

# Hierarchical and relational governance and the life cycle of entrepreneurial ecosystems

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Accepted: 31 July 2017 / Published online: 23 November 2017  
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**Abstract** In this paper, we explore the way the evolution of entrepreneurial ecosystems is shaped by different governance designs. We propose a theoretical framework in which we discuss what type of governance design would best fit the needs of an entrepreneurial ecosystem throughout its evolution. We also provide argumentations concerning the mechanisms that may explain the evolution through the different governance configurations. The conceptualization of a new framework has allowed us to specify a set of propositions, which we have tested on one single empirical setting, represented by Turin's entrepreneurial ecosystem. The paper introduces some important policy implications. It highlights the need for a more complex relational form of governance for the growth of an entrepreneurial ecosystem, which could be obtained by means of a systemic and participative approach rooted in shared cooperative norms and informal routines.

**Keywords** Governance · Entrepreneurial ecosystem · Local stakeholders

## 1 Introduction

Although the influence of the geographical context on entrepreneurial activity has long been acknowledged (Aldrich and Fiol 1994; Welter 2011), the literature on entrepreneurship has mainly focused on the individual entrepreneur rather than the way environmental conditions shape the origins, processes, and diverse outcomes of entrepreneurial behavior (Autio et al. 2014). The entrepreneurial ecosystem approach, which combines the suggestions of research on innovation systems (Brusoni and Prencipe 2013; Cooke et al. 1997; Fritsch 2001); clusters (Delgado et al. 2010; Feldman et al. 2005; Porter 1998; Zahra and Nambisan 2011); networks (Hoang and Antoncic 2003; Nijkamp 2003; Stuart and Sorenson 2005); and social capital (Anderson and Jack 2002; Rogers and Larsen 1984; Westlund and Bolton 2003), has recently been proposed.

This different perspective to the study of entrepreneurial dynamics was conceived from the observation that public efforts undertaken to boost entrepreneurship often fail, because of the difficulty involved in replicating strategies that have been successful in one place in seemingly identical places (Feldman and Zoller 2012, 2014; Isenberg 2010; Spigel 2017). Setting the conditions to make an area attractive to start-ups is currently a critical issue, because the growth of new ventures is conditioned by a complex mix of out-selection factors, which can constrain or boost entrepreneurial activity (Autio et al. 2014). Out-selection factors are associated with both the local economic and cultural attributes that favor the attraction of start-ups, and with global

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dynamics and challenges. The literature on entrepreneurial ecosystems has started to offer insights into the local conditions that can enable a geographical area to be attractive for start-ups (Arruda et al. 2013; Cohen 2006; Isenberg 2010; Spigel 2017). However, these early attempts were exclusively targeted at identifying the critical success factors in developing ecosystems, while little is known about the governance mechanisms that allow entrepreneurial ecosystems to emerge, change over time, and develop. A lack of conceptual development has limited the understanding of entrepreneurial ecosystems. According to several scholars (Brown and Mason 2017; Spigel 2017), research on entrepreneurial ecosystems needs to develop appropriate theoretical frameworks in order to understand the processes through which ecosystems emerge and change over time, in response to both external and internal economic and social changes.

This paper aims at filling this gap. It adds to entrepreneurship literature by studying entrepreneurial ecosystems in two ways. First, we explore an issue that we consider to be worthy of study and that has so far been under researched: The way the evolution of entrepreneurial ecosystems is shaped by different governance designs. A better understanding of this issue, through a formal conceptualization, would help to mitigate the gap that exists between theory and practice. We propose a conceptual framework which combines the governance configuration of an entrepreneurial ecosystem with its life cycle. The theoretical framework discusses what type of governance framework would best fit the needs of an entrepreneurial ecosystem during its evolution. Exploring the complementarity between governance structures and the life cycle of an ecosystem provides new insights into how entrepreneurial ecosystems evolve and strengthen. These two perspectives have not been combined so far in the previous literature.

Second, we test such a conceptual type of apparatus, by means of a set of propositions, on one single empirical setting, represented by Turin's entrepreneurial ecosystem. Turin constitutes an interesting case, as far as the developed theoretical framework is concerned, as it reflects the changing nature of the different governance designs across the life cycle of an entrepreneurial ecosystem.<sup>1</sup> The illustration of the case study through a

mixed methodology (based on interviews, answers to a questionnaire, and network analysis) has also had the aim of deriving policy implications to foster the future development of entrepreneurial ecosystems.

The remainder of the paper is organized as follows. The literature on entrepreneurial ecosystems is reviewed in Section 2. Section 3 illustrates the conceptual model, which combines the governance configuration of an entrepreneurial ecosystem with its life cycle. In Section 4, we describe the method we used to collect and analyze the data, and we present the results. In Section 5, we summarize our arguments and provide some policy suggestions on the strategic actions that need to be undertaken to stimulate the development of the entrepreneurial ecosystem in Turin.

## 2 Literature review

The exploration of the benefits of start-ups being localized in geographical “hotspots” has attracted the interest of scholars in the entrepreneurship field for many years. It has largely been acknowledged that entrepreneurship, and the system in which it takes place, feed off each other (Neck et al. 2004). Attempts have recently been made to elaborate a more comprehensive framework for the analysis of the dimensions of context in entrepreneurship (Autio et al. 2014). The entrepreneurial ecosystem approach, which borrows from biology, has recently been proposed (Arruda et al. 2013; Cohen 2006; Isenberg 2010; Spigel 2017).

An entrepreneurial ecosystem is “the union of localized cultural outlooks, social networks, investment capital, universities, and active economic policies that create environments that are supportive of innovation-based ventures” (Spigel 2017, page 1). Even though the precise definition of an entrepreneurial ecosystem has proven to be elusive, scholars have largely agreed on its characterizing features: the presence of investment capital, spin-off generators, universities and research organizations, a supportive entrepreneurial culture, a strong business infrastructure, support services/facilities, and public policies that incentivize venture creation (Kenney and Patton 2005; Neck et al. 2004; Spigel 2017). These local attributes are assumed to affect the growth and competitiveness of local start-ups, by easing interfirm cooperation, information sharing, knowledge spillovers, opportunity recognition, and financial endowments (Spigel 2017).

<sup>1</sup> It should be pointed out that the empirical exercise has had the primary objective of testing a set of propositions that are the outcome of our conceptual framework, which, however, is sufficiently general to allow it to be employed in other contexts and on a set of multiple cases, by means of comparative analyses, in future research.

In the following sub-sections, we classify the literature into three main strands, focusing on the perimeter, life cycle, and governance of entrepreneurial ecosystems, respectively.

