

Editorial

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1 Motive for this special issue

The influence of higher education institutions (HEIs) on economic and social developments of surrounding regions is a topic of special interest and a prevalent object of studies and discussions in regional sciences. Generally, institutions of higher education are expected to be a key competitive advantage for the regions in which they are located. On the one hand regions benefit from HEIs expenditures and from the consumption and spending of students and staff (*expenditure-based effects*). On the other hand there is a wide variety of other impacts stemming from HEIs: Well-educated university graduates can help to improve the regional human capital endowment and can transfer knowledge and innovation into the regional economy. Regions may profit from the HEIs' research efforts, from their international network connections and from public funding of research projects. HEIs may foster a rise of entrepreneurial activity leading to a higher rate of business start-ups in the region. Furthermore, there are socio-cultural impacts resulting in a change of urban atmosphere. These effects are summarized as *knowledge-based impacts* and benefit the population, the general economic development and innovation systems in their regional environment to a high extent.

To give a platform for discussing all kinds of HEI's regional effects was the intention of the 3rd ERSA International Workshop on "Higher Education Institutions and Regional Development" which took place in Mönchengladbach (Germany) at 14.–15. October 2013. The workshop was organized and hosted by the Niederrhein Institute for Regional and Structural Research (NIERS) which is part of Hochschule Niederrhein University of Applied Sciences. The event was funded by the Federal Ministry of Education and Research (BMBF), for which NIERS was conducting a

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research project on “Regional Transfer Effects from different Types of Higher Education Institutions”. The European Regional Science Association (ERSA) and its German Speaking Section (Gesellschaft für Regionalforschung GfR) have been key supporters of the workshop. Nearly 50 participants from 15 countries met there to listen to 30 presentations all related to the impacts of HEIs on regional development.

This special issue of the “Review of Regional Research” collects four papers from this workshop giving a partial impression of the topics discussed during the two-day meeting. There are several connecting links between these articles.

- Of course the most important connecting element of all four papers is the investigation of economic effects of HEIs, their focus on knowledge-based economic impacts and the special attention paid to the regional dimension.
- Two articles analyze basic knowledge transfer effects resulting from cooperative research – Falk Strotebeck’s (Ruhr University Bochum) paper “Running with the pack? The role of Universities of Applied Science in a German research network” and the paper “Regional and Global Collaborations for Knowledge in German Academia” written by Mirja Meyborg (Fraunhofer-ISI, Karlsruhe) and Axel Johannes Schaffer (Universität der Bundeswehr, München).
- Two articles focus on knowledge transfer via heads. While the paper of Nicola Francesco Dotti (Vrije Universiteit Brussel, Brussels), Ugo Fratesi (ABC, Politecnico di Milano), Camilla Lenzi (ABC, Politecnico di Milano) and Marco Percoco (DAIMAP and CERTeT, Università Bocconi, Milano) analyses the question whether the labor market situation of a university region is already a criterion for the future students’ choice, Johannes Kopper and Angelika Jäger (Niederrhein University of Applied Sciences, NIERS) examine a necessary condition for the transfer from university to region via graduates – the structural fit of types of graduations and regional employment by profession.
- Two of the articles are result of a common research project done by Niederrhein University of Applied Sciences and Ruhr University Bochum. Aim of this project had been to compare the regional effects of the two most important types of HEIs in the German system of academic education, namely traditional universities and universities of applied sciences. While the paper by Johannes Kopper and Angelika Jäger tries to estimate the “Third Mission Potential in Higher Education” for both types of universities, the article of Falk Strotebeck compares the research network of traditional universities with that of universities of applied sciences.

2 Contributions in some more detail

As key actors in regional innovation systems HEIs traditionally have been expected to fulfill two missions: Firstly they should boost the generation and accumulation of academic knowledge, and secondly they were considered to be responsible for the diffusion of knowledge via academic education. More recently, attention has been drawn to a “third mission” of HEIs, namely their role in supporting the regional development of their location. But HEIs’ success in fulfilling this “third mission” is geographically unevenly distributed: Some regions are able to profit more effectively from the knowledge transfer than others or some HEIs are able to produce higher

regional impacts than others. In their paper “Third Mission Potential in Higher Education – Measuring the regional focus of different types of HEIs” Johannes Kopper and Angelika Jäger analyze one important condition which is a necessary but not sufficient factor of influence on the success of knowledge transfer: the structural ‘fit’ between the graduates of a HEI and the regional employment by profession. The structure of Germany’s higher education system is characterized by two types of HEIs – universities of applied sciences are considered to be more practical oriented in education and research whereas traditional universities have a more theoretical orientation. This suggests structural differences as to the mentioned “fit” and as a consequence a differing potential for successful third mission activities. The authors’ hypothesis therefore is that the HEIs’ potential for regional engagement and third mission activities is the higher the better this “fit” is. In their paper Kopper and Jäger develop a “fit-indicator” to measure this. Their article suggests that universities of applied sciences fit in better with their surrounding region and hence have a higher potential to fulfil the tasks of the third mission regarding regional knowledge transfer via heads.

