, it is possible not only to increase the number of international entrepreneurs, but also their performance, since there is strong support from the government and banking sector to provide available resources needed to negotiate the higher uncertainty characteristic of international markets. As Wang (2012) and Rock and Ahmed (2014) point out, China and Chile have implemented public strategies to overcome financial barriers, and have been rewarded by a higher number of small firms with better export performance.

Regarding the last institutional variable, hypothesis 4 suggests that access to communication has a positive influence on export-oriented entrepreneurship and that this relationship should be stronger in the context of developing than in developed countries. This hypothesis is partially supported by our data. In accordance with the literature, the infrastructure and specifically access to communication encourages the rates of international entrepreneurial activity (Audretsch et al., 2015c; Padilla-Pérez & Gaudin, 2014). Even though the interaction term is not statistically significant, the relationship is the expected one. Models 3, 4 and 6 show that this variable has a positive and significant influence on entrepreneurship with more than 26% of international sales in all countries. Similar to hypotheses 1 and 2, the statistical insignificance of the interaction term suggests that the competitiveness efforts (e.g. highways, railways, electricity, telecommunications, etc.) are effective no matter the country or the development context. Public policies oriented to stabilize the prices generated by the infrastructure improvements could enhance the performance of small firms pursuing international markets (Eslava et al., 2013). Contrasting this idea with our findings may suggest that better telecommunications infrastructure is the most effective tool needed to increase the competitiveness of those international entrepreneurs with a higher portion of external sales.

The last hypothesis analyzed in this chapter proposes that economic performance is positively influenced by export-oriented entrepreneurship and that the relationship is

stronger in the context of developing than in developed countries. We find that export-oriented entrepreneurship at all levels has a positive effect on economic performance. Although the interaction terms in models 4, 5 and 6 are not statistically significant, the relationship found in Model 4 have the expected sign. These findings are consistent with the literature, since the effect of entrepreneurial activity without international sales is marginally higher in developing countries (Aparicio et al., 2016a; Hessels & van Stel, 2011). According to De Clercq et al. (2008), a positive and significant effect of export-oriented new ventures on economic growth means that the country is generating a fertile context to transfer the knowledge spillovers across industries. Similar to Cadot et al. (2013), one of the success factors of international firms is that they share similar market connections, as well as specific knowledge to adapt to those overseas markets. Similarly, Aparicio et al. (2016b) emphasize the importance of innovative entrepreneurs orientation toward international markets for long-term economic growth. Comparing our results with Hessels and van Stel's (2011), the coefficients have been remarkably stable between the two samples of countries. While Hessels and van Stel (2011) find that the effect of export-oriented new ventures on economic growth is equal to 0.048 ($p < 0.05$), our findings indicate that export-oriented entrepreneurship has a positive influence of $\beta_1 = 0.026$ ($p < 0.05$; Model 3) or $\beta_1 = 0.019$ ($p < 0.05$; Model 6) on economic performance. These results, in effect, enable us to clarify the relative importance of this type of entrepreneurial activity to obtain higher growth rate across countries, which may suggest that specialized entrepreneurial activity, affected by certain institutions, is also needed to enhance economic development.

6.5. Discussion

The extant literature on international entrepreneurship has explored different drivers of export-oriented entrepreneurial activity, recognizing at the same time that institutions are highly relevant for entrepreneurship development, which in turn is positively associated with economic performance (Terjesen et al., 2016). According to Voigt (2013), the challenge is to identify and quantify those institutional mechanisms that are related to the endogenous factor explaining economic growth. Drawing on this, our specific results may enhance the understanding of a macro-level analysis of institutions, international entrepreneurship, and economic performance. In particular, this chapter makes five contributions to the entrepreneurship literature. First, we identify for all countries that an adequate development environment is required to encourage international entrepreneurial activity. Our findings might suggest that the development context concerning the quality of life and standard of living generates an entrepreneurial environment for those individuals who perceive the opportunity to create an international new venture. Regarding the differences between groups of countries, although there is no statistical significance, it may be that the development stage matters in those emerging economies that are developing in terms of standard of living (Carree et al., 2002, 2007). Following Gnyawali and Fogel (1994), this

development context provides social stability, in which education, health insurance, perfect markets (accurate prices and guaranteed quantities), and increasing levels of income are generated for and by all society. Second, our findings emphasize that the ability to perceive the opportunities is important in all country contexts, which implies that a long-term policy of education, experience acquisition and entrepreneurial culture should be implemented. In line with Alvarez et al. (2013) and Chandra et al. (2015), a context where different actors (consumers and suppliers) constantly interact is primarily the result of trust and reasoning, and second, has an element of building up the ecosystem needed to create opportunities in international markets. Third, as has been found in the literature, the effect of access to bank credit on export-oriented entrepreneurship in developing countries is greater than in the context of development countries, suggesting that the banking system is an important element of international entrepreneurial development in these economies, which provides support for entrepreneurs and SMEs. Thus, increasing export intensity implies higher access to the bank system to implement the economic activity. Fourth, access to communication is important to entrepreneurs in foreign markets, where communication is relevant to expand the new venture (Audretsch et al., 2015c; Padilla-Pérez & Gaudin, 2014).

The fifth contribution concerns the link between export-oriented entrepreneurship and economic performance, where our findings are highly suggestive. Surprisingly, the effect of local oriented entrepreneurship is higher than entrepreneurial activity with external sales. This may suggest that once the entrepreneurs access international markets, they must compete and face greater uncertainty (De Clercq et al., 2008), and therefore, disadvantages arise against export-oriented entrepreneurship. These results, however, are similar in terms of magnitude to the findings of Hessels and van Stel's (2011), in that export-oriented entrepreneurship has a lower effect on economic performance than does domestic entrepreneurship. Therefore, we could infer that entrepreneurship (internal or external oriented) has an important role in promoting economic development, on which institutional endowment is an important factor. As De Clercq et al. (2008) conclude, export-oriented entrepreneurial activity is one missing link in converting knowledge as an implicit factor into the growth process; therefore, spillovers could be generated to spur economic development.

In spite of this desirability, it is important to understand the contexts, such as socio-political issues, poverty and unofficial economy (Bruton et al., 2013; Kim & Li, 2014) confronting mainly developing countries. With regard to these issues, our findings suggest that particular strategies that are related to those significant institutional variables have a positive impact on export-oriented entrepreneurship (directly) and economic growth (indirectly). Regarding financial assistance, not only removing credit constraints but also improving and increasing financial sources could be significant strategies for entrepreneurship development in all countries. In this regard, access to credit needs to overcome internal problems, such as unemployment and underemployment, as Alvarez and Urbano (2011) suggest. Uncertainty caused by social conditions generates distrust in the financial system, diminishing its

potential contribution in spurring entrepreneurial activity, according to Stiglitz and Weiss (1981).

The financial system is crucial to providing sufficient tools needed by entrepreneurs, who are constantly in pursuit of opportunities. Therefore, an ecosystem of entrepreneurship is required within each developing country in order to motivate the permanent generation of ideas (Acs et al., 2014). According to these authors, every government at the regional and the national levels should pay attention to the systems of entrepreneurship, which are fundamentally networks that are driven by individual-level opportunity pursuit, allowing the creation of new firms either internally or externally oriented. Furthermore, those policies to promote entrepreneurship should extend the vision to achieve long-term results mostly in developing countries. Therefore, financial goals can be included in the picture as long as the organization has an influence on the economy and society. Thus, growth, as well as development results, might be derived from increasing and promoting, through a higher financial system structure, sustainable entrepreneurship in all economies (Ansari et al., 2012).

Finally, one particular strategy focused on non-financial assistance, such as the infrastructure, which should contain elements of distribution (entrepreneurs with markets), communication (entrepreneurs with information) and networks (entrepreneurs with other entrepreneurs, government, education system, civil society, etc.), is highly recommended for all countries, but particularly for emerging economies, which have only an impoverished infrastructure. This entrepreneurial infrastructure and its outcomes should be regulated by country-specific institutional characteristics in order to achieve higher outcomes in terms of growth and welfare (Padilla-Pérez & Gaudin, 2014). According to Audretsch et al. (2015c), the infrastructure is a source of competitiveness, in which entrepreneurs participate through the development of new products and services, and are constantly searching for new (international) markets.

To achieve an increased network, useful for the value chain of new international ventures, it is important that governments in developed and developing countries guarantee and regulate, in favor of households and businesses, the communication infrastructure, which involves broadband, phone and mobile services, among others. With this in mind, some literature is discussed in Padilla-Pérez and Gaudin (2014), who found through various papers that analyzed the importance of communication in some countries of Central America, which have paid attention to entrepreneurship and innovation as key elements for economic growth.

The governments, the education system, the financial infrastructure, the productive sectors and the civil society must constantly interact to achieve a better performance in terms of increasing the number of international entrepreneurs and hence achieving higher levels of inclusive economic growth. In this context, Ács et al. (2014) propose an index of national

systems of entrepreneurship, which contains the capacity to identify the components that compose the systems, the factors that discourage their performance and the contextualization in which the entrepreneurial systems are embedded. The authors suggest that national systems of entrepreneurship could complement the national systems of innovation. In this regard, it is possible to identify a loop between innovative ideas based on knowledge and their subsequent transformation into a new international venture.

6.6. Conclusions

In this chapter, unbalanced panel data (for the period 2004–2012) were used to investigate empirically the links between institutional context, export-oriented entrepreneurship, and economic performance. Using the conceptual framework of institutional economics, we analyzed the influence of institutions (Human Development context, opportunity recognition, private coverage to obtain credit and access to communication) on international entrepreneurship (with 0% of external sales, between 1-25%, and 26-100% of international sales), which at the same time allows the achievement of economic growth.

The research generated two key results. First, there is evidence of a relationship between institutional variables and export-oriented entrepreneurship. This follows the recent results of entrepreneurship research, which suggest that institutions play a key role in explaining entrepreneurial activity at an international level (Álvarez et al., 2014). Here, our results have suggested that most of the environments proposed by Gnyawali and Fogel (1994) have a significant impact on export-oriented entrepreneurship in all countries. In this case, entrepreneurship related to international markets responds to the institutional context (social and economic conditions, entrepreneurial and business skills, financial assistance and non-financial assistance). Furthermore, we found a positive relationship between export-oriented entrepreneurial activity and economic growth. In particular, internal and export-oriented entrepreneurship are found to encourage economic growth. These results suggest that entrepreneurship could be a key factor in achieving growth. Therefore, it is important that policymakers aim toward strategies that encourage entrepreneurial activity in each country. Second, by joining the two sides of entrepreneurship research discussed by Carlsson et al. (2013), it is possible to suggest that institutions encourage the different types of entrepreneurship required to foster economic growth. Although Terjesen et al. (2016) find a vast literature analyzing those drivers of international entrepreneurship and its related effects, they claim that there are few studies shedding light on the causal chain at the country level, which is necessary for policy discussion. In this regard, our findings may provide some insights to understanding those institutional mechanisms affecting economic growth through international entrepreneurship.

Finally, some limitations regarding the sample size (especially for developing countries), and static analysis must be emphasized. Other datasets could provide a larger sample for both

heterogeneous as well as specific groups of countries over longer periods of time, which allow more precise estimators to be obtained through dynamic analysis. The promise that additional instruments should be considered encourages the possibility of extending the objective presented in this chapter, by exploring and including additional institutional factors into the export-oriented entrepreneurship equation. In that context, it is possible to follow the studies by Aidis et al. (2008), Bruton et al. (2009), Bruno et al. (2013) and Urbano and Alvarez (2014), in order to analyze how other types of institutions could also encourage entrepreneurial behaviour and therefore generate higher economic growth rates.

Chapter 7

Social Progress Orientation, Entrepreneurship, and Inclusive Growth: An Empirical Analysis

7. Social Progress Orientation, Entrepreneurship, and Inclusive Growth: An Empirical Analysis

7.1. Introduction

As it was stated in previous chapters, due to the current importance of entrepreneurship for society, many scholars have raised a debate as to whether entrepreneurial activity should be encouraged no matter what the type (Acs et al., 2016; Welter et al., 2016). On the one hand, there are works suggesting that only productive entrepreneurship should be placed at the core of public strategies, since otherwise its long-term effects on job creation and development might be diminished (Arshed et al., 2014; Shane, 2009). On the other hand, other scholars claim that real development and inclusion may be achieved through entrepreneurship, which is shaped by the context in which an entrepreneur makes decisions. In this sense, Blackburn and Ram (2006), Bruton et al. (2013, 2015) and McMullen (2011), among others, argue that inclusive outcomes can be accomplished if institutions are aligned to the type of entrepreneurial activity performed within each country. For instance, Bruton et al. (2012), De Castro et al. (2014), and Webb et al. (2013) suggest that many developing countries suffer unofficial entrepreneurship, which might be considered as an alternative mechanism to reducing poverty and creating inclusive processes.

Even though this may happen, there is still a lacuna regarding whether institutional disparities explain uneven outcomes across regions and countries through different types of entrepreneurship. In this regard, North (2005) suggests that the development differences between developed and developing nations may be supported by the notion of intentionality toward progress. Accordingly, those societies with higher intentions tend to be open, while those countries with fewer intentions present limited performance. In this respect, the final outcome (economic growth and development) is explained through the causal chain running from fundamental determinants (intentions -institutions), proximate determinants (e.g. entrepreneurship), and economic growth and development (North & Thomas, 1973). Similar ideas have been posited to underline the importance of institutions for entrepreneurship, which in turn, affect economic outcomes (Baumol & Strom, 2007). Hence, those factors framed by institutional economics have been considered a promising and useful approach for the study of entrepreneurship (Bruton et al., 2010; Thornton et al., 2011).

North (1990, 2005) distinguishes between formal and informal institutions. The formal ones are commonly known as laws or regulations, whereas informal institutions are seen as values, beliefs, and so on. In the light of this approach, we use the concept of social progress orientation (SPO), which is a value beyond economic terms that promotes social welfare and represents the intentionality of a society (Urbano et al., 2016). Societies oriented toward social progress may provide an adequate climate for the deployment of an individual's full potential. In this sense, we could consider SPO as an informal institution. In that regard,

Stephan and Uhlaner (2010) find that a socially supportive culture, in contrast to a performance-based society, encourages independence-based entrepreneurship, which is associated by Reynolds et al. (2005) with entrepreneurial activity driven by opportunity (TEA OPP). Others such as Naudé et al. (2013, 2014) and Urbano et al. (2016) find that subjective well-being and life satisfaction promote entrepreneurship driven by innovation (TEA INNO) and opportunity, which in turn could positively affect the economic development level (Carlsson et al., 2013).

Although institutions have generally been associated with economic development (Acemoglu & Robinson, 2012; North, 1990), since the early 2000s some scholars have suggested that institutions condition the endogenous factors instead of impacting directly on the development and inclusive process (Acemoglu et al., 2014; Rodrik, 2003). In that sense, entrepreneurial activity may be one of those endogenous factors affecting economic outcomes (Ács et al., 2014; Audretsch et al., 2008), which embrace vulnerable communities (Bruton et al., 2013; McMullen, 2011). Nonetheless, the literature presented above suggests that the variables influencing TEA INNO and OPP, and the sequence linking these two factors with inclusive growth and economic development are generally analyzed in isolation (Aparicio et al., 2016a; Block et al., 2017; Bruton et al., 2013; van Praag & Versloot, 2007).

Thus, the objective of this chapter is to examine how SPO affects inclusive growth through innovative and opportunity entrepreneurship, which may be a proxy for economic development. Because of the interaction and interdependence involving SPO, TEA INNO and OPP, as well as inclusive processes, a unidirectional model would lead to biased results. For that reason, we consider simultaneously the impact of SPO on entrepreneurial activity and that of this variable on economic growth, which reduces the poverty levels. The virtue of this approach is not only in the correction of the statistical bias. By explicitly instrumenting innovative and opportunity entrepreneurship in a second equation, we are able to analyze how policy could actually influence economic development by generating more entrepreneurial activity based on innovation and opportunity recognition. With this three-equation approach, we implicitly link the two disparate kinds of literature presented above and provide evidence on how entrepreneurship might reduce the poverty level by generating economic growth.

Estimating these three equations through a three-stage least-square (3SLS) method and using unbalanced panel data with information for 2002, 2006 and 2011 from the Global Entrepreneurship Monitor (GEM), and World Development Indicators (WDI); as well as information for 2000, 2005 and 2010 from the Indices of Social Development (ISD), we provide empirical evidence of the impact of civic activism, voluntary spirit and interpersonal safety and trust as a measure of SPO on entrepreneurship driven by innovation and opportunity, and the impact of these variables on inclusive growth. By introducing the concept of SPO and examining its impact on TEA INNO and OPP, and subsequently on economic growth and poverty, these findings advance the application of the institutional

approach to the study of the determinants of entrepreneurship driven by innovation and opportunity, and economic development in an integrative manner. In addition, this research combines the traditional approach to progress based on economic development (Engelbrecht, 2014; Porter, 2013; Stiglitz et al., 2009) with the SPO through entrepreneurship driven by innovation and opportunity.

After this introduction, the chapter is structured as follows. In section 2, we discuss the theoretical framework, which is based on an institutional approach and the link between entrepreneurship and inclusive growth. In section 3, we present the data and the model. Results and discussion are presented in section 4. Finally, section 5 concludes and highlights the future research lines.

7.2. Conceptual framework

7.2.1. Understanding the relationship between social progress orientation and entrepreneurship

As mentioned before, Schumpeter (1911) gave entrepreneurship a capital role for the understanding of how the economic system works. That mechanism is driven by entrepreneurs with an inseparable and embedded innovative component. The innovations implemented by the entrepreneurs within the markets produce disturbances that lead to new path dependency producing economic development. In that context, entrepreneurship driven by opportunity is predominantly found in countries characterized by the innovation-driven stage, such as Nordic countries, Western European countries and English-speaking countries (Amorós & Bosma 2014). Similarly, these countries are traditionally associated with a high level of social progress. Although the traditional approach to social progress is GDP-oriented, a more people-centered perspective is gaining momentum among international bodies and scholars (Alkire & Santos, 2010; Engelbrecht, 2014; Rojas, 2011; Stiglitz et al., 2009; Porter, 2013). In that regard, the World Bank (WB), with the World Development Indicators (WDI), and the United Nations Development Programme (UNDP), with the Human Development Index (HDI), have devised measurements that consider social outcomes other than GDP such as poverty, inequality, education and health care, among others. A similar approach is followed by Porter (2013), who devised the Social Progress Index to measure the social progress of countries. The index is formed of three dimensions: basic human needs, (nutrition, basic medical care, water and sanitation, shelter and personal safety), foundations of well-being (access to basic knowledge, communication and information, good health and ecosystem sustainability) and opportunity (personal rights, freedom of choice, tolerance and inclusion and access to advanced education).

The reviewed literature shows that alternatives to GDP consider a broad range of outcomes when it comes to defining and measuring social progress; however, our research considers social progress orientation (SPO) as a value beyond economic terms that promotes social

welfare. The relationship between SPO and entrepreneurship that is driven by innovation and opportunity can be understood through the institutional approach (North 1990, 2005). According to North (1990, 2005), the institutional framework can be classified in terms of formal institutions (set of rules, laws, procedures, regulations and constitutions) and informal institutions (set of values, taboos, customs, beliefs and attitudes embedded in a society commonly known as culture). Building on North, Scott (1995) suggested that institutions are formed by three elements or pillars (regulative, normative, and cultural-cognitive) that, combined with activities and resources, provide meaning to social life and can explain current behavior. These institutions act as constraints of social interaction and thus provide incentives and opportunities for economic development (Kwon & Yi, 2009) that would otherwise not exist (Hodgson, 2006, p. 2). Drawing from this approach some authors suggest that institutional factors determine entrepreneurial activity (Aidis et al., 2008; Bruton et al., 2010; Hayton et al., 2002; Salimath & Cullen, 2010; Thornton et al., 2011; Welter, 2005). Others suggest that procedures for starting a business affect entrepreneurship negatively (van Stel et al., 2007), and that risk-taking and creativity encourage entrepreneurial behavior (Alvarez & Urbano, 2012). If we focus on informal institutions, some authors probe the cultural dimensions⁷ affecting entrepreneurship (Aidis et al., 2008; Davidsson & Wiklund, 1997; McGrath, 1992; Shane, 1993, 1995; Thomas & Mueller, 2000; Wennekers et al., 2007). Therefore, it is in informal institutions where SPO is embedded.

As mentioned before, our research considers SPO as a value beyond economic terms that promotes social welfare. In that sense, postmaterialism (Inglehart, 1977, 1990) puts a similar emphasis on values beyond material terms. Postmaterialism addresses the cultural change toward values beyond material and economic goals that post-industrial societies have set in the last decades. This shift from traditional survival values to secular values of self-expression is known as the development sequence (Inglehart & Baker, 2000). As economic development takes place, modern societies give more attention to the quality of life, non-monetary well-being (health care and public education), freedom of choice and association (Inglehart & Welzel, 2005). The relationship between postmaterialist values and entrepreneurship has been explored by few researchers (Morales & Holtschlag, 2013; Uhlaner & Thurik, 2007). This relationship is found to be pervasive, meaning that postmaterialist values affect entrepreneurship negatively (Uhlaner & Thurik, 2007). Nevertheless, taking into account the different stages of development among countries, some questions remain open, especially when it comes to differentiating between the underlying motivations behind the entrepreneurial activity. Previous research has shown that as development rises from a certain level, so does opportunity and innovative entrepreneurship. This pattern is characterized by a U-shaped relationship and suggests that development offers more opportunities for entrepreneurs (Carree et al., 2002, 2007;

⁷ As defined by Hofstede (1980, 2005): "Individualism vs. Collectivism"; "Power Distance"; "Masculinity vs. Femininity"; "Uncertainty Avoidance"; and "Long Term Orientation".

Wennekers et al., 2005; Urbano et al., 2016). Accordingly, entrepreneurship that is driven by innovation and opportunity is predominant in countries that are in the innovation-driven stage of development and have higher rates of subjective well-being (Amorós & Bosma, 2014; Baron et al., 2012). In that sense, some researchers, such as Naudé et al. (2013, 2014), suggest that entrepreneurship can be boosted by subjective well-being and life satisfaction since individuals can deploy more innovative potential when survival needs are satisfied. Others, such as Stephan et al. (2016) and Stephan and Uhlaner (2010), find that a socially supportive culture, as opposed to a performance-oriented culture, can encourage entrepreneurial activity. Socially supportive cultures reflect a set of values related to a more human-centered orientation (encouragement and rewards for being fair, altruistic, generous, caring and kind to one another) (House et al., 2004).

A similar approach was developed by the International Institute of Social Studies (ISS) of the Hague, part of Erasmus University, with the Indices of Social Development (ISD) in 2011⁸ to track the informal institutions that promote human and social development. These informal institutions are measured through six dimensions (Foa & Tanner, 2012; van Staveren et al., 2014; Webbink, 2012): civic activism, clubs and associations, intergroup cohesion, interpersonal safety and trust, gender equality and inclusion of minorities. Therefore, some of these dimensions could be elements of social progress orientation (Urbano et al., 2016). Civic activism refers to the social norms that enable greater citizen participation in public decisions, media, and social movements such as protests and negotiations. The mechanism behind the civic activism that promotes entrepreneurship can be addressed through institutional entrepreneurship, which is considered an important stream of research (Bruton et al., 2010). Following this stream, institutional entrepreneurship is defined as the social movements that create new forms of organizations in order to solve social problems (Dees, 1998; DiMaggio, 1988; Rao et al., 2000). These social problems are market failures and also constitute a source of opportunities for institutional entrepreneurs/activists that can mobilize resources to fulfill these underserved needs through new forms of organization (Rao et al., 2000, p. 238-239). Building on that stream of research, the social entrepreneurship literature describes new forms of organization as opportunity-exploitation startup processes triggered by the recognition of a social disequilibrium (Martin & Osberg, 2007). Other defining elements of social entrepreneurship are its innovative nature and its capacity to add value as the ultimate goal (Austin et al., 2006; Mair & Martí, 2006). Given that, we propose the following hypotheses:

Hypothesis 1: Social progress orientation positively affects entrepreneurial activity.

Hypothesis 1a: Civic activism positively affects entrepreneurship.

⁸ The methodology of these indices is matching percentiles; further details can be found in Foa and Tanner (2012). <http://www.indsocdev.org/resources>.

The voluntary spirit (VOL) to engage in community membership could also be seen as a dimension of social progress orientation and therefore influence entrepreneurial activity. Similarly, the clubs and associations of ISD are defined as the community ties that act as a safety net for the poor by facilitating economic and social assistance. Social ties and connections, such as those found within families and local communities, help individuals to survive. Given the definition of voluntary spirit, it is possible to link this dimension with the social capital approach. The existing literature recognizes the positive impact of social capital on entrepreneurial activity (Aldrich & Kim, 2007; Davidsson & Honig, 2003; Kim & Kang, 2014; Lee, 2012; Schulz & Baumgartner, 2013; among others). According to Casson and Della Giusta (2007), the role of social capital in entrepreneurship can be analyzed in terms of the entrepreneurship process. This stepwise process is composed of opportunity seeking, resource mobilization and market organization. The first step, opportunity seeking, is highly influenced by information gathering. Entrepreneurs with access to social capital (clubs, associations, informal networks, and other meetings) can also gain access to information about business opportunities and thus exploit them (Bauernschuster et al., 2010). In the same vein, Kwon et al. (2013) find empirical evidence for this virtuous feedback loop, which is propelled by the enhanced flow of information among potential customers, entrepreneurs and partners. A similar logic can be applied for resource mobilization, where the trust gained through social capital is key for the acquisition of the financial, tangible and intangible resources that entrepreneurs otherwise cannot possess (Aldrich & Martinez, 2001; Liao & Welsch, 2005). Finally, when an entrepreneur tries to access the market, social capital is shown to be a valid conduit for transforming opportunities into innovative products (Alvarez & Busetniz, 2001; Anderson et al., 2007). For each one of the steps of the entrepreneurship process, social capital is shown as a factor promoting entrepreneurship. Others find that the social capital in high-tech and innovative sectors (Anderson et al., 2007; Sorenson, 2003) is especially determinant. Thus, given the suggested link between innovation and opportunity entrepreneurship, we propose the following hypothesis:

Hypothesis 1b: Voluntary spirit positively affects entrepreneurship.

The capacity to accept cultural diversity could also be seen as a dimension of social progress orientation. Therefore, the interpersonal safety and trust account for the capacity of acceptance of diverse groups and cultures. This type of entrepreneurship is found in communities that share a common cultural heritage or origin where social interrelations influence behavior and economic transactions (Aldrich & Waldinger, 1990; Zhou, 2004). Generally, ethnic entrepreneurs are characterized by an integrative social component, which includes trust and solidarity (Portes & Zhou, 1992). This integrative social component can be found in environments characterized by ethnic diversity and it attracts human capital, which in turn encourages creativity, innovativeness, long-term investment decisions and entrepreneurship (Florida, 2002; Lee et al., 2004; Turok, 2004). Existing qualitative literature suggests that ethnic diversity brings new perspectives into the entrepreneurship

process, especially into opportunity seeking (Nijkamp et al., 2010; van Delft et al., 1999; Ram & Jones, 2008). Empirical studies also find a positive impact of group associations on entrepreneurship because of the different perspectives brought to the stage of opportunity seeking. In that sense, Levi (2007) finds that ethnic minorities are more likely to engage in entrepreneurship than their UK correspondents thanks to a better level of education, skills, different perceptions of opportunities and attitudes toward new business activity. Other empirical studies link ethnicity, cultural diversity, interpersonal safety and trust with superior proactive entrepreneurship (Pathak & Muralidharan, 2016; Nathan & Lee, 2013), innovative start-ups (Audretsch et al., 2010) and opportunity entrepreneurship (Alvarez & Urbano, 2013). Thus, we propose the following hypothesis:

Hypothesis 1c: Interpersonal safety and trust positively affect entrepreneurship.

