How arbitrary are the weights assigned to books in performance-based research funding? An empirical assessment of the weight and size of monographs in Flanders

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An empirical assessment of the weight and size of monographs in Flanders

Frederik T. Verleysen

Department of Research Affairs and Innovation, University of Antwerp, Belgium

Frederik.verleysen@uantwerpen.be

Tim C.E. Engels

Department of Research Affairs and Innovation and Expertise Center for R&D Monitoring, Faculty of Social Sciences, University of Antwerp, Belgium

Abstract

Purpose

This study presents an empirical assessment of the weight assigned to monographs in the publication indicator of the performance-based research funding system (PRFS) in Flanders, Belgium. By relating publication weight to publication size we offer an alternative perspective on the production of scholars who publish monographs. This perspective on weights is linked to the aggregation level at which PRFS indicators are used: the national/regional one as opposed to the local one. In Flanders as elsewhere the publication indicator designed for funding distribution between universities has sometimes trickled down to institutions, their faculties and departments.

Design/methodology/approach

As an alternative indicator of scholarly production we propose the median number of pages of a publication type. Measuring the size of publications allows to compare the weight ratio between monographs and journal articles in the publication indicator to their size ratio in the VABB-SHW database. We compare two levels, one of four universities and one of 16 disciplines.

Findings

Median publication size differences between disciplines are much larger than those between universities. This indicates that an increase of monographs' weight in the publication indicator would hardly affect funding distribution at the regional level. Disciplines with a relatively large share of monographs, however, would contribute more to the publication indicator. Hence an increase of monographs' weight might provide a better balance between fields and between publication types.

Originality/value

This paper presents a thought experiment regarding the weight assigned to different publication types in the publication indicator of the Flemish PRFS: What would happen if this weight were replaced by

the median number of pages of a publication type? In doing so, we highlight that such weighting schemes play an important role in finding a balance between fields of science and disciplines. The sizeable differences between weight and size ratios offer a new and critical perspective on the weighting schemes currently used in PRFS, also in other countries.

Introduction

In designing and implementing performance-based research funding systems (PRFS) a growing number of countries are acknowledging the role of the monograph in scholarly communication. This appears to be a recognition of the fact that monographs are not chosen randomly by their authors as a means of communication: in many fields of research, especially in the humanities, there exists a rich tradition of writing and reading scholarly books. Monographs, it has been argued, can offer scholars an epistemic tool better adapted to their specific research environments, requiring a more elaborate form to inform peers of the context, the nuanced interpretation and complex significance of their findings (Kyvik, 1991; Whitley, 2000). As such, it is not surprising that at least in several humanities disciplines, having a monograph published by a reputable academic publisher seems to carry a greater prestige than does publishing a single journal article, and is sometimes even seen as a crucial proof of scholarly competence (Cronin and La Barre, 2004; Hammarfelt, 2017). Moreover, bibliometric analysis of data collected in the frame of PRFS illustrates the persistent importance of scholarly monographs, especially in the humanities (Engels et al., 2012; Engels et al., 2018; Kulzcycki et al., 2018; Puuska, 2014).

Across Europe, book publications of various types are increasingly included in national and regional bibliographic databases coupled to PRFS (Giménez-Toledo et al., 2016; Sīle et al., 2018). This may indeed be perceived as an acknowledgement of the importance of monographs and other types of book publications in scholarly communication, in particular in the social sciences and humanities (SSH). However, in the implementation of PRFS a central question remains 'how and to what extent are the system-level incentives translated into local management practices affecting working conditions and processes of recruitment and promotion' (Aagaard, 2015). Therefore, this article analyses some of the consequences of PRFS implementation at the local level, specifically for scholarly monographs, in case the national publication indicator would be adopted unaltered by universities and their faculties or departments. As an example, we use comprehensive bibliographic data for the SSH registered in the Flemish VABB-SHW database, a component of the current Flemish PRFS for the five universities (Engels, Ossenblok, & Spruyt, 2012; Verleysen, Ghesquière, & Engels, 2014). However, the method can be applied to other countries where similar PRFS are used.

Along the lines of what has been shown for Norway (Aagaard, 2015), there are indications that the bibliometric indicators of the Flemish PRFS have at times been used in various ways at lower aggregation levels. Although institutional autonomy in Flanders is considerable, all five Flemish universities have, at least temporarily, introduced a variation of the publication indicators of the regional PRFS in some way in their intra-institutional allocation models; moreover, university faculties and departments have sometimes adopted variants of the publication indicators as a decision-aid for funding, recruitment and promotion. Often however, at disaggregate levels some alterations of the national publication indicator have been made . For instance, the authors have knowledge of at least some humanities departments at Flemish universities that have increased the weight of monographs when making use of bibliometric data in support of recruitment or promotion decisions. This is indicative, it seems, of the greater prestige attached to the monograph in humanities disciplines, such as history, and -related- its more considerable size as a publication (Hammarfelt, 2017). Increasing the weight of monographs is also an illustration of the tension that can arise between national and

local models: on the one hand local models may seek to adapt indicators to their own research and institutional contexts, on the other hand, out of self-interest they cannot deviate too much from the incentives provided through funding by the national model (Aagaard, 2015).

In what follows, we will specifically focus on the publication type weights assigned to monographs in PRFS, and on the possible effects a tight coupling of local models to the national publication indicator could have for strongly monograph-oriented fields of research in the SSH.

