

**Twenty-five years of research on institutions, entrepreneurship, and economic growth:
What has been learned?**

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Abstract: This paper analyzes an emergent stream of research shedding light on the institutional factors shaping entrepreneurial activity and its effect on economic growth. This integrative analysis spanning a broad spectrum of diverse literature enables a distinction between two different research lines in the field of entrepreneurship. The findings of this study, based on articles from the journals included in the Web of Science database, facilitate a broader comprehension of two separate lines of research, which allows an analysis of the interaction among institutions, entrepreneurship, and economic growth. The systematic literature analysis over the last 25 years (1992-2016) of research 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. Thus, not only is understanding both complex relationships and their possible sequence useful for planning strategies and public policies, but it is also helpful for advancing and providing new insights in these research fields, which could be complementary and interdisciplinary.

Keywords: Institutional approach, entrepreneurship, economic growth, economic development, formal and informal institutions, systematic literature analysis.

JEL Classification: B52, L26, M13, O17, O40.

1 Introduction

Entrepreneurship research has attracted the attention of many scholars from different social sciences¹ in terms of cross-national variation in entrepreneurial activity, the reasons behind this phenomenon, and its possible consequences on the economy (Baumol and Strom 2007; Carlsson et al. 2009). On the one hand, some authors suggest that part of the reasons lies in the country-specific institutional contexts in which the entrepreneurs operate². 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 influence 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 Bradley and Klein (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 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 paper is to identify an emergent stream of research shedding light on the institutional context shaping entrepreneurial activity and its effect on economic growth. In particular, the

¹ See the discussion offered by Blackburn and Kovalainen (2009), Fried (2003), Landström et al. (2012) and Teixeira (2011).

² See for instance Aidis et al. (2008), Alvarez et al. (2011), Busenitz et al. (2000), Dana (1987), Mueller and Thomas (2001), Reynolds et al. (1999, 2000, 2001), and Urbano and Alvarez (2014), among others.

paper focuses on the analysis of the literature about: (a) the institutional factors affecting entrepreneurship; (b) the entrepreneurship impacts of these 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. According to Buéla-Casal and Zych (2012), Leydesdorff (2012) and Merigó and Yang (2017), by considering only the impact factor index as selection criterion might be problematic, since some manipulations such as self-citations can be performed in order to increase the index. Thus, WoS introduced five-year impact factor to reduce such issues. Basically, the threshold we selected in this research is merely informative since practically all journals with five-year impact factor in economics, business, management and related areas have an index higher than 0.1.

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 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 different selection criteria. By following Merigó et al. (2016), we applied restrictions on the database (Web of Science Core Collection only), business economics and related research areas, document type (articles and reviews only) and language (English only), resulting in 4,071 records to be used for this literature analysis. Then, unavailable articles electronically were excluded (Aliaga-Isla and Rialp 2013; Jones et al. 2011).

Since we are interested in the causality from institutions to entrepreneurship at a macro level, we have re-scrutinized each of these articles, by reading carefully the abstract and the introduction (and in some cases other sections of the paper) to assure those best fitting the objective of the study. With the same criterion in mind, we have not included in the literature analysis those papers that have studied institutions from the organizational level (cf. DiMaggio and Powell 1991). Thus, the final sample consisted of 104 articles. By using the same criteria and process, 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 initially obtained 4,457 papers. After applying the same restrictions as in the first

relationship, 2,684 articles were identified. Finally, we considered 81 articles, which are focused only upon the impact of entrepreneurship on economic growth³.

After this brief introduction, the article 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 future research lines.

2 Theoretical framework: Institutional factors of entrepreneurship and its effects on economic growth

The debate about the determinants of economic growth still remains (Easterly and 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 and Howitt 1992; Lucas 1988; Romer 1986). For instance, Weitzman (1996) highlights the role of technology and institutions in the economic growth process. Similarly, North (1990, 2005) provides a theoretical advance, suggesting the importance of institutions in the analysis of growth. 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). In this case, 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, apart from influencing the traditional inputs such as labor, human capital, physical capital and knowledge, also conditions 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.

Accordingly, North (1990, 2005) posits that both formal and informal 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 in an indirect way rather than through a direct effect. Leibenstein (1968), based on Schumpeter's (1911) ideas, has suggested that entrepreneurship exerts an important influence on business cycle and economic development. In this regard, several works have taken place to highlight the relevance of entrepreneurial activity in the short-, mid- and long-term growth. For example, Baumol (1990, 1993) and Baumol and Strom (2007) have discussed how entrepreneurship is needed to achieve better economic performance. At the same time, these authors have

³ 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 and Versloot 2007).

suggested that the better institutions the higher the level and quality of entrepreneurship, which ultimately allows for a higher development.

Plenty of literature has emerged to analyze empirically and theoretically the link between entrepreneurship and economic growth⁴. However, as recommended by Audretsch et al. (2008), future research should incorporate new measures of entrepreneurship as well as the understanding of how different institutions help to draw entrepreneurship that affects economic growth positively. Hence, the institutional approach⁵ 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 and 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 business⁶.

Therefore, this article focuses on institutional economics (North 1990, 2005), which allows us to understand the institutional environmental factors that affect new business creation (Bruton et al. 2010; Thornton et al. 2011). Under this umbrella, institutional factors are the driving conditions for entrepreneurship, distinguishing between formal factors (e.g., procedures and costs to create a business, support mechanisms for new firm creation, etc.) and informal factors (e.g., entrepreneurial culture, attitudes towards entrepreneurship, etc.). On the one hand, according to North (1990), formal institutions (property rights, contracts, procedures, political structure, etc.) tend to reduce the transaction costs in order to enhance market performance related to prices and distribution. Therefore, these formal institutions can help the market work more efficiently by removing market imperfections and rigid administrative regulations (Djankov et al. 2002). One important characteristic of formal institutions is their nature to change in the short term, which facilitates (or hinders) individuals making productive decisions, among other things. On the other hand, informal institutions can be defined as belief systems (role models, independence and trust, among others), social norms/culture (community-wide normatives, embeddedness, a socially supportive culture, among others) and cognitive aspects (skills, risk taking and leadership, among others) (North 2005). These informal institutions, that tend to endure a long time, reduce the uncertainty caused by individual and group decisions. In this sense, some economic decisions could be associated, among others, with entrepreneurial activity.

Drawing on institutional theory, scholars have explored institutions as antecedents of entrepreneurial activity (Bruton et al. 2010). In this sense, institutions may encourage or hinder entrepreneurship by providing an appropriate environment or by imposing barriers. In this regard, Gnyawali and Fogel (1994) suggest that entrepreneurship development requires a suitable environment. Accordingly, government policies and procedures, entrepreneurial and business skills, socio-economic factors, financial and non-financial assistance affect each stage of the entrepreneurial process from the opportunity recognition to the new venture creation. Scott (2008), in turn, has suggested that organizations at all stages are affected by different institutional pillars

⁴ See for instance Acs et al. (2012), Audretsch and Keilbach (2004a), Audretsch and Keilbach (2008), Wennekers and Thurik (1999), among others.

⁵ In this article, we use indistinctively institutional approach, institutional perspective, institutional theory, institutional economics and institutional economic theory.

⁶ See for instance Aldrich and Zimmer (1986), Berger (1991), Busenitz et al. (2000), Manolova et al. (2008), Shapero and Sokol (1982), Steyaert and Katz (2004), Stephen et al. (2009), van Stel et al. (2007), among others.

