Routledge
Taylor & Francis Group

Economic Research-Ekonomska Istraživanja

ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/rero20

An approach to a country's innovation considering cultural, economic, and social conditions

M. Ángeles López-Cabarcos , Juan Piñeiro-Chousa & Lara Quiñoá-Piñeiro

To cite this article: M. Ángeles López-Cabarcos , Juan Piñeiro-Chousa & Lara Quiñoá-Piñeiro (2020): An approach to a country's innovation considering cultural, economic, and social conditions, Economic Research-Ekonomska Istraživanja, DOI: 10.1080/1331677X.2020.1838314

To link to this article: https://doi.org/10.1080/1331677X.2020.1838314

Published online: 04 Nov 2020.

ECONOMIC RESEARCH-EKONOMSKA ISTRAŽIVANJA
https://doi.org/10.1080/1331677X.2020.1838314

An approach to a country's innovation considering cultural, economic, and social conditions

M. Ángeles López-Cabarcos, Juan Piñeiro-Chousa and Lara Quiñoá-Piñeiro

Faculty of Business Administration and Management, University of Santiago de Compostela, Lugo, Spain

ABSTRACT

One of the main concerns regarding innovation lies in knowing and understanding how this phenomenon occurs. Many countries are basing their aspirations for progress on innovation, placing it at the heart of their growth strategies. In response to this need, this study proposes to analyse the combined effects of five conditions that can lead to a country's innovation. Using a sample of 51 countries and fuzzy-set qualitative comparative analysis (fsQCA), this study aims to find out whether a country's long-term orientation, its public expenditure on education, its democracy level, the inflows of foreign direct investment (FDI), and its entrepreneurial activity can lead independently or in combination to the presence of innovation. The results show that the democracy level and the long-term orientation of a country are key conditions to lead to a country's innovation. Conversely, the inflows of FDI and the public expenditure on education seem to play a secondary role to lead to a country's innovation. Besides, the entrepreneurial activity of a country and its innovative activity seem to behave in the opposite direction. The results are intended to help governments, businesses, and investors make decisions capable of generating greater value at all levels.

ARTICLE HISTORY
Received 20 June 2020
Accepted 13 October 2020

KEYWORDS
Innovation; long-term orientation; investment in education; democracy; FDI; entrepreneurship

JEL CLASSIFICATIONS
M14; O3; L26

1. Introduction

In the global economic context, innovation has become a fundamental and determining pillar of the potential success of a country and its development since it is a strong influencing factor in the competitiveness and productivity of companies. Innovation is a complex and ambiguous phenomenon that can take different forms and can be affected in various ways (Bukowski & Rudnicki, 2019). That is why its impacts go beyond economic growth facilitating ways to overcome the great challenges facing humanity (Cornell University et al., 2018). One of today's major concerns about innovation lies in knowing and understanding how innovation takes place, not only

CONTACT Lara Quiñoá-Piñeiro lara.quinoa@usc.es

in the most developed economies but also in middle- and low-income countries that can find in innovation a way to grow and develop. Many countries have placed innovation at the heart of their growth strategies as a way to achieve greater progress (Cornell University et al., 2017). Despite the growing interest in this research field, few studies are analysing the relationship between innovation at the country level and some variables such as the democracy level, the investment in education, or the long-term orientation. Moreover, with other variables such as entrepreneurial activity or foreign direct investment, this relationship shows ambiguous results. The potential relevance of all these factors in explaining a country's innovative activity, together with an observable shortage of studies that include a combined analysis considering variables of very different nature, highlights the importance of this study. In response to this need, this study proposes five factors that have never been studied together and that can be considered possible antecedents of the innovative activity. Its novelty lies in the combination of three different perspectives: cultural, economic, social, and their impact on innovation. This study therefore seeks to determine, using a sample of 51 countries and fsQCA, whether long-term orientation, public expenditure on education, democracy, FDI inflows, and entrepreneurial activity can lead to the presence of innovation separately or in combination. The research results are intended to guide the decision-making processes and the design of government, companies, or investors' strategies. Governments have the possibility of controlling and influencing some of the factors considered in this study, taking actions to favour the development of innovation-friendly environments. Companies may find it easier to design innovation strategies if previously government policies have been undertaken at a macro level. Finally, the results can also help investors make appropriate decisions that lead to the generation of value at all levels.

The study is structured as follows: Section 2 establishes the theoretical background; Section 3 explains the method used; Section 4 presents the main results; Section 5 discusses the results obtained; and finally, Section 6 presents the practical implications and offers guidelines for future research.

2. Theoretical background

2.1. Innovation

This global phenomenon has been defined from multiple perspectives (Damanpour & Schneider, 2006) and there is no consensus on its definition, despite being considered one of the key elements for economic development and competitiveness (Johannessen et al., 2001). The term 'innovation' has been used to refer to very diverse concepts (e.g. creativity, knowledge, or change), which has hindered its systematic analysis (Crossan & Apaydin, 2010). Previous research has related innovation to new technology or new knowledge (Kotey & Sorensen, 2014). According to Johannessen et al. (2001), newness can be seen as the central concept of innovation. From this perspective, innovative activity includes the introduction of new goods or services, new production methods, the opening of new markets, the use of new supply sources, or the development of new organisational forms. Baregheh et al. (2009, p. 1334) describe innovation as a 'multi-stage process whereby organisations transform ideas into new/

improved products, service or processes, in order to advance, compete and differentiate themselves successfully in their marketplace'. According to Duran et al. (2016) innovation encompasses two basic concepts: innovation inputs and innovation outputs. Furthermore, innovation can be defined as a process and an outcome since it refers to the renewal and enlargement of products, services and markets, as well as to the development or establishment of new methods of production or new management systems (Crossan & Apaydin, 2010).

This study has considered the concept of innovation from a broad point of view, considering innovation as a 'new or improved product or process (or combination thereof) that differs significantly from the unit's previous products or processes and that has been made available to potential users (product) or brought into use by the unit (process)' (OECD/Eurostat, 2018, p. 20). This definition considers not only the individual work of firms as actors responsible for innovations, but also understands innovation as a collective phenomenon which takes into account the efforts of other entities such as governments and institutions that can play a key role in the generation and diffusion of innovation (Watkins et al., 2015). Specifically, the national innovation systems theory (Freeman, 1987) identifies public institutions and organisations as key elements in the generation of new knowledge, capable of explaining the differences related to innovative activity between countries (Varsakelis, 2006).

Although the concept of innovation does not seem to be easy to define, it hardly needs to be justified. All fields (academic, political, business, and public administration) see innovation as a major source of economic growth, change, and creation of competitive advantages (Damanpour et al., 2009). Innovation can lead to sustainable economic growth which can lead countries to achieve higher levels of performance and well-being for their citizens. This can explain why public decision-makers give so much importance to promote innovation at all levels (Ferreira & Dionísio, 2016). Global challenges such as economic development, climate change, water management, or the need for food and housing security require governments to understand how innovation works to design appropriate economic and social policies to address these challenges (OECD/Eurostat, 2018). Knowing that innovation is not restricted to advanced economies or highly technological sectors, variables such as research and development (R&D) expenditure, the experience factor, the educational level, the capacity of a national system, or the cultural values can influence the innovation results of different geographical areas (Ferreira & Dionísio, 2016).