Quality and quantity in bibliometric indicators for PRFS

Apart from objectifying the distribution of research funding over institutions, PRFS relying on bibliometric indicators also seek to incentivize publication behavior regarded by policy makers as desirable. In a number of current PRFS this is done by rewarding high productivity and/or a high degree of 'quality publishing' with an increased share of government funding for the best performing research institutions (Giménez-Toledo et al., 2016). Moreover, a well-designed and transparent PRFS should at the same time avoid other steering of research and publication behavior in an undesirable direction or in one which has not been made explicit by science policy (Hicks, 2013).

In the publication-based part of the BOF key, the Flemish PRFS, which counts the share per institution of both Web of Science (WoS-) indexed and all other peer reviewed publications, the principal measure of quality for academic publications is stringently defined peer review (Engels et al., 2012; Verleysen et al., 2014). This implies that, for the distribution of funding between universities, all publications that are not indexed in WoS and that meet this requirement are considered by the system to be of equal, high academic quality. For the WoS-indexed publications further distinction is made through the use of impact factors binned by field of research into twentieths (Verleysen & Rousseau, 2017). Although the impact (through citations or otherwise) of scholarly book publications is not taken into account in the Flemish PRFS, by its incorporation of a comprehensive custom-made bibliographic database for the social sciences and humanities, the system unequivocally recognizes the scholarly relevance and value of peer reviewed monographs. Hence the VABB-SHW has contributed to a more balanced distribution of research funding over the five Flemish universities (Verleysen, Ghesquière, & Engels, 2014).

In the PRFS of Denmark, Finland and Norway, two or three publication outlet quality levels for the various publication types are used: articles and books published by more prestigious and international outlets (journals, book publishers) receive more points in the publication indicator than do publications in outlets of lower scholarly esteem and lesser international standing (Giménez-Toledo et al., 2016; Debackere et al., 2018). As shown by Table 1, in the Flemish BOF key the weight ratio between peer reviewed monographs and articles is one of 4 to 1. In Finland, the same ratio between monographs and articles is used throughout its four quality levels. Norway attributes a weight of 5 to 1 for quality level 1 and one of 8 to 3 for quality level 2. Denmark uses the same weights as does Norway, with the exception of a third top-quality level reserved exclusively for journal articles, which receives a weight of 5. We note that the use of quality levels for academic publications in the Nordic countries does not seem intended to reflect quality differences *between publication types* (e.g., peer reviewed monographs compared to peer reviewed journal articles), but rather *between publication outlets* (journals or book publishers) classified under a single publication type.

By contrast, *publication type weights* used in PRFS do in fact seek to differentiate between publication types for calculation of the publication indicator. In both the Flemish as well as the Nordic PRFS such weights are used, though it is quite difficult to find a concrete legitimation of their use in policy documents, academic papers or on the publicly accessible websites of dedicated governmental organizations (e.g., Flanders: https://www.ecoom.be/en/services/vabb/faq#weights; Denmark:

https://ufm.dk/en/research-and-innovation/statistics-and-analyses/bibliometric-research-indicator/bfi-rules-and-regulations; Finland: http://www.julkaisufoorumi.fi/en/evaluations/faq; Norway: http://www.cristin.no/english/resources/reporting-instructions/appendix/calculation-of-points.html). This lack of motivation for applying specific weights to publication types in these four systems is striking, and may point to a shared perception of the common-sense character of using such weights.

Table 1: Quality levels (QL) and publication type weights (PTW) in the PRFS of Flanders, Denmark, Finland and Norway

Peer reviewed publications	Flanders (no QL)	Denmark (3 QL)	Finland (4 QL)	Norway (2 QL)
Article PTW	1	1/3/5	0.1/1/3/4	1/3
Monograph PTW	4	5/8/-	0.4/4/12/16	5/8

Though left implicit in the abovementioned documentation on PRFS, it is reasonable to assume that publication type weights were in fact introduced to reflect a *quantitative* aspect of publication patterns: in the SSH a monograph seems to be, *on average,* a more sizeable publication (or even: contribution to knowledge) than an article, therefore also requiring a more substantial input from its author and her/his institution as regards research, writing and editing . What this extra 'input' consists of is difficult to say at an aggregate level, as this may vary considerably from one publication to another and between fields and authors. From this it follows that the higher weight for monographs in the Flemish and Nordic PRFS was most likely a way of recognizing -at an aggregate level- that the publication of a monograph on average requires more input from authors and the university they are affiliated with.

If varying publication type weights in PRFS are indeed a way of balancing between publication types, then the publication type weights in PRFS also serve to not de-incentivize the writing of lengthy monographs, or alternatively, to not over-incentivize the publication of shorter, 'easier' journal articles, which would in fact happen if both publication types were assigned an equal weight in the funding model. Otherwise put, from the perspective of academic publication productivity (the ratio between output and input), publication type weights in PRFS are intended to balance between publication types. This balance is important as some disciplines and specialisms, even within the SSH, have a much stronger tradition of publishing in monographs than do others (Verleysen & Weeren, 2016a; 2016b)). Moreover, individual authors may have epistemic, personal or otherwise motivated preferences for certain publication types. Aagaard, Bloch, & Schneider (2015) discuss this need for a balanced weighting scheme of publication types in the context of an ideal called field neutrality of the bibliometric indicator of a PRFS. Indeed, in Flanders as elsewhere, there are some differences in the disciplinary portfolio of universities, making a balanced weighting of publication types a prerequisite for the distribution of funding across universities.

