



This is an excerpt from the publication

“Wissenschaft weltoffen 2024”

Since 2001, the DAAD has been analysing data on the internationalisation of studies, research and higher education from Germany as well as from particularly relevant countries and regions such as the USA, the United Kingdom or Asia. The current edition presents the most important results and graphics.

These include figures on international students in Germany, data on mobility behaviour, an overview of students' countries of origin and host countries as well as developments in the field of doctorates. Special data analyses shed light on the status quo and trends at universities and research institutes during the Covid-19 pandemic.

The study integrates international data from OECD and UNESCO as well as national data from the Federal Statistical Office in Germany. In combination with other indicators, it provides a valid basis for long-term analyses.

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“We must be more receptive to international talent”

An interview with two members of the Commission of Experts for Research and Innovation, Prof. Dr. Carolin Häussler and Prof. Dr. Guido Bünstorf



Prof. Dr. Carolin Häussler holds the Chair of Organization, Technology Management and Entrepreneurship at the University of Passau and is a member of the Commission of Experts for Research and Innovation (EFI), appointed by the German Federal Government.



Prof. Dr. Guido Bünstorf is head of the Economic Policy, Innovation and Entrepreneurship Group at the University of Kassel, where he also serves on the executive board of the International Center for Higher Education Research (INCHER) and as spokesperson of the Graduate School in Economic Behavior and Governance.

The Commission of Experts for Research and Innovation (EFI) published its annual “Report on Research, Innovation and Technological Performance in Germany” – or EFI Report for short – in February 2024. One of the four core topics of the Report is the chapter on “International Mobility in the Science and Innovation System”, which was supervised by Commission members Prof. Dr. Guido Bünstorf (University of Kassel) and Prof. Dr. Carolin Häussler (University of Passau). In an interview with *Wissenschaft weltoffen*, they present their methodological approach and key findings of the analysis, along with the practical conclusions and recommended courses of action that, in their view, are the result thereof.

Prof. Häussler and Prof. Bünstorf, you were involved in the analysis of international mobility in the German science and innovation system published in the latest EFI Report. To start with, could you briefly explain your methodological approach to our readers – as comprehensibly as possible?

Bünstorf: Sure. First of all, it is important to realise that no statistics are kept on researchers who come to Germany or go abroad. It is therefore common practice to record international mobility in the science and innovation system on the basis of publication and patent data. Individuals are tracked over time to see whether there are any changes in their address or university affiliation. This also indicates a relocation from one country to another for their research. For its current report, EFI commissioned two studies in which this process was applied, firstly to publishing academic authors and secondly to patent-active inventors. In total, the data of approximately 1.2 million people were evaluated.

Häussler: In addition, we held a series of discussions with experts from science and industry. These discussions help us gain a better understanding of the patterns in the data. They are also key to identifying existing mobility barriers and suggesting improvements in areas that require attention.

In your view, what were the central findings of your analyses on international mobility in the German science and innovation system?

Häussler: Germany is moving in the right direction: today, more publishing researchers are coming to the country than are leaving. In the past it was the other way around. And although an average net outward flow of patent-active inventors has been documented over the last 20 years, this has been significantly lower in recent years than before. One especially positive development is that the share of internationally mobile researchers in top positions in the science system is above average. Many of them have worked in Germany before and have brought back new knowledge and extended networks. Nonetheless, we believe there is room for improvement. On the whole, those who leave Germany are more productive in scientific publishing than those who are immigrating. Non-mobile authors are the least productive, however.

Bünstorf: As the shortage of skilled personnel becomes more acute, we will need even greater inflows to Germany in the future than we are currently observing. International mobility is becoming increasingly critical – across the entire spectrum of the science and innovation system. We must be more receptive to international talent and encourage researchers who have moved away from Germany to return. It is also important to promote international exchange, via the DAAD, for example. After all, international cooperation is created through exchange and the data show that publications by international teams are of higher quality than those by purely national teams or individual authors.

