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The determinants of entrepreneurship in urban and non-urban regions: A fuzzy-set QCA approach

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ABSTRACT

Objective: The objective of the article is to identify and analyse the configurations of regional entrepreneurial ecosystems that lead to high levels of entrepreneurship in urban and non-urban regions.

Research Design & Methods: This study employed This study employed necessary condition analysis (NCA) and a fuzzy-set qualitative comparative analysis (fs/QCA) to reveal how different combinations of six elements of entrepreneurial ecosystems (EE): culture, supports, human capital, policy, markets, and finance, support the presence of high levels of entrepreneurship across 42 urban and non-urban regions in Colombia and Ecuador.

Findings: The NCA results revealed that no single element was necessary for the presence of high levels of regional business density. Conversely, some ecosystem elements become necessary when the expected ecosystem outcome is high levels of regional share of high-growth firms. Sufficiency analysis revealed several distinct combinations of elements that lead to high entrepreneurship levels in both urban and non-urban regions.

Implications & Recommendations: The findings of this study are valuable for researchers interested in understanding the complexity of EEs and for policymakers. This study provides empirical evidence of the differentiated relevance of EEs' elements depending on the urban-rural context. Moreover, results suggest that a one-size-fits-all approach for entrepreneurship policymaking might be inadequate since the requirements for achieving high levels of entrepreneurial development are substantially different between urban and non-urban regions.

Contribution & Value Added: This study contributes to the ongoing discussion on entrepreneurial ecosystems complexity, particularly regarding the questions of how ecosystem elements interact to support entrepreneurship in a particular place and whether all ecosystem elements are equally important for entrepreneurship.

Article type: research article

Keywords: entrepreneurial ecosystems; rural entrepreneurship; QCA; non-urban; South America

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INTRODUCTION

Entrepreneurship is widely acknowledged as an important driver of economic growth. Extensive literature confirms the positive impact of entrepreneurship on the economic performance of nations, regions, and cities (Ács *et al*., 2008; Audretsch *et al*., 2015; Naudé, 2013). The core of entrepreneurship research is the concept of entrepreneurial ecosystems (EE) and its key role in enabling entrepreneurship (Malecki, 2018; Wurth *et al*., 2022). Entrepreneurship is a complex and multidimensional phenomenon, whose success depends on the interaction of a set of interconnected factors and actors within a place, *i.e.* an ecosystem. The concept of EE has emerged as one of the most comprehensive frameworks for understanding and measuring entrepreneurship (Autio *et al*., 2018). It has provided valuable insights to scholars and policymakers, facilitating a comprehensive understanding of how entrepreneurship is generated and sustained in specific locations. As a result, the

concept has gained considerable attention in both policy and research, leading to a substantial increase in publications over the past decade. However, there are still gaps in the conceptualisation of EE that require attention (Cavallo *et al*., 2019; Stam, 2015).

One important criticism of research on EEs is that studies have focused almost exclusively on ecosystems in large, urbanised regions, and well-developed metropolitan areas, primarily located in developed economies (Aldrich & Ruef, 2018; Audretsch, 2021; Roundy, 2017) leading to a limited understanding of EEs in non-urban regions in developing economies (Cao & Shi, 2021; Freire-Gibb & Gregson, 2019; Guerrero *et al*., 2021; Muñoz *et al.*, 2022; Villegas-Mateos, 2021). Moreover, EEs are highly localised and operate within specific localities or regions, and draw upon local resources, institutions, and networks (Malecki, 2018; Welter, 2011). In this context, exploring the effect of the urban-rural divide on EE has attracted increasing attention from researchers (Calispa-Aguilar, 2021; Miles & Morrison, 2020; Muñoz & Kimmitt, 2019). Despite the socioeconomic disparities between urban and non-urban settings, non-urban areas have increasingly demonstrated the capacity to foster diverse forms of entrepreneurial activities. The availability of natural resources, human capital, and localised knowledge can effectively give rise to rural entrepreneurship (Müller & Korsgaard, 2018). However, the distinct socioeconomic and geographic characteristics may give rise to different ways for entrepreneurship development in non-urban areas which can be substantially different to the ways how entrepreneurship occurs in urban settings (Sternberg, 2022).