Looking at publication type weights from this perspective brings up the question of the process by which the weights were determined in countries making use of a publication indicator for their PRFS. In Flanders, the Authoritative Panel (GP), the board of university professors responsible for maintaining the academic standards of the VABB-SHW database, decided on the weight differentiation between publication types. The weight of 4 for monographs versus 1 for journal articles seems to have been pragmatically decided upon first by the government and then reaffirmed by the GP after consultation of bibliometric experts (Verleysen et al., 2014; Verleysen & Rousseau, 2017). By contrast, the weight of edited volumes was originally set at 2 but changed to a weight of 1 upon request of the GP. For the

design of the Norwegian national publication indicator the current ratios between monographs and articles were determined after a more broad consultation of scholarly communities, and were in part inspired by the average ratio of the number of journal articles included in an article-based PhD versus a dissertation (book)-based PhD (Gunnar Sivertsen, oral communication, RESSH conference, 6-7 July 2017, Antwerp). The Danish and Finnish weighting schemes were inspired by the Norwegian one, although in the case of Finland more substantial alterations were introduced. At any rate, the publication type weights included in Table 1 show that the weight ratio between monographs and articles can differ quite considerably between countries making use of a bibliometric indicator for their funding model. This suggests that either research and publication cultures in the SSH between these four Western/Northern European countries substantially differ, reflected by varying weighting schemes, or, which seems more likely, that at least some degree of arbitrariness was involved in the decision making on the weight of publication types in the respective PRFS.

Publication type weight versus publication size

In this article we present a thought experiment with regard to the weight ratio between monographs and journal articles used for the social sciences and humanities in the current Flemish (and other) PRFS.

A first question we will address is whether the current weighting scheme in the PRFS provides a balanced approach to publication types. A second, well-known question in research evaluation studies (Aagaard, 2015; Hammarfelt & De Rijcke, 2015) which we will revisit, is whether it is wise to adopt publication type weights designed for the bibliometric indicator at the level of the national PRFS in calculations of funding distribution at the local, intra-institutional level of faculties, departments and/or research groups.

Our main analysis is performed by means of a pragmatic and rudimentary bibliographic indicator of the extra input required (on average) by authors and their institutions to publish one monograph as opposed to one journal article. The indicator we propose is *publication size as expressed by the median number of pages*. By pragmatically assuming that the writing of any one page of peer reviewed and published scholarly text requires (again: on average) more or less the same input, irrespective of publication type, institution or field of research, it becomes possible to compare the weight ratio between publication types to their size (and input) ratio. If size ratios between monographs and articles more or less comply with the 4:1 weight ratio, the weighting scheme appears balanced in terms of scholarly production. Otherwise it is unbalanced. Whether such a balance or unbalance might also influence the distribution of funding at different aggregation levels, sheds light on the (in)appropriateness of adopting publication type weights at the intra-institutional level.

We are well aware that a number of important caveats apply to our method. Our assumption that the same input by an author, more or less, is required for the writing of any one page of peer reviewed scholarly text, regardless of publication type or field of research, is uncertain: for instance, it may or may not be true that, on average, articles present research findings in a more condensed and codified form than do monographs (Whitley, 2000); it may or may not be true that in some disciplines more input is required for the writing of one page than it is in another discipline or specialism. Another problem relates to the precision of the amount of written pages in measuring publication size, let alone scholarly input for publishing. In all likelihood, it is not a particularly precise indicator, as the number of pages is not only determined by a number of poorly understood group or individual characteristics and preferences of authors, but also by, e.g., the publication layout (font size, margins, white space, etc.) chosen by the journal or book publisher. There are probably also differences in the page density of monographs and journal articles, as only few publishers nowadays still adhere to the golden canon or other standards for book design (Hendel, 1998). For these reasons we consider the median number

of pages as a valid indicator of scholarly production, yet only a rudimentary indicator of productivity. In fact, similar reservations apply to the number of publications as an indicator of production or productivity. The lack of precision of our indicator also has consequences for the analysis, *as only sizeable differences between weight and size ratios can be meaningful* from a publication productivity and funding perspective.

The entire analysis presented in this paper is a thought experiment: we do not suggest to introduce the number of published pages as a bibliometric indicator in PRFS. We do believe, however, that a measurement of publication size sheds a new light on the need for balanced weighting schemes of publication types in PRFS.

Data and method

We first analyse the output ratio between all peer reviewed monographs and articles registered in the VABB-SHW for the years 2000-2014, at the level of the four largest (anonymized) Flemish universities (Antwerp, Brussels, Ghent and Leuven), as well as at the level of 16 SSH disciplines. The fifth university, that of Hasselt, has not been included in our study due to, until recently, its fairly limited research activity in the SSH. We then make a weighted calculation of funding points in the Flemish PRFS per university and discipline based solely on articles and monographs. In a final step of the first part we simulate a doubling of the weight of monographs (from 4 to 8) and its effect on the shift of publication points between entities at the level of universities and at that of disciplines. SSH disciplines in our data reflect the organizational structure of Flemish universities quite well, as the VABB-SHW uses an author affiliation-based classification of publications (Guns et al., 2018).