From an organisational point of view, changes in technological and managerial knowledge, the increase in industrial competitiveness, or the rising managers' aspirations, justify the decision of organisations to carry out actions involving innovative activity (Damanpour et al., 2009). These actions can be related to different aspects including products, processes, operations, services, and people. Organisational innovation contributes significantly to value creation and the maintenance of competitive advantages (Baregheh et al., 2009). Innovation is a decisive factor in this sense, especially for small organisations, as it ensures their organisational survival by allowing them to adapt to environmental changes, while at the same time gaining competitive advantages (Berne et al., 2019). Considering the importance of new knowledge as a source of innovation (Drucker, 1985), the individuals belonging to an organisation

have the responsibility to facilitate and achieve sustainable innovation. Since the innovation activity is greatly influenced by the generation of valuable knowledge, sustainable innovation is more feasible to achieve by creating a feedback system in which new knowledge from innovation processes feeds into the organisation's existing knowledge to continue innovating (Correia de Sousa, 2006). Therefore, learning and knowledge management should be considered as key variables that lead to effective organisational innovation processes. However, organisations must also consider the existence of different forces that can prevent or hinder any innovation process. Companies face obstacles of economic, organisational, or technological nature that force them to postpone or even abandon their innovative projects (Galia & Legros, 2004). Specifically, to overcome some of these barriers, governments and financial institutions should design appropriate policy to facilitate access to financial resources that allow companies to carry out their innovation activity (Galindo & Méndez, 2014).

Citizens also partake in the innovation activity since the economic activity reflects in the behaviour of the society that can accept or reject the use of innovations and therefore stop the innovation processes (Galindo & Méndez, 2014). The importance of innovation as an engine of global economic growth has aroused the interest of the academic world to identify those factors that lead to positive and effective innovation. Precisely, this study analyses the combinations of cultural, economic, and social conditions that lead to innovation at a country level.

2.2. Long-term orientation and innovation

People are not always conscious of many of the values they hold. To describe common phenomena, it is common for different cultures to use the same terms, although each of them experiences these phenomena differently (Trompenaars & Hampden-Turner, 1997). Culture is 'the collective programming of the mind that distinguishes the members of one group or category of people from others' (Hofstede et al., 2010, p. 6). The introduction of cultural values in the economic sphere has aroused the interest of several authors who have tried to identify and measure the differences between cultures (Hofstede et al., 2010; House et al., 2004; Schwartz, 2006; Trompenaars & Hampden-Turner, 1997). In the field of intercultural research, the model of cultural dimensions initially proposed by Hofstede and subsequently extended together with his collaborators (Hofstede et al., 2010) has become a reference, whose validity is supported by recent studies (Beugelsdijk et al., 2015). Based on Hofstede's model, previous research has attempted to analyse the relationship between culture and other social, organisational, and economic variables. Specifically, previous research analysed the possible relationship between cultural values and innovation, concluding that the intrinsic values of a society influence its innovation level (Bukowski & Rudnicki, 2019; Prim et al., 2017; Shane, 1993). Few studies have included the analysis of the relationship between the long-term orientation dimension and the innovative capacity of a country (Bukowski & Rudnicki, 2019; Prim et al., 2017). The lack of attention by the scientific community together with its great implications for innovation has particularly led us to include this variable in the study.

Long-term orientation dimension focuses on the approach chosen by members of a society to direct their efforts towards the future, or towards the present and the past. Savings and perseverance are qualities associated with a long-term-oriented society, while fulfilment of social obligations and respect for tradition are associated with a short-term orientation (Hofstede et al., 2010). The major tendency of previous studies to concentrate on individualism (high) and power distance (low) as values directly linked to innovation seems not to be enough to explain the current innovative landscape between countries (Bukowski & Rudnicki, 2019). The existence of cultural bias could have hindered the consideration of other cultural values capable of influencing innovation processes as long-term orientation. However, it seems clear that qualities associated with long-term orientation could also influence innovation capacity at the individual level. In this sense, Steel et al. (2012) analysed the relationship between innovation and some personality factors including conscientiousness, a factor strongly related to achievement orientation, responsibility, and persistence. They state that the process of innovation goes beyond factors directly associated with creativity since it requires an effort often extended in time to bring the invention to successful adoption. In this way, persistence, achievement orientation, and responsibility can help to successfully implement a potential invention. Further, it has been shown that personality variables of leaders, and in particular conscientiousness, can positively influence success in the development of new products (Aronson et al., 2008). Work ethics, characteristic of long-term orientation can also improve business innovation (Lin, 2009). The relationship between long-term orientation and innovation at a country-level has not been as studied as at individual level, and even less considering its combined effect with other variables. Therefore, the following proposition is tested:

P1: Long-term orientation leads to a country's innovation.

2.3. Government expenditure on education and innovation

Education is a human right and a powerful tool to develop human capital to advance individuals and countries. Education is increasingly essential to thrive in a changing economic environment (World Bank, 2018). The current world context of technological changes and digitalisation highlights the importance of access to higher education levels (OECD., 2018) for people to be more competitive through research, innovation, and generation of new ideas (Akhmat et al., 2014). This is the reason that has encouraged us to include this variable in the study. One way of considering the effort made by a country in the field of education may be considering the amount of money invested by the government in diverse training actions aimed at very different audiences; that is, the government expenditure on education. Historically, government spending on education is one of the main factors contributing to the fast economic growth of some countries, especially after the Second World War. The reason is that this variable can influence the human development of the countries, which makes it a very expensive but profitable investment in the long term. This variable refers to money spent on the building of facilities, the provision of materials and laboratories, the payment of teachers' salaries, and the aid for the development of scientific research (Ozatac et al., 2018). According to Varsakelis (2006), the greater a country's

investment in quality education, the greater the results of its innovative activity. In this sense, several authors have concluded that public spending on education has a positive impact on national innovation as it helps increase spending on R&D, the number of citations and publications, and the country's gross domestic product (GDP) (Akhmat et al., 2014). In the same line, Lau et al. (2015) state that an increase in research, development, and education spending leads to improvement of the efficiency of a country's innovation capacity. Therefore, education is a factor that drives the long-term economic growth of societies, promotes innovation and social cohesion, and strengthens their institutions (World Bank, 2018). Conversely, previous research has also shown a weak impact of R&D investment conducted by both the public sector and the higher education sector on the innovation of a country (Demir, 2019). This study considers that governments should direct their efforts towards the business sector as a way to increase private investment in R&D to raise domestic innovation. To better clarify the relationship between both variables, the following proposition is tested:

P2: Government expenditure on education leads to a country's innovation.

