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Additional Information

Sustainable development, economic and financial factors, that influence opportunity-driven entrepreneurship. An fsQCA approach

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Abstract

There are two main reasons when entrepreneurs decide to start a new venture: opportunity and necessity. Opportunity-driven entrepreneurship is expected to provide a stronger long-term positive impact than necessity-driven entrepreneurship. This study aimed to identify the combinations of the economic and sustainable development factors of countries that may be related to opportunity-driven entrepreneurship. In order to identify the combinations of the Sustainable Development and Economic aspects influencing opportunity-driven entrepreneurship, we analysed the data for 2017 from 57 countries. For this purpose, we conducted a cross-national analysis using the fsQCA methodology, which has proved suitable for small-sized datasets. Data were retrieved from four databases: Global Entrepreneurship Monitor, Country Risk Score, World Bank Database, and Sustainable Development Goals Index. Thus to analyse opportunity-driven entrepreneurial motivation, we considered economic and financial aspects jointly with social and gender equality, education, responsible production, innovation and infrastructure indicators.

Keywords: *Opportunity-driven entrepreneurship; Entrepreneurial motivation; Fuzzy Qualitative Comparative Analysis; Sustainable Development Goals; Country Risk*

1. Introduction

There are different motivations for undertaking an entrepreneur venture. Considering the Global Entrepreneurship Monitor (GEM) as a definition of motivation, (Reynolds et al., 2002), two different types of entrepreneurial motivation can be distinguished: necessity and opportunity. The factors influencing entrepreneurs might differ depending on the underlying motivation (Kirkwood, 2009; Verheul et al. 2010). The opportunity-driven kind is when the decision of becoming an entrepreneur is made by choosing to achieve something bigger or due to market opportunity; for instance, the chance to introduce innovative goods, services or processes (Gaglio, 2004). Nevertheless, no consensus about whether an opportunity is discovered or created has been reached (Short et al, 2010).

Economic motivation has promoted entrepreneurship, and has usually been oriented towards making profits and economic development (Acs, 2006). However, this concept is being re-evaluated by some individuals who no longer take making money as a central objective to be an essential goal for their shareholders, but seek to impact their interest groups (Rodríguez Moreno, 2016). It also raises respect for striking a balance with the environment and society by taking into account criteria such as responsibility and shared value (Porter & Kramer, 2019). Many people's increasing desire for the cessation of activities that degrade the environment, combined with a willingness to pay to reduce these activities, represents an opportunity for business action (Dean & McMullen, 2007).

In this context, entrepreneurship begins to gain ground as a concept to promote the development of territories and to reduce poverty by respecting the three pillars of sustainable development (Lans, Blok, & Wesselink, 2014; UN, 2015).

According to Mintrom and Thommas (2018), the Sustainable Development Goals (SDGs) were promulgated by the United Nations (UN, 2015). Goal attainment requires massive amounts of transformational leadership. Hence, the claim for entrepreneurs as key instigators of social and economic innovation becomes vital. They all include the three dimensions of sustainable development, namely the social, economic and environmental dimensions. The present work attempts to respond to the call for entrepreneurial action in order to achieve the SDGs (Schaltegger, Beckmann, & Hockerts, 2018). If we bear in mind that entrepreneurial action can help to reach most of the targets set by UN SDG (Shepherd & Patzelt, 2011), it can be stated that entrepreneurship may drive any economy given its positive impact on innovative entrepreneurial initiatives development. It can also be argued that those entrepreneurs who create innovative organisations and service provision models contribute to sustainable development (Seelos & Mair, 2005).

Regarding financial factors, the importance of country risk ratings has increased in the last few years and is underscored by the existence of several major country risk rating agencies (Afonso, 2003; Hoti & McAleer, 2004; Levich, Reinhart, & Majoni, 2002). A higher country risk rating implies a country's higher solvency, and *vice versa* (Cervelló-Royo et al., 2014; Hoti & McAleer, 2004), which lowers its probability of default. Thus it is an indicator of the potential access to credit and the financial cost for entrepreneurial ventures in each country. For this purpose, country risk scores (CRS) are calculated to measure several quantitative and qualitative factors as they represent good indicators for measuring the current situation of a country in terms of political, structural, economic and financial assessment measures to determine country risk ratings. Regarding economic factors, the gross domestic product (GDP) can be considered a good measure of economic development and potential growth of a country (Acs, Desai & Hessels, 2008; Van Stel et al. 2007; Hessels et al. 2008).

Although the literature on entrepreneurship together with sustainable finance, business financing and economic aspects is abundant (Cervelló-Royo, Moya-Clemente, & Ribes-Giner, 2015; Weber & Ahmad, 2014), the role of SDGs in opportunity-driven entrepreneurship has scarcely been covered (Hall, Daneke, & Lenox, 2010, Rodgers, 2010, Rodríguez Moreno, 2016). Consequently, knowledge gaps appear that justify carrying out the present research. Therefore, this study aimed to identify the combination of financial (CRS), economic (GDP) and sustainable development factors that lead to high opportunity-driven entrepreneurship.

This paper is arranged as follows: section 2 introduces the theoretical background of the study; Section 3 explains the methodology and data used; Section 4 shows and discusses the results obtained from applying a qualitative comparative analysis (QCA); Section 5 closes the paper with some concluding remarks.

