

Tracing the roots of innovation: the persistence and emergence of innovativeness in France since 1851

Application to green Entrepreneurship

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Introduction:

Entrepreneurial culture, with its ability to stimulate or constrain innovation, has long been recognised as a key force in shaping economic trajectories. Traditionally, frameworks such as Hofstede (1980) have played a key role in proving how cultural differences across countries affect entrepreneurial behaviour, while Baumol (1990) has shown that societies organised around specific reward structures can inadvertently stifle the mobilisation of entrepreneurial talent, thereby limiting technological progress¹. In this context, entrepreneurial culture—defined by *shared values*, *beliefs*, and *behaviours* at both the individual and collective levels (Baumol, 1990)—emerges as a central element in understanding regional innovation dynamics. Moreover, recent work (Pylak & Sosnovskikh, 2024) points to the persistence of both high-quality and low-quality entrepreneurship, emphasising that only high-quality entrepreneurial activity is fertile ground for lasting innovation.

Complementing entrepreneurial culture, ‘sticky’ regional characteristics—such as robust occupational structures, specialised industries and infrastructural advantages inherited from the past—play a key role in creating self-reinforcing entrepreneurial cycles that help preserve innovation advantage over time. Empirical evidence from a variety of countries, including Germany (Fritsch et al., 2019), the United Kingdom (Stuetzer et al., 2022), the United States (Stuetzer et al., 2021), Poland (Frisch et al., 2022), post-Soviet countries (Pylak and Sosnovskikh, 2024) and China (Wang et al., 2021), supports the insight that both a deeply rooted entrepreneurial culture and favourable regional characteristics can drive high-quality entrepreneurship and thus innovation. However, as Stuetzer et al. (2022) demonstrate, while

¹ He takes the example of ancient Rome, where prestige was not associated with industry and commerce but, for honourable people, with land ownership, usury and political office. In medieval China, the ultimate position on the social ladder was that of a scholar, with access to the status of mandarin by passing the imperial examinations.

historical entrepreneurial density is a predictor of modern innovation, excessive industrial dominance can also suppress bottom-up entrepreneurship.

Under these conditions, the persistence of entrepreneurship appears to be driven by these two intertwining phenomena, which can lead to positive or negative path dependence (Pylak & Sosnovskikh, 2024), as widely confirmed in the literature. Regions that are locked in a cycle of strong, high-quality entrepreneurship benefit from a long-term legacy of innovation. On the other hand, we are witnessing a change in the role of other regions that have become new centres of entrepreneurial dynamism and innovation hubs. It is these emerging regions that are the focus of our research.

This study therefore points to the need to examine two complementary models of innovation. The first, the historical persistence model, assumes that regions endowed with a robust entrepreneurial culture and ‘sticky’ characteristics inherited from the past tend to maintain their innovation advantage over time. This model also considers regions where factors such as social divisions, rigid hierarchies or over-specialisation in declining sectors have hindered the transmission of entrepreneurial spirit, thereby locking them into a negative path dependency.

In contrast, the emerging innovation model focuses on regions that have recently reinvented themselves by exploiting new opportunities. Sparked by historical ruptures—such as the 1973 oil crisis or the entrepreneurial revival of the late 1960s—these regions have harnessed dynamic, opportunity-based behaviour rather than relying solely on legacy structures. Drawing on insights from Hagen's (1962) frustration theory, the model explains how disruptive events can spur cooperation, foster a sense of autonomy and ultimately lead to the emergence of sectors such as green entrepreneurship and eco-innovation. However, since previous research has shown that such positive changes do not occur in all environments, as exemplified by Poland (Frisch et al., 2022) or post-Soviet countries (Pylak & Sosnovskikh, 2024), we hypothesise that positive changes may occur either due to a dormant entrepreneurial culture that, thanks to external shocks, has started to flourish again, or due to the transformation of an entrepreneurial culture from low to high quality, thanks to an adequate supply of resources (intangible and tangible, private and public).

The novelty of our approach lies in examining the emerging innovation model in direct comparison with the historical persistence model. We argue that while both models are driven by similar underlying mechanisms, the emerging innovation model tends to operate in regions that have historically lacked some of the key regional characteristics—such as abundant natural resources or strategically favourable locations—that have traditionally facilitated the development of entrepreneurial hubs. Instead, regions had a certain entrepreneurial culture and at some point, encountered unique opportunities or external shocks. This enabled them to exploit or transform a previously latent entrepreneurial culture, targeting entirely new and unexplored niches, such as green technologies and eco-innovation, for example.

To explore these dual models of innovation, we chose France—a country with a rich socio-economic history and a well-developed economic landscape—as the excellent ground to explore how past historical structures and events have shaped contemporary entrepreneurship and innovation. French history offers a fascinating narrative of transformation and resilience. Emerging from the revolutionary fervour of the late 18th century, the French Revolution not only redefined political power, but also catalysed a shift towards a modern, meritocratic society that valued innovation and individual entrepreneurship. In the 19th century, regions such as Lorraine and Nord-Pas-de-Calais used their rich coal and iron deposits to fuel industrial

development, creating sustainable centres of economic activity that still influence regional dynamics today. This model of historical sustainability illustrates how heritage structures—embodied by medium- and large-scale industries—can both sustain innovative capacity and paradoxically constrain entrepreneurial spirit through social divisions, rigid hierarchies and over-specialisation in declining sectors. Strategic business locations like the Atlantic ports of Nantes and Bordeaux, along with the Mediterranean gateway of Marseille, have historically served as vital nodes for commerce and trade, embedding an alternative entrepreneurial culture into the French economic fabric.

In contrast to the historical persistence model, the emerging innovation model exemplifies regions that have transformed their economic landscapes by seizing new opportunities and nurturing contemporary sectors. The 1973 oil crisis, for example, acted as a catalyst that revitalised entrepreneurial activity, enabling some regions to exploit latent cultural potential and target innovative niches such as eco-innovation. In recent years, the Hauts-de-France region—created in 2016 from the merger of Nord-Pas-de-Calais and Picardie—has experienced a surge in start-ups fuelled by regional incubators and public funds, while taking advantage of its strategic location near major European transport routes to focus on renewables, agri-food and logistics. Similarly, Marseille, once known mainly as a holiday destination, has transformed itself into one of the country's leading start-up ecosystems, with a strong focus on healthcare and biotechnology driven by clusters such as Immunopole. This example may demonstrate the successful transformation of a low-quality entrepreneurial culture into a completely new quality.

Other regions further illustrate this dynamic change. Lyon has transformed itself into a thriving centre for biotechnology, digital technologies and video games, combining its rich historical heritage with modern innovations. Bordeaux is rapidly developing as a digital health cluster using artificial intelligence for medical analysis, while Toulouse has expanded into cyber security and satellite imaging, supported by dedicated accelerators. Rennes has emerged as a hotspot in cyber-security and military intelligence, while Nantes continues to develop a vibrant startup culture through initiatives such as Atlanpole, which fosters collaboration between digital companies and academia. All these cases highlight how regions can reinvigorate their entrepreneurship by seizing new opportunities and creating innovative niches in today's competitive landscape.

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