2.4. Democracy and innovation

Democracy can be understood as a 'set of practices and principles that institutionalise, and thereby, ultimately, protect freedom' (Economist Intelligence Unit, 2019, p. 46). Democracy interpreted in a liberal sense requires two fundamental rights that are common to most definitions, as well as the appropriate institutions to guarantee them, that is, respect for the holding of free and fair elections and respect for political freedom (Bäck & Hadenius, 2008; Economist Intelligence Unit, 2019). Besides, democracy means a government that has the support of the majority of people governed, a system of protection of minority rights, respect for basic human rights, guaranty of equality before the law, fair treatment, and the existence of political pluralism (Economist Intelligence Unit, 2019). Recently there has been a general 'deterioration' in the practice of democracy. In 2017 almost half of the world's population (around 49.3%) was living in a territory with some kind of democracy, but only 4.5% was living in one of the so-called 'full democracies'. This democratic recession is the result of several factors, including a decline in the participation of the population in elections and politics, a loss of confidence in institutions, weaknesses in the functioning of governments, a growing gap between political elites and the electorate, a deterioration in the freedom of the media, and the erosion of civil liberties (Economist Intelligence Unit, 2018).

As a government system that protects the rights of individuals, democracy is also responsible for establishing institutions such as those that promote scientific and technological innovation or those that guarantee intellectual property (Gao et al., 2017). Democratisation has become one of the goals of developing countries as a means of boosting (along with other factors) their economic and social progress. Many studies have tried to analyse the impact that democracy can have on economic growth (Doucouliagos & Ulubaşoğlu, 2008; Gerring et al., 2005), however almost none have analysed whether the adoption of a democratic system has any effect on innovation and for this reason this variable has been included in the study. Several

authors point out democratic institutions and political rights as factors able to promote the growth of highly developed sectors (Aghion et al., 2007). They have demonstrated that sectors close to the so-called 'world technological frontier' benefit from the existence of democracy since it stimulates the entry of new companies, competition, and innovation. Therefore, political institutions can work as instruments that can facilitate or block the diffusion of new technologies, products, or processes, showing the importance of adopting one or another type of political regime. Democratic governments tend to create an institutional environment that promotes the adoption of new technologies at a faster rate than autocratic governments, which in many cases delay or hinder any type of technological change (Milner, 2006). Stressing again the importance of political regimes in developing a conducive environment to innovation, Gao et al. (2017) state that the number of inventions and patents registered in a country responds among other factors to the creation of a 'free' environment provided by a democratic system able to foster people's participation and initiative. They found that democratic countries are more innovative and conclude an indirect positive influence of democracy on innovation. To the best of our knowledge, no studies have analysed the combined effect of democracy on the innovation of a country. Therefore, the following proposition is tested:

P3: Democracy leads to a country's innovation.

2.5. Foreign direct investment and innovation

FDI is the result of a company's investment in real assets in a foreign country, being able to produce or market a product beyond its borders (Paul & Singh, 2017). In the last years, the trend has been to focus FDI activity on the direct acquisition of companies in foreign countries, the establishment of subsidiaries, the construction or acquisition of facilities by multinational companies, or the investment in joint ventures oriented to long-term mutually beneficial collaboration (Paul & Singh, 2017; Sivalogathasan & Wu, 2014). FDI studies have traditionally focused on analysing the motivations of firms to invest in foreign countries as well as the consequences of these operations, paying less attention to the effects of FDI in the host country (García et al., 2013). Previous research has concluded two opposite effects of FDI inflows on the innovation of local firms. First, FDI inflows provide knowledge to host countries on 'new technologies and materials, production methods, or organisational management skills' (Sivalogathasan & Wu, 2014, p. 63), making it very attractive to emerging economies that can consider FDI as an engine for their economic development. The entry of FDI together with imports can positively and significantly affect a country's product and process innovation. Increased competition forces local companies to respond to maintain their position in the national market, carrying out actions to increase or maintain their innovative activity (Bertschek, 1995). The transfer of knowledge from foreign investors can also benefit local companies that can find in foreign knowledge a complement that allows them to remain innovative (Li et al., 2018). Furthermore, previous research has shown that state-owned companies that export, invest in human capital, or have previous experience in R&D can benefit from the presence of foreign multinationals which can boost their innovation

activities (Girma et al., 2009). Second, FDI inflows may force domestic firms to operate in less innovative markets or even disappear from the market. Previous research concluded that local companies that were acquired by foreigners applied for fewer patents than before the acquisition. Moreover, those companies that were operating in the industries that received the highest FDI tended to introduce fewer product innovations damaging their technological development and affecting their long-term economic growth (García et al., 2013). In this regard, Cheung and Lin (2004) point out that FDI can inhibit the innovative production of the host economy by making foreign technology act as a substitute for local technology. Despite this, they consider that the importation of foreign technology can have an indirect positive impact on the innovation capacity of local companies in the long run. Considering the mixed results showed by previous studies, more research about the relationship between FDI inflows and innovation is needed. Therefore, the following proposition is tested:

P4: Foreign direct investment inflows lead to a country's innovation.

2.6. Entrepreneurship and innovation

Entrepreneurship can be defined as an activity (e.g. self-employment or new business creation), as a behaviour (e.g. entrepreneurial orientation), or even as a skill or cognitive attribute (e.g. the discovery of opportunities) (Acs et al., 2014). The study of entrepreneurship aims to understand 'how, by whom, and with what effects opportunities to create future goods and services are discovered, evaluated, and exploited' (Shane & Venkataraman, 2000, p. 218). This entrepreneurial behaviour encompasses the combination of three actions: innovation, risk-taking, and proactiveness (Miller, 1983). The study of entrepreneurship has focused on individuals and business teams since they play a major role in identifying, selecting, and exploiting opportunities for entrepreneurial action (Autio et al., 2014). The Schumpeterian classical definition considers entrepreneurs as the key agents in charge of carrying out innovative actions that make the economic system evolve and participate in the creation of innovative growth-oriented companies (Henrekson & Sanandaji, 2017). Although the term entrepreneurship is not synonymous with small business, small businesses often work as a vehicle to channel the business desires of individuals (Carree & Thurik, 2003). In this sense, small entrepreneurial companies are key in generating innovations, at least in certain industries and territories (Acs & Audretsch, 2005) and are held responsible for much of the 'revolutionary' advances in the economy (Baumol, 2005).

The interest of academics has focused on analysing the role that entrepreneurship plays in areas such as economic growth and regional development (Carree & Thurik, 2003; Fritsch, 2008). Previous literature suggests that entrepreneurship is responsible for introducing innovations, making changes, and increasing competition and degree of rivalry in a market, thus acting on a country's economic performance (Wong et al., 2005). According to Acs et al. (2014), entrepreneurship brings different benefits to the economy including job creation, productivity, technology transfer, knowledge spill-overs to industry, or innovation. The relationship between innovation and entrepreneurship is so close that it has been questioned whether both can be considered as two different fields or as a single broader field of research. On the one hand,

innovation and entrepreneurship are often viewed as interrelated and complementary concepts. According to Zhao (2005, p. 34), 'innovation is the source of entrepreneurship and entrepreneurship allows innovation to flourish and helps to realise its economic value'. On the other hand, innovation and entrepreneurship can be considered independently. The fact that a new business is established does not imply that it can be considered innovative (Landström et al., 2015). It is well known that not all entrepreneurs innovate (Autio et al., 2014) and not all new knowledge can generate viable business projects (Landström et al., 2015). Even these authors also state that innovation and entrepreneurship could be considered as two separated fields of research. Moreover, this relationship is understood by several authors in the opposite direction to that discussed thus far. That is, the attitude of individuals towards innovation can also be considered a precedent of entrepreneurship. In this sense, Wurthmann (2014) concludes that those students who have a more favourable attitude towards innovation also show greater intentions to participate in the specific behaviour of creating a company, even choosing this option as a profession and a livelihood. Correspondingly, the results achieved by Chye Koh (1996) indicate that greater propensity to take a risk, high tolerance for ambiguity and greater capacity for innovation are psychological characteristics of individuals who show a greater entrepreneurial inclination. Considering all of this, more research is needed to analyse the type of relationship that can be established between these two variables. In this study the following proposition is tested:

P5: Entrepreneurial activity leads to a country's innovation.