The paper written by Nicola Francesco Dotti, Ugo Fratesi, Camilla Lenzi and Marco Percoco starts with similar considerations: A highly-qualified workforce is a widely accepted key factor for regional economic development. A region’s capacity to attract human capital can therefore be interpreted as a signal for its competitiveness and offers the possibility to improve the quality of the regional labor force. In this context universities play a fundamental role because they can attract students from elsewhere and so provide regional firms with qualified workers. For the case of Italian regions the authors examine whether the labor market situation of a university region is already a criterion for the choice of study place of prospective students. They use a spatial gravity model to show that university students in Italy move from Southern towards Northern regions to study. They also show that the students’ decision to enroll at a certain university is not only driven by the university’s quality but also by the conditions of the local labor market where the universities are located. The results support the presumption that skill-biased migration occurs already at the time when students choose their university. Furthermore, the authors argue that – if regional innovation capacity is a function of human capital – the geography of university students’ mobility flows might also be an important determinant of innovative activities. Finally the authors discuss some policy implications of their findings against the background of Italian educational policy and they plead for an integration of regional and educational policy at the university level: The development of new universities in provinces suffering from a brain drain should take into account the dynamics between universities, local firms and their capacity to attract students. Otherwise there is the risk of having university campuses as a ‘cathedral in the desert’ unable to prevent brain drain.

For universities and for private companies cooperative research is an important mechanism for the exchange of knowledge. The paper “Running with the pack? The role of Universities of Applied Science in a German research network” by Falk Strotebeck uses data from the ‘Förderkatalog’ (catalog of public funds) of the German Ministry of Education and Research from 1999 to 2013 to analyze cooperative activities of companies and HEIs to describe the positions of universities and universities

of applied sciences in the German research network and changes in the course of time. Special attention is directed to distinguishing intra- and interregional patterns. Strotebeck's results show that traditional universities are much more interconnected and in a more central position in research networks than universities of applied sciences with a surprisingly high proportion of intraregional cooperations. Though universities of applied sciences seem to be less involved in the German research network their research activity increased with the augmentation of special public funding for this university type. This offers risks and chances at the same time. To fill the gap between research and application, connecting the resource intensive basic research of traditional universities with the practical needs of companies could be a chance of universities of applied sciences and could result in positive impacts for regional economic development. But the results of Strotebeck's paper suggest that universities of applied sciences more often position themselves as substitutes for traditional universities rather than being a complement actor—i.e. running with the pack and not using their distinctive features strengthening their strengths.

In their paper "Regional and global collaborations for knowledge in German academia" Mirja Meyborg and Axel Johannes Schaffer point out that collaboration for knowledge has become more and more important because complexity of scientific problems is rising and scarce budgets often make collaboration reasonable. Therefore one could expect an increasing number of coauthored papers. Based on more than 125,000 scientific articles of German academia written between 2000 and 2009 the authors analyze such coauthored papers. Their first finding is that despite of a rapidly increasing number of single- and co-authored papers, the share of coauthored papers was increasing, too, underlining the growing importance of collaboration. In a second step the authors investigate only the co-authored papers in some more detail differentiating between local/regional and interregional/global partnerships. The analysis shows that cooperation relies on both – regional and global partnerships seem to be equally important and this result still holds if specific types of universities, i.e. Elite Universities, are considered. While the importance of global partnerships can be explained by the trend of globalization, by improved computer mediated communication and an increasing number of research projects funded by supra-national organizations, the stable and high relevance of regional partnerships is a more surprising result which perhaps can be explained with preferences of researchers to cooperate with partners belonging to the same linguistic area. Finally the paper of Meyborg and Schaffer analyzes spatial proximity as a potential driver for collaborations. The results show a generally increasing intensity of cooperation with declining distance though spatial proximity hardly matters for partners with a distance larger than 25 km but smaller than 475 km suggesting that partners might be indifferent concerning distance if travel time allows for a meeting without an overnight stay.

With the ERSA workshop and the collection of these papers we want to show the richness of research in the regional effects of different kind of universities. In particular, we want to stimulate research into communalities and differences in the regional effects of universities and universities of applied sciences. We would like to thank the editor and the editorial staff at Springer for their support. We are indebted to the various reviewers who helped us putting together this special issue.