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Unveiling the mechanisms that trigger entrepreneurship. An application of institutional theory

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Abstract

Purpose: This study aims to investigate the determining factors of entrepreneurship and the significance of the institutional framework. It seeks to identify the mechanisms through which regulatory, normative, and cognitive dimensions interact to impact entrepreneurial activity.

Design/methodology: Utilizing Set-Theoretic Multi-Method Research (SMMR), this study analyzes data across 47 countries. It integrates Qualitative Comparative Analysis (QCA) and process-tracing to reveal the causal mechanisms connecting the institutional framework to entrepreneurship.

Findings: The results shed light on the specific mechanisms that lead to the presence or absence of entrepreneurial activity.

Research Limitations: One limitation of this study is its reliance on data from 47 countries, which might not fully represent the global diversity of institutional frameworks. The study's findings may be influenced by the specific time-period and sample used, limiting generalizability.

Practical implications: The study offers valuable insights for policymakers by highlighting effective approaches to stimulate entrepreneurship and fill institutional voids. It underscores the critical role of mentorship, education, and initiatives aimed at enhancing entrepreneurial skills and capabilities.

Social Implications: The study highlights the transformative power of entrepreneurship in driving social transitions and economic growth. It underscores the significance of both formal and informal institutions in fostering entrepreneurial activity. Policymakers should consider

incorporating entrepreneurship policies into broader legislation to promote economic development and competitiveness.

Originality: The study contributes to the literature by providing new insights into the relationship between entrepreneurship and the institutional framework, emphasizing the importance of considering multiple dimensions and their interactions.

Keywords: mechanism; SMMR; formal institutions; informal institutions.

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1. Introduction

Entrepreneurship is a multifaceted phenomenon that extends beyond the purview of individual entrepreneurs, deeply rooted within the institutional framework comprising formal and informal institutions, along with their cognitive, regulatory, and normative dimensions (Li *et al*., 2020; Camelo-Ordaz *et al*., 2020; Urban, 2018). These frameworks significantly influence entrepreneurial ventures (Huarng and Yu, 2021; Urban, 2018; Urbano *et al*., 2020; Zhao *et al*.; 2023). Regardless of the harshness or support of formal institutional environments, entrepreneurship always involves uncertainty. Thus, local networks and investments in them as informal institutions can be considered a valid way of receiving support and navigating contexts (Ivy and Perényi, 2020; Urbano *et al*., 2024; Webb *et al*., 2020). Therefore, the call for integrative frameworks to elucidate entrepreneurship through the institutional lens has never been so critical (Bağış *et al*., 2023; Xie *et al*., 2021). This framework provides a better understanding of how entrepreneurship develops in different institutional contexts (Urbano *et al*., 2024).

While correlations have been identified between the explanatory components of entrepreneurship, there is less evidence of its causal relationships. It is conceptually decisive to

identify the conditions under which the existence of a causal association between the variables can be affirmed (Anderson *et al*., 2022). However, beyond mere causality, a comprehensive understanding mandates the identification of underlying causal mechanisms (Linder *et al*., 2023), which are pivotal for addressing institutional voids and developing strategies to promote entrepreneurship (Ruzzene *et al*., 2023; Webb *et al*., 2020). According to Makadok *et al*. (2018), any theory can be seen as a combination of eight parts: (1) a research question, (2) a way of theorizing, (3) a level of analysis, (4) a phenomenon, (5) a causal mechanism, (6) a set of constructs or variables, (7) a set of boundary conditions, and (8) a set of outcomes such as explanations, predictions or prescriptions (Wales *et al*., 2023). One of the main contributions to a theory can be to focus on introducing or importing a causal mechanism that has not been previously recognized (Makadok *et al*., 2018). Especially in the case of entrepreneurship where the mechanisms have barely been addressed (Anderson *et al*., 2022; Wales *et al*., 2023). Therefore, there is a lack of studies that validate the interdependencies and causal mechanisms that determine entrepreneurship (Zhang et al., 2023).

Recent literature highlights the need for a mechanism-centered approach to understand the impact of external factors on entrepreneurial processes (Schade and Schumacher, 2022). The work by Alterskye *et al*. (2023) enriches this discourse by offering a novel methodological avenue for exploring the facilitators and barriers to entrepreneurial activity in varied contexts. This aligns with the aim of our study to define the causal mechanisms influencing successful entrepreneurship, advocating mechanism-based explanations to understand entrepreneurship dynamics (Linder *et al*., 2023; Ruzzene *et al*., 2023; Webb *et al*., 2020). However, the current literature lacks frameworks that capture the causal links between these processes (Johnson and Schalteger, 2020).

Similarly, novel methodologies have been called for in the study of the impact of institutions on entrepreneurship (Webb *et al*., 2020). Qualitative research stands as a cornerstone for apprehending the causal complexity inherent in entrepreneurial activities (Xie *et al*., 2021; Van Burg *et al*., 2022). Qualitative Comparative Analysis (QCA) is a case-centered method that enables comparative research while preserving the richness of the qualitative approach in entrepreneurship studies (Douglas *et al*., 2020; Waldkirch *et al*., 2021). QCA reveals different entrepreneurial pathways hidden in the data (Van Burg *et al*., 2022). Without additional within-case process-tracing analysis using Set-Theoretic Multi-Method Research (SMMR), establishing causal effects based on cross-case data analysis is limited (Beach, 2016; Williams and Gemperle, 2016). Process-tracing is a qualitative method that identifies causal mechanisms and links case context to the outcome (Baird *et al*., 2019). Thus, a multi-method research design should use QCA as one phase supplemented by process-tracing (Schneider, 2018; Williams and Gemperle, 2016). SMMR, the integration of QCA and process-tracing, presents a robust framework for identifying causal mechanisms. This multi-method research design, as advocated by Alterskye *et al*. (2023), not only echoes but significantly contributes to our study's methodological rigor.

Despite the key role of entrepreneurs in creating new economic activities, little attention has been paid to their transformative capacity (Huarng and Yu, 2021; Kuckertz *et al*., 2015) in driving social transitions through the introduction of new practices that deviate from the established norms of socio-technical regimes (Hörisch *et al*., 2017). Entrepreneurship is a complex and multifaceted phenomenon that connects social and economic dimensions between entrepreneurial processes, market transformations, as well as large-scale social developments (Johnson and Schaltegger, 2020; Medina-Molina *et al*., 2023). We can consider entrepreneurship an activity modeled by the interaction of factors at multiple levels of analysis (Kryeziu *et al*., 2023). To address this complexity, the Multilevel Perspective (MLP) and the

nuanced insights from Alterskye *et al*. (2023) provide compelling frameworks for understanding entrepreneurship as a dynamic process that operates across micro (niche), meso (regime), and macro (landscape) levels (Sorrell, 2018). Then, to fully capture this process, it is necessary to use multilevel models that adopt a configurational approach, examining both personal and contextual variables to explain entrepreneurship (Kraus *et al*., 2018; Medina-Molina *et al*., 2023).

By adopting a MLP, our study seeks to illuminate the combined conditions explaining entrepreneurial activity, thereby advancing our understanding of the entrepreneurship dynamics in a nuanced and integrative manner; this stands as one of our primary contributions. Moreover, our study is among the first to explore the mechanism driving entrepreneurship using SMMR, making a significant stride towards methodological innovation and comprehensive analysis. Likewise, it responds to the evidence needed from countries with different levels of development (Bağış *et al*., 2023).

2. Theoretical Background

2.1. Institutional environment and entrepreneurship

Entrepreneurship is widely recognized as a crucial driver for innovation and economic development, fostering new business ventures through the strategic use of innovation, creativity, and entrepreneurial skills (Diandra and Azmy, 2020; Hammerschmidt *et al.*, 2022; Zhuang and Sun, 2023). The entrepreneurial process is a dynamic interplay of internal and external factors, such as the institutional environment (Kryeziu *et al*., 2023). While individual capabilities and attitudes towards entrepreneurship -internal factors- are vital (Huarng and Yu, 2021; Novejarque-Civera *et al*., 2021; Schade and Schumacher, 2022), the institutional environment, which encompasses formal and informal frameworks, play and equally crucial role in shaping entrepreneurial activities (Aloulou, 2022; Alterskye *et al*., 2023; Camelo-Ordaz *et al*., 2020; Urban, 2018; Hörisch *et al*., 2017; Maroufkhani *et al*., 2018; Sendra-Pons *et al*.,

2022; Zhuang and Sun, 2023). Institutions contain the humanly devised incentives and constraints to shape human interaction (Zhang et al., 2023).

To analyze the influence of institutional factors on entrepreneurship, two main theoretical frameworks are commonly employed. The first, the economic perspective, as defined by North (1990), views institutions as the "rules of the game". This perspective includes formal frameworks such as rules and regulations that facilitate interactions and collaboration towards common goals, and informal frameworks comprising values, norms, and beliefs that guide human behavior (Díez-Martín *et al*., 2022; Xie *et al*., 2021). These institutions regulate social and economic activities, influencing organizational behavior and human interactions. The second framework, the sociological perspective, as outlined by Scott (1995), classifies institutions into regulatory, normative, and cognitive constructs that collectively contribute to societal stability (Kryeziu *et al*., 2023). There is a significant correlation between North´s (1990, 2005) classification of formal and informal institutions and Scott´s (1995) dimensions of regulatory, cognitive, and normative constructs (García-Cabrera and García-Soto, 2023). These correlations highlight the multifaceted nature of institutions and their comprehensive impact on entrepreneurial activities.