3. Methodology

FsQCA is an analysis technique that combines a qualitative and quantitative variable-based approach (Ragin, 2008; Ragin & Fiss, 2008). This methodology is based on the theory of sets and Boolean algebra and allows identification of the different combinations of causal conditions (factors considered to be the cause of the phenomenon) that lead to an outcome (the studied phenomenon) (Legewie, 2013; Ragin, 2008). Its relevance relates to the possibility of establishing asymmetrical configurations, which implies that the fact that a certain cause leads to a certain outcome does not mean that the presence of the outcome implies the presence of the cause (Ordanini et al., 2014). This study has used fsQCA because it is an appropriate method for studying causally complex social phenomena that can be articulated as groups and explained in terms of necessity and sufficiency (Woodside, 2016). A condition is defined as necessary if it must be present for an outcome to occur, and it is considered as sufficient if it can produce by itself a certain outcome. Necessity and sufficiency analyses are usually considered together since the cross-tabulation of the presence/absence of sufficiency analysis can make sense when analysing the presence/absence of necessity analysis (Ragin, 2018).

3.1. Participants, instruments, and calibration

The study used the United Nations and World Economic Forum databases to analyse 51 countries belonging to different regions around the world. By selecting these

Table 1. Countries included in the study sample.

Argentina	Finland	Latvia	Slovak Republic
Australia	France	Lebanon	Slovenia
Austria	Germany	Luxembourg	South Africa
Brazil	Greece	Malaysia	Spain
Bulgaria	Hong Kong SAR	Mexico	Sweden
Burkina Faso	Hungary	Morocco	Switzerland
Canada	India	Netherlands	Thailand
Chile	Indonesia	Peru	Turkey
Colombia	Iran	Poland	United Kingdom
Croatia	Ireland	Portugal	United States of America
Egypt	Italy	Republic of Korea	
El Salvador	Japan	Russian Federation	Uruguay
Estonia	Jordan	Saudi Arabia	Vietnam

Source: Own elaboration based on United Nations (2018), and World Economic Forum (2018) databases.

countries, the aim was to offer a global and pluralist vision, trying to cover as many regions as possible and pursuing diversity between countries. Besides, these countries should have been studied by Hofstedés model, and they should also be of interest from the innovation point of view (Table 1).

All the data related to the conditions and the outcome is referred to 2017 and was compiled from various secondary sources. This study used the Global innovation index (GII) to consider the innovation level of each country. GII is a composite index that scores from 0 to 100 and includes multiple innovation factors related to the inputs required and the outputs produced as a result of the innovative activity of a country (Cornell University et al., 2018). The Long-term orientation index (LTO) was used to analyse how a society directs its efforts towards the future, or towards the present and the past (Hofstede, 2001), ranging from 0 for short-term orientation societies to 100 for long-term orientation societies (Hofstede et al., 2010). To consider the education effort made by each country, this study used the Government expenditure on education (EDUC) as a percentage of their GDP to homogenise the existing differences between the size of the different countries' economies (UNESCO Institute for Statistics, 2019). This research considered the democracy level of the countries using the Democracy index (DEM), on a scale from 0 to 10 and based on the scores of 60 indicators allowing for the distinction between 4 types of democratic regimes: full democracies, flawed democracies, hybrid regimes, and authoritarian regimes (Economist Intelligence Unit, 2019). The inflows of FDI into a country were analysed using the FDI index (FDIs), representing the net inflows of investment into the reporting economy from foreign investors that acquire at least 10% of the voting stock of a company divided by the GDP (World Bank, 2019). Finally, this study used Total early-stage entrepreneurial activity (TEA) rate to analyse the entrepreneurial activity of different countries. This indicator measures the percentage of the adult population (18–64 years old) who is in the process of creating a company, or who has owned and managed a running business for more than 3 and less than 42 months (Global Entrepreneurship Research Association [GERA], 2018).

All the variables have been calibrated to transform the data into fuzzy sets. For this purpose, three anchors have been established: full membership, maximum ambiguity, and full non-membership (Ragin, 2008). The selection of threshold values depends on both theory and researcher knowledge of the cases under analysis (Fiss,

Table 2. Analysis of necessary conditions (GII/∼GII).

	GII		∼GII	
Conditions	Consistency	Coverage	Consistency	Coverage
LTO	0.764100	0.745381	0.449270	0.481928
∼LTO	0.468917	0.436398	0.762636	0.780460
EDUC	0.726225	0.696408	0.503557	0.530991
∼EDUC	0.510910	0.483444	0.712093	0.740943
DEM	0.880198	0.804970	0.450767	0.453313
∼DEM	0.402223	0.399755	0.806065	0.880933
FDIs	0.657472	0.616126	0.566829	0.584105
∼FDIs	0.556196	0.538676	0.627480	0.668262
TEA	0.498971	0.474550	0.683639	0.714957
∼TEA	0.700288	0.668107	0.497566	0.521995

Note: ∼ represents absence of the condition.
Source: Own elaboration.

2007). The nature and characteristics of the variables included in this study, together with the expertise of the authors, have led to the thresholds being set at 90th, 50th, and 10th percentiles (Misangyi & Acharya, 2014).

4. Results

The conditions of the model are long-term orientation, education, democracy, foreign investment, and entrepreneurial activity. The outcome of the model is the presence of innovation. However, the analysis of the absence of innovation was also carried out to perform a more comprehensive analysis capable of providing a better understanding of the proposed model. Table 2 shows the analysis of necessary conditions to determine if there is any necessary condition for the presence (and absence) models of innovation.

For each condition, the values of consistency, which refers to the number of conditions within each configuration that give a positive result; and coverage, which refers to the number of cases valid for each configuration, are shown. The results indicate that none of the five conditions leads to the presence of innovation on their own. Despite this, democracy index with a consistency value near 0.9 is a quasi-necessary condition to lead individually to the presence of innovation (Schneider et al., 2010). The analysis also shows that none of the five conditions lead to the absence of innovation on their own.