For our main analysis we then look at the median number of pages of 557 peer reviewed monographs and 41.166 peer reviewed journal articles published by SSH scholars affiliated with one of the four universities. This is a large subset of the VABB-SHW database for which the number of pages is readily available in the system or could be additionally retrieved by the authors from online sources such as book publishers' websites and WorldCat.org. In order to be eligible for inclusion in the VABB-SHW, publications must be at least four pages long, as was determined by the GP at the inception of the database and its integration into the Flemish PRFS (Verleysen et al., 2014).

To investigate whether the 4:1 weight ratio between monographs and articles in the Flemish PRFS can be considered balanced, as well as to examine the possible ill effects of adopting the publication type weights of the national bibliometric indicator at the local level of intra-institutional funding models, we assess publication size ratios for the four universities and the 16 SSH disciplines. After presenting descriptive statistics for our whole dataset on publication size, we use boxplots for four universities and 16 disciplines. For this visualization, extreme outliers for articles (> 50 pages, n = 50) and monographs (< 50 pages, n = 13; > 1000 pages, n = 13) were excluded. Publication data of outliers was visually inspected by the authors, but no meaningful patterns (e.g. in terms of disciplines or institutions) could be discerned. In a final step, the standard 4:1 weight ratio between monographs and articles in the regional publication indicator is compared to the size ratios between these publication types for the 4 universities and 16 disciplines.

Results

In their publication output the four largest universities in Flanders show relatively modest variations in the output ratio between monographs and journal articles. As Table 2 shows, ratios for universities

vary from 1:63 to 1:78, where for the whole VABB-SHW the ratio is 1:70. This also shows that publishing a peer reviewed monograph in Flemish SSH as a whole is a relatively rare phenomenon, at least when compared to the much more frequent publication of journal articles.

Table 2: Output, ratio and weight of monographs and articles for 4 universities and 16 disciplines

University/ Discipline	# monographs	# articles	Ratio	Weighted count (monograph = 4)	Weighted count (monograph = 8)	Weighted count change %
University 1	155	9713	1:63	10333	10953	+6.00
University 2	114	8419	1:74	8875	9331	+5.14
University 3	260	20368	1:78	21408	22448	+4.86
University 4	405	27660	1:68	29280	30900	+5.53
Archeology	21	737	1:35	821	905	+10.23
Art History	33	1485	1:45	1617	1749	+8.16
Communication Studies	19	1920	1:101	1996	2072	+3.81
Criminology	11	2168	1:197	2212	2256	+1.99
Economics & Business	119	8981	1:75	9457	9933	+5.03
Educational Sciences	21	3201	1:152	3285	3369	+2.56
History	69	2238	1:32	2514	2790	+10.98
Law	133	11222	1:94	11754	12286	+4.53
Linguistics	157	3974	1:25	4602	5230	+13.65
Literature	80	1822	1:23	2142	2462	+14.94
Philosophy	101	3633	1:36	4037	4441	+10.01
Political Science	53	2394	1:45	2606	2818	+8.14
Psychology	25	7153	1:286	7253	7353	+1.38
Social Health Sciences	18	10910	1:606	10982	11054	+0.66
Sociology	15	3097	1:206	3157	3217	+1.90
Theology	91	1631	1:18	1995	2359	+18.25

Ratios between SSH disciplines, however, do show vast differences. Theology, the most prolific discipline when it comes to writing books, has published one monograph for every 18 articles; Social Health Sciences, the discipline most inclined towards journals, has published only one monograph for every 606 articles. All other disciplines fall somewhere in between these extremes, with the lowest ratios for humanities such as Linguistics (1: 23), Literature (1:25), History (1:32), Archeology (1:35) and Philosophy (1:36). We note that in the social sciences the difference between disciplines is much more substantial (e.g., Social Health Sciences versus Political Science) than in the humanities (e.g., Art History versus Literature).

From the relatively small differences between universities and the much larger ones between disciplines it follows that an increase of the weight for monographs would have the most profound effect when these publication weights are used at the intra-institutional level. This is illustrated by the last column of Table 1, which shows the percentual increase in publication points for the four universities and the 16 disciplines if the weight of monographs were to be doubled to eight points. Between universities, the largest difference due to this shift of publication points is one of 1.14%

(between university 1 and university 3); between disciplines the largest difference is one of 17.59% (between Social Health Sciences and Theology). This shows that a weight increase for monographs, even a more restrained one than a doubling, would mostly benefit monograph-reliant SSH disciplines and groups when VABB-SHW data is used at the level of faculties and departments; at the same time such a weight increase would not significantly alter the distribution of research funding between the four universities.

Moving on to publication size in our VABB-SHW subset, the descriptives in Table 3 show that the median number of pages for monographs in Flanders is 284, whereas for articles it is 12. The size ratio between the two publication types in the VABB-SHW is therefore almost 24 to 1.

Table 3: distribution of number of pages for articles and monographs

	Articles	**Monographs**
#	41166.00	557.00
Mean	14.45	316.55
Median	12.00	284.00
Standard deviation	8.18	147.92
Coefficient of variation	0.68	0.52

The boxplots for publication size distribution for monographs and articles at the level of the universities (Figures 1 and 2), show that there is some spread around the medians for the whole dataset of 284 and 12. Universities 3 and 4 have a median number of pages both for monographs and articles that is very near or the same (286 and 299 for monographs; both 12 for articles) as the medians for the whole dataset. Universities 1 and 2 have medians that are slightly higher or lower than those for the whole dataset (323 and 276 for monographs; 13 and 14 for articles).

