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RESEARCH NETWORKS AND INVENTORS' MOBILITY AS DRIVERS OF INNOVATION: EVIDENCE FROM EUROPE

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OBJECTIVE

We investigate the importance of the labour mobility of inventors, as well as the scale, extent and density of their collaborative research networks, for regional innovation outcomes. Specifically, among the questions addressed in this study are the following: What is the contribution of inventor networking and inventors' labour mobility to the regional intensity of patenting? Do cross-regional mobility and cross-regional networking play an important role? What impact is attributable to mobility and networking once spatial interactions have been controlled for?

SCIENTIFIC METHODS

In this paper we estimate the quantitative relationship between two features of the local labour market, namely mobility and networking, and regional innovative capability. Specifically, the empirical analysis is built upon a regional knowledge production function (KPF) framework, which is used to model the aforementioned relationship for the NUTS2 regions of 17 Western European countries (EU-15 plus Norway and Switzerland) with averaged values of the variables across 1996-2003.

The econometric approach takes full account of the spatial structure of the data by applying spatial econometric techniques. Unlike previous studies of innovation,

however, the spatial lag model is not used to the exclusion of the error model or vice-versa, but rather a rich spatial specification is allowed for. To achieve this, first the spatial lag model is estimated and then the non-parametric heteroskedasticity and autocorrelation consistent (HAC) estimator of the variance-covariance matrix in a spatial framework is performed.

For our purposes, a "mobile" inventor is broadly defined as an individual who moves across different organisations offering his/her services. Therefore, mobility can refer either to labour mobility understood in its strictest sense (an employee leaving a firm to take up a position in a new one), or to that demonstrated by consultants, freelance workers, university inventors, and the like. We assume that both constitute sources of knowledge flows to the extent that in the two instances knowledge is transferred from former employers or customers to new ones. Mobility is then proxied as the share of mobile inventors to the absolute number of inventors per region, as is usually done in the labour literature. Inventors' mobility can take place either within the limits of a region or across regions. On the other hand, the design of the network variables is built upon the theory of Social Network Analyses. Thus, the inventors form the nodes in the network, and these are grouped via edges or ties (in this instance, co-patents) into different components.

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Strong support for the positive relationship between regional labour market mobility and regional innovation intensity is found in our empirical analysis. The influence of networks is also fairly important, but the strength of these ties (measured as the network density) was found to have a negative influence on innovation. In line with studies elsewhere, we rely on the explanations proffered by Grannovetter concerning the importance of weak ties for innovation. This idea is further strengthened with the inclusion in the regressions of a proxy for the number of collaborations with inventors outside the region (positive and significant), which leads us to conclude that weak, distant ties are indeed more important for innovation.

Contrary to our expectations, however, the inflow of inventors from other regions does not have a markedly significant impact on innovation outcomes. In principle,

these findings can be attributed to the level of regional disaggregation at which the analysis was conducted, although the existence of certain short-term costs of a change in location should not be overlooked.

The results reported above reveal certain tendencies and a number of policy implications can be directly derived from them. Research collaborations across firms and regions are pivotal for acquiring external knowledge, as well as making more effective the creation of new knowledge. The promotion of distant, weak ties embracing as much actors as possible is therefore a plausible and beneficial policy option from a regional perspective. The promotion of cooperative behaviours is therefore advisable from a policy viewpoint, especially those linking inventors far apart (geographically or economically speaking). Consequently, we can conclude that promoting the creation of research networks between inventors in the EU and in the ENP countries can be of interest, specially taking into account that the geographical and the economic distance is higher with the ENP countries, and may allow to boost innovation and, as a result, economic growth. Offering job opportunities and being connected to other regions through networks of collaboration seem to help, especially for peripheral backward regions of Europe as well as regions in the ENP countries.

Policy recommendations regarding mobility within the local labour market are not so straightforward. Although mobility seems to be desirable at an aggregate level, and also at the inventor level, it could be understood as a zero-sum game for firms. A policy option could be, therefore, to promote the competition for talent at the inter-regional and, in particular, the international levels. Which, in any case, seems clear is that at least institutional barriers to mobility must be avoided. And these barriers tend to be higher between the ENP countries and countries in the EU than between EU countries, so there is scope for reducing barriers in order to create innovation.

All in all, we can conclude that cluster policies à la Silicon Valley may fail if the local socioeconomic tissue is not taken into account; that is, as important as the mere concentration of firms for knowledge diffusion is the structure of the labour market and inventors' social networks.