The regulatory dimension is linked to formal institutions and includes "formal rules as well as incentives that constrain and regularize entrepreneurial behavior" (Seelos *et al*., 2010, p.335). In contrast, the cognitive and normative dimensions are part of informal institutions (Scott, 1995). The cognitive dimension involves the knowledge, skills and shared mental models within a community (Seelos *et al*., 2010), while the normative dimension reflects societal admiration for entrepreneurship and innovation (Pérez-Macías *et al*., 2021). Collectively, these dimensions influence entrepreneurial behavior through their impact on cognitive factors, attitudes and norms, and the accessibility of resources (Zhao *et al.* 2023). North (2005) emphasizes the need for the co-evolution and alignment of these frameworks to encourage

societal progress through the promotion of entrepreneurship. Studies consistently demonstrate the impact of the institutional environment on entrepreneurial activity (Urban, 2018; Zhuang and Sun, 2023), highlighting the role of both formal and informal institutions in regulating economic and social activity, and in shaping shared beliefs, expectations, and organizational practices (Li *et al*., 2020; Sahasranamam and Nandakumar, 2020; Schade and Schumacher, 2022; Webb *et al*., 2020; Xie *et al*., 2021; Zhao *et al*., 2023).

2.2.Formal institutions and the development of entrepreneurship

Formal institutions, such as legal and regulatory frameworks, significantly impact entrepreneurial activity by either fostering or hindering it (Aidis *et al*., 2008; Sendra-Pons *et al*., 2022; Webb *et al*., 2020; Zhuang and Sun; 2023). Within these formal institutions, the regulatory dimension is often associated with a nation's legal and governance frameworks, which are crucial for shaping the entrepreneurial landscape (García-Cabrera and García-Soto, 2023; Li *et al*., 2020; Seelos *et al*., 2010; Xie *et al*., 2021). Government policies, entrepreneurship programs, and infrastructure (GP) reduce the complexity of the entrepreneurial process and create opportunities for new venture creation (Bowen and De Clercq, 2008; Díez-Martín *et al*., 2022; North, 1990; Stenholm *et al*., 2013).

However, the relationship between formal institutions and entrepreneurial activity is complex and multifaceted, indicating that the influence is not always straightforward. For example, Uriarte *et al*. (2023) found that formal institutions, such as government policies and programs, exhibit a neutral effect when comparing failed entrepreneurs with novices. This suggests that governmental support for entrepreneurship might not uniformly facilitate re-entry after failure, highlighting the need to examine the nuanced impacts of formal institutions on entrepreneurship in varied contexts (Uriarte *et al*., 2023).

Moreover, less regulation does not necessarily lead to more innovation-rich entrepreneurial activity. Opportunity-driven entrepreneurship, often associated with greater innovation and

economic growth, may thrive in supportive regulatory environments. In contrast, necessity-driven entrepreneurship might be more prevalent in less regulated environments where individuals are compelled to start businesses out of economic necessity rather than opportunity. Studies have shown that developed countries with more regulations tend to have lower entrepreneurial activity, while less regulated systems often promote more entrepreneurship (Urbano *et al*., 2020). This apparent contradiction suggests that the mere presence or absence of regulation is not the sole determinant of entrepreneurial vibrancy. For instance, the quality of laws and regulations, as well as the predictability of the regulatory framework, significantly influences firm entrepreneurial behavior. Enhanced regulations often lead to behavioral modifications within firms, fostering opportunity-driven entrepreneurship in high-income, low-corruption countries (Kryeziu *et al*., 2023).

Studies indicate that in countries with low per capita incomes and high levels of corruption, the absence of a robust rule of law and simple procedures encourages entrepreneurship (Sendra-Pons *et al*., 2022). Conversely, in countries with higher income levels and lower corruption, a robust institutional framework characterized by effective government, regulatory quality, a strong rule of law, and easy access to credit fosters opportunity-driven entrepreneurship (Bosma *et al*., 2018; Díez-Martín *et al*., 2022; Li *et al*., 2020) While it is generally observed that developed countries with more regulations tend to have lower entrepreneurial activity, less regulated systems often promote more entrepreneurship (Urbano *et al*., 2020)

Furthermore, the perception of greater support for entrepreneurship can negatively influence entrepreneurial activities due to factors such as excessive regulations, deficient financial systems, and low confidence in institutional frameworks (Boudreaux *et al*., 2019; Li *et al*., 2020; Madzikanda *et al*., 2021; Qingqing *et al*., 2021). This complex relationship underscores the importance of a nuanced understanding of how regulatory dimensions may drive or hinder entrepreneurship, depending on the context (Bosma *et al*., 2018; Zhao *et al*., 2023).

2.3.Informal institutions and the development of entrepreneurship

Informal institutions, which encompass unwritten rules, cultural norms, and social networks, are pivotal in shaping the behaviors and interactions of individuals within a society (Harraf *et al*. 2021). These elements provide a critical socio-cultural framework that significantly influences whether entrepreneurship flourishes or falters (Aloulou, 2022; Urban, 2018). For instance, Uriarte *et al*. (2023) highlight how informal institutions can significantly influence entrepreneurial activity, especially in the context of re-engaging in entrepreneurship after failure. Furthermore, Liedong *et al*. (2020) emphasize that institutional voids, defined as the absence or inefficiency of market-supporting institutions, significantly impact firms' strategic decisions, including the resource commitment in emerging markets. These voids can increase transaction const and create economic inefficiencies, further influencing the entrepreneurial landscape.

Informal institutions encompass cognitive and normative dimensions, which are integral to business practices that encourage informal ways of operation (Donnelly and Manolova, 2020; García-Cabrera and García-Soto, 2023). The cognitive dimension entails the interpretative framework individuals use to make judgments and decisions about business opportunities, known as entrepreneurial cognitions (Mitchel *et al*., 2002; Xie *et al*., 2021). This dimension is essential for understanding the entrepreneurial process as it shapes perceived opportunities (PO), perceived capabilities (PC), and entrepreneurial intentions (EI), serving as foundational elements in the entrepreneurial decision-making process (Boudreaux *et al*., 2019). The ability to detect opportunities is fundamental to the entrepreneurial process, facilitating the development of a clearer vision and goals that strengthen entrepreneurial activity (Boudreaux *et al*., 2019; Camelo-Ordaz *et al*., 2020; Hassan *et al*., 2020; Schade and Schuhmacher, 2022). Individuals adept at identifying business opportunities tend to develop a greater interest in

entrepreneurship, thereby increasing their entrepreneurial intentions (Camelo-Ordaz *et al*., 2020; Hassan *et al*., 2020) and subsequent entrepreneurial activity (Schade and Schuhmacher, 2022).

Additionally, the decision to take advantage of a business opportunity is influenced by an individual's beliefs about whether they can achieve the expected results (Camelo-Ordaz *et al*., 2020; Li *et al*., 2020;). This belief is positively related to their entrepreneurial intentions (Boudreaux *et al*., 2019; Schade and Schuhmacher, 2022; Sedeh *et al*., 2020). According to Bosma *et al*. (2018), entrepreneurial activity not only arises from the PO, but also from the interaction between PO and PC, and their combined influence on EI, ultimately leading to entrepreneurial action.

Moreover, the normative dimension, which includes cultural values and social norms, plays a crucial role in shaping entrepreneurial behavior (Junaid *et al*., 2020). Cultural Social Norms (CSN) refer to the unwritten symbols, conventions, and shared values in a society (Scott, 1995). These norms influence the recognition and promotion of entrepreneurship, acting as guiding principles that align entrepreneurial initiatives with the prevailing cultural context (Maurer *et al*., 2022; North, 1990; Pérez-Macías *et al*., 2021; Qingqing *et al*., 2021; Xie *et al*., 2021).

In countries where formal institutions are less developed, the influence of CSN on Total Early-Stage Entrepreneurial Activity (TEA) may surpass the impact of regulatory dimension (Bosma *et al*. 2018; Pérez-Macías *et al*., 2021; Urbano *et al*., 2020). However, the extent of this influence is debated, with some studies suggesting a direct relationship while others propose an indirect or no influence at all (Pérez-Macías *et al*. 2021).

2.4.The interaction of formal and informal institutions in the development of entrepreneurship

Different combinations of institutional conditions may stimulate entrepreneurship in different contexts (Sendra-Pons *et al*., 2022). North (2005) emphasizes the need to ensure that both formal and informal institutions work synergistically to create a conducive environment for entrepreneurial ventures. In this line, several studies underline that the interaction between personal and contextual factors is indispensable in the emergence and development of entrepreneurship. This theoretical framework illustrates the complexity of entrepreneurship, where personal aspirations and the surrounding institutional context merge to influence the trajectory of entrepreneurial ventures (Audertsh *et al*., 2022; Schade and Schumacher, 2022; Urban 2018). According to Liedong *et al*. (2020), the interplay between formal and informal institutions, including the presence of institutional voice, can either facilitate or hinder entrepreneurial initiatives depending on the institutional context.

The dynamic interplay between formal and informal institutions significantly shapes the entrepreneurial landscape, impacting individuals' perceptions, beliefs, and ultimately, their decision to engage in entrepreneurial endeavors (Fuentelsaz *et al*., 2019). As North (1990) and Urbano *et al*. (2021) highlight, institutional frameworks play a crucial role in opportunity recognition processes, influencing individuals' motivation to pursue entrepreneurship. This influence is further nuanced by the compatibility and directionality of formal and informal institutions. Been therefore necessary to study the interaction between formal and informal institutions (Ivy and Perényi, 2020; Urbano *et al*., 2024; Webb *et al*., 2020). García-Cabrera and García-Soto (2023) suggest that formal institutions might not achieve their intended outcomes if they are not congruent with informal institutions. When aligned, these institutions collectively enhance their efficacy in fostering entrepreneurship, demonstrating the synergy between diverse institutional contents when oriented towards common entrepreneurial goals.