### 2.1 Perimeter of entrepreneurial ecosystems

Recent scholarly works have unravelled the concept of entrepreneurial ecosystem in order to better define its perimeter, at both a conceptual and a geographical level. At a conceptual level, an emergent perspective distinguishes between knowledge ecosystems and business ecosystems (Clarysse et al. 2014). According to Powell et al. (2010), a knowledge ecosystem is characterized by a knowledge generator (e.g., a leading university, a public research organization, or an R&D intensive firm) around which firms geographically cluster, by a diversity of organizational forms and by the mechanism of “cross-realm transposition,” which is defined as a transfer of logic (ideas, models) between the different players in the ecosystem. A business ecosystem is instead organized as a network of companies that work together to deliver value to the end customers, by integrating their assets, specificities, and competences (Eisenhardt and Galunic 2000; Zahra and Nambisan 2012), without following a linear value creation process (Iansiti and Levien 2004). Companies that cooperate in a value network, generally align themselves with the directions set by one or more “keystone” players that assume the leadership role in the ecosystem (Adner 2006; Clarysse et al. 2014). Although the dynamics and characterizing features of knowledge and business ecosystems are fundamentally different (Clarysse et al. 2014), the creation and development of an ecosystem in both types of system is spurred by a central player, i.e., the “anchor tenant” (Agrawal and Cockburn 2003; Totterman and Sten 2005).

The entrepreneurial ecosystem approach also emphasizes the concept of spatial boundedness. Entrepreneurial ecosystems can emerge at different spatial levels, ranging from the city to the region or to the state. Sometimes, entrepreneurial ecosystems are characterized by “nested geographies” (Brown and Mason 2017) or by smaller spatial boundaries than the city, such as a university campus (Miller and Acs 2017). Although the geographical unit of analysis can vary, entrepreneurial ecosystems all share a common feature: network formation and exchange of knowledge among the involved actors. These mechanisms create interdependences among the

actors that operate in a spatial delimited community, ultimately creating new value (Acs et al. 2017).

### 2.2 Life cycle of entrepreneurial ecosystems

The extant research has provided some valuable insights into the life cycle of entrepreneurial ecosystems and their adaptive evolution (Arruda et al. 2013; Brown and Mason 2017; Cohen 2006; Neck et al. 2004; Isenberg 2010; Spigel 2017; Stam 2015; World Economic Forum 2013, among others). Some works have focused on the birth phases of entrepreneurial ecosystems. Isenberg (2010) illustrated the principles that needed to be followed when building a successful entrepreneurial ecosystem, which include the following: favoring bottom-up processes, ambitious entrepreneurship, cultural changes and regulatory, and bureaucratic and legal reforms, with actions shaped around local conditions. A recent work by the World Economic Forum (2013) lists the pillars on which a successful ecosystem should be based in its infancy: accessible local and international markets, human capital, finance, robust regulatory frameworks, culture and mentorship, and support systems. Stam (2015) identified two main elements necessary for a successful entrepreneurial ecosystem to emerge: framework conditions (i.e., formal institutions, culture, physical structure, and demand) and systemic conditions (i.e., networks of entrepreneurs, leadership, finance, talent, knowledge, and support services).

Some observers have noted that entrepreneurial ecosystems have an evolutionary and dynamic nature (Auerswald and Dani 2017; Borissenko and Boschma 2016; Brown and Mason 2017; Isenberg 2010). The evolution of entrepreneurial ecosystems over time generally entails significant changes that could lead to multiple outcomes. Thus, entrepreneurial ecosystems appear to be a highly variegated, multi-actor and multi-scalar phenomenon (Brown and Mason 2017). Scholarly attention has also been focused on the processes that guide the entrepreneurial ecosystem’s evolutionary pathway, which are grounded on ecological and evolutionary theories of life cycle dynamics in social systems. Auerswald and Dani (2017) have recently proposed a theoretical framework to describe biotech cluster dynamics in the US National Capital Region, across the different phases of the life cycle, in the context of the evolution of the regional entrepreneurial ecosystem. Cohen (2006) discussed the processes that have led to

the entrepreneurial ecosystem in Victoria (British Columbia) developing into a “sustainable valley,” where firms cluster around innovative sustainable technologies.

### 2.3 Governance of entrepreneurial ecosystems

A prominent issue that is still largely underexplored concerns the governance of entrepreneurial ecosystems. The design of entrepreneurial ecosystems is associated with the setting up of institutions that are in charge of nurturing and supporting entrepreneurship. The network interactions and the power relationships among institutions within an entrepreneurial ecosystem constitute the domain of governance.

Governance, using the words of Le Galès and Voelzkow (2001), refers to “the entirety of institutions that coordinate or regulate actions or transactions among (economic) subjects in an (economic) system” (page 5). Local processes and systems of governance have become of increasing interest to academics studying cluster contexts (Markusen 1996; Tewdwr-Jones and McNeill 2000; Tracey et al. 2014). This stream of literature has identified two main types of governance design: hierarchical governance and relational governance.

Hierarchical governance relies on explicit patterns of authority (Tracey et al. 2014). Under hierarchical governance, relationships are managed in a “mechanistic” mode, and one actor assumes the leading role in establishing the rules that regulate the interactions between parties and lends legitimacy to the other members (Mooi and Ghosh 2010; Tracey et al. 2014). Relational governance is instead rooted in implicit understandings, shared cooperative norms, and informal routines that are mutually defined and adjusted by the parties (Gibbons and Henderson 2012; Poppo et al. 2008). However, the mechanisms that allow relational practices to originate are not clear (Tracey et al. 2014). Drawing on the social network theory, Tracey et al. (2014) discussed which cluster configurations promote the emergence of both relational and hierarchical governance practices. The authors found that cluster density promotes relational governance, which in turn helps to commercialize novel products, while centralized clusters foster hierarchical governance, which enhances the speed to market of products.

Within the realm of actors involved in the governance of entrepreneurial ecosystems, the literature emphasizes the role of the “anchor tenant.” The “anchor tenant” is

the central player that actively spurs economic growth, technological change, and innovation in the area, and around which groups of different organizations begin to gather. In the literature on knowledge ecosystems, the role of the anchor tenant is usually fulfilled by local universities or public research organizations (Agrawal and Cockburn 2003), which can exert their role directly or through incubation and acceleration facilities (Totterman and Sten 2005). In business ecosystems, the role of the anchor tenant is instead fulfilled by one or more key firms in central positions within a wide network of companies (Clarysse et al. 2014).

The role of an anchor tenant changes over time. An anchor tenant acts as a facilitator in the creation of an ecosystem. However, its proactive role and synergies with other local institutions also contribute to a process of collective learning and encourage a culture based on relationships of trust and of respect of a tacit code of behavior. These conditions foster constant technological innovation, stimulate entrepreneurship, and, in turn, spur the further development of the entrepreneurial ecosystem (Cassia et al. 2008).