2. Theoretical background

As previously mentioned, ample literature deals with entrepreneurship motivation (Bastian & Zali, 2016; Hessels, Van Gelderen, & Thurik, 2008; Lecuna, Cohen, & Chavez, 2017; Mahto & McDowell, 2018; Verheul et al., 2010; Williams & Williams, 2014). However, scarcely any works have considered SDGs together with economic factors as factors that influence opportunity-driven entrepreneurial motivation.

Cross-national research into entrepreneurship has focused mainly on identifying either fundamental differences in entrepreneurial activity across countries (Acs, Bosma, & Sternberg, 2008; Cumming, Johan, & Zhang, 2014; Markussen & Røed, 2017; Terjesen, Hessels & Li, 2013; Acs et al. 2018) or the government policies and programmes that best support entrepreneurial efforts and desired outcomes in innovation or growth terms in

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different national contexts (Terjesen, Hessels & Li, 2013; Stenholm et al. 2013). However, SDGs are not present in any of them.

Considering these facts, the present research takes a different approach. We researched common cross-country factors that influence opportunity-driven entrepreneurship by focusing, on the one hand, on economic and financial factors throughout: i) the country risk score and ii) GDP per Capita and, on the other hand, iii) SDG, by specifically considering the following variables included in the index: quality education (SDG4); industry, innovation and infrastructure (SDG9), reduced inequalities (SDG10) and responsible consumption and production (SDG12). The main findings of the literature review by considering the aforementioned factors are found below.

2.1. Country Risk Score

Much debate on entrepreneurship has focused on access to loan financing with the role of financial institutions (Cervelló-Royo et al., 2015; Rothaermel et al. 2006). Access to business finance has been the subject of considerable research, debate and policy concerns to date as part of a wider interest shown in entrepreneurship motivation and business ownership (Harrison & Mason, 2007;). Despite the large volume of research, very few research works have analysed the relation between CRS and entrepreneurship motivation (Rothaermel et al. 2006; Kollmann and Christofor, 2014).

In this work, we analysed the CRS as it can represent a good indicator of a country's probability of debt default, international confidence and level of development (Cervelló-Royo et al., 2014). CRS is herein used as defined by the Euromoney Agency (Euromoney Agency, 2017). According to this definition, CRS combines different categories related to political, economic and structural assessments, among others (Hoti & McAleer, 2004). According to

these components, different indicators measuring debt, confidence, access to credit, etc., can be found. Thus the CRS is a good indicator of the potential access to credit and financial cost for entrepreneurs. Therefore, it can be stated that the easier access is, and the better and lower financial cost, the better opportunity-driven entrepreneurial motivation becomes. Thus as all these components are closely linked to a country`s entrepreneurship level (Kollmann and Christofor, 2014; Ribes et al. 2018), it would be interesting to study their influence on opportunity-driven entrepreneurship.

Proposition 1. Opportunity-driven entrepreneurship relates to the CRS.

2.2. GPD per capita

A country's GDP is usually considered a key factor for the motivation of its entrepreneurs when they decide to start a venture, and GDP is a good indicator of a country's economic development and potential growth (Acs, Desai & Hessels, 2008; Van Stel et al. 2007; Hessels et al. 2008)). This variable has been withdrawn from the World Bank International comparison programme database (2017) and is a monetary measure of all the final goods and services produced in a country. As the GDP nominal per capita does not reflect the differences in the cost of living and inflation rates among countries, it is more useful to use a basis of the GDP per capita for purchasing power parity (PPP) to compare differences in countries' living standards (World bank, 2017). Acs, Desai and Hessels (2008) obtained evidence for the relation between entrepreneurship and economic development represented by the GDP per capita based on PPP in US dollars. It is generally and widely accepted that the level of economic development, measured by the GDP, can exert some positive influence on and drive motivated entrepreneurship (Hessels et al. 2008; Tominc & Rebernik, 2007). However, the impact of this variable may differ depending on the entrepreneurship

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motivation. For example, according to Van Stel et al. (2007), GDP growth has no influence on necessity entrepreneurship, but has a positive influence on opportunity entrepreneurship (Hessels et al. 2008). A high GDP per capita based on PPP is supposed to represent a high standard of living for a country and is, therefore, assumed to provide better conditions and opportunities for entrepreneurial ventures. This is the reason why we decided to consider the relation between GDP per capita (PPP) as a measure of economic development and/or potential growth, and its impact on opportunity-driven entrepreneurship.

Proposition 2. Opportunity-driven entrepreneurship is related to GDP per capita.

2.3. Sustainable Development Goals (SDG)

Since the 1970s, sustainable development (UN, 1972, 2015) has emerged as a broader social goal by focusing on the need to integrate the pursuit of improved human well-being with the need for halting and reversing systematic ecological degradation (Parrish, 2010). It has been shown as a path forward to real socio-economic development (Mas-Tur, Pinazo, Tur-Porcar, & Sánchez-Masferrer, 2015; Milutinović & Nikolić, 2014). Some studies show how entrepreneurship helps to revitalise regional identity, which drives the innovation process and creates employment opportunities (Audretsch & Thurik, 2001).

These new entrepreneurial opportunities play a very relevant role in any country's job creation and economic development (Acs, 2006; Aparicio, Urbano, & Audretsch, 2015; King & Levine, 2016).

