

The lineages of the entrepreneurial ecosystem approach

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Abstract In its most abstract sense, an ecosystem is a biotic community, encompassing its physical environment, and all the interactions possible in the complex of living and nonliving components. Economics has always been about systems that explain differential output and outcomes. However, economics has generally ignored the role of entrepreneurship in economic systems, just as entrepreneurship studies have largely overlooked the role of systems in explaining the prevalence and performance of entrepreneurship. The entrepreneurial ecosystem approach has the promise to correct these shortcomings. Its two dominant lineages are the regional development

literature and the strategy literature. Both lineages share common roots in ecological systems thinking, providing fresh insights into the interdependence of actors in a particular community to create new value. But studies of both regional development and strategic management have largely ignored the role of entrepreneurs in new value creation. In this paper, we will outline contributions to the entrepreneurial ecosystem approach and conclude with a promising new line of research to our understanding of the emergence, growth, and context of start-ups that have achieved great impact by developing new platforms.

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1 Introduction

This special issue of *Small Business Economics* on “Entrepreneurial Ecosystems” is a response to the rapidly growing interest in the subject. Both businesses and governments have embraced ecosystems as a concept to improve contexts for entrepreneurship and innovation. As Stam (2015: 1763) clearly pointed out, “Seductive though the entrepreneurial ecosystem concept is, there is much about it that is problematic, and the rush to employ the entrepreneurial ecosystem approach has run ahead of answering many fundamental conceptual, theoretical, and empirical questions.” Before these

questions can be answered, there needs to be a clear set of definitions, concepts, relationships, and boundaries.

In its most abstract sense, an ecosystem (“ecological system”) is a biotic community, its physical environment, and all the interactions possible in the complex of living and nonliving components (Tansley 1935). What does this have to do with economics, one might ask? The simple answer is that an ecosystem is about performance and performance is what economics is about. The more nuanced answer is that economics has always been about the systems that explain differential output (economic behavior) and outcomes (aggregate welfare). Entrepreneurship is an important output of such systems—it is both enabled and constrained by its context—and an important mechanism to explain the outcome of economic systems.

In this introduction, we will discuss the lineages of the entrepreneurial ecosystem approach not only to build on these but also to reveal the distinct nature and added value of the entrepreneurial ecosystem approach. This special issue of *Small Business Economics* critically examines the subject of entrepreneurial ecosystems. Our goal is to understand the environment around entrepreneurs and entrepreneurship in an economy, and gauge its performance effects on the regional economy.

2 Lineages of the entrepreneurial ecosystem approach

The entrepreneurial ecosystem approach has two dominant lineages: the strategy literature and the regional development literature. Both lineages share common roots in ecological systems thinking, focusing on the interdependence of actors in a particular community to create new value, and have developed a novel approach to industrial organization over the last decades.

The regional development literature has a long established tradition of looking at regional (eco)systems in order to explain differential socioeconomic performance of regions. It comprises a family of related concepts, like industrial districts, regional industrial clusters, and regional innovation systems (Stam and Spigel 2017; Terjesen et al. 2017). These concepts share a focus on regional performance, be it innovativeness as an output, or productivity and employment as outcomes. The industrial district approach emphasizes the local division of labor of an industry (Marshall 1920) and the interaction between the community of people and a population of firms within a socio-territorial entity (Becattini 1990) in order to be successful

on international markets. The cluster approach focuses on “geographic concentrations of interconnected companies, specialized suppliers, service providers, firms in related industries, and associated institutions (...) in particular fields that compete but also cooperate” (Porter 1998: 197). Regional innovation systems (RIS) refer to the networks and institutions linking knowledge producing hubs such as universities and public research labs with innovative firms within a region. These linkages allow knowledge to spill over between different organizations, increasing a region’s overall innovativeness (Cooke et al. 1997).

