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SKILLED LABOUR MOBILITY: TRACING ITS SPATIAL DISTRIBUTION

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OBJECTIVE

The first objective of this paper is to obtain a set of variables that proxy for the phenomenon of high-skilled labour mobility at the NUTS3 level for the whole of EU countries. Secondly, we perform a detailed exploratory spatial analysis to detect the focuses of attraction of talent throughout the European geography, looking for the *agglomeration centres for knowledge flows*. We would like to test whether these focuses are randomly distributed across the space or, on the contrary, they follow certain spatial pattern. Through the use of several descriptive statistics, we want to elucidate to what extent geographical movements of inventors is a phenomena bounded in the space or country specific.

SCIENTIFIC METHODS

Since our main purpose is to explore the geographical mobility of inventors across European regions at a very fine level, we first need to define who can be considered as inventor moving across European regions. For this, we propose a useful methodology for identifying the mobility patterns of inventors using information contained in their patent documents and computerised algorithms to be able to do this on a large scale (the whole of Europe). By looking at the names that appear in the patent documents relating to their inventions, our approach is divided in two stages: firstly, name matching algorithms are used in order to group possible similar names,

and secondly, an algorithm is designed to establish computationally whether inventors with the same or similar names are actually the same person, on the basis of features reported in the patent document – self-citations, the applicant, the region from where the inventor makes the application, or its technological class. This way, our period of analysis covers a large range of years, from 1990 up to 2006 and our final sample covers 698 NUTS3 regions in 29 European countries.

In a second step, we apply a set of exploratory spatial statistics tools (Exploratory Spatial Data Analysis, ESDA), such as the plot of maps depicting the geographical distribution of the flow of high-skilled individuals and the application of tests of spatial correlation, in order to detect the spatial pattern of high-skilled labour mobility.

POLICY VALUE-ADDED

We obtain that only a subsample of countries, and a subsample of regions, placed in some of the Northern and Central European countries, are benefiting from the immigration of talented individuals and, as a consequence, these regions are those *potentially* benefiting from knowledge flows and human capital spatial externalities. All in all, from this first analysis it is important to bear in mind that (1), even when controlling for innovation potential and patenting bias, skilled individuals' attraction is specially reserved for few countries and regions, whilst this phenomenon is very poor or inexistent in other countries; (2), large cities and capital cities register high values of our IMR most of the times, even in poor performing countries in terms of inflows –supporting the theses about the importance of urban agglomerations; and (3), in some cases, the regions surrounding these large or capital cities are even more magnetic, pointing to the existence of spillovers of attractive features and/or crowding-out effects from the capital region.

We also confirm the importance of being located nearby those leading regions and cities in terms of inventors' stocks and inflows, so co-location and geography matter for attracting talent. When trying to elucidate why these movements are concentrated in space, we find three reasons. First, the attractive regions are located nearby on the space because the attractive characteristics of a given region –amenities, job opportunities, social networks, research facilities, multinational firms, contacts with

the academia, and the like- may well spill over its administrative boundaries. Second, some of these attractive regions, especially urban ones, may suffer some kind of congestion effects, due to high land prices, traffic jams, or pollution, which would favour the location of the research agents outside that region, but nearby it at the same time in order to take advantage of the possible existence of agglomeration economies. Finally, we believe that certain European countries deserve an aura of attractiveness thanks to their research prestige, their wage premium, or their industrial tradition, that makes all the regions of these countries attractive for the inventors from abroad.

When analysing the origin-destination flows of inventors across European regions, we obtain that a large part of the inflows (44%) throughout the whole period (1990-2006) come from regions located within the 10 nearest neighbours of a given region. What is more, more than 30% of them come from the 5 nearest neighbours. However, the striking fact is that more than 76% of those inflows come from a region located within the same country. All in all, it seems clear to us that the migration movements of the inventors are localized phenomena, in other words, geographically mediated. Finally, we show that more than 40% of the inflows during the whole period are concentrated only in 20 regions. The same applies for the other side of the coin, that is, the outflows of inventors. In this sense, it is important to notice that 17 regions are in both top rankings, corroborating the fact that only a subsample of regions are participating of this phenomena.

Since high-skilled labour mobility tends to be very concentrated in the space, few regions will benefit from the knowledge carried out by these high-skilled workers. Therefore, it is not clear that policies aiming at attracting talent will have a result in the economic convergence process. At least, this has not been the case for most of the European countries, so that it is not expected to happen in the case of the European neighbouring countries. What policy makers in ENP countries should take into account is that regions hosting the capital city tend to attract more high-skilled workers and, as such, ENP countries should focus their efforts in this sense in policies related with the attraction of high-skilled workers. In such a way, the surrounding regions to those capital regions will also be able to benefit from such a policy.