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Local entrepreneurial ecosystems as configural narratives: A new way of seeing and evaluating antecedents and outcomes

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ABSTRACT

This paper develops and applies a new evaluative approach to local entrepreneuriale cosystems, as configural narratives. We examine how configurations of local entrepreneurial ecosystem attributes, as evaluated by local experts, support or hinder the emergence of new and innovative firms. Drawing on sociology of place, we present a novel configurational comparative analysis of local experts' evaluation of their ecosystems in Chile. Our proposed approach to entrepreneurial ecosystems helps us uncover two counterintuitive findings and so elaborateon interferences that have not yet been addressed through conventional concepts, methods and data. First, we reveal three distinct ecosystem types explaining different local levels of new firm activity: *Active self-propelled, Indulged* and *Passive self-absorbed*. The internal composition of these types change when only innovative and high growth firms are taken into consideration. Second, we show why, when seen as configural narratives, ecosystem attributes that have been assumed necessary play only a peripheral role. Our study demonstrates a split picture against seemingly similar outcomes and homogenous local contexts, contributing to the advancement of entrepreneurial ecosystem theory, observation and assessment.

1. Introduction

Recent entrepreneurship ecosystems research has moved the investigative focus from entrepreneurial dynamics shaping regions to the study of how regions influence entrepreneurial ecosystems and the emergence of new firms (Isenberg, 2010; Feldman, 2014; Acs, et al., 2014; Stam, 2015; Acs et al., 2016; Malecki, 2018; Masucci et al., 2019). Traditionally, entrepreneurial ecosystems are examined by looking at how different structural -social, political and economic- elements create supportive regional environments for the formation of new and innovative firms (Malecki, 2018; Spigel, 2017). However, scholars have called for explanations "beyond geographical proximity and location-specific endowment" (Acs et al., 2016: 530), where entrepreneurial ecosystems should be seen and treated as relationships (Spigel, 2017) and spatially- and temporally-bounded localized narratives (Lowe and Feldman, 2017). In this sense, local entrepreneurial ecosystems are not just collections of things or structures, but also exist as combinations of elements that are interpreted and evaluated by people in different ways (Lowe and Feldman, 2017; O'Shea et al., 2019). This means that the way places foster entrepreneurship can be understood as uniquely derived from people's evaluations of their own cultural and social idiosyncrasies, the geographical setting and its physical features. While conceptually appealing, this perspective comes with a dual - theoretical and methodological - challenge for ecosystem research (Acs et al., 2014; Malecki, 2018) and calls for (1) new ways of "seeing and evaluating" ecosystems and (2) an alternative approach to capture configurations of place-bounded and culturally-evolved attributes.

Against this drawback, we argue that a sociology-of-place approach (Gieryn, 2000) can be instrumental in our efforts to advance entrepreneurial ecosystems research (Acs et al., 2017; Spigel, 2017). Such approach allows us to observe ecosystems as unique combinations of local evaluations of things, meanings and values, through which we can move from ecosystems as collections of physical and formal elements to ecosystems as configural narratives. This equips us with tools capable of capturing how evaluations of cultural, social and material attributes, as performed by local experts, relate to the formation of new firms in general, and the development of innovative, high-growth firms in particular (Malecki, 2018).

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Local experts are not necessarily better equipped than other actors to evaluate how ecosystem local conditions support or constrain entrepreneurship. However, their position in-place can shape the *narrated reality* of local ecosystem functioning (Kibler et al., 2018). Their evaluations can have a strong influence on the regional social legitimacy of entrepreneurship and the way it unfolds (Kibler et al., 2014; Goswami et al., 2018). Experts provide ecosystem actors with localized knowledge, resources and networks and so playing an essential role in supporting the development of local entrepreneurial ecosystems (Goswami et al., 2018). This is an under-appreciated yet important consideration because in ecosystems literature "it is not always clear in what way the proposed elements are connected" (Alvadalen and Boschma, 2017: 887) and whether "an entrepreneurial ecosystem for high-growth firms [is] different from one for more `ordinary´ firms" (Malecki, 2018:14)

To unpack our approach to local entrepreneurial ecosystems as configural narratives and demonstrate its benefits, in this paper we put forward a conceptual framework and explore: *what combinations of narrated attributes (as evaluated by local experts) enable entrepreneurial activity at ecosystem level? And what types of local entrepreneurial ecosystemsemerge as a result?*

Using a fuzzy-set qualitative comparative analysis – fsQCA (Ragin 2000; Ragin 2008), we explain how the evaluations of ~2,500 local experts regarding cultural, social and material attributes (Spigel, 2017) can inform different levels and types of new firm activity within and across 71 local entrepreneurial ecosystems in Chile. We assess the necessity of individual narrated attributes and how conditions combine as configural narratives to produce early-stage firm activity compared to high-growth firms and the absence thereof.

Our findings reveal a variety of ecosystem types emerging under unique combinations of conditions, showing how ecosystem complexity materializes across seemingly similar contexts. This is interesting because, although ecosystems are complex entities, the scope of conceptual development and policy work have remained narrow (Malecki, 2018). Our findings also show that, although all narrated conditions are empirically relevant, none of them are necessary or sufficient by themselves to propel entrepreneurial activity within ecosystems. While it is known that one condition alone cannot support ecosystem functioning, there is a problematic premise in ecosystem research where all modeled conditions are assumed to be necessary for productive activity to occur. We show that indeed local entrepreneurial ecosystems can effectively yield early and high-growth activity in the absence of conditions so far assumed central to that end, such as financial support and ad-hoc regional policy. When seen through the lens of local actors, explanations change, emphasizing a revitalized role of market behaviors and the geography of entrepreneurial cultures (Spigel, 2013). The key is in how conditions combine and support each other.

Our research makes at least three contributions to our understanding of methods and metrics in entrepreneurship ecosystems research. First, we propose and articulate a novel configural explanation (Furnari et al., 2020) of the role of local evaluations in ecosystem functioning. Our findings demonstrate what matters and when for the emergence of early and growth-oriented firm activity, and the absence thereof, and how that forms different ecosystem types. Hence, we respond to repeated calls to expand theory on the socio-spatial mechanisms through which ecosystems enable and influence the activities of new firms (Spigel, 2017; Stam, 2015). Second, we deploy unique expert data at the regional level and a new methodological and conceptual approach to better observe, analyze and explain different types of ecosystems and their impact on local entrepreneurial activity. This allows us to introduce a new evaluative perspective of local entrepreneurial ecosystems and so overcome some the limitations of current methods and metrics in current ecosystem research. In doing so, we also inform regional policy debates (Tödtling and Trippl, 2005; Vecchiato and Roveda, 2014) by providing first evidence around which conditions, and combinations thereof, can be deemed as (un)necessary and quasi-sufficient for the emergence of alternative types and regional levels of new firm activity.

2. Theoretical grounding

2.1. Local entrepreneurial ecosystems: Promises and shortcomings

The notion of local entrepreneurial ecosystems has gained prominence in the study of entrepreneurship-in-context (Malecki, 2018; Neumeyer et al., 2019). Theory development has drawn from two streams of literatures: strategy and regional development (Acs et al., 2017), leading to e.g. regional innovation systems (Acs *et al.* 2016), industrial clusters (Delgado et al., 2010) and the inter-organizational networks (Dhanaraj and Parkhe, 2006). These approaches emphasize the importance of quantifiable physical and formal conditions in the generation of productive entrepreneurial activity, including: human capital, venture capital, innovative firms, mentorship and support systems, knowledge spillover capacity, robust regulatory frameworks, and major universities, among others (Acs et al., 2016; Audretsch and Lehmann, 2005; Audretsch et al., 2017; Feldman, 2014; Isenberg, 2010; Stam, 2015). These conditions are understood as pillars of an entrepreneurial ecosystem, guiding over time the development of a number of normative frameworks (e.g. Cooke et al. 1997; Lundvall, 2007; Stam, 2015). It is assumed that, if and when combined effectively, those conditions could lead to aggregated value creation (Stam, 2015). While conceptually appealing, the evidence available in relation to the predictive capacity, performance and impact of said models is frequently complex, difficult to interpret, and in general indirect and incomplete (Hausman, 2008).

Underlying the issues above, we observe three areas of contention. First, the overreliance on economic principles, which overemphasize human agency (Feldman, 2014), underappreciate interpretative elements, e.g. regional cultural identity (Audretsch et al., 2017), and downplay the inter-dependencies between ecosystem elements as well as the configurations associated with ecosystem functioning (Spigel, 2017; Spigel and Harrison, 2018). Second, ecosystems exist as a result of "combinations of social, political, economic, and cultural elements within a region" (Spigel, 2017:50), which support the development and growth of new ventures. While known and relevant, the complexity and combinatorial nature of the enabling attributes has been generally ignored. Finally, local entrepreneurial ecosystems are unique, with their own idiosyncrasy and characteristics (Audretsch et al., 2012; Brown and Mason, 2017). Current assumptions, models and means of assessment cannot embrace such diversity, which is particularly problematic in the selection of proxies for measuring conditions and outcomes (Kuratko et al., 2017). This calls for a new conceptual and methodological approach.

2.2. A place-sensitive approach to evaluating local entrepreneurial ecosystems

To counteract the shortcomings identified above, in this paper we leverage a sociology-of-place perspective (Gieryn, 2000), which allows us to observe local entrepreneurial ecosystems as places with meanings and values attached to demography, geography and physical elements. Several domains have already embraced this view on place, including: sustainability studies (e.g. Jorgensen and Stedman, 2006), environmental psychology (e.g. Giuliani, 2003), social geography (e.g. Cresswell, 2013), and organization studies (e.g. Lawrence and Dover, 2015). Through a sociology-of-place lens, we can observe local entrepreneurial ecosystems as constituted twice. First, ecosystems are *constructed* as compositions of substantive (physical and formal) elements and then *doubly-constructed* by local actors through their evaluations and narratives of the place. In this sense, when ecosystems are anchored in place, they are not just "built or in some way physically carved out […but] they are also narrated, perceived, felt, understood, and imagined" (Gieryn, 2000:465) by different actors situated in the same regional context. This allows us to make a critical distinction in our examination of local ecosystems: ecosystems as collections of things and ecosystems as

configurational narratives.

As configurational narratives, ecosystems are continuously evaluated by people that do things in and around them (Malecki, 2018; O'Shea et al., 2019). Thus, the ways in which ecosystems are evaluated by local leading actors can distinctively influence entrepreneurial activity. They are made and remade through upstream forces that convey "power and wealth; professional practices of place-experts; perceptions and attributions by people who experience places" (Gieryn, 2000:468). They are ultimately enacted by people based on what they make of them and used accordingly. This conceptualization provides a more refined view of ecosystem functioning as it captures the influence of social realities in place, in contrast to physical and formal aspects that arbitrarily delineate a space, a context, a landscape or an economic - demographic structure. In doing so, it brings to light two aspects central to advancing ecosystem research: (1) the relevance of local experts' evaluations and (2) the notion of locality in the conception of ecosystems as narrated places.

A call for local experts. Attending to well-situated local experts from different professional fields is essential to better understand how ecosystems factors come together (Goswami et al., 2018). It allows for appreciating how substantive elements come into being in local entrepreneurial ecosystems (i.e. constructed) and also how they are constantly evaluated and narrated (i.e. doubly constructed) as part of the broader cultural and social environment (Gieryn, 2000:465). We argue here that, when it comes to understanding entrepreneurial outcomes, the evaluations of local experts regarding the qualities of elements composing an ecosystem are equally or more relevant than the actual physical elements (Lowe and Feldman, 2017). In occasions, evaluations in place can be better suited than "amounts of things" in the appraisal of ecosystem functioning and performance. For example, there is a fundamental difference between the amount of incubators in a particular region and the evaluation of locals regarding the usefulness or pertinence of the extant incubation infrastructure. Similarly, the views of policy makers (offer side) regarding the adequacy of the programs they have designed are likely to differ from that of local experts (user side), who observe how local ventures interact with the system of support. Likewise, acceleration programs, co-working spaces and schools also have unique architectures of enclosure, display and classification that give an impersonal and autonomous power over subjects (Gieryn, 2000). Local experts can act as key legitimacy-givers (Kibler et al., 2018) as they can understand how evaluations of ecosystems' underpinnings may have an impact on venture activities, shape the local public discourse and offer important guidance in the development of entrepreneurial ecosystems (Goswami et al.,2018).