The Commission of Experts for Research and Innovation (EFI) and its Report 2024

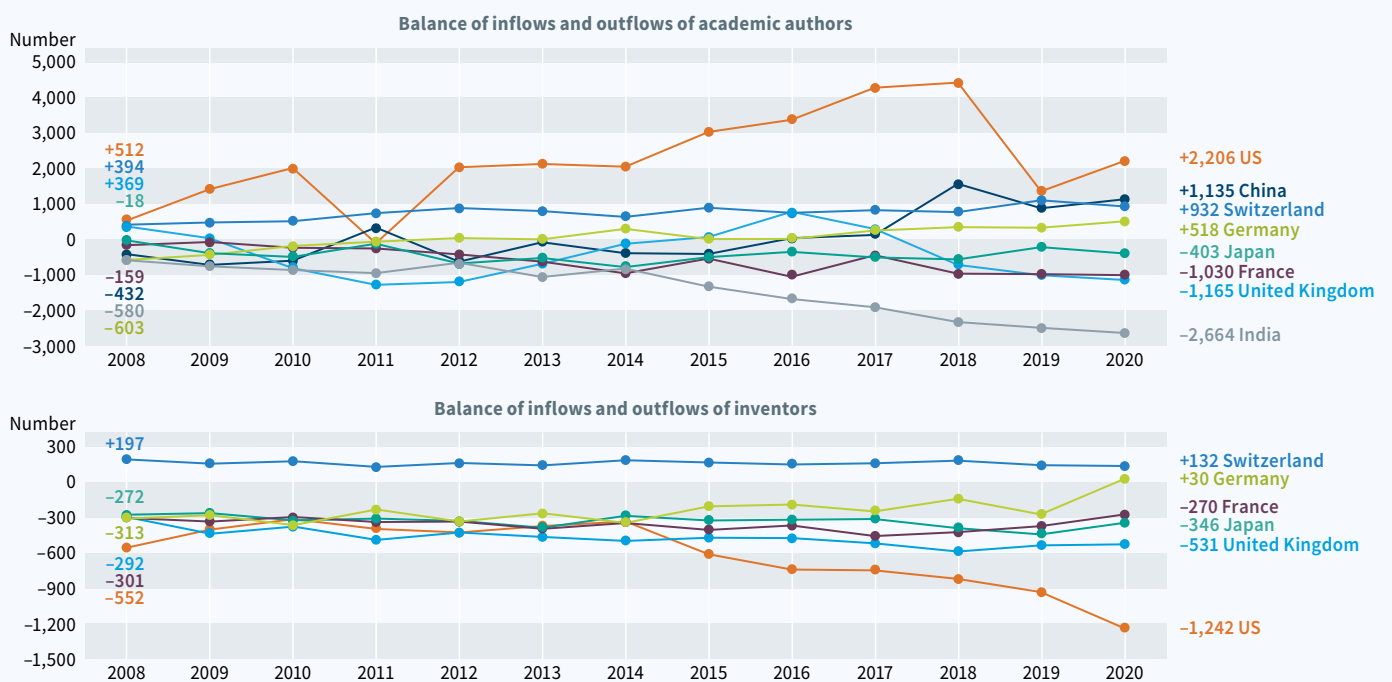
Since 2008, on behalf of the German Federal Government, the Commission of Experts for Research and Innovation (EFI) has prepared and published its annual “Report on Research, Innovation and Technological Performance in Germany” (EFI Report for short). It contains a comprehensive analysis of the strengths and weaknesses of the German innovation system in an international and temporal comparison, evaluates Germany’s perspectives as a location for research and innovation and presents proposals for optimising national research and innovation policy. The chapter on “International Mobility in the Science and Innovation System” in this year’s EFI Report is based on two comprehensive studies that were commissioned specifically by the EFI.