### 3 Theoretical framework

As has emerged from Section 2, the literature on entrepreneurial ecosystems is mainly descriptive in nature and does not provide generalizable findings about the internal dynamics of ecosystems, their life cycles or their governance. The idea that entrepreneurial ecosystems may change over time, through continuous interactions among the multiple actors that define the entrepreneurship infrastructure, is grounded on earlier contributions on entrepreneurial systems (Iansiti and Levien 2004; Spilling 1996; Van de Ven 1993). However, there is a lack of overarching frameworks that discuss the dynamics that shape the emergence and evolution of entrepreneurial ecosystems over time, when different forms of governance designs are in place. According to some authors (Brown and Mason 2017; Spigel 2017), research on entrepreneurial ecosystems is currently undertheorized, and this points out the need to develop a coherent theory on the way entrepreneurial ecosystems are formed and may evolve.

In this section, we propose a conceptual framework, and we discuss what type of governance design would best fit the needs of an entrepreneurial ecosystem during its evolution. By means of a set of propositions, we then

test the framework on one single empirical setting, which is represented by Turin's entrepreneurial ecosystem. The conceptual framework has been developed by combining the literature on inter-firm governance and the literature on entrepreneurial ecosystems. The framework constitutes a basis on which alternative analyses may be built.

Figure 1 illustrates the theoretical framework that helps us to gain insight into the relationship between governance structures and the evolution of an entrepreneurial ecosystem. The vertical and horizontal axes in the graph represent the type of governance design and the phases of the evolution of an entrepreneurial ecosystem, respectively. We have defined the first phase as "birth," the intermediate phase as "transition," and the last phase as "consolidation." These labels emphasize that ecosystems are dynamic.

The time dimension denoted as "birth" refers to the emergence of an entrepreneurial setting in which different actors start to bind together in a close geographical, institutional, and relational context. The "transition phase" is characterized by the emergence of a complex variety of social, cultural, political, and economic feedback mechanisms, which may support or discourage path dependence processes within the network of actors. The time dimension denoted as "consolidation" defines a situation in which all the actors that populate the ecosystem have survived the adaptive life cycle and are well embedded in the context.

We have also focused on the nature of the relationships between the network of players within the ecosystem and the structure of governance that governs different network configurations along the life cycle of the entrepreneurial ecosystem. Such a network of players, which is characterized by diverse organizational forms, assumes different functional roles that influence the evolution of the ecosystem.

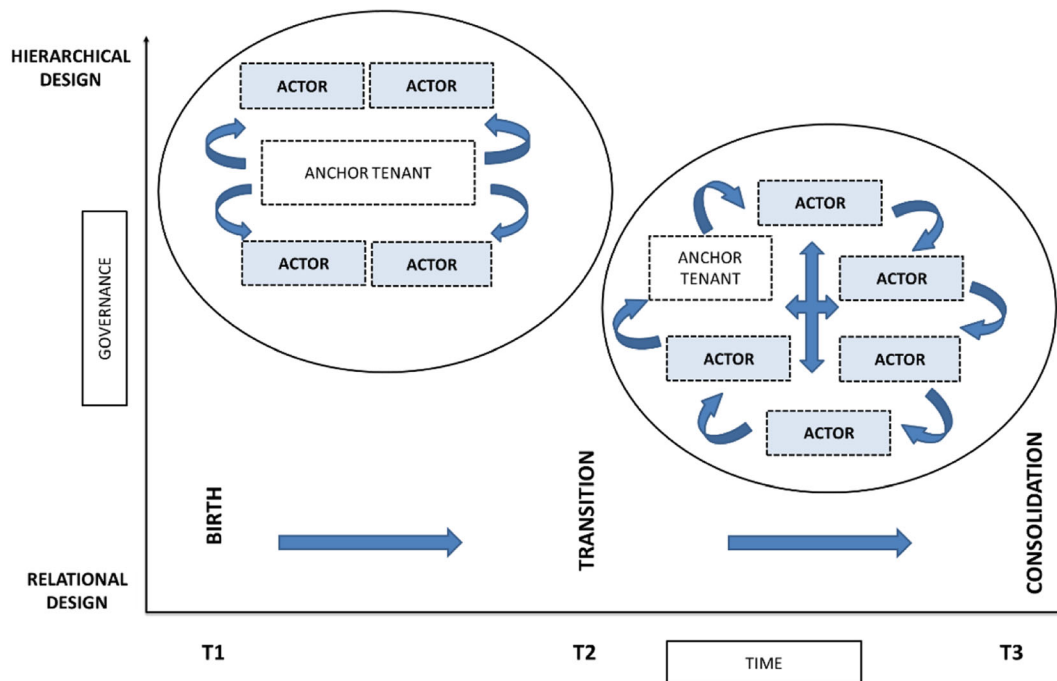
The "birth" of an entrepreneurial ecosystem is shown in the upper left hand side of Fig. 1. In our conceptualization, the organization that acts as a catalyst of the generation of a new born entrepreneurial ecosystem—the anchor tenant—is seen as an agent of change, which is pivotal in the transformation of the local environment and in the spawning of new entrepreneurship. As such, it needs to be embedded in the local social structure and to actively undertake concrete actions to build the local capacity in order to generate entrepreneurship and new firm formation. The role of catalyst is sustained by the trust that different multiple organizations place in it. The

anchor tenant is the actor that really takes on responsibility for the stewardship of the place.

We theorize that a central actor fuels the emergence of the entrepreneurial ecosystem and initially governs the dynamics of collaboration in the ecosystem. The creation of the ecosystem becomes an interactive, distributed, and collective process that involves a variety of actors. The players that generally gather around the catalyst institution are both governmental and private institutions that are interested in supporting entrepreneurship. Governmental bodies are charged with the provision of publicly funded support programs designed to foster entrepreneurship through tax benefits, the investment of public funds, and the removal of bureaucratic barriers to entrepreneurs (Cannone and Ughetto 2014; Mason and Brown 2013; Neck et al. 2004; Spigel 2017).

Within the sphere of private institutions, financial investors (e.g., venture capital funds, business angels, banks), and other organizations specialized in assisting entrepreneurial firm formation and growth constitute what Kenney and Patton (2005) refer to as "entrepreneurial support networks." This system of institutions, rotating around the anchor tenant, represents a critical component of an entrepreneurial ecosystem, because it guarantees the survival of the ecosystem itself and helps to bridge the gap between the production of new knowledge and the subsequent commercialization of that knowledge (Powell et al. 2010). Public and private actors interact by deploying feedback mechanisms which, at this stage, are always mediated by the anchor tenant. This line of arguments leads to the following proposition:

*Proposition 1: In the "birth phase" of an entrepreneurial ecosystem, the governance design is hierarchical. Once the ecosystem has been created, its adaptive capacity to the local conditions progressively increases, and its governance evolves towards a more horizontal and relational design, where multiple actors interact without a structural function being exerted by a central player. The strength and the intensity of the linkages among the actors evolve together with the evolution of the ecosystem. The tendency of the hierarchical governance design to persist for a certain period, before evolving into relational governance, is due to the path dependencies that reside in the governance form itself. What makes the difference is the ability of the ecosystem players to redefine and reshape it towards a more integrated system*



**Fig. 1** Conceptual framework

of reciprocal relationships, thus altering the initial scenario in a profound way.