In the strategy literature, an emergent perspective proposes *business ecosystems* as a form of economic coordination in which a firm’s ability to create and appropriate value critically depends on different groups of actors that produce complementary products or services (Iansiti and Levien 2004; Adner and Kapoor 2010; Williamson and De Meyer 2012). Business ecosystems refer to the set of partners that need to be brought into alignment in order for a value proposition to materialize in the market place (Adner 2017). Studies have shown that important structural and strategic factors affect a firm’s ability to capture a large share of the total value created by the ecosystem when organizing economic activity among ecosystem partners (Adner and Kapoor 2010; Jacobides et al. 2006). Alignment of business partners in a community, to create value for customers is central. As highlighted by Adner et al. (2013), p.x): “Strategy in ecosystems must account for creating a differentiated value proposition to attract not only the end consumer, but for the required partners as well. Such actors may include several groups of stakeholder firms such as component suppliers, rival firms, complementors, buyers, user communities, and universities.” Due to the need to manage the interactions and interdependences among the stakeholders (Uzunca et al. 2016), firms play a crucial role by shaping the perceptions of existing and future participants (Gawer and Cusumano 2002; Autio and Thomas 2016).

A related stream of strategy literature also looks at the ecosystem surrounding a platform. This literature focuses on physical or virtual platforms that connect one group of customers with another group of customers, centering on network externalities (Rochet and Tirole 2003; Parker and Van Alstyne 2005; Evans and Schmalensee 2016). However, an ecosystem does not necessarily have a platform at its core (Autio and Thomas 2014) and therefore a platform is not the defining characteristic of an ecosystem. In a sense, the ecosystem in the strategic management literature

is a reincarnation of the industrial organization literature, with its focus on how industry structure leads to particular firm behavior and performance (Bain 1959), however, with the important difference that the adopted ecosystem approach does not stick to strictly demarcated product markets, but employs a value chain approach that crosses a variety of industries. The industrial cluster approach likewise builds upon the industrial organization literature (Porter 1998), but it also transcends it, by analyzing sets of related industries in a particular territory.¹

The two lineages differ in three important aspects. First, the regional development literature explicitly focuses on the territorial boundedness of an ecosystem, while the strategy literature assumes (implicitly or explicitly) a global context (Zahra and Nambisan 2011). Second, the regional development literature aims to explain differences in aggregate regional performance (aggregate value creation), while the strategy literature focuses on the value creation *and* value capture by individual firms, around a clear value proposition. If you manage the ecosystem well, the value of the focal firm(s) increases (Uzunca et al. 2016). Third, the strategy literature assumes leadership by a focal firm in the ecosystem, while the regional development literature hardly acknowledges any central leadership role, beyond the facilitating role of governments and possibly business associations (“institutional thickness”: Amin and Thrift 1994).

The entrepreneurial ecosystem approach, just like strategy and regional development literatures, emphasizes the interdependence between actors and factors, but sees entrepreneurship (new value creation by agents) as the output of the entrepreneurial ecosystem. It shares its focus on aggregate value creation within a particular region, with the regional development literature. Outputs and outcomes can be collapsed into the concept of productive entrepreneurship (Baumol 1990), leading to a definition of entrepreneurial ecosystems as a “set of interdependent actors and factors coordinated in such a way that they enable productive entrepreneurship within a particular territory” (Stam and Spigel 2017). Both the strategy ecosystem literature and the regional development literature underplay the role of entrepreneurs in creating value (Pitelis 2012; Stam and Spigel 2017). Isenberg (2010)—probably the most explicit entrepreneurial ecosystem

follower of Porter’s cluster approach—mixes the (firm focused) concept of clusters with the (entrepreneurship focused) concept of entrepreneurial ecosystem. Thus, the novelty of the entrepreneurial ecosystem approach lays in the focus on (productive) entrepreneurship as an output of the ecosystem. Competition and value capture play a less prominent role in the entrepreneurial ecosystem approach than in the strategy literature on ecosystems. The entrepreneurial ecosystem claims a more central role for “servant” leadership by publicly oriented (successful) entrepreneurs with a long-term commitment to the region (Felf 2012). These entrepreneurs are likely to forge coalitions with the public sector (sometimes even becoming part of it, for example, as mayor or leader of a regional economic board). This entrepreneurial leadership refers to a mode of self-organization within the entrepreneurial ecosystem—entrepreneurship is not only an output but also an input to the system (Mason and Brown 2013; Stam 2015). We summarize the strategic management and regional development literatures, and the ensuing entrepreneurial ecosystem approach in Table 1.