The analysis of sufficient conditions has also been conducted to identify the causal configurations leading to the outcome, again considering the presence and absence of innovation. The following models have been studied:

$$\text{GII} = \text{f}\ (\text{LTO},\ \text{EDUC},\ \text{DEM},\ \text{FDIs},\ \text{TEA})$$

$$\sim\text{GII} = \text{f}\ (\text{LTO},\ \text{EDUC},\ \text{DEM},\ \text{FDIs},\ \text{TEA})$$

According to Ragin's (2008) recommendations, Table 3 shows the intermediate solutions for both models. Four configurations lead to the presence of innovation which explains more than 81% of the analysed cases. The first causal configuration states

Table 3. Analysis of sufficient conditions (GII/∼GII)

	GII				∼GII				
	1	2	3	4	1	2	3	4	5
LTO	○			○		●		●	●
EDUC	○	○	●	●	●	○	●		●
DEM	○	○	○		●	●	●	●	
FDIs		○	●	○	○	●			●
TEA			●	●			○	○	○
Consistency (incl.)	0.9517	0.8983	0.8289	0.8575	0.9205	0.9499	0.9445	0.9623	0.9480
Raw coverage (cov.r)	0.5117	0.5059	0.2972	0.2601	0.4118	0.2841	0.4399	0.4971	0.3077
Unique coverage (cov.u)	0.0691	0.0872	0.0992	0.0456	0.0243	0.0366	0.0082	0.0041	0.0033
Solution coverage			0.8135				0.7997		
Solution consistency			0.8257				0.8679		

Note: '○' denotes the presence of the condition and '●' denotes the absence of the condition. Large circles denote core conditions, and small circles denote peripheral conditions (Fiss, 2011). Consistency cutoff: 0.813 and 0.839. Frequency cutoff: 1. Vector of expected directions (1,1,1,1,1) and (0,0,0,0,0) (Ragin & Davey, 2016).

that the presence of LTO together with the presence of EDUC and the presence of DEM lead to the presence of innovation. This means that those countries considered as democratic, with a clear orientation to the future, and committed to improving their educational level, seem to show more innovative capacity. Eleven countries justify this configuration, including the Netherlands, Austria, Switzerland, or the Republic of Korea. The second configuration refers to the presence of EDUC, DEM, and FDIs. This means that the combination of democracy and government's expenditure on education, together with the presence of economic inflows from other countries, can act as a catalyst for the innovative capacity of a country. Nine countries justify this configuration, including Sweden, Finland, Estonia, or Latvia. The third configuration states that the presence of DEM leads to the presence of innovation, even if EDUC, FDIs, and TEA are absent. This means that the democracy level of a country seems to be a very important condition for the model, since its presence, even if three other important conditions are absent (even entrepreneurial activity), is enough to lead to the presence of innovation. Five countries justify this configuration, including Spain, Ireland, Italy, or Greece. Finally, the fourth configuration establishes that the presence of LTO, together with the presence of FDIs, lead to the presence of innovation, even though EDUC and TEA are absent. This configuration means that the absence of entrepreneurial activity (once again) and government expenditure in education are not enough to annul the innovative capacity of a country, as long as it receives inflows from other countries and is characterised by its long-term orientation. Bulgaria, Croatia, Luxembourg, and Hong Kong justify this configuration.

Eighteen countries of the fifty-one considered in this study do not justify any of the configurations of the presence model, but they justify any of the five configurations of the absence model. This is the case of countries as Egypt, Peru, Colombia, Thailand, Burkina Faso, El Salvador, or Lebanon. Besides, three countries (Bulgaria, Croatia, and Hong Kong) justify one of the configurations of the presence model (the fourth) and one of the configurations of the absence model (the first).

In summary, the results of the empirical analysis support P1 and P3. P2 and P4 are partially supported, and P5 is not supported because the condition related to entrepreneurial activity behaves in the opposite direction to that initially proposed.

5. Discussion

This study helps identify the key country-level factors that lead to innovative activity. The results show that none of the conditions independently considered leads to the presence (or absence) of innovation. However, the democracy level of a country is a quasi-necessary condition for the presence of innovation. In this sense, democratic systems have proved to be a form of government that acting through public institutions and granting the rights of the individuals and organisations of a country are beneficial to the economy as a whole, particularly to the development and dissemination of technology (Aghion et al., 2007; Gao et al., 2017; Milner, 2006). Principles such as freedom, respect, or equality make it reasonable to think that this political regime is the only one able to create a favourable environment for innovation. The relevance of democracy for the presence of innovation is also corroborated in the analysis of sufficient conditions. Democracy is present in three of the four configurations that lead to the presence of innovation, and in the same way it is absent in four of the five configurations that lead to the absence of innovation. Furthermore, the variable behaves as a core condition in both models. Thus, democracy, as a form of government based on trust generation among citizens, is a key variable for leading to the presence of innovation at a country level. Supported by strong institutions and stable governments that promote freedom of expression, ideas, and knowledge generation, democracy provides the right framework for individuals and organisations to feel free to research and innovate without their actions being limited or punished. The fact that most of the countries classified as full democracies belong to the OECD suggests a potential relationship between the countries' democratic and economic levels (Economist Intelligence Unit, 2019). In turn, the countries with the highest levels of economic development are shown to be more innovative, therefore it is logical to think that the countries showing higher democratic levels could also be more innovative. In other words, low economic development can hinder the innovative activity of some countries which could be limited to small innovations at the local level. Correspondingly, those countries with a higher level of technological development can benefit more from higher levels of democracy, since their policies can encourage the entrance of new companies that can create greater competition and knowledge transfer that stimulate innovation (Aghion et al., 2007).

Long-term orientation has also proved to be an important condition for the presence of innovation. It is present in two of the four existing combinations as a core condition. Societies with long-term orientation show great interest in knowledge and education and make efforts to achieve success (Hofstede et al., 2010), which could be closely related to the innovative activity. Effort and perseverance are necessary to persist in the processes of creation and development regardless of the results achieved. The educational level attained in a country can bring about structural and economical changes, creating skilled jobs that encourage innovative activity. Finally, knowledge is an input but also a result of the innovative activity since innovation outputs encompass among others the creation, impact, and diffusion of knowledge. The absence model corroborates the results of the presence model, being long-term orientation absent in three of the five configurations. This demonstrates that the orientation of a

society's efforts towards the future positively affects its innovation capacity (Bukowski & Rudnicki, 2019; Prim et al., 2017).

Contrary to expectations, entrepreneurial activity does not seem to lead to the presence of innovation. According to previous research, entrepreneurship has been associated with the innovative activity, being in many cases small firms responsible for much of the revolutionary advances (Baumol, 2005). Conversely, in this study is the absence of entrepreneurial activity that leads to the presence of innovation. The logical association between entrepreneurship and innovation has led many countries to adopt policies to stimulate innovation by entrepreneurial enterprises to foster economic development; however, as mentioned above not all entrepreneurs innovate (Autio et al., 2014). The absence model shows consistent results since entrepreneurship is present in more than half of the configurations. Thus, the results obtained could indicate a greater presence in most countries of so-called 'imitative new entrepreneurs' as opposed to 'innovative new entrepreneurs' (Aldrich & Ruef, 2006). It may be that the real motivations of individuals when embarking on the start of a new business respond mostly to the search for opportunities (GERA, 2018), but this does not imply that those opportunities are innovative. A different approach to analysing the influence of innovation on entrepreneurial activity could perhaps help better understand the results achieved in this study.