The role of institutions and culture in entrepreneurship has been extensively studied (Madzikanda *et al*., 2021; Urbano *et al*., 2021). However, it is important to recognize the

complexity and necessity of institutional support. Donnelly and Manolova (2020) advocate for the disaggregation of institutions to appreciate their varied effects on entrepreneurial activity, challenging the notion of institutions as a singular, homogeneous entity. This perspective aligns with calls by Boudreaux *et al*., (2019) and Li *et al*., (2020) for further exploration into the complex role of personality traits within the broader institutional context. The regulatory environment, alongside cultural norms and societal attitudes towards entrepreneurship, plays a key role in fostering or inhibiting entrepreneurial motivations and capabilities, which are essential for generating social value and economic growth (Urbano *et al*., 2020).

Fuentelsaz *et al*. (2019) contribute to this discourse by examining the nuanced interaction between formal institutions (such as laws and regulations) and informal institutions (such as cultural norms and values), which provides fertile ground for opportunity entrepreneurship. This interaction is crucial not only for the existence of entrepreneurship but also for the quality and direction of entrepreneurial ventures. Both formal and informal institutions offer the infrastructure and framework critical for nurturing entrepreneurial activity (Díez-Martín *et al*., 2022; Madzikanda *et al*., 2021; Maurer *et al*., 2022; Schade and Schumacher, 2022; Urbano *et al*., 2020; Zhao *et al*., 2023). The importance of formal and informal institutions may vary (Fuentelsaz *et al*., 2019; Schade and Schumacher, 2022), with informal institutions having a significant influence on entrepreneurial activity (Muhammad *et al*., 2016), while formal institutions may play a more influential role in different contexts (Zhao *et al*., 2023).

Scott (1995) outlines the dimensions through which institutions can condition societal actions by offering incentives and creating opportunities or constraints for future entrepreneurs (Díaz-Casero *et al*., 2013; Webb *et al*., 2020. The combination of formal rules and informal norms creates a complex matrix of possibilities that can either catalyze or stifle entrepreneurial initiatives. Recognizing the dynamic interaction between these two types of institutions is

crucial in understanding the development of entrepreneurship. Based on the above discussions, we propose the following:

Proposition 1a: The combination of formal and informal institutions causes the existence of entrepreneurship.

Proposition 1b: The combination of formal and informal institutions causes the negation of entrepreneurship.

3. METHOD

3.1.Causal mechanisms and entrepreneurship

Explaining 'how' and 'why' conditions and outcomes linked to entrepreneurship occur is critical to explaining its causal mechanisms and boundary conditions (Wales *et al*., 2023). While a causal mechanism explains 'how' and 'when' a condition explains an outcome, and is the lever that defines 'why' the relationships or effects proposed in the theory occur; boundary conditions suggest when a theory needs to be refined or incorporate exceptions to the rule (Makadok *et al*., 2018; Wales *et al*., 2023). Causal mechanisms unveil how psychological, social, economic, and physical forces interact, explaining macro processes and outcomes from micro level interactions. They demonstrate how entrepreneurial decision-making generates specific effects (Hedström and Ylikoski, 2010; Van Burg and Romme, 2014).

Identifying these mechanisms at different levels is crucial for entrepreneurship research (Johnson and Schalteger, 2020; Van Burg *et al*., 2022). Identifying mechanisms involves understanding how models and their components interact, revealing the principles of causality (Hedström and Wennberg, 2017; Hedström and Ylikoski, 2010; Van Burg and Romme, 2014). Different types of mechanisms operate at each stage of the causal chain, connecting macro, meso, and micro factors. Situational mechanisms link the context to opportunities, objectives, and beliefs that influence entrepreneurial behavior. Action-formation mechanisms explain how

socio-psychological elements shape behavior. Transformational mechanisms show the collective effect of individuals or firms on networks, markets, and the overall landscape (Cowen *et al*., 2022; El Baz *et al*., 2022; Hedström and Wennberg, 1998, 2017; Johnson and Schaltegger, 2020; Kim *et al*., 2016).

Among the studies that explain causation in entrepreneurship, Wurth *et al*. (2022) develop a theoretical framework based on a theoretical review. In this way, they consider the intra-layer causation between the elements of the ecosystem (interdependence of elements); upward causation, how elements lead to results; and the downward causation and feedback of the results that shape the entrepreneurial ecosystem and its elements. Likewise, they include the interaction between different ecosystems and the flow of information between them (Wurth et al., 2022). However, the complex interdependencies between the elements of the entrepreneurial system and downward causation have not been systematically tested. Therefore, the nature of interdependence and how interdependencies influence the entrepreneurial context are under-researched (Zhang *et al*., 2023).

3.2. Methodology

In many cases, analyses based on regression-based models examine net effects: whether an individual variable has a positive or negative effect on the dependent variable. In this way, the understanding of alternative patterns that explain the same result is limited (Tran *et al*., 2022). Since the use of regression-based methods maintains important voids in research (Bouhalleb and Haddoud, 2024), entrepreneurship research must explore interactions rather than linear relationships or isolated impacts, for which QCA's configurational approach is valuable (Bouhalleb and Haddoud, 2024; Nikou *et al*., 2022; Torres and Godinho, 2019; Tran *et al*., 2022). Employing QCA in entrepreneurship studies allows for a better understanding of the complexity of entrepreneurial phenomena (Nikou *et al*., 2022).

QCA responds to causal complexity, also called 'multiple conjunctural causation': conjunctural causation implies that effects are often produced by a combination of conditions; equifinality, indicates that several of these combinations may be sufficient for the same result; and causal asymmetry refers to the fact that necessary and sufficient causes generally work in one direction only (Haesebrouck and Thomann, 2022). QCA captures the holistic reasoning employed by entrepreneurs that often incorporates interactions between personal and contextual factors and identifies the multiple pathways that shape entrepreneurial behavior (Baroncelli *et al*., 2023; Bouhalleb and Haddoud, 2024). In this way, QCA can explain the dark side of entrepreneurship: the combinations of conditions that lead to the absence of its development. Likewise, it shows the way in which different combinations of conditions determine its development (Puumalainen *et al*., 2023). Therefore, QCA makes important contributions to research in the field of entrepreneurship by explaining the complexities underlying the entrepreneurial phenomenon and facilitating the development of more refined theories of entrepreneurship (Bouhalleb and Haddoud, 2024; Donaldson *et al*., 2024).

Under a mechanistic view of causation, QCA cannot be used to establish causal relationships, but rather to find potential causes, select appropriate cases for within-case analysis, and enable cautious generalizations about processes to reduced but limited sets of cases (Álamos-Concha *et al*., 2022; Haesebrouck and Thomann, 2022). Therefore, this work advocates SMMR, which implies the joint application of QCA and process-tracing—both of them set theory-based techniques—by combining their strengths and overcoming their limitations (Pattyn *et al*., 2022). QCA identifies relationship patterns among causally homogeneous cases, while process-tracing examines causal mechanisms through an in-depth study of unique cases (Beach and Rohlfing, 2018; Chien *et al*., 2022).

Process-tracing infers the existence of causal mechanisms from empirical evidence, establishing a connection between praxis, practices and practitioners. Process-tracing sheds

light on the generative power of practices; reconstructs the chain of causation that develops in a particular context and the result it leads to; and offers solid bases for political action and intervention (Ruzzene *et al*., 2023). Process-tracing allows for the analysis of sequences and interactions between events leading to the production of a result, and tracing a process that links a cause (or set of causes) to an outcome to infer the existence of a causal mechanism (Beach, 2016; Beach and Rohlfing, 2018; Chien *et al*., 2022; Ruzzene *et al*., 2023; Williams and Gemperle, 2016). Process-tracing is accepted as an within-case strategy for causal analysis. Its methodology is linked to the ontological assumption that social phenomena are generated by social mechanisms, and the epistemic assumption that the identification of such mechanisms allows the exploitation of the phenomenon of interest (Ruzzene *et al*., 2023). In fact, without process-tracing, solid causal inferences cannot be established and explained as to why and how X is a cause of Y (Beach and Rohlfing, 2018; Goertz and Mahoney, 2012, Johnson and Schalteger, 2020).

Under the condition-centered SMMR approach, the mechanism describes how causes (or sets of causes) produce results in specific contexts (Beach and Rohlfing, 2018; El Baz *et al*., 2022; Goertz and Mahoney, 2012; Schade and Schumacher, 2022; Van Burg and Romme, 2014). The context presents the precise circumstances under which a particular intervention is introduced, and the mechanism is the precise way in which this intervention works within a context to produce a certain outcome (Pattyn *et al*., 2022). Therefore, in designs that combine QCA with process-tracing, a distinction is made between causal and contextual conditions. Causal conditions trigger processes that relate to the outcome, while contextual conditions facilitate causal relationships (Álamos-Concha *et al*., 2022; Pattyn *et al*., 2022).

