



POLICY NOTE OF THE WORKING PAPER 5.7

CULTURAL DIVERSITY, SOCIAL CAPITAL AND INNOVATIVE CAPACITY OF REGION-INDUSTRIES

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OBJECTIVE OF THE RESEARCH CONCERNING POLICY

The aim of this research is to study the impact of cultural diversity on innovation, in order to evaluate whether multicultural research settings should be promoted, but also to what extent and under which contextual factors they can be profitable. These research questions are particularly relevant in the case of the SEARCH program, for evaluating the opportunity and the relevance of EU-NC research partnerships.

The added value of our work holds in the specific way by which we address the research questions. More precisely, our theoretical and empirical framework feature 3 original elements: (1) we use the concept of social capital as a channel between cultural diversity and innovation (after having presented a bi-dimensional view of social capital); (2) we address our research questions at region-industry level, i.e. we study the impact of cultural diversity on innovation, in a sample of regions (32 NUTS 2 EU regions) and for a specific industry (the electric device industry); (3) Our theoretical framework suggests that cultural diversity in a region-industry can be beneficial for innovation only if it goes along with generalized cohesiveness.

SCIENTIFIC METHOD

Our empirical methodology includes 3 main steps:

- 1) We identify in the OECD REGPAT 2009 database all the inventors who have patented at least one patent featuring the IPC code H01 (“basic electric elements”) between 1997 and 2005, as well as all their co-inventors. Then we determine each of these inventors’ “cultural attributes” (in terms of region of residence and technological specialization) at year xxxx, by analyzing the data contained in all the patents that they have obtained throughout their life before year xxxx.
- 2) For each region-industry, we determine the value of the 2 social capital variables (cohesiveness between individuals, and average cultural distance

between connected individuals) that we will use to assess the overall impact of cultural diversity. This is done through a social network analysis, in each region of the sample, of the network of inventors whose addresses are located in the region and who have patented at least one H01 patent. The density of this network is used to proxy cohesiveness. The individual cultural attributes of inventors are used to calculate an indicator of average cultural distance between connected inventors.

- 3) Using a classical knowledge production function, we carry out an econometrical analysis of the impact of each of these variables (as well as the additional impact of their product) on knowledge production, controlling for other classical determinants of knowledge production (sectorial specialization, human capital, financial capital, and market size).

POLICY VALUE

Our results confirm that cohesiveness is beneficial for knowledge production, but they do not confirm any beneficial effect of average cultural distance between connected inventors. They even tend to show that high values of “average *technological* distance between connected inventors” have a negative effect on knowledge production (while “average *geographical* distance between connected inventors” has no significant effect).

Since the results are still preliminary, it is difficult to exploit them for policy making. Moreover, the relatively low level of explanatory power of our regressions should invite policy makers to use these results with a lot of care at this stage of the research.

Which policies are results important for?

The results are useful for regional industrial policies and regional innovation policies: They suggest that (1) collaborations between inventors of a same domain should be encouraged, and (2) that MAR (Marshall-Arrow-Romer) spillovers (spillovers resulting from collaborations among firms and actors of a same industrial sector) are more efficient than “jacobs” spillovers (resulting from collaborations among diversified firms and actors) in the case of the electric equipment industry.

Novel or expected findings?

Collaboration between inventors has often been recognized as a key factor of knowledge diffusion and production. On the other hand MAR externalities also have been discussed extensively, but not in the context of knowledge networks. Hence, our results provide new and original insights on the effect of technological diversity on regional innovation through scientific networks. They provide expected findings on the fact that cohesiveness is beneficial for knowledge production. But, more unexpectedly, cohesiveness is beneficial, as long as it doesn't go along with technological heterogeneity of inventors. This latter variable would exhibit a negative effect on knowledge production. Finally, contrary to our theoretical assumption, the

geographical scope of the network is not identified as a significant driver of regional innovativeness.

For which countries?

Our theoretical framework is assumed to be valuable for any region of any country. However, our empirical part focuses on European regions. And due to the general lack of stability of our results, they should not be extrapolated to other regions.

Under which conditions are the policies suited for?

Like mentioned earlier, the results should not be extrapolated to other industrial sectors than the electric equipment industry so far, neither should they be transposed to other regions than European regions, until clearer results are put forth.