Moreover, debates exist regarding the understanding of EE complexity (Brown & Mason, 2017; Haarhaus *et al*., 2020; Roundy *et al*., 2018). It is now well-established that the interaction of EE elements predominantly determines the ecosystem's success (Ács *et al*., 2014; Stam, 2015). However, the academic discussion of EEs seems to remain focused on identifying the essential 'ingredients' of an ecosystem and overlooks the importance of understanding the 'recipes' or paths for their combination into a sustainable ecosystem (Malecki, 2018). In this regard, scholars argue for further empirical investigations into the complex causal relationships among EE elements using methods such as network analysis, agent-based modelling, interpretivist approaches, or qualitative comparative analysis (Berger & Kuckertz, 2016; Douglas *et al*., 2020; Roundy *et al*., 2018; Wurth *et al*., 2022).

Therefore, the study aimed to reveal and compare the entrepreneurial ecosystem configurations associated with high levels of regional business density and high-growth firms in both urban and non-urban regions using necessary condition analysis (NCA) and fuzzy-set qualitative comparative analysis (fs/QCA). This article is divided into four sections. The first section will provide an overview of relevant literature on EE structure and complexity. The second section will introduce the research method and the data employed. The third section will present and discuss the results of NCA and fs/QCA. The final section will present the main conclusions of the study.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Entrepreneurial Ecosystem's Structure and Complexity

Existing research recognizes that successful entrepreneurship is not solely dependent on individual entrepreneurs but is influenced by several surrounding environmental conditions and support structures. This recognition has led to the emergence of a novel concept that laid the foundations for a systemic view of entrepreneurship, known as the entrepreneurial ecosystem (EE). An EE refers to a 'set of interdependent actors and factors coordinated in such a way that they enable productive entrepreneurship within a particular territory' (Stam & Spigel, 2018). Building on the concept of EEs, researchers elaborated several conceptual frameworks aiming to define EE from different perspectives (*e.g.* Ács *et al*., 2014; Stam, 2015; Isenberg, 2016; Kauffman's foundation ecosystem model or Kantis *et al*., 2021). Overall, researchers in this field agree that entrepreneurship is a complex phenomenon influenced by a wide range of factors, including a population with entrepreneurial attitudes, abilities, and aspirations, supportive policies and regulations, access to finance, supportive culture, well-developed infrastructure, skilled human capital, effective networks, adequate educational systems, market, and innovation platforms. Moreover, healthy ecosystems are expected to promote entrepreneurship as an outcome, and entrepreneur-

ial outcomes can take various forms, such as more entrepreneurs, more firms, or more jobs (Bell-Masterson & Stangler, 2015), productive entrepreneurship, aggregate value creation (Stam & van de Ven, 2021), or quantity and quality entrepreneurship (Szerb *et al*., 2019).

Despite the evident progress in research on EEs, this field is still evolving, with several knowledge gaps and questions to be answered. One notable criticism of EE research is its primary focus on advanced economies when conceptualizing and operationalizing ecosystems (Aldrich & Ruef, 2018; Audretsch, 2021). Some scholars suggest that current theoretical frameworks for understanding and measuring EEs are not context-sensitive. They argue that these models are defined by a standard set of elements derived from ecosystems in large, urbanized regions and well-developed metropolitan areas, primarily located in developed economies. As a result, the possible relevance and differentiated role of other context-specific elements are diminished. Consequently, the existing knowledge about EEs may lack contextualization and be insufficient for explaining the factors and mechanisms that affect, for example, rural entrepreneurship (Miles & Morrison, 2020; Muñoz & Kimmitt, 2019). In this regard, the literature suggests that despite the challenges that socio-economic and developmental disparities among urban and non-urban contexts pose, non-urban settings are fertile ground for entrepreneurial activities due to the availability of valuable, unique natural and human resources that can be strategically utilized for productive entrepreneurial purposes (Milone & Ventura, 2019; Müller & Korsgaard, 2018; Pato & Teixeira, 2016; Roundy, 2019). Nonetheless, the distinctive socioeconomic and geographic characteristics of urban and rural regions can certainly give rise to disparities in entrepreneurial dynamics. Factors such as urbanization, agglomeration (Fotopoulos & Louri, 2000; Lavesson, 2018), the gap in access to digital infrastructure (McCoy *et al*., 2018), gender dynamics (Birdthistle *et al*., 2022), rural poverty, territorial capital, peripheral location (Calispa-Aguilar, 2021), and limited access to venture capital may have varying impacts on how entrepreneurship unfolds in non-urban settings. Consequently, there is a growing need to understand how the specificities of non-urban locations, such as smaller towns or rural areas, might impact entrepreneurship development (Muñoz *et al*., 2022; Roundy, 2017; Roundy *et al*., 2018).