7.2.2. Entrepreneurship as a mechanism to link SPO and inclusive growth

The relationship between entrepreneurship and economic development has been widely studied in the literature (Acs & Szerb, 2007; Acs et al., 2012; Ács et al., 2014; Audretsch et al., 2008, among others). However, as Aparicio et al. (2016a,b), Wennekers et al. (2005) and Wong et al. (2005) discuss and suggest, more empirical recent evidence is needed given the fluctuations of GDP across countries. Thus, entrepreneurship (especially that based on innovation and opportunity) still attracts the attention of many scholars from different disciplines (Coad et al., 2016; Segarra & Teruel, 2014; Thornton et al., 2011). According to Carlsson et al. (2013), it is argued that entrepreneurship is a factor that mediates the development process. Therefore, the study of entrepreneurship comprises two streams; namely, the antecedents and consequences of entrepreneurial activity. One stream of entrepreneurship research is focused on exploring its determinants. The previous section above tried to explore the institutional factors that determine entrepreneurship.

However, the question of how the role of entrepreneurship driven by innovation and opportunity not only in economic growth but also in economic development still remains (Aparicio et al., 2016a; Dean & McMullen, 2007; Wong et al., 2005). The answer of this might lead to explore the new firms' capacity to create and spark knowledge at the same time into society (Acs et al., 2012). Indeed, Audretsch and Keilbach (2008) and Acs et al. (2012) suggest that entrepreneurship could be a vehicle for transferring knowledge to the economy and, thus, creating social value.

Rodrik (2003) suggests that to achieve economic development it is important to take into consideration three components: 1) endogenous factors, which contain the determinants that are directly related to economic growth, 2) partly endogenous factors, which could interact to affect economic growth (i.e. institutions), and 3) exogenous factors which consist of geography and natural resources. The positive interrelationship between these components could be reflected as a dynamic of economic development. As we have

mentioned, entrepreneurship has been assessed as an endogenous factor in economic growth, which is a necessary condition for development.

In the field of economic growth, Romer (1986) includes a variable of knowledge in the neo-classical production function. Likewise, Aghion and Howitt (1992) and Romer (1990) suggest an endogenous growth model, which contains both knowledge and innovative entrepreneurs generating higher economic development through creative destruction. Nevertheless, other authors suggest that a “chain” may exist that links institutions to economic growth throughout entrepreneurial activity (Agarwal et al., 2007; Audretsch, 2007; Audretsch & Keilbach, 2008; Noseleit, 2013; Urbano & Aparicio, 2016). McMullen (2011) suggests that an innovation process may be achieved if the institutions encourage individuals to pursue innovative initiatives. According to this author, it is possible to generate inclusive growth through entrepreneurship, which in turn is affected by the institutional environment. Similar literature argues that innovative projects are the key to solving the poverty puzzle. Hall et al. (2012) and Khavul and Bruton (2013) highlight the importance of innovation and entrepreneurship as a recipe to include all society into the economic system. Drawing on this literature, we propose the following hypothesis:

Hypothesis 2: Entrepreneurial activity positively links SPO and inclusive growth.

7.3. Data and methods

As we noted before, this chapter examines how social progress orientation (SPO) through innovative and opportunity entrepreneurship affects inclusive growth, which may be a proxy for economic development. The specification of a growth function assumes implicitly that entrepreneurial activity is exogenous. However, as we mentioned in previous chapters, entrepreneurship needs to be endogenized. In this regard, Carlsson et al. (2013) suggest that future studies in this research field should consider the factors that affect entrepreneurial activity and its role in socioeconomic outcomes. By simultaneously treating entrepreneurship and economic growth, it is possible to overcome the endogeneity problem between these two variables (Acs et al., 2012; Audretsch et al., 2008; Urbano & Aparicio, 2016). Taking this into account, we specify a set of equations that enable us to understand the causal chain running through SPO, entrepreneurship and inclusive growth. Hence, the first equation considers this recursive structure explicitly as well as other control variables that affect entrepreneurial activity. Namely, the equation of entrepreneurship (E_i) takes the form:

$$E_{it} = f(CVA_{it}, VOL_{it}, IST_{it}, v_{it}) \quad (1)$$

where CVA_{it} , VOL_{it} and IST_{it} are vectors that collect information about civic activism, the voluntary spirit and the interpersonal safety and trust, respectively, that are used as proxies of SPO and v_{it} is the controlling vector that influences entrepreneurial activity in country i at

the period t (i.e. 2000, 2005 and 2010). The vector of control is referred to the level of income per capita, population aged between 15 and 64 years old, unemployment and the growth rate of GDP per capita. In this regard, variables that capture demographic as well as economic characteristics allow capturing of the unobserved heterogeneity among countries (Carree et al., 2007; Galindo & Méndez, 2013).

To specify the sequence from SPO, entrepreneurship and economic development, an augmented production function that includes an explicit measure of entrepreneurship that is driven by innovation and opportunity is estimated. By drawing on this, we are able to assess the impact of SPO on entrepreneurship on the one hand, and the impact of this last variable on economic development on the other. The second equation is a Cobb-Douglas function of the form:

$$Y_{it} = \alpha E_{it}^{\beta_1} K_{it}^{\beta_2} L_{it}^{\beta_3} GC_{it}^{\beta_4} P_{it}^{\beta_5} HE_{it}^{\beta_6} \quad (2)$$

where Y_i is the economic outcome of country i , measured as GDP, E_{it} represents its endowment of entrepreneurship (by innovation, opportunity and necessity, for comparison reasons), K_{it} , L_{it} , GC_{it} , P_{it} , and HE_{it} are country i 's endowment of capital, labor, government consumption, population, and health expenditures, as control variables in production function, respectively, at 2002, 2006, and 2011. Hence, this specifies formally that entrepreneurship could impact on the economic development of countries dynamically. Through Eq. (2), it is possible to extend the models presented by Audretsch and Keilbach (2004a,b,c, 2005) and Audretsch et al., (2008) who emphasize that entrepreneurship is a conduit for the effects of institutions on economic development.

Although McMullen (2011) and Bruton et al. (2013) have suggested that entrepreneurship, influenced by institutions, serves to reduce poverty and generates inclusive growth, there is no literature that quantitatively examines such statements. In fact, few works have empirically approached inclusive economic outcomes. In this sense, following Berdegué et al. (2015), we estimate a third equation in order to capture the indirect effect of entrepreneurship on poverty, which is mediated by economic growth. The equation is as follows:

$$P_{it} = f(Y_{it}, z_{it}) \quad (3)$$

where P_{it} is the poverty rate, and z_{it} represents a series of control variables (Gini index, urban and rural population, secondary and primary enrolment and health expenditure). Therefore, by using three-stage least-squares regression (3SLS), we estimate these three equations simultaneously in order to correct for simultaneity bias (e.g. Intriligator et al., 1996). Given that this econometric method considers the correlation of the disturbance of each simultaneous equation, its estimators are considered asymptotically more efficient than ordinal least-square (OLS) estimators whether each equation is regressed separately or not. Accordingly, estimating the coefficients within a generalized least-square (GLS) framework

adjusts the weighting matrix for potential heteroskedasticity of the errors (Zellner & Theil, 1962).

Thus, we use an unbalanced panel data for the waves 2000-2002, 2005-2006 and 2010-2011. Our first dependent variables, innovative, opportunity and necessity entrepreneurship, are the best-known indicators of the Global Entrepreneurship Monitor (GEM), which are measured through total early-stage entrepreneurial activity (TEA) that is driven by innovation, opportunity and necessity. The difference between these three measures is the motivation of each individual to pursue the entrepreneurial career. While TEA innovative refers to those entrepreneurs that are perceived by customers as introducing new products in the market, entrepreneurship driven by opportunity shows those entrepreneurs that are motivated to pursue perceived business opportunities. Necessity entrepreneurship results from those individuals that are excluded from the labor market. The second dependent variable is economic growth, obtained through the GDP at 2010 \$US constant prices; and the third dependent variables is the level of poverty, measured through the percentage of the population, who, on a daily basis, lives with \$US 3.10 or less. The sources of data for measuring these dependent variables are GEM and the World Development Indicator (WDI) of the World Bank.

The data on independent variables were obtained from the Indices of Social Development (ISD) website database. Data on control variables for Eq. (2) were sourced from WDI by World Bank. The variable K is measured in constant values at 2010 \$US, L is the percentage of the labor force available in each economy, GC is the final government consumption at constant prices, P is the number of inhabitants in each country and HE is the percentage of government expenditures in health. According to Bleaney and Nishiyama (2002), the previous variables have been proved to be accurate control variables in a growth model. Similarly, for Eq. (3), variables such as the Gini index, which measures the income distribution across the society, urban and rural population, secondary and primary enrolment (measuring the number of enrolled people in private and public schools) and health expenditures, were used to control for poverty. By introducing these variables, it is possible to embrace the human development, which includes income, schooling and health elements. Following the methodology used by Wong et al. (2005), we used natural logarithms in those level variables to estimate the three equations. Accordingly, by transforming these variables it is possible to interpret the coefficient as a percentage change in the dependent variable given by one percentage change of the independent variables. Table 7.1 presents a list of dependent and independent variables used in this study, including their sources. Our final sample consists of pooled data on 132 observations and 63 countries (see Appendix 11).

Table 7.1. Description of variables

Equation 1		
Dependent variables	Description	Source^a
TEA Innovative	Percentage of early-stage Entrepreneurial Activity (TEA) reporting that the product or service is new to at least some customers	GEM
TEA OPP	Percentage within early-stage Entrepreneurial Activity (TEA) motivated to pursue perceived business opportunities.	
TEA NEC	Percentage within early-stage Entrepreneurial Activity (TEA) involved in entrepreneurship because they have no better option for work.	
Independent variables	Description	Source^a
Civic activism	Measure the social norms, organizations, and practices which facilitate greater citizen involvement in public policies and decisions. Values from 0 to 1.	ISD
Voluntary spirit	Measure the membership in local voluntary associations. Data is based on the clubs and associations dimension. Values from 0 to 1.	
Interpersonal safety and trust	Measure the social cohesion between strangers, as manifested through bonds of trust, reciprocity, and absence of criminal intent. Data is based on the interpersonal safety and trust dimension. Values from 0 to 1.	
Income pc	It is the adjusted value of gross national income minus consumption of fixed capital and natural resources depletion divided by the population.	WDI
Population aged 15-64	The proportion of the population ages 15 and 64 that is economically active.	
Unemployment rate	The share of the labor force that is without work but available for and seeking employment.	
GDP pc growth	Percentage of variation of the GDP per capita (\$US constant of 2010)	
Equation 2		
Dependent variables	Description	Source^a
GDP	GDP at purchaser's prices is the sum of gross value added. Data are in constant 2010 U.S.	WDI
Independent variables	Description	Source^a
Capital	Gross capital formation (formerly gross domestic investment) consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories. Data are in constant 2005 U.S. Dollars.	WDI
Labor force	The total labor force is the supply of labor available for producing goods and services in an economy.	

Government consumption	General government final consumption expenditure (formerly general government consumption) includes all government current expenditures for purchases of goods and services.
Population	The total population is based on the de facto definition of population, which counts all residents regardless of legal status or citizenship.
Health expenditure	Capital spending from government (central and local) budgets, external borrowings and grants (including donations from international agencies and nongovernmental organizations), and social (or compulsory) health insurance funds.

Equation 3

Dependent variable	Description	Source^a
Poverty	Percentage of the population living on less than \$3.10 a day at 2011 international prices.	WDI

Independent variables	Description	Source^a
Gini index	Gini index measures the extent to which the distribution of income (or, in some cases, consumption expenditure) among individuals or households within an economy deviates from a perfectly equal distribution.	WDI
Urban population	Number of people living in urban areas as defined by national statistical offices.	
Rural population	Number of people living in rural areas as defined by national statistical offices.	
Secondary enrolment	Total number of pupils enrolled at secondary level in public and private schools.	
Primary enrolment	Total number of pupils enrolled at primary level in public and private schools.	

^a Global Entrepreneurship Monitor (GEM): <http://www.gemconsortium.org/>; Indices of Social Development (ISD): <http://www.indsocdev.org/data-access.html>; World Development Indicators (WDI): <http://data.worldbank.org/data-catalog/world-development-indicators>.

7.4. Results and discussion

Table 7.2 reports the means, standard deviations, and correlation coefficients of the variables used in this study. As Table 7.2 shows, entrepreneurship driven by innovation (TEA innovative), opportunity (TEA OPP) and necessity (TEA NEC) is significantly correlated with some of the dimensions used to measure social progress orientation (SPO). Also, economic growth was significantly correlated with the control variables and TEA OPP. Given the correlations among independent variables, we tested for the problem of multicollinearity of both equations through variance inflation factor (VIF) computations, which might affect the significance of the main parameters in the regressions. Although 3SLS does not allow us to obtain VIF directly, we computed this test for each equation. The VIF values were low (lower than 2.41 for equation 1, 8.75 for equation 2, and 6.34 for equation 3).

Table 7.3 shows the results of linear regressions with robust variance estimates. Models 1, 2 and 3 consider only the linear regression with robust variance estimates of the first equation (TEA innovative, OPP, and NEC are a function of SPO's dimensions), Models 4, 5 and 6 simultaneously assess the first and second equation (economic growth is a function of TEAs, which are a function of SPO's dimensions) through robust variance estimates. And similarly, Models 7, 8 and 9 estimate three equations simultaneously. Here, economic growth, endogenized directly by entrepreneurship and indirectly by SPO, explains the poverty level. All the models are highly significant ($p < 0.01$) and have high explanatory power, explaining 73.1 per cent of the variance of TEA innovative, 87.0 per cent of the variance of TEA OPP and 83.3 per cent of the variance of TEA NEC. In terms of economic growth, on average, 99 per cent of the variance is explained. Regarding the poverty equation, 86.2 per cent of its variance is explained. This indicates that in terms of R^2 , the models have a good fit. In addition, for robustness check purposes, we computed the Hausman test to compare systematic differences between the coefficients obtained with OLS, 2SLS and 3SLS. The results show that there are not systematic differences in coefficients of both equations modeled through 3SLS vs. OLS and 3SLS vs. 2SLS. Although the standard errors of 3SLS coefficients are marginally higher than OLS for Eq. 2, these results are lower than 2SLS, meaning that the endogeneity problem is overcome through different stages. In this case, the estimation results are more efficient than 2SLS. Thus, according to Zellner and Theil (1962), the 3SLS may provide more consistent estimators than OLS, which are suitable for the analysis.

The first set of models considers equation 1, which contains civic activism (CVA), voluntary spirit (VOL), interpersonal safety and trust (IST) and the control variables. The results show that CVA, VOL and IST have a positive influence (3.510, $p < 0.1$; 0.146, $p > 0.1$; 2.198, $p > 0.1$, respectively) on TEA innovative; (1.917, $p > 0.1$; 0.548, $p > 0.1$; 0.342, $p > 0.1$, respectively) on TEA OPP; and (0.278, $p > 0.1$; 0.444, $p > 0.1$; 0.579, $p > 0.1$, respectively) on TEA NEC. In respect of the models 4-6, which consider equations 1 and 2 simultaneously, the results show that the dimensions of SPO - CVA (3.433, $p < 0.05$ in Model 4; 1.906, $p < 0.1$ in Model 5; and 0.270, $p > 0.1$ in Model 6); VOL (0.120, $p > 0.1$ in Model 4; 0.545, $p > 0.1$ in Model 5; and 0.444, $p < 0.1$ in Model 4); and IST (2.218, $p < 0.05$ in Model 4; 0.344, $p > 0.1$ in Model 5; and 0.551, $p > 0.01$ in Model 6) affect economic growth through TEA innovative ($b = 0.257$, $p < 0.01$ in Model 4), TEA OPP ($b = 0.108$, $p > 0.1$ in Model 5), and TEA NEC ($b = -0.136$, $p > 0.1$ in Model 6). In terms of the third equation, we find that economic growth reduces poverty (-5.842, $p < 0.1$ in Model 7; -10.129, $p < 0.01$ in Model 8; and -6.594, $p < 0.05$ in Model 9), while is positively affected by entrepreneurship driven by innovation ($b = 0.503$, $p < 0.01$ in Model 7), opportunity ($b = 0.613$, $p < 0.01$ in Model 8), and necessity ($b = -0.057$, $p > 0.1$). Additionally, based on the results obtained in the control variables, we could suggest that the feedback effects that economic growth and entrepreneurship enjoy are a source of new business opportunities that need to be detected and exploited (Galindo & Méndez, 2013).

Table 7.2. Descriptive statistics and correlation matrix

Variable	Obs	Mean	St. Dev.	1	2	3	4	5	6	7	8	9
1 TEA Innovative	132	0.443	0.154	1								
2 TEA OPP	96	0.506	0.149	0.101	1							
3 TEA NEC	132	0.232	0.129	-0.035	-0.741***	1						
4 GDP	132	1.16E+12	2.36E+12	-0.030	0.100	-0.029	1					
5 Poverty	47	12.451	16.128	-0.172	-0.002	0.272	0.240	1				
6 Civic activism	131	0.564	0.059	-0.015	0.588***	-0.600***	0.292***	-0.431***	1			
7 Voluntary spirit	103	0.069	0.050	-0.036	-0.396***	0.319***	-0.01	0.075	-0.371***	1		
8 Interpersonal Safety and Trust	130	0.061	0.020	0.002	-0.043	-0.041	0.056	0.332	-0.034	0.101	1	
9 Income pc	125	21014.430	16299.830	-0.020	0.628***	-0.656***	0.261***	-0.623***	0.858***	-0.267***	-0.047	1
10 Population aged 15-64	132	66.983	3.902	0.070	0.113	-0.056	0.038	-0.507***	-0.034	0.217	-0.145	0.171
11 Unemployment rate	132	8.070	4.816	-0.035	-0.405***	0.387***	-0.12	0.053	-0.228***	0.033	-0.213	-0.287***
12 GDP pc growth	132	3.352	3.170	-0.017	-0.151	0.084	0.011	-0.136	-0.071	0.123	0.045	-0.229
13 Capital	131	2.79E+11	5.66E+11	-0.007	0.027	0.041	0.952***	0.210	0.210	0.148	0.114	0.211
14 Labor force	132	70.196	7.643	-0.032	0.484***	-0.481***	0.151	-0.052	0.477***	-0.083	0.073	0.560***
15 Government consumption	131	2.04E+11	3.96E+11	-0.048	0.136	-0.058	0.992***	0.190	0.343***	-0.052	0.028	0.302***
16 Population	132	9.23E+07	2.37E+08	-0.082	-0.225***	0.308***	0.357***	0.450***	-0.225***	0.353***	0.277***	-0.219
17 Health expenditure	131	7.525	2.507	-0.036	0.250***	-0.286***	0.511***	-0.462***	0.680***	-0.186	-0.238***	0.607***
18 Gini index	72	37.522	10.137	0.140	-0.402***	0.464***	0.013	0.623***	-0.570***	0.038***	0.082	-0.608***
19 Urban population	132	50700000	101000000	-0.074	-0.210***	0.317***	0.552***	0.405***	-0.168	0.378***	0.260***	-0.162
20 Rural population	132	41600000	145000000	-0.083	-0.223***	0.283***	0.200	0.472***	-0.252***	0.316***	0.273***	-0.239***
21 Secondary enrolment	122	7582328	18300000	-0.095	-0.252***	0.316***	0.363***	0.450***	-0.234***	0.360***	0.297***	-0.222
22 Primary enrolment	122	7575696	20300000	-0.137	-0.250***	0.319***	0.324***	0.548***	-0.238***	0.333***	0.287***	-0.225

Variable	10	11	12	13	14	15	16	17	18	19	20	21
10 Population aged 15-64	1											
11 Unemployment rate	-0.109	1										
12 GDP pc growth	0.008	-0.166	1									
13 Capital	0.100	-0.151	0.096	1								
14 Labor force	0.210	-0.450***	-0.048	0.168	1							
15 Government consumption	0.015	-0.106	-0.023	0.924***	0.168	1						
16 Population	0.011	-0.164	0.287***	0.529***	0.038	0.291***	1					
17 Health expenditure	-0.092	0.120	-0.205	0.391***	0.300***	0.556***	-0.184	1				
18 Gini index	-0.415***	0.206	0.184	-0.015	-0.271	-0.037	0.433***	-0.386***	1			
19 Urban population	0.052	-0.157	0.293***	0.716***	0.071	0.490***	0.951***	-0.066	0.459***	1		
20 Rural population	-0.019	-0.160	0.265***	0.368***	0.013	0.135	0.976***	-0.256***	0.258	0.860***	1	
21 Secondary enrolment	0.023	-0.168	0.336***	0.532***	0.038	0.297***	0.995***	-0.204	0.472***	0.957***	0.966***	1
22 Primary enrolment	0.010	-0.154	0.266***	0.483***	0.062	0.259***	0.985***	-0.219	0.549***	0.912***	0.985***	0.979***

*** p< 0.01. It means that t-test of correlations tends to be stochastically different from zero.

Table 7.3. Estimating entrepreneurship and inclusive growth

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Eq. 1	TEA Innovative	TEA OPP	TEA NEC	TEA Innovative	TEA OPP	TEA NEC	TEA Innovative	TEA OPP	TEA NEC
Civic activism	3.510*	1.917	0.278	3.433**	1.906*	0.270	1.525	0.993	2.349***
	(1.981)	(2.025)	(0.619)	(1.353)	(1.064)	(0.420)	(1.597)	(1.194)	(0.710)
Voluntary spirit	0.146	0.548	0.444	0.120	0.545	0.444*	0.010	0.353	0.036
	(0.701)	(0.828)	(0.371)	(0.478)	(0.435)	(0.251)	(0.535)	(0.266)	(0.237)
Interpersonal Safety and Trust	2.198	0.342	0.579	2.218**	0.344	0.551	1.913	0.649	0.479
	(1.446)	(1.109)	(0.811)	(0.987)	(0.583)	(0.550)	(2.027)	(1.479)	(0.898)
Income pc	0.000	-0.000	-0.000	0.000	-0.000	-0.000	0.000	0.000+	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Population aged 15-64	0.012	0.033	-0.009	0.011	0.033**	-0.009	-0.012	-0.001	0.000
	(0.017)	(0.028)	(0.011)	(0.012)	(0.015)	(0.008)	(0.010)	(0.007)	(0.004)
Unemployment rate	-0.002	-0.013	-0.000	-0.002	-0.013**	-0.000	-0.003	-0.005	0.003
	(0.009)	(0.011)	(0.005)	(0.006)	(0.006)	(0.004)	(0.006)	(0.004)	(0.003)
GDP pc growth	-0.007	0.004	-0.011***	-0.007	0.004	-0.011***	0.006	0.013*	-0.005
	(0.007)	(0.008)	(0.004)	(0.005)	(0.004)	(0.003)	(0.010)	(0.007)	(0.004)
Constant	-0.558	-2.948	0.604	-0.734	-2.913**	0.596	0.345	-0.303	-0.883**
	(1.330)	(2.310)	(0.744)	(0.785)	(1.214)	(0.504)	(0.993)	(0.682)	(0.440)
<i>R</i> ²	0.731	0.870	0.833	0.726	0.869	0.832	0.271	0.287	0.511
Eq. 2	Ln GDP	Ln GDP	Ln GDP	Ln GDP	Ln GDP	Ln GDP	Ln GDP	Ln GDP	Ln GDP
TEA Innovative				0.257***			0.503***		
				(0.096)			(0.119)		
TEA OPP					0.108			0.613***	
					(0.153)			(0.221)	
TEA NEC						-0.136			-0.057
						(0.174)			(0.327)
Ln capital				0.402***	0.406***	0.436***	0.241***	0.282***	0.332***
				(0.043)	(0.053)	(0.042)	(0.059)	(0.069)	(0.075)
Labor force				0.002	0.004	0.003	-0.000	-0.005*	-0.003
				(0.002)	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)
Ln government consumption				0.460***	0.455***	0.433***	0.519***	0.470***	0.416***
				(0.040)	(0.048)	(0.038)	(0.060)	(0.066)	(0.066)
Ln population				0.142***	0.137***	0.128***	0.247***	0.245***	0.248***
				(0.018)	(0.022)	(0.020)	(0.025)	(0.031)	(0.037)
Health expenditure				0.021***	0.005	0.007	0.012	0.011	0.008
				(0.008)	(0.010)	(0.008)	(0.014)	(0.016)	(0.016)
Constant				2.292***	2.453***	2.497***	3.093***	3.599***	3.792***
				(0.258)	(0.313)	(0.302)	(0.439)	(0.436)	(0.496)
<i>R</i> ²				0.993	0.991	0.991	0.995	0.993	0.994
Eq. 3	Poverty	Poverty	Poverty	Poverty	Poverty	Poverty	Poverty	Poverty	Poverty
Ln GDP							-5.842*	-10.129***	-6.594**
							(3.123)	(2.664)	(3.141)
Gini index							0.564***	0.159	0.551***
							(0.149)	(0.124)	(0.150)
Ln urban population							-10.154*	-9.939*	-9.603+
							(5.810)	(5.931)	(5.843)

Ln rural population							6.020*** (1.836)	6.591*** (1.660)	6.420*** (1.845)
Ln secondary enrolment							4.397 (5.199)	7.639 (5.510)	4.801 (5.231)
Ln primary enrolment							6.396** (2.830)	7.945*** (2.641)	5.834** (2.842)
Health expenditure							1.100 (0.890)	2.022** (0.846)	1.229 (0.895)
Constant							49.838 (33.814)	91.120*** (28.762)	55.972* (34.019)
<i>R</i> ²							0.833	0.862	0.834
Observations	101	83	115	101	83	115	36	31	36
Country fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*** p < 0.01; ** p < 0.05; * p < 0.10; + = 0.10. Note: Heteroskedasticity corrected standard errors are shown in parentheses.

As regards hypotheses testing, in Hypothesis 1a we suggest a positive impact of civic activism (CVA) on entrepreneurship (TEA innovative and TEA OPP). According to the results, societies with greater CVA enjoy greater entrepreneurial activity driven by innovation and opportunity recognition; therefore, hypothesis 1a is not rejected. Existing literature links civic activism with new firm formation as a means to challenge market failures and to create social value through the detection and exploitation of the opportunities embedded in the political environment (Dees, 1998; DiMaggio, 1988; Rao et al., 2000). Other authors posit social entrepreneurship as a process where the combination of resources and innovation is convergent with social improvement (Austin et al., 2006; Mair & Martí, 2006). Thus, this innovative character of social entrepreneurship can be translated into new firm creation based on opportunity motives. For Hypothesis 1b, we suggest a positive impact of voluntary spirit (VOL) on the different measures of entrepreneurship. Although the results exhibit only a significant influence on TEA NEC (which is not the focus of our study), the sign holds for TEA innovative and TEA OPP. According to the results, societies with greater VOL exhibit greater entrepreneurial traits, however, the results do not support hypothesis 1b. Despite this, as noted in the theoretical section, we associate VOL with social capital. Therefore, in environments where VOL is high, the information can flow smoothly between entrepreneurs, customers and suppliers, allowing better access to opportunities, resources and markets (Aldrich & Martinez, 2001; Anderson et al., 2007; Bauernschuster et al., 2010). Consequently, and consistent with the existing research, we find that TEAs might flourish in environments more prone to social capital (networks, associations, and so on). Social capital is found to be a factor that influences entrepreneurship positively (Aidis et al., 2008; Davidsson & Honig, 2003; Kwon et al., 2013; among others). For Hypothesis 1c we suggested a positive impact of

interpersonal safety and trust (IST) on entrepreneurship. According to the results obtained in Model 4, societies with greater IST have greater TEA innovative, and thus hypothesis 1c is not rejected. The IST can be translated into a more social cohesion in communities characterized by high cultural diversity and, in turn, provide an appropriate environment for attracting creative and innovative entrepreneurs (Florida, 2002; Turok, 2004). These results are consistent with Alvarez and Urbano (2013), who suggest a positive impact of cultural diversity on entrepreneurship. Others suggest that this type of environment can also be seen as a source of opportunities because of the variety of needs that the diverse cultures may express (van Delft et al., 1999; Ram & Jones, 2008).