By contrast, in Figures 3 and 4 and Table 4 there is far more variation between SSH disciplines as regards publication size of monographs and articles.

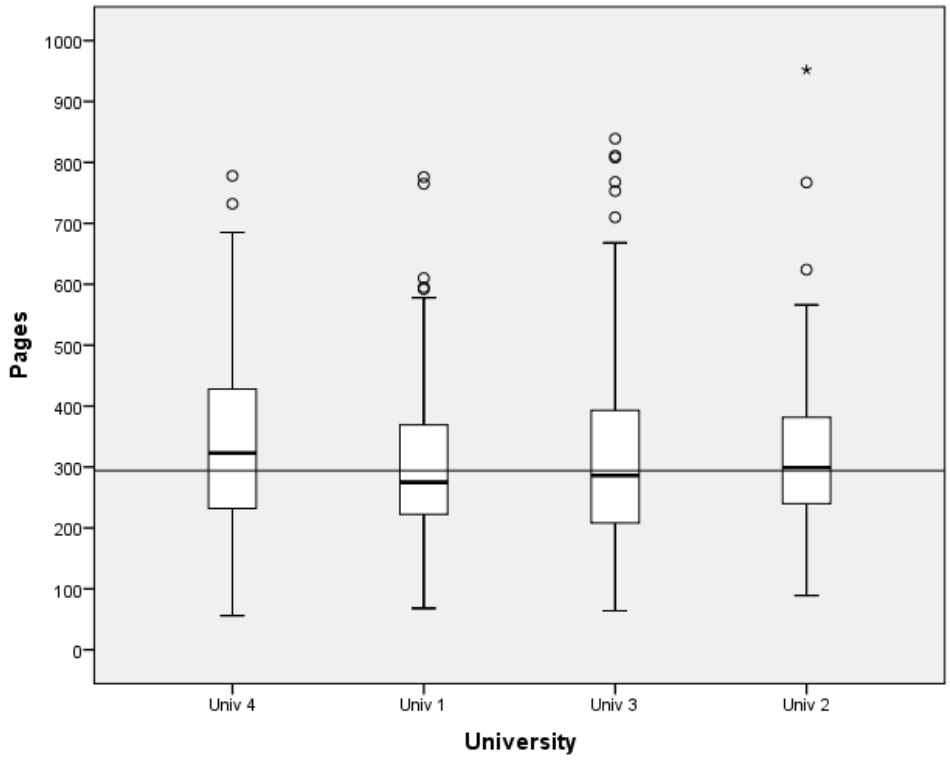

Figure 1: boxplot of monograph size for 4 universities

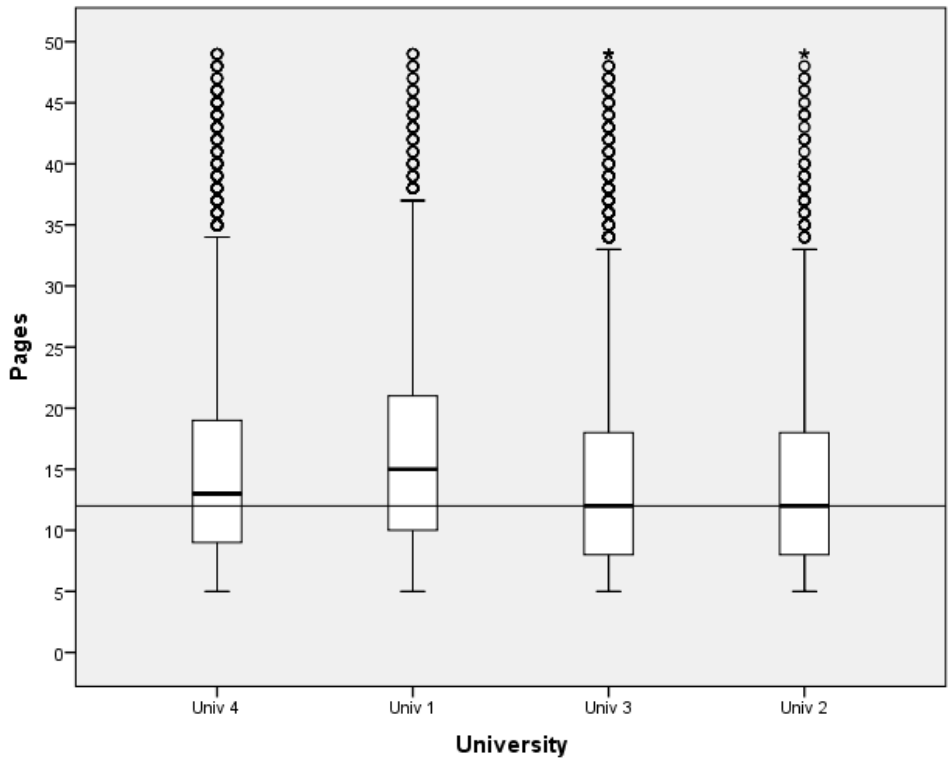