Narrated places and a reconsideration of local. Considering local entrepreneurial ecosystems "*in place*" calls for a reconsideration of what those places are and the main attributes that enable their emergence. Our proposed conceptualization of entrepreneurial ecosystems as being "local" draws on the idea of "sense of place" (Gieryn, 2000; Jorgensen and Stedman, 2006). Since ecosystems exist as local networks of social relations, beyond "the geographical container", *Locality* is as much phenomenological as spatial (Fine, 2010). Being local does not refer to a small arrangement of streets, houses or neighborhoods, but rather to an ongoing practical and discursive production of meaning in relation to a (geo-political) space that is important to individuals and groups. In our conceptualization of local ecosystems, *Local* is a lens (rather than a stage) that ultimately reflects the meanings individuals and groups assign to their regions. These are in turn embedded in historically contingent and shared cultural understandings of what that a particular region is (Fine, 2010). Thus, when we ask experts about their "evaluations of their region" we are ultimately prompting *Locality*, which is at the core of our delineation of *Local* in *local* entrepreneurial ecosystems. In the following we use this new lens to elaborate on the core attributes of local entrepreneurial ecosystems.

2.3. Decomposing configural narratives as enablers

Our elaboration of local entrepreneurial ecosystems as configural narratives draws on a relational view (Kuratko et al., 2017; Stam and Spigel, 2017) and focuses on how defining attributes of ecosystems - cultural, social and material (Spigel, 2017) – are seen by local actors.

Cultural enablers pertain to local actors' evaluation of a supportive culture for entrepreneurship and a favorable historical evolvement of the local entrepreneurial behavior. Entrepreneurial cultures are place-dependent and influence the nature of local opportunities and the entrepreneurs who enact them (Baker et al., 2005). They become cultural celebrations of the unwritten rules of conduct shaping the regional legitimacy of entrepreneurship (Kibler et al., 2014). Indeed, regions exhibiting strong levels of entrepreneurial culture tend to perform better in terms of regional economic outputs, e.g. higher employment growth (Stuetzer et al., 2017) and new firm emergence (Fritsch and Wyrwich, 2017). Relatedly, local markets and the way entrepreneurship unfolds in a region involves historically developed interactions, exchange and competition. They constitute self-reproducing cultural structures, within which shared beliefs about markets can have an impact on how the market operates (Gieryn 2000; Thornton, 1999). In other words, the enduring structures and dynamics of local markets can have profound effects on the thoughts, feelings and behaviors (Lawrence & Dover, 2015) of those involved in entrepreneurial activities as well as on their social positions (Lang et al., 2014; Kuratko et al., 2017). Taken together, we argue that if the local experts' evaluations of local market behavior and culture of entrepreneurship are positive in the development of their local ecosystems, they also act as enabling conditions for the formation of new ventures and high-growth entrepreneurship.

Social enablers pertain to local actors' evaluation of the availability of local capital (e.g. investment, finance) and relevant social structures (e.g. networks, mentors, role models) available to support entrepreneurial activity (Brown and Mason, 2017; Spigel, 2017). The positive evaluation of financial support and infrastructure can play a central role in the development of local ecosystems. For instance, Acs et al. (2016) argue that the provision of entrepreneurial finance in a region (and awareness thereof) is a key factor and oftentimes a bottleneck in the making and functioning of ecosystems. Professional service providers and entrepreneurs, operating within a particular financial infrastructure, are often better positioned to recognize the opportunities and restrictions of the ecosystem (Stam, 2015). They can also facilitate access to equity capital and financial assistance to new ventures exhibiting high-growth potential (Isenberg, 2010). Having a strong, dense and supportive community and sources of investment - available, visible and accessible across sectors - is instrumental for the emergence and growth of new ventures and thus part of the recipe for successful ecosystems (Feld, 2012; WEF, 2013).

In a similar vein, the availability of role models and mentoring in place are important for the promotion of entrepreneurial learning and the functioning of local ecosystems. Alongside developing managerial skills, entrepreneurs need to learn about and from the social and market environment they are embedded in and their surrounding entrepreneurial networks. This involves learning about "how to manage relationships with existing and potential customers, suppliers, and competitors, as well as appreciating and maximizing the relationship with advisory agencies and support services such as banks and accountants" (Cope, 2005:380). This is relevant since embeddedness in local communities has an enduring influence on the behavior of entrepreneurs and their ventures, primarily given the proximity of local networks that enables isomorphism (Marquis and Battilana, 2009; Muñoz et al., 2019). In sum, we argue that if the local experts' evaluations of the local financial capital and social support for entrepreneurial learning are positive in the development of their ecosystems, they also act as enabling conditions for the formation of new ventures and high-growth entrepreneurship.

Material enablers relate to local actors' evaluations of the availability

and efficiency of local entrepreneurship policy and support infrastructure. Linked to local formal institutions, policy and programs seek to influence the level of entrepreneurial activity in a specific region (Lundstrom and Stevenson, 2006) in a way that increases job creation and country competitiveness (Amorós et al., 2012). Despite their assumed relevance, it is still unclear whether and how governments influence entrepreneurial activity at the regional level and which entrepreneurship policies are actually successful in stimulating rates of entrepreneurship within particular places (Capelleras et al., 2008). The evidence seems to be even less conclusive in emerging economies (Acs and Amorós, 2008). Shane (2009) suggests that entrepreneurship policy aimed at improving the rates of entrepreneurial activity is fundamentally flawed, because many of these early-stage firms fail and most of them will fail to actually create employment or improve local economic conditions. This is why entrepreneurial programs are regularly seen as "cottage industries that add little to the economy in terms of productivity or growth" (Schramm, 2004:105).

Nevertheless, local policies and programs do seem to have an effect on certain regions, if and when economic growth and innovative entrepreneurs are not the sole objects of interest. Supportive assessments of place-sensitive policies can mobilize stories of successful local entrepreneurs (Kibler et al., 2015; Spigel, 2017) providing a basis for discussing the benefits and possibilities of entrepreneurship. Local policies can contribute to effective ecosystem functioning by removing institutional barriers and facilitating training and networking events (Feldman and Francis, 2004), which in turn improves the perception of the desirability and appropriateness of entrepreneurship in a particular region (Kibler et al., 2014). In less developed contexts, for example, localized support policies tend to confer legitimacy and empowerment, in particular when these are created on the basis of consensus rather by command of policymakers or funders (Reficco and Marquez, 2012). In this sense, we argue that when local actors' evaluations of local entrepreneurship policy and support programs are seen as favorable for the development of local ecosystems, they also serve as enabling conditions for the development of new ventures and high-growth entrepreneurship.

3. Methods and data

"The study of ecosystems should focus not only on the outcomes—rates of entrepreneurship—but rather the inputs such as the localized cultural, social, and material attributes that support entrepreneurial activity and the ways in which these attributes interact and reproduce the overall ecosystem" (Spigel, 2017: 57). In this sense, understanding what enables ecosystem functioning requires a novel methodological approach and alternative data sources capable of dealing with configural narratives, i.e. doubly-constructed attributes that act inherently in interdependence.

3.1. Methodological approach

To unpack the complexity challenge outlined above, our work draws on conjunctural causation and systematic comparative heuristics (Furnari et al., 2020), which we operationalize using Fuzzy-Set Qualitative Comparative Analysis (FsQCA). FsQCA is a set-theoretic method and analytical technique that permits visualizing and analyzing causal complexity (Ragin, 2008). It uses Boolean algebra, counterfactual analysis and logic minimization to reduce complex social reality to a parsimonious set of causal recipes explaining the outcome of interest. FsQCA permits testing whether and how different configurations of narrated attributes combine to produce strong entrepreneurial activity at a local level. This allows us to overcome the limitations of traditional linear methods and uncover the complex and conjunctural nature of the relationships emerging from our review of the literature (Coduras et al., 2016).

3.2. Research setting

Our research looks at the case of Chile, as it offers a unique empirical site for the study of entrepreneurial ecosystems and local development (Espinosa et al., 2019; Värlander et al., 2020). This country is geographically and economically-distinct. First, the unique geographic diversity creates regional gaps and significant differences in development (Amorós, et al., 2013; Espinosa et al., 2019). Chile is also seen as an exemplar case of economic development within Latin America and one of the most successful countries in the region in terms of entrepreneurship ecosystems development (Cao and Shi, 2020; Startup Genome, 2017). The Global Entrepreneurship Index[1] (Acs et al., 2014), which measures "the health" of entrepreneurship ecosystems across countries, ranks Chile in the 19th position among 137 countries. At the regional level, Santiago Metropolitan is recognized as one of the most dynamic ecosystems in Latin America.

Relatedly, recent research looking at entrepreneurship in Chile (Harima et al., 2020) highlights the role of political decisions and policy in the evolution of entrepreneurship in the country. From 2008 to 2015 Chile's government moved from a socialist administration (2006-2010) to a center-right administration (2010-2014) and back to a socialist administration (2014-2018). Four-year presidential periods with no immediate re-election generated variability in some constructed conditions, affecting mainly those linked to policies and regulation. All regions are part of and operate under a single constitutional republic with central administration and policy development. Regional governments depend politically on the central government. Regional governors, local representatives and executive directors within most development agencies are designated by the president.

Despite the political swings and strong centralization of policy decisions, several reforms have been implemented in the past two decades to minimize the bottlenecks and institutional barriers for the development of new businesses. Special emphasis has been placed on the implementation of new programs, policies, and initiatives aimed at improving the social perceptions and legitimacy of entrepreneurship, with new funding available to support new ventures nationwide. Some *iconic* initiatives such as Start-up Chile[2] and new legal frameworks (e.g. *firm-in-a-day*) have led Chile to be seen as an unlikely yet robust entrepreneurial hub *with its own special charm* (Larsson, 2016; Muñoz et al., 2020), which has experienced significant growth in terms of the quantity and quality of activity (Amorós and Mandakovic, 2017).

Reforms and political swifts have had varied effects on central entrepreneurship policies and entrepreneurship more broadly. At the meso-level, most relevant government programs have remained unchanged, maintaining their basic structures and organizational forms. Yet, political orientation, mandates and management teams have changed, affecting the way entrepreneurial activity is promoted. The National Innovation Council, for example, changed its emphasis from competitiveness and industrial clusters (2005-2010) to science and technology (2010-2015) to inclusive development (2015-today). Likewise, Start-Up Chile, went from focusing almost exclusively on importing tech unicorns to gradually open the door to Chilean applicants whilst bringing inclusiveness and sustainability to the fore (e.g. Footprint program). Beyond prompting changes to the physical infrastructure of the ecosystem, such shifts have impacted the perceptions of local actors in relation to that infrastructure.

A note on external shocks. In February 2010, Chile was impacted by

[1] Appendix A provides an overview of the 2018. Some of the indicators of Global Entrepreneurship Index are calculated based on GEM data. More information is available at: https://thegedi.org/global-entrepreneurship-and-development-index/

[2] Start-Up Chile is the largest country-level, government-funded seed accelerator in the world. Launched in 2010, this program has been recognized as a pioneering effort, attracting more than 1,300 entrepreneurs from 80 countries.

one of the strongest earthquakes on record, with important consequences for the country's economic activity. Despite its disruptive nature, in our study we have decided to factor this in as a boundary condition, for three reasons. First, although extremely disruptive, external shocks are not theoretically-relevant in the context of our study. Second, while the epicentre was the Maule region, the earthquake was felt in the entire country and strongly in six regions, impacting significantly 80% of Chile's population. Since the effects cannot be attributed to particular regions, the earthquake cannot be taken as a source of variance across regions. Finally, financial support and rescue programs for entrepreneurs and SMEs were made available to the whole of the population and this is already captured by our assessment. Eventual increments in government funding, for example, are already factored in the experts' evaluation of *local entrepreneurship programs*, which captures the perceived quality of place-specific support programs in that year specifically.

