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*Information: Academic research paper (refereed); for a Round table discussion; under the theme: The impact of university-business collaboration*

### **Elastic limit: The role of university-focused venture capital firms in extending knowledge and technology transfer**

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#### **Objectives**

This paper has two main objectives. Firstly, to identify the role of the university-focused intermediaries, specifically UVCs, in order to explain how they interact at the early stage of USO creation, particularly regarding knowledge sharing. Secondly, to analyse whether they change their position once the USO is developed. This gives rise to two Research Questions: How does knowledge sharing occur in the dynamics of a university-based entrepreneurial ecosystem? And Do particular participants, such as UTTOs or UVCs, always occupy the same role and position within the university-based entrepreneurial ecosystem?

#### **Approach / Methodology**

The idea of the entrepreneurial ecosystem has generated increasing interest in recent years (Autio & Thomas, 2014; Nambisan & Baron, 2013). Through studying the concept two major streams of research have been identified as being relevant in the entrepreneurial context (Clarysse, Wright, Bruneel & Mahajan, 2014): business or innovation ecosystems (Adner & Kapoor, 2010; Nambisan & Baron, 2013) and knowledge or regional ecosystems (Agrawal & Cockburn, 2003; Graham, 2014). The literature shows that the process of how knowledge ecosystems actually change is not well-understood (Autio & Thomas, 2014). This is in spite of the fact that policymakers have taken initiatives to stimulate both the creation and the dynamics of knowledge ecosystems (Clarysse, Wright, Bruneel & Mahajan, 2014; Graham, 2014). It is here that the role of universities are often perceived to be critical by policymakers (Morgan, 1997; Nicolaou & Birley, 2003). However, the role of universities, as anchor tenants, in the dynamics of this ecosystem and the connectivity between the participants as University Spin-out Companies (USOs) change to be full commercial companies have not been specifically studied under the ecosystems lens. Consequently, more research is recommended in this area (Graham, 2014; Wright, Vohora, & Lockett, 2004), in particular, about the emergence of university-focussed venture teams, which we have termed University-focused Venture Capital Firms (UVCs), created to invest in new business emerging from universities (Graham 2014), being located close to universities is essential to obtain funds and advise.

A mixed-method approach was used to consider two university-based entrepreneurial ecosystems, Andalusia in Spain and England in the UK. The findings from a qualitative analysis of 70 in-depth interviews with entrepreneurs in USOs and relevant intermediaries (48 in Andalusia, and 22 in England) and quantitative social network analysis were then compared internationally to achieve a better understanding of the complex processes involved (Acs, Autio, & Szerb, 2014; Audretsch, Lehmann, & Wright, 2014; Wright, 2014).

#### **Results**

The findings highlight that knowledge sharing and the role and position of particular participants, such as UTTOs or UVCs, in the two regional innovation ecosystems occur in different ways. This study contributes to the entrepreneurship literature theoretically on three levels: i) knowledge sharing in the dynamics of the university-based entrepreneurial ecosystems, ii) processes at early stage of USOs creation, and iii) role and position of UVCs. Firstly, regarding knowledge sharing, both countries confirm the importance and benefits of the commercialization of research results through

the creation of USOs, thus facilitating knowledge sharing in the ecosystem. This study confirms the role of entrepreneurial universities as 'engines of innovation' (Thorp & Goldstein, 2010). Secondly, regarding processes at early stage of USOs creation, universities act as facilitators who provide a supportive ecosystem in which the university community can start and develop entrepreneurial initiatives. Regarding the context, the entrepreneurial universities were studied in two knowledge ecosystems and differences in the nature and the role of their intermediaries were found. It was found that the way of enhancing the entrepreneurial university in the Spanish case is through public intermediaries, while in the English case they were private. The role of financial intermediaries, specifically UVCs, was found to be particularly relevant. In the English case, they showed a central role in developing entrepreneurial opportunities. This role was not evident in Andalusia where a public venture capital institution and a private one were identified. Concerning the USOs, the factors affecting USOs formation include the specific characteristics of the universities, the characteristics of the local economic and social environment and the resources and capabilities of UTTOs. Furthermore, several barriers to create USOs were mentioned, including difficulty to access finance, bureaucratic barriers at the level of administration and public institutions' lack of knowledge of this activity, being the most relevant, to get finance.

Thirdly, regarding the role and position of UVCs, the importance of 'surrogate entrepreneurs' (Mosey & Wright, 2007) was confirmed. This is not only for management knowledge but also for facilitating access to finance. In the English case, once the UVC identify the entrepreneurial opportunity they joined the research team, to help commercialize it. These UVCs advised from the inside, joining the management board to invest in this opportunity. In direct contrast, in the Spanish case, there was a public UVC that worked advising companies that are already operating or are going to be created, helping them in the management of the contractual process.

### **Implications and recommendations**

An important implication of this study is the fundamental difference between the regional innovation ecosystems in England and Andalucía, where the private UVCs, in England, had a proactive role in collaborating with universities to identify new opportunities to generate USOs. In addition, once they reached an agreement with these companies, they introduced a professional 'surrogate entrepreneur' (Mosey & Wright, 2007), who was critical in the management of the company. The public UVC in Andalucía was reactive, being approached by companies seeking advice or funding, and that whilst the private UVC in Andalucía had a more proactive approach it was not as professionalized as in the English case. Consequently, from the studied cases, the appropriate way of providing funding was through the private UVCs as additional advantages appear. For policymakers, this distinguishes the proactive role of UVCs, in the case of England, as being central to the university-based entrepreneurial ecosystem and, in the case of Andalucía, in mainly providing reactive advice and financing after the initial contractual agreement. The identification of these ongoing interactions between USOs and UVCs in England appear to have a significant role in reconnecting USOs with UTTOs thus providing further opportunities for university IP commercialisation.

### **Areas for development / further research**

This is an exploratory study investigating the different ways of approaching academic entrepreneurship promotion involving UVCs. Other university-focused intermediaries could be explored in a similar way.

The sample could be considered small. A more quantitative study with a larger number of observations coming from more regions and countries might improve the generalizability of results. Third, this empirical research has been carried out with a cross section sample of universities, and the results could be somewhat biased since important variables like historical background, cultural and social structures could not be controlled for (Wright, 2014).

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