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# What share of researchers publish monographs?

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## Abstract

In this study, we investigate what share of researchers publish monographs across fields, gender and seniority. We acquire data from the Polish current research information system, containing metadata about all publications by 67,415 Polish researchers, including 30,185 monographs and 638,779 articles from 2013-2016. The data are aggregated at the researcher level which allow us to shed new light on publication patterns in all fields, especially on monograph patterns which in previous studies have been investigated mostly in only the social sciences and humanities. The key finding of our study is twofold. Firstly, we show that scholars who publish monographs also publish journal articles at the same time. This pattern is observed in all dimensions, i.e. fields, gender and seniority. However, substantial differences between the fields are observed. Secondly, presenting the publication patterns at the researcher level allows us to argue that a monograph is the key publication channel for social sciences and humanities. The discussion summarizes our empirical findings and positions them in the light of other methods of data aggregation.

## Introduction

Monographs are the primary type of scholarly book publication in social sciences and humanities (Giménez-Toledo & Román-Román, 2009; Williams, Stevenson, Nicholas, Watkinson, & Rowlands, 2009). The so-called hard sciences also use monographs, but it is definitely a less popular form of scholarly communication channel (Aagaard, Bloch, & Schneider, 2015; Kulczycki, 2018).

Systematic empirical studies regarding the share of monographs among scholarly publications are rare because full publication records are often not available. The most comprehensive studies have to be based on national level databases (Sīle et al., 2018). Those studies are conducted at the level of countries, fields or disciplines. Engels et al. (2018) show that scholarly book publications are not disappearing from scholarly communications, and the publication patterns seem stable over the last several years. Kulczycki et al. (2018) present publication patterns in eight European countries and argue that monograph patterns differ both across fields and across countries within social sciences and humanities (SSH). On average, the share of monographs in the total number of publications in those countries was 6.2% in 2014. The highest share of monographs in the total volume was observed in the Czech Republic (12.8%) with the lowest in Flanders (Belgium) at 1.8%. Also, at the level of disciplines, patterns were different. For instance, in the field of Law, the highest share was in Finland (11.1%) and the lowest in Flanders (2.28%). Such studies at field and country levels provide important information on how monographs are popular within fields and given countries, yet they do not detail how single researchers use monographs as a publication channel nor how often they decide to use it to communicate their research results. Moreover, existing literature devoted to monographs is most often limited to SSH fields.

Claiming that monographs are the primary research output in some fields, especially in SSH, has not been extensively documented or investigated. Moreover, analyses are usually conducted at the level of fields. Studies at the researcher level are most often related to citation analysis (Aksnes, Rorstad, Piro, & Sivertsen, 2011) and evaluation context at the national level (Sivertsen, 2016a) rather than the publication channel. Therefore, there is a lack of studies at the researcher level related to publication patterns. In this light, Sivertsen's study on patterns of

internationalization in the SSH performed at the researcher level reveals that 15.7% of researchers in humanities and 8.5% researchers of researchers from social sciences published a monograph within the studied four-year period (Sivertsen, 2016b).

In order to perform publication pattern analysis at the researcher level in a given country, a current research information system with metadata about all publications by all researchers is required. Therefore, such studies cannot be based either on the Web of Science or Scopus as these databases do not include all publication channels, especially local journals, monographs, and edited volumes. Current research information systems at the national level exist in Norway, Finland, Slovenia, and Poland, among others.

In this paper we fill this gap in research literature related to monograph patterns in all fields of science by investigating empirically what share of researchers publish monographs in a four-year period using comprehensive publication data collected in Poland. We also analyze what share of researchers in a given field published at least one or more monographs across both gender and seniority. Moreover, we analyze how publishing monographs is related to publishing journal articles. The discussion summarizes our empirical findings and positions them in the light of the often raised statement that monographs are the primary research output in SSH.