3.3. Sample construction and data

In configurational studies, case selection is guided by explicit theoretical concerns (Rihoux and Ragin, 2009). Two considerations need to be taken into account in delineating the sampling strategy. Firstly, the study must define an area of homogeneity, meaning that cases must parallel each other and be comparable in terms of their background characteristics. While these regions differ in size and population, these are all clearly defined geo-political areas with similar administrative structures and political powers. Following from our theoretical framework, they all have entrepreneurial activity, receive (entrepreneurial) support from the government, host internal markets and entrepreneurial events, offer training through the same type of providers (educational institutions, business centers or municipalities), have state and private lenders and mobilize seed funding. In the context of our study, these factors make these regions theoretically comparable.

Secondly, within this conceptual space maximum heterogeneity over a minimum number of cases needs to be achieved (Rihoux and Ragin, 2009), meaning that the sample requires cases with both positive and negative outcomes, this is strong and weak entrepreneurial activity at the local level as well as strong and weak markets, support, finance, education and so on. Case selection in fsQCA does not rely on mechanistic procedures such as random sampling, but rather on a iterative process whereby the criteria of sufficient homogeneity and maximum heterogeneity are constantly pursued (Rihoux and Ragin, 2009). The non-parametric nature of fsQCA minimizes the threat of sample selection bias (Fiss, 2011), which normally affects studies requiring random sampling (Berk, 1983).

Our research draws on the Global Entrepreneurship Monitor - GEM (Levie and Autio, 2008), which offers wide coverage and unique longitudinal primary data from 2008 to 2015 (Amorós et al., 2019). In the context of this study, the methodological approach taken by the GEM team in Chile offers unique data at the local level. Since 2007, GEM Chile has been collecting data with specific attention to local circumstances, using local experts and their perceptions regarding specific local conditions (Amorós et al., 2013) and collecting over samples in some regions to capture Chile's distinct demographical distribution.

In operational terms, we use comparative-historical methods (Mahoney, 2004; Bengtsson and Ruonavaara, 2017) and the sociology-of-place approach (Gieryn, 200) to understand local entrepreneurial ecosystems as historical artifacts, i.e. places bounded by geographical and temporal considerations. This casing strategy is commonly used in comparative politics research (home of fsQCA) for several theoretical and methodological reasons. First, it is useful in the assessment of historical circumstances leading to particular outcomes. Take breakdown of democracy for example. In a particular country, democracy can fail in several occasions, each of which will result from a unique set of historical circumstances. This the case of Chile for example, in 1924 and 1973, or Brazil in 1964 and 2016. Although it is the same country, structurally-speaking, we are dealing with multiple historical circumstances (i.e. cases), because all of them provide alternative configural explanations of why democracies break down. Since 1930 Argentina has experienced six coups d'état, each a case in itself (Erdmann, 2011). Through a comparative-historical perspective, we can compare and analyze ten democratic breakdowns using three countries. The study of technology failurethrough comparative historical methods offers another interesting example. In understanding failure of space programs, NASA's Columbia and Challenger disasters are treated as two distinct cases (Garrett, 2016; Hall, 2003), despite this being the same country, same space agency, same funding source, same type of space shuttle and same launching site. In our study, since the same region can produce alternative levels of entrepreneurial activity over time due to unique historical circumstances, each local ecosystem at a given point in time is considered a unique reality, hence a single case. Second, comparative research normally have to deal with "many variables and small Ns". Comparative politics research counteracts this problem by increasing the number of cases as much as possible by adding plasticity to casing procedure, i.e. extending the analysis both geographically and historically and focusing the analysis on comparable cases which may be found within a geographical-cultural area (Lijphart, 1975:159).

Following the above criteria and considerations, we derived 88 unique local ecosystem cases from Chile. These 88 cases emerge from the 11 geopolitical areas covered by GEM Chile[3] over the course of eight years. To define the required area of homogeneity, we draw on a set of national-level circumstances occurring over this period. Within this area of homogeneity, the set of localized changing conditions perceived by local experts enable us to establish the needed maximum heterogeneity over a small number of cases. Based on data availability and reliability, in a final stage we reduced the number of ecosystems for inclusion in our analyses from 88 to 71.

Our data stem from the two complementary GEM's instruments: (1) the Adult Population Survey (APS) comprising ~50,000 answers from individuals across Chile in the 8-year period, providing information about entrepreneurial dynamics, primarily new business creation indicators in each region. (2) The National Expert Survey (NES), comprising ~2,500 local experts (in the same time-period), which provides time-bounded evaluations on doubly-constructed attributes of a local ecosystem. The cohort of experts is selected every year following a standardized protocol, which ensures uniformity of informants[4]. Experts can be entrepreneurs, policymakers, academics, and/or entrepreneurship support providers - all living in the region of interest. They are all relevant local actors with the agency to influence perceptions and behaviors in their specific regions, through their business or professional activity.

To capture local experts' evaluations regarding specific local circumstances, we leverage a unique feature in the application of the Chilean survey, where questions in the regional-level NES refer specifically to the region in which the expert lives in at that point in time. Unlike the national-level NES, where experts are asked about the national context, Chilean local experts are prompted to think about their regions specifically, where questions are phrased e.g.: "*In my region*, there are an adequate number of programs for new and growing businesses". NES collects data in an annual basis. This time-period is relevant for our study since most of the attributes evaluated are subject to annual planning, funding and assessment. Thus, evaluations of attributes by the experts are likely to be constrained by the same temporal space.

[3] Data. GEM captures evidence from all 15 regions, however data is only representative at regional level in 11 regions, where oversampling is used.

[4] NES framework. For the complete GEM's NES framework and methodology see Reynolds et al. (2005). NES items and coding can be found at: http://www.gemconsortium.org/wiki/1172. For NES results and linkage of EFCs with other international measurements see Bosma et al. (2008). For specific application of NES at regional level in the case of Chile see Amorós et al. (2013).

3.4. Measurement and calibration

3.4.1. Outcome conditions

In this study we assess how doubly-constructed attributes of local entrepreneurial ecosystems combine to produce three alternative levels entrepreneurial activity: Early-stage firm activity, high-growth firm activity and low-growth firm activity. Our measurement for *Early-Stage Firm Activity* is based on the APS, focusing particularly on Total Early Activity (TEA) at the local level. TEA captures the percentage of individuals aged 18-64 who are either a nascent entrepreneur or owner-manager of a new business, these new businesses are not older than 3.5 years. We also assess the ratio of *high-growth firm activity*, looking at the percentage of firms with high job expectations within the TEA group, this is 10+ jobs and over 50% in five years. Levie and Autio (2011) show that individuals who have high job expectations, tend to have higher educational levels and income and are less likely to engage in entrepreneurship for survival reasons only. Finally, we assessed *low--growthfirm* activity by computing the negate (absence) of high-growth activity.

3.4.2. Causal conditions

The evaluation of the local ecosystem refers to how local experts perceive, assess and make judgements about the effect of material, social and cultural enablers on the entrepreneurial activity of a place. Our configurational assessment of doubly-constructed conditions draws on the National Expert Survey (NES). Because NES offers place-sensitive (i.e. geographical and temporal) information based on the perceptions and evaluations of key informants living in the regions of interest, we can capture evidence on the unique conditions experienced by the selected Chilean regions at every point in time during the eight years. Our items stem from NES's closed part, which comprises nine blocks of items, scored on a 9-point Likert scale with 1 being completely false, and 9 being completely true[5]. It is worth noting that the idea of configurational narratives (combinations of doubly-constructed attributes) refers to the subjective evaluation of experts, rather than the nature of the data of itself. A range of different data collection techniques can be used to capture double-constructions; e.g. closed survey questions, assessment reports, short communications, focused interviews, media articles, open-ended survey questions, etc, as they are all expressions of individual evaluations. Given that the specificity provided by NES's set of closed questions, as it relates to the theoretical framework of our study, we opted to use these items instead of NES's open-ended questions.

In light with our approach, we assess six narrated attributes as evaluated by local experts. Our measure for *policy support* captures the assessment of local experts regarding the extent to which public policies support entrepreneurship. It has two components, entrepreneurship as a relevant economic issue and, taxes or regulation that encourage/discourage the emergence of new firms. *Local programs* are assessed by looking at whether the experts think the presence and quality of place-specific support programs are adequately assisting entrepreneurial activity, indistinctively the government level. While both policies and programs rely on governmental action, these are substantially different. The former encompasses macro-level regulations and incentives (e.g. tax benefits), whereas the latter involves localized assistance and support, such as ad-hoc seed-funding or mentoring schemes. Correlation value between these two variables do not trigger divergent validity issues. In terms of *financial support,* we assess the local experts' evaluation regarding the availability of financial resources -equity and debt- to support entrepreneurial activity in the region.

Cultural celebration captures the extent to which experts think that the social and cultural norms in their regions encourage new firm emergence and whether this activity can potentially increase personal wealth and income. Our measure for *entrepreneurial learning* assesses the extent to which local experts believe training aimed at creating and managing new ventures is incorporated into the education and training systems at all levels. Finally, *market behavior* captures the perceived level of change in markets from year to year. It assesses the extent to which local experts think commercial arrangements undergo constant change and redeployment as new and growing firms compete and replace extant suppliers, subcontractors, and consultants (Amorós et al., 2013). Market behavior is comprised by two distinct sub-dimensions: market dynamism and market openness. In Table 1, we report correlations for the calibrated scores. A complementary VIF assessment shows very low intercorrelations, which eliminates potential multicollinearity concerns[6].

3.4.3. Calibration

Calibration of raw scores is central in configurational comparative studies. By means of an estimation technique, the calibration procedure in fsQCA transforms raw scores into set measures, rescaling the original measures into fuzzy scores ranging from 0.0 to 1.0 (Ragin, 2008). Table 2 shows the calibration thresholds used in our study. When theoretical support is absent, thresholds full inclusion, full exclusion and cross-over point (i.e. point of maximum ambiguity) for each of the measures should be based on substantive knowledge and the distribution of raw scores across cases (Schneider and Wagemann, 2012). In line with current practice, we use the median for the sample as point of maximum ambiguity, and the maximum and minimum scores as thresholds for full inclusion and full exclusion. In the right-hand side of Table 2, we report the observed standard deviations for causal and outcome conditions. The calibration table is available in Appendix B.

4. Data analysis and results

For our analyses, we use two complementary methods in a stage-wise process. Firstly, in assessing the potential centrality of some of the attributes emerging from the configurational analysis, we conduct a necessity analysis of the six conditions, in their present and absent forms. In a second step, we conduct a sufficiency analysis to examine the specific configurations of narrated attributes leading to strong entrepreneurial activity at the local level.

4.1. Identifying necessary conditions

The assessment of necessary conditions is central to advancing entrepreneurship research and policy decisions as it allows us to identify key antecedents of strong entrepreneurial activity at the local level. Policy-wise, entrepreneurial activity can be fostered or prevented through appropriate programs by promoting or removing necessary conditions. The necessity analysis evaluates the degree to which instances of an outcome agree in displaying the causal condition thought to be necessary and the empirical relevance of each causal condition (i.e. consistency and coverage). A condition is considered necessary if whenever the outcome is present the condition is also present, meaning that the outcome cannot be achieved without the condition (Schneider and Wagemann, 2012). In set-theoretical terms, the outcome is a subset of condition. Since it is possible to find outliers violating patterns of necessity, fuzzy logic works with degrees of set membership and uses probabilistic criteria to allow for partial necessity. Our test draws on this set of principles. In necessity analyses, higher consistency implies that the membership in the outcome is consistently less or equal than membership in the condition, meeting the criteria for considering a

[5] Detailed information on the NES methodology, instrument and coding procedure is available in the following link: http://gem-consortium.ns-client.xyz/wiki/1172

[6] In assessing potential multicollinearity among the causal variables, we calculated variance inflation factors (VIFs) for all our measures. VIF values below 2.5 with tolerance of >0.445 do not raise collinearity concerns. Results can be found in Appendix E.

Table 1
Descriptives and Correlations. Ref. Local entrepreneurial ecosystems as configural narratives: A new way of seeing and evaluating antecedents and outcomes.