Another issues contributing to the decontextualization of EE framework models are the assumptions that all ecosystems work in the same way, and each EE element has the same relevance for a successful ecosystem. However, EEs are conceptualized as unique, heterogeneous, complex, and adaptive systems (Alvedalen & Boschma, 2017; Daniel *et al*., 2022; Jacobides *et al*., 2018; Stephens *et al., 2022)*. In this respect, research suggests that certain ecosystem elements may be more or less important in enabling entrepreneurship depending on the regional context (Spigel, 2017). In fact, researchers have begun to investigate EEs using a configurational approach, aiming to understand how factors within specific territories interact to support or hinder entrepreneurship (González-Tejero *et al.*, 2022; Heredia-Portillo & Armas-Arévalos, 2023). In this regard, qualitative comparative analysis (QCA) and necessity condition analysis (NCA) have been recognized as well-established methods that offer a feasible methodological solution for studying the diversity of different types of ecosystems (Coduras *et al*., 2016; Spigel *et al.*, 2020). It is increasingly common to find studies that employ NCA and QCA together to reveal both whether all or some of the ecosystem conditions are necessary for a desired outcome and how the conditions combine to produce the outcome. Two important themes emerge from the results of these types of studies. Firstly, findings show that not all ecosystem elements are always necessary to foster entrepreneurship. Several studies corroborate that some EE elements are more important in creating the conditions necessary for entrepreneurship depending on the specific context of the ecosystem or the expected entrepreneurial output. For instance, in a recent study aiming to identify the ways to a successful EE in Europe, Schrijvers *et al*. (2023) revealed that, out of ten, only two ecosystem conditions (leadership and intermediate services) are necessary for very high-performing ecosystems. There are also cases, in which researchers found that no single condition was necessary for explaining entrepreneurship (Muñoz *et al*., 2022; Xie *et al*., 2021).

Secondly, an increasing number of studies show that the combination of elements required for fostering entrepreneurship most often does not include the presence of all relevant factors, challenging, in this way, the well-known completeness logic that suggests that in successful, healthy ecosystems all ecosystem elements must be present in a balanced way (Ács *et al*., 2014). There is

evidence that in certain regions, having all elements at a high level is not a precondition for EE success, as regions can achieve high levels of productive entrepreneurship even without having one or two ecosystem elements at a high level (Schrijvers *et al*., 2023). An increasing number of publications also show that the 'recipes' that lead to high levels of entrepreneurial outcomes usually include a combination of a few ecosystem elements rather than all of them (Alves *et al*., 2019; Komlósi *et al*., 2022; March-Chordà *et al*., 2021; Yang & Zhang, 2021).

Moreover, several studies have employed more than one entrepreneurial output measurement in their QCA models and explored the differences in the ecosystems' configurations between these outcomes. In this context, some researchers have differentiated their entrepreneurial outcome variables by setting 'permissive and strict' (Komlósi *et al*., 2022) or 'Top 25 and Top 10' (Schrijvers *et al*., 2023) thresholds to differentiate high and very high outcome levels. Others have employed different output variables, such as in the case of Torres and Godinho (2022), who evaluated the necessity levels of eight elements of digital entrepreneurial ecosystems for enabling digitally-enabled unicorns, unicorns in general, and new business creation. Importantly, what these studies show is that both necessity and sufficiency configurations change depending on the desired output in several ways. Overall, it seems that the higher (stricter) the desired output, the more convergence there is to an all-round ecosystem where all the ecosystem's components must be well-developed.