Figure 2: boxplot of article size for 4 universities

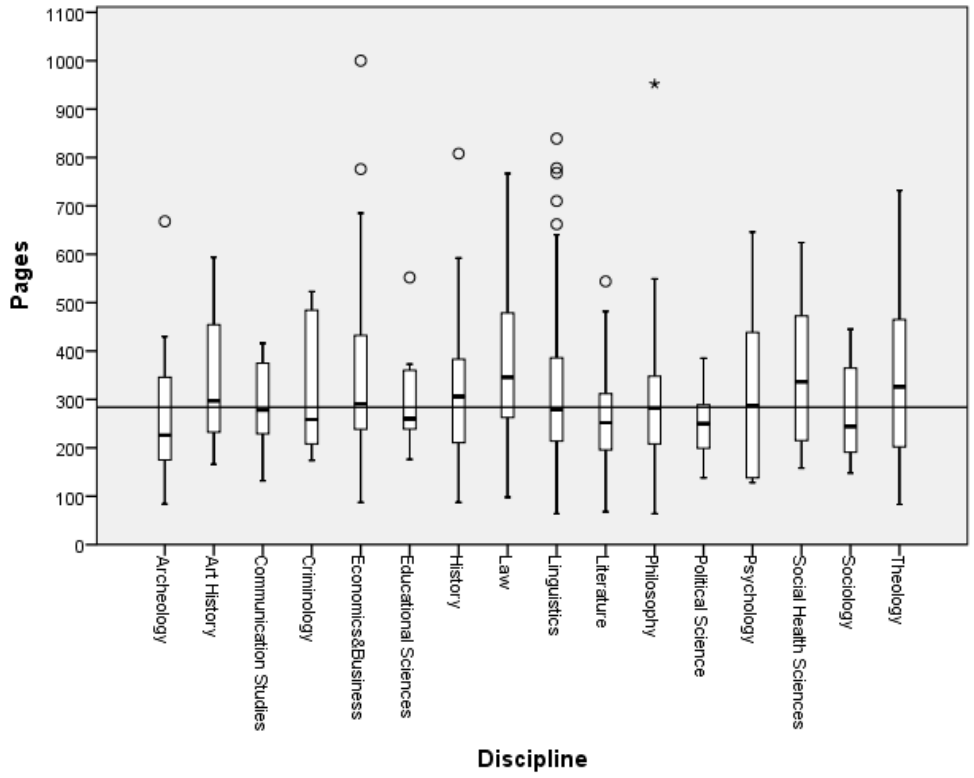

Figure 3: boxplot of monograph size for 16 disciplines

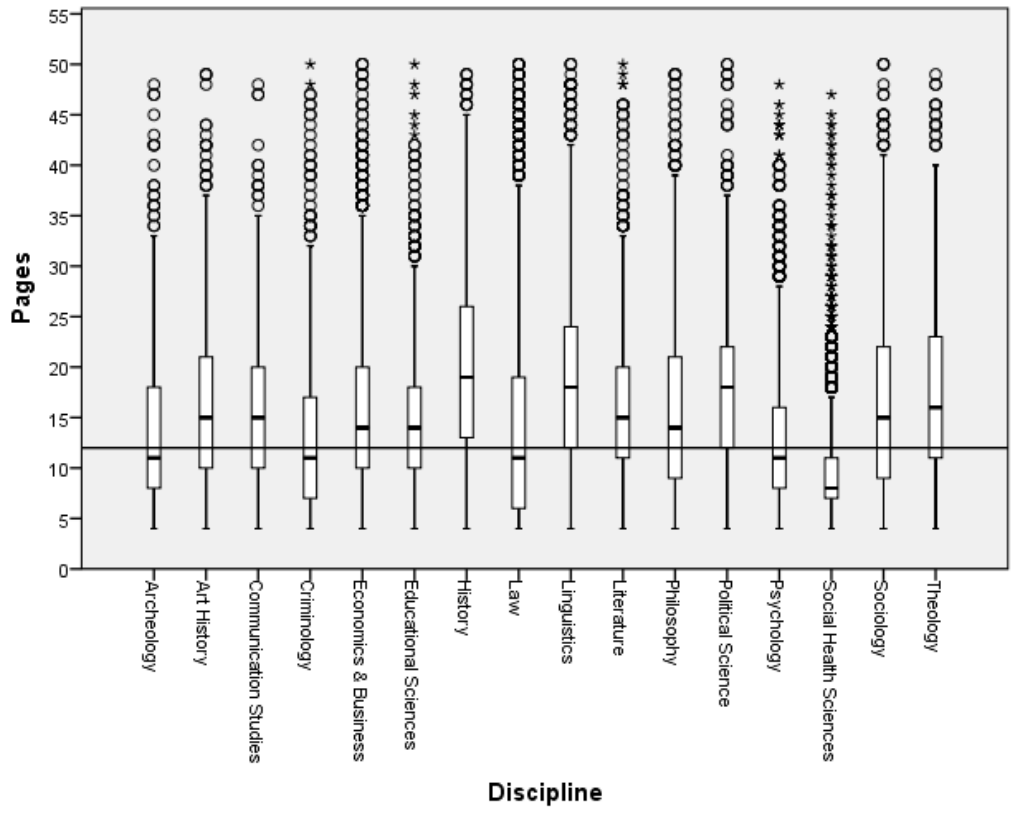

Figure 4: boxplot of article size for 16 disciplines

Table 4: size ratio between monographs and journal articles for 4 universities and 16 disciplines