(regulative, normative and cultural-cognitive). Based on North (1990, 2005) and Williamson (1985, 2000), other works have explored the same relationship, though extending the analysis to economic growth. In this regard, Bjørnskov and Foss (2016) have provided a review of the extant literature that addresses the complexity involved in the development process, leveraged by entrepreneurship and institutions. 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 performance, and economic activity (Aparicio et al. 2016a; Audretsch et al. 2008; Sobel 2008).

If entrepreneurship connects institutions and economic performance, is it enough to increase the level of entrepreneurial activity through policies and regulations such that a higher aggregated output is accomplished? Shane (2009) claims that policies unable of distinguishing between survival and high added-value entrepreneurs, may generate harmful long-term outcomes. Blackburn and Ram (2006) argue that badly addressed strategies encouraging entrepreneurship create social exclusion rather inclusive process, since new firms do not reach expected goals due, among other things, to the lack of markets and a supportive structure for social diversity. Thus, the debate on what type of entrepreneurial activities exist and create growth is still alive (Welter et al. 2017). Shane (2012) addresses the debate on what entrepreneurship is, distinguishing entrepreneurial activity as either an event or a process. Accordingly, entrepreneurship can be seen as an individual characteristic/decision, a firm/organization or as a social phenomenon (Audretsch et al. 2015b). Hence, entrepreneurship as a conduit between institutions and economic performance (GDP, national income, total factor productivity, labor productivity, regional economic growth, etc.) could be understood in many ways, such as nascent entrepreneurial activity -or TEA at individual level-, start up rates or density - entrepreneurship capital at country level-, productive or unproductive entrepreneurship, entrepreneurship engagement, self-employment, opportunity-necessity entrepreneurial activity -motivation-, intrapreneurship - or corporate entrepreneurship-, female entrepreneurship, entrepreneurial universities, immigrant and transnational entrepreneurship (as a diversity in entrepreneurship), innovative entrepreneurship, social entrepreneurship, green/sustainable entrepreneurship, and entrepreneurial growth aspirations (see Figure 1).

Insert Figure 1 about here

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 in the electronic supplementary material.

3 Results of the literature review

3.1 Entrepreneurship and its institutional determinants

After applying the filters described in the introduction, 104 articles from the empirical (90), theoretical (10), and introduction special issues (4) literature were identified and selected to explain the relationship between institutions and entrepreneurship (see the details in Appendix 1 in the electronic supplementary material). 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 sixteen articles, followed by Estrin (seven), Mickiewicz (six), Guerrero (five), Stephan (five), Audretsch (four), Desai (four), Pathak (four), Stephan (four), Aidis (three), Alvarez (three), Aparicio (three), Chowdhury (three), De Clercq (three), Sobel (three), Toledano (three), and Uhlaner (three). In total, we found 172 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 (18.3 percent), followed by the *Journal of Business Venturing* (13.5 percent), *Entrepreneurship Theory and Practice* (8.7 percent), *International Entrepreneurship and Management Journal* (6.7 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-one journals) or 1.9 percent (seven 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 1). Also, note that in the period 2007-2011 the number of articles published reaches 33, followed by 54 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 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.

Insert Table 1 about here

With respect to the theoretical framework, we found different approaches (see Table 2). Given our focus of analysis, the main framework found in our literature review is the institutional approach (70.2 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 3). For example, formal institutions could be measured as policies, regulations, governmental variables, among others⁷, and informal institutions could be measured as attitudes, values, social norms, religion, among others⁸. Similar to formal institutional factors (see Table 2), contract theory (6.1 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), Van de Ven (1993) 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 (cf. Gohmann 2012; 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), resource-based view (Guerrero and Urbano 2012; Guerrero et al. 2014), geographical economics (Freire-Gibb and Nielsen 2014), a dissatisfaction perspective (Uhlener and Thurik 2007), Baumol's theory of productive and unproductive entrepreneurship (Sobel 2008), among others. All of these together, which we classified as "others," represent 18.4 percent of the total articles in Table 2.

Insert Table 2 about here

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 issues⁹, others look at procedures that are

⁷ Some works have analyzed this type of institution. For instance, 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.

⁸ For example, Aidis et al. (2008), Estrin and Mickiewicz (2012), Field et al. (2010), Levie and Autio (2008), Meek et al. (2010), Stephan et al. (2015), van Hemmen et al. (2015), among others.

⁹ See for instance Aldrich and Fiol (1994), Braunerhjelm et al. (2015), Busenitz et al. (2000), Calcagno and Sobel (2014), De Clercq et al. (2010), Meek et al. (2010), Manolova et al. (2008), Spencer and Gomez (2004), Stenholm et al. (2013), Valdez and Richardson (2013).

related with access to stock markets (Bruton et al. 2009), the financial system (Autio and Fu 2015; Klapper et al. 2006), hiring and firing rules and controls (Goltz et al. 2015; 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 (De Clercq and Dakhli 2009; Estrin et al. 2013a, 2013b). 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,b), Estrin and Mickiewicz (2012), 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.

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 engagement¹⁰, followed by welfare and society (Field et al. 2010; Kannianen and Vesala 2005). With respect to social norms and culture, some variables such as control of corruption (Anokhin and 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 and Autio (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.

Insert Table 3 about here

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 4, and Appendix 1 in the electronic supplementary material). The most prevalent estimation method used by the authors is linear regression (19.4 percent), followed by panel data (16.3 percent), binomial and multinomial techniques (logit and probit) (14.3 percent), single/multiple case studies and multilevel estimation (8.2 percent), structural equation models (6.1 percent), and descriptive statistics and hierarchical linear models (5.1 percent). We identify only two articles using instrumental variables (2.0 percent). The rest of the techniques presented in Table 4 are classified as “others” (15.3 percent).

¹⁰ Some of the works are Aidis et al. (2008), Bauernschuster et al. (2010), Estrin et al. (2013a, b), Estrin and Mickiewicz (2012), Urbano et al. (2011), Urbano and Alvarez (2014).

Insert Table 4 about here

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 total-factor productivity (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 5 presents empirical and theoretical papers, and also the introduction to special issues or editorials.

Insert Table 5 about here

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 Wennekers four; and Aparicio, Carlsson, Fritsch, Galindo, Guerrero, and Méndez have three. In total, 108 authors were found in 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 6, and Appendix 2 in the electronic supplementary material).

Insert Table 6 about here

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 to 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 incorporate entrepreneurship behavior in the Solow-Swan growth model. Other authors such as Aparicio et al. (2016a), Audretsch and Keilbach (2004a, 2004b, 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), Braunerhjelm and Henrekson (2013), Fritsch (2008), Giordani (2015), Gries and Naudé (2010), Hessels and van Stel (2011), Mueller (2007), Noseleit (2013), Stephens and Partridge (2011), and Valliere and Peterson (2009), among others, 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 7).

Insert Table 7 about here

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 8 the type of data and the technique used by each author(s). Table 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 and Keilbach 2004c, 2008), and instrumental variables (IV) (Stephens and Partridge 2011) in cross section analysis. In terms of time series approach, models based on estimations techniques such as autoregressive models (AR) (Carree and Thurik 2008; Johnson and Parker 1996), least absolute deviations (LAD) (Berkowitz and DeJong 2005), and two-stage least-square (2SLS) (Berkowitz and DeJong 2005;

Bjørnskov and Foss 2013) were also found. Also, dynamic panel data (Dejardin 2011), 2SLS or 3SLS in panel data (Aparicio et al. 2016a; Gonzalez-Pernía and Peña-Legazkue 2015), and random/fixed effects¹¹ were identified.