		Mean	Std. Dev	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1)	Policy support	0.4553	0.21869							
(2)	Local programs	0.5441	0.24686	.574**						
(3)	Financial support	0.5125	0.21444	.258*	-0.013					
(4)	Cultural celebration	0.5198	0.23256	.274*	.415**	-0.098				
(5)	Market behavior	0.4908	0.25693	-0.025	-0.087	0.078	-0.007			
(6)	Ent. learning	0.47	0.27109	0.2	.291*	.275*	.291*	0.064		
(7)	Early activity	0.5554	0.26774	0.046	0.095	-.379**	.404**	-0.071	0.017	
(8)	High-growth act.	0.4688	0.24898	-0.198	-0.017	-0.066	-0.143	-0.158	-0.054	0.027

** 0.01 * 0.05

Table 2
Calibration thresholds.

Condition	Full in	COP	Full out	SD
Policy support	3.8	2.9	2.1	0.32
Local programs	3.3	2.8	2.3	0.21
Financial support	2.9	2.3	1.6	0.23
Cultural celebration	3.5	2.8	2.3	0.23
Entrepreneurial learning	3.4	2.9	2.6	0.19
Market behavior	3.2	2.6	2.2	0.18
Early activity	30	20	10	4.47
High-growth activity	41	24	12	6.39

condition to be almost always-necessary. Table 3 presents the results of our necessity analysis.

As evidenced, all narrated conditions are empirically relevant with coverage score ≥.65, which means that the constraining effect of each tested condition may be great. However, to be considered necessary a condition must surpass the 0.95 consistency threshold with at least 0.65 coverage score (Muñoz and Dimov, 2015). Out of the twelve narrated conditions assessed (six conditions in their present and absent states), cultural celebration exhibits the highest consistency score (0.77), followed by absence of financial support (0.73) (grey-shaded in Table 3). Both of them show a strong coverage (>0.8), which combined reinforce their prominent role observed in the solution table below. However, these narrated conditions cannot be considered necessary or quasi-necessary for strong entrepreneurial activity at the local level.

4.2. *Identifying sufficient ecosystem configurations for local firm activity*

Following the identification of necessary conditions, fsQCA evaluates the different combinations of causal conditions that are linked to the outcomes in terms of causal sufficiency, as well as the strength of the causal relationships between conditions or combinations of conditions and the outcome. This is done in a stage-wise fashion (Furnari et al. 2020) using fsQCA 3.0 (Ragin and Davey, 2016).

This first step requires the construction of a truth table with all 64 logically possible configurations of conditions (2^6), which are reducedin line with two conditions: the minimum number of cases required for a solution (frequency) and the minimum consistency level of a solution. In our analysis, we use a frequency threshold of 3 cases and consistency cut-off of 0.9. Although running this analysis with a frequency threshold of 3 increases the limited diversity over the 64 logically possible configurations, it allows for improving the consistency, parsimony and relevance of the solutions in that it only uses configurations with a greater number of empirical instances. The Truth Table 4 (Early Activity) shows the resulting ten configurations and 32 cases relevant for the outcome after applying the frequency threshold (46% of the cases). 29 cases exceed the lowest acceptable consistency, set at ≥0.9, which is above the minimum recommended of 0.8, and only 3 cases fall below the consistency cut-off line. This 0.9/0.1 distribution of cases when conducting fsQCA is in line with current practice.

Drawing on the truth Table 4, we run three configurational analyses with three alternative specifications for the outcome: early, high-growth and low-growth firm activity. Solution Table 5 shows the results for each of the three assessed outcomes. Overall, solutions are highly consistent (0.88; 0.77; 0.82) and empirically relevant (0.70; 0.73; 0.69), with individual solution terms exhibiting equally consistent results ranging from 0.84 to 0.94[7]. The three solutions explain the set of conditions through which local ecosystems operate in a continuum of firm activity. Each of the solutions for early, high-growth and low-growth are sorted from left to right based on their empirical relevance.

Table 3
Set-theoretical necessity analysis.

Condition tested*	Early activity Consistency	Coverage	High-growth activity Consistency	Coverage
Policy support	0.649049	0.791513	0.684059	0.704327
Local programs	0.731955	0.747094	0.773783	0.666822
Financial support	0.641897	0.695521	0.766273	0.701017
Cultural celebration	0. 771012	0.823630	0.741071	0.668392
Market behavior	0.664722	0.752059	0.672584	0.642478
Entrepreneurial learning	0.641390	0.757866	0.681265	0.679652
Early activity	-	-	0.751885	0.634821
~Policy support	0.726553	0.740890	0.827491	0.712442
~Local programs	0.612452	0.746053	0.694812	0.714603
~Financial support	0.733959	0.836174	0.741972	0.713695
~Cultural celebration	0.589881	0.682302	0.733832	0.716654
~Market behavior	0.705047	0.769039	0.768376	0.707627
~Entrepreneurial learning	0.692112	0.725219	0.751284	0.664656
~ Early activity	-	-	0.646721	0.681976

* ~ sign refers to absence of condition

4.2.1. *Early-stage activity*

Findings show that the development of strong early activity at the local level does not depend on a single factor but emerges from three sufficient combinations of narrated attributes: two solution terms (1 and 2) and one superset combining 3a*3b . Among the 12 possible conditions (i.e. presence and absence of six conditions), only the presence of cultural celebration and the absence of financial support are causal mechanisms that exhibit a strong causal relationship with the outcome. Despite the strong causal relationships between these two conditions and the outcome, none of them are by themselves necessary or sufficient for the emergence of strong entrepreneurial activity. Given the fragmented and combinatorial nature of the different conditions building up a local ecosystem, with more and less robust entrepreneurial activity, it is clear that different combinations of conditions can explain the formation of early entrepreneurial activity at the local level. Our analysis shows a much more diverse picture reflecting ecosystem complexity, particularly when compared to what is constructed and the physical

[7] Individual consistency scores are estimated dividing the number of cases that are present in a given configuration of conditions as well as the outcome by the number of cases that are present in the same configuration but do not exhibit the outcome (Ragin, 2006).

Table 4
Truth tables for TEA and High Growth.

Early Activity								
Policy	Programs	Financial	**Culture**	**Market**	**Learning**	**Cases**	**TEA***	**Consist.**
1	1	0	1	0	1	3	1	0.980
0	1	0	1	0	1	3	1	0.961
1	1	0	1	0	0	3	1	0.961
0	0	0	1	0	0	3	1	0.957
0	1	0	1	0	0	4	1	0.938
1	1	1	1	0	1	3	1	0.936
0	0	0	0	1	0	3	1	0.923
0	0	0	0	1	1	3	1	0.920
1	1	1	1	1	1	4	1	0.919
0	0	1	0	0	1	3	0	0.842
High-growth Activity								
Policy	**Programs**	**Financial**	**Culture**	**Market**	**Learning**	**Cases**	**HG^**	**Consist.**
0	0	0	1	0	0	4	1	0.897
0	0	0	0	1	0	3	1	0.894
0	1	0	1	0	0	4	1	0.885
1	1	0	1	0	0	3	1	0.874
1	1	0	1	0	1	3	1	0.871
0	0	1	0	0	1	3	1	0.868
0	0	0	0	1	1	3	1	0.857
0	1	0	1	0	1	3	1	0.857
1	1	1	1	1	1	4	1	0.854
1	1	1	1	0	1	3	0	0.853

*Consistency cutoff: 0.9; frequency threshold=3; ^ Consistency cutoff: 0.854; frequency threshold=3

infrastructure of the ecosystem (see illustration of evidence in Appendix F).

Solution 1: Active self-propelled local entrepreneurial ecosystem. This ecosystem type exhibits only one core condition, absence of financial support, which combines with four peripheral conditions to produce strong entrepreneurial activity: absence of cultural celebration, local

Table 5
Solution table for early activity, high-growth and absence of high growth.

	Early Activity*				**High-growth^**		**Low-growth**	
Configurations	**1**	**2**	**3a**	**3b**	**4**	**5**	**6**	**7**
Policy support	⊗	●	-	⊗	⊗	●	⊗	●
Local programs	⊗	●	●	-	⊗	●	⊗	●
Financial support	⊗	●	⊗	⊗	⊗	●	⊗	●
Cultural celebration	⊗	●	●	●	⊗	●	⊗	●
Entrepreneurial learning	-	●	-	⊗	-	●	-	●
Market behavior	●	-	⊗	⊗	●	●	●	-
Type of local ecosystem	Active self-propelled	Indulged	Passive self-absorbed		Boosted self-propelled	Indulged, market counter-balanced	Abandoned self-propelled	Overly-indulged
Consistency	0.91	0.89	0.94	0.94	0.84	0.84	0.91	0.88
Raw coverage (RC)	0.39	0.43	0.49	0.44	0.430	0.40	0.41	0.44
Unique coverage (UC)	0.084	0.079	0.051	0.025	0.073	0.060	0.073	0.067
Solution consistency		0.88			0.77		0.82	
Solution coverage		0.70			0.73		0.69	
*Consistency cutoff: 0.91, frequency threshold=3; ^ consistency cutoff: 0.854, frequency cutoff: 3								

*Consistency cutoff: 0.91, frequency threshold=3; ^ consistency cutoff: 0.854, frequency cutoff: 3. The solution table distinguishes core and peripheral conditions and shows single and overall degrees of consistency and coverage. Black circles indicate the presence of the condition, and circles with "X" indicate their absence. Large circles indicate core conditions; small circles indicate peripheral conditions. Blank spaces indicate irrelevant condition.

programs, and policy support and the presence of market behavior. These four peripheral conditions act as complementary ingredients or contributing factors that reinforce the central features of the core conditions. The cases of Maule11 (0.58, 0.87), Maule12 (0.59,0.63) and Santiago Metropolitana12 (0.61,0.72) offer a good illustration of Solution 1. While part of the same solution, the reasons behind strong market behavior and absence of constructed conditions and cultural celebration are different.

In late 2011 and early 2012, the Maule region experienced growth rates of 9.7% and 8.3% respectively, significantly superior than the national average of 5.6%. As a result of a boost in forestry, construction and manufacturing linked to increments in the international price of cellulose and agricultural activity, local markets became more active increasing the economic dynamism within the region and thus affecting the perception of experts regarding market behavior. However, Maule has traditionally considered as an intermediate region. Close enough but far enough from the nation's capital, it has shown over the years a moderate yet sufficient agricultural activity and no salient socio-political issues, such as ethnic conflicts or high inequality or poverty levels, which normally capture media attention and mobilize the government's social and economic agendas through economic development funds.

On the other side of the spectrum, entrepreneurship and perception of market dynamism increased significantly within the Santiago Metropolitan region as a result of a number of widely publicized entrepreneurship programs. Between 2010 and 2011, the Chilean government launched three iconic initiatives, i.e. Start-up Chile (2010, the year of innovation (2010) and the year of entrepreneurship (2011), diverting a significant amount of public funds to support enterprise-related activities. Such policy decisions increased the desirability of entrepreneurship as a career choice and the experts' expectations, yet the assessments of whether these three programs achieved the intended outcomes remain mixed. In the case of Start-Up Chile for example, evidence from early years of the program show positive effects on business performance (Gonzalez-Uribe and Leatherbee, 2017), survival rates (Verde, 2016) and Chile's global position as a Start-Up Nation (Gonder, 2012). However, as Forbes points out, its success remains constrained by its own standards of measurement (Moed, 2018). Commentators emphasize that "it's simply not possible to create *the next Silicon Valley* using legislative fiat and gobs of cash" (Johnson, 2013). Networking opportunities are limited, the Chilean market is too small, there are number of hidden costs and local VC funding is scarce. This is echoed by the entrepreneurs themselves (Malikov, 2016). Despite the government's claims (Ministerio de Hacienda, 2019), there are reasonable doubts about the value over tax-payers money (Johnson, 2013), while - 10 years on - the billion dollar company (Feige, 2014) has not yet emerged (InvestChile, 2018). This is specially so, when funding allocation for these new initiatives required disinvestment in other public services. Overall, while the number of new ventures created and attracted annually might have increased, the overall perception of support have gradually decreased as a result of the above tensions. This (i.e. sense of absence of adequate constructed attributes) was reinforced when the low retention and growth rates resulting from such programs were revealed.