The study on the “International Mobility and Collaboration of German Scientists, 2005–2020” was carried out by researchers at the Université de Bordeaux and focused on using bibliometric data to track international mobility in the period 2005–2020.¹ A special feature of this study is the use of name analysis, which makes it possible to assign academics and researchers to their presumed countries of origin, thereby facilitating a comparatively precise classification of internationally mobile researchers to a mobility category.² In-depth analyses focus on gender differences in

international mobility, investigations into the publication quality of internationally mobile academics and researchers, the measurement and quality of international co-publications, the comparison of international mobility in specific research fields and the impact of funding programmes on the influx of international academics and researchers to Germany.

The study on “Researcher Mobility and Cooperation in the Science System” was carried out by researchers at the Fraunhofer Institute for Systems and Innovation Research (ISI) and covers two topics.³ Based on patent applications in the period 2000–2020, the first part analyses Germany’s position in inventor mobility flows over time and in relation to other relevant countries, outlines Germany’s international inventor cooperation structure and provides insight into the effects of inventor mobility and cooperation patterns on the German innovation system. Using bibliometric measurements, the second part examines the international mobility experiences of researchers in critical career positions in the German research system during the period 2005–2021. Moreover, it includes an analysis of the mechanisms and determinants that were relevant to international researchers’ transitions to these career positions.

ES1 Annual migration balances of inflows and outflows of academic authors and inventors, by selected countries of residence, 2008–2020⁴



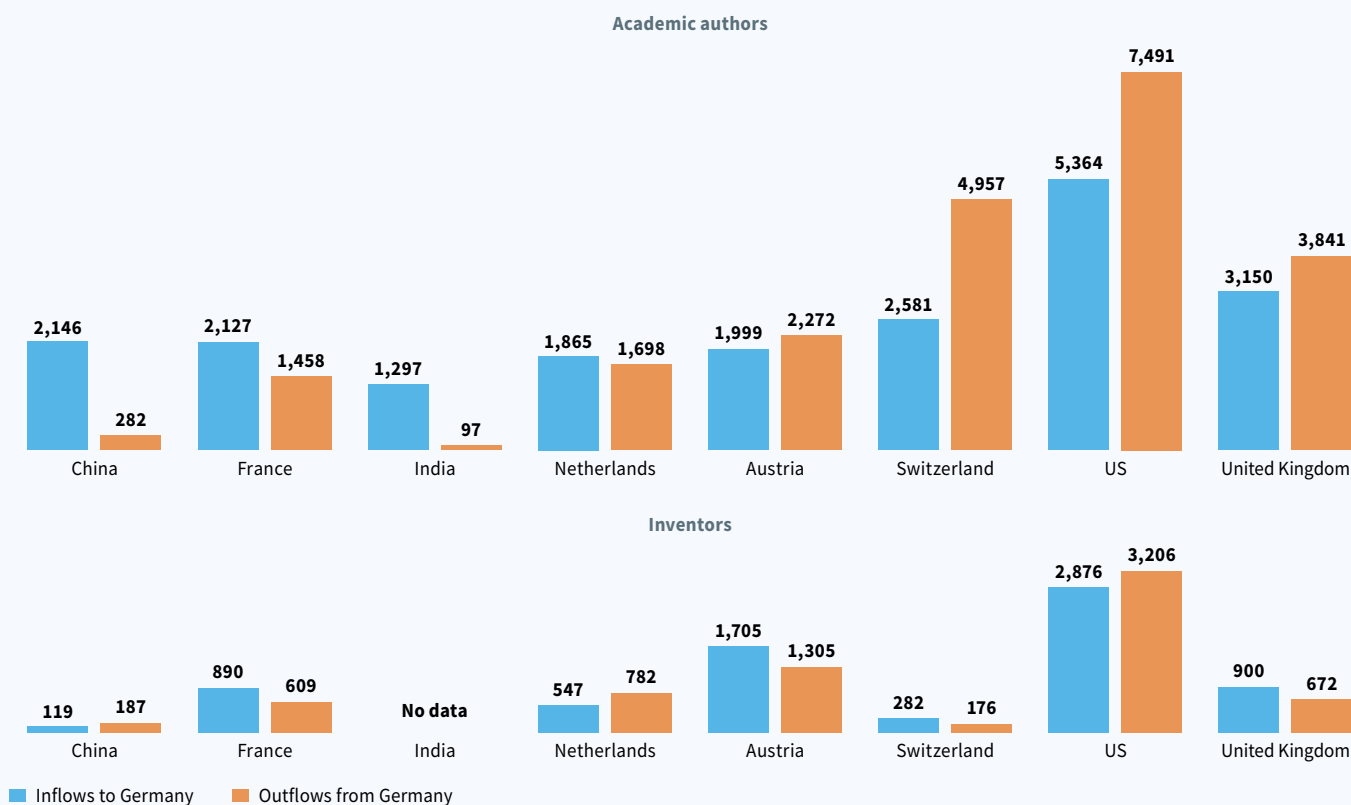
Source: Own representation, following EFI (2024), on the basis of Coda-Zabetta, M. et al. (2024) and Karaulova, M. et al. (2024)

