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Knowledge diffusion between European Neighboring Countries and the European Union

Corinne Autant-Bernard, Sylvie Chalaye
UJM-GATE

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OBJECTIVE

This study aims at quantifying the intensity of knowledge flows between EU countries and ENC countries, and to assess the channels through which this diffusion occurs.
Three main issues are addressed:

- To what extent ENC and EU exchange their knowledge?
- How are these knowledge flows structured?
- How is this knowledge diffusion evolving over time?

The aim concerning policy is to contribute to build the Neighbouring Knowledge Space. Knowledge flows from European Union towards European Neighboring Countries is indeed likely to help these countries to catch up. Moreover, as scientific, technological, cultural diversity is recognized as a key driver for innovation, knowledge flows among EU and its neighbors could benefit to the whole area, and favour innovation within the EU as well.

MAIN RESULTS

The results provide original insights in the analysis of the different mechanisms of knowledge diffusion between EU and ENC.
The channels for knowledge diffusion appear as weakly developed. This is especially the case for IPR collaboration and student mobility, whereas co-authorship and co-inventorship are stronger channels for knowledge flows between the two areas. R&D cooperation taking place in FPs program is important for only one ENC. The ability to diffuse and to access knowledge are also heterogeneously distributed over EU and ENC countries giving rise to hierarchical networks in which some countries play a central role.
But the Neighbouring Knowledge Space is changing. Collaborations between EU and ENC are becoming more intense and the influence of the EU is increasing relatively to the one of the US. Moreover, even if most collaboration networks remain strongly centered on few countries, the network structures tend to some extent to be more homogenous.

POLICY IMPLICATIONS

Which policies are results important for?

The results are important for EU neighboring policy in the perspective of creating a Neighbouring Knowledge Space.

Novel or expected findings?

The insights provided by the study are original. To the best of our knowledge, no systematic analysis has been provided so far to measure the intensity and structure of knowledge diffusion between EU and ENC.

Indeed, data collection on various channels of knowledge diffusion for ENC is very difficult. In this study, we suggest new indicators and we rely on new databases to give an accurate picture of knowledge collaborations between both EU and ENC.

Not surprisingly, the results point out the weak development of the channels for knowledge diffusion. This is especially the case for IPR collaboration and student mobility, whereas co-authorship and co-inventorship are stronger channels for knowledge flows between the two areas. R&D cooperation taking place in FPs program is important for only one ENC.

The study also highlights the central role played by some countries. The closest neighboring countries to the EU considering the different dimensions under study appear to be: Algeria, Tunisia, Morocco and Lebanon. Conversely, the farthest countries are Azerbaidjan, Jordan and Israel.

In spite of their relatively weak orientation towards Europe, Turkey, Israel, Ukraine and to a lesser extent Egypt take a central place in the knowledge networks due to their higher technological potentials.

Another expected result is the differentiated role played by the channels. Scientific and technological collaborations build upon historical and commercial linkages due to proximity and are favored by common languages while for intellectual property that is to say the nationality of offices where patents are filled, the geographic dimension plays a lesser part. Europe is therefore less central. For student's mobility, the origin of student is mainly driven by the continent where the country is located.

The most unexpected result relies probably on the observed trend. This latter tends to show that the Neighbouring Knowledge Space is changing. Collaborations between EU and ENC are becoming more intense and the influence of the EU is increasing relatively to the one of the US. Moreover, even if most collaboration networks remain strongly focused on few countries, the network structures tend to some extent to become more homogenous.

For which countries?

The study covers all the EU and ENC. Policy implications are therefore relevant for both areas.

Under which conditions are the policies suited for?

The information about technological and scientific relationship between EU and ENC is scarce. Our study focuses on five variables: patents, publications, FP projects, student mobility and IPR. To this regard, it allows to cover different aspects and channels of knowledge diffusion. However, this cannot provide us with a complete overview of the scientific and technological linkages exiting between the two areas. This has to be kept in mind in the interpretation of the results.