

### XXXIII AiIG Scientific Meeting

# Redesigning networks and supply chains in times of transition

## Developing research and education in Management Engineering

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#### Title of the track

Higher Education and Manifestations of Entrepreneurship: Towards a Multifaceted Perspective (Regular session: full papers relating to the track theme are presented and discussed)

# Names, institutions, e-mail addresses and phone numbers of the organizers (please note that for each track proposal are asked between 3 and 5 organizers)

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#### Short biography of each organizer

Davide Hahn is a Post-doc Research Fellow at the Department of Management, Information and Production Engineering and at the research Center for Young and Family Enterprise of the University of Bergamo. He obtained the doctoral degree in the PhD Program on Economics and Management of Technology offered jointly by the University of Pavia and the University of Bergamo. His research focuses on entrepreneurship in the context of university. His research has appeared in Journal of Management Studies, Technological Forecasting and Social Change, Small Business Economics, Entrepreneurship and Regional Development, Journal of Technology Transfer, International Entrepreneurship and Management Journal, Studies in Higher Education.

Alice Civera is a Post-doc Research Fellow at the University of Bergamo (Italy). She has been a Visiting Research Fellow at the University of Augsburg (Germany). Her main research interests are related to academic entrepreneurship, academic career trajectories, and science policy. In this regard, she has published in several international scientific journals such as Research Policy, European Economic Review, and Studies in Higher Education.

Alessandra Colombelli is Associate Professor of Strategy and Entrepreneurship and Head of the Entrepreneurship and Innovation Centre (EIC) at the Politecnico di Torino. She is elected member of the AiIG Board. She was formerly Marie Curie Fellow at the Manchester Business School, research fellow at the University Lumière Lyon2 and the University of Nice Cote D'Azur. Her research interests cover several topics in the fields of entrepreneurship, regional economics, economics and management of innovation. She is Associate Editor of Regional Studies and member of the Editorial Review Board of Small Business Economics. She has published articles in top international scientific journals like *Economic Geography* and *Research Policy*. She has been involved in several national and international research projects financed by both public and private institutions like the European Commission, European Parliament, Italian Ministry of Economic Development, and Invitalia.

Luca Grilli is Full Professor of Business and Management Engineering at the Politecnico di Milano (Italy). His main research interests revolve around the economics of innovative entrepreneurship and the economics of network and digital industries. On these subjects, he has participated in numerous scientific projects, promoted by private and public institutions, he has published articles in several international scientific journals (e.g., Research Policy, Journal of Business Venturing, Industrial and Corporate Change, Small Business Economics, Journal of Corporate Finance, International Small Business Journal) and he has acted as an editor for journal special issues and a book. He has also been a Visiting Professor at SPRU-Science and Technology Policy Research of the University of Sussex (UK).

**Azzurra Meoli** is an Assistant Professor in the Department of Management at the University of Bologna, where she earned a Ph.D. in Management in March 2018. Her research focuses on explaining the process by which individuals decide to start an entrepreneurial career. In particular, she investigates the entrepreneurial behavior among graduates. She has been visiting scholar for a year at the Whitman School of Business, Syracuse University. Her works are presented at the BCERC, AOM, DRUID and published in the relevant journal as *Journal of Business Venturing*, Research Policy, and Regional Studies.

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#### Short description of the proposed track

In face of to the undisputed importance of entrepreneurship for economic growth and social development (Audretsch & Keilbach, 2008; Stuetzer et al., 2018; Van Praag & Versloot, 2007), higher education institution (HEI) ecosystems represent a fertile ground for entrepreneurship in several respects (Siegel & Wright, 2015). In terms of teaching (i.e. first mission), university play a central role in equipping its members with entrepreneurial skills, through specific entrepreneurship education programs (Hahn et al., 2020) or through the design of course of studies that combine technical and managerial education (Colombo & Piva, 2020). In terms of research (i.e. second mission), HEIs are a source of knowledge spillovers, such as new technologies and innovations, that can be commercialized by new ventures (Agarwal & Shah, 2014; Lindholm-Dahlstrand et al., 2019; Shah & Pahnke, 2014). In terms of the third or entrepreneurial mission, HEI and the stakeholders connected to the university, such as incubators or science parks, – together forming the HEI ecosystem (Graham, 2014) – also provide infrastructures and resources that support technology transfer and the creation of new businesses (Civera et al., 2020; Lyons & Zhang, 2018). For all these reasons, the research field of university-based entrepreneurship has exponentially grown in the last decade (Fini et al., 2018; Guindalini et al., 2021).

However, while research has largely acknowledged the pivotal role of HEI ecosystems in driving entrepreneurship, less is known on how different configurations of HEI ecosystems lead to various manifestations of entrepreneurship, defined as the identification and exploitation of new business opportunities through venture creation or within existing organizations (Shane & Venkatamaran, 2000). For example, HEI are known to generate both academic entrepreneurship and student entrepreneurship. The former describes entrepreneurial engagement of faculty (Perkmann et al., 2020) and can have various forms, ranging from the creation of academic spinoffs to research collaborations with industry. Student entrepreneurship, instead, indicates those entrepreneurial activities undertaken by university students and recent graduates (within 5 years after graduation; Colombo & Piva, 2020). Even though most research has focused on academic entrepreneurship, student entrepreneurship has the greatest impact on national economies and innovation systems (Åstebro et al., 2012; Wright et al., 2017).