The results also show that FDI does not behave as coherent as the previous conditions. In fact, in the model for the presence of innovation this variable is present in two of the four configurations as a core variable and absent in one of them. When analysing the absence of innovation, this condition is absent in two of the five configurations and present in one of them. This result leads to the thinking that FDI plays a secondary role to conclude the presence (or absence) of a country's innovation. Previous literature has shown ambiguous results to explain the effect of FDI on business innovation (Bertschek, 1995; Cheung & Lin, 2004; García et al., 2013; Li et al., 2018). This ambiguity does not seem to be fully resolved in this research, although the results suggest a predominance of the presence of FDI inflows (mostly as a core variable) among the configurations that lead to the presence of innovation and vice versa.

Finally, government expenditure on education seems to have a partial relevance for both the presence and the absence models. This condition is present in two configurations and absent in the other two configurations in the presence model. Further, it is absent in three of the five configurations (one as a core variable) and present in one of the configurations in the absence model. In this study, the instrument chosen to measure government expenditure on education encompasses all levels of education, which might have affected the results obtained. It is possible that by limiting the government expenditure to the highest education level, the results would have been different since, typically, higher levels of education lead to higher levels of innovation (OECD., 2018). Although this condition seems to play a secondary role in this study, it is logical to think that the quality of a country's education should be key to conclude its innovative ability (Varsakelis, 2006). Therefore, greater efforts on education should be done if a country wants to increase its innovative activity and more research should be carried out to deeply analyse the relationship between both variables.

6. Practical implications and future research

This study examines the conditions that can lead to countries' innovation. The results obtained allow us to identify what kind of strategies should be designed primarily by governments to achieve greater levels of innovation. In this sense, it is important to create an adequate environment conducive to the generation of attitudes and behaviours oriented towards innovation. Democratic forms of government and the long-term orientation of a society seem crucial to being more innovative. That is why public institutions must work to achieve and maintain the economic, social, and political progress of a country as a way to encourage innovative activity. This study has concluded that entrepreneurial activity behaves in the opposite direction to innovation for the presence (and absence) of innovation, reopening the debate about the type of relationship that can exist between both variables. Whatever the relationship, countries must design strategies that guide entrepreneurship under the prism of innovation. Furthermore, allowing the access of foreign investment to attract economic resources, new ideas and knowledge can be crucial for a country's innovation. Although this study does not allow a conclusive relationship to be established between a country's public expenditure on education and its innovation activity, it seems reasonable to think that the quality of a country's education should have an inexcusable effect on its innovative capacity.

Like any empirical study, this research has some limitations. The QCA methodology using a main outcome and five possible antecedents could seem simple; therefore, the model for the absence of innovation was also analysed. The analysis could have included more countries, but the lack of transparency of some of them in providing reliable information has limited the study sample. Anyway, working with countries covering a broad global spectrum makes it possible to be conclusive about the importance of each condition to lead to innovation, encouraging the design of effective strategies.

The results are consistent with previous research and create opportunities for new analyses. Although the variables included in this study are very relevant, the inclusion of other economic variables (domestic credit to private sector or loans from a financial institution), social variables (population density) or cultural variables (uncertainty avoidance or masculinity) could also provide interesting results. A country-by-country analysis could also be conducted to highlight their idiosyncrasies and corroborate the results obtained in the different studies.

Disclosure statement

No potential conflict of interest was reported by the authors.

ORCID

M. Ángeles López-Cabarcos http://orcid.org/0000-0001-9844-8767
Juan Piñeiro-Chousa http://orcid.org/0000-0002-4639-8435
Lara Quiñoá-Piñeiro http://orcid.org/0000-0002-4173-8998

References

Acs, Z. J., & Audretsch, D. B. (2005). Entrepreneurship, innovation and technological change. *Foundations and Trends® in Entrepreneurship*, *1*(4), 149–195. https://doi.org/10.1561/0300000004

Acs, Z. J., Autio, E., & Szerb, L. (2014). National systems of entrepreneurship: Measurement issues and policy implications. *Research Policy*, *43*(3), 476–494. https://doi.org/10.1016/j.respol.2013.08.016

Aghion, P., Alesina, A. F., & Trebbi, F. (2007). *Democracy, technology and growth* (NBER Working Paper No. 13180). National Bureau of Economic Research. https://doi.org/10.3386/w13180

Akhmat, G., Zaman, K., Shukui, T., Javed, Y., & Khan, M. M. (2014). Relationship between educational indicators and research outcomes in a panel of top twenty nations: Windows of opportunity. *Journal of Informetrics*, *8*(2), 349–361. https://doi.org/10.1016/j.joi.2014.01.007

Aldrich, H. E., & Ruef, M. (2006). *Organizations evolving* (2nd ed.). Sage Publications.

Aronson, Z. H., Reilly, R. R., & Lynn, G. S. (2008). The role of leader personality in new product development success: An examination of teams developing radical and incremental innovations. *International Journal of Technology Management*, *44*(1–2), 5–27. https://doi.org/10.1504/IJTM.2008.020696

Autio, E., Kenney, M., Mustar, P., Siegel, D., & Wright, M. (2014). Entrepreneurial innovation: The importance of context. *Research Policy*, *43*(7), 1097–1108. https://doi.org/10.1016/j.respol.2014.01.015

Bäck, H., & Hadenius, A. (2008). Democracy and state capacity: Exploring a J-shaped relationship. Governance, *21*(1), 1–24. https://doi.org/10.1111/j.1468-0491.2007.00383.x

Baregheh, A., Rowley, J., & Sambrook, S. (2009). Towards a multidisciplinary definition of innovation. *Management Decision*, *47*(8), 1323–1339. https://doi.org/10.1108/00251740910984578

Baumol, W. J. (2005). Education for innovation: Entrepreneurial breakthroughs versus corporate incremental improvements. *Innovation Policy and the Economy*, *5*, 33–56. https://doi.org/10.1086/ipe.5.25056170

Berne, D. F., Coda, R., Krakauer, P., & Donaire, D. (2019). The innovation challenge in micro and small enterprises (MSE): An exploratory study at São Paulo metropolitan region. *Innovation & Management Review*, *16*(3), 235–252. https://doi.org/10.1108/INMR-03-2019-0031

Bertschek, I. (1995). Product and process innovation as a response to increasing imports and foreign direct investment. *The Journal of Industrial Economics*, *43*(4), 341–357. https://doi.org/10.2307/2950548

Beugelsdijk, S., Maseland, R., & Van Hoorn, A. (2015). Are scores on Hofstede's dimensions of national culture stable over time? A cohort analysis. *Global Strategy Journal*, *5*(3), 223–240. https://doi.org/10.1002/gsj.1098

Bukowski, A., & Rudnicki, S. (2019). Not only individualism: The effects of long-term orientation and other cultural variables on national innovation success. *Cross-Cultural Research*, *53*(2), 119–162. https://doi.org/10.1177/1069397118785546

Carree, M. A., & Thurik, A. R. (2003). The impact of entrepreneurship on economic growth. In Z. J. Acs & D. B. Audretsch (Eds.), *Handbook of entrepreneurship research* (pp. 437–471). Kluwer Academic Publishers.