Finally, it is important to note that to date, much of the research employing configurational approaches to investigate the functioning of EEs has primarily focused on identifying how EE facilitates entrepreneurship within a specific location. Nevertheless, there is a notable gap in the literature, as no previous study has undertaken a comparative analysis of EE performance across diverse locations or contexts, including comparisons between urban and non-urban regions, large and small cities, various industrial sectors, or over different periods. Therefore, this study aimed to contribute to the literature by studying the differences in the configurations (combinations of factors) associated with high levels of regional business density and high-growth firms in both urban and non-urban regions. Based on the literature review, I propose:

Proposition* 1*: Entrepreneurial ecosystems work differently in urban and non-urban regions.

Proposition* 1.1*: The necessary factors for high levels of entrepreneurship are different between urban and non-urban regions.

Proposition* 1.2*: Different combinations of factors lead to high levels of entrepreneurship in urban and non-urban regions.

RESEARCH METHODOLOGY

This study employed fs/QCA (Ragin, 2008; Rihoux & Ragin, 2009) and NCA (Dul, 2016). The purpose of the QCA analysis of sufficiency is to find the minimal configurations of conditions that are sufficient for a given outcome. Necessity refers to the fact that while several conditions impact the causal structure of social phenomena, some conditions are more important than others. Some are so important, that the outcome is impossible in their absence (Duşa, 2022).

Research Settings

In this research, I used the six domains of EE (Isenberg, 2016) to explore the configurations of EE elements that lead to high levels of regional entrepreneurship. Culture, support, human capital, policy, markets and, finance are posited to interact in ways that foster and sustain entrepreneurship (Isenberg, 2016). As Figure 1 shows, the fs/QCA model consists of six domains and two outcome measures. I measured the outcomes using two proxies for entrepreneurship: regional business density and the regional share of high-growth firms. I selected these indicators based on the concepts of 'Kirznerian' and 'Schumpeterian' entrepreneurship proposed by Szerb *et al*. (2019). The analytical stage includes two steps: first to test whether all six conditions (EE domains) were necessary for high levels of high regional business density and high regional share of high-growth firms. After defining the necessary conditions, the second step was to reveal and analyse the ecosystem configurations sufficient for high levels of high regional business

density and high regional share of high-growth firms. In QCA, causality is not assumed to be symmetrical and the presence and the absence of the outcome may require different explanations (Berg-Schlosser *et al*., 2009). However, since I focused on the factors that lead to the presence of high levels of entrepreneurship, I did not include a discussion of the results regarding the factors that lead to low levels of the outcome nor the absence of the outcome.

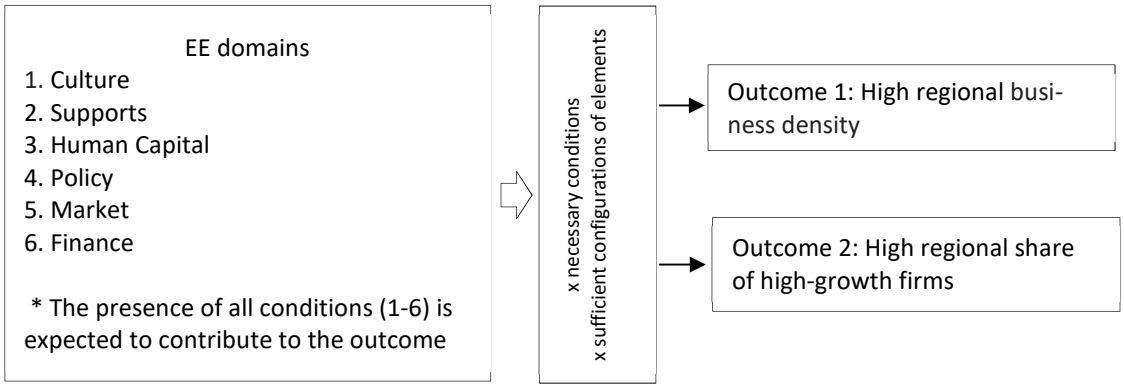

Figure 1. Six conditions of fs/QCA research model for quantity and quality entrepreneurship
Source: own elaboration.