## **Data and methods**

In this study we use bibliographical records of publications from the Polish Scholarly Bibliography, a part of the Polish current research information system POL-on, published for the years 2013–2016. Since 2013, all Polish higher education institutions and research institutes have been obliged to submit bibliographical records of publications affiliated with those institutions. We have data on 67,415 Polish researchers and their 30,185 monographs and 638,779 articles. The POL-on data contains publications by 87,352 researchers employed by Polish universities, basic and applied sciences institutes. However, in our analysis, we limited this number to include only those researchers who; (1) were academic staff member in the higher education institutions or research institutes; (2) published at least one publication of any type in the 2013–2016 period according to the POL-on data, and (3) obtained a PhD degree before 2013. In the final data set of 67,415 researchers, 273 (0.4%) and 1,584 (2.4%) of these researchers did not assign information on gender or the years of their PhD, respectively.

The POL-on data is originally aggregated at the researcher level, meaning that whole counting is used: every co-author gets credit for a whole publication.

We assigned information on gender using first name dictionaries. Moreover, we used information about the date of obtaining their PhD and the discipline attributed by the researcher. For 500 researchers, there were data about more than one discipline. We decided to exclude those researchers from the analysis and they were not counted in the number of 67,415 researchers. We mapped these disciplines to the six major fields of science and technology classification of the Organisation for Economic Co-operation and Development (OECD, 2007). In this way all publications published by researchers classified for instance as philosophers, are counted in this analysis as publications from Humanities.

## **Results**

In each OECD major field, the majority of scholars did not publish any monograph in the studied four-year period. In Humanities, the share of such non-publishing scholars is 50.5% (4,347 researchers) and in Medical and Health sciences 92% (11,424 scholars).

The univariate logistic regression analysis of the studied factors is presented in Table 1. Researchers from Natural sciences were taken as the reference point in the logistic regression. Only researchers from Medical and Health sciences write fewer monographs than from Natural sciences (OR = 0.665). It is no surprise that researchers from SSH write many more monographs (OR = 6.424 and OR = 7.549, respectively). Male researchers (57% of all researchers), then

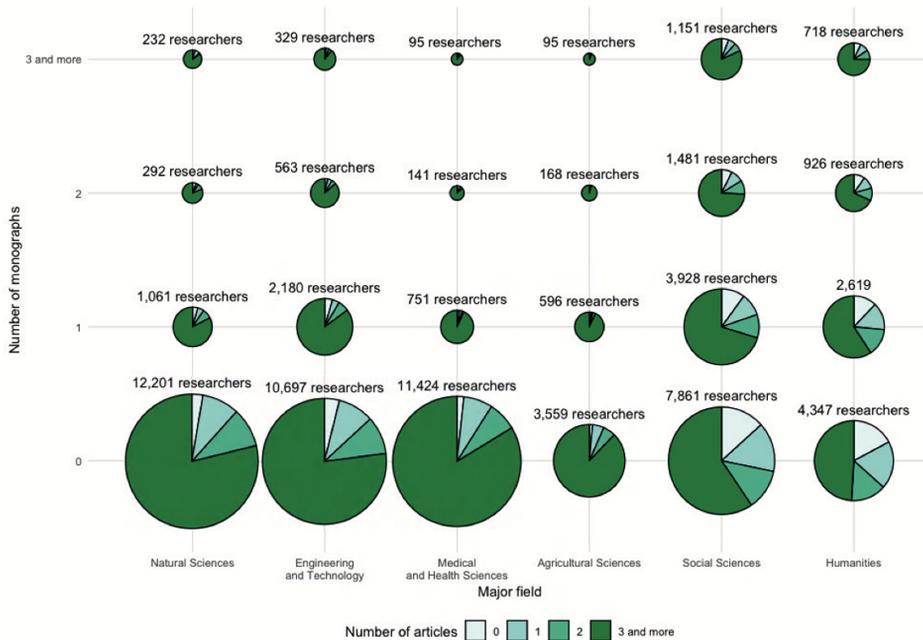
researchers from the hard sciences, by a small margin, write more monographs than female researchers (OR = 1.146).