3 Papers in this special issue

There are several issues that emerge when one starts to research entrepreneurial ecosystems. First, is the issue of governance? Who is in charge of setting up the inclusive institutions that create the incentives for productive agents that make up the regional entrepreneurial ecosystem (Baumol 1990; Acemoglu and Robinson 2013; Acs et al. 2014)? Some have argued that entrepreneurial ecosystems open up a shared responsibility of many who nurture, encourage, and support entrepreneurs (Stam 2015). However, this requires supportive political institutions. The second question evolves around what are the ecosystem services that a region is trying to achieve (Stam 2015). In other words, if we want to improve the entrepreneurial ecosystem, what do we want to improve (which elements), and with what kind of end goals in mind? These end goals may include an increase in entrepreneurial outputs, but ultimately outcomes like productivity, employment, and income.

The literature supports some of this. Entrepreneurs (small firms) are important for innovation (Acs and Audretsch 1988) and new firms are important for employment growth although only a small fraction of new firms create most of the employment growth (Davis et al. 1996). There is some evidence that entrepreneurship

¹ Even though most of the spatial econometric analyses of industrial clusters have focused on the spatial concentration of single industries (Glaeser et al. 1992), more recently, they started focusing on related industries (Frenken et al. 2007).

Table 1 Lineages of the entrepreneurial ecosystem approach

	Strategic management	Regional development	Entrepreneurial ecosystem approach
Value	Value creation and capture by firms	Value creation by firms in related industries (productivity) driven by competition (value capture) and collaboration	Value creation by individual entrepreneurs, as indicated by the prevalence of high-impact entrepreneurial efforts (such as Unicorns)
Context	Global	Regional	City/regional/national
Coordination	Governance and management by a focal orchestrator firm	Firms' rivalry and collaboration, government policy	Public-private governance

has positive aggregate socioeconomic effects. Finally, is there an overlap between the business ecosystem and the entrepreneurial ecosystem? If yes, how, and if not, why not? For example, we know that all successful platform businesses are located in a limited set of regions around the world, but many entrepreneurial ecosystems are not home to platform businesses. The papers in this special issue try to answer some of these questions.

The first paper by Brown and Mason, “Looking Inside the Spiky Bits: A Critical Review and Conceptualization,” builds off an idea originated by Florida (2004) that the world is spiky and not flat. In other words, globalization has changed the world but economic activity is still highly concentrated in certain key cities. The authors argue that a lack of specification and conceptual development of the entrepreneurial ecosystem has hindered our understanding. They suggest that the rapid adoption of the concept has tended to overlook the heterogeneous nature of ecosystems. They provide a critical review and conceptualization of the ecosystems concept: they unpack the dynamics of the concept, outline its theoretical limitations, measurement approaches, and use in policy-making. A preliminary taxonomy of archetypal ecosystems is forwarded and delineated. The paper concludes that entrepreneurial ecosystems are highly variegated, multi-actor and multi-scaler phenomenon, requiring bespoke policy interventions.

Terjesen et al. (2017) suggest that the *prima facie* motivation for entrepreneurial ecosystems is *economic performance*. They argue that *economic performance* is not unique to individuals, companies, entrepreneurs, or regions. Entrepreneurial ecosystems have the special feature of bringing the goal of enhanced and sustained performance to all the various actors. Economic regions have a mandate to and in practice expend considerable effort and resources to attain and sustain a strong performance. While the entrepreneurial ecosystem concept does not challenge the efficacy of the other dimensions of spatial organization and structure, such as clusters,

specialization, diversity, market power, or localized competition, it suggests that entrepreneurship is also a key dimension enhancing economic performance. They further examine different approaches to attaining performance including the Global Entrepreneurship Index (GEI) that links entrepreneurs and institutions in a system of mutual interrelationships.