University/Discipline	Monographs median # pages	Articles median # pages	Ratio
University 1	323.00	13.00	25:1
University 2	276.00	14.00	20:1
University 3	286.00	12.00	24:1
University 4	299.00	12.00	25:1
Archeology	226.00	11.00	20:1
Art History	297.00	15.00	20:1
Communication Studies	278.00	15.00	18:1
Criminology	258.50	11.00	23:1
Economics & Business	291.00	14.00	21:1
Educational Sciences	260.00	14.00	18:1
History	306.00	19.00	16:1
Law	346.00	11.00	31:1
Linguistics	279.50	18.00	15:1
Literature	252.00	15.00	17:1
Philosophy	282.00	14.00	20:1
Political Science	250.00	18.00	14:1
Psychology	288.00	11.00	26:1
Social Health Sciences	336.50	8.00	42:1
Sociology	244.00	15.00	16:1
Theology	326.00	16.00	20:1

Table 4 illustrates the substantial differences between disciplines of the size ratio between the medians for monographs and the medians for articles. For Social Health Sciences, the ratio is 42:1, for Law it is 31:1 and for Psychology it is 26:1. At the other end of the spectrum we find Philosophy (14:1), Linguistics (15:1), History (16:1) and Sociology (16:1). Such large differences do not exist between universities, where the highest size ratio (university 2) is 25:1 and the lowest (university 1) is 20:1.

Discussion

The higher weights for monographs compared to those for journal articles in PRFS making use of a bibliometric indicator are not often legitimized explicitly by the governments that have adopted them. However, depending on the way they are used, their impact on funding distribution and incentivizing academic publishing may be considerable. As pointed out in the introduction, the weighting schemes used in many current PRFS seem to have mostly been adopted from a common-sense estimate of and political compromise on reasonable ratios between publication types at an aggregate level. Such a pragmatic approach probably needed to be used at the time of introduction of these bibliometric indicators, as reliable and comprehensive bibliographic data for the SSH was mostly not yet available.

The rationale behind the adoption of publication type weights in PRFS does not seem to have been quality differentiation or a wish for changes in publication patterns, but rather the need to find a balanced approach to publication types in terms of the input needed to achieve a unit of output (i.e. a publication of a certain type). In other words, rather than merely counting production in terms of number of outputs, an attempt at taking into account productivity is made by using publication type weights. In the Flemish VABB-SHW database, part of the regional PRFS, the weight ratio between

monographs and journal articles is one of 4 to 1. However, the median size ratio between both publication types is one of almost 24 to 1. The implication of this comparison is simple: were we to contend that the Flemish weighting scheme is in fact adequate in its current form , it would imply that, on average, the input required for writing and publishing six pages of text for a peer reviewed monograph represents the same input as does the writing and publishing of one page for a journal article. Even if we allow for the possibility of a greater density of words on a journal article page, say for instance two times as dense, then a monograph page in the social sciences and humanities would still only count as one third of a journal article page. Although this ratio of between 6 and 3 pages to 1 may be surprising, the fact that the Flemish GP decided to keep the 4 to 1 weight ratio of monographs to journal articles seems in line with this finding.

A central issue is to what extent discrepancies between weight ratios and size ratios are really relevant in the context of funding allocation based on a publication indicator. Our analysis for Flanders shows that at the regional level, that of funding universities based on their share in the total publication output, the current weight ratio between monographs and journal articles is balanced. Universities in Flanders are all research intensive, and therefore do not show a meaningful difference either in the share of monographs in their output nor in the size ratio between monographs and articles. Therefore, from the point of view of the government and the universities, the weight ratio between these publication types in the indicator seems to allow for a balanced publication indicator in the PRFS. However, at the level of local, intra-university funding allocation models, where the weights of the publication indicator might also be used, the impact on funding distribution, recruitment and promotion decisions at faculties and departments may be much more substantial. in Flanders, as in other countries, disciplines in the social sciences and humanities show a significant variation in publication patterns (Engels et al., 2012; Puuska, 2014), with some disciplines being far more oriented towards book publications than others. At the level of research groups and individual authors, the problem becomes greater still, as even within single disciplines in the SSH authors can show widely varying publication patterns, including their preference for specific publication types (Verleysen & Weeren, 2016a, 2016b).

The guideline formulated by the Flemish GP in 2010 and updated thereafter to accompany the introduction of the VABB-SHW into the Flemish funding model explicitly states that the use of the database's counting scheme is 'solely intended for the distribution of funding between the universities and is *not* suitable for the assessment of individual researchers, research groups, and certainly not for cross-disciplinary comparisons' (https://www.ecoom.be/sites/ecoom.be/files/Begeleidende%20nota%20VABB-SHW%20VII%202017.pdf) (in Dutch). Clearly, this warning still holds true today, as using the counting scheme, including its publication type weights, in a simplistic way to make funding or promotion decisions at intermediate and lower aggregation levels is questionable to say the least. At intermediate levels, e.g., those of university faculties, the sizeable numbers and diversity of units, researchers and publications may appear to warrant or even require the use of publication output metrics for simplifying 'objective' comparisons of SSH department or unit performance. Relying on a counting scheme in line with the existing national funding model can therefore become a seductive decision-making aid for university administrators (Aagaard, 2015; Aagaard et al., 2015; Sauder & Espeland, 2009).

Conclusion

In conclusion, and as a possible or temporary alternative to the complications and expense of developing fine-grained local PRFS models (Aagaard, 2015), a case can be made for discussing and re-evaluating the current weight ratios between book and non-book publication types in PRFS at the

national or regional level. The available comprehensive bibliographic data for a growing number of countries allows for empirical analysis to substantiate political decisions on national publication indicators, including the weight ratios between publication types. At least in Flanders, a change of the weight of monographs in the regional PRFS would not result in a dramatic shift of funding between the universities. However, a change of the weight ratio between monographs and journal articles would, however, impact the balance between fields. At the level of institutional allocation and decision models supported by publication data gathered in the context of PRFS, great care in the use of publication weights will always be needed.