This study combines QCA and process-tracing through SMMR to comprehensively explore the existence of causal relationships between TEA and the conditions considered in the model. QCA analyzes complex entrepreneurship dynamics by testing theory-based conditions and

contextual influences (Kraus *et al*., 2018). It takes into account the relationships between personal traits, environmental factors, and TEA (Huarng and Yu, 2021), while addressing causal complexity (Ragin, 2008; Xie *et al*. 2021). QCA explains both the occurrence and non-occurrence of TEA (Huarng and Yu, 2021; Waldkirch *et al*., 2021; Woodside, 2016). On the other hand, process-tracing identifies and explains causal patterns within a case, providing insights into the mechanisms behind causal relationships (Hedström and Wennberg, 2017). By examining the context-outcome link, process-tracing, contributes to theory development (Baird *et al*., 2019). The combination of these methods offers a comprehensive understanding of entrepreneurial phenomena by integrating the breadth of QCA with the depth of process-tracing.

Combining these methods enhances the validity of the findings by triangulating the results from QCA with the in-depth insights from process-tracing. Process-tracing offers detailed insights into the contextual factors and sequences that drive entrepreneurial outcomes, complementing the cross-case patterns identified by QCA (Oana *et al*., 2021). Additionally, the integration of QCA with process-tracing allows for a thorough examination of effective elements and their mechanisms, providing a deeper understanding of the reasons behind unachieved outcomes, and elucidating the contexts in which various configurations emerge (Bazzan *et al*., 2022). Focusing exclusively on a single level analysis-whether cross-case or within-case-is inferior to the integrated analysis of both levels. A causal analysis requires both a cross-case effect (difference-making) and a within-case mechanism (Schneider, 2024).

*3.3.*Model, data, and sample

Sociotechnical systems comprise various elements, including infrastructures, technologies, actors, social norms, regulations, policies and cultural meanings (Hedegaard and Paulsson, 2020). These components co-evolve and generate mutual dependence and resistance to change (Geels, 2019; Sorrell, 2018). Transitioning from one sociotechnical system to another (a

sociotechnical transition) requires significant configuration changes (Hedegaard and Paulsson, 2020).

The MLP framework explains sociotechnical transitions, particularly in entrepreneurship (van Rijnsoever and Leenderste, 2020). It organizes the analysis in micro/niches, meso/regimes, and macro/landscapes. Niches are protected spaces where radical innovations can emerge (Kuckertz *et al*., 2015). Meso/Regimes are stable systems with dominant practices, and a set of rules followed by system actors (Hedegaard and Paulsson, 2020). Landscapes are external factors that drive transitions (Geels, 2019; Hedegaard and Paulsson, 2020). Transitions occur when the configurations of sociotechnical systems change, destabilizing regimes through interactions at different levels (Hedegaard and Paulsson, 2020; Kuckertz *et al*., 2020; Sorrell, 2018).

The MLP helps understand the necessary configurations for entrepreneurial transitions. Landscape provides a context that niche and regime actors cannot influence directly, but which can destabilize sociotechnical systems (Geels, 2019; Hedegaard and Paulsson, 2020; Sorrell, 2018). Regimes are characterized by stability, as they consist of shared beliefs, rules, norms and expectations that guide the behaviors of the actors in the system (Geels, 2019), while niches facilitate innovation due to weak, modifiable social relations, providing a high degree of uncertainty (Hedegaard and Paulsson, 2020; Kuckertz *et al*., 2015; Sorrell, 2018). Therefore, economic, social, technological and institutional development is crucial for niche innovation (Taalbi, 2021). The institutional framework plays a role in stimulating entrepreneurship and associated risks (Aloulou, 2022; Kuckertz *et al*., 2015; van Rijnsoever and Leendertse, 2020).

Figure I here

Starting from the MLP, our model (See Figure I) contemplates the regulatory dimension (measured through GP) at landscape level; the normative (measured through CSN) and cognitive (measured through PO, PC and EI) dimensions at regime level; and as a result, at

niche level, TEA. The study includes 47 cities worldwide, sampled from the GEM database in 2021. The sources used to measure the different elements are explained in Table I.

Table I here

4. Analysis and Results

A sequential SMMR approach was employed to analyze the data. The analysis consisted of two steps: QCA analysis, and process-tracing analysis.

4.1. QCA analysis

The QCA analysis was performed using R with the SetMethods package (Oana *et al*., 2021). Fuzzy set calibration was conducted by setting three calibration anchors: total inclusion (95th percentile), total exclusion (5th percentile), and crossover point (50th percentile) (Oana et al. 2021; Ragin, 2008). However, none of the conditions met the required thresholds to be considered a necessary condition (see Table II).

Table II here

For the analysis of sufficient conditions, QCA was used to identify the combinations of conditions that lead to both TEA and ~TEA. The truth table was calculated with a required consistency of 0.85 (Fiss, 2011; Ragin, 2008). To ensure valid results, a proportional reduction in inconsistency (PRI) above 0.5 was set to avoid simultaneous subset relations of attribute combinations in both TEA and ~TEA (Greckhamer *et al*. 2018). The parsimonious solution, which enables convincing causal inferences, was selected based on the regulatory theory of causation (Álamos-Concha *et al*. 2022; Schneider, 2018). Enhanced Standard Analysis was applied to address the presence of untenable reminders and strengthen the parsimonious solution (Haesebrouck, 2021; Schneider and Wagemann, 2012). The solutions explaining both TEA and ~TEA are shown in Table III and Table IV. The solution for TEA consists of four

terms: GP*PC*EI + ~PO*PC*EI + ~GP*PO*PC*CSN + GP*~PO*EI*CSN -> TEA. The solution for TEA returns high parameters (inclusion for sufficiency-InclS=0.845, proportional reduction of inconsistency-PRI=0.677, solution coverage-covS=0.721) and the composition of the four terms shows varying degrees of InclS, PRI, covS, and unique coverage-covU see Table III.

Table III here

The solution for ~TEA also consists of four terms: ~PC*~EI + ~EI*~CSN + ~GP*PO*~EI + GP*~PO*~PC*CSN -> ~TEA. Similarly to TEA, the solution for ~TEA returns high parameters (InclS=0.883, PRI=0.827, covS=0.821) and the composition of the four terms shows varying degrees of InclS, PRI, covS, and covU see Table IV.

Table IV here

4.2. Process-tracing analysis

Process-tracing is a strategy used for in-depth case analysis, involving the identification of different types of cases based on their membership scores in the outcome and the solution or term: typical cases, which are members of a solution term and consistent with a sufficiency statement; deviant consistency in kind, deviant coverage, and individually irrelevant (Williams and Gemperle, 2016). The process-tracing analysis begins with a single within-case analysis followed by a comparative within-case analysis. The SetMethods package in R Studio, specifically the smmr command, is used for systematic case identification. While the analysis covers all four terms of both solutions, only terms that reveal causal mechanisms, specifically the first term of TEA and ~TEA solutions, are presented.

The *single within-case analysis* in the SMMR approach starts by identifying typical cases, assuming ex-ante that they may contain the mechanisms (Beach and Rohlfing, 2018). To establish the existence of a mechanism in a specific term, the presence of the mechanism is

examined in each conjunct of the term, distinguishing the Focal Conjunct (FC) from the Complementary Conjunct (CC).

Table V here

To establish a mechanism, typical cases must be exclusively covered by the term. That is, if the case is typical only for the term GP*PC*EI or any other term in our solution. We introduce the principle of attribution for assessment where membership in the term is determined by the FC. The corridor test indicates that the inferential value of the mechanism increases as the difference between the membership of the typical case in the result and the term decreases. Process-tracing benefits from cases with similar membership in a term and the result. For details, refer to Schneider and Rohlfing (2019).

In the FC GP of the TEA solution (Table V), Chile hardly differs in its membership in the FC and CC, meeting the rest of the requirements outlined, while Uruguay has a higher inferential value not meeting the principle of attribution (membership in the term is determined by the CC). In FC EI and FC PC, Uruguay and Chile present very similar membership in the FC and CC in the FC PC.

In ~TEA (Table VI), Norway and Sweden meet all requirements in the first term, FC ~PC. In the second FC (~EI), Israel meets all the requirements, but Norway, despite meeting the principle of being uniquely covered, does not meet the principle of attribution. Consequently, we conclude the existence of typical cases in both the first term of TEA and ~TEA, as there is at least one typical case meeting all the requirements for each term.

Table VI here

Deviant consistency cases were identified (Table VII). These cases, explained by a term in the solution, do not exhibit the studied outcome. In the explanation of TEA, two deviant consistency cases, Oman (0.43) and South Korea (0.49), have a membership in the outcome

close to 0.5 (0.53 and 0.58, respectively). Iran is striking, as despite having a membership of 0.57 in the term ~PO*PC*EI, it has a low membership in the outcome (0.16). This implies that despite belonging to the solution, it is far from presenting the studied outcome. The last of the deviant consistency cases is very close to presenting the target outcome. For ~TEA, there are deviant consistency cases in all four terms that make up the solution. However, the case of South Africa stands out, explained by the first two terms (~EI*~CSN and ~GP*PO*~EI) with an outcome membership below 0.5 (0.32). The United States is a deviant consistency case in the ~GP*PO*~EI term with an outcome far from 0.5 (0.36). For the third term, the most deviant case is the Netherlands with an outcome close to 0.5 (0.47) and a term membership of 0.72. Lastly, Latvia is the most deviant case for the fourth term, with an outcome not too far from 0.5 (0.42) and a term membership of 0.59.

Table VII

Table VIII shows the deviant coverage cases, which are cases that, although presenting the desired outcome, are not explained by any of the terms in the solution. In other words, these are cases in which we cannot explain why the result occurred. Therefore, these cases are highlighted as potential areas for further analysis in search of terms that explain the generation of the studied outcome.

