



SCIENCE, TECHNOLOGY & INNOVATION INDICATORS

Open indicators: innovation, participation and actor-based STI indicators PARIS 2017

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Does the Scopus author ID suffice to track scientific international mobility?

A case study based on Leibniz laureates

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Motivation

- Increased interest in studies on scientific international mobility
- Scholars are often confronted with insufficient data on mobility
- There is a diversity of data and methods
 - Collection of information via surveys or interviews
 - CV data
 - Bibliometric data such as Scopus data
- There are only a few methodological discussions of the use of bibliometric data to track international mobility

Data & Methods - CV data

- There is no comprehensive CV database for German scientists
- However, Leibniz laureates have an online-published CV that is an integral part of the awarding process
- The data set encompasses all **193 laureates** who were awarded a **Leibniz Prize** between **1999 and 2016**
- CVs were coded according to the **country of residence** and the duration of stay (> 1 month) within the period **1996 to 2015**
- To compare CV data with bibliometric data, a data set was created on the basis of their publications in Scopus

Data & Methods - Bibliometric data

- Affiliations of publications indicate the movement of scientists from organisation to organisation
- Identification of the full scientific output of an author is difficult
- Author IDs are helpful
 - **Scopus author ID**
 - ResearcherID
 - ORCID
- To identify author IDs, laureates were searched manually
 - Last name and the initial of the first name in Scopus
 - Top-level domain of the e-mail address was compared against the institutions at which the laureate has stayed (CV data)

Data & Methods - Adjustments

- Scopus publications (journal articles & reviews) were collected for the 20-year period (1996-2015)
- Not every laureate has a continuous publication activity and thus some laureates lack country information for some years
- Missing country information can be filled in two different ways

Table 1. Example of forward filling (FF) and backward filling (BF) of author's missing country information in Scopus.

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
FF		DEU	<i>DEU</i>	USA	<i>USA</i>	<i>USA</i>	DEU	DEU	<i>DEU</i>	<i>DEU</i>	GBR	<i>GBR</i>	<i>GBR</i>	<i>GBR</i>
BF	<i>USA</i>	<i>USA</i>	USA	DEU	<i>DEU</i>	DEU	<i>NLD</i>	NLD	<i>DEU</i>	<i>DEU</i>	DEU	DEU	USA	

Data & Methods - Adjustments

- In many cases authors have resided and published from different countries in one year
 - These countries are weighted
- One main reason for potential discrepancies is assumed in multiple affiliations of authors
 - It is tested how the exclusion of multiple-affiliations publications influences the precision of results

Results

**Table 2. Number of author IDs
in Scopus per laureate.**

Number of author IDs	Number of laureates
0	11
1	156
2	22
3	2
4	1
150	1

Results

- The following results build upon 182 laureates
 - They published 25,768 articles and reviews between 1996 and 2015 according to Scopus
- The subset under study consists of
 - 24,872 single-affiliation papers (96.5%)