Insert Table 8 about here

Throughout the empirical assessment and theoretical discussions, it is possible to draw some interesting conclusions. For instance, Iyigun and Owen (1999) presented an endogenous growth model by which individuals choose to increase either their human capital or their experience through entrepreneurial activity. The authors found that both decisions positively affect economic growth. Also, Wennekers and Thurik (1999) presented a literature review on the benefits of entrepreneurship, not only as a direct driver of growth but also as a conduit for knowledge and innovation. Blanchflower (2000) used self-employment as a proxy for entrepreneurship to analyze its determinants and effects on the economic growth of OECD countries in the period 1966–1997. This author found a negative relationship between entrepreneurship and economic growth. Following that, Carree et al. (2002) established the hypothesis that the relationship between these two variables has a U-shaped form. Countries with low income levels have high self-employment rates; medium-income countries present low self-employment rates; more developed economies have self-employment rates that are higher than medium-income economies but lower than those of developing economies. In summary, there are hypotheses about the effects of entrepreneurship and economic growth, as well as about the U-shaped curve that show the different relationships with economic development, depending on the stage of each country.

Regarding the regional level, another hypothesis was identified that posits how entrepreneurship affects regional economic growth. Indeed, Audretsch and Fritsch (2002), Audretsch and Keilbach (2004a, 2004b, 2004c, 2005), Dejardin (2011), González-Pernía and Peña-Legazkue (2015), Müller (2016), and Noseleit (2013) used regional data to find that there is a positive impact of entrepreneurship on regional economic growth. Berkowitz and DeJong (2005), Mueller (2007), Yu (1998) and Stephens and Partridge (2011) tested this hypothesis in other regions and found similar results. This could indicate that the effects of entrepreneurship are robust at both the national and regional levels. Most of these studies have focused on European regions (e.g., Germany, Belgium, Spain, Sweden), as well as Canada and the United States. In this sense, geography plays a role in this relationship and helps make it possible to understand not only economic growth but also economic development. This is another type of hypothesis found in the literature review. For instance, some studies such as those by Acs and Szerb (2007), Carree et al. (2002, 2007), Liñán and Fernandez-Serrano (2014), and van Stel and Carree (2004) related entrepreneurship to economic development (GDP per capita) depending on the stage of development. Additionally, it has been found that

¹¹ See for example Aubrey et al. (2015), Audretsch et al. (2015a), Bosma et al. (2011), Braunerhjelm and Borgman (2004), van Stel et al. (2005).

entrepreneurship plays a useful role as a conduit of knowledge spillover that positively affects economic growth¹².

3.3 Institutions, entrepreneurship, and economic growth

From the previous section, two results suggest further analysis. First, among other conceptual works in the field of entrepreneurship,¹³ this article suggests 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, 2015b), Goltz et al. (2015), and Urbano and Alvarez (2014), among others, have applied explicitly the institutional approach (North 1990 and 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. 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 understand the link between these two variables (Baumol and Strom 2007; Bjørnskov and Foss 2013). 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 a crucial role.

Theoretically, North (1990, 2005) asserts that 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. In this sense, it is important to highlight the role of institutions in entrepreneurship, on the one hand, and how entrepreneurial activity influenced by institutions plays a key role in the growth process, on the other (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. A similar analysis is presented by Carree et al. (2002, 2007), who find that business ownership has a U-shaped relationship with economic growth. Nevertheless, van Stel et al. (2007) have studied the effect of business regulation on nascent and established entrepreneurs, whose decisions regarding regulation depend on the political legacy and the economic development stage. Some important conclusions can be derived from these works: (a) there is a correlation between institutions

¹² Some of the works conducting this analysis are Acs et al. (2008b, 2012), Agarwal et al. (2007), Audretsch (2007), Audretsch and Keilbach (2004a, 2008), Noseleit (2013).

¹³ For instance: Bruton et al. (2010), Thornton et al. (2011), Veciana and Urbano (2008), Welter and Smallbone (2008, 2011), among others.

and economic development; (b) given the capacity and efficiency to create norms and laws, entrepreneurial activity will increase or decrease; and therefore (c) entrepreneurship will have a greater impact in some regions and countries than in others.

From another perspective, authors such as Audretsch (2007), Audretsch and Keilbach (2004a, 2004b, 2005, 2007), Audretsch et al. (2008), and Urbano and Aparicio (2016) explore the last conclusion assuming that institutions affect the rate of entrepreneurship capital. They find that effectively this factor impacts positively on economic 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 framework 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, 2004b) 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 process. Thus, as Audretsch and Keilbach (2008) suggest, simultaneity between institutions, entrepreneurship, and economic growth is required. On the one hand, 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. On the other hand, 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 and 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 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 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 with 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.

Insert Figure 2 about here

From Figure 2 one might suggest that future research should align highly advanced techniques to understand both the effect of institutions on entrepreneurship, and the consequences of entrepreneurial activity on economic performance. This could imply that further analysis at individual level and grounded upon occupational, contract, social capital and institutional theory needs to include a multilevel approach that captures the nearest and furthest socialization processes (Urbano and Alvarez 2014). Since GEM data has a cross-section structure, empirical analysis and different insights can be obtained by applying multilevel estimations or pseudo-panel models. At country level, Figure 2 may suggest that studies analyzing economic development need undoubtedly the time dimension as long as a dynamic exploration is involved. Nowadays there are more opportunities of conducting time series analysis since year after year information on entrepreneurship is being gathered. In the case of panel data, the pioneer work by Ács et al. (2014) suggests that new data is emerging to explore how institutions, entrepreneurship and economic development are recursively linked (e.g. the project called the global entrepreneurship and development index –GEDI). Although the microdata is not publicly available (as GEM), a cross-country analysis can be perfectly carried out. Thus, further tools are emerging to conduct future research that combines institutional analysis as antecedent of entrepreneurship and economic growth.

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 in the electronic supplementary material). 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.

4 Conclusions and future research

Entrepreneurship research has evolved rapidly since its origins (Blackburn and Kovalainen 2009; Carlsson et al. 2013). According to the literature studied in the current article, 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 lenses¹⁴. The second issue could be explored using an institutional or economic framework.

In this article, a systematic literature analysis based on an institutional approach was conducted. Using the idea that institutions shape human behavior in order to enhance economic growth, we explored the papers that analyze how institutional factors through entrepreneurial activity affect economic growth. 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. Thus, not only is understanding both complex relationships and their possible consequences helpful for advancing and providing new insights in these complementary research fields, but it is also useful for formulating public policies, particularly strategies that reinforce the sustainable creation of new businesses that effectively enhance economic performance and provide well-being, not only for the entrepreneurial firms but also for the entire society.

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 institutions have a higher and more positive effect than formal institutions. 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 and 2014) institutional dimensions or pillars (regulative -in terms of formal institutions-, normative -in terms of informal institutions- and cultural-cognitive -this dimension relates the external world and the individual-). 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. Likewise, authors such as Bjørnskov and Foss (2013) and Nissan et al. (2011) found that institutions also affect

¹⁴ Apart from the institutional and economic approaches considered in this article, perspectives that involve psychological (Collins et al. 1964; McLelland 1961; Krueger 1993 and Krueger and Brazeal 1994; Shepherd 2015; among others) and organizational (Alvarez and Busenitz 2001; Barney 1991; Barney et al. 2001; Chesbrough 2003 and 2006; Leih and Teece, 2016; 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 and Brown 2014, among others).

