

The effectiveness of university-industry relations: The importance of regional absorptive capacity

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There is a widely held belief that the role of universities as regional development agents revolves around a closer relationship with the industry, mainly based on the transfer of academic research outputs. This idea has been supported by a large body of economic research that highlights the benefits of the so-called "science-industry relationship," and describes university research as one of the engines of industrial innovation (Henderson et al., 1998; Kaufmann and Tödtling, 2001). Additionally, it has been also pointed out that the interaction with the industry provides lecturers with access to important financial resources and relevant knowledge, both of which can impact positively on their scientific performance (Breschi et al 2007; Gulbrandsen and Smeby, 2005). In other words, all these studies come to justify the interweaving of universities in the economy and point out that University-Industry relations (UIR) not only have a positive effect on firm's performance, but also on the development of academic research.

In this context it is not surprising that the promotion of university-industry relations has become a major element within both the innovation policies and the strategic plans of the universities. However, it is worth noting that many if not most of the studies that support the positive effect of UIR, although valuable, are hindered by a focus on a limited number of technologically developed environments and intensive knowledge industries (Laursen and Salter, 2004). In this line, it might be advisable to wonder whether the positive effects induced by a closer relationship between university and industry are also manifest in a technology follower region or in a region with a low absorptive capacity. This issue becomes more relevant taking into account the growing importance of regions in the design of innovation policies and considering that the region is also the main setting in which universities must define their role as development hubs.

This paper aims to analyse the effectiveness of UIR in a Spanish region with a low absorptive capacity: The Valencian Community. In this region, total expenditure on R&D as a proportion of regional GDP is lower than the Spanish average, and the productive sector is characterized by a concentration of traditional low-technology sectors and medium and small enterprises with low R&D expenditure. As regards human capital, the percentage of the region's population with higher education is two points lower than the national average; the difference doubles if we consider this group as a percentage of the employed or active population (Azagra et al., 2006).

In order to examine in detail the effectiveness of UIR, the analysis is carried out considering both the effects of UIR on firm's innovative performance and their effects on lecturers' scientific production. To do this, we have designed two data sets. The first one is comprised of more than 600 innovating firms located in the Valencian Community, which have answered two waves of the Spanish Innovation Survey (2003 and 2005). Using this data, we examine the impact of cooperation with university during the period 2001-2003 on subsequent firm's innovation output in 2003-2005. The analysis also controls for the potential impact of other innovation activities, as well as for the effects of different firm's characteristics.

The second data set contains information of more than two thousand faculty members from two more important universities of the Valencian Community, who have conducted research projects and/or have been involved in formal UIR activities during 1999-2004. Using this data, we analyse the effect of UIR activities carried out by lecturers with firms located in the region on their scientific production (measured as the number of articles published in journals indexed in the Thomson ISI database during 2003-2004).

The results of the firm level analysis reveal that cooperation with universities has no significant effect on product and process innovation. Additionally, the results of the lecturer level analysis indicate that the linkages with regional firms do not impact positively on lecturer's scientific productivity. In contrast, when the relations are established with foreign firms, the lecturer's scientific productivity is favoured. These results come to suggest that in regions with a low absorptive capacity, UIR would hardly result in a virtuous circle, such as it has been recognized in other contexts, based on the improvement of firm's innovative performance as well as the improvement of lecturer's scientific production.

The above results have important implications. On the one hand, they show that in regions with a low absorptive capacity, the universities rarely act as direct source of knowledge for the firm's innovative activities; therefore, in these regions, the promotion of UIR based on the transfer of academic research outputs does not seem the most appropriate innovation strategy. On the other hand, the results indicate that in this kind of regions, the linking with the industry - although is a major source of funding for university - can inhibit the development of university research, which can involve considerable costs in terms of production and diffusion of knowledge.

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