Solution 2: Indulged local entrepreneurial ecosystem. In contrast to the previous ecosystem type, an indulged local ecosystem is explained by the combination of the presence of cultural celebration, as core condition, with four complementary conditions: presence of policy support, local programs, financial support and entrepreneurial learning. These four act as contributing factors reinforcing the central features of a strong and supportive entrepreneurial culture. This is the only solution term where market behavior appears as an irrelevant condition.

Here, four cases involving two regions serve as illustrative examples. Unlike in *Active self-propelled ecosystems*, where explanations differ, Valparaiso11 (0.71,0.6), Valparaiso13 (0.7,0.76), Coquimbo11 (0.51,0.91) and Coquimbo13 (0.71,0.59) experienced a similar set of circumstances. Between 2011-2013, Valparaiso and Coquimbo became two unexpected entrepreneurial hubs, with local universities and local agencies igniting entrepreneurial activity semi-independently from the central government. Events, co-working spaces and accelerators mushroomed during those years funded by both private and public actors. Experts argue that this growth in entrepreneurial activity and positive perception of support was a knock-on effect of the circumstances experienced by the Santiago Metropolitan Region in 2010-2011 (solution 1), yet the grassroots and unexpected nature of this entrepreneurial expansion led to stronger perceptions of confidence and correct functioning of the local ecosystem, unlike what we observe in solution 1.

*Solutions 3a*3b: Passive self-absorbed local entrepreneurial ecosystem*. Solutions 3a and 3b share two core conditions and exhibit relatively low unique coverage scores yet high raw coverage scores. This points toward potential overlaps between the solutions, enabling the creation of a joint solution 3a/3b or superset. Solution 3a combines the presence of cultural celebration and absence of financial support as core conditions, with two peripheral conditions: presence of local programs and absence of market behavior. In solution 3a, policy support and entrepreneurial learning are irrelevant conditions. Similar to solution 3a, Solution 3b also combines the presence of cultural celebration and absence of financial support as core conditions, however, it requires absence of policy support, market behavior and entrepreneurial learning as contributing factors to produce strong entrepreneurial activity. This is only solution where local programs appear as an irrelevant condition. Six empirically significant cases involving two regions serve as illustrative examples: Antofagasta11 (0.54, 0.91), Antofagasta13 (0.66, 0.84), Antofagasta14 (0.64, 0.59), Araucania13 (0.61, 0.57), Araucania14 (0.57, 0.56), and Araucania15 (0.74, 0.75). These cases dominate solution 3a and exhibit a moderate presence in solution 3b.

While Antofagasta and Araucanía are part of the same solution terms, these regions are geographically and economically different[8], therefore the circumstances (presence of cultural celebration and absence of financial support and market behavior) leading to strong entrepreneurial activity also differ. Antofagasta's economy is mostly dependent on copper mining, concentrating 54% of the country's copper production. Alongside Santiago, Antofagasta has become the capital for business tourism and currently hosts the most important trade fair of copper mining in the world - EXPONOR. Perceptions of local market behavior tend to consequently vary in line with international prices of cooper, which have experienced a sustained decline from 2010 onwards, from 4.5 usd/lb to 2 usd/lb in 2016. In addition, Antofagasta's GDP per capita equates that of the UK whilst exhibiting one of the highest multi-dimensional poverty levels in the country. To add further complexity, it presents one of the lowest rates of unemployment and highest salaries in the country, reducing the perceived need of public financial support aimed at fostering entrepreneurship.

Facing these unique circumstances, Antofagasta's entrepreneurial community has grown exponentially, yet independently, being supported by local universities, one technical college and one of the largest co-working movements in the country, boosted and supported by local programs. While part of the same set, the reasons behind Araucania's strong early firm activity and unique set of causal conditions differ from those of Antofagasta. Unlike its northern counterpart, Araucania's GDP per capita barely reaches Ecuador's GDP rates. The region exhibits the highest levels of income and multi-dimensional poverty and it also concentrates the highest number of ethnic conflicts in the country, experiencing continuous social unrest. Such set of circumstances increases perceptions of uncertainty within the region, influencing market dynamism in a downward direction. Similarly however, Araucania's

[8] Antofagasta (1,000 kilometers north from Santiago) is characterized by deserted landscapes and mining, whereas Araucania (900 kilometers south from Santiago) is characterized by hosting important part of Chile's lakes and thus concentrating an important part of the country's tourism industry.

entrepreneurial community has flourished in the past eight years propelled by two local universities, one technical college and also similar local programs, announced in 2013 and launched in 2014, aimed at fostering the development of co-working spaces across the region.

4.2.2. High- and low-growth activity

To further understand the relationship between narrated ecosystem attributes and firm activity, we examined what conditions lead to high-growth firm activity and the absence thereof. Combined with the results for early-stage firm activity, these findings give us a more fine-grained understanding of how ecosystem attributes enable entrepreneurship distinctively at a local level. They also allow us to find unexpected enabling forces, go deeper into our interpretations and explore further what underlies some of the counterintuitive findings. Most notably, it allows us to reflect on how and why the causal significance of some conditions is redistributed when attributes are configurationally assessed against different types of entrepreneurial activity.

The middle section of Table 5 presents two solutions for high-growth (4 and 5) and the last two columns on the right show two solutions for low-growth (6 and 7). While combinations remain stable for high-growth and low-growth activity, we observe a redistribution of the conditions' causal significance. Active market behavior becomes central to high-growth activity, moving other conditions to the back of the explanation. This creates two alternative types for high-growth ecosystems, which we label: *Boosted self-propelled* and *Indulged market counterbalancedlocal ecosystem*. Surprising and counterintuitive is also the change in the role that cultural celebration plays in comparison to its influence on early activity more generally. Contrary to early firm activity, where cultural celebration is prominent throughout, high-growth firm activity tends to flourish in the absence of norms conducive to entrepreneurship or where the importance of celebrating entrepreneurship is reduced.

Surprisingly, our analysis of low-growth activity (solutions 6 and 7) shows a similar configurational pattern compared to solutions 1 and 2. Although causal significance of independent conditions change, this finding suggests that most of what triggers early activity also prompts low-growth in both extremes, shaping up two types of low-growth ecosystems: *Abandoned self-propelled* and *overly-indulged*.

4.3. Robustness tests

To assess the robustness of results we conducted several tests, pertinent to fsQCA studies. First, we assessed the sensitivity of our results by readjusting the calibration and frequency thresholds (Muñoz and Dimov, 2015). These procedure allows us to evaluate whether our results are robust to the use of alternative specifications and assess the stability of the resulting causal configurations. This is conducted by means of squaring (SQ) and root-squaring (SQRT) the calibrated scores (C2 and C3 in Appendix C), which moves scores downward and upward, respectively creating sets with very strong membership and more or less strong membership. SQ test solution is consistent (0.79) and empirically relevant (0.79) as a whole. Overall, forcing the scores downward paints a clearer picture, it confirms the actual centrality and causal relevance of the core conditions previously identified. Narrated conditions are relatively sensitive to the use of alternative thresholds. We observe that cultural celebration becomes absent and peripheral and relevant in two out of three solution terms, whereas market and learning appear as core conditions in one out of three solution terms. The squaring test reinforces the absence of financial support as a core condition. Indeed under very strong membership, absence of financial support is almost necessary for strong TEA, with consistency and coverage levels of 0.88 and 0.68 respectively. Lack of financial support appears in three out of four solution terms. Likewise, the SQ test reinforces the contributing role of lack of policy support, which is present in all four solution terms, with >0.8 consistency levels. Our test with more or less strong fuzzy membership levels also supports our findings. SQRT test reinforces the absence of financial support, policy and local programs as core conditions, making them less sensitive to the use of alternative thresholds. In their present form, these are merely peripheral. As in the SQ test, conditions are slightly more sensitive to measurement when the scores are moved in an upward direction, since the absence of culture becomes a core condition. While relevant, this does not raise methodological concerns since it only occurs in only one empirically relevant solution term, which is accompanied by presence of market behavior and entrepreneurial learning as peripheral conditions in five out of six and three out of six solution terms respectively.

In a second test, we assess the stability by readjusting the frequency threshold under the same consistency cut-off. As seen in Appendix C (Table C4), solutions 1 and 2 remain stable as the ones with highest unique coverage, confirming the stability of our results. While interesting and parsimonious, since the test shows two distinct radically different types of entrepreneurial regions, the overall solution increases unnecessarily the limited diversity of observable cases. As such, it loses the richness of counterintuitive cases. In addition, the lack of counterfactuals constrains the identification of core and peripheral conditions.

Thirdly, we conduct a negate analysis of TEA to eliminate alternative explanations regarding possible causal relationships between conditions and absence of strong early activity at the regional level (C1 in Appendix C). The negate analysis confirms that indeed presence of financial support and market behavior and absence of cultural celebration lead to absence of strong TEA, reinforcing our main findings. In addition, the negate solution is less consistent (0.72) and empirically relevant (0.66) than the main solution, meaning that it is more effective to look for presence rather than absence of TEA.

Finally, we run a second set of sufficiency analyses with the metropolitan region excluded from the set of cases (Appendix D). This, to discard the potential distorting effect of centrality and concentration of population on early and high-growth activity. We did not find significant effects and the main causal recipes remain consistent. For early activity, we only observe a small atomization in the solutions (3a/3b in solution Table 5) with low coverage, which already exhibited overlaps. This, as a result of that a reduced number of cases forces the frequency threshold downward, which will always affect the parsimony of the results. For high growth activity, we notice a swift in balance in one of the solutions, making market behavior less relevant overall when the capital city is removed from the analysis. As one would expect, lower market dynamism is likely to be replaced by cultural celebration as the social engine of high-growth expectations (solutions D5a/b in Appendix D).

5. Discussion and conclusion

While research and practice have acknowledged the fact that entrepreneurial ecosystems are a combination of both national and specific local conditions (WEF, 2013), policymakers and scholars interested in the effect of institutional conditions on entrepreneurial activities have overlooked the role of meso-level, localized conditions in fostering entrepreneurship (Autio et al., 2018; Spigel and Harrison, 2018). Disregarding such role is beneficial, yet counterproductive.

We argue that most of our theorizing and normative work is still ill-equipped to deal with varied social and institutional realities and hence the possible combinations of factors leading to the emergence of new firms, high-growth firms in particular. The many attempts to simplify the reality within ecosystems theorizing have ended up in overly parsimonious frameworks. Echoing Autio *et al.* (2018), Goswami *et al.* (2018) and McKeever *et al.* (2015), we emphasize that rather than aiming for generalizable, all-encompassing frameworks in ecosystem research (Tödtling and Trippl, 2005), our theorizing should be geared toward addressing local needs from the ground up and in conjunction with local experts groups, community members and local entrepreneurs. This can better support agencies for the development of place-sensitive entrepreneurship and innovation policy.

Our results reveal a split picture against seemingly similar outcomes and assumed homogenous local contexts. The assessment of configural narratives reveals indeed a much more complex reality in ecosystem functioning. What matters and when for local ecosystems look different when seen through the lens of sociology of place, particularly when compared to what we observe when only constructed elements are taken into consideration (see illustration of evidence in Appendix F). Moreover, our analyses show a swift in causal significance when only high growth firms are taken into consideration. In light of the results, we argue that the normative homogeneity and the assumed necessity of certain evaluations of local ecosystem attributes within current frameworks need to be carefully reconsidered. Our analyses also bring to light counteracting sets of enabling conditions, where ecosystems structured to nurture early-stage firm activity seem to end up slowing-down growth.

Combined, our results not only put dominant frameworks under the spotlight but raise important policy concerns as to the actual relevance of certain ecosystem configurations, since some of them seem to triggering desirable (high-growth) and non-desirable (low-growth) outcomes simultaneously. This is problematic under the assumption that high-growth activity is a desirable policy outcome. It might require a serious rethinking moving forward, where a place-sensitive complexity view of the local normative evaluations of local ecosystems attributes needs to take a central stage.