Different mechanisms are at work in “transforming” the hierarchical governance that dominates the former stage into a relational type of governance. The transition of an ecosystem to a different governance design implies a dynamic and constantly adapting dimension. The formation of networks of actors is one of the main channels that drive the change in the structure of the ecosystem. Knowledge spillovers and human capital mobility characterize the transition phase, and new spaces of opportunities are defined by the spawning of the connectivity between the actors of the ecosystem, which in turn enables learning processes. Networking and relational factors are facilitated by the co-localization of actors within the same area, and they are crucial in this phase to allow the sharing of tacit knowledge, the exchange of human capital and the building of social capital. In the period of transition towards a relational governance model, the learning processes and exchange of information and personnel that emerge from both formal and informal interactions are mediated to a lesser extent by the anchor tenant. Other actors start occupying central positions within the network, while other institutions start populating the ecosystem, although at the beginning they may be located in peripheral regions.

Consistent with these predictions, we formulate the second proposition as follows:

*Proposition II: In the “transition phase” of an entrepreneurial ecosystem, the governance design is in-between the hierarchical mode and the relational mode. As the system matures into the consolidation phase, the governance of the ecosystem becomes horizontal and embedded in an increasingly interconnected and dense network of actors. Interactions among actors are self-reinforcing, and they have a feedback effect on the ecosystem that is no longer mediated by the anchor tenant. In this new scenario, reported in the lower right hand side of Fig. 1, the anchor tenant is just one player along with all the other ones. This scenario foresees a situation in which higher returns on investments are likely to occur, because the backbone of the entrepreneurial ecosystem is made up of a well-connected set of actors that jointly create the conditions necessary for new venture creation. In this phase, a key role is played by cognitive belief systems and social and organizational ties that underpin interactions within the ecosystem. We argue that this new setting, characterized by relational governance, is likely to allow local entrepreneurial dynamism to perpetuate over time. This line of argument leads to the following proposition:*

*Proposition III: In the “consolidation phase” of an entrepreneurial ecosystem, the governance design is relational.*

## 4 Case study

### 4.1 Method

We test the propositions derived from our conceptual framework on a single empirical setting—the entrepreneurial ecosystem of Turin. The history of the evolution of the entrepreneurial ecosystem in Turin reflects the changing nature of the different governance designs across the life cycle of an entrepreneurial ecosystem, as theorized. Turin’s entrepreneurial ecosystem has in fact experienced different governance configurations over a limited time span. Moreover, Turin is also a paradigmatic case, because it has undergone a profound economic transformation over time. The city has evolved from a traditional industrial setting, with FIAT automaker at its center in a directive role, to a more sophisticated multi-firm system, which is today only partially linked to the local automotive production system (Whitford and Enrietti 2005).<sup>2</sup>

It is worth noting that we adopt an embedded case study design because we include more than one unit of analysis, while maintaining a holistic view of the case study (Yin 1984). The case study combines qualitative and quantitative data collection methods, such as archives, questionnaires, and structured interviews. This multi-level approach allows triangulation and is adopted to provide a substantiation of our conceptual framework and to allow for a nuanced understanding of the phenomenon under investigation. This combination of different types of data is highly synergistic, as each piece of information can strengthen and provide support to the other ones (Eisenhardt 1989).

<sup>2</sup> Today, Turin is one of the most entrepreneurial and innovative cities in Italy. In fact, it is the fourth Italian province, after Rome, Milan, and Naples, in terms of new firms created in 2015, and the third Italian province, after Milan and Rome, in terms of number of innovative start-ups. It counts a total of 268 innovative start-ups registered at the Chamber of Commerce between 2012 and 2015 over a total of 5143 in Italy (Italian Chamber of Commerce, Registro Imprese). Turin is one of the 30 top European metropolitan areas, second in Italy only to Milan, in terms of total patent applications to the European Patent Office (EPO): the city counts 195 new patent applications and 87 patent applications per million inhabitants in 2012, while the European average for NUTS3 regions is 73 and 72, respectively (Eurostat, online datacodes pat\_ep\_mtot and pat\_ep\_rtot).

The different types of available data require the use of a mixed methodology (including descriptive statistics and social network analysis) to derive descriptive evidence on the composition and evolution of Turin’s entrepreneurial ecosystem. In other words, the analysis of the Turin case is organized around a set of specific goals, within the context of the developed conceptual framework. Each of the adopted methods is linked to these specific goals: (i) identification of the ecosystem, (ii) identification of the anchor tenant, (iii) identification of the governance model, and (iv) identification of the life cycle phases.

As a first objective, we identified the institutions that compose Turin’s entrepreneurial ecosystem. To this aim, we started from secondary data made available by Fondazione Human Plus (FH+), which developed a map of Turin’s start-up ecosystem in the May–October 2014 period through interviews, archives, and web sources. The project was promoted by the Piedmont Region in order to provide a guide for prospective entrepreneurs (Regione Piemonte 2014). The final map included 62 institutions. We then decided to drop some of these institutions because of the marginal role they play in the local entrepreneurial ecosystem.<sup>3</sup> We were therefore left with a list of 59 institutions.

As a second objective, we identified the anchor tenant and the governance model of Turin’s entrepreneurial ecosystem. A questionnaire, which was promoted by Torino Strategica,<sup>4</sup> was delivered to all the institutions that make up the entrepreneurial ecosystem. The response rate was 90%. The data collected through the questionnaire allowed us to distinguish the role that each institution plays within the ecosystem, as well as the network of relations among all the actors that populate it. Each institution was asked to describe the set of activities and services provided within the ecosystem and to indicate the relationships it had with the other institutions in the ecosystem.

In order to identify the network of relations among all the actors that populate the ecosystem, we analyzed the data collected through the questionnaire by means of Social Network Analysis (SNA) techniques. SNA

<sup>3</sup> We dropped three institutions: one is a patent consultancy company that offers professional services to support the patenting process of private firms, the second one is a consortium of cooperatives, and the third one is a private foundation, which has the broad objective of helping people at the margin of society. The activities of these organizations are quite different from the aim of supporting innovative start-ups.