Coming back to Hypothesis 1, we predicted that social progress orientation (SPO) would impact positively on entrepreneurship driven by opportunity (TEA OPP). As presented before, this study finds that societies with a stronger SPO characterized by civic activism (CVA), voluntary spirit (VOL) and interpersonal safety and trust (IST) exhibit superior entrepreneurial activity; thus, Hypothesis 1 is not rejected. These results may suggest that SPO provides a set of environmental factors that allow the deployment of people's potential and is manifested through TEA innovative and TEA OPP. Inglehart (1977, 1990) stated that postmaterialist values are about free choice, self-realization and the deployment of the full personal potential. In that sense, behind entrepreneurship driven by innovation and opportunity, there are motives related to personal improvement that can be accommodated in the postmaterialist perspective. Our results are also consistent with Stephan and Uhlaner (2010), who find that a socially supportive culture encourages entrepreneurship. This socially supportive culture is characterized by a humane orientation. In the same vein, Naudé et al. (2013, 2014), also suggest that subjective well-being and life satisfaction influence entrepreneurial activity positively. When controlled for economic development, this environment is alleged to bring opportunities for entrepreneurs who possess agency (the motivations behind TEA innovative and TEA OPP may find a better fit in more socially progressed environments). The results are also aligned with the existing literature that suggests a U-shaped relationship between development and entrepreneurial activity. As development takes place, entrepreneurial activity decreases to the point where TEA innovative and TEA OPP increase (Carree et al., 2002; Wennekers et al., 2005).

Linking with the previous results, Hypothesis 2 suggested that entrepreneurial activity positively links SPO and inclusive growth. We find both that TEA innovative and TEA OPP, influenced by SPO, are positively related to economic growth; and this reduces poverty considerably. Therefore, Hypothesis 2 is not rejected. As we mentioned before, innovative and opportunity entrepreneurship define a different characteristic in each country in terms of innovation processes. According to Wong et al. (2005) and Urbano and Aparicio (2016), among others, entrepreneurial activity influenced by intentionality toward progress tends to impact positively on economic development. This is consistent with Audretsch and Keilbach's (2004a) results. According to these authors, the entrepreneurial activity associated with

innovation has a positive impact on economic performance. Also, we point out that the effect of TEA innovative and TEA OPP on economic development do not significantly differ among these countries. This idea, supported by Valliere and Peterson (2009), suggests that those countries that encourage entrepreneurial activity based on innovation could obtain improved outcomes in terms of socioeconomic outcomes. Also, according to Braunerhjelm et al. (2009) and Mueller (2007), entrepreneurial activity based on innovation is one missing link in converting knowledge into economically relevant knowledge, and therefore social inclusion could be obtained to increase economic development. Therefore, we can suggest that entrepreneurship has a relevant role in promoting economic development, where the institutional endowment presents superior SPO.

7.5. Conclusions

The purpose of this research was to analyze the effect of social progress orientation (SPO) on inclusive growth through entrepreneurship driven by innovation and opportunity. Using a three-stage least-squares (3SLS) method and information from the Global Entrepreneurship Monitor (GEM), the Indices of Social Development (ISD) and the World Development Indicators (WDI) from the World Bank (WB), we find that SPO impacts positively on economic development through opportunity entrepreneurship. Building on the concept of postmaterialism (Inglehart 1977, 1990), we conceptualize SPO through the dimensions of civic activism, clubs and associations, and interpersonal safety and trust. The civic activism (CVA) dimension measures participation in public life and civic engagement. We build on the existing literature on institutional and social entrepreneurship to find a positive impact on opportunity entrepreneurship and subsequently on economic development. The voluntary spirit (VOL) dimension measures the membership in voluntary associations, and thus it can be associated with social capital. We find a positive impact on entrepreneurship driven by opportunity and, in turn, on economic development. For the interpersonal safety and trust (IST) dimension, literature on ethnic entrepreneurship and cultural diversity was surveyed and we found that superior IST encourages opportunity entrepreneurship, which, in turn, promotes economic development. Thus, taking our findings together, we suggest that SPO can be a valid instrument for the promotion of inclusive growth through entrepreneurship driven by innovation and opportunity.

This research contributes to the existing literature in the following ways. By examining the concept of SPO (Urbano et al., 2016), it contributes to the application of the institutional approach to the study of the determinants of entrepreneurship and the endogenous factors of economic development in an integrative manner. So far, the analyzed literature suggests that these two phenomena have been analyzed in isolation. In addition, this research explores the ISD database, which, to our knowledge, has been neglected to date. Our findings concur with the recent call for a more people-oriented approach to social progress (Porter, 2013;

Stiglitz et al., 2009) and add new insights to the argument that SPO and economic development are not mutually exclusive. To sum up, following the Schumpeterian stream and using the institutional approach, this research serves two different fields of study, the entrepreneurship field and the economic development field.

Regarding implications, our research can offer new insights for entrepreneurs and policy makers. By understanding the factors that promote new firm creation, especially the ones that are driven by innovation and opportunity, they could direct actions to promote economic development. In this context, we find that SPO can be a factor to take into account. For instance, if we consider the IST dimension of SPO, Jewish communities of ex-pats require a kosher certificate for the selling and consumption of certain food items. Thus, adapting the portfolio to kosher requirements can be seen as a business opportunity for those entrepreneurs involved in food production and certification.

For policy makers who seek levers for boosting economic performance, we suggest that reinforcing SPO produces a positive impact on innovative and opportunity entrepreneurship, which, in turn, affects endogenous growth as an endogenous factor. These insights can be useful for the design of programs designed to promote economic development through entrepreneurial activity, especially those driven by innovative projects and opportunity seeking. For instance, if we consider the VOL dimension, the social capital accrued in enterprise incubator centers can provide entrepreneurs with the elements to detect and exploit business opportunities that otherwise would be difficult to reach. Incubator centers are at the core of public policies to promote economic development across regions (Bøllingtoft & Ulhøi, 2005). In that regard, the European Union (EU) is promoting entrepreneurship with the Entrepreneurship 2020 Action Plan, of which incubators are an important part.

Our research also has some limitations. For instance, we consider three different groups of years, 2000-2002, 2005-2006 and 2010-2011, which are separated by the great recession of 2008. This economic downturn may have affected the cultural values from 2008 onwards, bearing in mind that our sample was built with ISD data from 2010 with little reflection of such events. According to Inglehart (1977, 1990), values are stable and cultural change is produced by generational replacement or economic long-standing increase (decrease); thus, we expect that in further deliveries the ISD may offer new waves of data to build new research. Concerning the econometric techniques, ideally and initially a longitudinal analysis was considered; however, the lack of year-to-year data is a common failing of all databases that aim to measure culture, values, attitudes and so on. The ISD is by no means an exception. This fact led us to adopt static panel data regressions. Also, the operationalization of SPO through the ISD is open to criticism, especially when the cultural dimensions of Hofstede can offer a better explored and contrasted approach to entrepreneurship research (Hayton et al., 2002; Salimath & Cullen, 2010). The decision to use the dimensions of the ISD was based on theoretical and practical reasons, as stated before; existing research on institutional

entrepreneurship, social entrepreneurship, social capital, ethnic entrepreneurship and cultural diversity offered a convenient fit for CVA, VOL and IST, respectively. For further research and given our first approach to SPO, there is the need to amplify the theoretical foundations and test in the validity of the SPO more extensively, an idea reinforced by the over-identification problem identified through the Lagrange multiplier. As mentioned before, the application of longitudinal analysis can help to validate our findings over time. So far, the limited amount of countries (particularly for models 7-9) might create estimation problems, basically because the models are performed with low degrees of freedom. Nonetheless, even with a limited sample, the coefficients obtained were highly significant, suggesting a strong correlation between entrepreneurship, economic growth and poverty reduction. Other multivariate techniques can also be applied to prove and enhance the construct validity, especially factor analysis. Given that the ISD provides six dimensions, capturing the essence of the construct with factor analysis may enhance the representativeness of the SPO. In that sense, as mentioned before, the usage of Hofstede's cultural dimensions may provide sounder foundations for capturing the essence of social progress orientation (SPO). In addition, future research may serve to answer the question whether social progress is actually achieved. The next chapter might provide some insights in this regard.

Chapter 8

Institutional Context, Entrepreneurial Activity, and Social Progress: International Evidence

8. Institutional Context, Entrepreneurial Activity and Social Progress: International Evidence

8.1. Introduction

As mentioned before, the type of motivation, which entrepreneurs respond to, is likely to influence the contribution of entrepreneurial activity to economic growth (Audretsch & Keilbach, 2008; Audretsch et al., 2008). Accordingly, entrepreneurship is a factor that must be considered in the analysis of growth theory, and therefore further results should be taken into account for policy implications (Solow, 2007). Audretsch and Keilbach (2004a,b,c, 2008), exploring entrepreneurship as capital endowment required for economic growth, emphasize the importance of understanding those factors affecting entrepreneurship in order to understand the key role played by entrepreneurship in the growth process. Here, the institutional environment has been posited as influencing the impact of entrepreneurship on economic performance (Baumol & Strom, 2007; Méndez-Picazo et al., 2012).

North and Thomas (1973) suggest that institutions influence those endogenous factors that have a direct impact on economic development. This process must be understood not only in terms of income but also in terms of broader social characteristics (Sen, 1999). Economic growth and its measurement need to be rethought, challenged and considered in a broader context (Henderson et al., 2012). According to Henderson et al. (2012), economic performance is the individual self-expression that is related to the most minute aspects of society. Accordingly, Young (2012) claims that alternative economic performance measures need to go beyond merely measuring economic growth in a narrow sense *per se*, but need to incorporate the socio-economic evolution of individuals at both the subnational and country levels. For instance, Sen (1999) suggests a multidimensional criterion to capture the real evolution of a society. Instead of limiting the economic development measure to income criteria, other factors should also be included, such as education, health, environment, among others, in order to obtain not only an ordinal measure but also a cardinal approach. Thus, several indicators such as the Human Scale Development (Max-Neef et al., 1991), Human Development Index (Desai, 1991) and The Standard of Living (Sen, 1988), among others, have been introduced in economic development analysis.

The Social Progress Imperative, a non-profit organization, recently proposed a recent index that embraces this broader perspective. This index is composed of three dimensions that contain factors such as the creation of opportunities — personal rights, access to higher education, personal freedom and choice, and equity and inclusion—; the foundations of well-being —access to basic knowledge, access to information and communications, health, and wellness and ecosystem sustainability—; and basic human needs —nutrition and basic medical care, air,

water and sanitation, shelter, and personal safety. These elements conform to the social progress index (SPI), which has the main purpose to measure the development stage of each country. According to Stern et al. (2014), the theoretical foundations of SPI combine institutional perspectives of the development process. Hence, productive outcomes, human capabilities and institutional setting are assumed to create a more comprehensive measure of development, which is represented by social progress. In addition, Stern et al. (2014) aim to understand social progress as the interaction of three levels —individual, represented by capabilities; organizational, which is associated with productive outcomes; and environmental as a result of the institutional configuration. Similar to North and Thomas (1973), the authors analyze the phenomena from an institutional perspective.

Thus, using the theoretical approach of institutional economics (North, 1990, 2005), the main purpose of this chapter is to examine whether and how a country's institutional context influences the manner in which entrepreneurial activity affects social progress. Although this framework has been applied to the field of entrepreneurship with social outcomes (Aidis et al., 2007; Stephan et al., 2015; Terjesen et al., 2016; Urbano et al., 2017), Audretsch and Keilbach (2008), Audretsch et al. (2008) and Baumol and Strom (2007) claim that more studies concerning the interrelationship between institutional context, entrepreneurial activity and social progress are needed. Through this, two distinct and disparate lines into the field of entrepreneurship research could be combined together, suggesting new elements for both theoretical and policy implications (Carlsson et al., 2013).

Considering simultaneously the impact of institutional context on entrepreneurial activity, and this variable's effect on social progress, we are able to address biases resulting from estimation of a simple unidirectional model. The virtue of this approach is not only in the correction of the statistical bias. By explicitly instrumenting entrepreneurship in a second equation, we are able to analyze how different public strategies could actually influence social progress by generating more entrepreneurial activity. In addition, since the traditional approach to progress and development has been GDP-oriented, this research tries to go further by applying a simultaneous equation to the analysis of social progress as an index of economic development driven by entrepreneurial activity.

Using pooled data with information over the period 2012 and 2014 from the Global Entrepreneurship Monitor (GEM), the Social Progress Imperative, World Development Indicators (WDI), Doing Business (both from World Bank) and Center for Systemic Peace, we provide empirical evidence of the impact of the number of tax payments, the time required to start a business, and established democracy on entrepreneurial activity (measured through the number of owners in start-up and new businesses and the ratio between opportunity and necessity

entrepreneurship), and these two measures of entrepreneurship on social progress index.

The remainder of this chapter is as follows. In Section 2, we discuss the theoretical framework, which is based on institutional economics. Section 3 presents the data and model, and Section 4 describes and discusses the results. Section 5 presents policy implications. And finally, we make our conclusions and highlight the future research lines in Section 6.

8.2. Conceptual framework

As mentioned in Chapter 1, understanding institutions as the rules of the game (North, 1990, 2005), it is possible to reduce the transaction costs (through formal institutions) and the uncertainty caused by the social interactions (through informal institutions). According to North and Thomas (1973), institutions do not impact directly on economic development, rather they act as fundamental determinants that either encourage or discourage the productive process that ultimately generates growth and development. This simple scheme opens up questions about which endogenous factors could be affected by institutions that are conducive to development.

8.2.1. Institutions and Entrepreneurial Activity

As discussed in Chapter 1, Bruton et al. (2010) and Carlsson et al. (2013) emphasize that the field of entrepreneurship has become more robust by using an institutional lens to understand the variation of entrepreneurial activity across countries. In particular, Bruton et al. (2010) and Baumol and Strom (2007) suggest that, taking into account this the link to institutions, the evolving domain of entrepreneurship should be considered as an important element to be included in the complex process of development.

Drawing on Gnyawali and Fogel (1994), many authors have empirically estimated the effect of government regulation on entrepreneurship (Djankov et al., 2002; van Stel et al., 2007). For example, Djankov et al. (2002) found that those governments creating many regulations as control mechanisms discourage the intention to become an entrepreneur. Their analysis suggests that firms have to pay taxes to operate internally and must have the amount of capital subscribed, resulting in a bias towards formalized firms. Djankov et al. (2002) show that those developed countries ranked the highest in terms of the (least) amount of taxes required to start a new business are actually characterized by a strong welfare state. In the middle and lower part of the ranking appear those developing countries requiring higher levels of taxes to start a new business. Van Stel et al. (2007) conducted a similar exercise with new data, and although their findings are not conclusive in terms of the amount of taxes required to start a new business, they show that bureaucracy deters entrepreneurial activity. Another similar conclusion drawn is that young

firms prefer to locate their plants where better regulatory protection is offered (Chowdhury et al., 2015a; Coeurderoy & Murray, 2008). However, Fisman and Svensson (2007) find that taxes not only affect the creation of a firm but also its future growth. They provide evidence regarding the case of Uganda, where a one percent increase in taxes implies a three percent decrease in the growth of firms. Lawless (2013) suggest that the amount of taxes also discourages foreign direct investment, which implies a lower level of capital from abroad. This, in turn, deters new business formation and firm growth. Croce et al. (2012) find that fiscal policy implemented during the crisis period affected the productivity growth and distorted profits. Djankov et al. (2010) investigate how taxes affect both investment and entrepreneurship. They provide evidence suggesting that taxes have a large adverse impact on financial channels, such as aggregate investment and foreign direct investment, hence affecting entrepreneurial activity (Belitski et al., 2016). Thus, we propose the following hypothesis:

Hypothesis 1. The number of tax payments has a negative effect on entrepreneurial activity.

Djankov et al. (2002) also analyze other regulatory factors that affect firm entry, which are related to intangible assets such as time. While Djankov et al. (2002) find that time is negatively related to new-firm formation, van Stel et al. (2007) conclude that these variables are unrelated. Nonetheless, Muñoz and Kibler (2016) discuss that productivity is lost dealing with inefficient bureaucracies and regulations that take up a lot of time. Empirically, Monteiro and Assunção (2012) analyze the impact of bureaucracy simplification on the time required to start a business with microenterprise formalization in Brazil. They observe that the number of start-ups increases when the length of the bureaucracy process is reduced. The estimated results suggest that the implementation of procedure reforms increases the new-firm formation rate by one percentage point. Furthermore, in terms of job creation, Branstetter et al. (2014) came to similar conclusions in the case of Portugal. Here, the bureaucratic costs imposed in terms of time required to start a business is found to deter the entrepreneurship that creates employment. Aparicio et al. (2016a) found that the time required to create a startup has a negative impact on entrepreneurship. Their results show that regulations benefit the incumbent firms, discouraging competition across the industry and ultimately reducing economic growth. Stenholm et al. (2013) found similar results. They extend the analysis assessing the impact not only on the rate of entrepreneurial activity, but also on the type of entrepreneurial activity. Stenholm et al. (2013) show that although regulations such as the time to start a business have little impact on innovative and high-growth new ventures, the effect is negative. On the basis of this reasoning we offer the following hypothesis:

Hypothesis 2: The time required to start a business negatively affects entrepreneurial activity.

Van Stel et al. (2007), Terjesen et al. (2016) Djankov et al. (2002) and Angulo-Guerrero, Pérez-Moreno and Abad-Guerrero (2017) discuss the regulatory factors together with the legal origin and political structure. According to these authors, the importance of this discussion is associated with who legislates the regulations and what benefits are obtained from them. Djankov et al. (2002) provide evidence that the autocratic, socialist and French legal system tends to increase regulatory constraints. The next question should be whether these consolidated political structures affect entrepreneurial activity or not. For instance, van Stel et al. (2007) discuss how established democracy sets up the regulatory factors that affect nascent and young firms. Aidis et al. (2007) analyze how the transition from a socialist structure to a more democratic one affects female entrepreneurship. Pinotti (2012) provides empirical evidence suggesting that the trust generated in democracies tends to undermine the regulatory processes, and hence encourages entrepreneurial activity and market competition. Acemoglu (2008) finds that democracies tend to facilitate the entry of new business into each industry and thus contributes to a more efficient income distribution. Ireland et al. (2008) highlight that democracies with articulated societies tend to encourage entrepreneurial activity, while populism and socialism tend to deter entrepreneurship. Accordingly, we propose the following hypothesis:

Hypothesis 3. Countries with an established democracy positively influence entrepreneurial activity.

8.2.2. Entrepreneurship and Social Progress

It is suggested that entrepreneurship plays an important role not only in terms of economic growth, but also in terms of social progress (McMullen, 2011; van Praag & Versloot, 2007; Wennekers & Thurik, 1999). Nonetheless, the extant literature linking entrepreneurship to economic development has not analyzed actual measures of social progress. This question can be explored further by considering the capacity to create new firms and at the same time to generate new knowledge into society. Indeed, Audretsch and Keilbach (2008) suggest that entrepreneurial activity could be a key factor in generating higher growth and development by creating knowledge spillovers.

According to Reynolds et al. (2005), entrepreneurial activity can be considered a relevant factor that encourages individuals to pursue market opportunities and creates benefits for themselves as well as for society. In this regard, it is recognized that entrepreneurs have potential to contribute to prosperity and economic welfare (Blackburn & Ram, 2006; Urbano & Alvarez, 2014). Thus, entrepreneurship acts as a gear within the complex engine of economic development (Audretsch et al., 2008). Additionally, Audretsch et al. argue that those individuals pursuing an entrepreneurial career tend to include more people into the development process of new products and services based on new knowledge. This, in turn, creates synergies that are useful to acquire competitive advantage vis-a-vis other

entrepreneurs. In this sense, Wong et al. (2005) and Noseleit (2013) point out that entrepreneurship rates reflect the creation of knowledge and technology that could affect positively on social progress. Moreover, Carree et al. (2007) associate the innovative capacity of the owners with the level of social progress. Following these authors, countries with a high level of innovative activity tend to encourage the virtuous circle constituted between business ownership and social progress. In addition, Carree et al. (2007) suggest that these countries tend to facilitate new business creation in order to generate permanent progress for the entire society. Thus, we propose the following hypothesis:

Hypothesis 4. The number of business owners is positively related to social progress.

As Reynolds et al. (2005) suggest, entrepreneurs should be differentiated based on their motivations, which are associated with the capacity to perceive opportunity and transform it into a new business. As mentioned in previous chapters, those countries that exhibit a high degree of opportunity entrepreneurship are expected to be highly developed in terms of social and economic characteristics; whereas those individuals in developing countries that are not employed and the labor market is very restrictive to them, find in necessity entrepreneurship an escape. By definition, those countries that present higher rates of necessity entrepreneurship tend to suffer from high rates of unemployment, a large underground or informal economy and social disadvantages. In this sense, the policy prescription is to prioritize the motivation towards opportunity entrepreneurship, given its high value to society (Ács et al., 2014; Acs et al., 2008a, Devece et al., 2016). On these bases, various authors have approached the analysis of entrepreneurial activity by assessing the ratio between opportunity and necessity entrepreneurship, which co-exist together according to the institutional context (Acs & Amorós, 2008; Block et al., 2015b). For instance, Acs et al. (2008) provide evidence that the ratio of opportunity entrepreneurship with respect to necessity entrepreneurship is positively correlated with economic development measured through GDP per capita. In addition, Block and Koellinger (2009) analyze the satisfaction with startups in order to contribute to well-functioning economies. These authors find that satisfaction is positively correlated with the ratio between the opportunity–necessity entrepreneurship ratio. On the basis of these considerations, we propose the following hypothesis:

Hypothesis 5. The ratio of opportunity entrepreneurship with respect to necessity entrepreneurship is positively related to social progress.

8.3. Methods

As we noted earlier, this chapter has the goal of contributing to the literature by linking a country's institutional environment to the manner in which entrepreneurial activity affects social progress. Given the interplay between these variables (Aparicio et al., 2016a; Audretsch & Keilbach, 2008), we specify the economic development process throughout two equations approach. The first

equation considers this recursive structure explicitly as well as the other variables that affect entrepreneurship. Hence, this equation is specified as:

$$EA_i = f(IC_i, x_i) \quad (1)$$

where IC_i represents the institutional context, and x_i is the vector of control variables that influence entrepreneurial activity (EA) in country i . The vector of control variables refers to the gross domestic product (GDP) per capita.

To specify the institutional context, entrepreneurial activity and social progress, a development function that includes an explicit measure of entrepreneurial activity is estimated. On this basis, we are able to test the impact of the institutional context on entrepreneurship on the one hand and the impact of entrepreneurship on social progress on the other. The second equation has the following form:

$$SP_i = f(EA_i, z_i) \quad (2)$$

where SP_i is the social progress of country i , measured as an index between 0–100, EA_i represents its endowment of entrepreneurial activity, and z_i represents a vector with control variables reflecting the stage of development — K_i is country i 's endowment of capital, X_i is country i 's exports volume. Thus, equation (2) specifies formally that entrepreneurship contributes to the social progress of countries. The extent to which we apply this methodology, it might be possible to enhance the model presented by Audretsch and Keilbach (2004b,c, 2008) and Audretsch et al. (2008). Therefore, we focus on these two equations, which are estimated simultaneously using three-stage least-squares regression (3SLS) to correct for the simultaneity bias (Zellner & Theil, 1962). Similar models have used this method to estimate the relationship between entrepreneurship and economic growth, because of their ability importance to estimate efficiently models with bi-causality (Aparicio et al., 2016a; Audretsch & Keilbach, 2008).

Thus, we use pooled data for the period 2012–2014. Our first dependent variable, entrepreneurial activity, is an indicator of the Global Entrepreneurship Monitor (GEM), which is measured as the number of owners in startups and new firms, as well as using opportunity Total Entrepreneurial Activity (TEA) and necessity TEA. Opportunity TEA shows those entrepreneurs who are motivated to pursue perceived business opportunities, while necessity TEA captures those entrepreneurs who cannot get a job.

The second dependent variable is the economic development indicator, obtained through three dimensions that contain creations of opportunities, the foundations of well-being, and basic human needs. The three dimensions conform to the Social Progress Index. The sources of data to measure these dependent variables are the GEM and the Social Progress Imperative.

The data for the independent variables, specifically those that reflect the institutional context, were obtained from Doing Business (the number of taxes paid by the firms and the time required to start a business) and Center for System Peace

(established democracy). Meanwhile, data on the GDP per capita were obtained from the World Development Indicators (WDI) database. The number of taxes paid by firms measures the total amount of taxes reported by the chamber of commerce in each economy; the time required to start a business is the total days that it takes any new firm to register in the chamber of commerce; and established democracy is an 11-point scale (0–10), derived from codings of the competitiveness of political participation, the openness and competitiveness of executive recruitment, and constraints on the chief executive. Gross capital formation (K), obtained from the WDI, is measured in constant values at 2005 \$US; and exports refer to the value of all goods and other market services provided to the rest of the world as a percentage of constant GDP.

Table 8.1 presents a list of the dependent and independent variables used in this study, including their sources. Our final sample consists of pooled data with 87 observations and 63 countries (see Appendix 12).

Table 8.1. Description of variables

Variable	Description	Source ^a
Equation 1		
Business owners	Average number of owners in start-up or young business.	GEM 2012-2013
Opportunity/Necessity TEA	Ratio computed with TEA opportunity and TEA necessity. TEA opportunity and necessity: Total Entrepreneurial Activity reporting opportunity or necessity as a major motive, respectively.	GEM 2012-2013
Tax payments	The total number of taxes and contributions paid, during the second year of operation.	Doing Business 2012-2013
Time to start a business	The median duration (in days) necessary to complete a procedure with government agencies and no extra payments.	Doing Business 2012-2013
Established Democracy	Additive eleven-point scale (0-10), derived from the competitiveness of political participation, the openness and competitiveness of executive recruitment, and constraints on the chief executive.	Center for Systemic Peace 2012-2013
GDP per capita	Sum of gross value added by all resident producers in the economy divided by midyear population. Constant values at 2005 US\$	WDI 2012-2013
Equation 2		
Social Progress Index	The index scores from a 0-100 scale, created through individual indices such as opportunity, foundations of wellbeing and basic human needs.	The Social Progress Imperative 2013-2014
Opportunity Index	Based on 0-100 scale, the index measures the degree to which a country's population is free of restrictions on its rights and its people are able to make their own personal decisions.	The Social Progress Imperative 2013-2014
Foundations for Wellbeing Index	Based on 0-100 scale, the index measures whether a population has access to basic education, ideas and information from both inside and outside their own country.	The Social Progress Imperative 2013-2014

Variable	Description	Source ^a
Basic Human Needs Index	Based on 0-100 scale, the index assesses how well a country provides for its people's essential needs by measuring whether people have enough food to eat and are receiving basic medical care and healthy services.	The Social Progress Imperative 2013-2014
Capital	Fixed assets of the economy plus net changes in the level of inventories. Constant values at 2005 US\$.	WDI 2012-2013
Exports	Value of all goods and other market services provided to the rest of the world, respect to the GDP.	WDI 2012-2013

^a Global Entrepreneurship Monitor (GEM): <http://www.gemconsortium.org/>; Doing Business: <http://www.doingbusiness.org/>; Center for Systemic Peace: <http://www.systemicpeace.org/>; The Social Progress Imperative: <http://www.socialprogressimperative.org/>.