Table VIII

The *comparative within-case analysis* in the SMMR approach compares different types of cases. We compare typical cases with individually irrelevant cases (IIR) to determine if identified mechanisms trigger the causal relationship between the condition and the outcome. In order to make this assertion, it is necessary for the typical case to be uniquely covered and the IIR case to be globally uncovered. For term 1 in the explanation of TEA, FC GP pairs of (Chile-Egypt, Chile-Morocco), FC PC pairs (Uruguay-Japan, Uruguay-Israel), and FC EI pairs (Uruguay-Slovenia, Chile-Slovenia, Uruguay-Slovakia, Uruguay-Sweden) meet the conditions.

Table IX here

On the other hand, for the explanation of ~TEA, the FC~PC pair of Norway-SaudiArabia, Sweden-SaudiArabia, Romania-SaudiArabia, Norway-India, and Sweden-India), and FC~EI pair of Israel-Panama, Israel-Kazakhstan, Israel-Turkey, Israel-UnitedArabEmirates, and Israel-Qatar meet the requirements, as shown in Table X

Table X here

We continue with the comparison between two typical cases (See Table XI) to establish the possibility of extrapolating the mechanism to all typical cases explained by the solution. In order to make such a statement, the two typical cases must be uniquely covered. In the explanation of TEA, the three FCs (GP, PC and EI) meet the condition, and the Uruguay-Chile pair is involved in all of them.

Table XI here

In the comparison of typical case pairs for the explanation of ~TEA (Table XII), three pairs meet the conditions in the FC ~PC (Norway-Romania, Norway-Sweden, and Romania-Sweden), while in the FC ~EI, Norway-Israel meet the conditions.

Table XII here

Based on the aforementioned reasons, we confirm the presence of a causal mechanism in both TEA (GP*PC*EI term,) and ~TEA (~PC*~EI term) explanations. The findings support proposition 1a, as the combination of formal and informal institutions leads to TEA through a mechanism. In this case, only the cognitive dimension appears in informal institutions. However, proposition 1b is not accepted since the ~TEA explanation only identifies a mechanism involving the negation of informal institutions, specifically the cognitive dimension.

5. Discussion

This paper expands upon existing perspectives regarding the relationship between the institutional context and TEA. We investigate how regulatory, normative, and cognitive dimensions interact to explain TEA across 47 countries. By employing QCA and SMMR within a MLP, our study identifies four solutions that explain both the presence (TEA) and absence (~TEA) of entrepreneurial activity, as well as the mechanisms driving entrepreneurship. This demonstrates how the interplay between formal and informal institutions can either facilitate or hinder entrepreneurship (Liedong et al., 2020).

We identified four solutions explaining TEA. Three solutions (GP*PC*EI, ~GP*PO*PC*CSN, and GP*~PO*EI*CSN) involve both formal and informal institutions, whereas the second solution (~PO*PC*EI) only considers informal institutions. This finding aligns with Fuentelsaz et al. (2019), who stated that formal institutions can either reinforce or constrain the effects of informal institutions, with the latter becoming predominant when the former fail. This is consistent with literature suggesting that entrepreneurial activity is not solely dependent on either type of institution (Boudreaux et al. 2019; Schade and Schumacher, 2022). However, the first term, which includes conditions linked to both formal and informal institutions, reflects a synergistic behavior in explaining the development of entrepreneurial activity (García-Cabrero and García-Soto, 2023; North, 2025).

Kazakhstan's TEA is explained by three solutions: GP*EI*(PC+~PO*CSN) and ~PO*PC*EI. These findings align with the 2022 GEM report for Kazakhstan, which highlights the importance of GP, EI, and PC or CSN in promoting entrepreneurial activity despite the lack of PO (GEM, 2022). Government policies in Kazakhstan are highly valued, fostering positive perceptions of individual entrepreneurial abilities and supporting entrepreneurial activity even during economic downturns (GEM, 2022; Zhao et al., 2023). This underscores the importance of regulatory and cognitive dimensions in promoting entrepreneurship, consistent with Urban

(2018) and also how the supportive normative environment can enhance entrepreneurial outcomes.

Another explanation for the TEA in Kazakhstan focuses on cognitive factors: PC and EI, despite the negation of PO. This highlights the importance of maintaining high PC levels, as this will greatly encourage entrepreneurial activity among Kazakh citizens, aligning with Bourdeaux *et al*. (2019) and Camelo-Ordaz *et al.* (2020) who emphasize the role of PC and EI in driving entrepreneurship. In line with Urban (2018), the cognitive dimension is crucial for fostering entrepreneurial activity. Likewise, we confirm differences between South Korea and the United Arab Emirates in terms of how each of these three dimensions affects entrepreneurship. South Korea's TEA is explained by all three dimensions, while the United Arab Emirates' TEA relies on regulatory and cognitive dimensions.

Furthermore, the first solution (GP*PC*EI) also explains TEA in Uruguay, Qatar, United Arab Emirates and Chile. Qatar´s entrepreneurial ecosystem is notably supported by strong government policies and initiatives, as outlined in the Qatar National Vision 2030. This aligns with Costa and Pita (2020), who emphasize the crucial role of government support in promoting EI and capabilities. Robust GP in Qatar provide financial support, educational opportunities, and a favorable regulatory environment, which are critical for fostering entrepreneurial activities. Individuals with higher PC and EI are more likely to engage in entrepreneurship, highlighting the importance of an integrated approach involving both regulatory support and cognitive factors in Qatar (Costa and Pita, 2020).

Similarly, the second solution (~PO*PC*EI) explains TEA in Iran, Turkey and Panama. For instance, in Iran, EI are among the highest globally (GEM, 2022), driven by necessity rather than opportunity (Karimi *et al.,* 2019). This suggests that while PO may not be crucial, PC and EI are vital. For this reason, Karimi *et al.* (2019) recommend educators adopt action learning approaches to enhance entrepreneurial skills.

The third solution (~GP*PO*PC*CSN) explains TEA in the United States, Oman, Guatemala and Dominican Republic, emphasizing the normative and cognitive dimensions. This aligns with Urbano and Álvarez (2014), highlighting the importance of these dimensions especially in necessity-driven entrepreneurial environments like Guatemala and the Dominican Republic.

The explanation for ~TEA consists of four terms. The first (~PC*~EI) negates two cognitive elements and explains ~TEA in Greece, Slovakia, Russia, Romania, Hungary, Israel, United Kingdom, Japan, Germany, Luxembourg, France, Italy, Spain, Latvia, Colombia, Norway, Finland, Sweden, and Netherlands. The second term (~EI*~CSN) negates informal institutions (cognitive and normative) and explains ~TEA in Greece, Slovakia,Russia, Romania, Hungary, Cyprus, Poland, Croatia, South Africa, Japan, Germany, Luxembourg, France, and Slovenia. The third solution (~GP*PO*~EI) negates formal institutions (regulatory) and the cognitive dimension of informal ones explaining ~TEA in the United Kingdom, Poland, Croatia, South Africa, and the United States. The fourth solution (GP*~PO*~PC*CSN) denotes the presence of formal (regulatory) and normative institutions, and the negation of cognitive ones, explaining ~TEA in Italy, Spain, Latvia, Colombia and South Korea. The fourth term in both solutions shares GP~PO*CSN, differing only in EI for TEA (PRI=0.64) and ~PC for ~TEA (PRI=0.746). High PRI values in both terms demonstrate asymmetry (Xie *et al*. 2021).

It is noteworthy that countries such as Italy, Spain, Latvia, and Colombia are explained by both the first and the last solutions, highlighting the importance of cognitive factors. This confirms that the presence of cognitive factors is crucial for understanding the entrepreneurial process in specific contexts (Aloulou, 2022; Schade and Schumacher, 2022). In fact, Santos *et al.* (2017) show that the PC together with the EI, which are part of the first solution, are critical for the development of TEA in countries such as Greece, Spain, Italy, Sweden, Norway, and Finland. Furthermore, the combination of the negation of PC and PO drives to the negation of TEA aligning with Bosma et al., 2018 and Santos *et al.* (2017). Other factors, such as the negation

of EI or PC, play a key role in the absence of TEA development (Boudreaux *et al*., 2019; Li *et al*., 2020; Schade and Schumacher, 2022; Sedeh *et al*., 2020).

Additionally, Greece, Slovakia, Russia, Romania, Hungary, Japan, Germany, Luxembourg, and France are also present in two of the recipes for ~TEA, which are ~PC*~EI and ~CSN*~EI, showcasing equifinality (Ragin, 2008; Xie *et al*., 2021). Once again, the importance of the cognitive dimension in both cases can be observed, and its negation can explain ~TEA (Hassan *et al*., 2020; Schade and Schumacher, 2022).

Likewise, in certain contexts, the negation of the normative and cognitive dimensions can also explain ~TEA, aligning with Junaid *et al*. (2020 y Urbano y Álvarez (2014), which highlights the importance of both dimensions in the context of female entrepreneurship. In fact Pilková and Holienka (2017) confirm that in Slovakia the cultural and social norms generally do not stimulate but rather inhibit individuals from engaging in entrepreneurial efforts. This is due to a lack of societal support for entrepreneurial activities.

The causal mechanism explaining TEA incorporates both formal (regulatory) and informal (cognitive) institutions, aligning with Schade and Schumacher (2022), and emphasizes the importance of PC as a mechanism for driving entrepreneurial action. However, external factors should also be considered, as they can either promote or restrict entrepreneurial action. This finding is consistent with Díez-Martín *et al*. (2022) and Urbano and Álvarez (2014), highlighting the importance of aligning both types of institutions. Fuentelsaz *et al.* (2019), establish that formal institutions coexist with informal ones and that, together with their interdependencies, both must be considered for correctly interpreting the institutional dimension. The absence of CSN in this mechanism suggests that it influences TEA as a contextual condition. Pérez-Macías *et al*. (2021) support this notion, emphasizing the context-dependent nature of how the normative dimension impacts TEA.