Cheung, K., & Lin, P. (2004). Spillover effects of FDI on innovation in China: Evidence from the provincial data. *China Economic Review*, *15*(1), 25–44. https://doi.org/10.1016/S1043-951X(03)00027-0

Chye Koh, H. (1996). Testing hypotheses of entrepreneurial characteristics: A study of Hong Kong MBA students. *Journal of Managerial Psychology*, *11*(3), 12–25. https://doi.org/10.1108/02683949610113566

Cornell University, INSEAD, & WIPO. (2017). *The Global Innovation Index 2017: Innovation feeding the world*. https://www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2017.pdf

Cornell University, INSEAD, & WIPO. (2018). *The Global Innovation Index 2018: Energizing the world with innovation*. https://www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2018.pdf
Correia de Sousa, M. (2006). The sustainable innovation engine. VINE, *36*(4), 398–405. https://doi.org/10.1108/03055720610716656
Crossan, M. M., & Apaydin, M. (2010). A multi-dimensional framework of organizational innovation: A systematic review of the literature. *Journal of Management Studies*, *47*(6), 1154–1191. https://doi.org/10.1111/j.1467-6486.2009.00880.x
Damanpour, F., & Schneider, M. (2006). Phases of the adoption of innovation in organizations: Effects of environment, organization and top managers. *British Journal of Management*, *17*(3), 215–236. https://doi.org/10.1111/j.1467-8551.2006.00498.x
Damanpour, F., Walker, R. M., & Avellaneda, C. N. (2009). Combinative effects of innovation types and organizational performance: A longitudinal study of service organizations. *Journal of Management Studies*, *46*(4), 650–675. https://doi.org/10.1111/j.1467-6486.2008.00814.x
Demir, C. (2019). Public, private or universities? The effectiveness of R&D efforts in OECD countries. *Ekonomski Pregled*, *70*(2), 276–300. https://doi.org/10.32910/ep.70.2.6
Doucouliagos, H., & Ulubaşoğlu, M. A. (2008). Democracy and economic growth: A meta-analysis. *American Journal of Political Science*, *52*(1), 61–83. https://doi.org/10.1111/j.1540-5907.2007.00299.x
Drucker, P. F. (1985). *Innovation and entrepreneurship: Practice and principles*. Harper & Row.
Duran, P., Kammerlander, N., Van Essen, M., & Zellweger, T. (2016). Doing more with less: Innovation input and output in family firms. *Academy of Management Journal*, *59*(4), 1224–1264. https://doi.org/10.5465/amj.2014.0424
Economist Intelligence Unit. (2018). *Democracy index 2017: Free speech under attack*. https://www.eiu.com/public/topical_report.aspx?campaignid=democracyindex2017
Economist Intelligence Unit. (2019). *Democracy index 2018: Me too? Political participation, protest and democracy*. https://www.eiu.com/public/topical_report.aspx?campaignid=democracy2018
Ferreira, P. J. S., & Dionísio, A. T. M. (2016). What are the conditions for good innovation results? A fuzzy-set approach for European Union. *Journal of Business Research*, *69*(11), 5396–5400. https://doi.org/10.1016/j.jbusres.2016.04.144
Fiss, P. C. (2007). A set-theoretic approach to organizational configurations. *Academy of Management Review*, *32*(4), 1180–1198. https://doi.org/10.5465/amr.2007.26586092
Fiss, P. C. (2011). Building better causal theories: A fuzzy set approach to typologies in organization research. *Academy of Management Journal*, *54*(2), 393–420. https://doi.org/10.5465/amj.2011.60263120
Freeman, C. (1987). *Technology policy and economic performance: Lessons from Japan*. Pinter.
Fritsch, M. (2008). How does new business formation affect regional development? Introduction to the special issue. *Small Business Economics*, *30*(1), 1–14. https://doi.org/10.1007/s11187-007-9057-y
Galia, F., & Legros, D. (2004). Complementarities between obstacles to innovation: Evidence from France. *Research Policy*, *33*(8), 1185–1199. https://doi.org/10.1016/j.respol.2004.06.004
Galindo, M.-Á., & Méndez, M. T. (2014). Entrepreneurship, economic growth, and innovation: Are feedback effects at work? *Journal of Business Research*, *67*(5), 825–829. https://doi.org/10.1016/j.jbusres.2013.11.052
Gao, Y., Zang, L., Roth, A., & Wang, P. (2017). Does democracy cause innovation? An empirical test of the popper hypothesis. *Research Policy*, *46*(7), 1272–1283. https://doi.org/10.1016/j.respol.2017.05.014
García, F., Jin, B., & Salomon, R. (2013). Does inward foreign direct investment improve the innovative performance of local firms? *Research Policy*, *42*(1), 231–244. https://doi.org/10.1016/j.respol.2012.06.005
Gerring, J., Bond, P., Barndt, W. T., & Moreno, C. (2005). Democracy and economic growth: A historical perspective. *World Politics*, *57*(3), 323–364. https://doi.org/10.1353/wp.2006.0002

Girma, S., Gong, Y., & Görg, H. (2009). What determines innovation activity in Chinese state-owned enterprises? The role of foreign direct investment. *World Development*, *37*(4), 866–873. https://doi.org/10.1016/j.worlddev.2008.07.017

Global Entrepreneurship Research Association (GERA). (2018). *Global Entrepreneurship Monitor. Global Report 2017/2018.* https://www.gemconsortium.org/report/gem-2017-2018-global-report

Henrekson, M., Sanandaji, T. (2017). *Schumpeterian entrepreneurship in Europe compared to other industrialized regions* (IFN Working Paper No. 1170). Research Institute of Industrial Economics. http://hdl.handle.net/10419/183399

Hofstede, G. (2001). *Culture's consequences: Comparing values, behaviors, institutions and organizations across nations* (2nd ed.). Sage Publications.

Hofstede, G., Hofstede, G. J., & Minkov, M. (2010). *Cultures and organizations, software of the mind: Intercultural cooperation and its importance for survival* (3rd ed.). McGraw-Hill.

House, R. J., Hanges, P. J., Javidan, M., Dorfman, P. W., & Gupta, V. (Eds.). (2004). *Culture, leadership, and organizations: The GLOBE study of 62 societies*. Sage Publications.