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, 2004b), Audretsch et al. (2008), Bjørnskov and Foss (2016), Terjesen et al. (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.). In this sense, although Bjørnskov and Foss (2016) conduct a similar literature analysis, this paper might be complimentary through the idea that informal institutions are more relevant for explaining entrepreneurial activity and its economic consequences. 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.

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) and the belief systems (informal institutions) should be further analyzed, since there is still a scarcity of evidence dealing with these types of institutions. Among those few authors who have analyzed these institutional factors, 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 (as productive entrepreneurship) rather than unproductive entrepreneurship. 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, and therefore, more studies are needed to provide a broader perspective. Also, the interplay between entrepreneurship and institutions where a bidirectional relationship takes place, needs further research. Institutions shape entrepreneurship but at the same time entrepreneurs tend to affect institutions (Elert and Henrekson 2017). In addition, we noticed that measures of entrepreneurship that were not considered in the current paper 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 study how entrepreneurs within firms are shaped by the institutional environment¹⁵.

Similarly, future research might consider the question on how and why the diversity in entrepreneurship research is particularly important for economic growth. Some poignant examples of this diversity include: female entrepreneurship (Ahl and Marlow, 2012; Collins and Low, 2010; De Bruin et al.,

¹⁵ See for instance Gómez-Haro et al. (2011), Ribeiro-Soriano and Urbano (2009), Toledano et al. (2010), Turró et al. (2014), Turro et al. (2016).

2007; Minniti and Naudé, 2010), social entrepreneurship (Acs et al. 2013; Nicholls 2010; Zahra et al. 2009), immigrant and transnational entrepreneurship (Collins and Low 2010; Drori et al. 2009; Li et al. 2017), entrepreneurial universities (Guerrero et al. 2016b; Wennberg et al. 2011), family business (Chrisman et al. 2010; Cruz et al. 2012; Debicki et al. 2009; Van Gils et al. 2014; Zahra et al. 2008), green or sustainable entrepreneurship (Dean and McMullen 2007; Gast et al. 2017; Shepherd et al. 2013), etc. Due to data limitations and the lack of strong theoretical approaches, this type of distinction has not often been made yet in the empirical literature. With regard to economic growth, Alvarez and Barney (2014), Blackburn and Ram (2006), Bruton et al. (2013), Carter (2011), and McMullen (2011) discuss the importance of entrepreneurship to explain not only the economic performance, but also inclusive growth, well-being, social mobility and the alleviation of poverty. 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. According to Welter et al. (2017), there are particular austerity demands concerning the government budget constraints, impeding to reactivate the economic level of regions and nations, which result in a reduced inclusive growth outcome. Thus, entrepreneurial diversity may serve as a policy instrument to connect those excluded households with economic dynamics. Departing from Figure 1 (see section 2), we can summarize what we have found through the literature analysis plus some elements that could be considered by scholars in entrepreneurship research in order to push out the extant frontier, framed of course, by the causal chain running from institutions and entrepreneurship to economic growth.

Figure 1, therefore, might serve to depict the growth and development process across regions and countries. In each of these two levels, future research and public policies should consider that local and national differences may exist. In this regard, as identified in this literature analysis, further policy reports and articles are needed. These should address the question on what are the conducive institutions in developing and developed countries such that entrepreneurship leverages the economic development process. Certainly, there are different trends depending on the context in which entrepreneurs make decisions (Beynon et al. 2016). For instances, Bruton et al. (2013) and De Castro et al. (2014) discuss the challenge in terms of the unofficial economy confronting developing countries, which, despite such challenges, individuals still decide to become entrepreneurs. In one way or another, this is the labor market structure that shapes the entrepreneurial intentions and decisions, which perhaps represent the best (short-term) solution for those families living in emerging economies (Bruton et al. 2012). Thus, new insights could tackle the fact that institutions (mainly the formal ones) exert lower influence on entrepreneurial activities formally registered. In this sense, an analysis of informal institutions, encouraging (direct and indirectly) both formal institutions and higher quality of entrepreneurship, is needed.

In the developed country context, the analysis of the causal chain suggests an important tool to analyze the recent crises. First, the huge immigrant flows from developing to developed countries (Bizri 2017; Collins and Low 2010); and second, the still unstable economic platform of the US, UK, and Europe (Giotopoulos et al. 2017; Koellinger and Thurik 2012; Varvarigos and Gil-Moltó 2016), among other types of crises, create opportunities for entrepreneurship scholars to provide compelling evidence and a broader debate regarding the importance of entrepreneurial activity as a policy last resort. Ács et al. (2014) and Acs et al.

(2017) recognize that the national system of entrepreneurship is a new way to comprehend the functioning of the economic process, leveraged by entrepreneurs who are, at the same time, embedded in a particular environment. In particular, Ács et al. (2014) have introduced new metrics of entrepreneurial activity and economic development called the GEDI, which understand entrepreneurship as a system. Measurement advances like this offer ways forward to explore in depth institutions, entrepreneurship and economic development at the individual, regional and country level, facilitating at the same time the creation of long-term policies.

Both conceptual and policy implications could be derived from this paper. 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, informal, etc.), entrepreneurial activity (necessity, opportunity, etc.) and economic performance (growth, development, etc.). Second, this study is useful for formulating strategies and public policies, particularly those strategies that reinforce the sustainable creation of new businesses that enhance the standard of living for not just the entrepreneurs but also the entire society.

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List of tables and figures

Table 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	18.27
Journal of Business Venturing	2	1	0	6	5	14	13.46
Entrepreneurship Theory and Practice	1	0	2	3	3	9	8.65
International Entrepreneurship and Management Journal	0	0	0	3	4	7	6.73
International Small Business Journal	0	0	1	2	1	4	3.85
Journal of Business Research	0	0	1	0	3	4	3.85
European Journal of Law and Economics	0	0	0	0	3	3	2.88
Journal of Evolutionary Economics	0	0	0	1	2	3	2.88
Journal of International Business Studies	0	0	0	2	1	3	2.88
Journal of Small Business Management	1	0	0	0	2	3	2.88
Academy of Management Perspectives	0	0	0	0	2	2	1.92
Entrepreneurship & Regional Development	0	0	0	1	1	2	1.92
International Business Review	0	0	0	1	1	2	1.92
Journal of Economic Behavior & Organization	0	0	0	1	1	2	1.92
Journal of Technology Transfer	0	0	0	0	2	2	1.92
Research Policy	0	1	0	0	1	2	1.92
Technological Forecasting and Social Change	0	0	0	0	2	2	1.92
Academy of Management Journal	0	1	0	0	0	1	0.96
Academy of Management Review	1	0	0	0	0	1	0.96
American Behavioral Scientist	0	1	0	0	0	1	0.96
American Economic Review	0	0	0	1	0	1	0.96
Asia Pacific Journal of Management	0	0	0	0	1	1	0.96
Canadian Journal of Administrative Science	0	0	0	1	0	1	0.96
Cybernetics and Systems	0	0	0	0	1	1	0.96
Economic Modelling	0	0	1	0	0	1	0.96
European Journal of International Management	0	0	0	1	0	1	0.96
Feminist Economics	0	0	0	1	0	1	0.96
Journal of Comparative Economics	0	0	0	0	1	1	0.96
Journal of Financial Economics	0	0	1	0	0	1	0.96
Journal of International Management	0	0	0	0	1	1	0.96
Journal of Public Economics	0	0	0	1	0	1	0.96
Management Science	0	1	0	0	0	1	0.96
Organization Science	0	0	0	0	1	1	0.96
Public Choice	0	0	0	1	0	1	0.96
Regional Studies	0	0	0	0	1	1	0.96
Review of Development Economics	0	0	0	0	1	1	0.96
Review of Economics and Statistics	0	0	0	0	1	1	0.96
Service Industries Journal	0	0	0	1	0	1	0.96
Total	6	5	6	33	54	104	100