What conclusions or recommended courses of action arise from these findings for German science and research policy? In your view, are the findings also of practical relevance for individual research institutes or even individual researchers?

Häussler: One common problem, whether someone intends to work at a university in Germany or in a company’s research department, are the lengthy administrative processes this entails, first when applying for a visa at a German diplomatic mission abroad, then later at the local immigration office. To facilitate this, we propose a digital transformation from a single mould – a digital platform that integrates all the immigration sub-processes into one overall process, thereby connecting all those involved. The plan is to integrate the recognition of qualifications at the same time. This has the advantage of reducing the administrative burden, at the same time keeping all parties updated as to the status of their application. By the same token, any bottlenecks can be quickly identified and hopefully eliminated promptly.

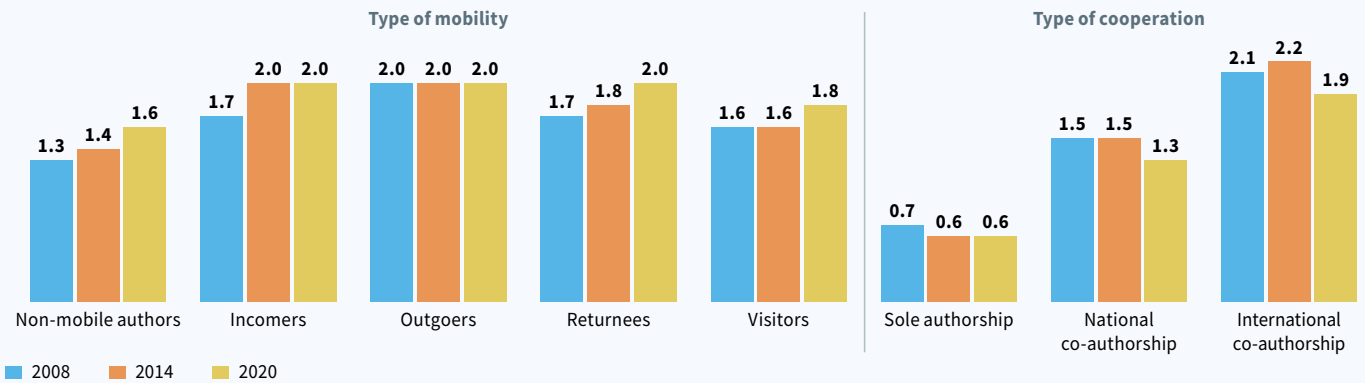
Bünstorf: Universities and research institutes must be more receptive to international careers. The Tenure Track Programme of the federal government and the federal states is a good starting point in encouraging policies to promote this openness; the programme will systematically ensure that equipment and remuneration can compete on the international stage, while also being fully compatible with the international labour market. This includes ensuring that candidates from abroad are given reliable information on their salary and pension entitlements at an early stage. Germany must also enhance its standing as a location of science and research for international talents below the level of professor, ideally with research-oriented tenure track positions that allow for independent work.