Conversely, the causal mechanism explaining the absence of TEA considers only informal institutions, specifically the cognitive dimension. This underscores the significance of this dimension (Boudreaux *et al*., 2019; Xie *et al*., 2021) as it shapes individuals' decision-making regarding business opportunities. This aligns with Aloulou (2022), who shows the importance of the cognitive dimension in boosting perceived feasibility in countries where little is known about the regulations, procedures and support mechanisms provided to entrepreneurs. Other dimensions are considered passive in this regard, facilitating the causal relationship rather than acting as triggering factors for TEA (Álamos-Concha *et al*., 2022). In essence, while cognitive dimensions are relevant, they can be suppressed if passive contextual conditions are unfavorable (Boudreaux *et al*., 2019). Therefore, contextual differences should be carefully considered as they introduce variations in the causal mechanisms governing the relationship between conditions and outcomes (Álamos-Concha *et al*., 2022).

Deviant consistency cases and deviant coverage cases have been identified in relation to TEA. Oman (~GP*PO*PC*CSN) and South Korea (GP*~PO*EI*CSN) are deviant consistency cases, ranking 22/47 and 21/47 in terms of TEA, respectively. In Oman, missing conjuncts may include considerations of financing access, bureaucratic challenges, and taxes within the regulatory dimension. Their score of 17/19 (3.7) in economies with a GDP per capita of $20,000-$40,000 (GEM, 2022) supports this notion. Another potential cognitive variable is the fear of failure, where Oman scores 44/47. In South Korea, the missing conjunct could be related to the fear of failure (score: 46/47) or regulatory aspects such as infrastructure access (GEM, 2022). Regarding deviant consistency cases for ~TEA, Latvia (GP*~PO*~PC*CSN), Netherlands (~PC*~EI), and USA (~GP*PO*~EI) are notable. For these countries, GDP per capita, a landscape variable, could be a possible conjunct. Being categorized as A level, indicating a GDP per capita above $40,000 suggests a potential influence. The literature indicates that in developed economies, the relationship between TEA rates and GDP per capita

becomes less pronounced due to economic progress and improved institutions (Fernández-Serrano *et al*., 2018). However, in the case of South Africa, low GDP per capita is not the likely condition, as it is typically associated with high TEA levels in less developed economies (Novejarque-Civera *et al*., 2021). Instead, the missing conditions in South Africa seem to be more related to financing access and regulatory variables.

Regarding deviant coverage cases, we observe the following for TEA: South Africa (~GP*PO*PC~EI*~CSN), Sudan (~GP*PO*PC*EI~CSN), Colombia and Latvia (GP*~PO*~PC*~EI*CSN), the Netherlands (GP*PO*~PC*~EI*CSN), Saudi Arabia, Canada, and India (GP*PO*PC*~EI*CSN). These cases exhibit TEA results, but the conjunct they belong to in the truth table does not reach the required consistency level. Similarly, for ~TEA, the deviant coverage cases are Iran (~GP*~PO*PC*EI*~CSN), Morocco and Egypt (~GP*PO*PC*EI*~CSN), and Oman (~GP*PO*PC*EI*CSN). This indicates the need to assess whether these references can explain a certain result (TEA or ~TEA), despite the cases within these conjuncts not showing the studied result.

To analyze if these mechanisms trigger TEA and ~TEA, typical cases were compared with irrelevant cases. For TEA, we analyzed the FC GP Chile-Egypt and Chile-Morocco. It was found that in Chile, GP act as a trigger for entrepreneurial activity, aligning with the need for greater government support to boost entrepreneurship, such as financial aspects or market dynamics (GEM, 2022). In fact, Chile's efforts in this regard have positioned it at 3/47 in TEA, possibly due to its higher GDP per capita resources ($20,000-$40,000), enabling more entrepreneurial initiatives. Despite significant efforts in entrepreneurship support programs, Morocco and Egypt have lower GDP per capita (below $20,000), resulting in their TEA levels being ranked 30/47 for Egypt and 42/47 for Morocco (GEM, 2022).

For the FC PC, the pairs are Uruguay-Japan and Uruguay-Israel. Comparing a country with a GDP per capita of between $20,000-$40,000 (Uruguay) with two countries whose GDP per

capita is above $40,000 (Japan and Israel), it is observed that PC triggers TEA in Uruguay. This aligns with studies highlighting the cognitive dimension as a driving mechanism for entrepreneurship (Boudreaux *et al*. 2019; Xie *et al*., 2021). In fact, in the GEM report, Uruguay scores high in PC (score: 69.8), occupying the 9/47 position compared to Japan and Israel, which score 12.3 and 37.5, respectively, occupying the 47/47 and 29/47 positions (GEM, 2022). Finally, for the FC EI cases, the pairs are Uruguay-Slovenia, Chile-Slovenia, Uruguay-Slovakia, and Uruguay-Sweden. GEM data shows that Chile and Uruguay have higher scores (50.3 and 33 respectively) and occupy higher positions (7/47 and 13/47) compared to Slovenia (26/47), Slovakia (44/47), and Sweden (34/47). This translates into higher TEA levels in Chile and Uruguay (GEM, 2022), confirming that EI triggers TEA, consistent with studies emphasizing its importance (Perez-Macías *et al*., 2021). Thus, both formal and informal institutions act as triggers for TEA, aligning with previous research (Boudreaux *et al*., 2019; Schade and Schumacher, 2022).

To investigate the mechanisms triggering ~TEA, we analyzed typical cases with the IIR. We found that both ~PC and ~EI are triggers for ~TEA. In fact, if we compare the Norway-Romania pair for the FC ~PC, we see that Norway ranks very low at 41/47 in PC, resulting in a TEA ranking of 46/47, while Romania does not score as low in PC at 33/47, resulting in a TEA ranking of 28/47 (GEM, 2022). This again confirms the importance of the cognitive dimension, especially PC, in driving TEA (Sedeh *et al*. 2020), meaning that low levels of PC lead to low levels of TEA.

In the case of FC ~EI, one of the typical pairs and IIR is Norway-Israel. We see that their score in relation to EI is 4.9 and 17.5, respectively, resulting in rankings of 45/47 and 25/47. This, in turn, has a significant influence on TEA, implying that lower EI leads to lower TEA. Thus, Norway ranks 46/47 in TEA, while Israel ranks 29/47 (GEM, 2022). This confirms once again the importance of EI and how its negation can lead to low levels of TEA (Liñán and Fernandez-

Serrano, 2014; Perez-Macias *et al*., 2021). This confirms that the cognitive dimension can lead to the negation of TEA (Li *et al*. 2020) since it is the belief about what one can or cannot achieve that facilitates entrepreneurial action.

Finally, to assess the generalizability of results, we examine mechanisms in all typical cases of the solution. For this, the typical cases for each FC in TEA and ~TEA must be taken into account. Thus, for TEA, the typical cases of Chile-Uruguay for FC GP, FC PC, and FC EI demonstrate extrapolability. Both countries fall within the GDP per capita range of $20,000-$40,000 and show similar rankings in TEA-driving parameters. That is, in EI, Chile has a score of 50.3 and Uruguay of 33, occupying positions 7/47 and 13/47, respectively. Regarding PC, Chile scores 70.7 and Uruguay 69.8, occupying positions 8 and 9. Finally, in terms of GP, they have a position of 5.4 compared to Uruguay's 5.6 (GEM, 2022).

For ~TEA, typical cases for FC ~PC are Norway-Romania, Norway-Sweden, and Romania-Sweden and they support extrapolation. These countries show low TEA levels, with Norway ranking 46/47, Romania 28/47, and Sweden 31/47. They also have low levels of PC and EI scores, suggesting their influence on low TEA levels. In terms of PC, Norway scores 42, Romania 50, and Sweden 49.9 (rankings: 41, 33, and 34 out of 47), while EI scores are 4.9 for Norway, 9.7 for Romania, and 13.1 for Sweden (rankings: 45, 35, and 47, respectively) (GEM, 2022). These findings emphasize the importance of cognitive variables (PC and EI) and the relevance of informal institutions in certain contexts (Muhammad *et al*. 2016).

6. Conclusions and contributions

6.1. Conclusions

This paper aims to identify causal mechanisms underlying TEA and ~TEA, emphasizing their relevance (Rezzene *et al*., 2023; Webb *et al*., 2020). A multilevel model based on formal and

informal institutions reveals condition combinations and triggering mechanisms for TEA and ~TEA.

The results confirm the interrelationship between formal and informal institutions in explaining the presence of TEA and ~TEA. Different combinations of regulatory, cognitive, and normative elements are interrelated in offering these solutions. However, regulatory elements do not appear in any of the causal mechanisms identified. Thus, while the causal mechanism identified for TEA involves the interaction between regulatory and cognitive factors, the mechanism that explains ~TEA is composed exclusively of cognitive factors. Consistent with Schade and Schumacher's (2022) argument, TEA explanation links situational and action formation mechanisms. Contextual influence, such as government support, shapes beliefs and attitudes (Hedström and Wennberg, 2017; Kim *et al*., 2016). The explanation of ~TEA focuses on the cognitive dimension, emphasizing beliefs, opportunities, and goals, etc. (El Baz *et al*., 2022; Johnson and Schaltegger, 2020).