There are 17 SDGs with several targets per goal and amount to 169 targets. The development of this set of goals was widely considered an ambitious challenge because these goals cover a

much broader range of issues than their predecessors, and they aim to be universal. That is, they are applicable to all countries and not only developing ones (Le Blanc, 2015).

As financial and economic aspects have been considered by using specific variables, this paper focused on four of the SDGs related with environment and social aspects, those that are more socially (SDG4 and SDG10) and environmentally (SDG9 and SDG12) related to be developed for the case of opportunity driven-entrepreneurship, that is: Quality education (SDG4), Industry, innovation and infrastructure (SDG9), Reduced inequality (SDG10) and Responsible consumption and production (SDG12).

2.2.1. Quality education (SDG4)

The Quality education goal includes actions to ensure inclusive and equitable quality education, and to promote lifelong learning opportunities for all (UN, 2015).

This SDG comprises different targets that cover aspects such as: affordable and quality education at different levels (including university), development of skills for employment and entrepreneurship, or availability of qualify teacher, among others.

Many works relate opportunity entrepreneurship and educational attainment (Giotopoulos, Kontolaimou, & Tsakanikas, 2017; Koellinger, 2008; Mas-Tur et al., 2015; Singh & Crump, 2007). It is important to highlight that the literature about entrepreneurship claims that weaknesses in education explain the greater difficulty to perform activities, such as entrepreneurship or business creation (Acs &Amoros 2008), especially in Higher Education (Mas-Tur et al., 2015). Entrepreneurs with Higher Education qualifications and a higher level of personal and professional skills are more prone to explore new market opportunities (Bastian & Zali, 2016). Investing in people leads to more wealth and faster economic growth

because human capital —the skills, experience, and a population's effort— is the world's greatest asset (Kim, ElTarabishy, & Bae, 2018).

Proposition 3: Opportunity-driven entrepreneurship is related to quality education.

2.2.2. Industry, innovation and infrastructure (SDG9)

The Industry, innovation and infrastructure sustainable goal (SDG9) includes building resilient infrastructure, promoting inclusive and sustainable industrialisation, and fostering innovation (UN, 2015).

This SDG comprises different targets that cover aspects such as: developing quality, reliable and resilient infrastructure to support economic development and well-being, or enhancing scientific research, encouraging innovation in both public and private sectors.

Innovation is commonly acknowledged as a principal means by which regions foster economic growth and competitiveness (Huggins & Thompson, 2015). Previous studies on entrepreneurship have related the innovation concept of entrepreneur actions (Kim et al., 2018), particularly to favour change and innovation to obtain a competitive advantage for their firm. According to the type of entrepreneurship, its effect on a nation's capacity differs for innovation and economic growth, and entrepreneurship opportunities improve knowledge diffusion and economic growth. (Rolf Sternberg & Sander Wennekers, 2005). By associating entrepreneurship motivation with innovation, many nations, regions, states and universities have adopted policies to build a resilient infrastructure to stimulate innovation by entrepreneurial firms in the hope of facilitating innovation and, hence, economic growth (Autio, et Al, 2014). Acs and Varga (2005) show that the impact of both types of entrepreneurship on growth and economic development widely varies, whereas necessity

entrepreneurship does not affect economic development, and opportunity entrepreneurship has a positive and significant effect. Opportunity entrepreneurship is positively linked to technological and innovation progress (Mrożewski and Kratzer, 2017). Moreover, Anokhin and Wincent (2012) explain that entrepreneurship is positively only linked to innovation in high-income countries.

Proposition 4: Opportunity-driven entrepreneurship is related to industry, innovation and infrastructure.

2.2.3. Reduced inequalities (SDG10)

The Reduced inequalities goal (SDG10) works to reduce inequalities within and among countries. The indicators defined for this goal are directly related to high-quality job creation and, therefore, household incomes (UN, 2015), which are characteristics of entrepreneur actions driven by opportunity.

This SDG is made up of different targets that cover aspects such as growth rates of household expenditure, empowerment and the promotion of social, economic and political inclusion, or the assurance of equal opportunities and the reduction of inequalities of outcomes.

It has been demonstrated that fostering opportunity-driven entrepreneurship is a critical factor for obtaining job growth and economy growth in both developed and developing economies (Lecuna et al., 2017).

Inequalities in many countries may be rooted in policies and regulations that encourage firms to operate successfully in not only the local, but also the international market (Salman, 2016). In particular, policymakers in developing countries embrace entrepreneurship as a way to

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provide jobs for the large, young and growing labour force that often faces unemployment as formal sector jobs are lacking (Calza & Goedhuys, 2016). Moreover, the more transparent and accountable policies, the more efficient business performance becomes as it attracts more entrepreneurs (Henrekson, Johansson, & Stenkula, 2010; Stenholm et al. 2013; Salman, 2016).

However, not every kind of entrepreneurship affects economy and society in the same way. Hence it is important to highlight that, according to the classification of entrepreneurship in terms of motivational factors, opportunity-driven entrepreneurship (which leads to high growth) is the best predictor of future behaviour, specifically of growth expectations (Lecuna et al., 2017). Countries with a higher level of opportunity entrepreneurship will achieve faster growth. It has been particularly shown that for developing countries, where inequalities are usually wider, when opportunity-based entrepreneurship is encouraged, they tend to be more sensible in growth terms; they foster positive higher results in terms of employment, economic growth and development, and they therefore tend to reduce inequalities (Aparicio et al., 2015).