<sup>4</sup> Torino Strategica is the public association that promotes and develops the strategic plan of the metropolitan area of Turin ([www.torinostrategica.it](http://www.torinostrategica.it)).

techniques allow the structural forms of relations among the actors that compose a network to be recognized and measured, and this is important to understanding their observed behavior. The network of collaborations of Turin's entrepreneurial ecosystem was described as a graph, consisting of nodes (i.e., the institutions that compose the entrepreneurial ecosystem) and edges (i.e., which represent the links between these institutions) (see Fig. 2 in the next section). Hence, we were able to use SNA indicators to describe the role of specific nodes. We were in particular interested in identifying the anchor tenant, that is, the institution that occupies the central position in the network (i.e., the institution that has achieved a high degree of prestige due simply to the number of connections to other nodes).

As a third objective, we singled out the different phases of the evolution of the entrepreneurial ecosystem. To this aim, semi-structured interviews were conducted between January and February 2016 with the institutions that hold a central position within the ecosystem network. We also tried to obtain a balanced list of interviews with respect to their typology. The interviews were conducted by multiple investigators, in order to bring complementary insights and different perspectives to the data analysis (Eisenhardt 1989). After the initial interviews, some adjustments were made and other interviews with institutions were conducted; the importance of which became clear during the data collection. Moreover, not all of the contacted institutions agreed to be interviewed. A total of ten interviews were conducted. The purpose of the interviews was to collect the opinion of key actors on the evolution of Turin's ecosystem, with specific focus on governance issues. In order to grasp the way the evolution of entrepreneurial ecosystems is shaped by different governance designs, we asked questions about the past, the present, and the future of Turin's entrepreneurial ecosystem, the existence and the role of anchor tenants and the strategic levers needed to drive the future evolution of the ecosystem. The interviews ranged in length from 30 to 60 min and took place at a location of the interviewee's convenience. We agreed with interviewees that the obtained information would not be disclosed, unless in an aggregated form.

#### 4.2 The evolution of Turin's entrepreneurial ecosystem and the governance design

This section is organized in three sub-sections and provides an analysis of the evolution of the entrepreneurial

ecosystem in Turin with specific focus on governance issues. The first sub-section describes how the ecosystem in Turin originally emerged, and it points out the governance design that spurred its creation. The second sub-section provides a description of the current configuration of the ecosystem and of its governance structure. The third sub-section discusses the foreseen future developments that the ecosystem and its governance structure will likely undergo.

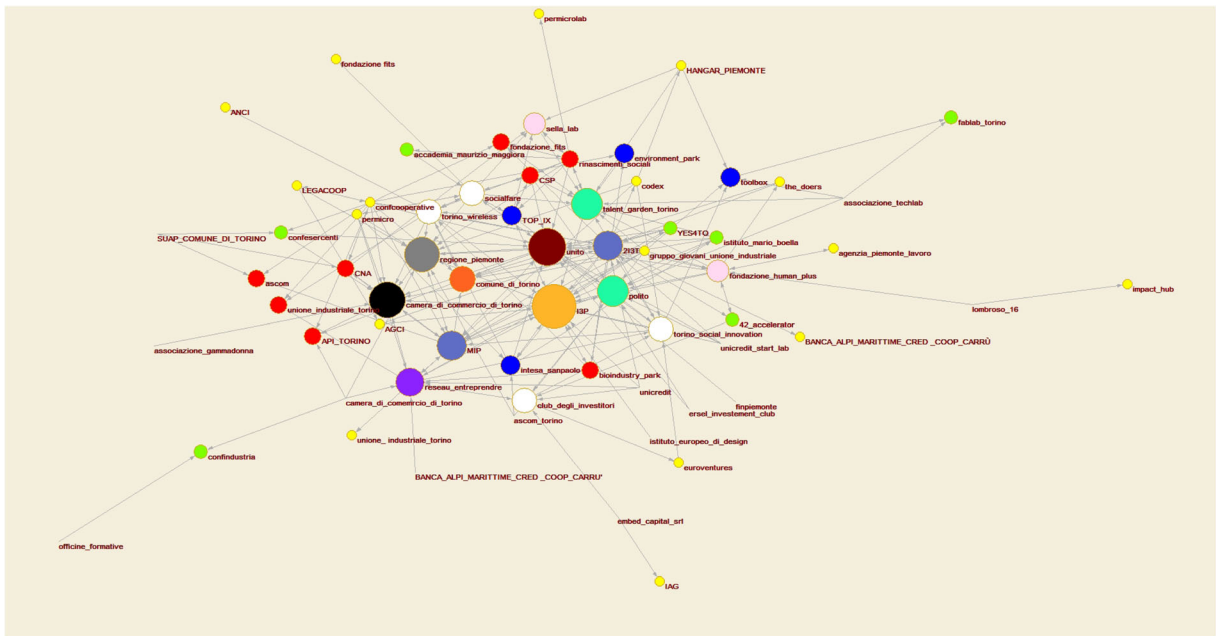
##### 4.2.1 The "birth phase" of Turin's entrepreneurial ecosystem

The entrepreneurial ecosystem in Turin is the result of a unique historical process. The starting point of the process that led to the birth of the entrepreneurial ecosystem can be traced back to the 1980s and the 1990s. In those years, the city, after an industrial past with FIAT automaker in a directive role, experienced a redirection of production towards emerging businesses, only partially linked to the automotive sector (Colombelli 2006; Colantonio et al. 2013; Quatraro 2007; Whitford and Enrietti 2005). The industrial setting, originally tailored to the demand of the automotive industry, was progressively reshaped to include emerging businesses in new sectors. In such a context, it was clear that the need to progress towards an entrepreneurial ecosystem was emerging.

A key step in the direction of the emergence of the entrepreneurial ecosystem was the foundation, in 1999, of the first incubator in Turin, I3P, a non-profit joint-stock consortium, constituted by Politecnico di Torino, Turin's Chamber of Commerce, the City of Turin, and the Province of Turin.<sup>5</sup> According to all ten individuals who were interviewed, I3P was the central actor that spurred the setting up of the entrepreneurial ecosystem. Thus, I3P can be identified as the first anchor tenant that acted as the main engine to stimulate the emergence of the entrepreneurial ecosystem. As one interviewee put it "At that time, it was crucial to have an engine that could effectively stimulate the emergence of the ecosystem. I3P acted as an operating arm of the territory, as it was sequentially the expression of the local policies of the City of Turin, of the Province of Turin and of Finpiemonte

<sup>5</sup> I3P is the main university-based incubator and one of the best at a European level: in 2014 it ranked fifth in Europe and fifteenth in the UBI (University Business Incubator) world ranking, the Global Benchmark Report annual ranking of the best academic incubators.