Table 2 Theoretical framework used in articles

Theory	Articles	
	No.	%
Institutional approach	80	70.18
Contract theory	7	6.14
Occupational choice	6	5.26
Others	21	18.42
Total	114	100

Table 3 Operationalization of formal and informal institutions in analyzed articles

Institution	Type	Articles	
		No.	%
Formal	Political structure	34	19.43
	Procedures - Regulations	27	15.43
	Contracts	24	13.71
	Property rights	8	4.57
Informal	Social norms - Culture	34	19.43
	Cognitive dimension*	26	14.86
	Beliefs systems	21	12.00
Others		1	0.57
Total		175	100

* It is worth noting that although we classify cognitive dimension as informal institution, Scott (2008 and 2014) suggest that cultural-cognitive dimension or pillar relates the external world of stimuli and the response of the individual. Here, we believe that cognitive elements are directly sensitive to the primary socialization process, and therefore, those variables associated with this dimension are classified as informal institutions.

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

Table 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. (2016a), Valdez and Richardson (2013), van Hemmen et al. (2015).
Panel data	16	16.33	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), Chowdhury et al. (2015b), Da Rin et al. (2011), Dutta and Sobel (2016),

Methods	Articles		Author and year of publication
	No.	%	
			García-Posada and Mora-Sanguinetti (2015), Krasniqi and Desai (2016), Levie and Autio (2008), Meek et al. (2010), Nyström (2008).
Logit, Probit, Multinomial, Ordered	14	14.29	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), Urbano et al. (2016b), Zhang (2015).
Single/Multiple-Case studie(s)	8	8.16	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	8.16	Estrin et al. (2013a), Estrin et al. (2013b), 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	6.12	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	5.10	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	5.10	Baughn et al. (2006), Goltz et al. (2015), Hechavarria and Reynolds (2009), Pathak et al. (2013), Yeganegi et al. (2016).
Instrumental variables	2	2.04	Field et al. (2010), Hopp and Stephan (2012).
Others	15	15.31	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	98	100.00	

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

Table 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

Table 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	32.10
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	3.70
Industrial and Corporate Change	0	1	0	1	1	3	3.70
Strategic Entrepreneurship Journal	0	0	0	2	1	3	3.70
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
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	100.00

Table 7 Theoretical framework used in articles

Theory	Articles	
	No.	%
Neoclassical economic growth theory	11	12.22
Schumpeterian theory	20	22.22
Endogenous growth theory	29	32.22
Economic development theory	3	3.33
Institutional economic theory	11	12.22
Other	16	17.78
Total	90	100

Table 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), Audretsch and Keilbach (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), Acs et al. (2008b), Braunerhjelm and Henrekson (2013), Fritsch (2008), Valliere and Peterson (2009).
	2SLS/3SLS	2	11.76	Audretsch and Keilbach (2004c), Audretsch and Keilbach (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).
	OLS	2	33.33	Belitski and Desai (2016), Braunerhjelm et al. (2010).
Pooling data	GLS/2SLS/3SLS	3	50.00	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 (2007), Capello and Lenzi (2016), Low and Isserman (2015).
Structural Equation Model	SEM	3	100	Audretsch et al. (2008), Guerrero et al. (2015), Guerrero et al. (2016a).
Partial least square	PLS/fsQCA	2	100	Castaño-Martinez et al. (2015), Castaño et al. (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.

Figure 1: Linking institutions, entrepreneurship, and economic growth

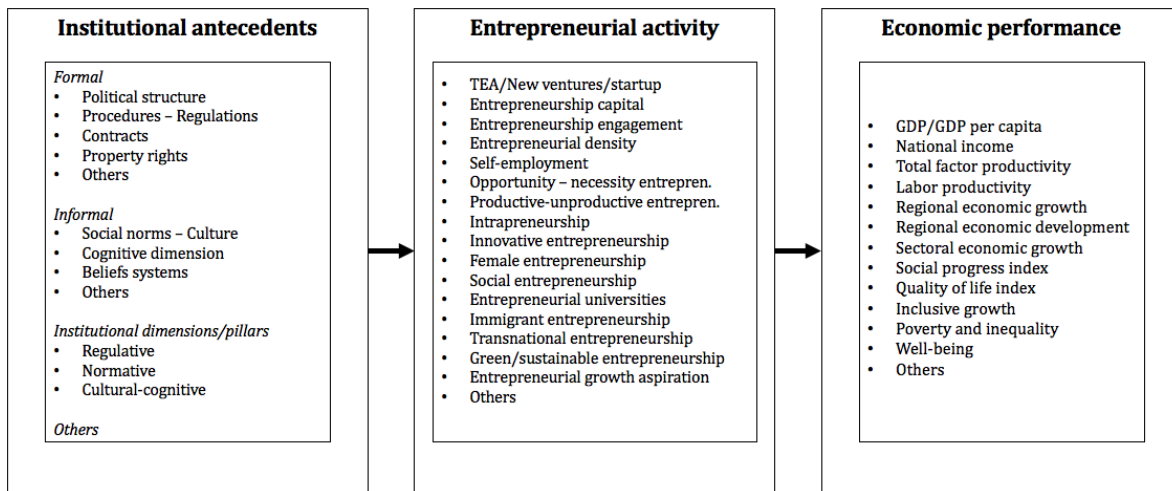
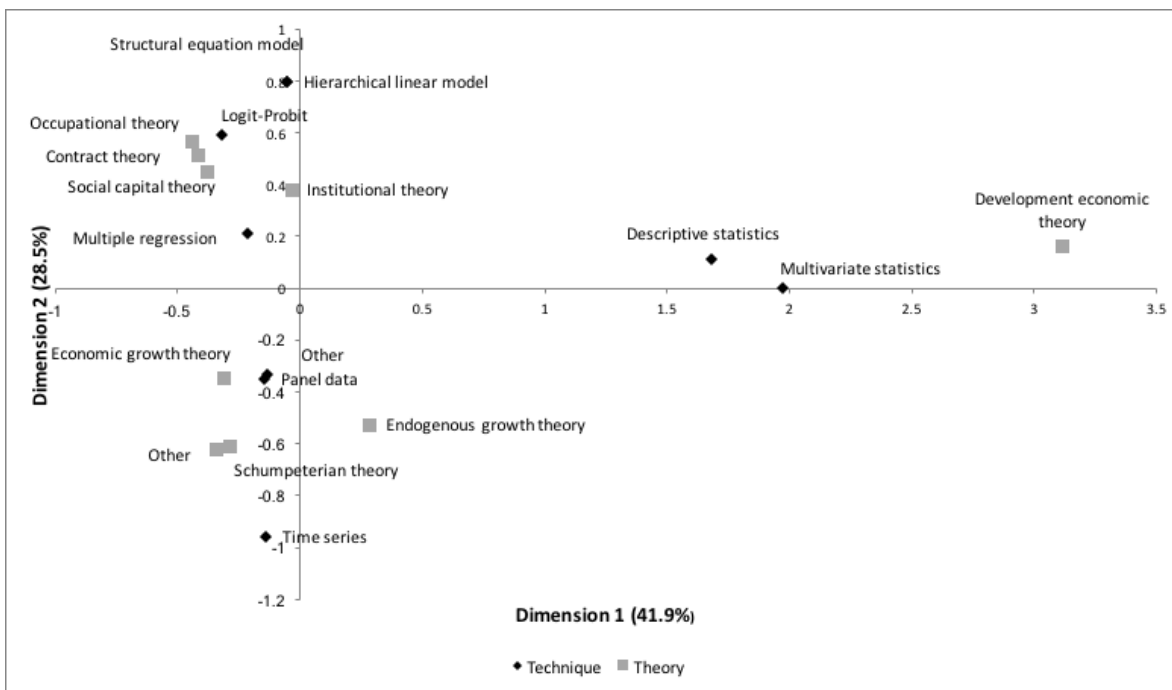


