

What is the cost of bibliometric games to taxpayers?

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Abstract

The paper shows how editors of hybrid journals, high IF OA-Journals and Low-IF OA-Journals behave in the conditions of the publication race going on under the slogan “Publish or Perish”, by launching “bibliometric and citation games”. The publishers from the first group, namely Elsevier, Springer and Wiley Publishers, charge an average \$3,000 for the Open Access - option (with the cost ranging from \$500 to \$5,000). For the editors from the second group, such as PLoS publishers, there has been obtained a simple balanced equation showing that if when moving from a subscription journal to an OA-Journal an editor intends to keep his incomes at the old level, the he should keep the annual average number of articles equal to the circulation of his subscription journal, and the cost of publishing one article should be equal to the annual subscription fee (about \$2,000-3,000). The publishers from the third group, included in Beall's List, charging far less for publishing an article (about \$200-300 or \$300-400) compared to High-IF OA-Journals, compensate for their losses by publishing a large number of articles in each issue of a journal. But in all three cases, the main burden falls on taxpayers.

Keywords

Bibliometric games; Citation games; Publication games; Publication race; Hybrid journals; Open Access Journals; Publish; Perish; Taxpayers

Introduction

When we talk about bibliometric games, we mean the manipulations to increase impact factors of journals, whereby pushing up subscription prices of journals, submission fees for papers in Open Access journals (OA-Journals), the cost of electronic deliveries of certain articles in subscription journals and the cost of Open Access-options in hybrid journals. Manipulations with impact factor are frequently called citation games. Searching this term in Google Scholar provided 32 responses (as of June 1, 2015). In this paper we can distinguish two types of manipulation: 1) citation cartels (Sundberg, 1983; Frank, 1999), when authors cite one another through mutual citation agreements regardless journals; 2) citation of certain journals (Sugimoto & Cronin, 2013). The first manipulation type was likely described by Jacob W.F. Sundberg (1983) for the first time, who wrote that “Citation Cartels” become prevalent in Swedish legal literature in the 70 s”. As for the second manipulation type, so as C.R. Sugimoto’s & B. Cronin (2013) noted that “editors, authors and reviewers use the peer review process as an opportunity to play citation games”. In this work, after analyzing 442 manuscripts and 927 referee reports submitted to the Journal of the American Society of Information, Science and Technology the authors show that

1. 75% of all manuscripts in the above sample contained at least one reference to JAS/S&T; on average, manuscripts referenced JAS/S&T thrice;
2. 30% of all manuscripts referenced the current JAS/S&T editor;
3. Nearly half of all manuscripts (48%) were assigned to at least one reviewer listed in the cited reference list of the manuscript (Sugimoto & Cronin, 2013).

Bibliometric games are closely linked with the publication race going on under the slogan “Publish or Perish”, and this concept is much wider than that of “citation games”. Google Scholar yields almost no relevant results for the key phrase “bibliometric games”, but the Advance Search mode gave us four such results. Thus in (Mustajoki, 2014), they write that “Good results in bibliometrics may create an imbalance between branches or fractions of research fields. An example on this is medicine, where genetics is the highest area today. It attracts the most talented students, has the journals with highest impact factors, and receives the largest share of research grants. Here bibliometrics is only part of the game, but it does an important role in the high prestige of this subfield medicine. As a result, some other subfields that are important from the point of view of society suffer from the situation (Mustajoki, 2014).

In the monograph (Bellis, 2009), besides the term “bibliometric games”, the author also uses “publication games” and “citation games”. He writes that “If bibliometric game is played according to its rules, namely if one admits that the core of truly important literature continues to thicken around a small set of highly esteemed and heavily cited journals; if nothing in a scientific career succeeds in competing with the importance of a publication in top journals; then the access problem should be kept methodologically distinct from the impact problem” (Bellis, 2009).