Proposition 5: Opportunity-driven entrepreneurship is related to inequality reduction within and among countries.

2.2.4. Responsible consumption and production (SDG12)

Responsible consumption and production (SDG12) focuses on ensuring sustainable consumption and production patterns (UN, 2015). This SDG is composed of different targets that cover aspects such as material footprint, global food loss or recycling rates.

Traditional approaches to sustainable consumption and production are to make products and production processes cleaner and more efficient (Keskin, Diehl, & Molenaar, 2013)

Some entrepreneurs aim to be more efficient in consumption and production terms (Muñoz & Cohen, 2018). Those entrepreneurs find opportunities in ~~see~~ environmental and social issues ~~as~~ that need to be exploited on the market (Berchicci & Bodewes, 2005). However, balancing sustainability goals with the desire to make profits and maintain economic efficiency is no simple matter (Zahra et al., 2009). Therefore, these sustainable opportunities (in terms of consumption and production aspects) may be considered by opportunity-driven entrepreneurs to be a competitive advantage as long as they turn into positive results for their businesses.

Entrepreneurs may face challenges when translating their environmental goals into product attributes that offer customer value. One reason for this is uncertainty about the existence and severity of sustainability problems, and uncertainty about the best methods to address these problems and the consequences of possible solutions (Keskin et al., 2013).

For opportunity-driven entrepreneurs, the impact of environmental regulations is low (Stenholm et al. 2013). However, creating economically viable businesses depends on firms' ability to deal with shifts in environmental goals and customer requirements (Keskin et al., 2013; McRobbie, 2013; Muñoz & Dimov, 2015; Muñoz & Cohen, 2018).

Proposition 6: Opportunity-driven entrepreneurship is related to responsible consumption and production.

3. Methodology

The fuzzy set qualitative comparative analysis (fsQCA) is an empirical method based on Boolean algebra that allows a configurational examination of the causal relation between a

group of antecedent conditions and related outcome (Ragin, 1989, 2000). This methodology offers a set theoretical approach to the causality analysis as regards conditions and outcome (Ragin, 2008). This method acknowledges that different combinations might explain outcome; in other words, different combinations of attributions can explain the same outcome.

The present study observes which development factors (Quality education (SDG4), Industry, innovation and infrastructure (SDG9), Reduced inequality (SDG10), and Responsible consumption and production (SDG12) and economic and financial factors, CRS and GDP, are related with opportunity-driven entrepreneurship.

To date several authors have used the fsQCA methodology to analyse issues related to entrepreneurship (Ribes et al., 2018; Devece et al., 2016; Kuckertz, Berger, & Allmendinger, 2015; Mandl, Berger, & Kuckertz, 2016; Rey-Martí, Tur Porcar & Mas-Tur, 2015). In this research, the fs/QCA software, v. 3.0, was used to apply the fuzzy QCA methodology (Thiem & Dusa, 2013). The fsQCA methodology is also useful for small N-samples (Fiss, 2011), which was our case.

This empirical study analysed the data for 2017 from 57 countries to cover different world geographical areas. Data were retrieved from four databases: Global Entrepreneurship Monitor (GEM), CRS, World Bank Database (2017) and the Sustainable Development Goals Index, as seen in Table 1.

Table 1. Countries' Data.

[*Table 1 goes here*]

Source: The authors based on GEM, CRS, the SDG Index and the World Bank (2017)

GEM is a trusted entrepreneurship resource for key international organisations like the United Nations, the World Economic Forum, the World Bank and the Organisation for Economic Co-operation and Development (OECD). It provides custom datasets, special reports and expert opinions. The entrepreneurial motivational index is the percentage of those involved in total early-stage entrepreneurial activity (TEA) who are improvement-driven opportunity-motivated, divided by the percentage of TEA that is necessity-motivated.

The CRS measures the current situation of countries in terms of political, economic and financial assessments. It was retrieved from the Euromoney Agency Country Risk website (Euromoney Agency, 2017). GDP, as a measure of economic growth and development, was taken from the World Bank, the International Comparison Program Database: GDP per capita, PPP (constant 2011 International $).

Finally, the SDG Index provides a report card for country performance in the historic Agenda 2030 and SDG. The SDG Index establishes a world ranking that measures the progress of SDGs in 193 countries. Its components were retrieved from the database prepared by the Bertelsmann Stiftung and Sustainable Development Solutions Network (Sachs, et al., 2018). In this study, particular attention was paid to Quality education (SDG4); Industry, innovation and infrastructure (SDG9); Reduced inequality (SDG10); and Responsible consumption and production (SDG12) to conduct the present research.

By means of the fsQCA methodology, the model in which we wished to test the combination of variables (CRS, GDP per capita, SDG4, SDG9, SDG10, SDG12) that lead to high opportunity-driven entrepreneurship was as follows:

motiv_indexfz = f(sdg12fz, sdg10fz, sdg9fz, sdg4fz, crsvaluefz, gdppercapitarfz)

All these variables are shown in Table 2.

Table 2. Definition of variables

[*Table 2 goes here*]

Source: The Authors'

4. Results

In the present paper, calibration indicated the measure at which countries can be considered members of a set, which changes according to their particular economic, financial and sustainable attributes. More precisely, seven factors were analysed: the 2017 Motivational Index as an outcome; the 2017 CRS rank, the 2017 GDP per capita rank; four Sustainable Development Goals: SDG4, SDG9, SDG10 and SDG12 as antecedent conditions. According to the fsQCA methodology, the sufficiency analysis is firstly performed to obtain the combinations of model variables that lead to high opportunity-driven entrepreneurship. The necessity analysis is then performed to know which of these variables are needed for entrepreneurship to occur.