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References

Aagaard, K. (2015). How incentives trickle down: Local use of a national bibliometric indicator system. *Science and Public Policy*, 13. doi:10.1093/scipol/scu087

Aagaard, K., Bloch, C., & Schneider, J. W. (2015). Impacts of performance-besed research funding systems: the case of the Norwegian publication indicator. *Research Evaluation, 24*(2), 106-117.

Cronin, B., & La Barre, K. (2004). Mickey Mouse and Milton: book publishing in the humanities. *Learned publishing*, 17(2), 85-98.

Debackere, K., Arnold, E., Sivertsen, G., Spaapen, J. & Sturn, D. (2018). Performance-based funding of university research. European Commission: Directorate-general for Research and Innovation.

Engels, T. C. E., Ossenblok, T. L. B., & Spruyt, E. H. J. (2012). Changing publication patterns in the social sciences and humanities, 2000-2009. *Scientometrics, 93*(2), 373-390. doi:DOI 10.1007/s11192-012-0680-2

Engels, T.C.E., Istenic-Starcic, A., Kulczycki, E., Pölönen, J. & Sivertsen, G. (forthcoming, 2018). Are book publications disappearing from scholarly communication in social sciences and humanities? Aslib Journal of Information Management.

Giménez-Toledo, E., Manana-Rodriguez, J., Engels, T. C. E., Ingwersen, P., Pölönen, J., Sivertsen, G., Verleysen, F.T, Zuccala, A. (2016). Taking scholarly books into account. Current developments in five European countries. *Scientometrics, 107*(2), 685-699. doi:DOI: 10.1007/s11192-016-1886-5

Hammarfelt, B., & De Rijcke, S. (2015). Accountability in context: Effects of research evaluation systems on publication practices, disciplinary norms and individual working routines in the faculty of Arts at Uppsala University. *Research Evaluation, 24*(1), 63-77. doi:https://doi.org/10.1093/reseval/rvu029

Hammarfelt, B. (2017). Recognition and reward in the academy: Valuing publication oeuvres in biomedicine, economics and history. *Aslib Journal of Information Management, 69*(5), 607-623. doi.org/10.1108/AJIM-01-2017-0006

Hendel, R. (1998). *On book design*. New Haven, Conn: Yale University Press.

Hicks, D. (2013). One size doesn't fit all: on the co-evolution of national evaluation systems and social science publishing. *Confero, 1*(1), 67-90. doi:doi: 10.3384/confero13v1121207b

Kulczycki, E., Engels, T.C.E., Pölönen, J., Bruun, K., Dušková, M., Guns, R., Nowotniak, R., Petr, M., Sivertsen, G., Istenič Starčič, A. & Zuccala, A. (2018). Publication patterns in the social sciences and humanities: The evidence from eight European countries. *Scientometrics,* 116(1), 463-486. https://doi.org/10.1007/s11192-018-2711-0.

Kyvik, S. (1991). Productivity in Academia. Scientific Publishing at Norwegian Universities. Oslo: Scandinavian University Press.

Puuska, H.-M. (2014). *Scholarly publishing patterns in Finland - a comparison of disciplinary groups.* (Unpublished doctoral thesis), University of Tampere, Tampere.

Sauder, M., & Espeland, W. (2009). The disicpline of rankings: tight coupling and organizational change. *American Sociological Review, 74*, 63-82.

Linda Sīle, Janne Pölönen, Gunnar Sivertsen, Raf Guns, Tim C E Engels, Pavel Arefiev, Marta Dušková, Lotte Faurbæk, András Holl, Emanuel Kulczycki, Bojan Macan, Gustaf Nelhans, Michal Petr, Marjeta Pisk, Sándor Soós, Jadranka Stojanovski, Ari Stone, Jaroslav Šušol, Ruth Teitelbaum; Comprehensiveness of national bibliographic databases for social sciences and humanities: Findings from a European survey, *Research Evaluation*, rvy016, https://doi.org/10.1093/reseval/rvy016

Verleysen, F. T., Ghesquière, P., & Engels, T. C. E. (2014). The objectives, design and selection process of the Flemish Academic Bibliographic Database for the Social Sciences and Humanities (VABB-SHW). In W. Blockmans & al. (Eds.), *The use and abuse of bibliometrics* (pp. 115-125): Academiae Europaea; Portland Press.

Verleysen, F. T., & Rousseau, R. (2017). How the existence of a regional bibliographic information system can help evaluators to conform to the principles of the Leiden Manifesto. *Journal of Educational Media and Library Sciences, 54*(1), 97-109.

Verleysen, F. T., & Weeren, A. (2016a). Clustering by publication patterns of senior authors in the social sciences and humanities. *Journal of Informetrics, 10*, 254-272. doi:10.1016/j.joi.2016.01.004

Verleysen, F. T., & Weeren, A. (2016b). Mapping diversity of publication patterns in the social sciences and humanities. An approach making use of fuzzy cluster analysis. *Journal of Data and Information Science, 3*(1), 1-27.

Whitley, R. (2000). *The intellectual and social organization of the sciences*. Oxford University Press, Oxford.