The second paper by Bruns et al. (2017), “Searching for the Existence of Entrepreneurial Ecosystems,” proposes a method by which the entrepreneurial ecosystem, if present, reveals itself in the data. Since an ecosystem is impossible to measure directly, according to the authors, they argue that variations in entrepreneurial ecosystem quality should result in variation in the estimated marginal effect of entrepreneurial activity on economic growth. They cover 107 European regions across 16 European countries. They find no evidence of statistically significant heterogeneity in the estimated slope coefficients for entrepreneurial activity across regions. They suggest two reasons for the insignificant results. First, the regional units used in the analyses are too large and combine rural and city regions. Second, they suggest that the time period 2006 to 2014 was a period of crisis in Europe. We would suggest a third explanation. The use of GEM’s Total Entrepreneurial Activity (TEA) measure is not an adequate or appropriate measure of entrepreneurship. In several studies of economic growth, TEA and self-employment are even negatively correlated with both growth and development (Henrekson and Sanandaji 2014; Stam 2013).

In a related paper, Acs et al. (2017) also found no support for entrepreneurial ecosystems impacting performance at the country level using the GEI. They explore empirically the relationship between economic growth, factor inputs, institutions, and entrepreneurship. In particular, they investigate whether entrepreneurship and institutions, either independently or in combination in an ecosystem, represent the “missing link” in explaining

cross country differences in productivity. Examining 48 countries over a 10-year period from 2002 to 2012, entrepreneurial ecosystems were not a significant explanatory variable for economic performance measured by changes in productivity. They found that after controlling for factor inputs and institutions that were statistically significant for performance, entrepreneurship alone or with institutions in an ecosystem, added nothing to the explanation of economic performance in developed countries although they were significant in developing countries. The implication is that entrepreneurship or entrepreneurial ecosystems if they are important for economic performance operate through institutions.

The dead end in the previous paper suggests that another approach might be needed to identify entrepreneurial ecosystems. Building on the idea that performance is the primary motivation for entrepreneurial ecosystems, the third paper expands the concept to include technology that has not been directly addressed in the previous papers. Sussan and Acs, “The Digital Entrepreneurial Ecosystem,” suggests that a significant gap exists in the conceptualization of entrepreneurship in the digital age. They introduce a conceptual framework for entrepreneurship in the digital age by integrating the entrepreneurial ecosystems (Acs et al. 2014) with the digital ecosystem (Li et al. 2012). They argue that the integration of these two ecosystems helps us better understand the interactions of agents and users that incorporate insights from customer’s individual and social behavior. The *Digital Entrepreneurial Ecosystem* framework consists of four concepts: digital infrastructure governance, digital user citizenship, digital entrepreneurship and the digital marketplace. The paper provides a theoretical framework of multisided platforms to better understand the *digital entrepreneurial ecosystem* (Evans and Schmalensee 2016). The digital marketplace is populated with entrepreneurial companies that are *matchmakers* of multisided platforms where a matchmaker business helps two or more different kinds of customers find each other and engage in mutual beneficial transactions. What is new is that digital technology lowers the transactions cost (Coase 1937) of making a match outside the firm (Rochet and Tirole, 2003). The paper also connects with Terjesen et al. (2017) on performance by examining the companies’ ecosystem as a necessary condition for improving performance.

So where does a high-performance entrepreneurial company come from? Yes, they come from spiky regions but even spiky regions are very heterogeneous. What