Data

Regional entrepreneurship results from the interplay between individuals' attitudes and environmental factors. In this context, favourable institutional conditions are important, but people are crucial, as are the entrepreneurs who bring about entrepreneurship in a trial-and-error dynamic. Therefore, empirical analyses must encompass both individual and institutional components (Ács *et al*., 2014; Davidsson, 2016). The measures for the six conditions and two outcome variables are constructed by combining individual-level data from the global entrepreneurship monitor (GEM) adult population survey from 2010-2017 and institutional data from various local, regional, and international databases, as shown in Table A1 in the appendix. This study includes a total of 42 subnational regions in Ecuador and Colombia: 23 regions (provinces) in Ecuador and 19 regions (departments) in Colombia. Two separate analyses are performed to study differences in the configurations of ecosystems in 17 predominantly urban regions (PU) and in 25 non-urban regions (NU), defined as regions where the share of the population living in rural areas is below 35% or where the share of the population living in rural areas is higher than 35% correspondingly. For the full list of regions and the raw data employed, please refer to Table A2 in the appendix.

I performed the necessity analysis using the NCA package in R and the sufficiency analysis – using fs/QCA 4.1 software. Raw data were calibrated adopting the QCA direct method of calibration, specifying three qualitative breakpoints: full membership, full non-membership, and the crossover point (Ragin, 2008). In line with previous studies (Komlósi *et al*., 2022; Pappas & Woodside, 2021; Schrijvers *et al*., 2023), I used sample statistics to determine the calibration thresholds. The 75th percentile for full membership, the 50th percentile for the crossover point, and the 25th percentile for full non-membership, as displayed in Table 1. This calibration approach is suitable for this dataset because EEs in Ecuador and Colombia are known to have a medium level of performance (Ács *et al*., 2018), resulting in a positively skewed distribution. Therefore, setting calibration thresholds based on global external benchmarks could lead to decontextualized QCA results. Truth tables were built from the calibrated data matrices with a sufficiency inclusion score of ≥ 0.8 and at least 1 case per row.

Table 1. Descriptive statistics

Variable	Mean		St.Dev		Min		Max		Pctl 75		Pctl 25	
	PU	NU	PU	NU	PU	NU	PU	NU	PU	NU	PU	NU
Culture	0.535	0.477	0.066	0.071	0.421	0.397	0.639	0.681	0.590	0.492	0.484	0.445
Supports	0.353	0.192	0.098	0.097	0.162	0.067	0.469	0.433	0.458	0.265	0.312	0.130
Human Capital	0.452	0.375	0.061	0.086	0.341	0.276	0.602	0.683	0.477	0.426	0.428	0.328
Policy	0.522	0.411	0.112	0.099	0.340	0.240	0.824	0.614	0.566	0.489	0.458	0.398
Market	0.321	0.208	0.097	0.116	0.185	0.048	0.473	0.499	0.415	0.326	0.240	0.149
Finance	0.424	0.362	0.065	0.086	0.237	0.165	0.504	0.520	0.475	0.436	0.414	0.337
Business density	0.037	0.050	0.029	0.034	0.018	0.010	0.094	0.106	0.057	0.091	0.024	0.080
High-growth firms	0.196	0.082	0.129	0.134	0.042	0.000	0.387	0.360	0.333	0.237	0.085	0.043

Note: PU = predominantly urban, NU= non-urban.
Source: own study.

RESULTS AND DISCUSSION

Necessary Conditions

The NCA results revealed that no single condition was necessary (*i.e.* had a very high size effect) for explaining high levels of quantity entrepreneurship measured as regional business density. This holds true for both types of ecosystems, *i.e.* predominantly urban and non-urban. As depicted in Table 2, the NCA results display very low size effect scores for all six dimensions of the ecosystem. This does not imply that the six dimensions of the ecosystem are unimportant for business creation. Rather, it indicates that quantity entrepreneurship can be achieved in a region even when these components work at minimal levels. In other words, a high-performing entrepreneurial ecosystem is not a prerequisite for achieving high levels of business density in a region.

Conversely, ecosystem conditions become necessary (*i.e.* have a large effect) when the expected outcome is high levels of quality entrepreneurship, measured as the regional share of high-growth firms. This holds true for both types of ecosystems, urban and non-urban. These findings suggest that supporting the rise of high levels of quality entrepreneurship is more demanding in terms of minimum necessary conditions. Unlike quantity entrepreneurship, achieving a high regional share of high-growth firms requires ecosystems where several components must be present for the outcome to occur. More specifically, in urban regions, culture, support, and finance are necessary for high rates of regional high-growth firms. Similarly, culture and market are necessary for supporting a high share of high-growth firms in non-urban regions. Together, these results provide evidence that supports Proposition 1.1.