8.4. Results and discussion

Table 8.2 reports the means, standard deviations and correlation coefficients of the previous variables. As Table 8.2 shows, both measures of entrepreneurial activity are significantly correlated with tax payments, time to start a business and established democracy. Furthermore, the social progress index is significantly correlated with exports as well as both measures of entrepreneurial activity. Given the correlations among the independent variables, we test for the problem of multicollinearity in both equations through variance inflation factor (VIF) computations, which might affect the significance of the main parameters in the regressions. Although 3SLS does not allow the VIF to be obtained directly, we compute this test separately for each equation in models 4 and 8, which assess the two measures of entrepreneurship and social progress, respectively. The VIF values are low (lower than 1.86 for equation 1 and 1.08 for equation 2 in model 4; and 1.86 for equation 1 and 1.07 for equation 2 in model 8).

Table 8.2. Descriptive statistics and correlation matrix

	Mean	Std. Dev.	1	2	3	4	5	6	7	8
1 Ln Business owners Ln Opportunity/Necessit	0.522	0.162	1							
2 y TEA Ln Social Progress	1.137	0.577	0.306*	1						
3 Index	4.147	0.233	0.458*	0.384*	1					
4 Ln tax payments Ln Time to start a business	2.653	0.697	-0.442*	-0.359*	-0.384*	1				
5 Established	2.785	0.825	-0.425*	-0.329*	-0.415*	0.316*	1			
6 Democracy	7.989	2.687	0.409*	0.354*	0.621*	-0.223	-0.354*	1		
7 Ln GDP per capita	9.016	1.386	0.606*	0.501*	0.740*	-0.548*	-0.441*	0.669*	1	
8 Ln Capital	25.119	1.628	0.224	0.089	0.182	-0.480*	-0.191	0.122	0.475*	1
9 Ln Exports	3.535	0.480	-0.038	0.155	0.309*	0.115	-0.278	0.176	0.245	-0.221

* $p < 0.01$.

Table 8.3 shows the results of linear regressions with robust variance estimates. Models 1, 2, 3 and 4 consider both equations but the dependent variable of equation 1 is the ratio between opportunity and necessity entrepreneurship, while in equation 2 the dependent variable is the opportunity index, foundations of well-being index, basic human needs index, and the overall social progress index, respectively. Models 5, 6, 7 and 8 are similar to the previous models, but in this case, the dependent variable of equation 1 is the number of business owners. All the models are highly significant ($p < 0.001$) and have a relatively high explanatory power, explaining 40.3% of the variance in entrepreneurial activity and 13.8% of the variance in social progress. In addition, for models 4 and 8, we compute the Hausman test to compare the coefficients obtained with Ordinal Least Square (OLS) and 3SLS. The results show that the coefficients of both equations modeled through the techniques are not significantly different ($p > 0.1$) for both models. However, according to Baltagi (2005, p. 127), if the null hypothesis of the Hausman test is not rejected, this means that the expected value of the residuals tends to be zero, which implies good specification of the models. Here, the 3SLS estimators are consistent and asymptotically more efficient than single equation estimators obtained through OLS. Thus, 3SLS appears an appropriate technique to produce better results.

Regarding model 1, the results indicate that the number of tax payments and established democracy are highly significant, as predicted. On the one hand, the number of tax payments generates a reduction in the opportunity–necessity entrepreneurship ratio, which is positively associated with the opportunity index; on the other hand, the established democracy is positively associated with the ratio, and thus the opportunity in society. Similarly, the results of model 2 show that the number of tax payments and the time required to start a business have a negative and significant influence ($p < 0.1$) on the entrepreneurship ratio. However, this variable seems not to be significant in explaining the variations of foundations of well-being. Model 3 indicates that only the number of tax payments and the time required to start a business are highly significant and have the expected signs of the coefficients. Nonetheless, the entrepreneurship ratio does not have a significant impact on the basic human needs index. In the case of model 4, both the number of tax payments and the time required to start a business have a negative impact on the opportunity–necessity entrepreneurship ratio ($p < 0.1$), which explains the variations of the social progress index ($p < 0.05$). Similarly, in models 5, 6 and 7 the opportunity–necessity entrepreneurship ratio explains the variation of the dimensions of social progress: opportunity index, foundations of well-being index and basic human needs index, respectively. For all these models, the regulatory institutions, such as the number of tax payments and the time required to start a business, negatively affect ($p < 0.1$) the variation of the number of business owners, on the one hand; on the other, the established democracy is positively related to this variable. Finally, model 8 shows that both regulatory institutions used in previous

models have a negative effect on the number of business owners, which is highly related to the Social Progress Index ($p < 0.01$).

Concerning the hypotheses testing, we follow the measures of institutions suggested by Voigt (2013), which try to reflect the regulatory atmosphere and political system of each country. For instance, hypothesis 1 posits that the number of tax payments has a negative influence on entrepreneurship. In our case, all models show that this variable has a negative and significant influence on entrepreneurship in all countries (for models 1–4, an average impact of $b = -0.221$, $p < 0.05$; and for models 5–8, an average impact of $b = -0.056$). Therefore, hypothesis 1 is supported by the data. The results show a negative relationship between the number of tax payments and entrepreneurship, similar to the relationship found in previous studies (Belitski et al., 2016; Djankov et al., 2010; Fisman & Svensson, 2007). Thus, with one additional percentage of the number of tax payments, entrepreneurship decreases by 0.221% for models 1–4, and 0.056% in models 5–8.

Hypothesis 2 suggests that time required to start a business has a negative influence on entrepreneurship. This hypothesis is supported by our data, which is generally consistent with the literature; the presence of bureaucratic constraints, such as the time required to start a business, decreases entrepreneurship (Branstetter et al., 2014; Monteiro & Assunção, 2012). Although this variable is not statistically significant in model 1, the result is expected. Models 2–4 show that the time required to start a business has a negative and significant influence on entrepreneurship in all countries (for models 2–4, the average impact is $b = -0.139$, $p < 0.1$; and for models 5–8, there is an average impact of $b = -0.043$). Thus, with one additional percentage in the amount of the time required to start a business, entrepreneurship decreases by 0.139% for models 2–4, and by 0.043% in models 5–8.

Hypothesis 3 suggests that an established democracy has a positive influence on entrepreneurship. Although the outcome is the expected one for all estimated models, only the coefficients in models 1 and 5–8 are positive and significant, supporting hypothesis 3; thus, countries with an established democracy encourage entrepreneurial activity (for model 1, an impact of $b = 0.070$, $p < 0.05$; while for models 5–8, an average impact of $b = 0.022$). These results support the conclusions of Djankov et al. (2002) and van Stel et al. (2007), who analyze the regulatory structure of each country based on their political system. According to these authors, the regulatory regime tends to affect entrepreneurship less in those countries with an established democracy or where there is a transition towards this system. For instance, Aidis et al. (2007) provide evidence showing that entrepreneurial activity is more dynamic in countries undergoing a transition process from communism to democracy. Also, Acemoglu (2008) suggests that the free market in democratic countries increases the opportunity for those new firms that are trying to enter into a specific industry. Accordingly, the entrepreneurial activity increases by 0.070% when countries have a well-established democracy (model 1), and 0.022% for models 5–8.

Hypotheses 4 and 5 posit that social progress is influenced positively by entrepreneurship, measured as the number of business owners, and the opportunity–necessity entrepreneurship ratio, respectively. We find that entrepreneurship is positively related to social progress ($b = 0.252$, $p < 0.05$, in model 4; and $b = 0.912$, $p < 0.01$, in model 8). As we mentioned before, both measures of entrepreneurial activity define different characteristics in each country in terms of the development process. According to Wong et al. (2005), opportunity entrepreneurial activity impacts positively on economic development. However, they do not find statistically significant evidence. In contrast, our results suggest that for each country in our sample, if entrepreneurship increases by 1%, the social progress index will increase by 0.252% (model 4) and 0.912% (model 8), *ceteris paribus*. This is consistent with Audretsch and Keilbach's (2004a) results. Furthermore, we point out that the effect of these two measures of entrepreneurship on social progress does not differ significantly among these countries. This idea, supported by Valliere and Peterson (2009), suggests that those countries that encourage entrepreneurial activity based on innovation could obtain improved outcomes in terms of economic performance. Therefore, we could suggest that entrepreneurship has a relevant role in promoting social progress, in which institutional context is a factor that has a relevant influence. In addition, according to Braunerhjelm et al. (2010), entrepreneurial activity is a key missing link in converting knowledge into economically relevant knowledge; therefore, spillovers could be generated to increase economic development.

8.5. Policy implications

The analysis of these results in terms of policy implications concerns both models using simultaneous estimation. Our results provide compelling empirical evidence regarding the approach proposed by Reynolds et al. (2005, p. 206), who suggest that entrepreneurial activity depends on the institutional context, and its effects are reflected in economic development (social progress). Thereby, factors such as regulations and political context are associated with formal institutions. The appropriate external context could help to facilitate a favorable endowment of entrepreneurship, which in turn is instrumental in the process of economic development. Given our results, public policy in general and regulatory agencies, in particular, should be consistent with the entrepreneurial intentions of individuals, as well as encouraging the long-run pursuit of opportunities in order to transform them into new businesses. We could suggest that a higher stable political system is essential to incentive a structure more compatible with entrepreneurship, which will ultimately promote social progress. Concerning tax payments and the time required to start a business as entry barriers, these should be relaxed to reduce the

Table 8.3. Results of simultaneous equation through three-stage least-square (3SLS)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dep. Variable Eq. 1	Ln Opportunity/ Necessity TEA	Ln Opportunity/ Necessity TEA	Ln Opportunity /Necessity TEA	Ln Opportunity/ Necessity TEA	Ln Business owners	Ln Business owners	Ln Business owners	Ln Business owners
Ln tax payments	-0.210** (0.104)	-0.237** (0.110)	-0.219** (0.105)	-0.218** (0.105)	-0.053** (0.023)	-0.058** (0.025)	-0.056** (0.025)	-0.055** (0.024)
Ln Time to start a business	-0.087 (0.075)	-0.146* (0.079)	-0.146* (0.076)	-0.124* (0.075)	-0.032* (0.017)	-0.048*** (0.018)	-0.049*** (0.018)	-0.042** (0.018)
Established Democracy	0.070** (0.033)	0.041 (0.034)	0.044 (0.034)	0.054 (0.033)	0.025*** (0.008)	0.020** (0.008)	0.020** (0.008)	0.022*** (0.008)
Ln GDP per capita	0.072 (0.086)	0.062 (0.087)	0.067 (0.086)	0.068 (0.086)	0.004 (0.019)	-0.000 (0.020)	0.001 (0.020)	0.002 (0.020)
Constant	0.715 (0.855)	1.274 (0.875)	1.149 (0.859)	1.003 (0.857)	0.499*** (0.188)	0.639*** (0.200)	0.625*** (0.199)	0.581*** (0.194)
<i>R</i> ²	0.287	0.329	0.326	0.317	0.382	0.410	0.409	0.403
Dep. Variable Eq. 2	Ln Opportunity Index	Ln Foundations of Wellbeing Index	Ln Basic Human Needs Index	Ln Social Progress Index	Ln Opportunity Index	Ln Foundations of Wellbeing Index	Ln Basic Human Needs Index	Ln Social Progress Index
Ln Capital	0.044 (0.039)	0.011 (0.038)	0.066 (0.051)	0.039 (0.039)	0.055 (0.034)	0.020 (0.032)	0.079** (0.040)	0.050 (0.032)
Ln Exports	0.117 (0.075)	0.154** (0.076)	0.244** (0.099)	0.171** (0.076)	0.130** (0.057)	0.160*** (0.057)	0.260*** (0.072)	0.184*** (0.056)
Ln Opportunity/Necessity TEA	0.300** (0.125)	0.181 (0.122)	0.286* (0.163)	0.252** (0.126)				

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Ln Business owners					1.126*** (0.365)	0.645* (0.342)	1.018** (0.434)	0.912*** (0.347)
Constant	2.183** (1.082)	3.130*** (1.059)	1.340 (1.414)	2.257** (1.089)	1.635* (0.863)	2.760*** (0.809)	0.749 (1.026)	1.756** (0.820)
R^2	0.129	0.107	0.164	0.138	0.011	0.089	0.225	0.133
Observations	62	62	62	62	62	62	62	62

* p<0.10, ** p<0.05; *** p<0.01. Robust standard errors in parentheses.

unnecessary bureaucracy that impedes entrepreneurial activity. Countries in our sample should find an appropriate balance between the capacity of regulation, in terms of procedures, and taxes in order to provide an incentive structure that is most conducive to the creation of new business.

Given results for our entrepreneurship measures, imply, by definition, that productive outcomes and human capabilities are impacted by the institutional context. This finding is consistent with the model proposed by Gnyawali and Fogel (1994), who identify those different elements involved in the entrepreneurial process which is also useful in spurring economic development. In this case, institutional dimensions such as regulatory, socioeconomic and nonfinancial assistance play a key role in fostering entrepreneurial activity, which at the same time facilitates the creation of opportunities (one of the dimensions in the SPI). This dynamic could imply that each strategy to increase the number of new business owners and entrepreneurs motivated by opportunity introduces a positive and constant loop, leading to a virtuous path of economic development.

The social process in which more entrepreneurs are involved is also beneficial in terms of well-being and human needs. Bruton et al. (2013) discuss the importance of entrepreneurship as a mechanism to solve the problems of poverty in society. They suggest that one possible solution is to design incentives encouraging individuals to become entrepreneurs. Our results are consistent with their conclusion in the sense that social progress, influenced by entrepreneurship, contains access to basic knowledge, information and communication, health, ecosystem sustainability, nutrition and basic medical care, air, water and sanitation, shelter and personal safety. Hence, a focused entrepreneurship strategy also facilitates access to all of these social requirements. Higher and improved results could be obtained if entrepreneurs are oriented towards a social system that breaks the vicious cycle of the poverty trap.

Shane (2009) emphasizes that entrepreneurial policy must be aimed at those entrepreneurs related to innovation and enjoy a higher likelihood of survival. This implies the provision of education and skills to all people in order that they can pursue innovative goals useful for them as well as for the rest of society. The opportunity–necessity entrepreneurship ratio is an example of the importance of either increasing opportunity entrepreneurship or decreasing necessity entrepreneurship, or a combination of both.

8.6. Conclusions

In this chapter, pooled data (for the periods 2012 and 2014) were used to examine how a country's institutional environment influences the way in which entrepreneurial activity affects social progress. Using the conceptual framework of institutional economics, we analyzed the influence of the number of tax payments,

the time required to start a business and the established democracy on entrepreneurial activity, which at the same time allows for the achievement of social progress. The empirical results suggest that for all of the countries included in the sample, the institutions analyzed exert a strong and important influence on entrepreneurship, which in turn, is found to enhance social progress.

Three main results from this chapter should be highlighted. First, there is evidence that the institutional context affects entrepreneurial activity. This follows the recent results in the entrepreneurship literature, which has identified institutions as playing an important role in explaining entrepreneurship (Bruton et al., 2010; Thornton et al., 2011). Secondly, we found a positive relationship between entrepreneurial activity and social progress. These results suggest that entrepreneurship is a factor not only in achieving economic growth, but also in influencing economic development and social progress. Hence, it is important that public policy has a broad comprehension of the complex process in order to redefine the strategies conducive to entrepreneurial activity in each national context. In terms of long-term development, strategies related to enhancing the number of individuals involved in each business idea, as well as entrepreneurship driven by opportunity, are important. Thirdly, by combining the two sides of entrepreneurship research discussed by Carlsson et al. (2013), we would emphasize that institutions reflecting the regulatory regime and political system stability influence entrepreneurial activity, which ultimately will foster social progress. Here, theoretical and policy implications could be derived, concerning the institutional factors that affect growth and development (North, 1990) through entrepreneurship.

Finally, some limitations regarding the sample size and short period of analysis need to be emphasized. Other data sets could only provide a greater sample for a heterogeneous group of countries, but not for specific ones such as developing countries. Additional institutional factors should be considered, as well as single index of entrepreneurial activity such as overall or innovative TEA (as shown in Chapters 4 and 7), self-employment or the number of new firms registered. In that sense, it is possible to follow the studies by Urbano and Alvarez (2014) and Audretsch et al. (2008), in order to analyze how the institutions analyzed in these papers could also encourage entrepreneurial behavior and therefore enhance social progress.

Chapter 9

General Conclusions

9. General Conclusions

9.1. Main conclusions

Entrepreneurship, defined as the process of exploring, evaluating and exploiting opportunities (Shane & Venkataraman, 2000), has turned out to be highly relevant for society (Blackburn & Ram, 2006; Carlsson et al., 2013). Hence, people involved in academia, policy making and business have placed emphasis on the analysis of entrepreneurial activity across the world. According to Blackburn and Kovalainen (2009) and Landström et al. (2012), research in entrepreneurship has shown a rapid increase in different areas, which implies a dissemination of the field toward different frontiers. In this regard, although the explicit analysis of entrepreneurial activity was born with the Schumpeter's (1911) book, many disciplines have been motivated to explore such a phenomenon from their own perspectives (Carlsson et al., 2013). According to Alvarez et al. (2015), Bruton et al. (2010) and Thornton et al. (2011), most researchers in the entrepreneurship field have been interested in exploring economic, psychological, sociological and anthropological factors, among others. Nonetheless, the different approaches have led to disparate ideas ranging from antecedents and consequences of entrepreneurship, but not to a common view that embraces the entire complexity involved in entrepreneurial activity.

Some scholars have made an important attempt at comprehending those factors that affect both entrepreneurship and its consequences on economic outcomes (cf. Audretsch & Keilback, 2008; Bjørnskov & Foss, 2016; Terjesen et al., 2016). It turns out that among those elements that influence entrepreneurial activity, these authors have identified that the institutional context is extremely relevant to explaining why entrepreneurship is formed within each country or region, and how it could contribute to enhancing the economic growth and development. According to Audretsch (2012), Carlsson et al. (2013) and Bruton et al. (2010), among others, there is still a lacuna in the literature that includes both the antecedents and consequences of entrepreneurship, placing emphasis on institutions as those relevant factors for, and economic development as the main final outcome guided by entrepreneurship. Therefore, the main objective of this research has been to explore the institutional factors encouraging the entrepreneurial activity that achieves higher economic development across developing and developed countries. In particular, this thesis has been focused on specific objectives such as the exploration of the content and evolution of both the isolated relationships between institutions and entrepreneurship, and how the latter is linked to economic progress, as well as to: the whole causal chain that goes from institutions to entrepreneurship and economic development; the study of social intentionality, as a particular informal institution, related to entrepreneurial activity; the analysis of the effect of different entrepreneurship types on economic growth; and the

examination of those institutional factors that enable a positive relationship between entrepreneurship and economic development. Overall, in addition to shedding light on institutional economics, the results of this research show that entrepreneurship serves as a conduit that transfers the influence of different institutional settings on economic development.

The hypotheses have been assessed using country level data. For instance, for the different institutional factors evaluated within this thesis, Doing Business, Worldwide Governance Indicators, World Values Survey, Indices of Social Development, the Hofstede Centre, the United Nations Development Programme, the National Experts Survey of Global Entrepreneurship Monitor (GEM) and the Center for System Peace have been used. For entrepreneurship, the study has primarily used GEM (Adult Population Survey); and for economic growth and development, databases such as World Development Indicators and Social Progress Imperative have been employed. Additionally, several research techniques have been applied throughout the thesis: systematic literature review, multiple regression, instrumental variables and a three-stage least-square analysis. Finally, Table 9.1 summarizes the main findings of the study.

Chapter 2, through synthesizing disparate strands of literature over the period 1992-2016, identifies an emergent stream of research that sheds light on the institutional factors that shape entrepreneurial activity and its effect on economic growth. This integrative analysis spans a broad spectrum of disparate literature, enabling a distinction between two different research lines in the entrepreneurship field. The findings of this chapter enable a broader comprehension of these two separate lines of research, which allows for an analysis of the interaction among institutions, entrepreneurship and economic growth. The systematic literature synthesis and review reveals that institutions could be related to economic growth through entrepreneurship, which would open new research questions about what institutional factors are conducive to entrepreneurship, which in turn spurs economic growth. Some of these ideas for further research are developed in the remaining sections of the thesis.

Chapter 3 examines the influence of social progress orientation on entrepreneurship from an international perspective. Using a multiple linear regression model with cross-sectional information from the Global Entrepreneurship Monitor, the Indices of Social Development, the World Values Survey, the Hofstede Centre, the United Nations Development Programme and World Development Indicators, it is found that social progress orientation dimensions such as voluntary spirit, survival vs. self-expression values and power distance are related to entrepreneurial activity. More specifically, the main findings demonstrate that a high voluntary spirit had a positive and statistically significant impact on innovative early-stage entrepreneurial activity (TEA). In addition, necessity-driven TEA is highly discouraged in those societies with high voluntary spirit and self-expression values, whereas larger power distance increased the

entrepreneurial activity driven by necessity. Based on these results, this study advances the literature by introducing and analyzing the concept of social progress orientation through examining the factors that influence innovative entrepreneurial activity in light of an institutional approach.

Once (informal) institutions are proven to be linked to entrepreneurship, Chapter 4 analyzes the effect of entrepreneurship capital types on economic growth. An augmented Cobb-Douglas production function is used, which introduces variables such as entrepreneurship capital into the analysis of growth as an endogenous factor. By using panel data analysis on 43 countries in the period from 2002 to 2012, this chapter employs different measures of entrepreneurship capital. The estimations suggest that these variables have a positive effect on economic growth, specifically overall TEA and opportunity TEA. Distinguishing between groups of countries and periods of time, it is found that overall TEA has a greater effect on economic growth in OECD countries and in the post-crisis period for all the countries in our sample.

Having studied separately the institutional antecedents and the economic consequences of entrepreneurship, in which entrepreneurial activity driven by opportunity is found to be highly relevant, Chapter 5 explores the institutional factors that encourage opportunity entrepreneurship in order to achieve higher rates of economic growth. This chapter and the next ones make an effort of integrating institutions and economic development (North, 1990, 2005) by analyzing the determinants and effects of entrepreneurial activity. Thus, opportunity entrepreneurship is identified as one such mechanism that impacts on economic growth. Using a three-stage least-square method through unbalanced panel data with 43 countries (2004-2012), it is found that informal institutions have a higher impact on opportunity entrepreneurship than formal institutions. Variables such as control of corruption, confidence in one's skills and private coverage to obtain credit promote a positive effect of opportunity entrepreneurship on economic growth in all the countries of the sample, and especially in Latin American countries as a homogeneous group.

By holding the same model but exploring different variables in all phases of the causal chain, Chapter 6 investigates the links between institutional context, export-oriented entrepreneurship, and economic performance using simultaneous-equation panel data models for a sample of 43 countries over the period 2004-2012. In particular, this chapter focuses its attention on the differences between developed and developing countries through interaction effects. The main findings suggest the existence of directional causality running from institutions to the different levels of export-oriented entrepreneurship, which are linked to economic growth. In terms of institutional factors, this chapter finds that the human development context, opportunity recognition, private coverage to getting credit and access to communication are significantly related to the highest level of the

export intensity of entrepreneurship across countries; and getting coverage is particularly more relevant for developing countries than for developed ones.

As mentioned before, it is suggested that informal institutions, which cultivate those factors that are associated with intentionality toward progress, are important for entrepreneurial activity driven by innovation and opportunity recognition. Thereby, Chapter 7 extends the current debate on whether innovative and opportunity entrepreneurship do improve not only economic growth but also development by reducing poverty. Chapter 7 is aimed to empirically examine how social progress orientation through entrepreneurship that is driven by innovation and opportunity affects inclusive economic growth. Using an unbalanced short panel data of 132 observations and 63 countries and the three-stage least-squares method (3SLS), evidence is provided that social progress orientation measured through civic activism, voluntary spirit and interpersonal safety and trust has a positive and significant influence on innovative and opportunity entrepreneurship, which in turn, affects economic growth, and allows for poverty reduction.

Finally, Chapter 8 attempts to examine how a country's institutional context influences the way in which entrepreneurial activity affects social progress. Following the theoretical approach of institutional economics, hypotheses are tested using pooled data from 62 countries (2012 and 2014) and simultaneous-equation model estimation. The findings suggest that business regulations decrease entrepreneurial activity, while established democracies provide a government context that is conducive to entrepreneurship. In addition, we find that entrepreneurial activity has a positive impact on the Social Progress Index, which is an alternative measure of economic development.

9.2. Implications

As pointed out in Chapter 1, this thesis contributes to both the theoretical debate and public policy implications. From a theoretical point of view, this research may contribute to the advances of the current knowledge in an area in which there is a space to keep working (the institutional antecedents and economic consequences of entrepreneurship), as some aspects remain underexplored.

Some of the main theoretical implications might be related to the evidence provided on the causal chain that explains the economic development process. Accordingly, North and Thomas (1978) and Rodrik (2003) have suggested that institutions conditioning those factors, are indirectly related to economic development. The logics behind this idea is that, first, economic development is pushed up by particular engines that create commercial and social value (Acs et al., 2013); and second, although institutions matter to explain the differences among societies (North, 2005), they do not cause growth (Gleaser et al., 2004) simply because they frame the individual behavior of those who make productive decisions. On these bases and by applying mainly institutional economics, this research offers a set of empirical findings (Chapters 5, 6, 7 and 8) that enables the understanding of such

development, in which entrepreneurial activity plays an important role. Although literature exists that deals with this idea (Bjørnskov & Foss, 2016; Méndez-Picazo et al., 2012), there is still a lacuna suggesting that more empirical evidence across countries is needed. Thereby, this thesis might contribute to this discussion by proposing different models that quantify the simultaneity running from institutions, entrepreneurship and economic development. In this regard, based on this thesis, it is possible to suggest that institutions (and particularly the informal ones) affect entrepreneurship, which is a conduit for accomplishing higher economic growth and development.