institutions actually enable high-performance firms? Several authors including Henrekson and Johansson (2008), Boettke and Coyne (2009), and Acs et al. (2014) have suggested different institutional configurations to enable venture creation and growth. However, this leads to an interesting question, “Are these institutions all equally important?” or, “Are some more important than others?” In the fourth paper, Miller and Acs (2017), “The Campus as Entrepreneurial Ecosystem: The University of Chicago,” suggest that the entrepreneurial ecosystem might actually be much smaller than a region, have fewer institutions and still vitally exist within a regional economy. They employ Frederick Jackson Turner’s Frontier Theory in the USA to construct a framework for understanding the campus as an entrepreneurial ecosystem (Turner 1894). When studying ecosystem performance one, question that immediately comes to mind is what the proper unit of analysis is: the country, the state, the region, the city, or is it something smaller like a campus or an incubator? This paper suggests that the frontier in the USA shifted from the West, a vast physical frontier, to and a knowledge frontier at the end of the twentieth century to the campus. The contemporary campus entrepreneurial ecosystem maintains the Turnerian characteristics of the frontier, *available assets, liberty, and diversity while creating opportunity fostering entrepreneurship and innovation*. In March 2016, *Forbes* Magazine released its list of the world’s billionaires. Simply perusing the 100 richest people in the world suggests that student entrepreneurs from US colleges and universities have impacted the world as much as any cohort on the list. A recent study by Henrekson and Sanandaji (2014) suggests that using billionaire entrepreneur data from *Forbes* Magazine is a better indicator of the strength of entrepreneurial ecosystems than traditional measures such as self-employment and new business formation. In exploring entrepreneurial ecosystems, Stam (2015) and Acs et al. (2014) make the point that they should produce successful entrepreneurs and firms.

University campuses across the USA have been very productive in recent decades (Miller 2015), appearing to offer a conducive environment for opportunity recognition and the beginning of the firm formation process (Stenholm et al. 2013). The case study of the University of Chicago examines the governance of the entrepreneurial ecosystem. Semi-structured interviews were completed with 32 individuals. The sample included adults who have played a role in the creation of high growth firms started by students at US colleges and

universities. No targeting of gender, ethnicity, or health status occurred, other than an attempt to reach a representative sample of those involved with an interest in high growth entrepreneurship at US universities.

The fifth paper shifts the emphasis from the role of certain institutions in the entrepreneurial ecosystem to questions about the role of firms and industries in the entrepreneurial ecosystem. “The Adaptive Lifecycle of Entrepreneurial Ecosystems: The Biotechnology Cluster,” by Auerswald and Dani (2017) proposes an empirical framework for assessing the vibrancy and trajectory of regional entrepreneurial ecosystems. Making use of a set of indicators of ecosystem vitality posited by Stangler and Bell-Masterson (2015), they apply the framework to the study of the US National Capital Region’s biotech cluster. This application constitutes an initial attempt at mapping the dynamics of an industry cluster within the adaptive lifecycle of a wider regional ecosystem. They find that the biotechnology cluster in the National Capital Region although mature, entered a cycle of “re-orientation” of its cluster lifecycle in the early 2000s, building up stored energy, capital, and connectedness in non-research oriented activities.

Coevolutionary patterns in biotechnology and related high-technology manufacturing industries are driving consolidation within the entrepreneurial ecosystem. An increasing regional presence of large biotech firms in the past 5 years, a highly active and diverse start-up community, increasing merger and acquisition activity, and declines in regional public funding for medical and clinical trials all suggest a transition of entrepreneurial activity in the region from a dynamic driven by federal research spillovers to one increasingly driven by private sector actors. This paper raises interesting questions about whether the business ecosystem or the regional ecosystem is playing the key role or if the two are in fact interacting. What kind of industry is biotechnology? Does it operate a production platform? Does it manage its ecosystem that is in fact not local? These and other questions are important and need to be researched.

The sixth paper in this special issue shifts the focus to the entrepreneur. “The Paradox of New Venture Legitimation in an Entrepreneurial Ecosystem,” by Kuratko et al. (2017), theorize about a unique paradox for entrepreneurs trying to establish legitimacy for their new ventures. That is, when pursuing opportunities with high levels of technological or market newness, entrepreneurs confront a significant challenge in legitimizing their venture within an entrepreneurial ecosystem, while

those entrepreneurs pursuing ventures using existing technologies or pursuing existing markets have a much easier path to garnering legitimacy within that ecosystem. However, the diffusion of that legitimacy beyond the ecosystem will be wider and more far reaching for those pursuing the newer elements compared to those using existing technologies or pursuing existing markets, thus creating a paradox of venture legitimation. Prior research outlines approaches for new venture legitimacy but it is unclear when these approaches should be applied within and beyond an entrepreneurial ecosystem. To address this paradox, the authors integrate ideas from the entrepreneurship and innovation literatures with insights from the legitimacy literature to describe how different types of venture newness employ different legitimation strategies which result in different levels of legitimacy diffusion beyond an ecosystem.