Thus all the variables (See Table 2) were calibrated to provide a grade of membership or belonging to the defined sets (outcome/results and antecedent conditions). Once the result and all the conditions have been calibrated (suffix *fz* indicates the calibrated variable), we then drew up a truth table (Table 3) which lists all the possible configurations (with 2^K

configurations or rows, where k is the number of conditions, in this case $2^6 = 64$ combinations). Value 1 in each configuration indicates a score of the calibrated variable that exceeds or equals 0.5 (i.e. closer to the full member category), and 0 indicates the values of the calibrated variable below 0.5 (i.e. closest to the no member category). They are ranked from the biggest to the smallest number of cases with a membership score above 0.5 in that configuration (the *number* column is the cumulative %) and the consistency of each one is shown based on the subset relation to the result.

Table 3. Truth Table

[*Table 3 goes here*]

Source: The Authors'

The next step was to drop those configurations with no cases (reminders) and, as sample size was relatively small, to also drop those with a case (the maintained configurations had to cover 75-80% of the cases, with 85% in this case). Next a consistency threshold was selected to distinguish the causal combinations that were the subsets of the result from those that were not. In general, the values below 0.75 in this column indicate substantial inconsistency. We took 0.85 to be the consistency threshold and assigned a value of 1 to the outcome (motiv_indexfz) when the consistency of that configuration exceeded the 0.85 threshold, and 0 otherwise (see Table 4).

Table 4. fsQCA output

[*Table 4 goes here*]

Source: The Authors'

4.1. Sufficiency Analysis

Table 5 shows the intermediate solution to result from the three combinations that sufficiently increased opportunity-driven entrepreneurship .

Table 5. fsQCA output. Intermediate solution (reduced final set): antecedent configuration leading to high opportunity-driven Entrepreneurship

[*Table 5 goes here*]

Source: The Authors'

The final solution can be expressed as follows:

Motivational Index= (~sdg12fz*sdg10fz*sdg9fz*crsrankfz*gdppercapitarfz+~sdg12fz*sdg9fz*sdg4fz*crsrankfz* gdppercapitrfz + sdg10fz*sdg9fz*sdg4fz*crsrankfz*gdppercapitarfz)

As seen, the three combinations shown in Table 6 sufficiently increase opportunity-driven entrepreneurship by 82% of all the cases and cover 69% of them. Therefore, a high CRS rank, a high GDP per capita, a high level of development of Industry, innovation and infrastructure (SDG9), a high reduction in inequalities (SDG10) and a low responsible consumption and production value (SDG12) lead to increased opportunity-driven entrepreneurship; also a high CRS rank, a high GDP rank, a high value for variable SDG9, a

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low value for SDG12 and a high level of Quality education (SDG4); also a high CRS rank, a high GDP per capita rank, a high SDG9, a high SDG4 and a high SDG10. All three combinations provided increased opportunity-driven entrepreneurship. As shown, both CRS and GDP per capita rank are present in all three combinations, which leads to high opportunity-driven entrepreneurship. Thus we suggest that both are necessary conditions to improve opportunity-driven entrepreneurship. However, other variables need to be present for this relation to take place. Each combination has a coverage grade of 60-65%.

Unlike other quantitative estimation techniques, the fsQCA is not symmetric. Thus it might be convenient to study which combinations of factors lead to low opportunity-driven entrepreneurship by taking into account that a result does not always explain its negation. Table 6 shows the resulting configuration for the negative result.

Table 6. fsQCA output: intermediate solution (reduced final set): antecedent configuration leading to low opportunity-driven entrepreneurship

[*Table 6 goes here*]

Source: The Authors'

This combination shows a coverage of 39% and a consistency of 92%. Both combinations share a low GDP per capita rank, a high SDG12, a low SDG9 and a low SDG4. However, in the first one we can also see a high SDG10 and a low CRS, whereas the other combination contains the opposite, a low SDG10 and a high CRS rank. It should be noted that the common part of the combination in both solutions (~gdppercapitarfz*sdg12fz*~sdg9fz*~sdg4fz) always appears in a contrary sense in relation to the solutions found for high-opportunity driven entrepreneurship, which reinforces the sense of the found solution.

4.2. Necessity Analysis

According to Table 7, conditions gdppercapitarfz, crsrankfz and sd4fz meet, to some extent, the condition of necessity as consistency is above 0.80 and, as shown in the table below, a vast majority of countries remain below the diagonal line (which is a critical condition for fulfilling the need). Thus it could be argued that, to a large extent, the presence of a high CRS or a high GDP per capita or a high SDG4 leads to a high degree of opportunity-driven entrepreneurship. However, it should be noted that SDG9 shows a consistency of 0.79, which come quite close to the necessity condition.

Table 7. Necessity analysis

[*Table 7 goes here*]

Source: The Authors'

In order to help visualise and understand this subset concept (the result is a subset of the condition), scatter plots are provided in two dimensions, where the arithmetic relation between both conditions (outcome and antecedent conditions) is shown in Figure 1; that is membership in Set of Countries with high Opportunity-driven entrepreneurship against membership in Set of Countries with high CRS or high GDP per capita or high SDG4.