Figure 2: Technique vs. theoretical framework



ELECTRONIC SUPPLEMENTARY MATERIAL

Appendix 1. Institutions and entrepreneurship articles included in the systematic literature analysis

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.	Institutions	TEA	Informal_institutions: Beliefs systems	Empirical
2. Aidis, R., Estrin, S., Mickiewicz, T. M. (2012)	Size matters: entrepreneurial entry and government	Institutional approach	Panel data	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	Start-up rate	Formal_Informal: Political structure; procedures – regulation; social norms - culture	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	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	Business owners	Formal_Informal: Contracts; beliefs systems	Empirical
4. Aldrich, H. E., Fiol, C. M. (1994)	Fools rush in? The institutional context of industry creation	Institutional approach		New organizations that successfully pursue legitimacy may evolve from innovative ventures to a broader context, collectively reshaping the industry and institutional environments.	Institutions	New organizations/industries	Formal_Informal: Political structure; cognitive dimension	Theoretical
5. Álvarez, C., Urbano, D., Amorós, J. E. (2014)	GEM research: achievements and challenges	Institutional approach	Literature review	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			Theoretical
6. Anokhin, S., Schulze, W. S. (2009)	Entrepreneurship, innovation, and corruption	Contract theory	Quantile regression; Panel data	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	TEA	Informal_institutions: Social norms - culture	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: Political structure; procedures-regulations; cognitive dimension	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: Beliefs systems	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: Political structure; procedures - regulation	Empirical
10. Bauerschuster, 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_Informal: Contracts; social norms - culture	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 revealed that the performance implications of relational trust are contingent on the institutional context.	Institutions	New venture performance	Formal_institutions: Political structure	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: Political structure; procedures-regulations	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		Informal_institutions: Beliefs systems	Empirical
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

Author(s)	Title	Theoretical framework	Methodology	Results	Key term	Dvariable	Ivariable	Type of paper
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.	Institutions	Business owners	Formal_ institutions: Political structure	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	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			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	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	Business owners	Formal_Informal: Political structure; procedures-regulations; social norms-culture	Empirical
21. Busenitz, L. W., Gomez, C., Spencer, J. W. (2000)	Country institutional profiles: Unlocking entrepreneurial phenomena	Institutional approach	Factor analysis	A country institutional profile can serve as a viable alternative for exploring broad country differences.	Institutions	Business owners	Formal_Informal: Contracts; social norms – culture; cognitive dimension	Empirical
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: Contracts	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: Political structure; contracts; property rights	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	Institutions	Export-oriented TEA	Formal_institutions: Political structure; procedures-regulations; contracts	Empirical

Author(s)	Title	Theoretical framework	Methodology	Results	Key term	Dvariable	Ivariable	Type of paper
25. Chowdhury, F., Terjesen, S., Audretsch, D. (2015b)	Varieties of entrepreneurship: institutional drivers across entrepreneurial activity and country	Institutional approach	Panel data	deterrent factor for IE when corruption is low. 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: Political structure; procedures-regulations; property rights; cognitive dimension	Empirical
26. Collins, J. D., McMullen, J. S., Reutzell, 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: Political structure	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: Political structure; contracts; social norms-culture	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: Contracts	Empirical
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: Contracts; cognitive dimension; others	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: Political structure; contracts; beliefs systems	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: Contracts; social norms – culture; cognitive dimension	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				Theoretical

Author(s)	Title	Theoretical framework	Methodology	Results	Key term	Dvariable	Ivariable	Type of paper
33. Dutta, N., Sobel, R. (2016)	Does corruption ever help entrepreneurship?	Institutional approach	Panel data	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 Corruption hurts entrepreneurship. The impact is smaller, but remains negative, when business climates are bad.		New business density	Formal_institutions: Political structure	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: Pocedures - regulations	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_institutions: Political structure; property rights	Empirical
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.	Institutions	TEA	Formal_institutions: Political structure; contracts	Empirical
37. Estrin, S., Mickiewicz, T. (2012)	Shadow Economy and Entrepreneurial Entry	Institutional approach	Probit	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_Informal: Contracts; cognitive dimension; beliefs systems	Empirical
38. Estrin, S., Mickiewicz, T., Stephan, U. (2013b)	Entrepreneurship, Social Capital, and Institutions: Social and Commercial Entrepreneurship Across Nations	Institutional approach	Multilevel estimation	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.	Institutions	TEA	Formal_Informal: Political structure; property rights; beliefs systems	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	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	Self-employment	Informal_institutions: Beliefs systems	Empirical
40. Fligstein, N. (1997)	Social skills and Institutional Theory	Institutional approach	Single-Case study	It is argued that skill is applied differently across organizational fields that are forming, become stable,	Institutions	Institutional entrepreneurs	Informal_institutions: Cognitive dimension	Theoretical

Author(s)	Title	Theoretical framework	Methodology	Results	Key term	Dvariable	Ivariable	Type of paper
41. Freire-Gibb, L. C., Nielsen, K. (2014)	Entrepreneurship Within Urban and Rural Areas: Creative People and Social Networks	Geographical economics	Logit	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	Self-employment	Informal_institutions: Beliefs systems	Empirical
42. García-Posada, M., Mora-Sanguinetti, J. S. (2015)	Entrepreneurship and enforcement institutions: Disaggregated evidence for Spain	Institutional approach	Panel data	Higher judicial efficacy increases the entry rate of firms, while it has no effect on the exit rate.	Institutions	Entry rate	Formal_institutions: Procedures - regulations	Empirical
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.	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	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	TEA	Formal_institutions: Political structure	Empirical
45. Gohmann, S. F. (2012)	Institutions, Latent Entrepreneurship, and Self-Employment: An International Comparison	Occupational choice	Logit	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	Self-employment	Informal_institutions: Political structure	Empirical
46. Guerrero, M., Urbano, D. (2012)	The development of an entrepreneurial university	Institutional approach; Resource-Based View	Structural equation model	Formal and informal institutions affect universities outcomes, from which entrepreneurial activities take place.	Institutions	Entrepreneurial universities	Formal_Informal: Political structure; cognitive dimension	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	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: Political structure; cognitive dimension	Empirical
48. Hafer, W., Jones, G. (2015)	Are entrepreneurship and cognitive skills related? Some international evidence	Global Entrepreneurship and Development Index (GED) model	Linear regression	Cognitive skills predict a measure of both entrepreneurial attitudes and the institutional and economic prerequisites for creating high-value, high-growth firms.	Institutions	GEDI	Informal_institutions: Cognitive dimension	Empirical
49. Hayton, J. C., George, G., Zahra, S. A. (2002);	National culture and entrepreneurship: A review of behavioral research	Institutional approach	Literature review	Fruitful avenues for future research could address Hofstede dimensions in order to understand the entrepreneurial activity.	Institutions		Informal_institutions: Social norms - culture	Theoretical
50. Hechavarría, D. M. (2016)	The impact of culture on national prevalence rates of social and commercial entrepreneurship	Institutional approach	Linear regression	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	Social/commercial entrepreneurship	Informal_institutions: Social norms - culture	Empirical