Results

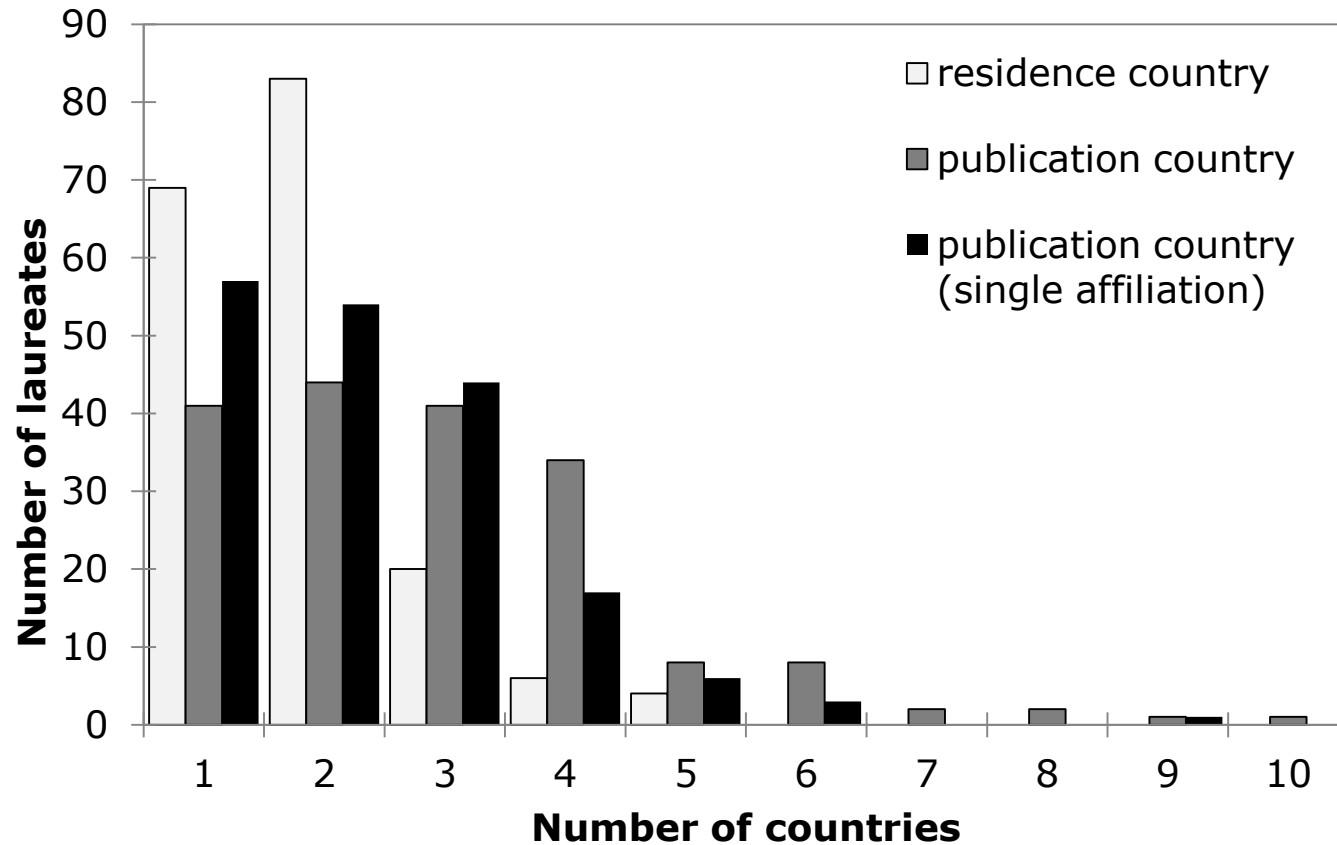


Figure 1. Number of countries of laureates between 1996 and 2015 according to source.

