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SEARCH
SHARING KNOWLEDGE ASSETS: INTERREGIONALLY COHESIVE NEIGHBORHOODS

Sharing KnowledgE Assets: InteRregionally Cohesive NeigHborhoods (SEARCH) Project

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HIGH-SKILLED WORKERS' MOBILITY: POLICY IMPLICATIONS FROM THE EVIDENCE OBSERVED IN EUROPE

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INTRODUCTION

SETTING THE SCENE

Although the core focus of the ENP is on trade and economic reforms, other research areas such as migration policies, institutional reform and collaboration in research and higher education are also part of the ENP, and all these elements are meant to contribute to the ultimate goal of creating a ring of stable, friendly and prosporous countries around the EU (Com 393 final, 2003).This Policy Brief tries to elaborate policy measures that will permit to improve the economic potential of European regions to generate flows of high-skilled workers as a mechanism of transmission of knowledge across individuals, and subsequently, across regions and countries.

This research synthesizes the work done on the actual and potential future role of high-skilled labour migration and its economic consequences for destination regions. Particular attention is given to the role of certain intangible assets, such as human capital and R&D, analysing how high-skilled labour migration may allow obtaining higher returns from the investments made on such intangible assets. The research also identifies the determinants of the geographical mobility of skilled individuals.

KEY OBSERVATIONS

STYLIZED FACTS ON HIGH-SKILLED LABOUR MOBILITY IN EUROPE

When performing an exploratory analysis to detect the focuses of attraction of talent throughout the European geography, we observe that:

- Even when controlling for innovation potential and patenting bias, skilled individuals' attraction is especially reserved for few countries and regions, whilst this phenomenon is very poor or inexistent in other countries. The regions receiving more immigration of talented individuals are placed in some of the Northern and Central European countries.

- Large cities and capital cities register high values of inward migration flows of high-skilled workers most of the times, even in poor performing countries in terms of inflows, supporting the theses about the importance of urban agglomerations

- 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.

More specifically, when analysing the origin-destination flows of high-skilled workers 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 high-skilled workers. 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.

On average, the distance covered by inventors' movements reported between 2002 and 2005 was around 397 kilometres – approximately the driving distance between Paris and Luxembourg. This figure is relatively low and is around half the distance found in another study for the US. Additionally, the average distance covered by the movements computed increases by around 25 kilometres between the 1996-1999 period and the 2002-2005 one. This seems to suggest that, over time, distance is becoming less important as an explanation of inventors' geographical mobility.

HIGH-SKILLED LABOUR MOBILITY AS A MECHANISM OF DIFUSSION OF KNOWLEDGE

With respect to the effect of inventors' mobility, we obtain that it is highly significant and its impact on patenting activity is positive. We have, therefore, offered evidence in line with the hypothesis already checked in some other researches that communities of inventors within regions with larger degrees of labour mobility are expected to

be more productive and innovation intensive. This can be due to the fact that knowledge, especially that of tacit nature, is mostly embedded in individuals. Moving themselves means moving the knowledge capital they accumulate. Their movement across firms must therefore contribute to knowledge exchange between firms. Skilled workers take their knowledge with them and share it in a new workplace with their new colleagues, at the same time as they provide their new employer with this knowledge. In return, they acquire new knowledge from their new colleagues, establish new links and social networks for future collaborations based on trust and, in general, promote new combinations of knowledge.

The same applies to a variable proxying for the participation of high-skilled workers in research networks, which also has a positive and significant impact on the patenting activity of the region. The rationale behind this is that the simple cross-fertilization of previously unconnected ideas will lead to better knowledge outputs and that individuals connected within a collaborative framework are more willing to learn from each other than is the case of isolated inventors. Moreover, collaborative research projects may achieve scale economies and may lessen research costs by reducing duplication of research efforts among the participants in the network. Additionally, professional relationships of this nature enhance trust and cooperative behaviour between individuals –and hence raising the level of social capital - which has been shown to be a further element in innovation and knowledge transmission.

LABOUR MOBILITY AS A CATALYZER ALLOWING FOR HIGHER RETURNS TO INVESTMENTS IN R&D AND HUMAN CAPITAL

However, we have not obtained evidence in favour of the idea that in regions with high levels of mobile workers, the investment made in R&D or in human capital is more profitable that in those regions with lower levels of labour mobility. It seems that the idea that mobility may favour knowledge diffusion is not confirmed. On the contrary, we do obtain that regions with higher number of individuals connected within a research network may obtain higher returns to R&D investments and to the stock of human capital, probably due to the fact that their inventors are more prone to learn from each other, with faster access to new and complementary knowledge. In fact, as it is commonplace in the related literature, close network links seem to prove more useful in transferring complex knowledge, especially that with a high component of 'tacitness'. Similarly, individuals connected within a collaborative framework are more willing to learn from each other than is the case of isolated inventors. Additionally, participating in networks reduces the degree of uncertainty and provides fast access to different kinds of knowledge. All this would signal to the fact that belonging to a research network may imply higher returns of knowledge endowments, such as R&D and human capital investments, on regional innovation, as we obtain in this research.