6.2. Contributions

Our study marks a significant advancement in the field of entrepreneurship by elucidating the intricate causal relationships between formal and informal institutions and their collective impact on (TEA). By employing QCA, we have uncovered the nuanced complexity of these relationships, demonstrating the principle of equifinality. Notably, our analysis reveals that TEA and ~TEA are explained by different combinations of conditions, a phenomenon we have identified as equifinality. This methodological approach has allowed us to identify four specific condition combinations that drive the presence or absence of TEA, thus providing robust evidence of conjunctural causation. Through Process-tracing, we identify causal mechanisms for TEA and ~TEA applicable across typical cases, shedding light on crucial aspects of entrepreneurial ecosystems that have been less explored previously. The application of SMMR

complements this analysis by emphasizing the role of contextual conditions in explaining TEA (CSN, PO) and ~TEA (CSN, GP, PO). These contextual conditions enable outcomes but do not form part of the triggering mechanism. The normative dimension serves as a contextual condition for TEA, while both the regulatory and normative dimensions are contextual conditions for ~TEA. The novel application of QCA alongside SMMR in a multimethod research design enables a nuanced understanding of the conditions under which institutions affect TEA. This methodological innovation represents a substantive leap forward in theorizing about entrepreneurship, allowing us to dissect the complex and often subtle interplay between various institutional factors and their joint impact on entrepreneurial outcomes.

Our investigation into the complex interplay between formal and informal institutions in entrepreneurship not only advances theoretical understanding but also yields significant practical contributions that align directly with Sustainable Development Goal (SDG) 8: Decent Work and Economic Growth. These insights are crucial for the development of supportive ecosystems that encourage entrepreneurial activities, thereby promoting sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all.

Our findings underscore the critical need for entrepreneurship support policies that go beyond providing direct aid to entrepreneurs. Effective policy-making must consider the intricate dynamics between formal institutions (e.g., support policies) and informal institutions (e.g., the cognitive and normative dimensions). Aligning policies with the cultural norms and social networks within a community significantly enhances the effectiveness of entrepreneurship programs. This alignment ensures that support mechanisms are not only accepted but actively embraced by the target community, leading to higher engagement and success rates in entrepreneurial ventures.

Recognizing the role of formal and informal institutional dimensions is paramount. Governments and policymakers need to prioritize the integration of support, mentorship, and educational programs that foster an individual's belief in their capabilities, thereby boosting entrepreneurial intentions. Consulting services aimed at aspiring entrepreneurs can further augment their skills and readiness for entrepreneurial endeavors. Moreover, the cognitive dimension, often overlooked, plays a vital role in shaping entrepreneurial outcomes. Neglecting this dimension can stifle entrepreneurial activity in many countries.

Although CSN may not trigger TEA or ~TEA, they facilitate outcomes as contextual conditions. Therefore, reinforcing the importance of entrepreneurship in societies is vital for economic growth and competitiveness. In fact, entrepreneurial policies should be included in legislation to increase growth. Addressing contextual conditions, particularly CSN, is crucial to avoid limiting the development of recipes explaining high TEA. However, a review of the support policies that are being carried out in different countries would also be of interest. This is because sometimes a low level of public programs is combined with informal institutions to explain high TEA, and high levels of public programs combine with informal institutions to explain ~TEA. We should remember that, according to the complexity that characterizes social phenomena, it is the combination of conditions that explains the generation of different phenomena, such as entrepreneurship.

Likewise, the application of process-tracing offers valuable insights for public managers by identifying deviant consistency and deviant coverage cases. Both types of cases should serve as a basis for policy reflection, encouraging an exploration of why certain countries, despite possessing the requisite combinations of conditions for high TEA, fail to achieve expected outcomes. That is, why do some countries that present the conditions that make up the explanation of TEA or ~TEA not return this result? In other words, we need to reflect on the

reasons why, while Oman and Iran present the required conditions, they do not present a high TEA.

In the same way, public managers could delve deeper into identifying additional solutions that might explain the high rates of TEA in some of the countries not covered by our solutions. They are referred to as deviant coverage cases, and such cases lead us to try to identify additional solutions that help us explain the development of factors as clearly determined by their context as entrepreneurship.

Although our study makes it possible to see heterogeneity among different economies, it is necessary to continue advancing in this regard. Therefore, further research should explore clusters within different economies to understand similarities and differences. Additionally, identifying new conditions to explain unachieved results and exploring additional recipes will enhance consistency in explaining TEA and non-TEA.

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Figure I. Model

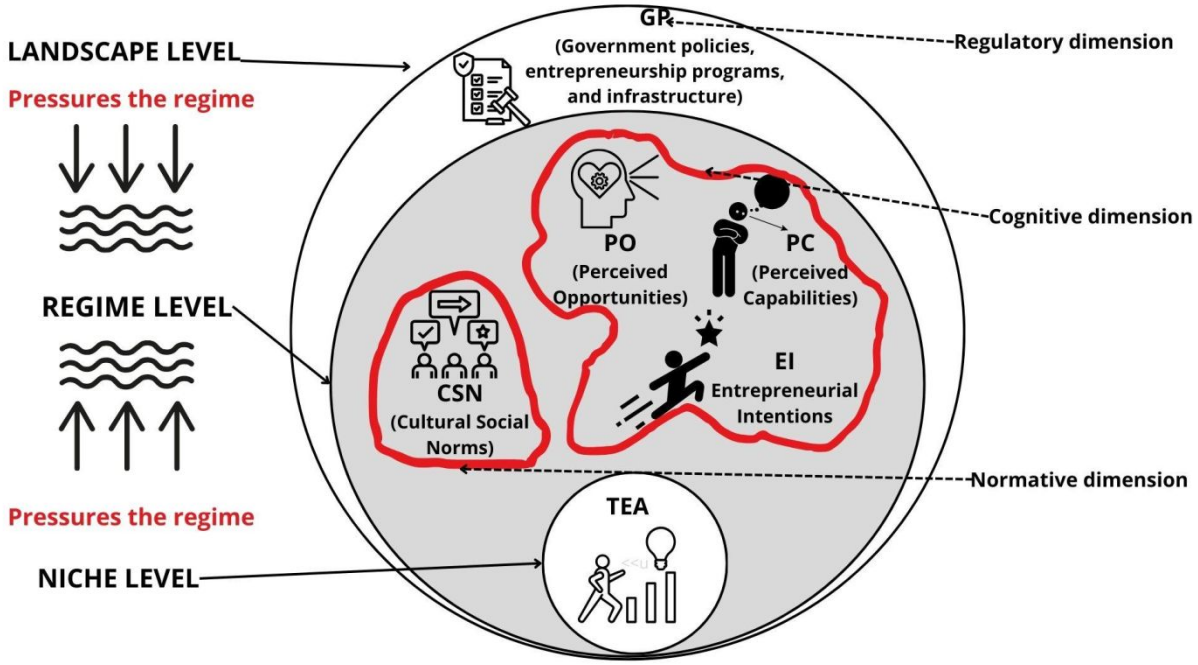

Table I. Sources used to measure the different elements

Landscape	Regulatory Dimension	GP	The presence and quality of programs directly assisting SMEs at all levels of government (national, regional, municipal)	GEM
Regime	Normative Dimension	CSN	The extent to which social and cultural norms encourage or permit actions that lead to new business methods or activities that can potentially increase personal wealth and income.	
	Cognitive Dimension	PO	Perceived Opportunities refers to the percentage of 18-64 population who see good opportunities to start a firm in the area where they live	
		PC	Perceived Capabilities relates to Percentage of 18-64 population who believe they have the required skills and knowledge to start a business	
		EI	Percentage of population aged 18-64 (excluding individuals engaged in any stage of entrepreneurial activity) who are latent entrepreneurs and intend to start a business within three years.	
Niche	Outcome	TEA	Total early-stage Entrepreneurial Activity Percentage of 18-64 population who are either a nascent entrepreneur or owner-manager of a new business	

GEM (Global Entrepreneurship Monitor):https://www.gemconsortium.org/data

Table III. Analysis of sufficient conditions (TEA)

	inclS	PRI	covS	covU	cases
GP*PC*EI	0.902	0.733	0.503	0.122	Kazakhstan; Uruguay; Qatar, United Arab Emirates, Chile
~PO*PC*EI	0.872	0.642	0.403	0.065	Iran,Turkey, Panama; Kazakhstan
~GP*PO*PC*CSN	0.869	0.676	0.393	0.127	United States; Oman, Guatemala, Dominican Republic
GP*~PO*EI*CSN	0.913	0.640	0.295	0.020	South Korea; Kazakhstan
Model	0.845	0.677	0.721		

inclS: inclusion for sufficiency
PRI: proportional reduction of inconsistency
covS: solution coverage
covU: unique coverage

Table IV. Analysis of sufficient conditions (~TEA)

	inclS	PRI	covS	covU	cases
~PC*~EI	0.924	0.887	0.715	0.132	Greece, Slovakia, Russia, Romania, Hungary; Israel; United Kingdom; Japan, Germany, Luxembourg, France; Italy, Spain, Latvia, Colombia; Norway, Finland, Sweden, Netherlands
~EI*~CSN	0.946	0.919	0.600	0.046	Greece, Slovakia, Russia, Romania, Hungary; Cyprus; Poland, Croatia, South Africa; Japan, Germany, Luxembourg, France; Slovenia
~GP*PO*~EI	0.867	0.673	0.292	0.002	United Kingdom; Poland, Croatia, South Africa; United States
GP*~PO*~PC*CSN	0.897	0.746	0.287	0.019	Italy, Spain, Latvia, Colombia; South Korea
Model	0.883	0.827	0.821		

inclS: inclusion for sufficiency
PRI: proportional reduction of inconsistency
covS: solution coverage
covU: unique coverage