Table 9.1. Summary of the main results of the research

	Chapter	Theoretical framework	Dependent variables	Independent variables	Methodology	Main conclusions
Phase 1: Literature review	2	-	-	-	Literature review of 188 articles published in the top management journals in the business, economics and entrepreneurship fields	The results show the current state of the art in the institutions, entrepreneurship, and economic development literature. In addition, it highlights that institutions and entrepreneurship, entrepreneurial activity and economic development, and the whole causal chain running from institutional factors to development are three main lines of future research in entrepreneurship.
	3	Institutional economics	TEA innovative	Voluntary spirit	Linear regression	The findings show that social progress orientation dimensions such as voluntary spirit, survival vs. self-expression values and power distance are related to entrepreneurial activity driven by innovation, opportunity and necessity.
TEA opportunity			Survival vs. self-expression values			
Phase 2: Institutions and entrepreneurial activity	3	Institutional economics	TEA necessity	Power distance		The estimations suggest that three measures of entrepreneurship capital have a positive effect on economic growth, specifically overall TEA and opportunity TEA. Distinguishing between groups of countries and periods of time, overall TEA has a greater effect on economic growth in OECD countries and in the post-crisis period.
			TEA opportunity	TEA	Instrumental variables	
Phase 3: Entrepreneurship as a key capital factor to growth	4	Endogenous growth theory	GPD per population aged 15-64	TEA	Instrumental variables	The estimations suggest that three measures of entrepreneurship capital have a positive effect on economic growth, specifically overall TEA and opportunity TEA. Distinguishing between groups of countries and periods of time, overall TEA has a greater effect on economic growth in OECD countries and in the post-crisis period.
	5	Institutional economics	TEA opportunity	Control of corruption	3SLS	
Endogenous growth theory			Labor productivity	Confidence in one's skills		
Phase 4: Building a complex model for economic development	5	Endogenous growth theory	Labor productivity	Confidence in one's skills		Variables such as control of corruption, confidence in one's skills and private coverage to obtain credit promote a positive effect of opportunity entrepreneurship on economic growth in all the countries of our sample, and especially in Latin American countries as a homogeneous group.
				Number of procedures to start a new business		
				Private coverage to getting credit		

	Chapter	Theoretical framework	Dependent variables	Independent variables	Methodology	Main conclusions
	6	Institutional economics	Export-oriented TEA (0, 1-25, 26-100%) Labor productivity	Human development context Opportunity recognition Private coverage to getting credit Access de communication	3SLS	The main findings suggest the existence of directional causality running from institutions to the different levels of export-oriented entrepreneurship, which are linked to economic growth in developing and developed countries.
	7	Institutional economics Endogenous growth theory	TEA innovative TEA opportunity TEA necessity GPD Poverty	Civic activism Voluntary spirit Interpersonal Safety and Trust	3SLS	The results show that the three dimensions of social progress orientation (i.e. Civic activism, voluntary spirit and interpersonal safety and trust) exert a positive influence on TEA innovative, opportunity and necessity, but only entrepreneurship driven by innovation and opportunity recognition generates increase economic growth that reduces poverty.
	8	Institutional economics	Business owners Opportunity/Necessity TEA Social progress index Opportunity index Foundations for wellbeing index Basic human needs index	Tax payments Time to start a business Established democracy	3SLS	The findings suggest that business regulations decrease entrepreneurial activity, while established democracies provide a government context conducive to entrepreneurship. In addition, the entrepreneurial activity has a positive impact on the Social Progress Index, which is an alternative measure of economic development.

Regarding the simultaneity issues, additional implications might be derived from this research. According to Acs et al. (2012) and Audretsch and Keilbach (2008), among others, studies dealing with the relationship between entrepreneurship and economic growth must overcome the existing endogeneity between these two variables. Hence, this thesis is an attempt to solve such problems by instrumenting entrepreneurship with specific institutional factors. Additionally, the different set of models and empirical strategies presented might constitute a robustness check for the idea that entrepreneurial activity mediates the relationship between the institutional context and economic development. In this regard, despite the fact that Chapter 4 does not include institutional factors, it establishes the idea that entrepreneurship should capture, in advance, some environmental characteristics in order to explain growth and development. Thus, Chapters 5, 6, 7 and 8 operationalize different institutional settings that precede entrepreneurial activity, and subsequently affect the economic development. The common empirical strategy presented in these chapters might offer to entrepreneurship scholars a fresh view on the importance of keeping conducting analysis at the country level, which requires taking into account the endogeneity issues presented there. We suggest, therefore, that institutions (particularly the informal ones) should be considered in such analysis, which in addition, help to overcome the endogeneity between entrepreneurship and economic development.

In terms of operationalization, the present thesis tries to go one step further by introducing the concept of social progress orientation as a particular informal institution. In Chapter 3, the idea is explained that entrepreneurship is not only conditioned by the social characteristics, but also that it captures them quantitatively in order to represent the social intentionality toward progress. Consistent with North (2005), intentions aimed at improving the standard of living differentiate those developed societies from those in the developing stage. According to Uhlaner and Thurik (2007) and Stephan and Uhlaner (2010), additional evidence is needed to see whether cultural values and social features define the types of entrepreneurship across countries. Thereby, this research provides evidence in terms of those characteristics that go beyond the economic terms in order to explain the entrepreneurial formation. Accordingly, social progress orientation might constitute an important element to classify those societies encouraging productive entrepreneurship.

Another important implication of this thesis is related to those effects not only on economic performance, but also on social indicators such as poverty and social progress. According to Bruton et al. (2013, 2015) and McMullen (2011), entrepreneurship and related factors (e.g. microlending) might be mechanisms for overcoming poverty and generating inclusive process. However, as Bruton et al. (2013) and Blackburn and Ram (2006) claim, there are few studies tackling this issue quantitatively, and therefore, further evidence may shed light on the effect that

entrepreneurship has on the social progress mostly seen in developing countries. In this regard, Chapter 7 might be important for offering new evidence concerning the effects of entrepreneurship on inclusive growth. Although in this case a simultaneous-equation model was also applied, this research put together the notion of social progress orientation as the intentionality characteristic of societies leading to entrepreneurship, and its subsequent influence on economic growth. As an additional step, this research estimated another equation to assess whether economic growth, influenced by entrepreneurial activity (directly) and social progress orientation (indirectly), reduces the poverty level across countries. In this regard, the evidence offered by this thesis indicates that entrepreneurship does generate economic growth and social inclusion.

Implications regarding not only an orientation but also a social progress outcome are also generated. Chapter 8 draws upon the idea that economic development (i.e. creation of opportunities, foundations of well-being, and basic human needs) is influenced by entrepreneurship (Leff, 1979). Consequently, Chapter 8 assesses a new proxy of economic development (i.e. Social Progress Index), which is a function of entrepreneurial activity that is affected at the same time by institutions. The evidence found that the number of owners not only affects social progress as a whole, but also each one of the factors that comprise the index. It might imply that entrepreneurial activity is one of the factors that may cause development by creating (market) opportunities, new jobs that increase income and well-being and the inclusion of all society into the economic system. In this case, it turns out that it is important to identify those characteristics that encourage entrepreneurship. Here, Chapter 8 is in line with the discussion and findings in the extant literature (Djankov et al., 2002; Leff, 1979; van Stel et al., 2007). In this sense, excessive regulations may be harmful for the creation of new businesses, and established democracies may create a stable environment pro-market in order to develop entrepreneurial projects.

Overall, the previous implications might suggest to entrepreneurship scholars that new data is appearing in the scene, and therefore, new empirical findings at all stages of the causal chain may be raised. The data and the operationalization of the variables presented in this thesis might also imply that scholars have the opportunity to validate our results, particularly on whether they hold across time. One of the advantages of the macro-level data use here is that there is a continuous agenda to gather information about institutions, entrepreneurship and economic development. By achieving this, it is possible to keep exploring and validating the determinants of economic development.

With regard to the main theoretical implications, this thesis places emphasis on the role played by informal institutions within the relationship between entrepreneurship and economic development. On the one hand, though some authors have found similar results in terms of entrepreneurial activity and economic growth (Acs et al., 2012; Audretsch & Keilbach, 2008), through this thesis we

suggest that formal and informal institutions constitute a framework that plays an active role in defining why the effect of new businesses creation might differ across developed and developing countries. And on the other, although North (1990, 2005) has explained such differences mainly due to the institutional context, entrepreneurship had been implicit in his analysis (as well as in other mainstream theories in Economics). In this sense, by drawing the scheme presented by North and Thomas (1983) and Rodrik (2003), this thesis is an attempt to demonstrate that entrepreneurship could be a factor that follows such theoretical models. Thus, through this thesis, we suggest that institutional economics is a framework to understand economic development (North, 1990, 2005) through entrepreneurship.

From a public policy point of view, this research might serve to shed light on possible answers regarding what determines economic development. As mentioned before, entrepreneurship is a key factor in explaining the complexity involved in the development process. Thus, by knowing those institutional factors that affect different types of entrepreneurial activity, it could be possible to discuss some public strategies that encourage people to become entrepreneurs, and at the same time enhance the level of economic development. The present research identifies some possible variables that create a sensitive response to entrepreneurial activity, which ultimately affects growth and development.

Chapter 3, for instance, allows the observation that it is not only the cultural values, but also the intention to be better developed socially and economically that creates an environment where certain types of entrepreneurship may be encouraged. In this sense, Arshed et al. (2014), McMullen (2011) and Shane (2009), among others, suggest that public policies should create mechanisms that increase the level of entrepreneurial activity capable of surviving and growing across time. It implies that governments should identify what entrepreneurship they are creating within their countries in order to define the most accurate rules of the game that shape the entrepreneurial interactions. Although Chapter 3 uses cross-sectional data, it might be useful to suggest that it is importance to establish long-term policies that ultimately define informal institutions (Williamson, 2000) such as the culture and social progress orientation. For example, creating social cohesion through collaborations and community efforts should be considered by policy makers in order to foster entrepreneurial persistence. In line with this idea, Chapter 7 serves to claim that short- and long-term public strategies allow for the achievement of innovative entrepreneurship, capable of creating social value and development.

Power distance, another factor used to characterize social progress orientation, is conclusive in its negative effect on innovative and opportunity entrepreneurship. Inequality created among groups may generate coordination problems, which brings some obstacles for the market development and opportunity seeking. Chapter 5 may illustrate that control of corruption serves a mechanism to controlling power distance. This idea is in line with Anokhin and Schulze (2009) and Liñán and Fernandez-Serrano (2014), who argue that control of corruption is highly

relevant for the entrepreneurial process based on the discovery, evaluation and exploitation of opportunities. Similarly, Jetter et al. (2015) suggest that social advances (e.g. education, health, inclusion, etc.) and industrial transformation, among others, create less corrupt societies. Thereby, redistribution mechanisms, social inclusion, well-defined regulatory actors, the active participation of the whole society in the design of public budget, and the subsequent assessment of the use of such public funds are highly relevant (See Chapter 8).

Based on Chapters 5 and 6, it is possible to discuss the importance of a national entrepreneurship system, particularly for developing countries. In this regard, strategies for the science, technology and innovation (STI) system should also be the focus of public policy. In this sense, Ács et al. (2014) suggest that policies concerning the permanent generation of ideas through the STI infrastructure spur potential entrepreneurs to keep exploring, evaluating and creating new entrepreneurial ideas driven by innovation. Hence, the new businesses could contribute to the competitiveness and growth of regions and countries. Padilla-Pérez and Gaudin (2014) offer evidence for Central American countries, which have created public policies that include infrastructure and innovation systems. At the same time, developing countries should create complementary policies aimed to enhance the education system by including entrepreneurial and business skills, since they are considered as transversal knowledge in the learning process (Guerrero et al., 2015). This may provide confidence to all entrepreneurs based on their own knowledge instead of pointing out cases of failure (Stephens & Partridge, 2011).

Additionally, Chapters 5 and 6 find that the lack of financial structure for supporting entrepreneurial ideas based on opportunities and international orientation is a barrier to accomplishing efficient results in terms of economic performance. Padilla-Pérez and Gaudin (2014, p. 757) find that financial scarcity discourages entrepreneurs and the efficiency of science, technology and innovation process. Fatoki and Odeyemi (2010) provide evidence for African countries, which suggests that public policies oriented toward the expansion of financial aid are crucial to all entrepreneurs, particularly for those who create businesses based on knowledge. Thus, a wide coverage of private credit may support an increasing number of innovative entrepreneurs with a high likelihood of success. By achieving this, governments and financial organizations could get back the loans to redistribute them again into new nascent entrepreneurs. In that sense, access to credit should be focused on providing support to evaluate new ideas, the growth and development of SMEs, innovative projects in firms and the possibility to explore new local and foreign markets.

9.3. Limitations and future research lines

Although some implications have been derived from the present research, there is still much to do. Thus, the thesis has several theoretical and empirical limitations

that in somehow might create opportunities to keep moving forward in future research lines. Theoretically, the limitations are related to the concept of the entrepreneurship, which lacks a universal definition (Shane & Vankataraman, 2000; Audretsch et al., 2015b). Nonetheless, this thesis has tried to follow Reynolds et al.'s (2005, p. 208) definition, which states that entrepreneurship is "the net result of individual decisions to pursue entrepreneurial initiatives". In this sense, various measures of entrepreneurship have been employed in order to explore whether a variety of different businesses effectively fits in such definition. Although the data availability is a limitation by itself, the use of different rates and types of entrepreneurial activity might cause confusions in the interpretation of entrepreneurship as a mechanism that connects institutions and economic development. Nonetheless, different scholars have shown that the use of GEM data is expanding within entrepreneurship research, indicating its accuracy for measuring entrepreneurial activity across countries, as well as the opportunity to conduct analyses with long time series and similar measures of entrepreneurship (Bosma, 2013; Álvarez et al., 2014).

Another theoretical limitation found in this thesis is related to the concept of development. On the one hand, the results of this thesis are initially presented in isolation, which leads to the understanding of each link. Although this structure might create confusion due to the separate analysis of the results, we believe that it was necessary to conduct such strategy before examining the objectives established within Chapters 5, 6, 7 and 8, which try to explore the proximate and fundamental determinants of development. In most of these chapters, conscious that growth is a necessary but not sufficient condition for economic development, this research has mainly used variables of economic growth rather than development. Although Hirschman (1981) claimed that little advances of this theory have been made, recent literature (cf. Acemoglu et al., 2014) has provided evidence to answer the general question in economic development: why are some countries richer than others? Accordingly, the main discussion around this query converges on the analysis of national growth or income as a proxy for development (Acemoglu & Robinson, 2011; Rodrik, 2003). In entrepreneurship research, Wennekers et al. (2005) have discussed the correlation between entrepreneurial activity and economic development, suggesting that there exists a "U-shaped" form between these two variables. Here, the relationship analyzed ran from economic development to entrepreneurship. Carree et al. (2002, 2007), however, were pioneering in providing evidence about the opposite direction. In their works, the proxy for economic development was GDP per capita. Based on this evidence, Chapters 4, 5 and 6 were focused on this validated but limited proxy of development. Nonetheless, Chapters 7 and 8 aimed to move forward by analyzing inclusive growth and social progress. According to McMullen (2011) and Bruton et al. (2013), alternative measures of economic development need to be assessed in models where entrepreneurship plays an important role. In this regard, authors such as Antonelli and Gehringer (2017) and Fritsch and Wyrwich (2017), among others, open the

possibility to keep exploring the influence of entrepreneurial activity on development, by reducing income inequality and poverty, and by allowing social progress.

Similar to the previous limitation, this thesis has found that the operationalization of institutions, and particular the distinction between formal and informal ones, might have problematic results. Although this research was built upon North's (1990, 2005) ideas, in some cases it was not possible to conduct an analysis distinguishing between formal and informal factors. For example, Chapters 3 and 7 were only focused on informal institutions, since it was related to the concept of social progress orientation on the socio-cultural characteristics of countries. In this regard, by combining this approach and Williamson's (2000) ideas, subsequent research could introduce the notion of social progress orientation joint with formal regulatory factors, which undoubtedly differ across developed and developing countries. Other examples of this limitation are found in Chapters 6 and 8, which instead of treating variables as either formal or informal institutions, they went directly toward understanding the institutional context. This research is conscious that some subtle differences should be taken into consideration, especially because developed and developing countries pose cultural characteristics that generate divergent behaviors within each country, as well as among each group of countries. Possible solutions might follow the idea of conducting research by taking into account a multilevel approach (Estrin et al., 2013a; Urbano & Alvarez, 2014), as well as other theoretical contributions (DiMaggio & Powel, 1991; Scott, 1995).

Along with the theoretical limitations, this research is not devoid of problems derived from the data. According to Estrin et al. (2013a) and Stenholm et al. (2013), among others, different databases (e.g. GEM, Doing Business, WGI, etc.) are limited by the availability of each country to provide comparable data. All these databases at a country level do not report information for all countries in the same period of time. It causes the analysis to take support from an unbalanced panel data structure (see Chapters 4, 5, 6, 7 and 8), which conditions the results to the manner in which the final sample is restructured. As an example of this limitation, the goodness of fit reported in Chapters 5, 6 and 7 were extremely high. Nonetheless, alternative models were performed by excluding those countries with few information. By doing this, it was avoided the assumption that the constant term could absorb the effect of entrepreneurship on economic growth in those countries having one or two observations. Surprisingly, the results were pretty much similar. In addition, although Audretsch et al. (2015b) suggest that future research should consider the dynamics in entrepreneurship, given the young stage of the research field, as well as the lack of data, this gap is still open and difficult to cover. Nonetheless, new avenues could consider the difference between short- and long-term analysis (van Praag & van Stel, 2013), which could be supported by longitudinal data such as the panel study of entrepreneurial dynamics (PSED) (Reynolds & Curtin, 2008).

Based on this thesis, it could be possible to further discuss research in line with the structure information that GEM and PSED offer. Although the present thesis has conducted empirical analysis by aggregating the data at a country level, individual level exercises may also lead to new directions in terms of the microfoundations of the macro analysis of entrepreneurship and economic development. In this sense, there is a stream that suggests that entrepreneurial activity could influence the well-being (Shir, 2015; Uy et al., 2013). However, this research relies mostly on a psychological perspective, leaving some space to understand such relationship from an economic point of view, where institutions may condition the way these two variables interact with each other. In this sense, Warnecke (2013) suggests that such analyses enable the understanding, for instance, of the role of institutions in relation to female entrepreneurs and their well-being. Similarly, Acs et al. (2013) discuss the possibility of the social impact on other type of entrepreneurs. In particular, these authors refer to social entrepreneurship as the labor choice that not only creates economic value, but also social value. Thus, future research from an individual perspective could shed light on the relationship between entrepreneurship and economic development.

Although the previous research line proposal considers institutions, the argumentation still follows the causal chain logic. Another avenue in entrepreneurship research that could be derived from this thesis is the idea that institutions are not exogenous factors. As Alvarez et al. (2015) suggest, the study of those institutional factors affecting entrepreneurial activity needs to understand the interplay existing between these variables. It could be relevant for both theoretical discussion and policy debate to analyze how institutions affect entrepreneurship, which in turn affects the institutional change. In this regard, Bruton et al. (2009, 2013) discuss the fact that developing countries are embedded in an environment of the informal economy. It might be relevant to analyze whether institutional factors affect the formation of entrepreneurship; and at the same time, to see whether the quality of these new ventures demands better institutions, and if therefore, an institutional change might be achieved. By enhancing the regulatory environment, it could be possible to influence the decision to carry out a formalized entrepreneurial activity. In this sense, better institutions could be accomplished through entrepreneurship, which is stimulated by stable institutions, and ultimately, generates a higher level of economic development.

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Appendix

Appendix 1. List of papers dealing with institutions and entrepreneurship

Author(s)	Title	Theoretical framework	Methodology	Results	Key term	Dvariable	Ivariable	Type of paper
1. Aidis, R., Estrin, S., Mickiewicz, T. (2008)	Institutions and entrepreneurship development in Russia: A comparative perspective	Institutional approach	Probit	Russia's institutional environment is important in explaining its relatively low levels of entrepreneurship development, where the latter is measured in terms of both a number of start-ups and of existing business owners. In addition, Russia's business environment and its consequences for the role of business networks contribute to the relative advantage of entrepreneurial insiders (those already in business) to entrepreneurial outsiders (newcomers) in terms of new business start-ups. Entrepreneurial entry is inversely related to the size of the government, and weaker to the extent of corruption. A cluster of institutional indicators representing "market freedom" is only significant in some specifications. Freedom from corruption is significantly related to entrepreneurial entry, especially when the richest countries are removed from the sample, but unlike the size of government, the results on corruption are not confirmed by country-level fixed-effects models.	Institutions	TEA	Formal_institutions	Empirical
2. Aidis, R., Estrin, S., Mickiewicz, T. M. (2012)	Size matters: entrepreneurial entry and government	Institutional approach	Panel data	Though formal institutions such as rules and regulations allow for the possibility of female business development, informal institutions such as gendered norms and values that reflect the patriarchy observed during the Soviet era restrict women's activities and their access to resources.	Institutions	Start-up rate	Formal_institutions	Empirical
3. Aidis, R., Welter, F., Smallbone, D., Isakova, N. (2007)	Female entrepreneurship in transition economies: The case of Lithuania and Ukraine	Institutional approach	Descriptive statistics	New organizations that successfully pursue legitimacy may evolve from innovative ventures to a broader context, collectively reshaping the industry and institutional environments.	Institutions	Business owners	Formal_Informal	Empirical
4. Aldrich, H. E., Fiol, C. M. (1994)	Fools rush in? The institutional context of industry creation	Institutional approach		There is an increasing number of articles nowadays using GEM data to conduct entrepreneurship research. There is also a notorious recognition of institutional economics as a theoretical framework in this field.	Institutions	New organizations/in dustries	Formal_Informal	Theoretical
5. Álvarez, C., Urbano, D., Amorós, J. E. (2014)	GEM research: achievements and challenges	Institutional approach	Literature review	There is a positive curvilinear relationship between the control of corruption and three independent measures of entrepreneurial and innovative activity across nations. We also document that these relationships are moderated by foreign direct investment — which prior research has established as a driver of technological advancement in developing nations.	Institutions			Theoretical
6. Anokhin, S., Schulze, W. S. (2009)	Entrepreneurship, innovation, and corruption	Contract theory	Quantile regression; Panel data		Institutions	TEA	Formal_institutions	Empirical

Author(s)	Title	Theoretical framework	Methodology	Results	Key term	Dvariable	Ivariable	Type of paper
7. Aparicio, S., Urbano, D., Audretsch, D. (2016a)	Institutional factors, opportunity entrepreneurship and economic growth: Panel data evidence	Institutional approach	Panel data (3SLS)	Informal institutions have a higher impact on opportunity entrepreneurship than formal institutions. Variables such as control of corruption, confidence in one's skills and private coverage to obtain credit promote a positive effect of opportunity entrepreneurship on economic growth in all the countries, and especially in Latin American countries as a homogeneous group.	Institutions	Opportunity TEA	Formal_Informal	Empirical
8. Audretsch, D. B., Bönte, W., Tamvada, J. P. (2013)	Religion, social class, and entrepreneurial choice	Institutional approach	Multinomial probit	While some religions are relatively conducive to self-employment, some others have a negative impact on self-employment choices.	Institutions	Self-employment	Informal_institutions	Empirical
9. Autio, E., Fu, K. (2015)	Economic and political institutions and entry into formal and informal entrepreneurship	Institutional approach	Panel data (OLS)	An increase in the quality of economic and political institutions could double the rates of formal entrepreneurship and halve the rates of informal entrepreneurship.	Institutions	Formal new firms	Formal_institutions	Empirical
10. Bauernschuster, S., Falck, O., Heblich, S. (2010)	Social capital access and entrepreneurship	Occupational choice	Linear probability model	The effect of club membership on the propensity to be an entrepreneur is 2.6 percentage points larger in small communities than in large communities.	Institutions	Self-employment	Informal_institutions	Empirical
11. Baughn, C. C., Chua, B.-L., Neupert, K. (2006)	The Normative Context for Women's Participation in Entrepreneurship: A Multicountry Study	Institutional approach	Hierarchical linear model	Countries with higher overall levels of entrepreneurial activity also tended to evidence higher relative proportions of female participation. These findings are still seen when controlling for the substantial effect of countries' economic development in shaping patterns of entrepreneurial activity.	Institutions	TEA	Formal_institutions	Empirical
12. Bauke, B., Semrau, T., Han, Z. (2016)	Relational trust and new ventures' performance: the moderating impact of national-level institutional weakness	Relational trust/ Institutional approach	Linear regression	Interaction analyses reveal that the performance implications of relational trust are contingent on the institutional context.	Institutions	New venture performance	Formal_institutions	Empirical
13. Belitski, M., Chowdhury, F., Desai, S. (2016)	Taxes, corruption, and entry	Institutional approach	Panel data	Higher tax rates consistently discourage entry. Further, although the direct influence of corruption on entry is also consistently negative, the interaction influence of corruption and tax rate is positive. This indicates that corruption can offset the negative influence of high taxes on entry.	Institutions	Entry rate	Formal_institutions	Empirical
14. Ben Letaifa, S., Goglio-Primard, K. (2016)	How does institutional context shape entrepreneurship conceptualizations?	Institutional approach	Multiple-case studies	The comparison of two information and communication technology clusters illustrates that entrepreneurship relies on either a network or an individual perspective. The former relies on collaborative entrepreneurship, well-defined norms of conduct; uncollaborative entrepreneurship and absence of norms characterize the latter	Institutions			Empirical

Author(s)	Title	Theoretical framework	Methodology	Results	Key term	Dvariable	Ivariable	Type of paper
15. Bjørnskov, C., Foss, N. J. (2016)	Institutions, Entrepreneurship, and Economic Growth: What Do We Know and What Do We Still Need to Know?	Institutional approach	Literature review	The literature narrowly identifies entrepreneurship with start-ups and self-employment; does not theorize many potentially relevant inter-level links and mechanisms; and suffers from sample limitations, omitted variable biases, causality issues, and response heterogeneity. Theories in management research, such as the resource-based view, transaction cost economics, and strategic entrepreneurship theory, can fill some of the conceptual and theoretical gaps.	Institutions			Theoretical
16. Bradley, S. W., Klein, P. (2016)	Institutions, economic freedom, and entrepreneurship: The contribution of management scholarship	Institutional approach		Introduction to the symposium focused on economic freedom, which summarizes the perspective on how scholars can theorize and study the effects of institutions and institutional change on entrepreneurship, and the effects of entrepreneurship on institutions, at and across different levels of analysis.	Institutions			Special issue
17. Braunerhjelm, P., Desai, S., Eklund, J. E. (2015)	Regulation, firm dynamics and entrepreneurship	Institutional approach		The paper identifies some foundational considerations relevant to the relationship between regulatory conditions and entrepreneurship, which can be nuanced given the wide range of regulatory tools and possible areas of impact.	Institutions			Special issue
18. Bruno, R. L., Bychkova, M., Estrin, S. (2013)	Institutional determinants of new firm entry in Russia: a cross-regional analysis	Contract theory	Tobit model	Entry rates in Russia are explained by natural entry rates and the institutional environment. Industries that are characterized by low entry barriers in developed market economies are found to have lower entry rates in regions subject to greater political fluidity, as in the case of gubernatorial change. We also find that higher levels of political fluidity and democracy increase relative entry rates for small-sized firms but reduce them for medium-sized or large ones. Institutional theory has the potential to provide great insights for entrepreneurship and the broader management discipline. However, since the theory has matured, it is time to employ new and richer insights and uses of the theory.	Institutions	Business owners	Formal_Informal	Empirical
19. Bruton, G. D., Ahlstrom, D., Li, H.-L. (2010)	Institutional Theory and Entrepreneurship: Where Are We Now and Where Do We Need to Move in the Future?	Institutional approach	Literature review	The venture capital industry exhibits a strong consistency across many dimensions, yet institutions in these two distinct settings result in significant differences in industry practice.	Institutions			Theoretical
20. Bruton, G. D., Ahlstrom, D., Puky, T. (2009)	Institutional differences and the development of entrepreneurial ventures: a comparison of the venture capital industries in Latin America and Asia	Institutional approach	Grounded theory	A country institutional profile can serve as a viable alternative for exploring broad country differences.	Institutions	Business owners	Formal_Informal	Empirical
21. Busenitz, L. W., Gomez, C., Spencer, J. W. (2000)	Country institutional profiles: Unlocking entrepreneurial phenomena	Institutional approach	Factor analysis		Institutions	Business owners	Formal_Informal	Empirical