ES2 Bilateral inflows and outflows of academic authors and inventors to or from Germany, by selected countries of origin and destination countries, 2000–2020⁵



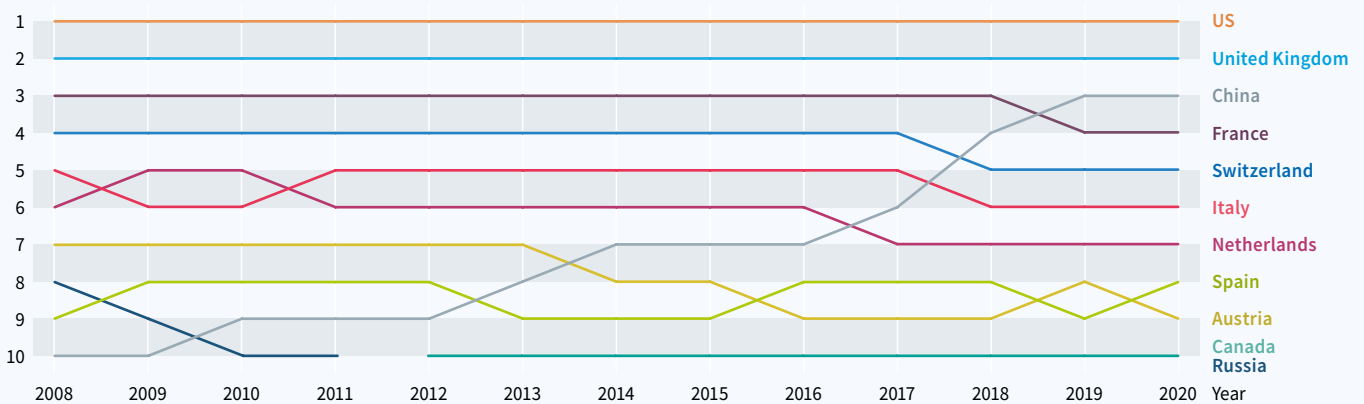
Source: Own representation, following EFI (2024), on the basis of Coda-Zabetta, M. et al. (2024) and Karaulova, M. et al. (2024)

ES3 Average value of the quality indicator of publications by academic authors with Germany as their country of residence, by type of mobility and cooperation, 2006–2020^{2,6}



Source: Own representation, following EFI (2024), on the basis of Coda-Zabetta, M. et al. (2024)

ES4 Germany's top ten partner countries in terms of academic co-authorship, 2008–2020



Source: Own representation, following EFI (2024), on the basis of Coda-Zabetta, M. et al. (2024)

* Footnotes

- 1 See Coda-Zabetta et al. (2024).
- 2 To differentiate between mobility types, the publication analysis of academic authors also included information from the IBM Global Name Recognition database. The database links every first name and last name to all countries where they occur. Conclusions can be drawn about the nationality or ethnicity of the authors, based on the frequency distribution of their names. For example, “Fowler” is often found in the United Kingdom and “Rajiv” in India, therefore these countries would be chosen as associations for an author named Rajiv Fowler. This approach is in line with the latest methodological standard for research on scientific mobility. Accordingly, incomers are authors without typical German first or last names, who first published outside Germany and subsequently came to Germany and remained here. Outgoers are authors with typical German first or last names who first published in Germany and then left Germany without returning. Returnees are authors with typical German first or last names, who first published outside Germany and later came to Germany and stayed here, or authors whose first and last names are untypical for Germany, who first published in Germany, then left Germany before returning at a later date. Visitors are authors who first published outside Germany, then moved to Germany for a certain period and left the country again.
- 3 See Karaulova et al. (2024).
- 4 The study by Karaulova et al. (2024) does not include any data on inventors from China and India.
- 5 The study by Karaulova et al. (2024) does not include any data on inventors from India.
- 6 The quality indicator is based on the SCImago Journal Rank (SJR) determined by Elsevier. The prestige of academic journals is assessed by taking into account both the number of citations that a journal receives and the prestige of the journals from which these citations originate.