Table V. Typical cases (TEA)								
Case	FC	Outcome	CC	Term	UniqCov	Best	MostTypFC	Rank
FC GP								
Chile	0.78	0.96	0.79	0.78	TRUE	0.58	FALSE	1
Kazakhstan	0.64	0.77	0.68	0.64	FALSE	0.62	FALSE	1
Uruguay	0.83	0.86	0.72	0.72	TRUE	0.34	TRUE	2
FC PC								
Uruguay	0.77	0.86	0.72	0.72	TRUE	0.46	TRUE	2
Chile	0.79	0.96	0.78	0.78	TRUE	0.56	FALSE	2
Kazakhstan	0.68	0.77	0.64	0.64	FALSE	0.54	FALSE	2
FC EI								
Uruguay	0.72	0.86	0.77	0.72	TRUE	0.56	FALSE	1
Chile	0.93	0.96	0.78	0.78	TRUE	0.28	TRUE	2
Kazakhstan	0.96	0.77	0.64	0.64	FALSE	0.74	FALSE	2

FC: Focal Conjunct
CC: Complementary Conjunct
UniqCov: Unique Coverage
MostTypFC: Most Typical Focal Conjunct

Table VI Typical cases (~TEA)								
Case	FC	Outcome	CC	Term	UniqCov	Best	MostTypFC	Rank
FC ~PC								
Norway	0.90	0.98	0.95	0.90	TRUE	0.26	FALSE	1
Sweden	0.75	0.83	0.84	0.75	TRUE	0.41	FALSE	1
Slovakia	0.90	0.93	0.95	0.90	FALSE	0.16	TRUE	1
Italy	0.86	0.96	0.91	0.86	FALSE	0.34	FALSE	1
Romania	0.75	0.80	0.90	0.75	FALSE	0.35	FALSE	1
France	0.78	0.89	0.81	0.78	FALSE	0.44	FALSE	1
Spain	0.76	0.94	0.93	0.76	FALSE	0.60	FALSE	1
FC ~EI								
Israel	0.72	0.80	0.94	0.72	TRUE	0.44	FALSE	1
Norway	0.95	0.98	0.90	0.90	TRUE	0.16	FALSE	2
Italy	0.91	0.96	0.86	0.86	FALSE	0.24	FALSE	2
Spain	0.93	0.94	0.76	0.76	FALSE	0.26	FALSE	2
France	0.81	0.89	0.78	0.78	FALSE	0.38	FALSE	2
Greece	0.91	0.94	0.66	0.66	FALSE	0.40	FALSE	2
Luxembourg	0.84	0.90	0.67	0.67	FALSE	0.45	FALSE	2

FC: Focal Conjunct
CC: Complementary Conjunct
UniqCov: Unique Coverage
MostTypFC: Most Typical Focal Conjunct

Table VII. Deviant Consistency Cases					
Cases	Term	TermMembership	Outcome	Best	MostDevCons
Outcome TEA					
Oman	~GP*PO*PC*CSN	0.53	0.43	1.37	TRUE
Iran	~PO*PC*EI	0.57	0.16	1.02	TRUE
South Korea	GP*~PO*EI*CSN	0.58	0.49	1.33	TRUE
Outcome ~TEA					
SouthAfrica	~EI*~CSN	0.64	0.32	1.04	TRUE
UnitedStates	~GP*PO*~EI	0.68	0.36	1.00	TRUE
SouthAfrica		0.60	0.32	1.12	FALSE
Netherlands	~PC*~EI	0.72	0.47	1.03	TRUE
Latvia		0.65	0.42	1.12	FALSE
Colombia		0.56	0.40	1.28	FALSE
Latvia	GP*~PO*~PC*CSN	0.59	0.42	1.24	TRUE
Colombia		0.56	0.40	1.28	FALSE
MostDevCons: Most Deviant Consistency					

Table VIII. Deviant Coverage Cases											
Case	SolM	GP	PO	PC	EI	CSN	RowM	Out	Best	MostDevCv	ConsTT
Outcome TEA											
SouthAfrica	0.36	0	1	1	0	0	0.60	0.68	0.40	TRUE	TRUE
Sudan	0.10	0	1	1	1	0	0.88	0.98	0.12	TRUE	TRUE
Colombia	0.40	1	0	0	0	1	0.56	0.60	0.44	FALSE	TRUE
Latvia	0.29	1	0	0	0	1	0.59	0.58	0.41	TRUE	FALSE
Netherlands	0.15	1	1	0	0	1	0.72	0.53	0.28	TRUE	FALSE
SaudiArabia	0.29	1	1	1	0	1	0.71	0.76	0.29	TRUE	TRUE
Canada	0.47	1	1	1	0	1	0.53	0.78	0.47	FALSE	TRUE
India	0.42	1	1	1	0	1	0.58	0.54	0.42	FALSE	FALSE
Outcome ~TEA											
Iran	0.43	0	0	1	1	0	0.57	0.84	0.43	TRUE	TRUE
Morocco	0.13	0	1	1	1	0	0.59	0.93	0.41	TRUE	TRUE
Egypt	0.08	0	1	1	1	0	0.55	0.82	0.45	FALSE	TRUE
Oman	0.16	0	1	1	1	1	0.53	0.57	0.47	TRUE	TRUE

SolM: Solution Membership
RowM: Row Membership
Out: Outcome
Best: Best Solution
MostDevCV: Most Deviant Coverage
ConsTT: Consistency Truth Table

Table IX. Comparative analysis Typical-IIR (TEA)					
Focal Conjunct GP					
Typical	IIR	UniqCov	GlobUncov	Best	PairRank
Chile	Iran	TRUE	FALSE	1.16	1
Chile	Oman	TRUE	FALSE	1.74	1
Chile	Egypt	TRUE	TRUE	1.26	1
Chile	Morocco	TRUE	TRUE	1.32	1
Kazakhstan	Iran	FALSE	FALSE	1.28	1
Focal Conjunct PC					
Uruguay	SouthKorea	TRUE	FALSE	1.67	2
Chile	SouthKorea	TRUE	FALSE	1.77	2
Kazakhstan	SouthKorea	FALSE	FALSE	1.77	2
Uruguay	Japan	TRUE	TRUE	1.37	5
Uruguay	Israel	TRUE	TRUE	1.39	5
Focal Conjunct EI					
Uruguay	Slovenia	TRUE	TRUE	1.37	1
Chile	Slovenia	TRUE	TRUE	0.85	2
Kazakhstan	Slovenia	FALSE	TRUE	1.19	2
Uruguay	Slovakia	TRUE	TRUE	1.51	3
Uruguay	Sweden	TRUE	TRUE	1.56	3
IIR: Individual Inclusion Ratio UniqCov: Unique Coverage GlobUncov: Global Uncoverage					

Table X. Comparative analysis Typical-IIR (~TEA)					
Focal Conjunct ~PC					
Typical	IIR	UniqCov	GlobUncov	Best	PairRank
Norway	SaudiArabia	TRUE	TRUE	1.00	1
Sweden	SaudiArabia	TRUE	TRUE	1.19	1
Romania	SaudiArabia	TRUE	TRUE	1.22	1
Norway	India	TRUE	TRUE	1.45	1
Sweden	India	TRUE	TRUE	1.64	1
Focal Conjunct ~EI					
Israel	Panama	TRUE	TRUE	1.69	3
Israel	Kazakhstan	TRUE	TRUE	1.72	3
Israel	Turkey	TRUE	TRUE	1.92	3
Israel	UnitedArabEmirates	TRUE	TRUE	1.98	3
Israel	Qatar	TRUE	TRUE	2.15	3
IIR: Individual Inclusion Ratio UniqCov: Unique Coverage GlobUncov: Global Uncoverage					

Table XI. Comparative analysis Typical1-Typical2 (TEA)					
Typical1	Typical2	UniqCov1	UniqCov2	Best	PairRank
Focal Conjunct GP					
Chile	Kazakhstan	TRUE	FALSE	1.40	1
Uruguay	Chile	TRUE	TRUE	1.54	3
Uruguay	Kazakhstan	TRUE	FALSE	1.08	3
Focal Conjunct PC					
Uruguay	Chile	TRUE	TRUE	1.70	4
Uruguay	Kazakhstan	TRUE	FALSE	1.26	4
Chile	Kazakhstan	TRUE	FALSE	1.36	4
Focal Conjunct EI					
Uruguay	Chile	TRUE	TRUE	1.66	2
Uruguay	Kazakhstan	TRUE	FALSE	1.94	2
Chile	Kazakhstan	TRUE	FALSE	1.42	4
UniqCov: Unique Coverage					

Table XII. Comparative analysis Typical1-Typical2 (~TEA)					
Typical1	Typical2	UniqCov1	UniqCov2	Best	PairRank
Focal Conjunct ~PC					
Norway	Romania	TRUE	TRUE	0.98	1
Norway	Sweden	TRUE	TRUE	1.13	1
Romania	Sweden	TRUE	TRUE	1.35	1
Focal Conjunct ~EI					
Israel	Spain	TRUE	FALSE	1.71	2
Israel	Luxembourg	TRUE	FALSE	1.77	2
Israel	Greece	TRUE	FALSE	1.83	2
Norway	Israel	TRUE	TRUE	0.85	3
UniqCov: Unique Coverage					