4 Entrepreneurial ecosystem performance: Unicorns

Our goal for this introductory article was to understand the environment around entrepreneurs and entrepreneurship in an economy and to gauge its performance effects on the regional economy. While the lineages presented here and the set of articles included in this special issue provide insight into the environment surrounding entrepreneurs and entrepreneurship, the agreement on performance and how to detect it seems still to be a work in progress. However, there is potentially a major indicator of strong entrepreneurial ecosystems which we explore a little further here.

There is one recent phenomenon that might best be explained by the emerging entrepreneurial ecosystem approach: the—spatially uneven—rise of Unicorns (start-ups valued at more than \$1 billion). A small elite within the population of start-ups is able to scale-up, by building a platform on which others can create and exchange value (Acs et al. 2016). Platform business models are highly scalable, and the majority of Unicorns is based on a platform business model (Evans and Schmalensee 2016). These platforms enable start-ups to achieve a massive scale and valuation in a very short period of time. Many Unicorns are successful creators of digital platforms and as such phenomena to be explained by the strategy ecosystem literature. Unicorns also emerge in a very limited number of places around the globe (Table 2; Fig. 1), which is a reflection of the differential performance of entrepreneurial ecosystems.

Entrepreneurial ecosystems can be the breeding place of business ecosystems. The theoretical evidence for this is that knowledge and human capital is concentrated in cities and knowledge spillovers are local (Anselin et al. 1997). We perform a simple observation: we count the number of Unicorns as a measure of performance. This is a much better indicator of the presence of entrepreneurial ecosystems than self-employment and new firm formation, no matter how sophisticated the estimation techniques are (Bruns et al. 2017). If we find multiple *billion dollar start-ups* anchored in a city, then we might infer that it has a well-functioning entrepreneurial ecosystem.

Table 2 lists the number of Unicorns per city in the world and Fig. 1 shows a map with the prevalence of Unicorns per 10 million inhabitants. Cities not listed below have no Unicorns. This does not necessarily mean that those city regions do not have a healthy entrepreneurial ecosystem only that this measure has not identified one (cf. Stam 2015 on the causal structure of the entrepreneurial ecosystem approach). The list of emerging Unicorns, those not yet valued at a billion dollars, may in fact identify entrepreneurial ecosystems in the process of maturing or enforce the status quo. Several observations follow. First, Silicon Valley (including cities such as San Francisco, Palo Alto and Mountain View) is in fact still the world leader in high growth companies, with almost a third (57) of all (174) Unicorns globally. By definition, it has a healthy entrepreneurial ecosystem. Silicon Valley is followed by Beijing (19), the Greater New York area (16), Shanghai (8), and the Greater Los Angeles area (7). Therefore, as a country, the USA clearly leads, although with a very spiky entrepreneurial landscape. The second observation is that China has the second most billion dollar start-ups and like the USA has pockets of healthy ecosystem activity. Third, all around the world there are cities with healthy entrepreneurial ecosystems including London, Berlin, Singapore, Seoul, Bangalore, Hong Kong, and Stockholm. Finally, a large home base is neither a necessary nor sufficient condition for a highly productive ecosystem: small countries like Singapore, Israel, and Sweden perform very well, while large countries like Russia, India, Brazil, and Indonesia have a relatively small number of Unicorns.

These observations call for a better explanation of why Unicorns are so unevenly spread over space, and how the ecosystem approaches could provide an explanation for both the transformation of start-ups into Unicorns, and more particular, provide insight in the role of

the territorial context in this success. And, that more research is needed to understand and explain the rise of Unicorns and productive entrepreneurship more broadly in China.²

5 Conclusion and further research opportunities

In tracing the lineages of the entrepreneurial ecosystem, it seems clear that the concept can be demarcated from both the regional development and strategic management literatures to occupy its own particular space in entrepreneurship theory. The distinguishing features of the entrepreneurial ecosystem can be seen as the focus on the value creation by individual entrepreneurs, the most identifiable indicator being the presence and number of high-impact “Unicorn” ventures, with boundaries defined by a city or regional geography, and that they exhibit a complex mix of public-private governance. However, while this is a good beginning, many aspects of the concept still remain to be further researched.

