



PhD in INGEGNERIA GESTIONALE / MANAGEMENT ENGINEERING - 38th cycle

PARTENARIATO PNRR Research Field: INNOVATION, ENTREPRENEURSHIP AND LOCAL DEVELOPMENT

Monthly net income of PhDscholarship (max 36 months)

€ 1450.0

In case of a change of the welfare rates during the three-year period, the amount could be modified.

Context of the research activity

Motivation and objectives of the research in this field

Innovation is often described as a major determinant of the overall socio-economic development of regions and countries (Audretsch and Feldman 2004). Innovation is most likely to occur within an entrepreneurial ecosystem that typically involves a set of interdependent constitutive elements, such as informal and formal institutions, networks of entrepreneurs, finance, talent, knowledge and support services, coordinated in such a way that they enable innovative growth-oriented entrepreneurship within a geographical area (Isenberg 2010; O Connor et al. 2018). The literature on the local factors that generate or support entrepreneurial ecosystems is quite broad, with research having been conducted in many countries and crossing multiple academic disciplinary boundaries (e.g., Acs and Armington 2006). There is however a need for advancing this research domain by providing a richer conceptualization of the interdependencies among the different constitutive elements of an entrepreneurial ecosystem and a more in-depth empirical investigation of what drives the performance of an entrepreneurial ecosystem. Furthermore, entrepreneurial ecosystems are by their nature dynamic and evolutionary, having an origin and transitioning over time (Spigel and Harrison 2018). There is however scant knowledge of how these evolutionary processes of entrepreneurial ecosystems are manifest (Alvedalen and Boschma 2017). The spatial diversity of entrepreneurial ecosystem also warrants further attention (Autio et al. 2014). Ecosystems may



	<p>involve elements that are geographically proximate but they may also involve elements spread across different regions. For instance, leading universities may have major international links with other universities and corporations, and the presence of these international connections is likely to be beneficial to the performance of the local entrepreneurial ecosystem. Finally, scholars have contrasting views on the role of government policies in entrepreneurial ecosystems (Colombo et al. 2019). The bottom-up approach' assumes that ecosystems evolve over time like natural ecosystems, and almost excludes any rationale for government intervention (Isenberg 2010). The "top-down approach" considers that an ecosystem could be shaped (or even created from scratch) by policy makers, where necessary resources are provided by the government as the feeder of the ecosystem (O'Connor et al. 2018). Moving from these premises, the research is aimed at investigating the following research questions:</p> <p>RQ1) What determines the emergence, development and the overall performance of an entrepreneurial ecosystem?</p> <p>RQ2) To what extent and in what ways do spatial factors limit the boundary and composition of an entrepreneurial ecosystem?</p> <p>RQ3) What is the role of policies for entrepreneurial ecosystems? More specifically, how do the constitutive elements of entrepreneurial ecosystems influence the effectiveness of such policies?</p>
<p>Methods and techniques that will be developed and used to carry out the research</p>	<p>The research will be mainly based on econometric analyses at the entrepreneurial ecosystem-year level, in Europe. Coherently with existent literature, the entrepreneurial ecosystem will be defined at the possibly most detailed geographic (city, functional urban areas or NUTS3 regions) and industrial level, compatibly with the available data on the indicators of the theoretical constructs that describe the entrepreneurial ecosystem elements (O'Connor et al. 2018).</p> <p>It is worth noting that there is a scarcity of well-established metrics of entrepreneurial ecosystem performance (Leendertse et al. 2021), as well as an increasing recognition that the relationship between entrepreneurship innovation and economic growth</p>