Results

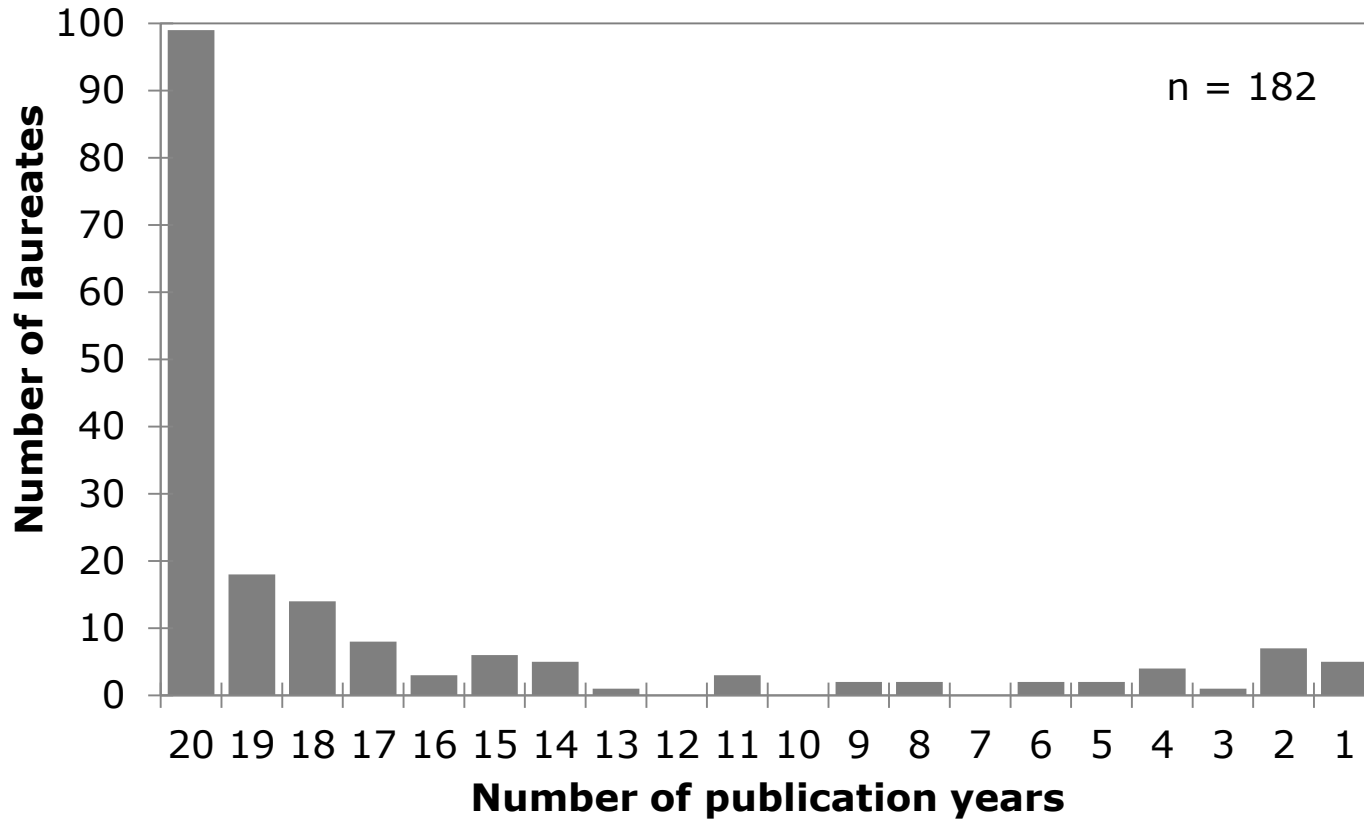


Figure 2. Publication activity of laureates according to Scopus data.

Results

Table 3. Overview of the accordance of CV and bibliometric data, distinguished by affiliation and filling procedure.

Affiliation type	Filling procedure	Residence country years missing in %	Filled country year combinations not in accordance with CV in %
Multiple	None	19.9	13.4
	FF	13.4	13.3
	BF	8.8	13.4
Single	None	22.1	9.0
	FF	15.4	9.1
	BF	10.6	9.2

Results

Table 4. Overview of reasons for inconsistency between CV country information and Scopus country information.

Reason for inconsistency between CV and Scopus data	No. of papers
Stay abroad was prior to 1996	5
CV data is not up to date (paper was published after the CV)	7
Mobility episode is not explicitly mentioned in the CV	14
There is a merged identity (4 identities overall)	13
There is only information on the first author of the paper (Web search)	23
Erroneous country assignment to institutions in Scopus	18
The affiliation of the first author or any co-author was taken	134

Conclusions

- Scopus author ID algorithm proves to be valuable
- However, split and merged author profiles remain a problem
- Distortions may result when scientists move to another country but continue to publish with colleagues from their former institutions
- Double affiliations cause distortions
- Co-authors may receive the same affiliation as the first author
- Publication delay has to be kept in mind

Conclusions

- The comparison shows that bibliometric data is suitable to identify a scientist's international mobility and appears to be a good solution if there are no CVs available or if they are incomplete
- CV data as well as bibliometric data have several shortcomings that prevent a straightforward application
- The use of CV data requires high effort in regard to coding mobility episodes
- Bibliometric research allows tracking mobility only to the extent that scientists publish
- A stay abroad does not necessarily result in a publication

End of presentation

feedback
critique
arguments
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views
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incentives
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tips
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impulses
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questions
references

ResearcherID and ORCID

Table 3. Missed Scopus author IDs on the basis of ResearcherID and ORCID.

Laureate	No. of publications	Publication period	Reason	Proof
Anja Feldmann	19	2010-2014	No e-mail	
Rainer Waser	19	2013-2015	No e-mail	
Dierk Raabe	12	2015	No e-mail	
Henry N. Chapman	8	2009-2015	No e-mail	
Karl Leo	7	2013-2015	No e-mail	
Martin Wegener	5	2015	No e-mail	
Christian Jung	5	2005-2006	No e-mail	
Detlef Weigel	5	2005-2012	No e-mail	
Daniel James Frost	2	2015	Spelling	Dan J. Frost
Matthias Mann	2	1996-1997	Spelling	Mattias Mann
Detlef Weigel	2	2013-2015	Spelling	D. Weige
Anthony A. Hyman	2	2014-2015	No e-mail	
Ilme Schlichting	1	2010	OCR	Urne Schlichting
Reinhard Jahn	1	2015	Spelling	