**Fig. 2** Turin’s entrepreneurial ecosystem network

(the regional development agency of the Piedmont region).” The actions undertaken by I3P were inspired by the first strategic plan (signed in 2000), which was developed according to a systemic approach; it was highly participative and involved a wide range of actors, such as the City of Turin, the Piedmont Region, Politecnico di Torino and Turin’s Chamber of Commerce, but also many other actors from the social, economic, political, and cultural spheres (Winkler 2007).<sup>6</sup>

The brief history of Turin’s ecosystem and the insights derived from the interviews with the stakeholders illustrate that the ecosystem emerged because of the dominant role played by I3P as the anchor tenant. I3P leveraged upon a wide range of institutional, industrial, and cultural actors in order to put in place a concerted strategy for the economic restructuring of the city. The process has been a “path dependent” one and has been influenced to a great extent by the role of key

individuals and their network of relations. This result is in line with our conceptual framework and with Proposition I. In fact, the ecosystem in Turin has emerged from a hierarchical governance design, where a central actor actively fuelled the emergence of the entrepreneurial ecosystem through an interactive and collective process that involved a variety of actors within the entrepreneurial support network.

*4.2.2 The “transition phase” of Turin’s entrepreneurial ecosystem*

This sub-section provides a description of the ecosystem as it appears today. According to our theoretical framework, Turin’s entrepreneurial ecosystem is now in the “transition” phase and shows a governance design that is somewhere in the middle between the hierarchical and relational mode. Table 1 provides a map of the local actors and describes their activities. The ecosystem is composed of 59 institutions. These institutions provide a broad range of services (i.e., education and research, incubation and acceleration, financing, provision of technological infrastructure, professional, technical, administrative, and facility management services). On the basis of their main activities, they can be classified into six groups that cover almost all the categories which, according to the literature, characterize an ecosystem:

<sup>6</sup> The underlying idea of the Strategic Plan, initially devoted to the urban requalification of the city, was to progress beyond a city centered on FIAT, to promote the growth in new sectors, by starting a process of diversification, and to attract new international players. The two pillars of this phase were “culture” - to make Turin an attractive touristic location - and “technological innovation” - to start a process of economic and industrial renewal. The proponents’ original idea was that these two attributes should have developed in tandem so that they could influence one another.

associations, community, and coworking; education and research; incubators, business and innovation centers (BICs), accelerators, and science parks; investors; public institutions; and trade associations.

Both the map, presented in Table 1, and the network analysis, illustrated in Fig. 2, reveal that Turin's ecosystem is widespread and prosperous. The "incubators, business and innovation centers (BICs), accelerators, and science parks" category is particularly lively. It includes I3P, the institution that played the original role of anchor tenant in the "birth" phase, as well as other institutions specialized in different technological areas. One important example is the second university incubator, 2i3T, which was founded by Università degli Studi di Torino, the City of Turin, the Province of Turin, and Finpiemonte SpA in 2002, although it only became active in 2007. A further key category appears to be "education and research," where Politecnico di Torino and Università degli Studi di Torino clearly play central roles. The evidence on both these categories is in line with the extant literature, which emphasizes the key role of local universities, also through their incubators, in the generation of economic growth, technological change, and innovation, and more importantly, it is in line with our framework and with Proposition II.

Although the role of universities and incubators is central, other institutions are well connected within the network that composes the ecosystem. Governmental institutions, particularly the Chamber of Commerce, the City of Turin, Piedmont Region, and Città Metropolitana di Torino,<sup>7</sup> are good examples. The "associations, community, and coworking" category is also becoming a crucial and vital actor in Turin's entrepreneurial ecosystem. Talent Garden Torino (TAG), which is a coworking space and community operating in the digital area, occupies a central position in the ecosystem.

On the other hand, other categories remain at the margin of the ecosystem. Within the sphere of private institutions that compose the entrepreneurial support networks, the role of "financial investors" still seems to be underdeveloped. This was confirmed by all the interviewees who stated that, according to them, the financial system was at the margin of the ecosystem. However, it seems that the problem is not a lack of financial resources, but rather that of money stickiness.

The role played by "trade associations" within the network of relations also seems rather marginal. As confirmed by eight out of ten interviewees, trade associations still do not have a clear and well-defined position within the ecosystem. It has in fact emerged that they are currently concentrated in the early stages of entrepreneurial activities, providing support to promote entrepreneurial culture and education, while they should instead be focusing on the later stages by supporting the growth of start-ups.

In short, descriptive evidence shows that some key actors, such as I3P and the university system, play central and strategic roles, which is in line with what emerged from the talks with the local stakeholders. In terms of governance structure, the entrepreneurial ecosystem in Turin today appears to be in a "transition phase," somewhere between the hierarchical and relational governance design phases, for two main reasons. First, it seems that the anchor tenant has not yet abandoned its central role completely, although other actors have started to occupy central positions within the network of institutions that compose the ecosystem. Second, a wider set of actors have started to populate the ecosystem, but many players do not appear to have a clear business model and, hence, a clear position within the ecosystem. Moreover, industrial and financial players are missing to a great extent or are positioned at the margins of the ecosystem.

The question arises as to whether the ecosystem truly benefits from a large network of institutions without having a well-defined set of connections among industrial and finance players. As one interviewee said: "Ecosystems are efficient if they are varied. To be in good health, an ecosystem must include expertise, capabilities and resources that derive from different actors. The challenges to mobilizing the finance side are well known and financial actors today mainly operate in isolation." Two other interviewees added: "Today the system is characterized by high entropy. The system is composed of a wide variety of actors, but there is no team game, particularly among governmental institutions. Moreover, the industrial players are not actively involved in the ecosystem." and "Some important industrial and financial players (Centro Ricerche Fiat, General Motors, Avio and Intesa Sanpaolo) have recently begun to invest in Torino, but there is still much work to be done to build an intertwined relational architecture that would allow strategic competences to be developed fully and resources to be allocated efficiently."

<sup>7</sup> Città Metropolitana di Torino is the governing body of the metropolitan area of Turin. Following the drawing up of "Delrio" Law, no. 56 (2014), it has substituted the Province of Turin as the governing body since January 2015.