Author(s)	Title	Theoretical framework	Methodology	Results	Key term	Dvariable	Ivariable	Type of paper
22. Calcagno, P. T., Sobel, R. S. (2014)	Regulatory costs on entrepreneurship and establishment employment size	Contract theory	Panel data	Regulation decreases the proportion of zero employee and 1–4 employee establishments. The proportion of establishments in the 5–9 employee range generally increases with the level of regulation. Thus, regulation appears to operate as a fixed cost causing establishments to be larger.	Institutions	Small Enterprises	Formal_institutions	Empirical
23. Carbonara, E., Santarelli, E., Tran, H. T. (2016)	De jure determinants of new firm formation: how the pillars of constitutions influence entrepreneurship	Institutional approach	Panel data	The provisions about the right to conduct/ establish a business, the right to strike, consumer protection, anti-corruption, and compulsory education promote higher rates of new firm formation.	Institutions	New business density	Formal_institutions	Empirical
24. Chowdhury, F., Desai, S., Audretsch, D. B., Belitski, M. (2015a)	Does corruption matter for international entrepreneurship?	Regulatory capture theory; Institutional approach	Panel data	The effect of regulations on international nascent entrepreneurship varies depending on types of regulation. Corruption plays a dual role, serving as both grease and sand for nascent international entrepreneurship. Corporate tax is not a significant deterrent factor for IE when corruption is low.	Institutions	Export-oriented TEA	Formal_institutions	Empirical
25. Chowdhury, F., Terjesen, S., Audretsch, D. (2015b)	Varieties of entrepreneurship: institutional drivers across entrepreneurial activity and country	Institutional approach	Panel data	Institutional factors influence the disparate varieties of entrepreneurship differently: property rights, freedom from corruption, and fewer start-up procedures are significantly positively related to nascent/new firm ownership. Property rights protection is significantly positively related to new firm start-up; tax and regulatory burden have significant positive impacts on self-employment but significantly negatively related to new firm start-up	Institutions	Varieties of entrepreneurship	Formal_Informal	Empirical
26. Collins, J. D., McMullen, J. S., Reutzel, C. R. (2016)	Distributive justice, corruption, and entrepreneurial behavior	Equity theory	Linear regression	Productive entrepreneurship is positively related to distributive justice perceptions but negatively related to perceptions that corruption is pervasive. In contrast, nonproductive forms of entrepreneurship are negatively related to distributive justice but positively related to corruption. Unexpectedly, the findings also show that corruption mediates the relationship between distributive justice and legal entrepreneurial behavior while distributive justice mediates the relationship between corruption and illegal entrepreneurial behavior.	Institutions	Productive/Nonproductive entrepreneurship	Formal_institutions	Empirical
27. Davis, L. S., Williamson, C. R. (2016)	Culture and the Regulation of Entry	Institutional approach	Linear regression	Individualism has a greater impact on entry regulation in societies with democratic political institutions or a common law tradition.	Institutions	Firm entry	Formal_Informal	Empirical
28. Da Rin, M., Di Giacomo, M., Sembenelli, A. (2011)	Entrepreneurship, firm entry, and the taxation of corporate income: Evidence from Europe	Taxation theory	Panel data	Significant negative effect of corporate income taxation on entry rates. The effect is concave and suggests that tax reductions affect entry rates only below a certain threshold tax level.	Institutions	Small Enterprises	Formal_institutions	Empirical

Author(s)	Title	Theoretical framework	Methodology	Results	Key term	Dvariable	Ivariable	Type of paper
29. Davidsson, P., Hunter, E., Klofsten, M. (2006)	Institutional Forces: The Invisible Hand that Shapes Venture Ideas?	Institutional approach	Linear regression	The results confirmed that the venture idea had undergone more change in ventures that had more external owners, a dominant customer, and an incubator location.	Institutions	Business owners	Formal_Informal	Empirical
30. De Clercq, D., Dakhli, M. (2009)	Personal strain and ethical standards of the self-employed	Strain theory	Linear regression	The self-employed's ethical standards relate positively to their household income and trust in institutions but negatively to their educational level and associational membership. A supplementary exploratory analysis provides further insights into how broader cultural and institutional contexts in which the self-employed are embedded might influence the relationship between sources of personal strain and ethical standards.	Institutions	Self-employment	Formal_Informal	Empirical
31. De Clercq, D., Danis, W. M., Dakhli, M. (2010)	The moderating effect of institutional context on the relationship between associational activity and new business activity in emerging economies	Institutional approach	Pooled regression	Positive relationship between a country's associational activity and new business activity; this relationship is stronger for higher regulatory and normative institutional burdens and lower cognitive institutional burdens	Institutions	TEA	Formal_Informal	Empirical
32. de Lange, D. E. (2016)	Legitimation Strategies for Clean Technology Entrepreneurs Facing Institutional Voids in Emerging Economies	Institutional approach		The research clarifies how organizational fields, potentially supportive of new industries, form through local entrepreneurs' efforts at legitimating their start-ups. It proposes that organizational fields can substitute for the institutional voids so that the new firms can develop. Legitimation strategies that foster the supportive organizational fields include endorsements from notable local individuals such as an iconic local entrepreneur or a community leader				Theoretical
33. Dutta, N., Sobel, R. (2016)	Does corruption ever help entrepreneurship?	Institutional approach	Panel data	Corruption hurts entrepreneurship. The impact is smaller, but remains negative, when business climates are bad.		New business density	Formal_institutions	Empirical
34. Eesley, C. (2016)	Institutional barriers to growth: entrepreneurship, human capital and institutional change	Institutional approach	Probit	Reducing the institutional barriers to growth differently affects college-educated individuals with different levels of human capital	Institutions	Founder	Formal_institutions	Empirical
35. Estrin, S., Korosteleva, J., Mickiewicz, T. (2013a)	Which institutions encourage entrepreneurial growth aspirations?	Institutional approach	Multilevel estimation	The relationship between growth aspiring entrepreneurs and institutions is complex; they benefit simultaneously from a strong government (in the sense of property rights enforcement), and smaller government, but are constrained by corruption. Social networks mediate some but not all institutional deficiencies.	Institutions	TEA	Formal_Informal	Empirical

Author(s)	Title	Theoretical framework	Methodology	Results	Key term	Dvariable	Ivariable	Type of paper
36. Estrin, S., Mickiewicz, T. (2011)	Institutions and female entrepreneurship	Institutional approach	Multilevel estimation	Women are less likely to undertake entrepreneurial activity in countries where the state sector is larger, but the rule of law is not generally found to have gender-specific effects. However, more detailed institutional components of discrimination against women, in particular, restrictions on freedom of movement away from home, make it less likely for women to have high entrepreneurial aspirations in terms of employment growth, even if their entry into entrepreneurial activities, including self-employment, is not affected by this. With appropriate controls and instrumenting for potential endogeneity, the impact of the shadow economy on entry in a linear specification is found to be negative. Further, there is evidence of a U-shaped relationship: entrepreneurial entry is least likely when the shadow economy amounts to about a quarter of gross domestic product (GDP). At the individual level, an extensive shadow economy has a more negative impact on respondents who are risk averse. In addition, in the economies where property rights are stronger, the negative impact of the shadow economy is weaker.	Institutions	TEA	Formal_institutions	Empirical
37. Estrin, S., Mickiewicz, T. (2012)	Shadow Economy and Entrepreneurial Entry	Institutional approach	Probit	Social and commercial entrepreneurial entry is facilitated by certain formal institutions, namely strong property rights and (low) government activism, albeit the latter impacts each of these types of entrepreneurship differently. Among Hindu women, training increased borrowing and business income for those facing more restrictions, i.e., UC women. However, Muslim women failed to benefit from the training program.	Institutions	TEA	Formal_Informal	Empirical
38. Estrin, S., Mickiewicz, T., Stephan, U. (2013b)	Entrepreneurship, Social Capital, and Institutions: Social and Commercial Entrepreneurship Across Nations	Institutional approach	Multilevel estimation	It is argued that skill is applied differently across organizational fields that are forming, become stable, and are being transformed. Creativity is found to lead to start-ups in urban areas, where the environment is not only more supportive but also more competitive, but not in rural areas. However, creativity does not increase the chance of success. The particular importance of social networks in rural areas is likely due to stronger ties and fewer supporting institutions.	Institutions	TEA	Formal_Informal	Empirical
39. Field, E., Jayachandran, S., Pande, R. (2010)	Do Traditional Institutions Constrain Female Entrepreneurship? A Field Experiment on Business Training in India	Institutional approach	Instrumental variables	Higher judicial efficacy increases the entry rate of firms, while it has no effect on the exit rate.	Institutions	Self-employment	Informal_institutions	Empirical
40. Fligstein, N. (1997)	Social skills and Institutional Theory	Institutional approach	Single-Case study		Institutions	Institutional entrepreneurs	Informal_institutions	Theoretical
41. Freire-Gibb, L. C., Nielsen, K. (2014)	Entrepreneurship Within Urban and Rural Areas: Creative People and Social Networks	Geographical economics	Logit		Institutions	Self-employment	Informal_institutions	Empirical
42. García-Posada, M., Mora-Sanguinetti, J. S. (2015)	Entrepreneurship and enforcement institutions: Disaggregated evidence for Spain	Institutional approach	Panel data		Institutions	Entry rate	Formal_institutions	Empirical

Author(s)	Title	Theoretical framework	Methodology	Results	Key term	Dvariable	Ivariable	Type of paper
43. Gnyawali, D. R., Fogel, D. S. (1994)	Environments for entrepreneurship development: Key dimensions and research implications	Institutional approach		Five dimensions are proposed as a framework to link entrepreneurial environment to the core elements of the new venture creation process. Women's political power and a country's rule of law are positively associated with women's entry into entrepreneurship. Entry into entrepreneurship is moderated by rule of law, with higher levels of women's political power having greater effects in countries with higher levels of rule of law.	Institutions			Theoretical
44. Goltz, S., Buche, M. W., Pathak, S. (2015)	Political Empowerment, Rule of Law, and Women's Entry into Entrepreneurship	Institutional approach	Hierarchical linear model	As institutions such as economic freedom improve, preferences for self-employment increase for both groups, but the effect is greater for those who are currently self-employed.	Institutions	TEA	Formal_institutions	Empirical
45. Gohmann, S. F. (2012)	Institutions, Latent Entrepreneurship, and Self-Employment: An International Comparison	Occupational choice	Logit	Formal and informal institutions affect universities outcomes, from which entrepreneurial activities take place.	Institutions	Self-employment	Informal_institutions	Empirical
46. Guerrero, M., Urbano, D. (2012)	The development of an entrepreneurial university	Institutional approach; Resource-Based View	Structural equation model	Differences at the internal and environmental level are outlined for Spain and Ireland. Both countries share and differentiate from certain characteristics that define entrepreneurial universities.	Institutions	Entrepreneurial universities	Formal_Informal	Empirical
47. Guerrero, M., Urbano, D., Cunningham, J., Organ, D. (2014)	Entrepreneurial universities in two European regions: A case study comparison	Institutional approach; Resource-Based View	Multiple case studies	Cognitive skills predict a measure of both entrepreneurial attitudes and the institutional and economic prerequisites for creating high-value, high-growth firms.	Institutions	Entrepreneurial universities	Formal_Informal	Empirical
48. Hafer, W., Jones, G. (2015)	Are entrepreneurship and cognitive skills related? Some international evidence	Global Entrepreneurship and Development Index (GEDI) model	Linear regression	Fruitful avenues for future research could address Hofstede dimensions in order to understand the entrepreneurial activity. Traditional societal values positively impact commercial entrepreneurship prevalence rates, but negatively impact social entrepreneurship rates. Self-expression societal values positively impact social entrepreneurship prevalence rates.	Institutions	GEDI	Cognitive skills	Empirical
49. Hayton, J. C., George, G., Zahra, S. A. (2002);	National culture and entrepreneurship: A review of behavioral research	Institutional approach	Literature review	The different dimensions of culture impact on the type of entrepreneurial activity.	Institutions			Theoretical
50. Hechavarría, D. M. (2016)	The impact of culture on national prevalence rates of social and commercial entrepreneurship	Institutional approach	Linear regression	There is a positive relationship between religion and business ownership based on those dimensions that reflect the internal aspects of religiosity (i.e., believing and behaving). No relationship was found regarding belonging and bonding, affecting business ownership.	Institutions	Social/commercial entrepreneurship	Informal_institutions	Empirical
51. Hechavarría, D. M., Reynolds, P. D. (2009)	Cultural norms & business start-ups: the impact of national values on opportunity and necessity entrepreneurs	Institutional approach	Hierarchical linear model	The culture, particularly perceptions of community cultural norms, influences venture emergence.	Institutions	Opportunity/Necessity TEA	Informal_institutions	Empirical
52. Hoogendoorn, B., Rietveld, C. A., van Stel, A. (2016)	Belonging, believing, bonding, and behaving: the relationship between religion and business ownership at the country level	Institutional approach	Linear regression		Institutions	Business ownership rate	Informal_institutions	Empirical
53. Hopp, C. Stephan, U. (2012)	The influence of socio-cultural environments on the performance of nascent entrepreneurs: Community culture, motivation, self-efficacy and start-up success	Institutional approach	Probit; Instrumental variables Probit		Institutions	New firm performance	Informal_institutions	Empirical

Author(s)	Title	Theoretical framework	Methodology	Results	Key term	Dvariable	Ivariable	Type of paper
54. Huggins, R., Thompson, P. (2016)	Socio-spatial culture and entrepreneurship: some theoretical and empirical observations	Institutional approach	Linear regression	A range of dimensions of sociospatial community culture relating to social cohesion, collective action, and social rules are significantly associated with the local entrepreneurial activity.	Institutions	New firm formation	Formal_institutions	Empirical
55. Kannianen, V., Vesala, T. (2005)	Entrepreneurship and labor market institutions	Occupational choice	Linear regression	Enterprise formation is affected by economic risks, unemployment compensation, union power, and labor protection variables.	Institutions	Self-employment	Informal_institutions	Empirical
56. Kibler, E., Kautonen, T. (2016)	The moral legitimacy of entrepreneurs: An analysis of early-stage entrepreneurship across 26 countries	Institutional approach	Multilevel estimation	Moral norms in society are an important influence upon early-stage entrepreneurship.	Institutions	TEA	Informal_institutions	Empirical
57. Kim, B.-Y., Kang, Y. (2014)	Social capital and entrepreneurial activity: A pseudo-panel approach	Institutional approach	Pseudo-panel	Trust measured by trust either in strangers or in public institutions facilitates entrepreneurship. Also, parents' emphasis on individual achievement relative to interpersonal relations in raising their child is positively associated with entrepreneurship. Evidence suggests that both social norms and networks influence entrepreneurship. These results do not change when we use social capital measured at the national level.	Institutions	Self-employment	Informal_institutions	Empirical
58. Klapper, L., Laeven, L., Rajan, R. (2006)	Entry regulation as a barrier to entrepreneurship	Contract theory	Linear regression	Costly regulations hamper the creation of new firms, especially in industries that should naturally have high entry. These regulations also force new entrants to be larger and cause incumbent firms in naturally high-entry industries to grow more slowly. Our results hold even when we correct for the availability of financing, the degree of protection of intellectual property, and labor regulations.	Institutions	Small Enterprises	Formal_institutions	Empirical
59. Kirby, D. A., Guerrero, M., Urbano, D. (2011)	Making universities more entrepreneurial: Development of a model	Institutional approach	Structural equation model	There is a series of formal and informal institutions at the university level that enhance different outcomes associated with entrepreneurial activity within the Autonomous University of Barcelona.	Institutions	Entrepreneurial universities	Formal_Informal	Empirical
60. Krasniqi, B. A., Desai, S. (2016)	Institutional drivers of high-growth firms: country-level evidence from 26 transition economies	Institutional approach	Panel data	Interaction effects, rather than direct effects, are useful in explaining systematic variations in HGFs prevalence in transition economies. We find that the interaction between formal and informal institutions positively influences HGFs. Further, we find that in fast-reforming transition economies, more burdensome formal institutions discourage HGFs but in slow-reforming transition economies, informal institutions encourage HGFs.	Institutions	High-growth firms	Formal_Informal	Empirical

Author(s)	Title	Theoretical framework	Methodology	Results	Key term	Dvariable	Ivariable	Type of paper
61. Krasniqi, B. A., Mustafa, M. (2016)	Small firm growth in a post-conflict environment: the role of human capital, institutional quality, and managerial capacities	Gibrat's Law; Jovanovic's Learning Theory; Resource-Based View; Institutional approach	Probit; Tobit	Growth aspirations, managerial capacities, and training are the most significant variables associated with growth. Among the institutional quality variables, only corruption appears to be significant and negatively associated with growth.	Institutions	Small firm growth	Formal_institutions	Empirical
62. Kuckertz, A., Berger, E. S., Mpeqa, A. (2016)	The more the merrier? Economic freedom and entrepreneurial activity	Institutional approach	Fuzzy-set qualitative comparative analysis	The effects of economic freedom (EF) vary according to the developmental stage of an economy and the type of entrepreneurial activity (EA) in question. Overall, high levels of EF trigger high levels of EA regardless of a country's developmental stage are inadequate.	Institutions	Opportunity/Necessity TEA	Formal_institutions	Empirical
63. Lechner, M., Pfeiffer, F. (1993)	Planning for self-employment at the beginning of a market economy: Evidence from individual data of East German workers	Occupational choice	Ordinal logit	Barriers to entry in entrepreneurship may come from capital market constraints and institutional restrictions.	Institutions	Self-employment	Formal_institutions	Empirical
64. Lerner, M., Brush, C., Hisrich, R. (1997)	Israeli women entrepreneurs: An examination of factors affecting performance	Institutional approach	Linear regression	Women entrepreneurs' performance is related to previous industry experience, business skills, and achievement motivation. Specifically, network affiliations was significantly more important for women entrepreneurs in Israel In high-income countries, opportunity perception mediates fully the relationship between the level of post-secondary entrepreneurship education and training in a country and its rate of new business activity, including high-growth expectation new business activity. The mediating effect of skills perception is weaker. This result accords with the Kirznerian concept of alertness to opportunity stimulating action.	Institutions	Female business owners	Formal_Informal	Empirical
65. Levie, J., Autio, E. (2008)	A theoretical grounding and test of the GEM model	Institutional approach	Panel data	The direct effect of individuals' household income on their engagement in entrepreneurship is persistent, regardless of institutional conditions; but the influence of education level varies contingent upon various institutional conditions.	Institutions	TEA	Formal_Informal	Empirical
66. Lim, D. S., Oh, C. H., De Clercq, D. (2016)	Engagement in entrepreneurship in emerging economies: Interactive effects of individual-level factors and institutional conditions	Institutional approach (Regulatory, cognitive and normative)	Multilevel estimation	The social valuation of the entrepreneur was higher in the more developed region (Catalonia), positively affecting perceived subjective norms and behavioral control. In Andalusia, the influence of perceived valuation of the entrepreneur in the closer environment was more important, affecting attitude towards the behavior and subjective norms.	Institutions	Engagement in entrepreneurship	Formal_Informal	Empirical
67. Liñán, F., Urbano, D., Guerrero, M. (2011)	Regional variations in entrepreneurial cognitions: Start-up intentions of university students in Spain	Planned behavior approach; Institutional approach; Social capital theory	Structural equation model		Institutions	Entrepreneurial intention	Informal_institutions	Empirical

Author(s)	Title	Theoretical framework	Methodology	Results	Key term	Dvariable	Ivariable	Type of paper
68. Malchow-Møller, N., Markusen, J. R., Skaksen, J. R. (2010)	Labour market institutions, learning and self-employment	Occupational choice	Dynamic partial-equilibrium model	Certain ability groups of workers become self-employed for both “carrot” and “stick” reasons: Some prefer self-employment to the low institutionalized wage, while others are not productive enough to qualify for a job at the institutionalized wage. Furthermore, wage compression and learning may give rise to a class of switchers who start in wage employment and later switch to self-employment.	Institutions	Self-employment	Formal_institutions	Empirical
69. Maimone Ansaldo Patti, D., Mudambi, R., Navarra, P., Baglieri, D. (2016)	A tale of soil and seeds: the external environment and entrepreneurial entry	Occupational choice	Logit	There are differences in the extent of entrepreneurship in different national contexts. While in developed economies business ventures are more likely to be launched when the turnover rate of incumbent firms is high, the opposite is true in developing economies. Institutional voids originate from the interplay between the existing power structure, legacy institutions, and recently introduced institutional practices. These processes are characterized by extreme resource constraints and an institutional fabric that is rich but often at odds with market development.	Institutions	Self-employment	Formal_institutions	Empirical
70. Mair, J., Marti, I. (2009)	Entrepreneurship in and around institutional voids: A case study from Bangladesh	Institutional approach	Multiple-Case study	There are important differences in the three dimensions (regulatory, cognitive, and normative) of the institutional profiles across the three emerging economies, reflecting their idiosyncratic cultural norms and values, traditions, and institutional heritage in promoting entrepreneurship. In a number of quite different societies, entrepreneurship is associated with high individualism, high power distance, low uncertainty avoidance, and high masculinity scores.	Institutions	Bricolage entrepreneurship	Formal_Informal	Empirical
71. Manolova, T. S., Eunni, R. V., Gyoshev, B. S. (2008)	Institutional environments for entrepreneurship: Evidence from emerging economies in Eastern Europe	Institutional approach	Structural equation model	In a sample of the U.S. solar energy sector, state-sponsored incentives, environmental consumption norms, and norms of family interdependence are related to new firm entry in this sector	Institutions	Business owners	Formal_Informal	Empirical
72. McGrath, R. G., MacMillan, I. C., Scheinberg, S. (1992)	Elitists, risk-takers, and rugged individualists? An exploratory analysis of cultural differences between entrepreneurs and non-entrepreneurs	Hofstede’s cultural dimensions	Discriminant analysis	Smaller government sector, better legal structure and security of property rights, as well as less regulation of credit, labor and business tend to increase entrepreneurship.	Institutions	Self-employment	Informal_institutions	Empirical
73. Meek, W. R., Pacheco, D. F., York, J. G. (2010)	The impact of social norms on entrepreneurial action: Evidence from the environmental entrepreneurship context	Institutional approach	Panel data	Chile societal collectivism decreases the likelihood of commercial entrepreneurship (CE), it increases that of social entrepreneurship (SE). Further, while societal trust influences both SE and CE positively, the strength of this positive influence is felt more strongly on SE than CE.	Institutions	Solar firm founding rate	Formal_Informal	Empirical
74. Nyström, K. (2008)	The institutions of economic freedom and entrepreneurship: evidence from panel data	Institutional approach	Panel data		Institutions	Self-employment	Formal_institutions	Empirical
75. Pathak, S., Muralidharan, E. (2016)	Informal Institutions and Their Comparative Influences on Social and Commercial Entrepreneurship: The Role of In-Group Collectivism and Interpersonal Trust	Institutional approach	Multilevel estimation		Institutions	Social/Commercial entrepreneurship	Informal_institutions	Empirical

Author(s)	Title	Theoretical framework	Methodology	Results	Key term	Dvariable	Ivariable	Type of paper
76. Pathak, S., Xavier-Oliveira, E., Laplume, A. O. (2013)	Influence of intellectual property, foreign investment; and technological adoption on technology entrepreneurship	Institutional approach	Hierarchical linear model	Regimes with strong intellectual property rights protection combined with high levels of FDI per capita decrease the likelihood of individuals' entry into technology entrepreneurship, whereas low barriers to technological adoption increase this likelihood.	Institutions	TEA	Formal_Informal	Empirical
77. Peng, M. W., Yamakawa, Y., Lee, S.-H. (2010)	Bankruptcy Laws and Entrepreneur-Friendliness	Institutional approach	Descriptive statistics	We advocate more entrepreneur-friendly bankruptcy laws designed to make the "pain" less painful for failed entrepreneurs and their firms and to "gain" from more vibrant entrepreneurship development around the world. The positive impact of the strictness of employment protection legislation and the potential severance payment on transitions to dependent self-employment is found. The opposite effects, however, are detected for individuals becoming independent self-employed.	Institutions	Business owners	Formal_institutions	Empirical
78. Román, C., Congregado, E., Millan, J. M. (2011)	Dependent self-employment as a way to evade employment protection legislation	Contract theory	Logit	Institutional legitimacy adds to economic explanations for the survival of new franchisors and suggests the importance of a properly socialized explanation.	Institutions	Self-employment	Formal_institutions	Empirical
79. Shane, S., Foo, M. D. (1999)	New firm survival: Institutional explanations for new franchisor mortality	Institutional approach	Cox regression	Entrepreneurial individuals channel their effort in different directions depending on the quality of prevailing economic, political, and legal institutions. This institutional structure determines the relative reward to investing entrepreneurial energies into productive market activities versus unproductive political and legal activities (e.g., lobbying and lawsuits).	Institutions	New franchise system	Formal_institutions	Empirical
80. Sobel, R. S. (2008)	Testing Baumol: Institutional quality and the productivity of entrepreneurship	Baumol's theory of productive and unproductive entrepreneurship	Linear regression	Normative institutions were marginally associated with the most basic form of entrepreneurship, self-employment, but not with more advanced forms of entrepreneurship. Cognitive institutions explained the prevalence of small firms in a country, as well as the number of new companies listed on the country's stock exchange. Regulatory institutions associated with new listings on the country's stock exchange.	Institutions	Self-employment	Formal_institutions	Empirical
81. Spencer, J. W., Gomez, C. (2004)	The relationship among national institutional structures, economic factors, and domestic entrepreneurial activity: a multicountry study	Institutional approach	Structural equation model	Differences in institutional arrangements are associated with variance in both the rate and type of entrepreneurial activity across countries. For the formation of innovative, high-growth new ventures, the regulative environment matters very little. For high-impact entrepreneurship an institutional environment filled with new opportunities created by knowledge spillovers	Institutions	Self-employment	Formal_Informal	Empirical
82. Stenholm, P., Acs, Z. J., Wuebker, R. (2013)	Exploring country-level institutional arrangements on the rate and type of entrepreneurial activity	Institutional approach	Structural equation model		Institutions	TEA	Formal_Informal	Empirical

Author(s)	Title	Theoretical framework	Methodology	Results	Key term	Dvariable	Ivariable	Type of paper
				and the capital necessary for high impact entrepreneurship matter most.				
83. Stephan, U., Pathak, S. (2016)	Beyond cultural values? Cultural leadership ideals and entrepreneurship	Institutional approach	Multilevel estimation	Cultural values (of uncertainty avoidance and collectivism) influence entrepreneurship mainly indirectly, via charismatic and self-protective CLTs.	Institutions	TEA	Informal_institutions	Empirical
84. Stephan, U., Uhlaner, L. M. (2010)	Performance-based vs socially supportive culture: A cross-national study of descriptive norms and entrepreneurship	Institutional approach	Linear regression	Findings provide strong support for a social capital/SSC and supply-side variable explanation of entrepreneurship rate. PBC predicts demand-side variables, such as opportunity existence and the quality of formal institutions to support entrepreneurship.	Institutions	TEA	Informal_institutions	Empirical
85. Stephan, U., Uhlaner, L. M., Stride, C. (2015)	Institutions and social entrepreneurship: The role of institutional voids, institutional support, and institutional configurations	Institutional approach	Multilevel estimation	It is found joint effects of formal regulatory (government activism), informal cognitive (postmaterialist cultural values), and informal normative (socially supportive cultural norms, or weak-tie social capital) institutions on social entrepreneurship	Institutions	Social entrepreneurship	Formal_Informal	Empirical
86. Stephen, F., Urbano, D., van Hemmen, S. (2009)	The responsiveness of entrepreneurs to working time regulations	Contract theory	Linear regression	Higher enforcement formalism mitigates the negative impact exerted by rigid working time regulations on the number of entrepreneurs. While it is agreed that regulatory rigidities may increase labor transaction costs, we show that entrepreneurs are less sensitive to labor regulations the higher the level of enforcement formalism in which they operate. Higher formalism is associated with lower enforcing efficiency and lower probability of being punished for transgressing laws.	Institutions	TEA	Formal_institutions	Empirical
87. Storey, D., Tether, B. S. (1998)	Public policies measures to support new technology-based firms in the European Union	Definition of new technology-based firms policies	Descriptive statistics	Policies such as science Parks, the Supply of PhDs in Science and Technology, the relationships between NTBFs and Universities, Research Institutions, Direct Financial Support to NTBFs from National Governments, and the Impact of Technological Advisory Services on NTBFs are clearly part of an interdependent 'system' of policies encouraging new technology-based firms	Institutions	New technology-based firms	Formal_institutions	Theoretical
88. Toledano, N., Urbano, D. (2008)	Promoting entrepreneurial mindsets at universities: a case study in the South of Spain	Institutional approach	Case study	In areas with low levels of entrepreneurial activity such as some rural areas of the south of Spain, additional actions to promote entrepreneurship would be necessary	Institutions	Entrepreneurial attitudes	Formal_Informal	Empirical
89. Thornton, P. H., Ribeiro-Soriano, D., Urbano, D. (2011)	Socio-cultural factors and entrepreneurial activity: An overview	Institutional approach		The paper integrates theoretically the socio-cultural factors into the entrepreneurial activity analysis. Thus, it is suggested that future research could take into consideration these factors to enhance the perspective of those elements influencing entrepreneurship.	Institutions			Special issue

