

(after Luxembourg). In contrast, Chile, the Russian Federation, and Mexico have less than 5 percent of international students at the doctoral level and spend less than USD2,000 per student on R&D in tertiary educational institutions.

The correlation of expenditure on R&D per student in tertiary educational institutions with the proportion of international doctoral students is 0.69, stronger than with the proportion of international master's students (0.57). It is also interesting that R&D investments are strongly associated to the enrollment of international students to doctoral programs, but not to enrollment in doctoral programs overall: the correlation between expenditure on R&D per student in tertiary educational institutions and the entry rate of national students to doctoral programs is close to 0.

The emergence of the knowledge economy and of knowledge communities is turning research and the top professional services into increasingly internationalized activities.

Tertiary education R&D expenditure could attract international master's and doctoral students by enhancing the quality of research training in a country's universities, as well as their research capacity and visibility. But it could also be a proxy for other factors attracting international students, such as the innovativeness of the economy, or social and cultural factors related to a thriving knowledge society. These other factors could be attractive not only for students enrolled in doctoral or academic master's programs, but also for those enrolled in professional master's or equivalent programs.

To sum up, a large proportion of students at the master's and doctoral levels in OECD countries is international. International students at these levels tend to choose countries investing substantial resources on R&D in tertiary educational institutions. This offers these countries an opportunity to attract future workers with advanced training, particularly in science and technology. Some countries are already doing this: in Luxembourg, the Netherlands, New Zealand, Switzerland, and the United States more than half of those enrolled in a doctoral program in science, engineering, or agriculture are international students. ■

Does Research Mobility Have an Effect on Productivity and Impact?

GALI HALEVI, HENK F. MOED, AND JUDIT BAR-ILAN

Gali Halevi is chief director, Mount Sinai Health System Libraries, New York, US. E-mail: gali.halevi@mssm.edu. Henk F. Moed is professor in the Department of Computer, Control and Management Engineering Antonio Ruberti, University of Rome "La Sapienza," Italy. E-mail: hf.moed@gmail.com. Judit Bar-Ilan is professor in the Department of Information Science, Bar-Ilan University, Ramat Gan, Israel. E-mail: Judit.Bar-Ilan@biu.ac.il.

With the globalization of science and the availability of online resources to help identify potential international collaborations, researchers are seeking opportunities outside their institutions and sometimes outside their country of origin. It is unknown, however, whether these types of scientific mobility have a positive effect on the productivity or impact of their work. On the one hand, mobility can be positive since researchers moving to a new affiliation and/or country might find opportunities to expand their network and further their knowledge and expertise. On the other hand, the period of adjustment and familiarization with a new affiliation and/or country can potentially delay the publication of new studies. In addition, one's affiliation with a new institution might take time to be recognized by the scientific community. By using data depicting researchers output, the affiliations they belonged to, and the overall impact of their work, we sought to discover whether researchers' "productivity" in terms of the number of publications they produce, and the "impact" of these publications in terms of number of total and relative citations they receive, is affected by mobility. In order to examine this question, we collected data on the number of affiliations, countries, number of publications, and citations for 700 researchers from 10 disciplines between 2010 and 2015. We compiled a diverse list of seven disciplines: (1) Neuroscience; (2) Mechanical Engineering; (3) Arts & Humanities; (4) Oncology; (5) Environmental Geology; (6) Business and; (7) Infectious Diseases. Using SciVal™ (Elsevier product) researcher profile, we identified the affiliations and countries where each researcher was assigned based on his/her publications. We found that mobility between at least two affiliations increases both output (number of publications) and impact (number of citations). The disciplines that see the most benefit from affiliation mobility are Mechanical Engineering; Oncology; Arts & Humanities; and Infectious

Diseases. It is interesting that in disciplines such as Oncology and Infectious Diseases, we did not find cases of only one affiliation in the researchers' profiles. Top authors in these disciplines had at least two affiliations associated with their profiles.

Mobility between countries does not seem to have the same impact as affiliation mobility. There are some disciplines such as Environmental Geology, Arts & Humanities, and Business that see more benefits from country mobility than others. This could be because of the more global nature of these disciplines.

The results presented in this study are limited to the top 100 authors in each defined discipline, 700 in total.

Therefore it seems important that researchers move from one affiliation to another during the course of their careers. This can probably be explained in terms of gaining experience and expanding one's networks. The number of affiliations, a researcher moves to (whether two or three) might not make a significant difference. Country mobility does not seem to have a significant impact, except in specific disciplines such as Arts & Humanities, Business, and Environmental Geology.

Looking at the most common trends per discipline, we can summarize them as follows:

- Neuroscience sees the most benefit when researchers move between two affiliations and two countries.
- Mechanical Engineering sees the most benefit when researchers move between three affiliations within one country.
- Oncology sees the most benefit when researchers move between two affiliations in one or two countries.
- Business sees the most benefit when researchers move between two or three affiliations in two countries.
- Arts & Humanities sees the most benefit when researchers move between three affiliations in two countries.
- Environmental Geology sees the most benefit when researchers move between two or three affiliations in two countries.
- Infectious Diseases sees the most benefit when researchers move between two affiliations in one country.

The results presented in this study are limited to the top 100 authors in each defined discipline, 700 in total. Further study should be conducted on authors in each discipline with an average or low production. Comparing authors with a high, average, and low production might reveal more about the effect of mobility on output and impact. Our results also show that the relationship between mobility and productivity and impact cannot be generalized across disciplines. Therefore, there is a need to examine each discipline in more detail, by looking at subdisciplines within it. Aggregating subdisciplinary results from the bottom up might shed more light on the overall trends within the discipline as a whole. In addition, our study was limited to five years only. Further study into year ranges going further back could shed light on the evolution of mobility and its effect on productivity and impact.

The Scholar-Practitioner Debate in International Higher Education

BERNHARD STREITWIESER AND ANTHONY C. OGDEN

Bernhard Streitwieser is an assistant professor of international education at the George Washington University. E-mail: streitwieser@gwu.edu. Anthony C. Ogden is the executive director of Education Abroad and Exchanges at Michigan State University. E-mail: aogden@msu.edu. This article is abbreviated from Higher Education's Scholar-Practitioners: Bridging Research and Practice (Symposium Books, 2016), edited by the authors.

Heightedened competition between higher education institutions and changes in their traditional structures in recent decades have created new challenges and opportunities for faculty and administrators. In the United States since the 1970s, there has been a gradual decrease in tenured or tenure-line research faculty, but substantial growth of contract faculty, adjuncts, and those straddling academic and administrative responsibilities. Cost-cutting measures and declining public funds have meant fewer openings for traditional faculty-line positions; university priorities and operating procedures have shifted as a result. These changes have had a significant influence on the individuals who work in the broad range of professional categories in today's academy; increasingly, conventional faculty-administrator divisions have become blurred.