**Table 1. Univariate logistic regression of researchers who published and did not publish monographs across the major OECD fields, gender and seniority.**

Parameter	N	Researchers who did not publish a monograph	Researchers who published monograph(s)	Odds ratio	95% confidence interval	p-value
<b>OECD Major Field</b>						
Natural sciences	13,786	12,201 (88.5 %)	1,585 (11.5 %)	1	(Ref.)	
Engineering and technology	13,769	10,697 (77.7 %)	3,072 (22.3 %)	2.211	(2.07; 2.362)	< 0.001
Medical and Health sciences	12,411	11,424 (92 %)	987 (8 %)	0.665	(0.612; 0.723)	< 0.001
Agricultural sciences	4,418	3,559 (80.6 %)	859 (19.4 %)	1.858	(1.696; 2.035)	< 0.001
Social sciences	14,421	7,861 (54.5 %)	6,560 (45.5 %)	6.424	(6.041; 6.835)	< 0.001
Humanities	8,610	4,347 (50.5 %)	4,263 (49.5 %)	7.549	(7.059; 8.076)	< 0.001
<b>Gender</b>						
Female	28,809	21,824 (75.8 %)	6,985 (24.2 %)	1	(Ref.)	
Male	38,333	28,046 (73.2 %)	10,287 (26.8 %)	1.146	(1.106; 1.187)	< 0.001
<b>Seniority (number of years after PhD)</b>						
0–10	35,334	26,874 (76.1 %)	8,460 (23.9 %)	1	(Ref.)	
11–20	15,966	11,236 (70.4 %)	4,730 (29.6 %)	1.337	(1.282; 1.394)	< 0.001
21–30	7,247	5,315 (73.3 %)	1,932 (26.7 %)	1.155	(1.09; 1.223)	< 0.001
30+	7,284	5,520 (75.8 %)	1,764 (24.2 %)	1.015	(0.957; 1.077)	0.617

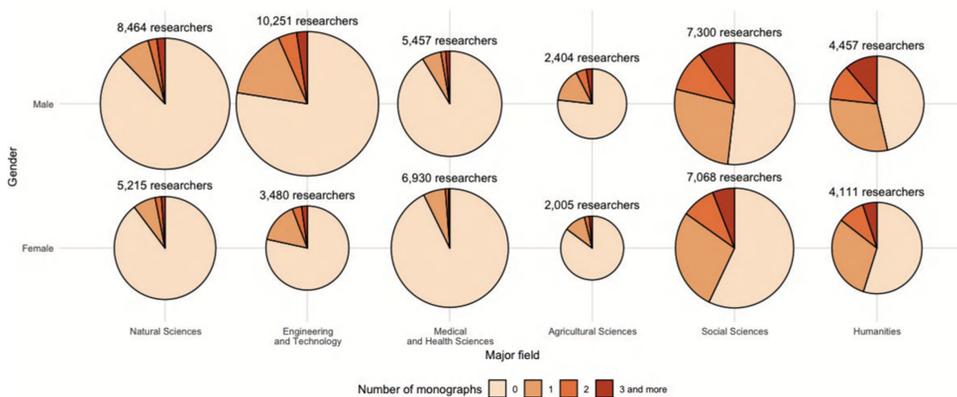
Figure 1 shows how many monographs researchers published across OECD major fields, and how publishing monographs is related to publishing journal articles. In all fields, the overwhelming majority of researchers who published monographs also published articles. 74.30% of researchers (all fields) did not publish a monograph, but even then, the majority of them published at least 3 articles in the four years period.

Analysing the all fields together, 16.52% of researchers published one monograph, 5.30% published two monographs, and 3.89% published three or more monographs. These numbers differ when the analysis is broken down into the major fields. For instance, 8.34% of researchers in Humanities published three or more monographs, whereas just 0.77% of researchers in Medical and Health Sciences did so.