Author(s)	Title	Theoretical framework	Methodology	Results	Key term	Dvariable	Ivariable	Type of paper
90. Uhlaner, L., Thurik, R. (2007)	Postmaterialism influencing total entrepreneurial activity across nations	Social legitimation perspective; Institutional approach; Dissatisfaction perspective	Linear regression	Findings confirm the significance of postmaterialism in predicting total entrepreneurial activity and more particularly, new business formation rates.	Institutions	TEA	Informal_institutions	Empirical
91. Urbano, D., Alvarez, C. (2014)	Institutional dimensions and entrepreneurial activity: an international study	Institutional approach	Logit	A favorable regulative dimension (fewer procedures to start a business), normative dimension (higher media attention for new business) and cultural-cognitive dimension (better entrepreneurial skills, less fear of business failure and better knowing of entrepreneurs) increase the probability of being an entrepreneur. Social progress orientation dimensions such as voluntary spirit, survival vs. self-expression values and power distance were related to entrepreneurial activity. Particularly, high voluntary spirit had a positive and statistically significant impact on innovative TEA. Necessity-driven TEA is highly discouraged in those societies with high voluntary spirit and self-expression values, whereas larger power distance increased the entrepreneurial activity driven by necessity.	Institutions	TEA	Formal_Informal	Empirical
92. Urbano, D., Aparicio, S., Querol, V. (2016)	Social progress orientation and innovative entrepreneurship: an international analysis	Institutional approach	Linear regression	Despite the relevance of the legal system, the most important factors for the promotion of the tourism business are the socio-cultural ones. Important differences between socio-cultural factors that affect the emergence of transnational entrepreneurship (role models, immigrants' entrepreneurial attitudes) and those that facilitate the development of transnational entrepreneurial activities (transnational networks and immigrants' perceptions of the culture and opportunities of the host society) are found.	Institutions	Innovative TEA	Informal_institutions	Empirical
93. Urbano, D., Toledano, N., Ribeiro-Soriano, D. (2010)	Support policy for the tourism business: a comparative case study in Spain	Institutional approach	Case study	Despite the relevance of the legal system, the most important factors for the promotion of the tourism business are the socio-cultural ones. Important differences between socio-cultural factors that affect the emergence of transnational entrepreneurship (role models, immigrants' entrepreneurial attitudes) and those that facilitate the development of transnational entrepreneurial activities (transnational networks and immigrants' perceptions of the culture and opportunities of the host society) are found.	Institutions	Tourism business	Formal_institutions	Empirical
94. Urbano, D., Toledano, N., Ribeiro-Soriano, D. (2011)	Socio-cultural factors and transnational entrepreneurship: A multiple case study in Spain	Institutional approach	Multiple-Case study	Despite the relevance of the legal system, the most important factors for the promotion of the tourism business are the socio-cultural ones. Important differences between socio-cultural factors that affect the emergence of transnational entrepreneurship (role models, immigrants' entrepreneurial attitudes) and those that facilitate the development of transnational entrepreneurial activities (transnational networks and immigrants' perceptions of the culture and opportunities of the host society) are found.	Institutions	Business owners	Informal_institutions	Empirical

Author(s)	Title	Theoretical framework	Methodology	Results	Key term	Dvariable	Ivariable	Type of paper
95. Valdez, M. E., Richardson, J. (2013)	Institutional Determinants of Macro-Level Entrepreneurship	Institutional theory	Linear regression	Findings suggest that a society's normative, cultural-cognitive, and regulative institutions are related to entrepreneurial activity. Normative and cultural-cognitive institutions' descriptive power in explaining entrepreneurial activity is higher than regulative institutions' or per capita gross domestic product. This suggests that differences in values, beliefs, and abilities may play a greater role than purely economic considerations of opportunity and transaction costs. Specific attention is given to opportunity- and necessity motivated entrepreneurship due to their relationship to economic development.	Institutions	TEA	Formal_Informal	Empirical
96. Van de Ven, H. (1993)	The development of an infrastructure for entrepreneurship	Ecological approach		The study systematically examines how various actors and functions interact to facilitate and constrain entrepreneurship.	Institutions	Entrepreneurship	Formal_institutions	Theoretical
97. van Hemmen, S., Alvarez, C., Peris-Ortiz, M., Urbano, D. (2015)	Leadership Styles and Innovative Entrepreneurship: An International Study	Institutional approach	Linear regression	The participative leadership and higher education represent the strongest explanatory factor in the variance of the current rates of innovative entrepreneurship.	Institutions	Innovative TEA	Informal_institutions	Empirical
98. van Stel, A., Storey, D. J., Thurik, A. R. (2007)	The Effect of Business Regulations on Nascent and Young Business Entrepreneurship	Contract theory	Two equation model	There is a need for a serious review of this policy area, with better data being a key requirement.	Institutions	TEA	Formal_institutions	Empirical
99. Veciana, J. M., Urbano, D. (2008)	The institutional approach to entrepreneurship research. Introduction	Institutional approach	Literature review	An attempt is made to justify why entrepreneurship research using the institutional approach is promising.	Institutions			Special issue
100. Watson, J., Everett, J. (1996)	Do small businesses have high failure rates: Evidence from Australian retailers	Definition of small business and business failure	Descriptive statistics	Reported failure rates vary from a high of more than 9 per cent per annum to a low of less than 1 per cent per annum depending on the choice of failure definition.	Institutions	Small business	Formal_institutions	Empirical
101. Welter, F., Smallbone, D. (2008)	Women's entrepreneurship from an institutional perspective: the case of Uzbekistan	Institutional approach	Descriptive statistics/ Multiple-Case study	Informal institutions dominating Uzbek society contribute to the prevailing forms of female entrepreneurship.	Institutions	Female/Male entrepreneurs	Informal_institutions	Empirical
102. Yeganegi, S., Laplume, A. O., Dass, P., Huynh, C. L. (2016)	Where do spinouts come from? The role of technology relatedness and institutional context	Spinout concept; Institutional approach	Hierarchical Logit	Employees experiencing activities unrelated to the core technology of their organizations are more likely to spin out entrepreneurial ventures, whereas those with experiences related to the core technology are less likely to do so. Additionally, the strength of intellectual property rights and the availability of venture capital have negative and positive effects, respectively, on the likelihood that employees become entrepreneurs. These institutional factors also moderate the effect of technology relatedness such that spinouts by employees with experiences related to core technology are curbed more severely by stronger intellectual	Institutions	Spinout	Formal_institutions	Empirical

Author(s)	Title	Theoretical framework	Methodology	Results	Key term	Dvariable	Ivariable	Type of paper
103. Zhang, Y. (2015)	The contingent value of social resources: Entrepreneurs' use of debt-financing sources in Western China	Network approach	Probit	property rights protection regimes and lacking of venture capital. The entrepreneurs' use of debt-financing sources is conditioned by the resources embedded in their social networks. More business or political contacts increase entrepreneurs' probability of using formal financial sources, and more urban ties increase their probability of using informal sources.	Institutions	Self-employees that have borrowed money	Informal_institutions	Empirical

Note. Dvariable. Dependent variable; Ivariable. Independent variable.

Appendix 2. List of papers dealing with entrepreneurship and economic growth

Author(s) & Year	Title	Theoretical framework	Methodology	Results	Key term	Dvariable	Ivariable	Type of paper
1. Acs, Z., Audretsch, D., Braunerhjelm, P., Carlsson, B. (2012)	Growth and entrepreneurship	Endogenous growth theory	Panel data (FGLS and 2SLS)	Entrepreneurship is a conduit of knowledge and Positive effect of entrepreneurial activity (TEA) on economic growth	Knowledge spillover	Growth	Self-employment	Empirical
2. Acs, Z., Desai, S., Hessels, J. (2008a)	Entrepreneurship, economic development and institutions	Development economic theory	Cross section (Descriptive statistics)	The Effect of entrepreneurship depends on development stage	Economic development			Special issue
3. Acs, Z., Desai, S., Klapper, L. F. (2008b)	What does "entrepreneurship" data really show?	Development economic theory	Cross section (Descriptive statistics)	The Effect of entrepreneurship depends on development stage	Knowledge spillover	GDPpc	TEA	Empirical
4. Acs, Z., Szerb, L. (2007)	Entrepreneurship, economic growth and public policy	Endogenous growth theory	Summarize	The Effect of entrepreneurship depends on development stage	Economic growth			Special issue
5. Acs, Z., Storey (2004)	Introduction: Entrepreneurship and Economic Development	Context on small firms and regional development		Entrepreneurship has a positive influence on regional development, which is a relevant fact to design public policies	Regional economic growth			Special issue
6. Agarwal, R., Audretsch, D., Sarkar, M. B. (2007)	The process of creative construction: knowledge spillovers, entrepreneurship, and economic growth	Schumpeter theory	Develop Knowledge Spillover View of Strategic Entrepreneurship	Entrepreneurship is a conduit of knowledge	Knowledge spillover			Theoretical
7. Aghion, P., Howitt, P. (1992)	A model of growth through creative destruction	Schumpeter theory		The fact that private research firms do not internalize the destruction of rents generated by their innovations introduces a business-stealing effect similar to that found in the partial-equilibrium patent race literature. Self-employment opportunities do not lead to sustainable growth solutions. Discovery and creation opportunities while difficult to	Economic growth			Theoretical
8. Alvarez, S. A., Barney, J. B. (2014)	Entrepreneurial opportunities and poverty alleviation	Development economic theory	Develop a theoretical framework		Economic development			Theoretical

Author(s) & Year	Title	Theoretical framework	Methodology	Results	Key term	Dvariable	Ivariable	Type of paper
9. Aparicio, S., Urbano, D., Audretsch, D. (2016a)	Institutional factors, opportunity entrepreneurship and economic growth: Panel data evidence	Institutional economic theory/Endogenous growth	Panel data (3SLS)	exploit in poverty contexts hold the greatest potential for significant economic impact. Informal institutions encourage more entrepreneurial activity than formal ones; and at the same time, entrepreneurship affects positively economic growth.	Economic growth	Growth	Opportunity TEA	Empirical
10. Aparicio, S., Urbano, D., Gómez, D. (2016b)	The role of innovative entrepreneurship within Colombian business cycle scenarios: A system dynamics approach	Circular flow model/Schumpeter theory	System dynamics	Innovative entrepreneurship contributes to sustainable economic growth during the simulation period (2003–2032).	Economic growth	Growth	Opportunity TEA	Empirical
11. Aubry, M., Bonnet, J., Renou-Maissant, P. (2015)	Entrepreneurship and the business cycle: the “Schumpeter” effect versus the “refugee” effect—a French appraisal based on regional data	Schumpeter theory	Panel data (fixed effects)	Entrepreneurship is motivated by unemployment in short run (“refugee” effect). The “Schumpeter” effect prevails in the long run in the Île-de France region.	Regional economic growth	GDPpc	Start-up rate	Empirical
12. Audretsch, D. (1997)	Technological Regimes, Industrial Demography and the Evolution of Industrial Structures	Schumpeter theory	Develop a theoretical framework	Industry evolution depends is shaped particularly by the role that innovation plays. The dynamic aspects involve the startup and new firms, survival, growth, the development of a strategy of compensating factor differentials and the extent to which new firms displace incumbent enterprises.	Economic development			Theoretical
13. Audretsch, D. (2007a)	Entrepreneurship capital and economic growth	Neoclassical Economic growth theory	Develop a theoretical framework	There are positive effects of entrepreneurship capital on economic growth and Entrepreneurship is a conduit of knowledge	Economic growth			Theoretical
14. Audretsch, D., Bönte., W., Keilbach, M. (2008)	Entrepreneurship capital and its impact on knowledge diffusion and economic performance	Endogenous growth theory	Structural equation model	Innovation efforts have an indirect effect on economic performance via entrepreneurship	Regional economic growth	Regional Growth	Entrepreneurship capital	Empirical
15. Audretsch, D., Belitski, M., Desai, S. (2015a)	Entrepreneurship and economic development in cities	Schumpeter theory	Panel data (random effects)	The economic development impact of new firm start-ups is positive for both small-/medium-size cities and large cities.	Regional economic growth	Regional Growth	New business	Empirical
16. Audretsch, D., Fritsch, M. (2002)	Growth regimes over time and space	Schumpeter theory	Cross section (OLS)	The effect of entrepreneurship on regional development depends on space regimen	Regional economic growth	Regional Growth	Start-up rate	Empirical

Author(s) & Year	Title	Theoretical framework	Methodology	Results	Key term	Dvariable	Ivariable	Type of paper
17. Audretsch, D., Keilbach, M. (2004a)	Does entrepreneurship capital matter?	Social capital theory	Cross section (OLS)	There is a positive effect of entrepreneurship capital on regional economic growth	Regional economic growth	Regional Growth	Entrepreneurship capital	Empirical
18. Audretsch, D., Keilbach, M. (2004b)	Entrepreneurship capital and economic performance	Neoclassical Economic theory	growth Cross section (OLS)	There is a positive effect of entrepreneurship capital on regional economic growth	Regional economic growth	Regional Growth	Entrepreneurship capital	Empirical
19. Audretsch, D., Keilbach, M. (2004c)	Entrepreneurship and regional growth: an evolutionary interpretation	Endogenous theory	growth Cross section (3SLS)	Entrepreneurship is a conduit of knowledge and Positive effect of entrepreneurial activity (TEA) on economic growth	Regional economic growth	Regional Growth	Entrepreneurship capital	Empirical
20. Audretsch, D., Keilbach, M. (2005)	Entrepreneurship capital and regional growth	Neoclassical Economic theory	growth Cross section (OLS)	There is a positive effect of entrepreneurship capital on regional economic growth	Regional economic growth	Regional Growth	Entrepreneurship capital	Empirical
21. Audretsch, D., Keilbach, M. (2008)	Resolving the knowledge paradox: Knowledge-spillover entrepreneurship and economic growth	Endogenous theory	growth Cross section (3SLS)	Entrepreneurship is a conduit of knowledge and Positive effect of entrepreneurial activity (TEA) on economic growth	Knowledge spillover	Regional Growth	Entrepreneurship capital	Empirical
22. Audretsch, D., Keilbach, M. (2007)	The localization of entrepreneurship capital: Evidence from Germany	Neoclassical Economic theory	growth Spatial econometrics (GLS)	Entrepreneurship capital is driven by local culture	Institutions	Regional Growth	Entrepreneurship capital	Empirical
23. Baumol, W., Strom, R. J. (2007)	Entrepreneurship and economic growth	Institutional economic theory	Comment institutions as a determining of link between entrepreneurship and economic growth	The effect of entrepreneurship on economic growth depends on institutions	Institutions			Theoretical
24. Belitski, M., Desai, S. (2016)	Creativity, entrepreneurship and economic development: city-level evidence on creativity spillover of entrepreneurship	Creativity/Knowledge spillover theory of entrepreneurship	Pooling data	Creativity and entrepreneurship, and creativity and a melting pot environment, interact to influence urban economic development.	Regional economic growth	Regional Growth	Start-up rate	Empirical
25. Berkowitz, D., DeJong, D. N. (2005)	Entrepreneurship and post-socialist growth	Endogenous theory	growth Time series (LAD and 2SLS)	There is a positive effect of entrepreneurial activity on economic growth	Regional economic growth	Regional Growth	Small Enterprises	Empirical
26. Biondi, Y. (2008)	Schumpeter's economic theory and the dynamic accounting view of the firm: neglected pages from the Theory of Economic Development	Schumpeterian theory	Translation	There are positive effects of entrepreneurship on economic development	Economic development			Theoretical
27. Bjørnskov, C., Foss, N. (2013)	How Strategic Entrepreneurship and The Institutional Context Drive Economic Growth	Neoclassical Economic theory	growth Time series (OLS and 2SLS)	There is a positive effect of self-employment and institutions on total productivity factor	Institutions	TFP	Self-employment_Institutions	Empirical

Author(s) & Year	Title	Theoretical framework	Methodology	Results	Key term	Dvariable	Ivariable	Type of paper
28. Bjørnskov, C., Foss, N. (2016)	Institutions, Entrepreneurship, and Economic Growth: What Do We Know and What Do We Still Need to Know?	Institutional economic theory		Other theoretical approaches might serve to explain the causality running from institutions, entrepreneurship, and economic growth.	Economic growth			Theoretical
29. Blanchflower, D. (2000)	Self-employment in OECD countries	Microeconomic Theory (discrete choice)	Time series (OLS)	There are negative effects of self-employment on economic growth	Economic growth	Growth	Self-employment	Empirical
30. Bosma, N., Stam, E., Schutjens, V. (2011)	Creative destruction and regional productivity growth: evidence from the Dutch manufacturing and services industries	Schumpeterian theory	Panel data (OLS)	Firm entry is related to productivity growth in services, but not in manufacturing. Also, the impact of firm dynamics on regional productivity in services is higher in regions exhibiting diverse but related economic activities.	Regional economic growth	TFP	Firm entry	Empirical
31. Braunerhjelm, P., Acs, Z., Audretsch, D., Carlsson, B. (2010)	The missing link: knowledge diffusion and entrepreneurship in endogenous growth	Endogenous growth theory	Pooling data (OLS, AR and GLS)	There are positive effects of entrepreneurship (No. of entrepreneurs) on economic growth	Economic growth	Growth	Self-employment	Empirical
32. Braunerhjelm, P., Borgman, B. (2004)	Geographical Concentration, Entrepreneurship and Regional Growth: Evidence from Regional Data in Sweden, 1975-99	Agglomeration and firm location	Panel data (fixed effects)	Regional entrepreneurship and regional absorption capacity are important explanations of regional growth	Regional economic growth	TFP	Firms per industry	Empirical
33. Braunerhjelm, P., Henrekson, M. (2013)	Entrepreneurship, institutions, and economic dynamism: lessons from a comparison of the United States and Sweden	Endogenous growth theory	Cross section (Descriptive statistics)	There is a positive effect of institutions on entrepreneurship and economic performance	Institutions	Growth	TEA	Empirical
34. Capello, R., Lenzi, C. (2016)	Innovation modes and entrepreneurial behavioral characteristics in regional growth	Neoclassical Economic growth theory/Endogenous growth theory	Spatial econometrics	There is an interplay between regional innovation modes, entrepreneurial behavioral characteristics and economic growth for 252 NUTS2 regions of the European Union.	Regional economic growth	Regional Growth	Entrepreneurial characteristics (potential of opportunities perception, risk orientation, strategic vision)	Empirical
35. Carlsson, B., Acs, Z., Audretsch, D., Braunerhjelm, P. (2009)	Knowledge creation, entrepreneurship, and economic growth: a historical review	Endogenous growth theory	Historical review	There are positive effects of entrepreneurship (locus and content of knowledge) on economic growth	Economic growth			Theoretical
36. Carree, M. A., Thurik, A. R. (2008)	The lag structure of the impact of business ownership on economic performance in OECD countries	Endogenous growth theory	Time series (AR models)	There are positive effects of entrepreneurship (business owners) on economic growth	Economic growth	Growth	Business owners	Empirical
37. 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	Schumpeterian theory	Panel data (OLS)	There is a U-shape relationship between self-employment/business ownership and economic development	Economic growth	GDPpc	Business owners	Empirical

Author(s) & Year	Title	Theoretical framework	Methodology	Results	Key term	Dvariable	Ivariable	Type of paper
38. Carree, M., Van Stel, A., Thurik, R., Wenekers, S. (2007)	The relationship between economic development and business ownership revisited	Schumpeterian theory	Panel data (fixed effects)	There is a U-shape relationship between self-employment/business ownership and economic development	Economic growth	GDPpc	Business owners	Empirical
39. Carmona, M., Congregado, E., Golpe, A. A., Iglesias, J. (2016)	Self-employment and business cycles: searching for asymmetries in a panel of 23 OECD countries	Self-employment and GDP	Panel threshold regression	there exist different responses –both in terms of sign and magnitude– of cyclical self-employment to output growth and of output growth to cyclical self-employment, depending on the value of the threshold variable.	Economic growth	Growth	Self-employment	Empirical
40. Castaño-Martínez, M.-S., Méndez-Picazo, M.-T., Galindo Martín, M. Á. (2015)	Policies to promote entrepreneurial activity and economic performance	Schumpeterian theory	Partial least squares	Countries with complex legal systems which regulate the start-up of an economic activity and where access to credit is complicated, present lower levels of entrepreneurship. Societies with a greater number of innovative entrepreneurs present higher levels of entrepreneurial activity and economic performance.	Economic growth	GDPpc	Innovative enterprises	Empirical
41. Castaño, M. S., Méndez, M. T., Galindo, M. Á. (2016)	The effect of public policies on entrepreneurial activity and economic growth	Institutional economic theory	Partial least squares/fsQCA	Early-stage entrepreneurial activity, affected by some public policies, is positively correlated to economic growth.	Economic growth	GDPpc	TEA	Empirical
42. Chang, H. J., Kozul-Wright, R. (1994)	Organising development: comparing the national systems of entrepreneurship in Sweden and South Korea	Evolutionary perspective	Descriptive statistics	A national system of entrepreneurship provides an appropriate framework for combining the creative and destructive processes inherent in entrepreneurship with the institutional diversity characteristic of successful economic development.	Economic development	Growth	National system of entrepreneurship	Empirical
43. Davidsson, P., Lindmark, L., Olofsson, C. (1994)	New firm formation and regional development in Sweden	Discussion based on the importance of entrepreneurship for regional development	Linear regression	Small firms are a major contributor of new jobs. It further turns out that new firm formation has an important influence on the development of regional economic well-being.	Regional economic growth	Regional Growth	Start-up rate	Empirical
44. Danson, M. W. (1995)	New firm formation and regional economic development: an introduction and review of the Scottish experience	Discussion based on the importance of entrepreneurship for regional development		Research and experiences from across the UK, European Union and the US are called upon to improve the understanding of the processes involved.	Regional economic growth			Special issue

Author(s) & Year	Title	Theoretical framework	Methodology	Results	Key term	Dvariable	Ivariable	Type of paper
45. Dejardin, M. (2011)	Linking net entry to regional economic growth	Endogenous theory	growth Panel data (dynamic)	Although there are differences between manufacturing and services industries, a positive impact of net entry on regional economic growth in the Belgian services industry is found.	Regional economic growth	Regional Growth	Net entry	Empirical
46. Dejardin, M. Fritsch, M. (2011)	Entrepreneurial dynamics and regional growth	Discussion based on the importance of entrepreneurship for regional development		Future research should try to shed light on the information about the characteristics of start-ups such as their knowledge intensity, their innovativeness and characteristics of their product program, as well as the interplay with previous or expected growth, required also to understand the effect on regional growth.	Regional economic growth			Special issue
47. Diaz Casero, J. C., Almodovar Gonzalez, M., Sanchez Escobedo, M., Coduras Martinez, A., Hernandez Mogollon, R. (2013)	Institutional variables, entrepreneurial activity and economic development	Institutional economic theory	Cross section (OLS)	The effect of institutions depends on development stage	Institutions	GDPpc	TEA_Institutions	Empirical
48. Etzkowitz, H., Klofsten, M. (2005)	The innovating region: toward a theory of knowledge-based regional development	Endogenous theory	growth Qualitative (case study method)	Entrepreneurial university is a driven factor for regional economic development	Other	Regional Growth	Business owners	Empirical
49. Fritsch, M. (2008)	How does new business formation affect regional development? Introduction to the special issue	Endogenous theory	growth Cross section (Descriptive statistics) and summarize	There is a U-shape relationship between start-up rates and regional economic development	Economic development			Special issue
50. Giordani, P. (2015)	Entrepreneurial finance and economic growth	Endogenous theory	growth Mathematical economics	It is found the amount of resources devoted to innovation along the balance growth path		TFP	Entrepreneurs that need finance	Theoretical
51. González-Pernía, J., Peña-Legazkue, I. (2015)	Export-oriented entrepreneurship and regional economic growth	Neoclassical Economic theory	growth Panel data (2SLS)	Opportunity TEA as well as export-oriented entrepreneurship is positively associated with Spanish regional growth.		TFP	Opportunity and export-oriented TEA	Empirical
52. Gries, T., Naudé, W. (2010)	Entrepreneurship and structural economic transformation	Endogenous theory	growth Mathematical economics	There are positive effects of entrepreneurship on economic growth	Economic growth	Growth	Self-employment	Empirical
53. Guerrero, M., Cunningham, J.A., Urbano, D. (2015)	Economic impact of entrepreneurial universities' activities: An exploratory study of the United Kingdom	Endogenous theory	growth Structural equation model	The outcomes of university activities (research, teaching and entrepreneur) have a positive effect on economic growth.	Economic growth	GDPpc	Entrepreneurial universities outcome	Empirical