Our analyses also emphasize the peripheral and insufficient role of *material enablers* (i.e. finance and policy), as evaluated by experts, bringing to light a set of interesting and so far neglected issues which also require careful consideration. Given the strong causal relationship between the lack of financial support and strong early activity at the local level and the high consistency levels of the former in a negative way, we can infer that financial support is neither dominant nor necessary for the development of strong entrepreneurial activity. This is also supported by the negative and significant correlation (-0.389) between these two variables. However, this argument opens up a new avenue for discussion, since most entrepreneurial ecosystems seem to flourish in the absence of financial support. Once again, our findings challenge traditional policy logic that tend to prioritize financial support as a key nurturing mechanism (Stam, 2015). We do not argue that financial support is irrelevant for entrepreneurship as a whole. Rather, we stress that there is bounded empirical evidence showing that strong entrepreneurial activity in early stages can remarkably occur in situations where financial support is absent. Also, that the relevance (necessity and sufficiency) of financial resources is sensitive to local realities and this can be better explained by looking at perceptions and combinations of narratives. Most notably, as narratives are enacted they can potentially transform the meaning and perceived benefits of a given set of financial resources.

Cultural enablers are expected to positively influence strong entrepreneurial activity at the local level. But they are insufficient by themselves, and need to be supported by other social and material enablers. This is in line with Spigel's (2017)assertions, where "ecosystem's attributes do not exist in isolation" (p.55) or a simple hierarchy. We observe that under no circumstances strong firm activity can emerge simply as a result of market behavior, entrepreneurial learning and social norms, despite their salience in comparison to material attributes, i.e. finance and policy. Significant increments in entrepreneurial activity should not be expected. For example, in ecosystems where entrepreneurship is highly valued and celebrated, entrepreneurs could be discouraged from starting up a new business if they are constrained by the absence of material attributes, e.g. lack of appropriate financial infrastructure, excessive local regulations and procedures and time requirements (Sørensen, 2007). Therefore, to explain differences between low-growth and high-growth entrepreneurial activity, further consideration should be given to combinatorial possibilities of doubly-constructed social, cultural and material attributes, despite the apparent sufficiency of certain conditions resulting from the prominence of social norms and cultural celebration.

5.1. Theoretical contributions

Building on these insights, our research makes a significant contribution to the current ecosystem literature (Autio *et al.* 2018; Goswami *et al.* 2018; Malecki, 2018; Audretsch *et al.* 2017; Spigler, 2017; Feldman, 2014). First, through a sociology-of-place lens, our research offers a new theoretical basis for the study of the social geography of ecosystems, revisiting what local entrepreneurial ecosystems are and the conditions under which they emerge as perceived by local experts. Each of the three derived ecosystem types constitute a theoretical statement comprising unique combinations of attributes explaining new firm emergence.

In particular, we offer a novel configural and place-sensitive conceptualization of local entrepreneurial ecosystems, which becomes possible when places are seen as culturally evolved and normatively evaluated. We echo and expand emerging perspectives on local ecosystem dynamics. For example, Spigel's (2017) comparative study emphasizes the importance of understanding the connections between the attributes that enable productive entrepreneurship. His analysis of two cities from Canada concluded that "Calgary's overall ecosystem has weaker ties between its attributes, but the power of its primary material attribute […] acts as the central point for the ecosystem's development […] [while] Waterloo's ecosystem lacks the powerful local market that creates opportunities for new entrepreneurs but instead depends on tight linkages among its cultural, social, and material attributes." (p. 66). Building on these ideas, we show that pursuing all-encompassing normative frameworks and overly simplified explanations might be cost-effective, (Brown and Mason, 2017; Acs *et al.,* 2017), yet inconvenient at best. Once the underlying complexity of ecosystems is brought to light, most of our theorizing and normative work seems ill-equipped to deal with the many possible social and institutional realities underlying local entrepreneurial ecosystems and hence the possible combinations of factors leading to productive entrepreneurship. In this sense, we advance Spigel's work by developing a new way of "seeing and appreciating" ecosystems and their impact on different levels of entrepreneurial activity.

Second, we contribute to recent calls for comparative ecosystem research and an emerging body of theories (Feldman, 2014; Malecki, 2018) by showing ecosystem plasticity and counter-productivity when

different levels of firm activity are analyzed. In this sense, early, low-growth and high-growth firm activity do not seem to exist as a continuum with positive correlations, where e.g. the more supportive the culture becomes, the stronger the entrepreneurial activity becomes. They are simply different types of entrepreneurial activity, which calls for reconsideration of the notion of "firm journeys" and the assumed enabling conditions. In this sense, our work contributes to the lack of specification and conceptual limitations of ecosystems research, which is still hindering our understanding of these complex systems (Brown and Mason, 2017; Goswami *et al.* 2018). Our work allows for delineating the relational and spatial elements of an ecosystem as a series of ideal types, offering place-sensitive specificity and boundaries pertaining how ecosystems emerge, evolve, and affect entrepreneurial activities in a particular location.

Finally, previous examinations of institutional conditions have overemphasized the role of material attributes, such as policy programs (e.g. Stam, 2015; Cao & Shi, 2020) and incentives (Massuci et al., 2020), which have been assumed to be necessary and in some cases sufficient by themselves for the development of strong entrepreneurial activity. Our results agree with this assessment only to the extent that local specificities are taken into consideration. Echoing Lowe and Feldman's (2017) narrative ecosystem research, our study shows that local entrepreneurship policy and programs are neither necessary nor sufficient by themselves to enhance ecosystem activity, requiring complementary sets of narrated conditions. Our results also challenge some preconceptions regarding the promotion of a culture of entrepreneurship. An entrepreneurial ecosystem culture creates dynamic environments, supports the (co-)creation of new opportunities and new ventures, enables networking, celebrates trust and risk-taking, and boosts entrepreneurial learning (Argote and Ingram, 2000; O'Shea et al., 2019). However, cultural celebration of entrepreneurship is by itself insufficient to produce high-growth entrepreneurial activity (Spigel and Harrison, 2018), since the relevance of culture and social norms is contingent upon the presence of formal institutions affecting the decision to become an entrepreneur within a particular region (Kibler et al., 2014; Lang et al., 2014; Muñoz and Kibler, 2016). In this vein, celebrating a culture of entrepreneurship cannot be enforced through policy intervention. Spigel and Harrison (2018) argue that the role of government is to "cultivate the entrepreneurial community and culture that will eventually help to produce and reproduce these resources rather than trying to create them from scratch" (p.164). Once again, our findings agree with that statement only to the extent these attributes are taken into consideration in a place-sensitive and narrated manner.

5.2. Contribution to methods and metrics

We also contribute to ecosystem assessment. In our research, we deploy a novel regional dataset as well as a new methodological approach and place-based conceptual apparatus to better observe, analyze and explain different levels of entrepreneurial activity and how alternative local entrepreneurial ecosystems are shaped up as a result. In doing so, we move the dominant investigative focus away from easy-to-get "hard-facts" or "national or regional statistics" to capture features and outcomes of ecosystems. Instead, we put emphasis on the analysis of socially constructed attributes of local ecosystems and what this tells us about the regional social legitimacy of entrepreneurship and how different firm activity levels are produced within and across regions. By unpacking and operationalizing a sociology of place in the study of ecosystems, our study makes also an important methodological contribution. This, by complementing our focus on measuring the "constructed" or "formal" side of ecosystem attributes with tools and data that help us capture the "doubly-constructed" side of local ecosystems, as evaluated and narrated by local (powerful) actors. This is particularly important if the aim is to tackle new questions around the social construction and impact of entrepreneurial ecosystems that have not yet been adequately addressed with traditional measures and research designs. By capturing local entrepreneurial ecosystems as configural narratives our study opens a new space where the complexity and combinatorial nature of the enabling narrative attributes of ecosystems can no longer be ignored. Alongside permitting the emergence a unique set of findings, our perspective allows for rethinking metrics and related inferential work and in consequence overcoming the limitations of current measures, analytical tools and data infrastructures.

5.3. Policy implications

We think our work also contributes to entrepreneurship and innovation policy by evaluating different types of local entrepreneurial ecosystems in terms of their impact on regional development through fostering entrepreneurial activity. In particular, we inform policy in three ways.

First, our work advances the ongoing development of normative models aimed at fostering entrepreneurship within and across regions (Stam, 2015). As our research shows, there is no single recipe for strong entrepreneurial activity at the local level, conversely, there are several distinct configurations of mostly necessary conditions and partially sufficient combinations of conditions that can support the development of a successful local entrepreneurial ecosystem. Our results reinforce the growing criticisms in the literature that discredit the overreliance on standardized strategies for the development of an efficient entrepreneurial ecosystem or region (Brown and Mason, 2017; Spigel, 2017). Our research provides evidence and insights in response to recent calls for a definitive shift from regional "entrepreneurship policy" to policy for an "entrepreneurial local economy", i.e. an entrepreneurial ecosystem (Thurik et al., 2013). Ultimately, regional entrepreneurship policy should not be about maximizing a particular indicator of entrepreneurship, but about enabling complex localized systems, in which multiple forms of entrepreneurship can flourish (Malecki, 2018). Complementing Spigel (2017), we argue that by disregarding this complexity-based understanding, research at the intersection of entrepreneurship and local development, in particular on entrepreneurial ecosystems, will continue to provide descriptive accounts of what a successful region looks like, without appropriate explanations of the internal dynamics of entrepreneurial regions or its role in local development.

Second, despite Chile's unique boundary conditions (Harima et al., 2020) we believe that some of our policy insights are widely applicable. The compilation of a harmonized and compressive database related to the key elements of the local entrepreneurial ecosystems in Chile is, to our knowledge, the first attempt to examine the localized institutional complexity underlying entrepreneurship in Latin America. This enables us to expand previous work on the relationship between entrepreneurship and institutional factors, particularly in emerging economies, to show how such interactions occur in a systematic manner in conjunction with other relevant attributes. Policymakers across emerging economies can benefit from our analyses and inferences.

Finally, our work also provides empirical evidence to support the growing concerns raised by Brown and Mason (2017), Spigel (2017) and others, regarding the overemphasis on standardized entrepreneurial development strategies at the local level. We indeed show three different

types of local ecosystems, all leading to new firm emergence. In this vein, our results expand Brown and Mason's (2017) critique in the sense that current policy frameworks put indeed too much attention on early stage activity. Reflecting on both sets of results, we can argue that current approaches rely on an essential misconception that considers entrepreneurial ecosystems as (high-growth, tech-based) firms' production lines, which inevitably ends up with narrow and inconsistent policy interventions.

Against this mis-conception, our findings reinforce the quintessential feature of an ecosystem which is its systemic and inclusive nature. The capacity of mono-method, single-recipe policies for the production of strong entrepreneurial activity is minimal. Narrowness and linearity lead to normative frameworks that are over-reliant on financial support mechanisms (e.g. Stam, 2015), despite the lack of evidence regarding the effectiveness of such instruments (Shane, 2009; Brown and Mason, 2017). If material attributes are to be nurtured (Lowe and Feldman, 2017), much more emphasis should be put on localized policy and programs rather than financial services, as the evidence confirm that entrepreneurial regions can equally flourish in the absence of financial support. Ultimately, the proof of the pudding is in the people and the complex social relationships underlying entrepreneurial regions, not in the monetary incentives that (presumably) guide their (rational) behavior. All in all, we believe that local governments are better positioned than centralized policymaking to foster ad-hoc constructed attributes, as they are capable of embracing complexity within their particular local contexts, and channel ecosystem evaluations circulating through narratives.