Author(s)	Title	Theoretical framework	Methodology	Results	Key term	Dvariable	Ivariable	Type of paper
51. Hechavarria, 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 different dimensions of culture impact on the type of entrepreneurial activity.	Institutions	Opportunity/Necessity TEA	Informal_institutions: Social norms - culture	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	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	Business ownership rate	Informal_institutions: Beliefs systems	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	The culture, particularly perceptions of community cultural norms, influences venture emergence.	Institutions	New firm performance	Informal_institutions: Social norms - culture	Empirical
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: Political structure	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	Formal_Informal: Contracts; beliefs systems	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: Social norms - culture	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: Social norms – culture; cognitive dimension; beliefs systems	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: Procedures – regulations; property rights	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 enhances different outcomes associated with entrepreneurial activity within the Autonomous University of Barcelona.	Institutions	Entrepreneurial universities	Formal_Informal; Political structure; procedures-regulations; social norms-culture; cognitive dimension	Empirical

Author(s)	Title	Theoretical framework	Methodology	Results	Key term	Dvariable	Ivariable	Type of paper
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: Procedures- regulations; social norms - culture	Empirical
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 among 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: Political structure; procedures- regulations	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: Political structure	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: Procedures- regulations	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 were significantly more important for women entrepreneurs in Israel	Institutions	Female business owners	Informal_institutions: Social norms – culture; cognitive dimension; beliefs systems	Empirical
65. Levie, J., Autio, E. (2008)	A theoretical grounding and test of the GEM model	Institutional approach	Panel data	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	TEA	Informal_institutions: Cognitive dimension	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 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	Engagement in entrepreneurship	Formal_Informal: Procedures- regulations; social norms – culture; cognitive dimension	Empirical

Author(s)	Title	Theoretical framework	Methodology	Results	Key term	Dvariable	Ivariable	Type of paper
67. Liñán, F., Urbano, D., Guerrero, M. (2011)	Regional variations in entrepreneurial cognitions: Start-up intentions of university students in Spain	Planned behaviour approach; Institutional approach; Social capital theory	Structural equation model	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. 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	Entrepreneurial intention	Informal_institutions: Social norms - culture cognitive dimension	Empirical
68. Malchow-Møller, N., Markusen, J. R., Skaksen, J. R. (2010)	Labour market institutions, learning and self-employment	Occupational choice	Dynamic partial-equilibrium model	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.	Institutions	Self-employment	Formal_institutions: Political structure; procedures- regulations; contracts	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	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: Political structure	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.	Institutions	Bricolage entrepreneurship	Formal_Informal: Procedures- regulations; social norms – culture; cognitive dimension	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 number of quite different societies, entrepreneurship is associated with high individualism, high power distance, low uncertainty avoidance, and high masculinity scores.	Institutions	Business owners	Formal_Informal: Contracts; social norms – culture; cognitive dimension	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	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	Self-employment	Informal_institutions: Social norms – culture; beliefs systems	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	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	Solar firm founding rate	Informal_institutions: Social norms - culture	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: Political structure; procedures – regulations; property rights	Empirical

Author(s)	Title	Theoretical framework	Methodology	Results	Key term	Dvariable	Ivariable	Type of paper
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	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	Social/Commercial entrepreneurship	Informal_institutions: Social norms - culture	Empirical
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_institutions: Procedures- regulations; property rights	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.	Institutions	Business owners	Formal_institutions: Procedures – regulations	Empirical
78. Román, C., Congregado, E., Millan, J. M. (2011)	Dependent self-employment as a way to evade employment protection legislation	Contract theory	Logit	A 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	Self-employment	Formal_institutions: Political structure; procedures – regulations; contracts	Empirical
79. Shane, S., Foo, M. D. (1999)	New firm survival: Institutional explanations for new franchisor mortality	Institutional approach	Cox regression	Institutional legitimacy adds to economic explanations for the survival of new franchisors and suggests the importance of a properly socialized explanation.	Institutions	New franchise system	Formal_institutions: Contracts	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	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	Self-employment	Formal_institutions: Procedures – regulations	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	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_Informal: Contracts; social norms – culture; cognitive dimension	Empirical

Author(s)	Title	Theoretical framework	Methodology	Results	Key term	Dvariable	Ivariable	Type of paper
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	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 and the capital necessary for high impact entrepreneurship matter most.	Institutions	TEA	Formal_Informal: Contracts; Social norms – culture; cognitive dimension; beliefs systems	Empirical
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: Social norms – culture; cognitive dimension	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. 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	TEA	Informal_institutions: Social norms - culture	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	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	Social entrepreneurship	Formal_Informal: Political structure; beliefs systems	Empirical
86. Stephen, F., Urbano, D., van Hemmen, S. (2009)	The responsiveness of entrepreneurs to working time regulations	Contract theory	Linear regression	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	TEA	Formal_institutions: Procedures – regulations; contracts	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' policy	Descriptive statistics	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	New technology-based firms	Formal_institutions: Political structure	Theoretical
88. Toledano, N., Urbano, D. (2008)	Promoting entrepreneurial mindsets at universities: a case study in the South of Spain	Institutional approach	Case study	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	Institutions	Entrepreneurial attitudes	Formal_Informal: Procedures – regulations; social norms - culture	Empirical
89. Thornton, P. H., Ribeiro-Soriano, D., Urbano, D. (2011)	Socio-cultural factors and entrepreneurial activity: An overview	Institutional approach			Institutions			Special issue

Author(s)	Title	Theoretical framework	Methodology	Results	Key term	Dvariable	Ivariable	Type of paper
				of those elements influencing entrepreneurship.				
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: Social norms - culture	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: Procedures – regulations; cognitive dimension; beliefs systems	Empirical
92. Urbano, D., Aparicio, S., Querol, V. (2016a)	Social progress orientation and innovative entrepreneurship: an international analysis	Institutional approach	Linear regression	Formal factors (university's lack of incentives to create a new business, entrepreneurial knowledge, training and skills, and entrepreneurship education) are higher correlated with the student employer entrepreneurs than informal institutions (role models, and fear of failure).	Institutions	Innovative TEA	Informal_institutions: Social norms - culture	Empirical
93. Urbano, D., Aparicio, S., Guerrero, M., Noguera, M., & Torrent-Sellens, J. (2016b)	Institutional determinants of student employer entrepreneurs at Catalan universities	Institutional approach	Probit	Despite the relevance of the legal system, the most important factors for the promotion of the tourism business are the socio-cultural ones.	Institutions	Student employer entrepreneurs	Formal_Informal: Political structure; social norms – culture; cognitive dimension; beliefs systems	Empirical
94. Urbano, D., Toledano, N., Ribeiro-Soriano, D. (2010)	Support policy for the tourism business: a comparative case study in Spain	Institutional approach	Case study	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: Political structure	Empirical
95. 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		Institutions	Business owners	Informal_institutions: Social norms – culture; cognitive dimension; beliefs systems	Empirical