In the above mentioned papers, the criticism of “bibliometric games” is quite gentle. At the same time, to our question that we put in the title, the answer seems to have been given by George

Monboit in 2011 in his article with a striking title “The Lairds of Learning. How did academic publishers acquire these feudal powers?” published in the Guardian. As he wrote: “You might resent Murdoch’s paywall policy, in which he charges £1 for 24 hours of access to the Times and Sunday Times. But at least in that period you can read and download as many articles as you like. Reading a single article published by one of Elsevier’s journals will cost you \$31.50. Springer charges Eur34.95, Wiley-Blackwell, \$42. Read ten and you pay ten times. And the journals retain perpetual copyright. You want to read a letter printed in 1981? That’ll be \$31.50. Of course, you could go into the library (if it still exists). But they too have been hit by cosmic fees. The average cost of an annual subscription to a chemistry journal is \$3,792. Some journals cost \$10,000 a year or more to stock. The returns are astronomical: in the past financial year, for example, Elsevier’s operating-profit margin was 36% (£724m on revenues of £2 billion). They result from a stranglehold on the market. Elsevier, Springer and Wiley, who have bought up many of their competitors, now publish 42% of journal articles” (Monbiot, 2011).

But in his article, George Monboit left out one more important revenue source of huge commercial publishers of subscription journals – selling Open Access-options, not to mention the incomes of publishers of OA-journals.

Before we dwell on the sources of income for large publishers of subscription and OA-Journals, let us look at how the international Open Access movement started. Fifteen years ago, when this movement was conceived by enthusiastic scholars Stevan Harnad and Tim Brody, librarians were concerned that they could hardly afford the cost of the existing subscriptions to the most important scientific journals. At that time, the average cost of a subscription to the journal was \$1,000 and it was growing at a rate of 12% per year (for the UK). But after the launch of the movement, when scientists and librarians began to come up with various initiatives concerning open access to scientific knowledge – The Budapest Open Access Initiative, Bethesda Statement on Open Access Publishing, The Berlin Declaration on Open Access, The Scottish Declaration on Open Access, etc., it was large commercial publishers who began to protest. For instance, the largest publishing house “Elsevier” appealed to the fact that the Open Access movement posed a threat to their incomes and to tens of thousands of employees across the globe. But after a while, large commercial publishers had an idea of how to take advantage of the Open Access movement and get extra income from it. They proposed a concept of hybrid journals, when traditional subscription journals would offer Open Access-options through which readers would be able to get instant access to any article, the authors of which wished to do so, but that would come at an extra payment of.

Like George Monboit, when considering the sale of electronic copies of articles and journal subscriptions, we will look at such options for the three major commercial publishers of scientific journals, taking the official information from their sites (as of January 2016).

On the whole, in this paper we will show what new opportunities for obtaining extra revenues the Open Access movement created for publishers of scientific periodicals at the beginning of XXI century.

Materials and Methods

The article studies the revenue types of commercial publishers of scientific periodicals in an age of Open Access: 1. Hybrid journals and their Open Access-options; 2. High-IF Open Access journals and their revenues; 3. Low-IF Open Access journals (predatory journals) and their revenues. In the first case, we look at the costs of Open Access-options of Elsevier, Springer and Wiley publishers. In the second case, we study high income-IF Open Access journals, such as seven PLoS journals. In addition, when developing a publishing strategy to convert a subscription journal to an Open Access journal, it is suggested that the balance approach be used, which allows the publisher to keep the previous subscription revenues. In the third case, we investigate revenues of typical low-IF Open Access journals. At the end of the article, a set of measures is proposed to resist the “Publish or Perish” doctrine and to stop bibliometric games.

Results and Discussion

In the paper, there will be made an opportunity analysis of gaining extra revenues by commercial publishers, after the launch of the Open Access movement: hybrid journals and their Open Access-options; high-IF Open Access journals and their revenues; low-IF Open Access journals (predatory journals) and their revenues.

Hybrid Journals and Their Open Access - Options

The site of Elsevier Publishing House states that authors can post their articles in an open access mode to more than 1,600 high-quality subscription journals supporting open access publishing. The Articles are marked with CrossMark ®. And to use this option an author, his institution or funder has to pay 500 to \$5,000. It is also know that Elsevier has agreements with funds, including Welcome Trust and Research Councils UK, which expenses connected with providing open access to articles.

Open choice-option offered by Springer publisher allows authors to publish their papers in Open Access in most of its subscription journals. The cost of this option is fixed at \$3,000. The same cost of the Open Access - option we can see in over 1,300 journals published by Wiley. As we can see, the annual subscription to one magazine and offering free access to an individual article cost almost the same. But what makes the situation worse is that all these costs are to be borne by taxpayers.

So in the past there were only subscription journals, which increased the cost of their subscription dramatically at the end of the XX century; in the Internet era, they began to sell additional electronic copies of their articles, and some later they came up with an option of open access for the price of an annual subscription to a journal. This is absolutely unacceptable.