Additionally, we urge to know more about the outcomes of the entrepreneurial activities undertaken by scientists (Mathisen & Rasmussen, 2019) or fresh graduates (Eesley & Lee, 2021) in order deepen our understanding on the extent and conditions under which manifestations of entrepreneurship generated by HEI institutions actually yield impact on social and economic development. For these reasons, in order to stimulate more research on how HEI ecosystems influence different manifestations of entrepreneurship and their impact, this track looks for papers at the that focus on various types of entrepreneurial activities generated by HEIs, embracing a micro, meso or macrolevel of analysis or a multilevel approach. Bringing together scholars from different research areas (e.g., higher education, regional studies, technology entrepreneurship, new venture creation, career studies, entrepreneurial finance) and disciplines (e.g., economics, innovation, entrepreneurship, management, social psychology) that reflect the heterogenous and complementary research expertise of the organizers, the goal of this track is creating a fruitful debate on the role of HEI ecosystems in driving socio-economic development through entrepreneurship.

We think that our track could nicely fit into the conference because it stimulates a scholarly debate on the role of research and education in driving the commercialization of innovations. In particular, by combining the focus on technologies with attention to managerial aspect, management engineering scholars and educators can provide a valuable contribution in steering education and research towards the promotion of entrepreneurial endeavors. This is crucial for the development of the engineering field, as recently emphasized by the COPI (Conferenza per l'Ingegneria) position paper "Ingegneria 2040: le nuove sfide nella formazione degli ingegneri nella società della

conoscenza". Additionally, attending the track can benefit scholars who have the opportunity to learn more about this intriguing, pervasive and growing research field that has been attracting interest from the broader (Fini et al., 2019), entrepreneurship (Abootorabi et al., 2021) and innovation (Bruneel et al., 2021). Indeed, numerous scholars at both national and international level have expressed the interest for the track.

We will assign to each paper a discussant who will comment the presented manuscripts, based on his/her review. The official language of the track will be English.

Some potential topic areas we suggest are (but not limited to):

- How do specific elements of the HEI ecosystem, such as educational offerings, lead to different forms of student entrepreneurship (not just venture creation but also intrapreneurship in SMEs and corporations as well as succession in family firms, cf. Hahn et al., 2021)?
- What are the antecedents and outcomes of necessity vs. opportunity-driven university-based entrepreneurship (cf. Civera et al., 2020)?
- What are the development trajectories of different types of academic spinoffs (e.g., research-transfer, method-transfer or competence spin-offs, cf. Müller, 2010; professor vs student start-ups, cf. Roche et al., 2020)?
- What is the relationship between the university research orientation (cf. Centobelli et al., 2019) on the performances of university-based spin-offs, such as fundraising and commercialization?
- To what extent and under which circumstances does entrepreneurship education foster social entrepreneurship (cf., Åstebro, & Hoos, 2021)?
- How do HEI ecosystem foster female entrepreneurship?
- What is the impact of university-entrepreneurship, for example in terms of job creation, inclusiveness, innovation and economic growth?
- To what extent does university governance and leadership affect different forms of academic engagement, such as patenting or research collaborations with industry (cf. Perkmann et al., 2021)?
- What are the career outcomes of student entrepreneurs (e.g., well-being, cf. Hahn, 2020, or wages, cf. Merida & Rocha, 2021) and of academic scientists (e.g., research productivity, cf. Fini et al., 2022)?
- How does socialization in HEI ecosystems (cf. Kacperczyk, 2013) affect the formation and performances of entrepreneurial teams of student or academic start-ups?
- How does university involvement in university-based firms affect their attractiveness to investors (cf. Colombo et al., 2019) or corporate buyers (cf. Mathisen et al., 2021)?
- What the antecedents and outcomes of firms founded by star scientists (cf. Roche et al., 2020)?

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#### Keywords

Academic Entrepreneurship; Ecosystem; Higher Education; Student Entrepreneurship.

#### Short state-of-art and bibliography about the proposed topic

Higher Education Institution (HEI) ecosystems consist of those stakeholders of a geographical community specifically connected to the university, which contribute to the regional economic development in many ways, including education, university spin-offs, staff and student start-ups, and collaborations with existing businesses, particularly in knowledge-intensive sectors (Walter et al., 2013). According to Siegel & Wright (2015), HEI ecosystems include several elements, which embrace the three missions of the university (i.e. teaching, research, third missions), such as curricular and extra-curricular entrepreneurship courses and programs, infrastructures supporting technology transfers (e.g., incubators / accelerators and science / technology / research parks), and business plan competitions to stimulate commercialization and venture creation. Literature has documented how different elements of HEI ecosystems affect entrepreneurial activities. For example, research has shown how specific types of curricula (Colombo & Piva, 2020), entrepreneurship education (Hahn et al., 2020), university climate (Bergmann et al., 2016), industry ties, research orientation (Walter et al., 2013) and business plan competition (Lyons & Zhang, 2018) facilitate students' venture creation. Moreover, the vast literature on academic entrepreneurship has explored how university resources (Powers & McDougall, 2005) and rules (Fini et al., 2020; Muscio et al., 2016) influence the creation of university spin-offs.