Author(s)	Title	Theoretical framework	Methodology	Results	Key term	Dvariable	Ivariable	Type of paper
96. 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: Contracts; social norms – culture; cognitive dimension	Empirical
97. 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
98. 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: Beliefs systems	Empirical
99. 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: Pcedures – regulations; contracts	Empirical
100. 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
101. 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: Procedures – regulations; contracts	Empirical
102. 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: Social norms - culture	Empirical
103. 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 property rights protection regimes and lacking of venture capital.	Institutions	Spinout	Formal_institutions: Property rights	Empirical
104. Zhang, Y. (2015)	The contingent value of social resources: Entrepreneurs' use of debt-financing sources in	Network approach	Probit	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	Institutions	Self-employees that have borrowed money	Informal_institutions: Beliefs systems	Empirical

Author(s)	Title	Theoretical framework	Methodology	Results	Key term	Dvariable	Ivariable	Type of paper
	Western China			sources, and more urban ties increase their probability of using informal sources.				

Notes. Dvariable: Dependent variable; Ivariable: Independent variable.

Appendix 2. Entrepreneurship and economic growth articles included in the systematic literature analysis

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, D. (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	Economic growth			Theoretical

Author(s) & Year	Title	Theoretical framework	Methodology	Results	Key term	Dvariable	Ivariable	Type of paper
8. Alvarez, S. A., Barney, J. B. (2014)	Entrepreneurial opportunities and poverty alleviation	Development economic theory	Develop a theoretical framework	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 exploit in poverty contexts hold the greatest potential for significant economic impact.	Economic development			Theoretical
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)	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	Economic development			Theoretical

Author(s) & Year	Title	Theoretical framework	Methodology	Results	Key term	Dvariable	Ivariable	Type of paper
13. Audretsch, D. (2007)	Entrepreneurship capital and economic growth	Neoclassical Economic growth theory	Develop a theoretical framework	compensating factor differentials and the extent to which new firms displace incumbent enterprises. 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
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 growth theory	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 growth theory	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 growth theory	Cross section (OLS)	There is a positive effect of entrepreneurship capital on regional economic growth	Regional economic growth	Regional Growth	Entrepreneurship capital	Empirical

Author(s) & Year	Title	Theoretical framework	Methodology	Results	Key term	Dvariable	Ivariable	Type of paper
21. Audretsch, D., Keilbach, M. (2008)	Resolving the knowledge paradox: Knowledge-spillover entrepreneurship and economic growth	Endogenous growth theory	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 growth theory	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 growth theory	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 growth theory	Time series (OLS and 2SLS)	There is a positive effect of self-employment and institutions on total-factor productivity	Institutions	Total-factor productivity (TFP)	Self-employment_Institutions	Empirical
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

Author(s) & Year	Title	Theoretical framework	Methodology	Results	Key term	Dvariable	Ivariable	Type of paper
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 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

Author(s) & Year	Title	Theoretical framework	Methodology	Results	Key term	Dvariable	Ivariable	Type of paper
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
38. Carree, M., Van Stel, A., Thurik, R., Wennekers, 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 cyclical self-employment, depending on the value of the threshold variable. 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	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	Early-stage entrepreneurial activity, affected by some public policies, is positively correlated to economic	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		Economic growth	GDPpc	TEA	Empirical

Author(s) & Year	Title	Theoretical framework	Methodology	Results	Key term	Dvariable	Ivariable	Type of paper
				growth.				
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. 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.	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	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	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		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			Special issue
45. Dejardin, M. (2011)	Linking net entry to regional economic growth	Endogenous growth theory	Panel data (dynamic)		Regional economic growth	Regional Growth	Net entry	Empirical

Author(s) & Year	Title	Theoretical framework	Methodology	Results	Key term	Dvariable	Ivariable	Type of paper
46. Dejaridin, 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 growth theory	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 growth theory	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 growth theory	Mathematical economics	It is found the amount of resources devoted to innovation along the balance growth path	Economic growth	TFP	Entrepreneurs that need finance	Theoretical
51. González-Pernía, J., Peña-Legazkue, I. (2015)	Export-oriented entrepreneurship and regional economic growth	Neoclassical Economic growth theory	Panel data (2SLS)	Opportunity TEA, as well as export oriented entrepreneurship, is positively associated with Spanish regional growth.	Economic growth	TFP	Opportunity and export-oriented TEA	Empirical

Author(s) & Year	Title	Theoretical framework	Methodology	Results	Key term	Dvariable	Ivariable	Type of paper
52. Gries, T., Naudé, W. (2010)	Entrepreneurship and structural economic transformation	Endogenous growth theory	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 growth theory	Structural equation model	The outcomes of university activities (research, teaching and entrepreneur) have a positive effect on economic growth. Informal factors have a higher influence on university entrepreneurial activity than formal factors. There is also a higher contribution of universities on regional competitiveness.	Economic growth	GDPpc	Entrepreneurial universities outcome	Empirical
54. Guerrero, M., Urbano, D., Fayolle, A. (2016a)	Entrepreneurial activity and regional competitiveness: evidence from European entrepreneurial universities	Institutional economic theory/Endogenous growth theory	Structural equation model	Positive effects of entrepreneurship (TEA) on economic growth and export orientation	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)	Network capital is found a mediator between entrepreneurship and innovation-based regional growth	Economic growth	Growth	TEA	Empirical
56. Huggins, R., Thompson, P. (2015)	Entrepreneurship, innovation and regional growth: A network theory	Endogenous growth theory	Mathematical economics	There are positive effects of self-employment on economic 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)	The birth rates are positively associated with industrial outcomes in UK counties. Financial systems affect the entrepreneurial activities that lead to productivity improvements. National culture and entrepreneurship can jointly help characterize the level of economic	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)	Regional economic growth	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)	Economic growth	Economic growth	Growth	Prospective entrepreneurs	Empirical
60. Liñán, F., Fernandez-Serrano, J. (2014)	National culture, entrepreneurship and economic development: different patterns across the European Union	Institutional economic theory	Cross section (OLS)	Economic development	Economic development	GDPpc	TEA	Empirical

Author(s) & Year	Title	Theoretical framework	Methodology	Results	Key term	Dvariable	Ivariable	Type of paper
				development.				
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 yield 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. 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	Growth	Start-up rate	Empirical
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		Regional economic growth			Theoretical

Author(s) & Year	Title	Theoretical framework	Methodology	Results	Key term	Dvariable	Ivariable	Type of paper
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	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)	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. 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 are positive effect of entrepreneurship (self-employment) capital on regional economic growth	Regional economic growth	GDPpc	Business owners	Empirical
71. Sternberg, R., Wennekers, 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	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	necessity TEA; and the influence on growth is higher in developing countries, as well as in post-crisis period. 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

Author(s) & Year	Title	Theoretical framework	Methodology	Results	Key term	Dvariable	Ivariable	Type of paper
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 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

Notes. Dvariable: Dependent variable; Ivariable: Independent variable.

