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Doctoral Dissertation

Doctoral Program in Management, Production and Design (37<sup>th</sup> Cycle)

# **Fostering the creation of nascent industries**

How public authorities can facilitate the development of  
nascent industries based on emerging technologies by  
leveraging on Entrepreneurial Ecosystems  
and Entrepreneurial Support Organizations

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# Summary

The rapid advancement in the development of several emerging technologies is driving a wave of innovation that offers industrial renewal possibilities that will shape tomorrow's economies.

However, these emerging technologies are characterized by radical novelty in the context in which they are applied. Thus, they usually bear additional knowledge uncertainties that might hamper their integration into new products and services, creating additional risks in their commercialization process. For this reason, the commercialization process of these emerging technologies is often driven by startups during the earliest stages of industry development, which in this context are commonly referred to as “constrained” due to the additional layer of uncertainties surrounding their development.

Given the huge potential of creating the industries of tomorrow that the new set of emerging technologies promises, it has become essential and strategic for public authorities to better understand how to facilitate the development of novel industries and help such constrained startups overcome the limits that hamper their development. In a context where several technologies are reaching the development point in which they might enable the emergence of several novel industries, policymakers are therefore required to adopt a more nuanced approach that does not rely on pushing for the development of specific industries but instead focuses on creating conditions that lower barriers to entry and encourage innovation in different industrial domains.

In this context, Entrepreneurial Ecosystems and Entrepreneurial Support Organizations literature offer valuable theoretical frameworks for understanding how public authorities can facilitate novel industry emergence. In an environment in which uncertainty regarding which novel industry might emerge locally, Entrepreneurial Ecosystems literature, studying the systems of actors and factors that enable the emergence of productive entrepreneurship in a particular region, represents a useful framework capable of overcoming limitations of more “vertical” cluster and innovation system-based policies, thus potentially more effective in later stages of industry development.

Similarly, Entrepreneurial Support Organization literature highlights the role of organizations that support entrepreneurship through services such as training and knowledge bridging. During the incubation period of novel industries, in a context where knowledge development and cumulation are fundamental, Entrepreneurial Support Organizations play a fundamental role by acting as knowledge

brokers, a function that traditional instruments (such as financial incentives) often fail to accomplish. Entrepreneurial Support Organizations are therefore crucial in addressing network failures and in fostering knowledge exchange during the delicate phases of industry development.

Despite the advancement in both fields of knowledge, many of the policies and interventions developed upon the suggestions supplied by these literature streams yielded unsatisfactory results in terms of facilitating the emergence of novel industries. Recognizing the strategic importance of local industrial renewal, it is now more crucial than ever to enhance our understanding of how public authorities can support the emergence of constrained startups to accelerate this renewal.

With this dissertation, we argue that this lack of effectiveness might be linked to a general lack of focus of these two streams of literature on the development processes of novel industries. Some scholars recently started recognizing these limits, criticizing the fact that Entrepreneurial Ecosystem-based policies are indeed often generically focused on producing “more entrepreneurship” (irrespective of type), on top of highlighting that such interventions often lack systemic and tailored approaches that address the specific challenges of different typologies of startups. By adopting a multilevel perspective and investigating different types of constrained startups, this work aims to bridge these previously disconnected fields with industry development theories and contribute to supporting the design of more effective policies capable of facilitating the development of novel industries based on emerging technologies.

After briefly introducing the state of the art and the central puzzle of the thesis in the introduction, the rest of the dissertation is organized as follows. The second chapter adopts a macro-level point of view to investigate which factors can promote the emergence of companies developing products based on the latest scientific and engineering advancements, commonly referred to as deep-tech startups. By combining the entrepreneurial ecosystem framework with the specific characteristics of deep-tech innovation systems, we developed and tested hypotheses about which factors influence the emergence of deep-tech startups in European regions. Results suggest that the presence of deep-tech-specific knowledge and deep-tech-specific talent are more important for facilitating the emergence of deep-tech startups in regions than the quality of the generic entrepreneurial ecosystem or the presence of deep-tech-specific formal institutions.

The third chapter, adopting a micro-level perspective, investigates how Intellectual Property Venturing Firms, a form of Entrepreneurial Support Organization similar to venture builders but focused exclusively on patentable technologies, are capable of “crafting” deep-tech startups from bare technological ideas. Since these firms invest in projects that no other investor would finance, we explore the mechanisms through which these emerging organizations transform science and engineering-based inventions into deep-tech startups via a series of actions and processes that are capable of improving both market legitimization of the new technology being commercialized, but most importantly legitimization of the project in front of future investors. This section provides valuable insights to policymakers in charge of designing instruments that aim to facilitate the creation of deep-tech startups by identifying mechanisms that facilitate their creation, highlighting at the same time the shortcomings of more established instruments.

The fourth and last chapter of the thesis instead adopts a meso-level perspective to examine whether and how public authorities, in particular central governments, can promote the local emergence of private Entrepreneurial Support Organizations. Literature suggests that the presence of these private actors within the ecosystem fosters startup formation and overall entrepreneurial ecosystem development, but little evidence on how to favor their emergence is available to public authorities. Adopting the Entrepreneurial Ecosystem framework, we provide evidence regarding levers that central governments may use to facilitate the emergence of such important actors within the European fintech context. Findings suggest that private entrepreneurial support organizations are constantly present in regions with combinations of enabling factors capable of fostering market competition. Targeted policy interventions on specific factors therefore could have a positive impact on the overall availability of private entrepreneurial support organizations, thus potentially on the overall local development of new industries.

Although not free of limitations (briefly introduced in the conclusive chapter), this dissertation provides the basis for shaping more effective policies that support the emergence of new industries driven by emerging technologies. This dissertation therefore serves as a foundation for developing a more comprehensive and integrated research agenda that better reconnects the literature streams of Entrepreneurial Ecosystems and Entrepreneurship Support Organizations with Industry Development theories.