Table 2. Results of necessary condition analysis: Urban and non-urban groups

Ecosystem dimension	Quantity entrepreneurship				Quality entrepreneurship			
	Business Density				High-growth firms			
	Urban		Non-Urban		Urban		Non-Urban	
	effect size	p	effect size	p	effect size	p	effect size	p
Culture	0.00	0.92	0.00	1.00	0.39	0.00	0.40	0.00
Supports	0.02	0.80	0.03	0.63	0.46	0.00	0.02	0.81
Human Capital	0.02	0.79	0.07	0.13	0.21	0.03	0.07	0.38
Policy	0.14	0.44	0.00	0.88	0.14	0.14	0.19	0.25
Market	0.00	0.88	0.01	0.89	0.29	0.00	0.41	0.00
Finance	0.17	0.72	0.21	0.11	0.32	0.16	0.25	0.30

Note: General qualifications for the size of an effect as 'small,' 'medium,' or 'large' are disputable. If, nevertheless, a researcher wishes to have a general benchmark for necessary condition effect size the following ranges are suggested: $0 < d < 0.1$ as a 'small effect,' $0.1 \leq d < 0.3$ as a 'medium effect,' $0.3 \leq d < 0.5$ as a 'large effect,' and $d \geq 0.5$ as a 'very large effect' (Dul, 2016). Values showing large effect are highlighted. Effect size scores are calculated with cr_fdh ceiling technique, p= p-value.
Source: own study.

Fs/QCA analysis of sufficient conditions

The results of the sufficiency analysis are presented using the so-called 'Fiss-style tables.' In these tables, each column represents an alternative causal recipe, where ● indicates the presence of a condition, ⊗ indicates its absence, and no circle indicates indifference toward that condition. Distinguishing large circles are employed to emphasize core conditions over peripheral ones. Core conditions are those present in both parsimonious and intermediate solutions, and the evidence indicates a strong causal relationship with the outcome of interest. Conversely, peripheral conditions are present only in the intermediate solution, and the evidence for a causal relationship with the outcome is weaker (Fiss, 2011). Consistency, also referred to as the 'inclusion' level, pertains to the percentage of causal configurations with similar compositions resulting in the same outcome value. In other words, the consistency coefficient expresses the proportion of cases exhibiting a given combination of causal conditions that also exhibit the outcome of interest. Therefore, the higher the consistency score, the greater the reliability of the sufficiency of a causal path for the outcome. In fsQCA, a solution is deemed informative when consistency is above 0.74 (Woodside, 2013).

Results from the fs/QCA sufficiency analysis provide evidence supporting Proposition 1.2. Entrepreneurship, both in quality and quantity, results from different ecosystem configurations in urban regions compared to non-urban regions. As depicted in Table 3, for high levels of regional business density in urban regions, there is only one sufficient configuration where all the components are indifferent to the outcome. This suggests that urban regions may potentially have an ecosystem enabling high rates of business density without requiring additional efforts to achieve high-performance levels in any of the ecosystem components. These findings align with previous studies establishing a connection between entrepreneurship and urban and agglomeration economies. The advantages of agglomeration in cities arise from the sharing of facilities, inputs, infrastructure, and a larger labour pool. Agglomeration allows workers and employers to better match their skills and needs within a broader labour pool, while firms can more readily acquire knowledge about new technologies and business practices in a larger market (Andersson & Karlsson, 2007; Audretsch *et al*., 2015; Glaeser *et al*., 2012). In this context, the pre-existence of these spatial arrangements is crucial for successful entrepreneurial discovery and implementation. In cities, this 'entrepreneurial base' is already functional, increasing the likelihood of successfully implementing a business due to ready access to key inputs. Furthermore, besides the advantages offered by urbanization, the spatial sorting of people and economic activities could also explain high start-up rates in urban areas (Hans & Koster, 2018).