These distinguishing characters of the entrepreneurial ecosystem do not address the heterogeneity that is apparent among its actors, scale, and focus, making it difficult to determine which approach to policy-making may be most useful in improving the entrepreneurial ecosystem performance (Brown and Mason 2017). The natural extension to this view is that governance is somewhat haphazard as neither firms nor institutions, as major influencers in the entrepreneurial ecosystem are focused on the macro measures of performance of the regional economy. The first major research direction therefore is to develop the governance models that can account for such heterogeneity and provide useful means and measures for designing governance systems. Disappointingly, econometric models to date have been unable to assist in this endeavor (Bruns et al. 2017).

A second major area for further developmental work is the matter of performance within entrepreneurial ecosystems. What is apparent is that digital technology that arises through the entrepreneurial ecosystem can contribute greatly to lowering of transaction costs among firms and actors (Sussan and Acs 2017). The extension to this is that the entrepreneurial ecosystem can play a vital role in improving performance, either for the firm or the individual actor (Terjesen et al. 2017). Hence, should we place our efforts into linking the

² Also see <https://info.kpmg.us/content/dam/info/tech-innovation/disruptive-tech-2017-part1.pdf>

Table 2 Number of Unicorns per city globally

City	Number	City	Number	City	Number
San Francisco, Calif.	34	American Fork, Utah	1	Moscow, Russia	1
Beijing, China	19	Amsterdam, Netherlands	1	Mumbai, India	1
New York, N.Y.	15	Atlanta, Ga.	1	Northbrook, Ill.	1
Palo Alto, Calif.	7	Austin, Texas	1	Norwalk, Conn.	1
Shanghai, China	7	Burbank, Calif.	1	Oxford, U.K.	1
London, U.K.	6	Cambridge, Mass.	1	Paris, France	1
Berlin, Germany	4	Carlsbad, Calif.	1	Prague, Czech Republic	1
Hangzhou, China	4	Charlotte, N.C.	1	San Carlos, Calif.	1
Mountain View, Calif.	3	Culver City, Calif.	1	Santa Clara, Calif.	1
Redwood City, Calif.	3	Dania, Fla.	1	Sao Paulo, Brazil	1
Singapore	3	Delhi, India	1	Scottsdale, Ariz.	1
Bangalore, India	2	Dubai, UAE	1	Seattle, Wash.	1
Boston, Mass.	2	Edinburgh, Scotland	1	Tel Aviv, Israel	1
Chicago, Ill.	2	El Segundo, Calif.	1	Tübingen, Germany	1
Hong Kong	2	Emeryville, Calif.	1	Vancouver, British Columbia	1
Irvine, Calif.	2	Farmington, Utah	1	Venice, Calif.	1
New Delhi, India	2	Gurgaon, India	1	Waltham, Mass.	1
Provo, Utah	2	Hawthorne, Calif.	1	Waterloo, Ontario, Canada	1
San Jose, Calif.	2	Herzliya, Israel	1	Westborough, Mass.	1
San Mateo, Calif.	2	Hoboken, N.J.	1	Xiamen, China	1
Seoul, South Korea	2	Jacksonville, Fla.	1	Zhuhai, China	1
Stockholm, Sweden	2	Kagochima, China	1		
Sunnyvale, Calif.	2	Los Angeles, Calif.	1		

Source: compiled by authors: <http://fortune.com/unicorns/>. Complete list of companies available on the webpage. Accessed February 3, 2017