**Figure 1. Publication patterns across the major OECD fields, with the number of published monographs and articles.**

Figure 2 shows the differences between the number of published monographs across the major OECD fields and gender. In all fields except Humanities, the majority of female and male scholars did not publish a monograph.



**Figure 2. Publication patterns across the major OECD fields, with the number of published monographs and gender.**

### Discussion and conclusion

In this study we analysed the share of researchers who published monographs in the four-year period 2013–2016 across the major OECD fields, gender and seniority. We studied publications by over 67 thousand Polish researchers. The key finding of our study is twofold. Firstly,

scholars who published monographs also published journal articles at the same time. This pattern is observed in all dimensions, i.e. fields, gender, and seniority. Secondly, presenting the publication patterns at the researcher level allows us to provide stronger arguments that a monograph is the primary publication channel for social sciences and humanities.

Our study reveals that there is no substantial difference between female and male researchers in terms of writing at least one monograph in the four-year period. Virtually all those researchers published more scientific articles than monographs, with the majority of those researchers publishing both articles and monographs. We believe that this should be interpreted in such a way that working on a monograph does not mean abandoning scholarly communication using journal articles. The seniority of the researcher (measured as the number of years after obtaining their PhD) did not significantly change the inclination toward publishing monographs.

The number of monographs published by Polish researchers might be influenced by a recent practice in academic promotion procedures where publishing monographs was perceived as the proper way of obtaining the habilitation degree and professorship in many fields. For instance, in 2011–2016, less than 2% of researchers from chemical and pharmaceutical sciences published a monograph as their habilitation thesis, whereas in all SSH fields this share was above 70% (Kulczycki, 2019).

Comparing the Polish data on SSH (from 2013–2016) with the Norwegian data (2010–2013) presented by Sivertsen (2016b), substantial differences can be observed between the share of researchers who published a monograph. According to Sivertsen, 8.5% of Norwegian researchers from social sciences published a monograph compared to 45.5% of Polish researchers. A similar situation can be observed in humanities, with 15.7% of Norwegian and 49.5% of Polish researchers publishing a monograph. As Kulczycki et al. (2018) show, publication patterns differ both across fields and across countries, e.g. publication patterns for humanities in Norway differ from those in Poland. Our results are in line with this conclusion. However, we would like to emphasize the differences between publication patterns when the data are aggregated at the researcher level instead of the field level.

The monograph is perceived as the primary research output, especially in social sciences and humanities (SSH). When we look at the four-year period 2013–2016, the majority of Polish researchers did not publish a monograph, while for humanities this share is 50.5%. On one hand, it could be said that a four-year period is too short to analyze such a publication pattern, and on the other hand, we can say that in this specific Polish case, the four-year period (2013–2016) comprises the entire evaluation period counted for Polish higher education institutions and research institutions, motivating all researchers to present their best publications within this regular period to maintain an adequate evaluation.

Most previous studies on publication patterns focused on differences between fields, so publications were aggregated at the level of fields. In our study, we aggregated the publications at the level of researcher. For instance, Kulczycki et al. (2018) shows that monographs constituted 9.98% of all publication types in SSH published by Polish researchers in the four-year period 2011–2014. However, our study shows that in the four-year period 2013–2016, 47.0% of SSH researchers (two fields counted as a whole) published a monograph. A similar situation is in Norway where, according to Kulczycki et al. (2018), monographs constitute 3.56% of all publication types in SSH, whereas according to Sivertsen (2016b), 11.1% of all SSH researchers (two fields counted as a whole) published a monograph. This means that researchers use many publication channels at the same time to communicate research results. Counting publications at only the field level does not allow a proper emphasis on the role of monographs in the so-called soft sciences. Thus, we argue that presenting the publication patterns at the researcher level provides a stronger argument that the monograph is the primary publication channel for SSH.

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