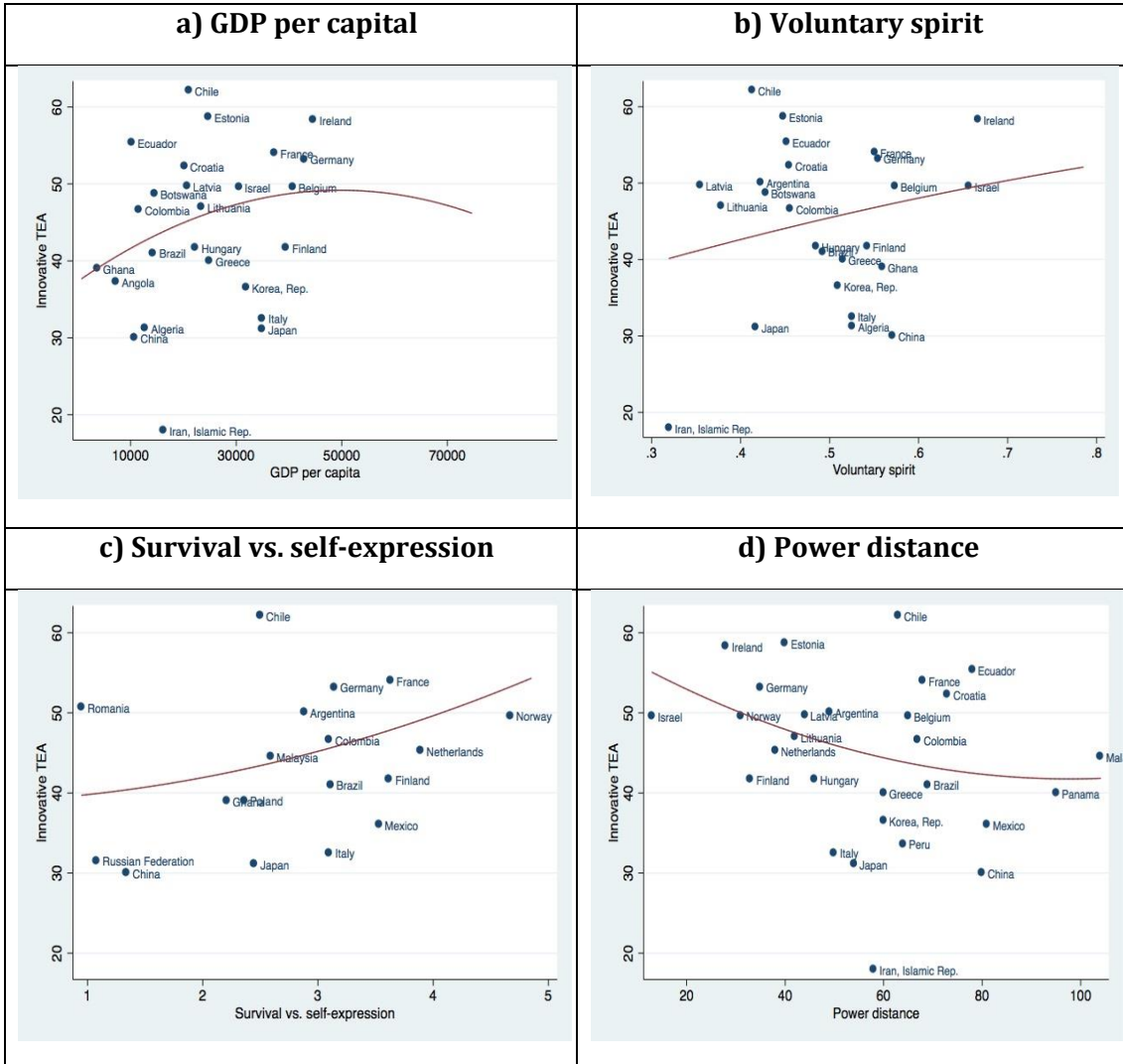
Author(s) & Year	Title	Theoretical framework	Methodology	Results	Key term	Dvariable	Ivariable	Type of paper
54. Guerrero, M., Urbano, D., Fayolle, A. (2016)	Entrepreneurial activity and regional competitiveness: evidence from European entrepreneurial universities	Institutional economic theory/Endogenous growth theory	Structural equation model	Informal factors have a higher influence on university entrepreneurial activity than formal factors. There is also a higher contribution of universities on regional competitiveness.	Regional economic growth	GDPpc	Entrepreneurial universities	Empirical
55. Hessels, J., van Stel, A. (2011)	Entrepreneurship, export orientation, and economic growth	Endogenous growth theory	Time series (OLS)	There are positive effects of entrepreneurship (TEA) on economic growth and export orientation	Economic growth	Growth	TEA	Empirical
56. Huggins, R., Thompson, P. (2015)	Entrepreneurship, innovation and regional growth: A network theory	Endogenous growth theory	Mathematical economics	Network capital is found a mediator between entrepreneurship and innovation-based regional growth	Regional economic growth	TFP	Entrepreneurship	Theoretical
57. Iyigun, M. F., Owen, A. L. (1999)	Entrepreneurs, professionals, and growth	Neoclassical Economic growth theory	Time series (Difference equations)	There are positive effects of self-employment on economic growth	Economic growth	GDPpc	Self-employment	Empirical
58. Johnson, P., Parker, S. (1996)	Spatial variations in the determinants and effects of firm births and deaths	Definition of births and deaths	Time series (AR models)	The birth rates are positively associated with industrial outcomes in UK counties.	Regional economic growth	Regional growth	Birth rate	Empirical
59. King, R. G., Levine, R. (1993)	Finance, entrepreneurship and growth. Theory and evidence	Endogenous growth theory	Pooling data (3SLS)	Financial systems affect the entrepreneurial activities that lead to productivity improvements.	Economic growth	Growth	Prospective entrepreneurs	Empirical
60. Liñán, Francisco; Fernandez-Serrano, José (2014);	National entrepreneurship culture, entrepreneurship and economic development: different patterns across the European Union	Institutional economic theory	Cross section (OLS)	National culture and entrepreneurship can jointly help characterize the level of economic development.	Economic development	GDPpc	TEA	Empirical
61. Low, S., Isserman, A. (2015)	Where Are the Innovative Entrepreneurs? Identifying Innovative Industries and Measuring Innovative Entrepreneurship	Schumpeter theory	Spatial econometrics	Start-ups and self-employment in innovative industries yields two indicators that capture the effect on regional economic growth	Regional economic growth	Regional growth	Innovative entrepreneurship	Empirical
62. Méndez-Picazo, M.-T., Galindo Martín, M. Á., Ribeiro-Soriano, D. (2012)	Governance, entrepreneurship and economic growth	Institutional economic theory	Panel data (EGLS)	Governance would have a significant indirect effect on economic growth. There is a positive relationship between governance and entrepreneurship that it is an economic growth-enhancing factor.	Economic growth	Growth	TEA	Empirical
63. Minniti, M., Lévesque, M. (2010)	Entrepreneurial types and economic growth	Neoclassical Economic growth theory	Mathematical economics	There are positive effects of entrepreneurship on economic growth	Economic growth	Growth	Self-employment	Empirical
64. Mueller, P. (2007)	Exploiting entrepreneurial opportunities: The impact of entrepreneurship on growth	Endogenous growth theory	Panel data (OLS)	There are positive effects of entrepreneurship (new firms creation) on economic growth and Entrepreneurship is a conduit of knowledge	Regional economic growth	Growth	Start-up rate	Empirical

Author(s) & Year	Title	Theoretical framework	Methodology	Results	Key term	Dvariable	Ivariable	Type of paper
65. Müller, S. (2016)	A progress review of entrepreneurship and regional development: What are the remaining gaps?	Discussion based on the importance of entrepreneurship for regional development	Literature review	While regional economists tend to overlook the role of contextualized agency, and thus neglect processes that may influence entrepreneurs' acting in distinctive localities, entrepreneurship scholars tend to overlook the role of the spatial and proximate contextual conditions in the entrepreneurial process.	Regional economic growth			Theoretical
66. Naudé, W. (2010)	Entrepreneurship, developing countries, and development economics: new approaches and insights	Institutional economic theory	Summarize	There are positive effects of entrepreneurship on economic development	Economic development			Special issue
67. Noseleit, F. (2013)	Entrepreneurship, structural change, and economic growth	Endogenous growth theory	Cross section (OLS) and Panel data (OLS)	Entrepreneurship is a conduit of knowledge and Positive effect of entrepreneurial activity (TEA) on economic growth A marginal increase in the entrepreneurship rate in developing countries has a positive effect on growth. In developed countries, there is no evident growth penalty.	Regional economic growth	Regional Growth	Start-up rate	Empirical
68. Prieger, J. E., Bampoky, C., Blanco, L. R., Liu, A. (2016)	Economic growth and the optimal level of entrepreneurship	Neoclassical Economic growth theory/Kirznerian theory	Panel data (OLS)	This could be because in developed countries as a whole, entrepreneurship is now close to its optimal level, whereas in developing countries the optimal rates of entrepreneurship are much higher.	Economic growth	GDPpc	TEA	Empirical
69. Rocha, H. O. (2004)	Entrepreneurship and development: The role of clusters	Schumpeter theory	Literature review	There are positive effects of entrepreneurship on economic development	Other			Theoretical
70. Stephens, H. M., Partridge, M. D. (2011)	Do Entrepreneurs Enhance Economic Growth in Lagging Regions?	Endogenous growth theory	Cross section (OLS and IV)	There is a positive effect of entrepreneurship (self-employment) capital on regional economic growth	Regional economic growth	GDPpc	Business owners	Empirical
71. Sternberg, R., Wenekers, S. (2005)	Determinants and effects of new business creation using Global Entrepreneurship Monitor data	Schumpeterian theory	Literature review	There are positive effects of entrepreneurship on economic growth	Economic growth			Special issue
72. Urbano, D., Aparicio, S. (2016)	Entrepreneurship capital types and economic growth: International evidence	Endogenous growth theory	Panel data (IV)	Entrepreneurial activity positively affects economic growth. Opportunity TEA has a higher effect than necessity TEA; and the influence on growth is higher in developing countries, as well as in post-crisis period.	Economic growth	Growth	TEA/Opportunity TEA/Necessity TEA	Empirical

Author(s) & Year	Title	Theoretical framework	Methodology	Results	Key term	Dvariable	Ivariable	Type of paper
73. Urbano, D., Guerrero, M. (2013)	Entrepreneurial universities: Socioeconomic impacts of academic entrepreneurship in a European region	Institutional economic theory; Resource-Based View; Endogenous growth theory	Case study	In the Catalonian University System there is a strategy focused on improving the determinants of the production function (human, knowledge, social, and entrepreneurship capital).	Regional economic growth	Labor productivity	Entrepreneurial universities	Empirical
74. Valliere, D., Peterson, R. (2009)	Entrepreneurship and economic growth: Evidence from emerging and developed countries	Endogenous growth theory	Cross section (Descriptive statistics -Principal component analysis)	There are positive effects of entrepreneurship (TEA) on economic growth	Economic growth	Growth	TEA	Empirical
75. van Oort, F. G., Bosma, N. S. (2013)	Agglomeration economies, inventors and entrepreneurs as engines of European regional economic development	Schumpeter theory	Pooling data (2SLS)	Human capital, patenting activity and entrepreneurship are all linked to regional performance, more so in regions containing large as well as medium-sized cities	Regional economic growth	Labor productivity	Low growth TEA/High growth TEA/Innovative TEA	Empirical
76. van Praag, C. M., Versloot, P. H. (2007)	What is the value of entrepreneurship? A review of recent research	Endogenous growth theory	Literature review	There are positive effects of entrepreneurship on economic growth	Economic growth			Theoretical
77. van Stel, A., Carree, M. (2004)	Business ownership and sectoral growth - An empirical analysis of 21 OECD countries	Schumpeter theory	Panel data (OLS)	There is a U-shape relationship between self-employment/business ownership and economic development	Economic growth	Growth	Business owners	Empirical
78. van Stel, A., Carree, M., Thurik, R. (2005)	The effect of entrepreneurial activity on national economic growth	Schumpeterian theory	Time series (AR models)	There is a U-shape relationship between self-employment/business ownership and economic development	Economic growth	Growth	TEA	Empirical
79. Wennekers, S., Thurik, R. (1999)	Linking entrepreneurship and economic growth	Schumpeterian theory	Literature review	There are positive effects of entrepreneurship on economic growth	Economic growth			Theoretical
80. Wong, P. X., Ho, Y. P., Autio, E. (2005)	Entrepreneurship, innovation and economic growth: Evidence from GEM data	Schumpeterian theory	Cross section (OLS)	There is a positive effect of potential entrepreneurial activity (TEA) on economic growth	Economic growth	Growth	TEA	Empirical
81. Yu, T. F. L. (1998)	Adaptive entrepreneurship and the economic development of Hong Kong	Kirznerian theory	Historical review	Hong Kong's entrepreneurs through imitation have brought structural transformation in the economy and have enabled Hong Kong to catch up with economically more advanced economies.	Economic growth			Theoretical

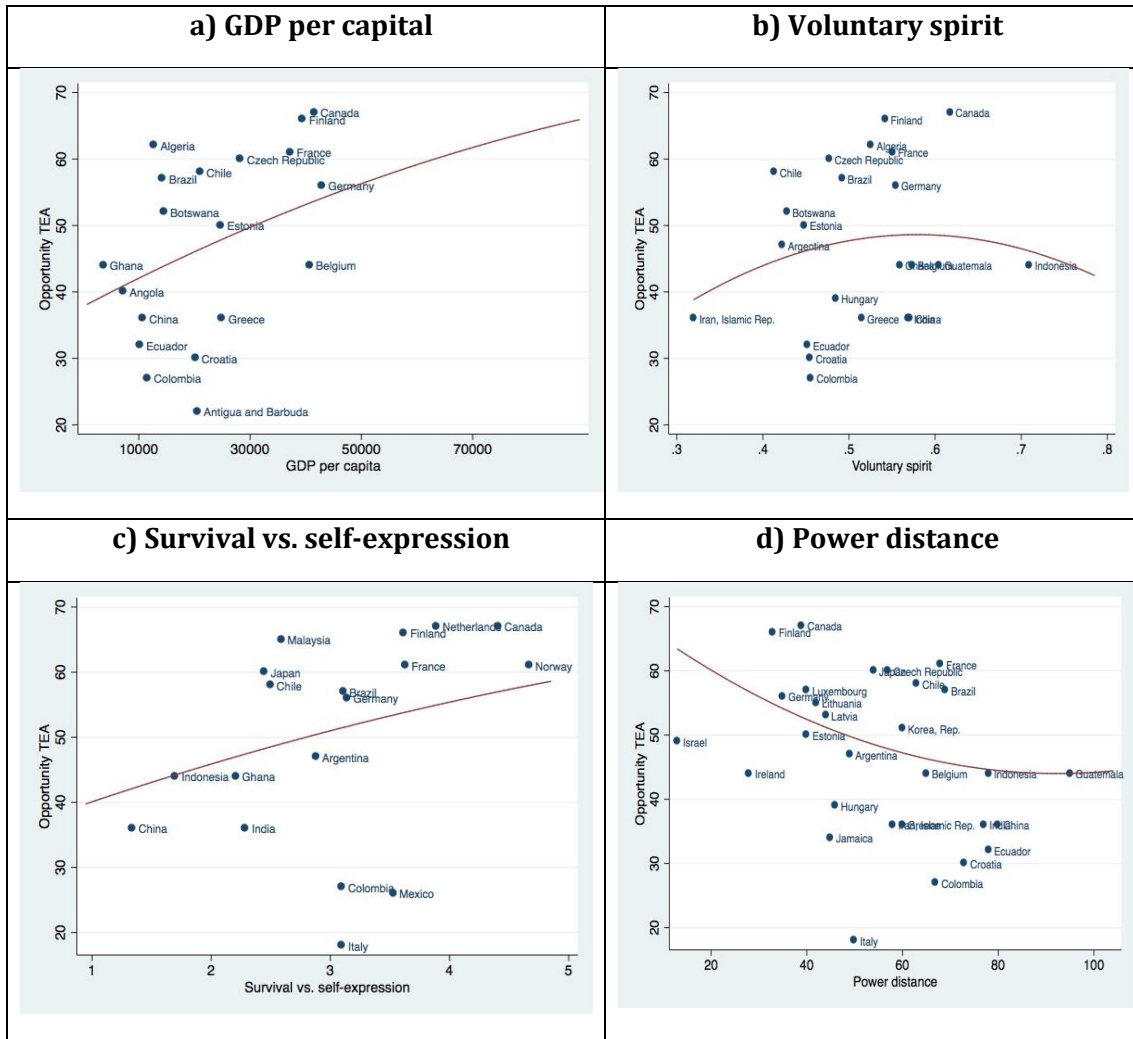
Note. Dvariable. Dependent variable; Ivariable. Independent variable.

Appendix 3. Innovative TEA distribution across the economic level and SPO variables



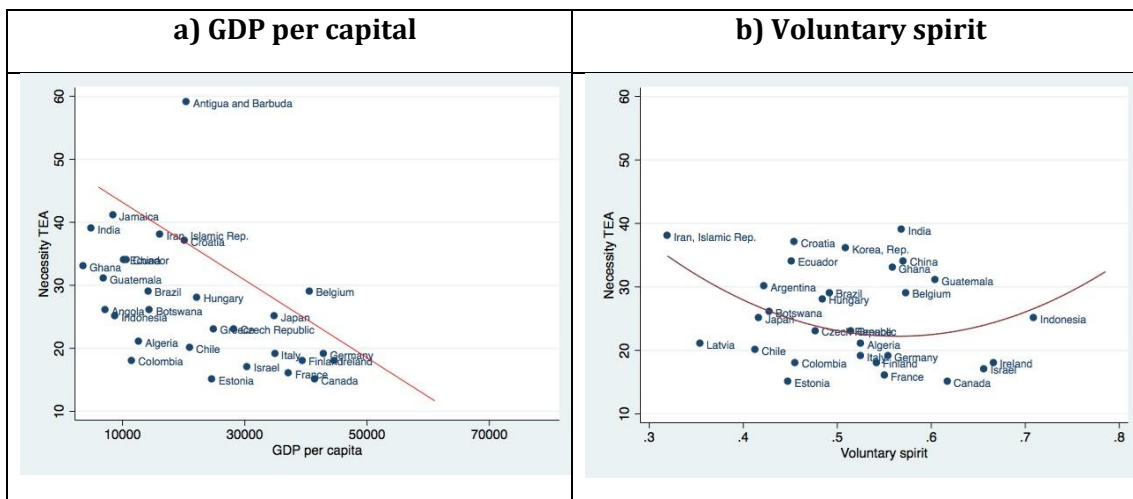
Note: In order to obtain clear graphs, we have not included all countries in the scatter plot. Nonetheless, the tendency line was computed taking into account the whole sample.

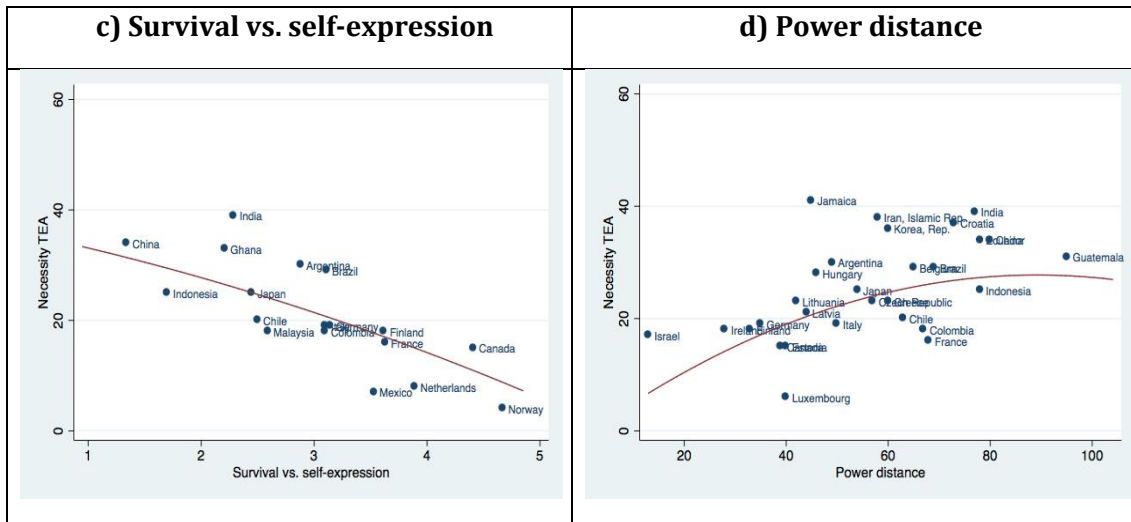
Appendix 4. Opportunity TEA distribution across the economic level and SPO variables



Note: In order to obtain clear graphs, we have not included all countries in the scatter plot. Nonetheless, the tendency line was computed taking into account the whole sample.

Appendix 5. Necessity TEA distribution across the economic level and SPO variables





Note: In order to obtain clear graphs, we have not included all countries in the scatter plot. Nonetheless, the tendency line was computed taking into account the whole sample.

Appendix 6. Sample of countries used in Chapter 3

Countries	
1	Algeria
2	Angola
3	Antigua and Barbuda
4	Argentina
5	Belgium
6	Botswana
7	Brazil
8	Canada
9	Chile
10	China
11	Colombia
12	Croatia
13	Czech Republic
14	Ecuador
15	Estonia
16	Finland
17	France
18	Germany
19	Ghana
20	Greece
21	Guatemala
22	Hungary
23	India
24	Indonesia
25	Iran, Islamic Rep.
26	Ireland
27	Israel
28	Italy
29	Jamaica
30	Japan
31	Korea, Rep.
32	Latvia
35	Luxembourg
36	Macedonia, FYR
37	Malawi
38	Malaysia
39	Mexico
40	Netherlands
41	Nigeria
42	Norway
43	Panama
44	Peru
45	Philippines
46	Poland
47	Portugal
48	Puerto Rico
49	Romania
50	Russian Federation
51	Singapore
52	Slovak Republic
53	Slovenia
54	South Africa
55	Spain
56	Suriname
57	Sweden
58	Switzerland
59	Taiwan, China
60	Thailand
61	Trinidad and Tobago
62	Uganda
63	United Kingdom
64	United States
65	Uruguay
66	Vietnam

Countries	
33 Libya	67 Zambia
34 Lithuania	

Appendix 7. Social progress orientation predicting an alternative measure of innovative TEA (new product)

	(1) Ln TEA Innovative (new product)	(2) Ln TEA Innovative (new product)	(3) Ln TEA Innovative (new product)
Ln Voluntary spirit	0.350 (0.258)		
Ln Survival vs. self-expression values		0.081 (0.135)	
Ln Power distance			-0.198 (0.149)
Ln Human Development Index	-0.160 (0.935)	3.616* (1.930)	-0.474 (1.581)
Ln percentage female population	0.464 (2.502)	-9.852*** (2.899)	-3.018 (2.616)
Ln GDP ppp	-0.038 (0.205)	-1.050** (0.434)	-0.095 (0.348)
Ln health expenditure	0.082 (0.155)	0.711*** (0.143)	0.230 (0.228)
Ln age structure of population	-0.496 (0.470)	-1.953*** (0.630)	-0.093 (0.857)
Ln unemployment rate	-0.113 (0.083)	0.048 (0.095)	0.030 (0.092)
Constant	1.849 (9.617)	51.094*** (10.706)	16.755 (11.646)
N	44	26	42
R ²	0.115	0.552	0.119
Root MSE	0,308	0,292	0,345
VIF	4,24	7,67	4,74
White's test (p-value)	0,630	0,721	0,454
AIC	28,290	16,260	36,954
BIC	42,564	26,325	50,856

*** Significant at $p < 0.01$; ** $p < 0.05$; * $p < 0.1$. Robust standard errors in parentheses.

Note: TEA innovative (new product): Percentage of early-stage Entrepreneurial Activity (TEA) reporting that the product or service is new to at least some customers.

Appendix 8. Sample of countries used in Chapter 4

Country	No. of years	OECD countries	Non-OECD countries
1 Australia	7	X	
2 Belgium	11	X	
3 Bosnia and Herzegovina	5		X
4 Brazil	11		X
5 Chile	8	X	
6 China	4		X
7 Colombia	7		X
8 Croatia	11		X

Country	No. of years	OECD countries	Non-OECD countries
9 Denmark	11	X	
10 Finland	11	X	
11 France	11	X	
12 Germany	5	X	
13 Greece	10	X	
14 Guatemala	3		X
15 Hungary	7	X	
16 Iceland	9	X	
17 Ireland	3	X	
18 Italy	9	X	
19 Japan	9	X	
20 Korea	5	X	
21 Latvia	6		X
22 Malaysia	4		X
23 Mexico	3	X	
24 Netherlands	11	X	
25 Nigeria	2		X
26 Norway	11	X	
27 Pakistan	3		X
28 Panama	2		X
29 Peru	7		X
30 Poland	2	X	
31 Portugal	3	X	
32 Romania	6		X
33 Russian Federation	7		X
34 Singapore	2		X
35 Slovenia	9	X	
36 South Africa	5		X
37 Spain	11	X	
38 Sweden	3	X	
39 Switzerland	4	X	
40 Thailand	2		X
41 United Kingdom	11	X	
42 United States	11	X	
43 Uruguay	7		X
Total	289	25	18

Appendix 9. Sample of countries used in Chapter 5

Country	Latin American countries
1 Australia	
2 Belgium	
3 Bosnia and Herzegovina	
4 Brazil	X
5 Chile	X
6 China	
7 Colombia	X
8 Croatia	
9 Denmark	
10 Finland	
11 France	
12 Germany	
13 Greece	

Country	Latin American countries
14 Guatemala	X
15 Hungary	
16 Iceland	
17 Ireland	
18 Italy	
19 Japan	
20 Korea	
21 Latvia	
22 Malaysia	
23 Mexico	X
24 Netherlands	
25 Nigeria	
26 Norway	
27 Pakistan	
28 Panama	X
29 Peru	X
30 Poland	
31 Portugal	
32 Romania	
33 Russian Federation	
34 Singapore	
35 Slovenia	
36 South Africa	
37 Spain	
38 Sweden	
39 Switzerland	
40 Thailand	
41 United Kingdom	
42 United States	
43 Uruguay	X

Appendix 10. Sample of countries used in Chapter 6

Countries	Developed countries	Developing countries
1 Australia	1	
2 Belgium	1	
3 Bosnia and Herzegovina		0
4 Brazil		0
5 Chile		0
6 China		0
7 Colombia		0
8 Croatia		0
9 Denmark	1	
10 Finland	1	
11 France	1	

Countries	Developed countries	Developing countries
12 Germany	1	
13 Greece	1	
14 Guatemala		0
15 Hungary		0
16 Iceland	1	
17 Ireland	1	
18 Italy	1	
19 Japan	1	
20 Korea, Rep.	1	
21 Latvia	1	
22 Malaysia		0
23 Mexico		0
24 Netherlands	1	
25 Nigeria		0
26 Norway	1	
27 Pakistan		0
28 Panama		0
29 Peru		0
30 Poland		0
31 Portugal	1	
32 Romania		0
33 Russian Federation		0
34 Singapore	1	
35 Slovenia	1	
36 South Africa		0
37 Spain	1	
38 Sweden	1	
39 Switzerland	1	
40 Thailand		0
41 United Kingdom	1	
42 United States	1	
43 Uruguay		0

Note: We classify these countries based upon the International Monetary Fund's list of 39 advanced economies. <http://www.imf.org/external/pubs/ft/weo/2016/01/pdf/text.pdf>

Appendix 11. Sample of countries used in Chapter 7

Country	No. of years	Country	No. of years
Algeria	1	Latvia	2
Argentina	3	Lithuania	1
Australia	3	Malaysia	2
Bangladesh	1	Mexico	3
Barbados	1	Netherlands	3
Belgium	3	New Zealand	1
Bosnia and Herzegovina	1	Nigeria	1
Brazil	3	Norway	3
Canada	2	Pakistan	1
Chile	3	Panama	1

Country	No. of years	Country	No. of years
China	3	Peru	2
Colombia	2	Philippines	1
Croatia	3	Poland	2
Czech Republic	2	Portugal	1
Denmark	3	Romania	1
Finland	3	Russian Federation	3
France	3	Singapore	3
Germany	3	Slovak Republic	1
Greece	2	Slovenia	3
Guatemala	1	South Africa	3
Hong Kong SAR, China	1	Spain	3
Hungary	3	Sweden	3
Iceland	2	Switzerland	2
India	2	Thailand	3
Indonesia	1	Trinidad and Tobago	1
Iran	1	Turkey	2
Ireland	3	United Arab Emirates	2
Israel	1	United Kingdom	3
Italy	2	United States	3
Jamaica	2	Uruguay	2
Japan	3	Venezuela	1
Korea	2	Total	132

Appendix 12. Sample of countries used in Chapter 8

Countries		
Algeria	Guatemala	Panama
Angola	Hungary	Peru
Argentina	India	Philippines
Belgium	Indonesia	Poland
Botswana	Iran, Islamic Rep.	Portugal
Brazil	Ireland	Romania
Canada	Israel	Russian Federation
Chile	Italy	Slovenia
China	Jamaica	South Africa
Colombia	Japan	Spain
Costa Rica	Korea, Rep.	Sweden
Croatia	Latvia	Switzerland
Czech Republic	Lithuania	Thailand
Ecuador	Malawi	Trinidad and Tobago
Estonia	Malaysia	Turkey
Ethiopia	Mexico	Uganda
Finland	Namibia	United Kingdom
France	Netherlands	United States
Germany	Nigeria	Uruguay
Ghana	Norway	Zambia
Greece		