Figure 1: Plot of "motiv_indexfz" against "gdppercapitafz" or "crsrankfz" or "sdg4fz"

[*Figure 1 goes here*]

Source: The Authors'

5. Conclusions

The purpose of this study was to identify the combination of a country's economic, financial and sustainable factors that lead to opportunity-driven entrepreneurship. These factors were selected as research that has analysed country risk, economic development and/or growth, sustainable development goals and opportunity-driven entrepreneurship is lacking.

The fsQCA methodology was used for this purpose and chosen because it has proved suitable for examining the relations between the analysed variable (motivational index, as a measure of opportunity-driven entrepreneurship) and all the possible combinations (high/low or missing) of the predictors, according to the proposals previously formulated herein: CRS (rank), GDP per capita rank, level of quality education (SDG4), level of development of the Industry, innovation and infrastructure (SDG9), Reduction of inequalities (SDG10) and Responsible consumption and production (SDG12).

The solution provided three combinations. Both CRS and GDP per capita rank are present in all three combinations, which lead to high opportunity-driven entrepreneurship according to Propositions 1 and 2. Thus according to the necessity analysis, we suggest that both (high

positions in both rankings) are necessary conditions to improve opportunity-driven entrepreneurship. However, other variables need to be present for this relation to take place, such as a high level of education, which will lead to high opportunity driven entrepreneurship, according to proposition 3. That is to say, for high opportunity-driven entrepreneurship to take place, a good economic and financial position is needed to allow access to international financial markets at a reasonable cost. It is also necessary for a country to create wealth and for its quality of education to be high. It should be noted that the level of development of Industry, innovation and infrastructures is also present in all three combinations. According to the necessity analysis, although, this last variable does not meet the consistency threshold, it came very close. Thus, it would be sufficient, but not necessary, to increase opportunity-driven entrepreneurship.

The Responsible consumption and production (SDG12) variable had an ambiguous effect on high-opportunity entrepreneurship. We could not, therefore, claim that Proposition 6 was met.

Finally, it can be stated that for a country to reduce inequalities (SDG10) to lead to high opportunity-driven entrepreneurship, it must be combined with a low country risk level. Hence, jointly with a low country risk level, Proposition 5 was met.

The main value that results from this research is to bridge the gap of studies that have related combinations of economic, financial and SDGs with opportunity-driven entrepreneurship.

6. Limitations and Future Research Lines

One of the limitations of this study is the number of countries included in the study given the data that are available in the used databases. Although this work covers all international

geographical areas, it could be extended to more countries. With the followed methodology, we identified a combination of factors that led to high opportunity-driven entrepreneurship. This study could be extended in future research by using another type of methodology to quantify this effect. A future research line would be to combine the factors leading to sustainable and social entrepreneurship.

Author contributions:

This paper was originally conceived and designed by R.C.R., I.M.C., R.P.M and G.R.G. All authors contributed equally to this work.

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TABLES AND FIGURES

Table 1. Countries' Data.

COUNTRY	MOTIVATIONAL INDEX (GEM)	GDP per capita Rank	CRS Rank	Average score on SDG4	Average score on SDG9	Average score on SDG10	Average score on SDG12
Argentina	2.46	63	93	88.7	40.5	51.0	69.9
Australia	3.75	18	11	96.5	83.2	73.1	50.7
Austria	3.00	21	13	82.5	76.2	85.9	51.8
Bosnia and Herzegovina	1.18	89	150	80.3	24.4	76.3	72.3
Brazil	1.16	81	61	77.0	46.2	25.7	70.3
Bulgaria	1.06	62	62	86.5	37.1	70.1	66.1
Canada	3.14	22	8	98.8	75.1	76.7	52.7
Chile	2.32	56	16	85.2	43.0	28.7	73.5
China	1.00	79	43	74.1	57.7	52.4	74.8
Colombia	2.96	86	42	75.0	28.7	19.9	74.7
Croatia	1.19	58	65	85.5	46.6	80.1	71.5
Cyprus	1.62	34	40	93.3	39.6	74.9	39.6
Ecuador	0.87	104	103	78.2	25.3	43.2	73.4
Egypt	0.63	92	116	75.8	30.5	n.d.	73.1

Estonia	2.73	41	33	94.0	61.0	78.3	60.9
Finland	9.70	25	12	90.1	87.6	95.5	53.5
France	2.99	23	22	91.3	77.2	78.4	56.7
Germany	5.42	17	10	98.3	81.0	86.9	55.0
Greece	1.83	49	106	88.8	46.2	68.1	46.4
Guatemala	1.63	119	84	64.9	13.4	33.8	74.7
India	0.75	122	57	65.3	33.1	72.5	81.6
Indonesia	1.72	97	63	76.2	25.4	60.2	79.3
Iran	1.59	64	129	84.5	26.7	66.2	68.3
Ireland	2.50	5	28	90.0	70.5	80.1	46.9
Israel	2.02	35	29	94.2	69.7	50.7	47.2
Italy	2.52	33	51	90.9	60.7	72.5	56.7
Japan	3.35	28	26	96.4	87.3	81.2	55.5
Kazakhstan	1.78	54	72	86.0	36.9	97.8	55.0
Latvia	2.06	50	44	92.7	42.8	71.6	72.0
Lebanon	1.09	66	115	72.1	35.4	67.2	73.4
Luxembourg	4.08	2	5	86.5	64.6	73.6	34.3
Madagascar	2.16	179	125	35.6	6.3	51.0	76.0
Malaysia	9.22	46	36	88.1	60.8	40.7	69.7
Mexico	2.14	65	38	81.3	38.5	35.1	73.3
Morocco	1.58	115	73	70.8	30.7	56.6	67.1
Netherlands	10.04	13	6	93.4	83.0	93.1	52.1
Norway	6.26	6	2	97.5	77.6	99.0	38.1
Panama	3.17	57	54	85.5	28.8	28.0	70.6