Regarding high levels of regional business density in non-urban regions, there are six sufficient configurations (2a-2f) where two types of solutions are identified based on their main driver. In the absence of supportive policy the presence of finance becomes core (2a-2c) and, in the absence of supportive culture, the presence of policy becomes core (2d-2f). These findings suggest that since non-urban regions cannot fully benefit from the agglomeration of talent, and supporting services as predominantly urban regions can, additional efforts from the government such as improving policy to ease doing business or facilitate access to finance are required to foster higher business density.

As depicted in Table 4, five distinct paths lead to achieving a high level of high-growth firms in urban regions. Solution 3a is based on the presence of support and finance while solutions 3b to 3e are based on the absence of supportive policy combined with the strong presence of all the other factors in different combinations. These findings suggest that while agglomeration in predominantly urban regions facilitates quantity entrepreneurship, this effect alone may not be a sufficient catalyst for attaining high levels of high-growth firms. This conclusion aligns with other research indicating that the formation and scale-up activity of high-growth firms, often referred to as 'gazelles,' in developing countries require a highly supportive ecosystem where finance, knowledge, marketization in the local economy, and demand play crucial roles (Mason & Brown, 2014; Zhang & Roelfsema, 2020). For non-urban regions, three potential paths lead to the outcome, with the overarching role played by the presence of supportive culture and good access to the market, identified as core in all three solutions. The first path (4a) outlines a configuration where culture, support, human capital, and finance are

required when good access to finance is absent. Conversely, configurations 4b and 4c illustrate ways to reach the outcome in the absence of human capital.

Table 3. Configurations for achieving a high regional level of business density

Dimension	Urban	Non-Urban					
	1a	2a	2b	2c	2d	2e	2f
Culture	⊗	–	•	⊗	⊗	⊗	⊗
Supports	⊗	⊗	⊗	•	⊗	•	•
Human Capital	⊗	⊗	⊗	•	•	•	
Policy	⊗	⊗	⊗	⊗	●	●	●
Market	⊗	⊗		⊗	•	•	⊗
Finance	⊗	●	●	●	⊗	•	⊗
Raw coverage	0.384	0.235	0.154	0.143	0.087	0.138	0.141
Unique coverage	0.384	0.145	0.067	0.120	0.031	0.114	0.080
Consistency	0.895	1.000	1.000	1.000	0.898	0.989	0.894
Overall solution coverage	0.384	0.690	–	–	–	–	–
Overall solution consistency	0.895	0.970	–	–	–	–	–
Regions	El Oro, Santo Domingo, Guayas	Orellana, Napo, Carchi	Bolivar (EC), Napo	Zamora Chinchipe	Manabí	Pastaza, Tungu-rahua	Chimbo-razo, Ca-ñar

Source: own study.

Importantly, good access to the market, measured in this study by indicators of networking, export capacity, and the newness of production, emerges as the most critical factor for both types of regions. Its presence is core in three paths (solutions 3b, 3c, 3d) for urban regions and in all solutions for non-urban regions. This suggests that businesses in Colombia and Ecuador need to sustain their growth through external markets to become high-growth firms. Indeed, these results align with studies finding that in many developing countries factors such as export orientation are particularly relevant for the growth of new ventures because the generally small domestic markets within these countries cannot support a large number of high-growth firms serving only the local market (Lecuna *et al*., 2017). Therefore, a high capacity to access international markets and the ability to develop innovative products within a region become crucial for sustaining high growth.

The outcomes of this study can significantly contribute to enhancing the understanding of entrepreneurship policy optimization and ecosystem governance. Firstly, after recognizing that not all elements within an entrepreneurial ecosystem are equally important for achieving high levels of entrepreneurship, it becomes imperative for policymakers to design tailored strategies that align with the unique characteristics and requirements of each region. Rather than adopting generic policy approaches, such as blindly investing in boosting some ecosystem aspects or pursuing a balanced ecosystem where all dimensions perform at a high level, the focus should be on creating a supportive environment where the very specific needs, and the necessary elements in the region are addressed. Necessary conditions are vital, and other conditions cannot compensate for their absences.