HETEROGENEITY IN THE IMPACT OF LABOUR MOBILITY ACCORDING TO DIFFERENT REGIONAL ECONOMIC LEVELS

When analysing the existence of regional variations in the returns to labour mobility and research networking, we observe that the highest values for the impact of labour mobility are obtained for most of the regions in West Germany, Austria, Denmark and Switzerland, as well as some regions in the Netherlands, North France, North-East Italy, Finland and Sweden. On the contrary, the non-significant or lowest values of the labour mobility impact are depicted in almost the

whole of the Eastern countries as well as the Mediterranean ones (Spain, Portugal, Greece and the South of Italy). It is worth highlighting some exceptions to this general pattern, since in the group of regions with the highest returns we find Cyprus, two Bulgarian regions, one from the Slovak Republic and another from Spain. On the contrary, some regions hosting capital cities, such as Île de France, London or Berlin are among the lowest ranges of the return. A plausible explanation of this a priori contra-intuitive result is the potential existence of non-disclosure agreements between knowledge employers and employees in regions with large levels of internal competition, that prevent the later ones to reveal their secrets to other local competing firms.

We can conclude, therefore, that the regions benefiting from knowledge coming from other regions –both in the form of mobile skilled workers and research networks- are not so concentrated in the core of Europe. Put differently, some peripheral regions might get larger advantages –in terms of returns on knowledge - in building knowledge linkages with distant knowledge hotspots, compared to the core regions, which most likely source their knowledge from their local pools of ideas or the ones from their immediate vicinity. A very interesting result is obtained when the research network variable is broken down according to the geographical scope of the linkages (with other European regions, with the US, with singular East-Asian countries and with remaining OECD countries). Only research networks with the US and the remaining OECD countries turn out to be significant. The underlying logic of this exercise would state that when the external knowledge is the same to existing competences in the region, it can be absorbed locally, but the new knowledge will not add much to the existing local one. This way, one possible interpretation would be that the collaborations maintained between inventors in Europe and other OECD countries or the US provide with less redundant pieces of knowledge, which would allow enhancing creativity.

PUSH FACTORS OF HIGH-SKILLED LABOUR MOBILITY

When trying to identify the main drivers of the geographical mobility of skilled individuals, such as inventors, across European regions, we obtain that physical separation from the inventors' former workplace is a critical predictor of their spatial movements, even after controlling for the spatial distribution of innovation and economic activities. In fact, we expected this variable to play a more secondary role. However, in spite of the announcements of "the death of distance", we find physical space to be pivotal in mediating inventors' mobility across regions. These results are robust to the sample choice, specification, and inclusion of controls.

Other more meaningful distances are also significant predictors of inventors' mobility patterns, such as social/professional connections, the institutional framework, or technological and cultural similarities. However, these measures do not succeed in explaining the role of physical distance away. We also obtained evidence of a relevant role of amenities and job opportunities as talent attractors.

RECOMMENDATIONS FOR POLICY-MAKERS

A POLICY OPTION COULD BE THE PROMOTION OF THE COMPETITION FOR TALENT AT THE INTER-REGIONAL AND, IN PARTICULAR, THE INTERNATIONAL LEVELS

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.

THE PROMOTION OF COOPERATIVE BEHAVIOURS IS ADVISABLE FROM A POLICY VIEWPOINT, ESPECIALLY THOSE LINKING WORKERS FAR APART

On the contrary, research collaborations across firms and regions have been obtained to be 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.

In short, we find that both mobility and networks explain a sizeable part of the spatial heterogeneity of innovation rates. From a policy perspective, these results illustrate that, not only R&D and human capital efforts are important to generate innovations, but also the *embeddedness* of agents in their local networks of alliances and mobility, as well as their degree of *connectedness* with the outside world. Further, it is precisely the concepts of *embeddedness* and *connectedness* which are in the core of the *smart specialisation* strategy recently launched by the European Commission.

In practical terms, the results encountered in this research provide additional evidence on the role that socioeconomic conditions play to enhance regional innovation rates. Thus, policies aimed to increase the polarisation and concentration of innovation activities in the space in order to benefit from economies of scale may fail to achieve satisfactory results if the specific economic tissue of regions is not properly taken into consideration. In other words, we should take into account that there are ways of diffusing knowledge, such as through collaboration in research networks. To sum up, if governments want to obtain the highest returns from each euro invested in R&D and in education, it is advisable from a policy perspective, to promote the participation of high-skilled workers in networks of research, even more than incentivising their mobility.