**Table 1** Classification of the surveyed institutions and the related activities

Classification	Institution	Activities													
		Education	Research	Incubation and acceleration	Financing	Professional and technical services	Administrative services	Facility management services	Provision of technological infrastructure	Information	Other				
Associations, community, and coworking	Accademia di Progettazione Sociale Maurizio Maggiora	V	V	V											
	Associazione Techlab	V	V						V	V					V
	Fablab Torino	V	V												
	GammaDonna	V	V						V						
	Lombroso 16	V	V			V									V
	Reseau Entreprendre	V	V	V											
	Talent Garden Torino	V	V	V											
	Toolbox	V	V												
	TOP-IX	V	V	V											
	YES4TO	V	V												V
Education and research	Fondazione Human+	V	V												
	Istituto Europeo Design	V	V												
	Istituto Superiore Mario Boella	V	V												V
	OFF—Officine Formative	V	V	V											
	Politecnico di Torino	V	V	V											
	Universita' Degli Studi Di Torino	V	V	V											V
	Incubators, BICs, 2i3T			V											
	accelerators, 42 Accelerator			V											
	and science parks Bioindustry Park Silvano Fumero			V									V		
	CODEX			V											
CSP															
Environment park	Environment park														
	Fondazione Torino Wireless		V												V
	I3P			V										V	V
	Rinascimenti Sociali			V										V	V
	SELLALAB	V		V										V	V

Table 1 (continued)

Classification	Institution	Activities
Investors	Social fare	V V
	The doers	V V
	UniCredit Start Lab	V V V
	Banca Alpi Marittime	V V
	Banca Del Piemonte	V
	Banca Prossima	V
	Centro Innovazione Intesa Sanpaolo	V V
	Club Degli Investitori	V
	EMBED Capital	V
	Ersel Investment Club	V
	Euroventures—Fondo di Venture Capital	V
	Fondazione Fits!	V
	Innogest	V
	PerMicro	V
	UniCredit Imprese	V
Public institutions	Agency Piemonte Lavoro	V V
	Camera di commercio di Torino	V V
	Citta' Metropolitana—MIP	V V
	Finpiemonte	V V
	Hangar	V V
	Regione Piemonte Settore Promozione e Sviluppo Sportello Impresa Giovani	V V
	Sportello Unico Comune Di Torino	V V
	Torino Social Innovation/Open Incent	V V
Trade associations	AGCI	V V
	API	V V
	Ascom/Progetto S.P.R.I.N.G	V V
	CNA	V V
	Confartigianato	V V

Table 1 (continued)

Classification	Institution	Activities
	Confcooperative/Coop Up	V
	Confesercenti	V V
	Gruppo Giovani Imprenditori	V
	Unione Industriale di Torino—Club della Comunicazione	V
	Legacoop	V

Another issue that has emerged from interviews with the relevant stakeholders is that the network of actors that constitute the ecosystem is largely concentrated on supporting the early stages of the life cycle of the start-ups, while little attention is devoted to the later stages. Moreover, no institutions that help start-ups to launch their products on the market have been found. Thus, it seems that Turin’s ecosystem is today able to foster creativity and to promote innovative ideas but is less able to support and sustain the successful exploitation and commercialization of these innovative ideas. A shared vision and a concerted strategy are still missing. According to our conceptual model, Turin’s ecosystem is thus in an intermediate phase somewhere between a hierarchical and a relational governance structure. This was clearly explained by one interviewee: “There is a problem of path dependence that affects institutions and their willingness to reshape their role. The local government has progressively lost its role as both leader and feeder of the ecosystem, and this has led to a vacuum of directives. Thus, the current ecosystem in Turin is somewhere midway in terms of governance design.”

4.2.3 The “consolidation phase” of Turin’s entrepreneurial ecosystem

This sub-section is aimed at identifying the strategic levers that drive the evolution of Turin’s entrepreneurial ecosystem, and thus reflects the “consolidation phase” of our framework. According to 52.73% of the respondent institutions, the most important strategic lever for the ecosystem is the need for a better coordination and governance. As can be seen in Fig. 3, 50.91% of the respondents identified the local financial system as the second most important strategic lever. Entrepreneurial education was ranked third (45.5%), and this was followed by the need for investments in start-ups by private companies (41.82%) and the adoption of alternative industrial strategies (36.36%).

All of the interviewees confirmed that the future development of Turin’s entrepreneurial ecosystem requires strategic planning, a spirit of engagement and a common purpose, as well as a systemic and participative approach. This finding is in line with our framework and with Proposition III.

However, if Turin’s ecosystem has set its sights on evolving towards a more horizontal governance design, it will have to find a way of attracting the players that

can cover all the life cycle needs of start-ups. In the words of one key stakeholder: “Although there is no exact formula to make an ecosystem evolve, it is crucial that all the actors have a common vision and a common objective. Other important elements for an ecosystem to develop are a shared culture and shared norms of behaviour.” According to the interviewees, Turin’s ecosystem will also have to face and respond to the challenges that arise within and outside the ecosystem. As one person stated “This means that if the ecosystem wants to evolve and be in good health, it must be capable of attracting start-ups, keeping them and making them grow, regardless of the changes that might alter the nature of the ecosystem. A supportive environment that creates the enabling conditions for start-ups to emerge and grow is what is needed for the future.”

The creation of a dense network among entrepreneurs, investors, and support organizations will help to reinforce and reproduce the ecosystem in the long term. A hierarchical type of governance can no longer work at this stage, because the system has to progress towards a wider plurality of actors. This plurality of actors should have a shared culture of norms of behavior, values, and codes of conduct to allow the ecosystem to evolve and reproduce itself in the long term.

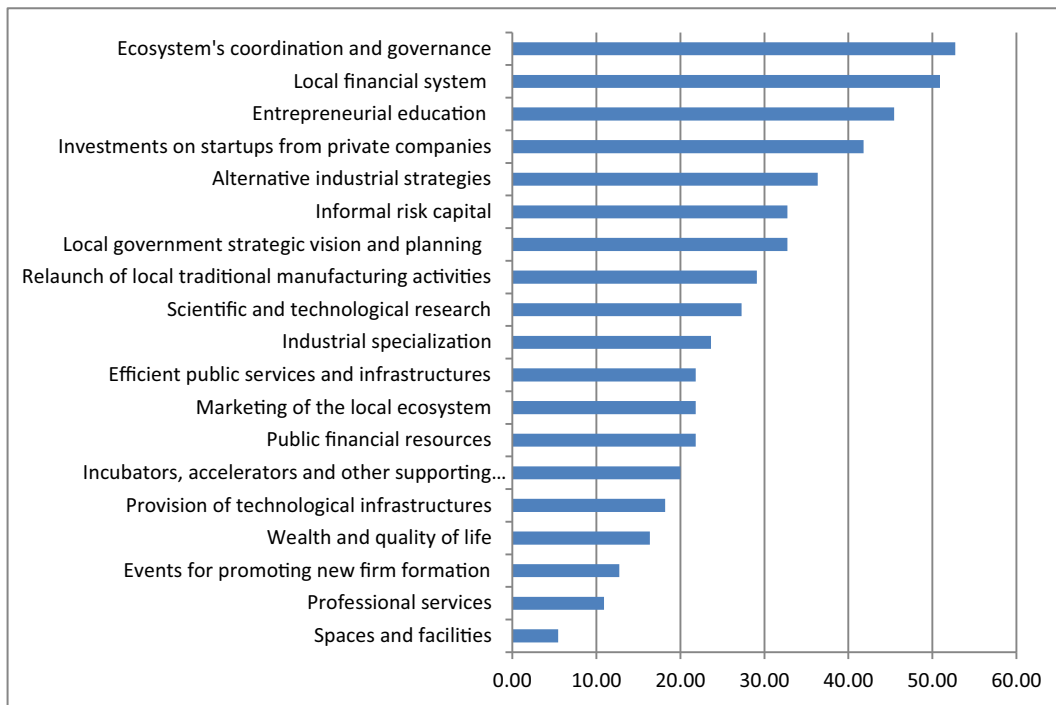
As one interviewee noted: “The network nodes cannot be created ad hoc, and should result from the evolution of the ecosystem. Adding too many layers may have the negative effect of increasing the agency costs of coordination. Having a central player that proactively builds new connections between actors is desirable, but only if this player is enlightened and adopts a bottom up process. Experience has taught that a public actor can start the dynamics by shaping entrepreneurial practices and norms, but cannot govern them.” The new phase in the evolution process of Turin’s ecosystem requires a relational governance structure, rooted in shared cooperative norms and informal routines that are mutually defined and adjusted by the actors that compose the system. This configuration requires that each actor plays a clear role within the ecosystem.