However, while most of these studies focus on the effect of HEI ecosystems on venture creation of students and scientists, more research is needed on the outcomes of the entrepreneurial activities generated within HEIs (Mathisen & Rasmussen, 2020), considering different manifestations of student and academic entrepreneurship.

First, concerning student entrepreneurship, we urge to know to what extent it generates innovation (e.g., are students' ventures driven by necessity or by the exploitation of new business opportunities?)(Fini et al., 2016), economic growth (e.g., do students' ventures create jobs?)(Eesley & Lee, 2021; Shane, 2009) and social development (e.g., to what extent does SE enable the entry in the job market of minorities?)(Cadenas et al., 2020). Furthermore, we do not know much about entrepreneurial efforts undertaken by students in established organizations, for example as successors in their family businesses or as employees in SMEs and corporations (Hahn et al., 2022). More research is also needed to understand how different elements of the HEI ecosystem, combined with regional characteristics, generate different manifestations of student entrepreneurship (Wright et al., 2019). On the one hand, HEIs expose students to several elements that could influence their

engagement into entrepreneurship, such as in-curricular and integrated extra-curricular entrepreneurial courses (Hahn et al., 2020), business plan competitions, incubators and, more in general, a widespread climate that encourages entrepreneurship (Wright et al., 2019). On the other hand, in addition to elements which are typical of HEIs, the local or regional characteristics are equally relevant for entrepreneurship: the presence of innovative start-ups and the socio-economic conditions (Meoli et al., 2020), the government support (Fini et al., 2011), the innovation intensity (Walter et al., 2013) all concur to create specific regional cultures which are more or less prone to entrepreneurial activities. Different combinations of these elements may generate different configurations of entrepreneurial activity for example by triggering family firm succession rather than venture creation (Hahn et al., 2021) or opportunity- rather than necessity-driven forms of entrepreneurship (Civera et al., 2020). Since the effect of university offerings on student entrepreneurship are contingent upon the opportunities in the region (Walter et al., 2013), more research is needed on how regional characteristics together with HEI drive student entrepreneurship. Second, concerning academic entrepreneurship, we need more research looking at different degrees and forms of academic engagement (Iorio et al., 2017). While scientists can engage into entrepreneurial activities in different ways (not necessarily spin-off creation but also advisory role or industry collaboration), we need to know more about the outcomes of these activities on scientists' performances (Fini et al., 2022), for example in terms of research productivity or economic impact. Moreover, literature has documented a large heterogeneity among university spin-offs in several aspects, such as the presence of surrogate entrepreneurs (Visintin & Pittino, 2014), university ownership (Ferretti et al., 2020), the motivation behind the spin-off (necessity vs opportunity-driven, cf. Civera et al., 2020), the university members involved in the spinoffs (students, scientist, star scientists, cf. Roche et al., 2020), the type of knowledge transferred by the parent university (i.e., research-transfer, method-transfer or competence spin-offs, cf. Müller, 2010). However, we do not know much about the implications of such heterogeneity on the performances and impact of university spin-off (Mathisen & Rasmussen, 2019). Related to this, we urge to know more on how different elements of the HEI ecosystem affect the performance, and not just the formation, of university spin-offs. In particular, scholars have called for studies focusing at the social impact of these firms (Fini et al., 2018). Finally, since many science-based firms end up competing in the "market for assets" rather than in the "market for products" (Colombo et al., 2010), studies on the acquisition of university spin-offs by incumbent firms (Mathisen et al., 2021) could offer a valuable contribution to the field.

Scholars have recognized that addressing these questions can contribute more broadly to our theoretical understanding of entrepreneurship as a socially embedded phenomenon (Kacperczyk, 2013; Larsson et al., 2017). For example, by studying how the social context in which university students are embedded affects entrepreneurial (and other) careers and learning, entrepreneurship scholars could offer valuable contributions to the social and intergenerational transmission of entrepreneurship (Criaco et al., 2017; Kacperczyk, 2013), to the translation of entrepreneurial intentions into behaviors (Meoli et al., 2020), to effectuation and causation logics (Braun and Sieger, 2021), to a dynamic view of entrepreneurial human capital (Hahn et al., 2017; Martin et al., 2013) and to entrepreneurial well-being (Hahn, 2020). Concerning academic entrepreneurship, the phenomenon of science commercialization by university spin-offs has recently attracted a growing attention from mainstream management research as an important context where to investigate questions related to the study of organizations (Balven et al., 2018; Fini et al., 2019), such as the presence of non-economic rationalities and the tensions between the academic and business worlds (Nikiforou et al., 2018).

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