THOSE REGIONS THAT ARE MORE KNOWLEDGE AND INNOVATION INTENSIVE OBTAIN HIGHER RETURNS

As labour mobility and research networks have been obtained to be a fundamental factor in the creation of knowledge, the unequal distribution of such features in the territory could explain regional differences in innovation performance and economic development.

TO HIGH-SKILLED LABOUR MOBILITY, WHICH SHOULD BE TAKEN INTO ACCOUNT WHEN DESSIGNING CONVERGENCE POLICIES

In this sense, policies aimed at encouraging the mobility of high skilled workers or enhancing the participation in research networks (as promoted by the European Commission through Marie Curie programs or the Framework Program Projects), specially in less innovative regions, may play a critical role in the creation of knowledge, and subsequently economic growth. Clearly, though, the effectiveness of such policies, as shown by the results of this research, crucially depends on each region's capacity to give returns to such labour mobility and the participation in research networks. To this respect, we have provided evidence that those regions that are more knowledge and innovation intensive obtain higher returns since they are able to translate internal and external knowledge into new specific commercial applications more efficiently than the less innovative regions. Therefore, the idea that R&D spending and knowledge production in general spill-over to neighbouring regions is not so evident in the absence of a certain level of receptivity to exploit external knowledge. Recall, however, that certain threshold effects seem to arise as evidenced by the negative influence of the networks' strength and the null impact of mobility in certain high performance regions.

POLICIES AIMING AT MAKING RECRUITMENT PROCEDURES MORE TRANSPARENT, IMPROVING THE PORTABILITY OF SOCIAL SECURITY PROVISIONS ACROSS COUNTRIES AND REDUCING DIFFERENCES IN TASATION SHOULD BE IMPLEMENTED

We must admit that, although a negative and significant impact of physical distance in explaining geographical mobility of people is a common result in the migration literature, we did not expect to find such large and strongly significant impacts in the case of high-skilled workers. One plausible interpretation of, at least, part of these findings, is as follows: when knowledge workers decide to move, they place a high value on locating close to their former colleagues, from whom they receive constant inflows of information about job and business opportunities, technical solutions, and, in general, knowledge spillovers. Next, on the way towards the ERA, this research also shows that the fragmentation of the institutional framework between countries impedes frictionless mobility across national borders. Despite recent progress, much work remains to be done to overcome this fragmentation, which remains a prevailing characteristic of the European research base. Thus, policies aimed at making recruitment procedures more transparent, improving the portability of social security provisions across countries and reducing differences in taxation must be implemented sooner rather than later.

More promising findings are the decreasing role of institutional distance over time, and the significant influence of formal and professional relationships across distant inventors' communities. Thus, from a regional perspective, joining international and inter-regional networks of research collaboration is beneficial for two main reasons: first, because of the direct knowledge acquired via research collaborations, and second, because of their effect in smoothing out frictions that may impede the free mobility of talent across Europe. This would be especially important for the diffusion of knowledge between EU and ENP countries, which would lead to higher economic growth and development in both areas.

RESEARCH PARAMETERS

Introductory statement

The current Policy Brief incorporates the policy implications of the research findings on the patterns of high-skilled labour mobility, their impact on economic growth and the push factors for this type of workers to change their job and residence.

Objectives of the research

The main objectives of the research were to:

- Describe the inflows and outflows of inventors in the EU regions (NUTS 3 level) with special emphasis in their spatial pattern. Are geographical movements of inventors a phenomenon bounded in the space?
- Identify the poles of attraction or expulsion (or "brain circulation") of talent among European regions and relation with regional economic characteristics.
- Assess the importance of inventors' mobility across firms as a mechanism for diffusing knowledge and, therefore, as a regional innovation driver. Are the impacts of mobility of inventors different according to the different economic and development levels of the regions?
- To analyse the factors enhancing the migration of high-skilled workers, taking into account the specific role played by geographical distance.

Methodology

The research provides an empirical analysis of high-skilled labour mobility in the European regions and relies on the use of different statistical and econometric methods:

- We have defined a 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). We end up with information for high-skilled labour mobility at the NUTS2 and NUTS3 level for the European regions of 31 countries (EU-27 plus Iceland, Liechtenstein, Norway and Switzerland).

- To describe the inflows and outflows of inventors in the EU regions with special emphasis in their spatial pattern we have depicted the variables in maps and used exploratory spatial data analysis as well as statistical methods.

- To assess the importance of inventors' mobility across firms as a mechanism for diffusing knowledge and, therefore, as a regional innovation driver we have estimated different regional knowledge production functions.

- To analyse the factors pushing high-skilled workers to move to a different work place, we have estimated gravitational models which allow us to identify the main determinants of such migration flows

PROJECT IDENTITY

Project name

Sharing KnowledgE Assets: InteRregionally Cohesive NeigHborhoods (SEARCH)

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Website

www.ub.edu/searchproject

Further Reading

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