Secondly, policy initiatives need to concentrate on formulating region-specific strategies by considering the unique combinations of factors that contribute to desired outcomes, such as high business density or the emergence of high-growth firms. Furthermore, the policymaking process should be flexible enough to adapt to the diverse needs of entrepreneurs across different regions, given that paths to high entrepreneurship levels vary between urban and non-urban areas. Resource allocation may need to be customized based on the urban-rural typology of each region. These findings align with existing research, suggesting that there is no universally applicable instrument guaranteeing success in increasing the entrepreneurship level. Decision-makers should tailor policies to support entrepreneurship development recognizing that different sets of instruments are required for rural and non-rural areas (Rodzinka *et al*., 2023; Skica & Rodzinka, 2021).

Table 4. Configurations for achieving a high regional level of high-growth firms

Dimension	Urban					Non-Urban		
	3a	3b	3c	3d	3e	4a	4b	4c
Culture	•	⊗	⊗	●	●	●	●	●
Supports	●	●	⊗	•	⊗	●	●	⊗
Human Capital	•	⊗	⊗	●	●	●	⊗	⊗
Policy	•	⊗	⊗	⊗	⊗	□	•	⊗
Market	□	●	●	●	⊗	●	●	●
Finance	●	●	⊗	⊗	⊗	⊗	●	●
Raw coverage	0.340	0.103	0.140	0.158	0.125	0.272	0.201	0.111
Unique coverage	0.270	0.025	0.050	0.070	0.074	0.245	0.170	0.096
Consistency	0.940	0.876	0.910	1.000	1.000	0.923	0.957	0.968
Overall solution coverage	0.620	–	–	–	–	0.543	–	–
Overall solution consistency	0.930	–	–	–	–	0.952	–	–
Regions	Santander, Cundinamarca, Risaralda	Norte de Santander	Magdalena	Atlántico	Bolívar (CO)	Nariño, La Guajira	Amazonas, Huila	Bolívar (EC)

Source: own study.

CONCLUSIONS

This study investigated the differences in the configuration of ecosystems associated with high levels of regional business density and high-growth firms in urban and non-urban regions in Colombia and Ecuador, employing NCA and fs/QCA. The findings indicated distinct necessary conditions and paths for entrepreneurship in urban and non-urban regions, supporting the main research proposition that entrepreneurial ecosystems operate differently in these settings.

Firstly, necessity analysis provided evidence to support the proposition that necessary factors for high levels of entrepreneurship differ between urban and non-urban regions. The NCA results revealed that no single condition was necessary for achieving high levels of regional business density. In contrast, achieving a high regional share of high-growth firms required the presence of several components. In urban regions, supportive culture, support, and access to finance were deemed necessary, while supportive entrepreneurial culture and good access to the market were found to be crucial for high-growth firms in non-urban regions. These findings agree with previous results showing that while all elements of an ecosystem are important for entrepreneurship, not all of them are always necessary. Secondly, sufficiency analysis unveiled various paths to attain high levels of entrepreneurship, providing evidence to support the proposition that different combinations of factors lead to high entrepreneurship levels in urban and non-urban regions. Notably, fostering high-growth firms in non-urban regions is relatively more challenging than in urban regions since all the paths include the presence of high levels in four out of the six ecosystem dimensions. This finding is consistent with research that highlights that the challenges of fostering entrepreneurship in economically weak places are much greater operationally than in already prosperous places (Ortega-Argilés, 2022). These findings also corroborate previous research suggesting that thriving entrepreneurial communities can be developed in small towns that lack certain elements traditionally associated with entrepreneurial ecosystems (Roundy, 2017). This study revealed how each ecosystem 'finds its own way' to function with a unique combination of elements, and non-urban ecosystems can function and succeed even without having all the 'classic' pillars of EEs found in large metropolises.

This study's academic implications contribute to the growing body of literature on entrepreneurial ecosystems in developing economies, particularly in the South American context. Finally, some limitations should be acknowledged, including the broad definition of urban-non-urban typology based on

the share of rural population and the study's geographical focus on Colombia and Ecuador. In this regard, the practical application of the results of the research can only be directly applied among regions within these two countries. I also acknowledge that although QCA technical decisions were based on previous empirical evidence and theoretical arguments, the result of fs/QCA analysis are delimited by my choices of case and conditions and fuzzy set calibration thresholds. Future research could enhance the validity of these QCA results by employing a bigger sample size, different or additional ecosystem components, or data from more specific geographical units such as cities, smaller cities, or towns. It would also be interesting to repeat this study using coincidence analysis (CNA).

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