	<p>depends not simply on the quantity but also on the underlying quality of new firms. Building on Guzman and Stern (2020), this research will therefore develop and implement a novel approach to measure the entrepreneurial ecosystem performance, based on the assessment of both the quantity and quality of entrepreneurship.</p> <p>Data for the analyses will be collected from a large variety of datasets to compose credible metrics to characterize entrepreneurial ecosystems. A number of measures related to entrepreneurial ecosystem performance and its constitutive elements will be based on regional indicators provided by EUROSTAT. However, to overcome problems with scarcity of information at a fine-grained level of geographic aggregation, additional indicators will be constructed starting from micro-data that will be retrieved, e.g., from Orbis (as to firm-level information) and the RISIS data infrastructure (www.risis.eu), which contains georeferenced micro-data on knowledge output (e.g., patents, publications), leadership (e.g., coordinators of EU-funded projects), universities, large corporate R&D-intensive firms, and venture capital investment activity.</p> <p>The identification strategy will also consider the empirical challenge of tackling endogeneity, reverse causality and spatial auto-correlation concerns that are typical in regional studies. To this end, instrumental variable approaches will be used and discontinuities in the government intervention (i.e., the creation or the reorganization of new programs, changes in legislation) will be exploited as sources of exogenous variations in the identification strategy.</p>
Educational objectives	<p>The educational objectives are multiple.</p> <p>First, during the Ph.D. the candidate will learn to master methodologies allowing to carry out high quality scientific research (literature reviews techniques, selection and use of quantitative methodologies, advanced tools for data analysis).</p> <p>Second, at the end of the program, the candidate will possess adequate research skills in the fields of entrepreneurship and innovation, with a particular focus on the scale-up process of high tech startups and its</p>



	drivers at micro, meso and macro-levels.
Job opportunities	Job opportunities after the Ph.D. are promising and include positions in academia, public administrations, public and private research centers, consulting firms.
Composition of the research group	1 Full Professors 1 Associated Professors 0 Assistant Professors 0 PhD Students
Name of the research directors	Proff. Massimo G. Colombo, Massimiliano Guerini

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Additional support - Financial aid per PhD student per year (gross amount)	
Housing - Foreign Students	--
Housing - Out-of-town residents (more than 80Km out of Milano)	--

Scholarship Increase for a period abroad	
Amount monthly	725.0 €
By number of months	6

Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information
<p>References</p> <p>Acs, Z. J., &Armington, C. (2006). Entrepreneurship, geography, and American economic growth. Cambridge University Press.</p> <p>Alvedalen, J., &Boschma, R. (2017). A critical review of entrepreneurial ecosystems research: Towards a future research agenda. European planning studies, 25(6), 887-903.</p> <p>Audretsch, D. B., &Feldman, M. P. (2004). Knowledge spillovers and the geography of innovation. In Handbook of regional and urban economics (Vol. 4, pp. 2713-2739). Elsevier.</p> <p>Autio, E., Kenney, M., Mustar, P., Siegel, D., &Wright, M. (2014). Entrepreneurial innovation: The importance of context. Research policy, 43(7), 1097-1108.</p> <p>Colombo, M. G., Dagnino, G. B., Lehmann, E. E., &Salmador, M. (2019). The governance of entrepreneurial ecosystems. Small Business Economics, 52(2), 419-428.</p> <p>Guzman, J., &Stern, S. (2020). The state of American entrepreneurship: New estimates of the quantity and quality of entrepreneurship for 32 US States, 1988-2014. American Economic Journal: Economic Policy, 12(4), 212-43.</p> <p>Isenberg, D. J. (2010). How to start an entrepreneurial revolution. Harvard business review, 88(6),</p>



40-50.

Leendertse, J., Schrijvers, M., & Stam, E. (2021). Measure twice, cut once: Entrepreneurial ecosystem metrics. *Research Policy*, 104336.

O'Connor, A., Stam, E., Sussan, F., & Audretsch, D. B. (2018). Entrepreneurial ecosystems: The foundations of place-based renewal. In *Entrepreneurial ecosystems* (pp. 1-21). Springer, Cham.

Spigel, B., & Harrison, R. (2018). Toward a process theory of entrepreneurial ecosystems. *Strategic Entrepreneurship Journal*, 12(1), 151-168.

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Decreto Direttoriale Avviso:

D.D. 3277 del 30/12/2022 Avviso pubblico per la presentazione di Proposte di intervento per la creazione di 12 Ecosistemi dell'innovazione sul territorio nazionale da finanziare nell'ambito del Piano Nazionale di Ripresa e Resilienza, Missione 4 Componente 2 Investimento 1.5 - Creazione e rafforzamento di "ecosistemi dell'innovazione", costruzione di "leader territoriali di R&S" - finanziato dall'Unione europea - NextGenerationEU.

Decreto di concessione: D.D. 1055 del 23/06/2022