Peru	3.74	90	39	82.2	23.3	46.8	73.2
Poland	7.52	44	31	93.7	46.7	81.3	72.6
Portugal	2.70	43	50	85.4	56.6	70.0	55.5
Qatar	3.94	1	24	81.4	50.1	57.5	56.7
Russian Federation	1.30	40	71	92.6	45.3	54.1	70.5
Saudi Arabia	1.15	12	46	86.8	51.7	n.d.	58.6
Slovakia	1.37	39	25	90.7	47.0	98.4	64.0
Slovenia	2.47	38	35	94.9	56.4	99.9	61.4
South Africa	1.46	89	64	85.8	45.1	0.0	63.1
South Korea	2.93	30	20	91.1	84.9	n.d.	64.8
Spain	1.70	32	41	88.9	66.9	70.4	60.8
Sweden	5.95	16	7	95.0	89.6	95.0	57.7
Switzerland	4.86	9	3	93.3	93.9	82.6	36.7
Thailand	7.90	72	52	76.2	39.8	64.8	70.4
United Arab Emirates	3.37	8	34	83.4	61.8	n.d.	44.5
United Kingdom	4.47	26	20	99.8	80.7	79.9	51.6
United States	7.21	11	15	93.1	84.4	55.6	38.2
Uruguay	2.28	60	45	80.9	35.5	54.0	61.3
Vietnam	4.60	125	80	81.3	24.9	65.5	71.2

Source: The authors based on GEM, CRS, the SDG Index, and the World Bank (2017)

Table 2. Definition of variables

Conditions		Symbol	Set of membership
Outcome/Results	Motivational Index (GEM 2017)	motiv_index	Countries with high Opportunity driven entrepreneurship
Antecedent Conditions	CRS Rank	crsrank	Countries with a high CRS value (high rank position)
	GDP per capita rank	gdppercapitar	Countries with a high GDP per capita (high rank position)
	SDG4	sdg4	Countries with high SDG4
	SDG9	sdg9	Countries with high SDG9
	SDG10	sdg10	Countries with high SDG10
	SDG12	sdg12	Countries with high SDG12

Table 3. Table of Truth

gdppercapitarfz	crsrankfz	sdg4fz	sdg9fz	sdg10fz	sdg12fz	number	motiv_indexfz	raw consist.
1	1	1	1	1	0	15 322%)		0.885732
0	0	0	0	0	1	12 (58%)		0.583811
0	1	0	0	0	1	3 (65%)		0.788950
1	1	1	1	0	0	2 (69%)		0.876368
0	0	0	0	1	1	2 (73%)		0.637168
1	1	1	1	1	1	1 (76%)		0.855435
1	1	1	0	1	0	1 (78%)		0.836858
1	1	0	1	1	0	1 (80%)		0.914863
1	1	1	1	0	0	1 (82%)		0.923200
1	0	1	1	1	0	1 (84%)		0.855989
1	0	1	0	0	1	1 (87%)		0.807547
0	1	1	1	0	1	1 (89%)		0.876881
0	0	1	0	1	1	1 (91%)		0.744759
0	0	1	0	0	1	1 (93%)		0.760684
0	0	0	0	0	0	1 (95%)		0.837359

0	0	0	1	0	1	1 (97%)		0.764444
1	0	1	0	0	0	1 (100%)		0.846154
1	1	1	1	0	1	0 (100%)		
1	1	1	0	1	1	0 (100%)		
1	1	1	0	0	1	0 (100%)		
1	1	0	0	0	0	0 (100%)		
1	1	0	1	1	1	0 (100%)		
1	1	0	1	0	1	0 (100%)		
1	1	0	0	1	1	0 (100%)		
1	1	0	0	1	0	0 (100%)		
1	1	0	0	0	1	0 (100%)		
1	1	0	0	0	0	0 (100%)		
1	0	1	1	1	1	0 (100%)		

Source: The Authors'

Table 4. fsQCA output

gdpercapitarfz	crsrankfz	sdg4fz	sdg9z	sdg10fz	sdg12fz	number	motiv_indexfz	raw consist.
1	1	1	1	1	0	15	1	0.885732
0	0	0	0	0	1	12	0	0.583811
0	1	0	0	0	1	3	0	0.788950
1	1	1	1	0	0	2	1	0.876368
0	0	0	0	1	1	2	0	0.637168
1	1	1	1	1	1	1	1	0.855435
1	1	1	0	1	0	1	0	0.836858
1	1	0	1	1	0	1	1	0.914863

Source: The Authors'

Table 5. fsQCA output. Intermediate solution (reduced final set): antecedent configuration leading to high Opportunity driven Entrepreneurship