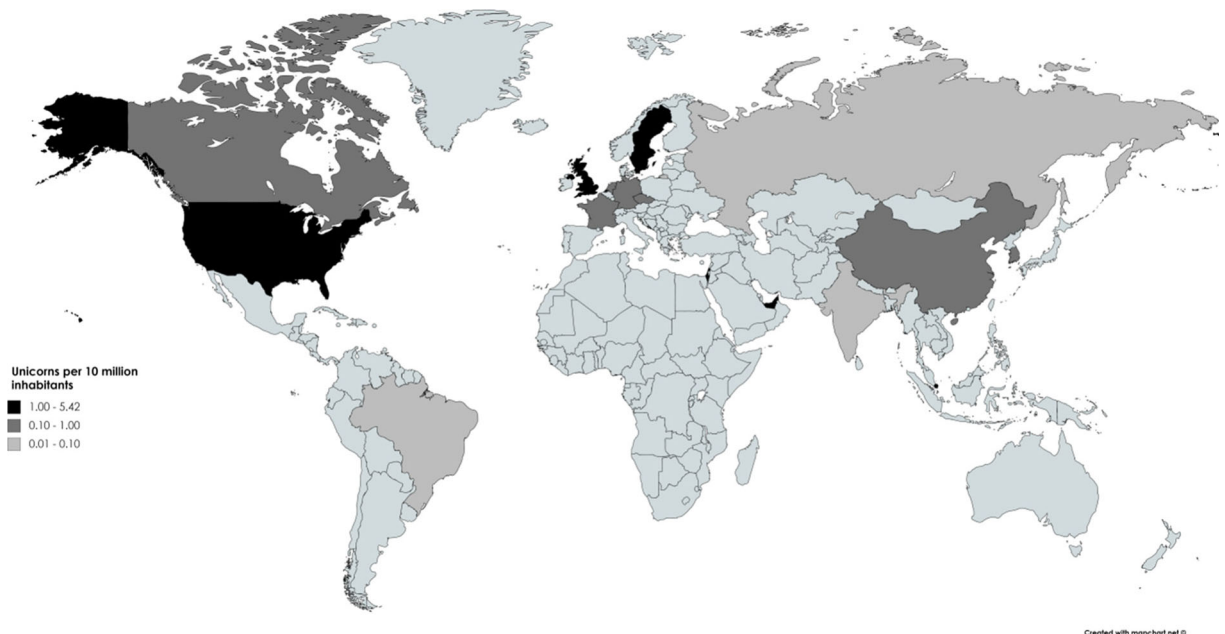


Fig. 1 The prevalence of Unicorns around the globe, per 10 million inhabitants (source: Stam and Saberi 2017)

entrepreneurial ecosystem to macro level regional economic performances? An alternate view may suggest that the performance of an entrepreneurial ecosystem instead may be better defined by how well it enables exploration of knowledge frontiers (Miller and Acs 2017). The question of what performance means in an entrepreneurial ecosystem sense is therefore still open.

A third research direction needing further investigation are questions relating specifically to scope. Scope may be addressed in either a temporal sense to examine such changes that occur in transitions of entrepreneurial activity in a region, an industrial-geography sense to account for variance between specific industry and regional drivers, an actor sense to question the variance of contributions of private and public actors, or lastly, a regional geography sense to better understand the local and global dimensions that influence the entrepreneurial ecosystem. Each of these questions regarding scope is important with respect to gaining a better appreciation of the entrepreneurial ecosystem.

Of course, the entrepreneur is undeniably a central actor in an entrepreneurial ecosystem and therefore studies relating to this ecosystem should also have relevance to our central actor. It is in this domain that issues of legitimacy are raised and further studies could address the questions regarding types of ventures and the legitimacy strategies that can be employed as suggested by Kuratko et al. (2017). However, other questions with respect to not only the entrepreneur but also the other actors that engage with and determine or influence the pathways of development of the ventures that entrepreneurs start. Questions of legitimacy for these other actors also exist and further questions regarding such matters of resourcing, network interactions, power relationships, and cultural or social fit among actors within the entrepreneurial ecosystem and how these effect the issues of performance are all highly relevant areas of investigation.

Distinguishing the entrepreneurial ecosystem from other theories that lay claim to similar concepts is an important contribution in the theory development of the entrepreneurial ecosystem. Each article in this special issue goes some way to performing this task. Collectively, we trust the articles encourage a greater awareness of and focus on the various strands of research that still lay before us.

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