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view from the top makkonen and mitze

The EU is good for collaboration but doesn't level the playing field

The EU is striving to create a single market for research, in the form of the European Research Area. The expansion of the union, however, creates challenges to this process, as it means the ERA must incorporate a greater diversity of research systems that are at different stages of development.

So far, the effectiveness of the policies attempting to bring about a single market for research has not been clear. Previous evaluations have been qualitative, and have concluded that the ERA has been only partially successful in achieving its goals. But there has not been much in terms of quantitative evidence.

To try to fill this gap, we have used data from the Web of Science publication database to analyse the patterns of co-authorship between scientists based across the EU. This has let us measure how EU membership has affected cross-border collaboration in 12 member states—mostly in eastern Europe—that have joined since 2000, and see how this compares with collaboration patterns in the 15 older member states. It is still too early to detect any trends for Croatia, which joined the EU in 2013, so we did not include the country in the study.

Efforts to measure research collaboration in Europe play out against a wider trend of increasingly globalised science. The collapse of the Soviet bloc also catalysed collaboration between eastern and western Europe, as the relatively closed systems of former communist countries opened their borders to international science.

Even against these wider trends, our analysis found that countries do indeed show a marked increase in cross-border collaboration within Europe when they join the EU. This increase starts even before nations receive full membership, probably spurred by access to EU research funds. Moreover, contrary to those who have argued that the internationalisation of science is reaching saturation point, the growth of international collaboration in Europe shows no signs of slowing down.

These patterns are driven by money: better funding means more opportunities for international collaboration. However, while the overall increase in collaboration in Europe stems from access to EU funding, the patterns we see also underline the ongoing significance of geographical and cultural proximity to international collaboration.

For example, most of the recently established cross-border collaborations in the newer member states are with

other newer member states. We are seeing the emergence of two blocs within the EU, the older 15 and the newer 12, which largely collaborate among themselves.

The picture for the newer member states, though, is not uniform. Bulgaria and Romania, which joined in 2007, have not reaped the same benefits as the 10 nations that joined in 2004. It might be that the earlier wave of membership saturated the market for collaboration partners in the east. Alternatively, it might be that some unique aspects of their research systems have prevented Bulgaria and Romania from breaking into the collaboration networks.

It will be interesting to see whether these two nations can catch up with the rest of the previous wave of member states, or whether collaboration patterns are solidifying and they will be shut out.

THE CASES OF Bulgaria and Romania have interesting policy implications. Evidently there are problems with EU research funding, if cohesion is considered the goal. Europe's research networks have evolved towards oligarchic patterns of winners and losers. Leading research institutions have been increasingly successful in attracting EU funding, while those of less renown have struggled to break into the networks of success.

Funding instruments launched as part of the Horizon 2020 framework programme offer hope that these patterns might be changed. Horizon 2020 includes schemes for twinning and teaming up research institutions in low-performing member states with internationally leading counterparts in Europe. Hopefully, initiatives such as these will encourage elite research institutions to look for partners outside their list of usual suspects and broaden their research networks to include less-privileged partners from the newer member states. This could harness the full potential of the ERA for the benefit of the EU as a whole.

Our findings, then, provide statistical evidence that policies to enhance the integration of EU research are succeeding—albeit patchily. It remains to be seen, however, which policies have done the most to bring about this integration, and whether individual policies in place at present are as effective as they can be.

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'The market for collaboration partners from the east may have been saturated.'