Sets	Raw coverage	Unique coverage	Consistency
~sdg12fz*sdg10fz*sdg9fz*crsrankfz*gdppercapitarfz	0.6029	0.0114	0.8747
~sdg12fz*sdg9fz*sdg4fz*crsrankfz*gdppercapitarfz	0.6345	0.0430	0.8498
sdg10fz*sdg9fz*sdg4fz*crsrankfz*gdppercapitarfz	0.6358	0.0443	0.8529
solution coverage: 0.6901			

solution consistency: 0.8161			

Table 6. fsQCA output: Intermediate solution (reduced final set): antecedent configuration leading to low opportunity driven entrepreneurship

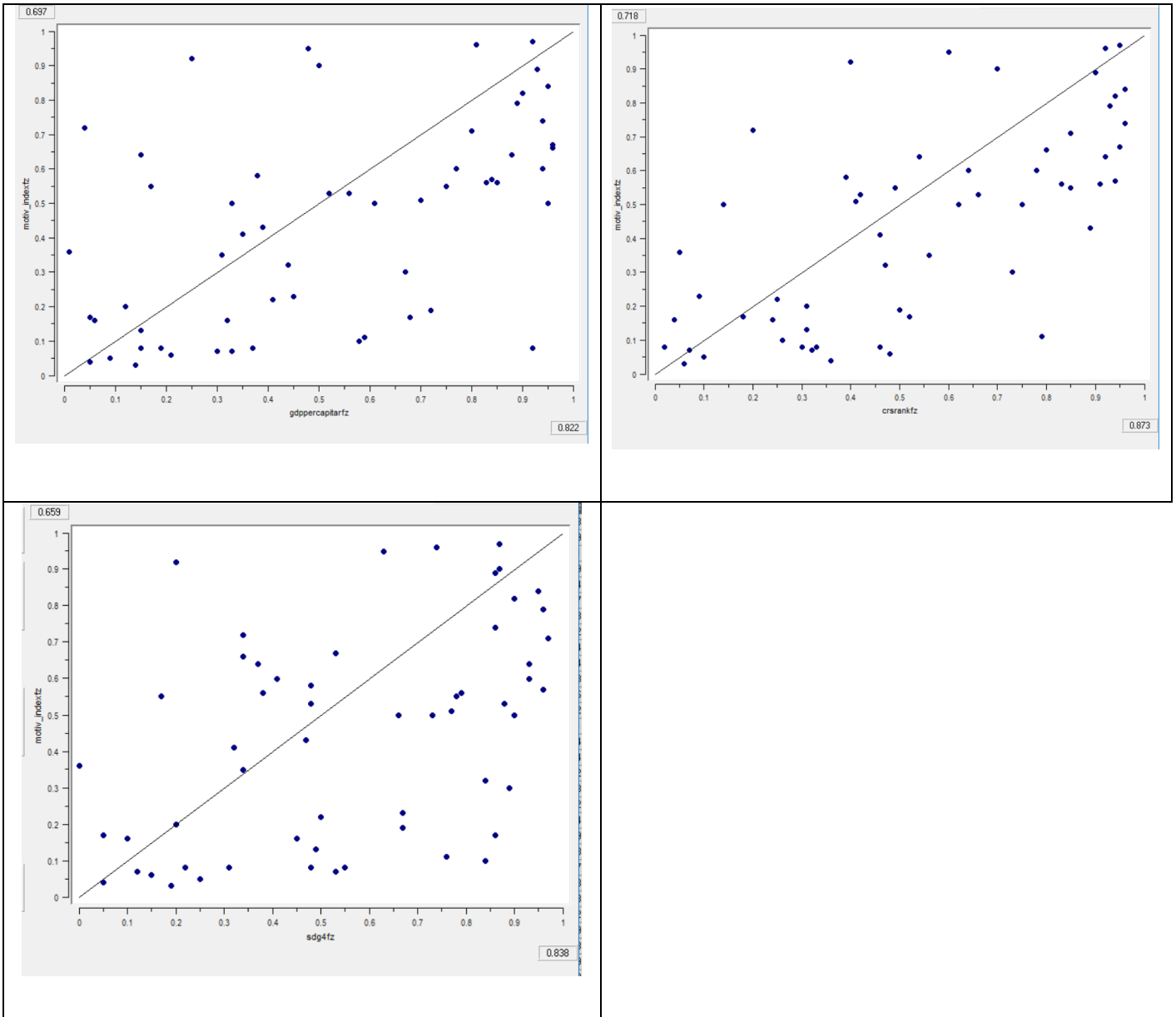| Sets	Raw coverage	Unique coverage	Consistency
~gdppercapitarfz*sdg12fz*~sdg9fz*~sdg4fz*sdg10fz*~crsrankfz	0.2988	0.1011	0.9347
~gdppercapitarfz*sdg12fz*~sdg9fz*~sdg4fz*~sdg10fz*crsrankfz	0.2910	0.0930	0.9083
solution coverage: 0.3918 solution consistency: 0.9187			

Table 7. Necessity analysis

Necessity analysis	Consistency	Coverage
gdppercapitarfz	0.811973	0.721078
crsrankfz	0.865093	0.728176
sdg4fz	0.836425	0.672087
sdg9fz	0.790894	0.703412
sdg10fz	0.744098	0.681467
sdg12fz	0.599494	0.496682

Figure 1: Plot of "motiv_indexfz" against "gdppercapitafz" or "crsrankfz" or "sdg4fz"