## 5 Conclusion

The vibrancy of the local economy, together with the presence of a dense network of connected institutions, has been advocated as the key for start-ups to grow and innovate and for the generation of technological

innovation within an area (Phelps et al. 2012; Whittington et al. 2009). The entrepreneurial ecosystem approach has recently been introduced to study the influence of the geographical context on entrepreneurial activity. Although the extant research provides some valuable insights into the specific features of successful entrepreneurial ecosystems (Arruda et al. 2013; Cohen 2006; Isenberg 2010; Spigel 2017), we know relatively little about the processes that underpin the evolution of ecosystems and their relationships with governance issues. In this paper, we have proposed a conceptual framework, which combines the governance configuration of an entrepreneurial ecosystem with its life cycle, to study Turin’s entrepreneurial ecosystem. Through multiple data collection methods (i.e., archives, questionnaires, and interviews), we have explored the way the evolution of entrepreneurial ecosystems is shaped by different governance designs, and we have tested the propositions on Turin’s empirical setting.

The obtained results have confirmed the role played by the university and I3P as the anchor organizations that, in the early 2000s, gave the initial impulse for the generation of the ecosystem in Turin. In line with the predictions of our conceptual framework, Turin’s ecosystem has emerged from a hierarchical governance design, as a result of a concerted strategy over a wide range of institutional, industrial, and cultural actors devoted to the economic restructuring of the city. In terms of governance structure, the entrepreneurial ecosystem in Turin today appears to be in an intermediate phase, that is, somewhere between the hierarchical and the relational governance design phases, for two main reasons. First, it seems that the anchor tenant has not yet completely abandoned its central role. Second, although a viable and wide set of actors have started to populate the ecosystem, many of these players do not have a clear position within the ecosystem, and some of the key institutions, such as industrial and financial investors, are loosely present. In addition, the wide range of organizations that populate the ecosystem is predominantly concentrated on supporting the early stages of start-ups and on disregarding the later stages of their life cycle. Interviews with key players and the answers to the questionnaire have confirmed the need for Turin’s ecosystem to evolve towards a relational governance design, by means of a systemic and participative approach rooted in shared cooperative norms and informal routines that are mutually defined and adjusted by the actors of the ecosystem.



**Fig. 3** Strategic levers that can be used to strengthen the local ecosystem. The figure illustrates the percentage of respondents that have indicated the most critical strategic levers necessary to

strengthen Turin's ecosystem (a maximum of five levers could be selected)

Our results have clear policy implications for those players that have the aim of promoting and sustaining entrepreneurship within the ecosystem in the long term. A deeper understanding of the governance conditions under which Turin's ecosystem may evolve is crucial to specifically tailored policy recommendations in order to strengthen the existing ecosystem. What are the strategies that need to be followed to drag Turin's ecosystem towards a more systemic and participative relational governance design? These strategies are yet to be defined, and it is questionable whether a shared vision and a concerted strategy are today present to fulfil the task. The way Turin's ecosystem may evolve into a relational governance design involves a unique set of coordination issues and challenges. How can actors' objectives and strategies best align with those of the other actors in the network? Is the progress towards a more relational type of governance feasible without a central actor playing the role of coordinator? How will the evolution of the ecosystem be shaped by institutional, cultural, organizational, and social changes? What are the drivers necessary for the constitution of a network of actors that would actively support the expansion and growth stages

of start-ups, which at the moment are missing? What are the challenges ahead in mobilizing financial capital?

Our results suggest that attempts to change the formal institutions will have little success, unless informal rules, conventions, norms are adjusted. This is clearly a difficult task which will take time, because informal rules, norms, and conventions basically have an intangible nature, tend to resist change, and usually fall outside the direct influence of public policy. The study lends to the conclusion that a relational governance design is unlikely to appear in the near future, unless it is underpinned by complementary cultural and social attributes. In this regard, there is still a need for a reorientation and reconfiguration of the public policy that goes beyond the simple provision of public funds. Local policies, aimed at promoting entrepreneurship, should lay the grounds for the creation of a fertile environment to attract financial capital, to promote the links between the players that populate the ecosystem, and to create the enabling conditions that would allow entrepreneurial support actions to materialize.

We hope that this paper will help to stimulate further research on the governance issues that affect the

evolution of entrepreneurial ecosystems. As the field moves from its infancy to a certain level of development, some additional questions could be asked and investigated. The understanding of the processes through which ecosystems emerge, change, and develop over time needs to be further elaborated, and is rich in potential for future research. In particular, further research might explore how internal and external social and economic changes affect the configuration and evolution of entrepreneurial ecosystems. Future studies could also apply or refine our conceptual model to study different types of ecosystems in other regions/countries. We have in fact just begun to unveil the complex relationships that affect entrepreneurial ecosystem dynamics.

**Acknowledgments** We are grateful to all of the interviewees for having given up their time to talk to us. We wish in particular to thank Valentino Castellani and Anna Prat (Torino Strategica) for having shared their profound knowledge of the history and strategy of Turin's entrepreneurial ecosystem with us. We are also grateful to Silvio Aime (University of Turin), Marco Cantamessa (I3P), Andrea Casalegno (Top-IX), Barbara Graffino (YES4TO), Giancarlo Rocchietti, Marco Lingua, and Silvano Bernardi (Club degli Investitori), Stefano Molino (Innogest), Nicoletta Marchiandi (Camera di Commercio di Torino). We are indebted to the Fondazione Human Plus for having provided us with the questionnaire data. The authors are responsible for all of the views and opinions expressed in the paper.

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