5.4. Limitations and future research

There are inevitable limitations to the new perspective we put forward and our demonstration. First, while we were able to use a unique expert data set to articulate a novel and robust understanding of local entrepreneurial ecosystems as configural narratives, the specific mechanisms whereby local experts communicate their normative evaluations and influence agencies are yet to be uncovered. Thus, an interesting way forward in this direction would be to conduct a more nuanced entrepreneurship rhetoric analysis (Salmivaara & Kibler, 2019), one that helps gain deeper insights into how local experts' rhetoric is shared via different channels (e.g. TV, social media, policy texts) and influence ecosystem functioning. Second, we acknowledge that the derived types are bounded by the hosting country conditions. Chile is undoubtedly a relevant empirical context for studying ecosystems as highlighted by Felzensztein et al. (2012), Larsson (2016),Amorós et al. (2017) and others. Yet, it is likely that local ecosystems in other emerging economies may be explained by alternative configurations, for instance as discussed by Kimmitt and Muñoz (2017) in their study of micro-entrepreneurship across Latin America. Future studies can look at the local normative evaluations of local ecosystems in other contexts, which could contribute to expanding the theoretical statements made in this study. Relatedly, our assessment is also bounded by the selection of one year as a temporal frame. While the decision of conducting annual evaluations is pertinent in our case, since most of the factors evaluated are subject to annual planning, funding and assessment, a different time-frame of analysis is likely to derive alternative explanations of ecosystem functioning. This is an important boundary condition. Other ecosystems might be constrained by weather or production patterns, which will have an impact on industrial activity. Given double rainy seasons in Africa, for example, local ecosystems might require six-monthly assessments. This opens up a range of opportunities for future research around temporality and ecosystem functioning and performance, with important policy implications. A final limitation pertains to the use of fsQCA to observe how local entrepreneurial ecosystems emerge and evolve, since limited process inferences can be made with conventional fsQCA. This is not an issue in our study, since we are interested in understanding how ecosystem attributes combine to yield new firm emergence across geographically and temporally-bounded cases, where of the cases represents a unique local entrepreneurial ecosystem. Leveraging new advances in configurational methods, such as temporal QCA (tQCA) and 2-step QCA, future studies can look at how configurations of conditions explaining ecosystem performance evolve and change over time.

6. Conclusion

In this paper, we draw on sociology of place to propose a new evaluative approach that delineates local entrepreneurial ecosystems as configural narratives, which we articulate using configurational comparative methods. We hope our theoretical and methodological contributions on the socio-spatial mechanisms underlying ecosystem functioning will inspire future research on the area.

Credit Author Statement

The four authors contributed to the manuscript equally.

Declaration of Competing Interest

We wish to confirm that there are no known conflicts of interest associated with this publication and there has been no significant financial support for this work that could have influenced its outcome.

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Appendices

Appendix A. 2018 Global Entrepreneurship Index (selected economies)

Country	1. Opportunity Perception	2. Startup Skills	3. Risk Acceptance	4. Networking	5. Cultural Support	6. Opportunity Startup	7. Technology Absorption	8. Human Capital	9. Competition	10. Product Innovation	11. Process Innovation	12. High Growth	13. Internationalization	14. Risk Capital	GEI
United States	0.864	1.000	0.969	0.569	0.816	0.849	0.814	1.000	1.000	0.733	0.902	1.000	1.000	0.876	0.836
Switzerland	0.776	0.719	0.879	0.533	0.673	0.966	1.000	0.789	1.000	0.834	0.902	0.882	1.000	1.000	0.804
Canada	0.981	0.795	0.708	0.626	0.975	0.999	0.779	0.912	0.676	0.991	0.758	0.559	0.936	1.000	0.792
United Kingdom	0.810	0.573	0.876	0.619	0.928	0.925	1.000	0.742	0.848	0.924	0.701	0.850	0.824	0.649	0.778
Australia	0.947	1.000	0.717	0.698	0.782	0.871	0.780	0.950	0.567	0.592	0.786	0.658	0.633	1.000	0.755
Denmark	1.000	0.690	0.748	0.634	0.918	1.000	1.000	1.000	0.989	0.988	0.723	0.594	0.390	1.000	0.743
Iceland	0.947	1.000	0.917	1.000	0.633	1.000	1.000	0.506	0.501	0.602	0.838	0.699	0.952	0.588	0.742
Ireland	0.766	0.966	0.801	0.390	0.780	1.000	0.769	0.851	1.000	1.000	0.822	0.884	0.970	0.568	0.737
Sweden	1.000	0.472	0.704	0.740	0.896	0.976	0.946	0.644	0.869	0.666	0.899	0.557	0.816	0.721	0.731
France	0.502	0.558	0.751	0.673	0.641	0.683	0.840	0.625	0.739	0.801	0.941	0.644	0.764	0.768	0.685
Netherlands	0.898	0.887	0.877	0.800	1.000	0.935	0.835	0.365	0.786	0.652	0.769	0.596	0.562	0.715	0.681
Finland	0.954	0.986	0.782	0.833	0.885	1.000	0.826	0.495	0.415	0.617	0.795	0.675	0.647	0.497	0.679
Hong Kong	1.000	0.581	0.610	1.000	0.680	0.800	0.643	0.894	0.381	0.884	0.409	1.000	0.679	1.000	0.673
Austria	0.780	0.953	0.672	0.552	0.683	0.808	0.941	0.399	0.761	0.724	0.818	0.403	0.901	0.630	0.660
Germany	0.775	0.627	0.657	0.380	0.842	0.759	0.863	0.482	0.848	0.667	0.840	0.662	0.874	0.760	0.659
Israel	0.738	0.598	0.481	1.000	0.738	0.647	1.000	0.811	0.317	0.997	1.000	0.851	0.601	0.788	0.654
Belgium	0.679	0.677	0.559	0.349	0.568	0.543	0.852	0.778	0.850	0.913	0.963	0.551	0.887	0.627	0.637
Taiwan	0.517	0.526	0.587	0.644	0.580	0.651	0.705	0.701	0.317	0.972	0.696	0.895	0.536	0.935	0.595
Chile	0.821	0.903	1.000	0.709	0.628	0.633	0.546	0.585	0.375	1.000	0.319	0.675	0.373	0.641	0.585

Appendix B. Calibration Table

case	policy	programs	finance	culture	market	learning	TEA	TEA-HG
TARAPACA_10	0.47	0.49	0.86	0.52	0.54	0.25	0.13	0.08
TARAPACA_11	0.39	0.31	0.48	0.44	0.14	0.31	0.94	0.57
TARAPACA_12	0.45	0.34	0.37	0.58	0.08	0.25	0.85	0.58
TARAPACA_13	0.96	0.96	0.95	0.94	0.7	0.96	0.62	0.28
TARAPACA_14	0.35	0.56	0.44	0.83	0.66	0.54	0.81	0.16
TARAPACA_15	0.26	0.43	0.18	0.81	0.88	0.53	0.68	0.33
ANTOFAGASTA_08	0.26	0.69	0.59	0.18	0.79	0.27	0.14	0.43
ANTOFAGASTA_09	0.38	0.75	0.76	0.47	0.61	0.86	0.31	0.8
ANTOFAGASTA_10	0.7	0.71	0.73	0.5	0.27	0.76	0.14	0.77
ANTOFAGASTA_11	0.43	0.72	0.44	0.54	0.27	0.57	0.91	0.77
ANTOFAGASTA_12	0.34	0.67	0.51	0.49	0.04	0.08	0.76	0.84
ANTOFAGASTA_13	0.55	0.77	0.33	0.71	0.34	0.6	0.84	0.54
ANTOFAGASTA_14	0.35	0.82	0.36	0.76	0.26	0.4	0.59	0.76
ANTOFAGASTA_15	0.1	0.43	0.05	0.55	0.17	0.04	0.77	0.85
ATACAMA_10	0.56	0.12	0.6	0.09	0.19	0.12	0.2	0.78
ATACAMA_11	0.43	0.25	0.43	0.3	0.79	0.05	0.88	0.501
ATACAMA_12	0.52	0.37	0.72	0.54	0.94	0.04	0.81	0.22
ATACAMA_13	0.7	0.66	0.48	0.72	0.48	0.45	0.7	0.52
ATACAMA_14	0.34	0.53	0.34	0.78	0.74	0.48	0.84	0.43
COQUIMBO_08	0.18	0.27	0.25	0.53	0.79	0.11	0.18	0.98
COQUIMBO_09	0.48	0.51	0.76	0.49	0.93	0.76	0.17	0.39
COQUIMBO_10	0.501	0.27	0.45	0.56	0.74	0.7	0.2	0.53
COQUIMBO_11	0.68	0.72	0.51	0.54	0.59	0.8	0.91	0.62
COQUIMBO_12	0.501	0.46	0.31	0.66	0.54	0.25	0.77	0.53
COQUIMBO_13	0.77	0.75	0.71	0.84	0.73	0.77	0.59	0.68
COQUIMBO_14	0.53	0.67	0.42	0.78	0.26	0.87	0.77	0.37
COQUIMBO_15	0.55	0.78	0.22	0.8	0.65	0.83	0.6	0.7
VALPARAISO_08	0.09	0.43	0.61	0.2	0.16	0.51	0.09	0.73
VALPARAISO_09	0.26	0.59	0.77	0.52	0.85	0.75	0.25	0.54
VALPARAISO_10	0.32	0.2	0.85	0.49	0.74	0.73	0.15	0.57
VALPARAISO_11	0.74	0.92	0.81	0.71	0.44	0.77	0.6	0.74
VALPARAISO_12	0.501	0.56	0.38	0.82	0.61	0.04	0.73	0.63
VALPARAISO_13	0.7	0.96	0.77	0.74	0.37	0.77	0.76	0.38
VALPARAISO_14	0.36	0.76	0.62	0.87	0.75	0.8	0.78	0.7
VALPARAISO_15	0.35	0.87	0.3	0.82	0.07	0.27	0.79	0.38
OHIGGINS_10	0.73	0.38	0.87	0.49	0.32	0.51	0.24	0.04
OHIGGINS_11	0.85	0.83	0.77	0.61	0.16	0.85	0.68	0.24
OHIGGINS_12	0.87	0.65	0.38	0.55	0.21	0.57	0.65	0.57
MAULE_10	0.32	0.07	0.81	0.58	0.84	0.31	0.73	0.09
MAULE_11	0.16	0.11	0.42	0.35	0.63	0.78	0.87	0.27
MAULE_12	0.3	0.41	0.2	0.05	0.9	0.56	0.63	0.49
BIOBIO_08	0.3	0.6	0.46	0.62	0.46	0.45	0.29	0.62
BIOBIO_09	0.46	0.71	0.22	0.52	0.04	0.15	0.13	0.32
BIOBIO_10	0.05	0.04	0.37	0.35	0.66	0.76	0.46	0.06
BIOBIO_11	0.22	0.38	0.6	0.27	0.63	0.78	0.58	0.23
BIOBIO_12	0.66	0.85	0.82	0.25	0.56	0.54	0.52	0.35
BIOBIO_13	0.65	0.501	0.22	0.07	0.57	0.07	0.56	0.21
BIOBIO_14	0.69	0.85	0.25	0.49	0.79	0.72	0.52	0.29
BIOBIO_15	0.62	0.87	0.43	0.55	0.48	0.45	0.55	0.25
ARAUCANIA_08	0.07	0.24	0.6	0.05	0.82	0.03	0.63	0.94
ARAUCANIA_09	0.48	0.83	0.63	0.33	0.82	0.43	0.22	0.51
ARAUCANIA_10	0.72	0.67	0.57	0.23	0.501	0.04	0.23	0.18
ARAUCANIA_11	0.58	0.77	0.4	0.12	0.66	0.14	0.12	0.31
ARAUCANIA_12	0.66	0.76	0.4	0.71	0.71	0.33	0.73	0.26
ARAUCANIA_13	0.72	0.94	0.26	0.76	0.39	0.4	0.57	0.11
ARAUCANIA_14	0.39	0.57	0.3	0.67	0.29	0.75	0.56	0.14
ARAUCANIA_15	0.3	0.88	0.18	0.84	0.26	0.62	0.75	0.09
METROPOLITANA_08	0.07	0.21	0.65	0.08	0.17	0.45	0.05	0.74
METROPOLITANA_09	0.14	0.22	0.9	0.2	0.1	0.56	0.13	0.18
METROPOLITANA_10	0.44	0.4	0.8	0.37	0.27	0.57	0.23	0.68
METROPOLITANA_11	0.64	0.33	0.48	0.17	0.26	0.65	0.58	0.78
METROPOLITANA_12	0.35	0.3	0.33	0.23	0.61	0.06	0.72	0.51
METROPOLITANA_13	0.66	0.78	0.61	0.31	0.15	0.51	0.81	0.6
METROPOLITANA_14	0.06	0.33	0.37	0.49	0.27	0.75	0.95	0.87
METROPOLITANA_15	0.1	0.44	0.28	0.501	0.3	0.06	0.78	0.69
ARICA_09	0.8	0.6	0.86	0.63	0.52	0.33	0.31	0.52
ARICA_10	0.36	0.16	0.62	0.72	0.44	0.14	0.38	0.04
ARICA_11	0.42	0.29	0.57	0.67	0.26	0.27	0.89	0.62
ARICA_12	0.47	0.29	0.47	0.7	0.37	0.48	0.72	0.08
ARICA_13	0.6	0.67	0.51	0.77	0.54	0.76	0.77	0.33
ARICA_14	0.37	0.4	0.42	0.49	0.78	0.25	0.63	0.4