Johannessen, J.-A., Olsen, B., & Lumpkin, G. T. (2001). Innovation as newness: What is new, how new, and new to whom? *European Journal of Innovation Management*, *4*(1), 20–31. https://doi.org/10.1108/14601060110365547

Kotey, B., & Sorensen, A. (2014). Barriers to small business innovation in rural Australia. *Australasian Journal of Regional Studies*, *20*(3), 405–429. https://search.informit.com.au/documentSummary;dn=949359701745494;res=IELNZC

Landström, H., Åström, F., & Harirchi, G. (2015). Innovation and entrepreneurship studies: One or two fields of research? *International Entrepreneurship and Management Journal*, *11*(3), 493–509. https://doi.org/10.1007/s11365-013-0282-3

Lau, C. K. M., Yang, F. S., Zhang, Z., & Leung, V. K. K. (2015). Determinants of innovative activities: Evidence from Europe and central Asia region. *The Singapore Economic Review*, *60*(01), 1550004. https://doi.org/10.1142/S0217590815500046

Legewie, N. (2013). An introduction to applied data analysis with qualitative comparative analysis (QCA). *Forum Qualitative Sozialforschung/Forum: Qualitative Social Research*, *4*(3), Art. 15. https://doi.org/10.17169/fqs-14.3.1961

Li, Z., Li, J., & He, B. (2018). Does foreign direct investment enhance or inhibit regional innovation efficiency? *Chinese Management Studies*, *12*(1), 35–55. https://doi.org/10.1108/CMS-02-2017-0034

Lin, L.-H. (2009). Effects of national culture on process management and technological innovation. *Total Quality Management & Business Excellence*, *20*(12), 1287–1301. https://doi.org/10.1080/14783360903250621

Miller, D. (1983). The correlates of entrepreneurship in three types of firms. *Management Science*, *29*(7), 770–791. https://doi.org/10.1287/mnsc.29.7.770

Milner, H. V. (2006). The digital divide. the role of political institutions in technology diffusion. *Comparative Political Studies*, *39*(2), 176–199. https://doi.org/10.1177/0010414005282983

Misangyi, V. F., & Acharya, A. G. (2014). Substitutes or complements? A configurational examination of corporate governance mechanisms. *Academy of Management Journal*, *57*(6), 1681–1705. https://doi.org/10.5465/amj.2012.0728

OECD. (2018). *Education at a glance 2018: OECD indicators*. OECD Publishing. https://doi.org/10.1787/19991487

OECD/Eurostat. (2018). *Oslo Manual 2018: Guidelines for collecting, reporting and using data on innovation* (4th ed.). The Measurement of Scientific, Technological and Innovation Activities. OECD/Eurostat. https://doi.org/10.1787/9789264304604-en

Ordanini, A., Parasuraman, A., & Rubera, G. (2014). When the recipe is more important than the ingredients: A qualitative comparative analysis (QCA) of service innovation configurations. *Journal of Service Research*, *17*(2), 134–149. https://doi.org/10.1177/1094670513513337

Ozatac, N., Taspinar, N., El Rifai, O., & Eren, B. (2018). The relationship between government expenditure on education and economic growth: The case of France. In D. Procházka (Ed.),

The impact of globalization on international finance and accounting (pp. 61–70). Springer Proceedings in Business and Economics. Springer. https://doi.org/10.1007/978-3-319-68762-9_7

Paul, J., & Singh, G. (2017). The 45 years of foreign direct investment research: Approaches, advances and analytical areas. *The World Economy*, *40*, 2512–2527. https://doi.org/10.1111/twec.12502

Prim, A. L., Filho, L. S., Zamur, G. A. C., & Di Serio, L. C. (2017). The relationship between national culture dimensions and degree of innovation. *International Journal of Innovation Management*, *21*(01), 1730001. https://doi.org/10.1142/S136391961730001X

Ragin, C. C. (2008). *Redesigning social inquiry: Fuzzy sets and beyond*. University of Chicago Press.

Ragin, C. C. (2018). *User's guide to fuzzy-set/qualitative comparative analysis 3.0*. Department of Sociology.

Ragin, C. C., & Davey, S. (2016). *Fuzzy-set/qualitative comparative analysis 3.0*. Department of Sociology.

Ragin, C. C., & Fiss, P. C. (2008). Net effects analysis versus configurationally analysis: An empirical demonstration. In C. C. Ragin (Ed.), *Redesigning social inquiry: Fuzzy sets and beyond* (pp. 190–212). University of Chicago Press.

Schneider, M. R., Schulze-Bentrop, C., & Paunescu, M. (2010). Mapping the institutional capital of high-tech firms: A fuzzy-set analysis of capitalist variety and export performance. *Journal of International Business Studies*, *41*(2), 246–266. https://doi.org/10.1057/jibs.2009.36

Schwartz, S. H. (2006). A theory of cultural value orientations: Explication and applications. *Comparative Sociology*, *5*(2–3), 137–182. http://doi.org/10.1163/156913306778667357

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

Shane, S., & Venkataraman, S. (2000). The promise of entrepreneurship as a field of research. *Academy of Management Review*, *25*(1), 217–226. https://doi.org/10.5465/amr.2000.2791611

Sivalogathasan, V., & Wu, X. (2014). The effect of foreign direct investment on innovation in south asian emerging markets. *Global Business and Organizational Excellence*, *33*(3), 63–76. https://doi.org/10.1002/joe.21544

Steel, G. D., Rinne, T., & Fairweather, J. (2012). Personality, nations, and innovation: Relationships between personality traits and national innovation scores. *Cross-Cultural Research*, *46*(1), 3–30. https://doi.org/10.1177/1069397111409124

Trompenaars, F., & Hampden-Turner, C. (1997). *Riding the waves of culture: Understanding cultural diversity in business* (2nd ed.). Nicholas Brealey Publishing.

UNESCO Institute for Statistics. (2019). *Government expenditure on education as a percentage of GDP*. http://data.uis.unesco.org/

Varsakelis, N. C. (2006). Education, political institutions and innovative activity: A cross-country empirical investigation. *Research Policy*, *35*(7), 1083–1090. https://doi.org/10.1016/j.respol.2006.06.002

Watkins, A., Papaioannou, T., Mugwagwa, J., & Kale, D. (2015). National innovation systems and the intermediary role of industry associations in building institutional capacities for innovation in developing countries: A critical review of the literature. *Research Policy*, *44*(8), 1407–1418. https://doi.org/10.1016/j.respol.2015.05.004

Wong, P. K., Ho, Y. P., & Autio, E. (2005). Entrepreneurship, innovation and economic growth: Evidence from GEM data. *Small Business Economics*, *24*(3), 335–350. https://doi.org/10.1007/s11187-005-2000-1

Woodside, A. G. (2016). The good practices manifesto: Overcoming bad practices pervasive in current research in business. *Journal of Business Research*, *69*(2), 365–381. https://doi.org/10.1016/j.jbusres.2015.09.008

World Bank. (2018). *World Bank education overview*. World Bank Group. http://documents.worldbank.org/curated/en/821801540479977693/World-Bank-Education-Overview

World Bank. (2019). *Foreign direct investment, net inflows (% of GDP)*. https://data.worldbank.org/indicator/BX.KLT.DINV.WD.GD.ZS

Wurthmann, K. (2014). Business students' attitudes toward innovation and intentions to start their own businesses. *International Entrepreneurship and Management Journal*, *10*(4), 691–711. https://doi.org/10.1007/s11365-013-0249-4

Zhao, F. (2005). Exploring the synergy between entrepreneurship and innovation. *International Journal of Entrepreneurial Behaviour & Research*, *11*(1), 25–41. https://doi.org/10.1108/13552550510580825