Appendix C. Robustness tests: Sensitivity

C1. Negate analysis

Model: ~tea = f(policy, programs, financial, culture, market, learning)

— PARSIMONIOUS SOLUTION —

frequency cutoff: 3 consistency cutoff: 0.800845	raw coverage	unique coverage	consistency
financial	0.820399	0.0446627	0.711734
policy*~learning	0.583782	0.00126702	0.777966
~culture	0.793792	0.0338929	0.735113
market	0.735508	0.0326259	0.666284
solution coverage: 0.961672			
solution consistency: 0.619213			

— INTERMEDIATE SOLUTION —

frequency cutoff: 3 consistency cutoff: 0.800845 Assumptions: NO	raw coverage	unique coverage	consistency
~policy*~programs*~financial*~culture*market	0.443776	0.0798225	0.825575
policy*programs*financial*culture*learning	0.452962	0.0655684	0.749869
~policy*~programs*financial*~culture*~market *learning	0.40133	0.0443459	0.884777
policy*programs*~financial*culture*~market*~learning	0.399113	0.025974	0.807692
solution coverage: 0.66107			
solution consistency: 0.721147			

C2. Very strong membership (fuzzy scores squared)

Model: tea = f(policy_sq, programs_sq, financial_sq, culture_sq, market_sq, learning_sq)

— PARSIMONIOUS SOLUTION —

frequency cutoff: 3
consistency cutoff: 0.826393

	raw coverage	unique coverage	consistency
~financial_sq	0.912345	0.333484	0.714079
mark_sq	0.443505	0.0175887	0.801165
learning_sq	0.432746	0.0128444	0.839231
solution coverage: 0.952947			
solution consistency: 0.698976			

— INTERMEDIATE SOLUTION —

frequency cutoff: 3
consistency cutoff: 0.826393
Assumptions: NO

	raw coverage	unique coverage	consistency
~policy_sq*~financial_sq*~mark_sq*~learning_sq	0.716302	0.126149	0.813027
~policy_sq*~programs_sq*~financial_sq*~culture_sq*~learning_sq	0.644168	0.0531161	0.800864
~policy_sq*~programs_sq*financial_sq*~culture_sq*mark_sq*learning_sq	0.170328	0	0.868729
solution coverage: 0.795357			
solution consistency: 0.785143			

C3. More or less strong membership (fuzzy scores sqrt)

Model: tea = f(policy_ro, programs_ro, financial_ro, culture_ro, market_ro, learning_ro)
Algorithm: Quine-McCluskey
— PARSIMONIOUS SOLUTION —

frequency cutoff: 2
consistency cutoff: 0.84017

	raw coverage	unique coverage	consistency
~learning_ro	0.526557	0.0410753	0.801941
~mark_beha_ro	0.512082	0.0546383	0.837456
~culture_ro	0.426297	0.00808477	0.755008
~financial_ro	0.521068	0.0210425	0.927772
~programs_ro	0.435518	0.0104774	0.815328
~policy_ro	0.534064	0.0156621	0.809185
solution coverage: 0.789936			
solution consistency: 0.761676			

— INTERMEDIATE SOLUTION —

frequency cutoff: 2
consistency cutoff: 0.84017
Assumptions:

	raw coverage	unique coverage	consistency
policy_ro*programs_ro*financial_ro*~culture_ro*mark_ro	0.391331	0.0209523	0.82379
programs_ro*financial_ro*culture_ro*mark_beha_ro*~learning_ro	0.433362	0.0243959	0.866006
~policy_ro*programs_ro*financial_ro*culture_ro*mark_ro	0.454551	0.00988764	0.852469
~programs_ro*financial_ro*culture_ro*mark_ro*learning_ro	0.375352	0.0199376	0.863073
policy_ro*programs_ro*financial_ro*culture_ro*~mark_ro*learning_ro	0.45366	0.0556687	0.891369
policy_ro*programs_ro*~financial_ro*culture_ro*mark_ro*learning_ro	0.444664	0.0210425	0.945001

solution coverage: 0.683247
solution consistency: 0.809456

C4. Truth table with frequency change (f=4)

policy	programs	financial	culture	market	learning	number	tea	Consist.
0	0	0	1	0	0	4	1	0.957156
1	1	1	1	0	1	4	1	0.936458
0	1	0	1	0	0	4	1	0.934407
1	1	1	1	1	1	4	1	0.91386

Model: tea = f(policy, programs, financial, culture, market, learning)
*Frequency 4 allows for capturing full complexity, hence the analysis does not produce a parsimonious solution
— INTERMEDIATE SOLUTION —

frequency cutoff: 4
consistency cutoff: 0.91386
Assumptions: NO

	raw coverage	unique coverage	consist
~policy*~financial*culture*~mark_beha*~learning	0.442521	0.13139	0.939866
policy*programs*financial*culture*learning	0.435636	0.124506	0.88773

solution coverage: 0.567027
solution consistency: 0.880835

Appendix D. Robustness test: Sufficiency analysis with Metropolitan Region excluded

	Early Activity*					High-growth^		
Configurations	**D1**	**D2**	**D3a**	**D3b**	**D4**	**D5a**	**D5b**	**D6**
Policy support	⊗	●	●	●	⊗	-	⊗	●
Local programs	⊗	●	●	-	⊗	●	-	●
Financial support	⊗	●	⊗	⊗	●	⊗	⊗	●
Cultural celebration	⊗	●	-	●	●	●	●	●
Entrepreneurial learning	-	●	⊗	-	⊗	-	⊗	●
Market behavior	●	-	●	⊗	-	⊗	⊗	●
Type of local ecosystem	Active self-propelled	Indulged	Atomization of passive self-absorbed			New super set, cultural celebration as social engine of high-growth expectations		Indulged, market counter-balanced
Consistency	0.9	0.84	0.92	0.93	0.9	0.8	0.84	0.84
Raw coverage (RC)	0.38	0.45	0.395	0.49	0.391	0.53	0.38	0.447
Unique coverage (UC)	0.05	0.075	0.018	0.05	0.019	0.036	0.036	0.088
Solution consistency			0.848				0.77	
Solution coverage			0.755				0.645	

N=63. *Consistency cutoff: 0.91, frequency threshold=2; ^consistency cutoff: 0.843, frequency cutoff: 3

N=63. *Consistency cutoff: 0.91, frequency threshold=2; ^consistency cutoff: 0.843, frequency cutoff: 3

Appendix E. Multicollinearity assessment

Variable	VIF	1/VIF
Local programs	1.85	0.5406
Policy support	1.82	0.5488
Cultural celebration	1.40	0.7165
Entrepreneurial learning	1.38	0.7252
Financial support	1.34	0.7467
Market behavior	1.03	0.9677
Mean VIF	1.47	

Appendix F

			Policy support		Local programs					Financial support
Year: 2015	Population	Ha / 100,000	Financial support CLP/ hab (1)	Corfo total funding CLP (1)	Regional entrepreneurship support program CLP (1)	Seed funding allocated CLP (1)	Seed funding beneficiaries (1)	Seed funding allocated per beneficiary CLP (1)	Ecosystem support program CLP (1)	Private capital across Corfo portfolio (1)
TARAPACA	330,558	3.31	222.65	73,598,000	73,598,000	-	-	-	3,375,000	-
ANTOFAGASTA	607,534	6.08	321.19	195,135,000	124,530,000	20,812,809	1	20,812,809	70,602,288	100,000,000
ATACAMA	286,168	2.86	253.70	72,600,000	72,600,000	-	-	-	-	-
COQUIMBO	757,586	7.58	218.80	165,757,000	95,557,000	51,000,000	2	25,500,000	19,200,000	411,000,000
VALPARAISO	1,815,902	18.16	630.54	1,145,000,000	488,426,000	322,375,250	13	24,798,096	334,099,828	135,000,000
OHIGGINS	914,555	9.15	200.26	183,152,000	158,150,000	25,000,000	1	25,000,000	-	12,000,000
MAULE	1,285,255	12.85	207.51	266,700,000	142,200,000	101,500,000	4	25,375,000	33,000,000	90,000,000
BIO BIO	1,797,110	17.97	368.56	662,341,604	527,141,000	76,000,000	3	25,333,333	59,200,000	20,000,000
ARAUCANIA	957,224	9.57	442.12	423,210,000	423,210,000	25,500,000	1	25,500,000	74,381,000	40,000,000
METROPOLITANA	7,112,808	71.13	810.89	5,767,700,000	342,480,000	2,042,918,148	82	24,913,636	3,382,368,383	4,538,000,000
ARICA	226,068	2.26	271.60	61,400,000	61,400,000	-	-	-	-	18,000,000
LAGOS*	828,708	8.29	445.27	369,000,000	300,000,000	-	-	-	129,097,960	28,000,000
AYSEN*	103,158	1.03	2,143.31	221,100,000	151,314,000	-	-	-	69,850,500	4,000,000
MAGALLANES*	166,533	1.67	918.61	152,979,460	112,979,000	-	-	-	40,000,000	-
RIOS*	384,837	3.85	945.62	363,911,000	173,910,000	-	-	-	202,000,000	259,000,000

1 Corfo
2 SIBF
3 GEM APS
4 Ministry of Education
5 Central Bank Chile
6 SII
7 Encuesta micro-emprendimiento
8 Entrepreneurnerd – Corfo
* Regions not included in the main analysis

Financial support		Cultural celebration		Entrepreneurship learning				Market behavior			
Financial deposits in private institutions average growth (2)	Number of bank offices per 100.000 adults (2)	Entrepreurship good career choice (% Adult population (3)	Coverage of successful entrepreneurs in the media (% Adult population (3)	Ratio students per teacher (4)	Number of HE institutions (4)	Number of HE institutions per 100,000 hab (4)	Number of leading incubators (8)	Regional annual GDP growth rate (5)	Unemployment rate (5)	Firms created (6)	Informality rates amongst micro-entrepreneuers (7)
1.8%	19	74.0%	59.6%	24.8	11	3.33	1		6.9%	19,116	59.4%
47.2%	19	75.0%	57.0%	25.1	21	3.46	2	-1.5%	6.9%	31,075	56.0%
10.2%	17	82.9%	54.6%	21.3	12	4.19	1	0.1%	6.1%	16,521	48.6%
11.8%	13	74.0%	62.1%	19.5	23	3.04	1	-0.4%	7.8%	40,268	63.0%
14.7%	17	73.0%	60.3%	19.8	41	2.26	3	-0.5%	7.1%	105,395	49.0%
0.4%	14	71.5%	62.1%	19.4	18	1.97	1	2.4%	5.8%	56,475	49.0%
9.9%	12	68.1%	62.8%	17.6	22	1.71	1	8.6%	6.1%	71,120	46.0%
-23.9%	12	74.1%	68.5%	17.3	39	2.17	3	1.5%	7.9%	108,780	54.5%
47.2%	13	70.8%	70.2%	17.6	28	2.93	3	5.4%	7.3%	51,138	66.4%
-2.0%	18	65.5%	57.1%	23.4	107	1.50	10	2.8%	6.1%	462,268	48.5%
10.7%	10	77.8%	74.5%	22.8	11	4.87	1	4.9%	5.7%	14,618	49.9%
10.1%	15	72.2%	61.2%	18.7	18	2.17	2	0.4%	3.3%	54,298	58.0%
10.7%	19	79.5%	59.0%	16.7	7	6.79	1	-2.6%	3.6%	8,010	42.3%
-3.9%	22	64.6%	63.0%	18.8	8	4.80	1	-0.6%	3.7%	11,857	32.4%
4.0%	13	64.7%	40.2%	18.0	14	3.64	2	1.5%	4.7%	22,280	58.8%

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