High-IF Open Access Journals and Their Revenues

To counterbalance subscription journals of major commercial publishers, Open Access movement, in addition to Open Access repositories, came up with the initiative to launch OA-Journals with a business model according to which authors pay for getting their articles

published. But quite farseeing publishers of such journals, having selected the most “trendy” fast-developing research fields, managed to quickly get relatively high impact factors, after which they also decided to follow major commercial publishers of traditional journals and in the end they charged authors to publish one article, this price being close to an annual subscription to traditional top-rated journals. In order to look more thoroughly into this issue, we have made up Table 1, where we put all the main characteristics of the PLoS, the most prestigious family of OA-Journals, whose founders used previously to criticize most publishers of subscription journals for their expensive subscriptions and who were among those who had initiated the Open Access movement.

Table 1. Main characteristics of the PLoS journals, January 2015

Journal Title	Publication fee of one article, US \$	Journal IF, 2013/2014	Total number of articles per year
PLoS Biology	2,900	11.771	201
PLoS Medicine	2,900	15.253	118
PLoS Computational Biology	2,250	4.829	534
PLoS Genetics	2,250	8.167	842
PLoS Pathogens	2,250	8.057	731
PLoS Neglected Tropical Diseases	2,250	4.489	605
PLoS One	1,350	3.534	31,496

Table 1 shows that an increase in the journal’s impact factor value brings about an increase in the publishing fee per one article; and low-cost journals, the lower fees are offset by a large number of articles published per year. While with subscription magazines all the “inflated” costs of their publication and dissemination were incurred by libraries, in case of OA-Journals those are incurred by the authors of articles, who, in turn, ask their institutions and funders for money, as nobody would pay 2,000-3,000 dollars per an article from their own pocket. Thus, in any case, the ultimate excessive burden of paying these expenses will lie heavily on taxpayers.

We also wanted to see where the publication fee for publishing an article in open-access journals amounting to \$2000-3000 came from. Let us assume that a subscription journal wants to change its status for an Open Access one, then, in order not to lose their subscription revenues, it must act in accordance with a simple balanced equation:

$NS = nP$, where N is a journal circulation, S is an annual subscription fee, n is the average annual number of articles in an OA-Journal, P is a publication fee for one article. As in reality, we can see that in a large segment of subscription and OA-Journals $S \approx P \approx \$2000-3000$, hence $N \approx n$. Thus, when moving his journal from a subscription journal section to an Open Access section, a publisher should keep the annual average number of articles published in the OA-Journal to match the circulation number of the subscription journal. And publishers of high-IF OA-Journals seem to stick to this logic when developing their business plans.

Low- IF Open Access Journals and Their Revenues

The other extreme situation can be seen in the market of low-IF OA-journals. As part of the Open Access movement and in the wake of publication race, there appeared a lot of OA-Journals which, upon entering the Scopus database, began also to earn a lot of money by publishing a

huge number of articles (up to 1,000 articles in one special issue) at dumped prices (US \$300-500), without proper peer review or editing. Those journals actually turned into repositories of unsorted articles. Few will ever look through such journals, as they usually include diverse articles which can take up over ten thousand pages per a journal. In this case the very idea of a journal is lost. At the same time, articles from such journals are easily found via Google Scholar, and if they are interesting and relevant, they will be well downloaded and cited. Thus, in the era of Open Access, the traditional understanding of a journal and its prestige are downplayed (Moskovkin & Serkina, 2016).

In 2014, the main register of OA-Journals – The Directory of Open Access Journals (DOAJ) – got concerned with the quality of OA-Journals, as their number in this register had reached 10,000. Since 2013, there has been going on a serious examination of these journal followed by their re-registration. The number of mandatory questions when filling in a re-registration form has increased from 6 to 58. It should be noted that most publishers of low- IF OA-Journals have been added to Beall's List of predatory publishers, whose journals may be delisted from the Scopus database. However, the process of making up this list does not seem transparent enough.

It can be calculated that the revenue of the most expensive PLoS Genetics (Table 1), amounting to US \$ 1,894,500 (US \$2,250 per article multiplied by 842 articles), is comparable with the revenues of three Special Issues of predatory journals (3×500 (US \$/per article) * 1000 articles = US \$1,500,000). In general, the above mentioned processes of taxpayers' money flow into private hands are shown in Figure 1. (Moskovkin & Serkina, 2016).

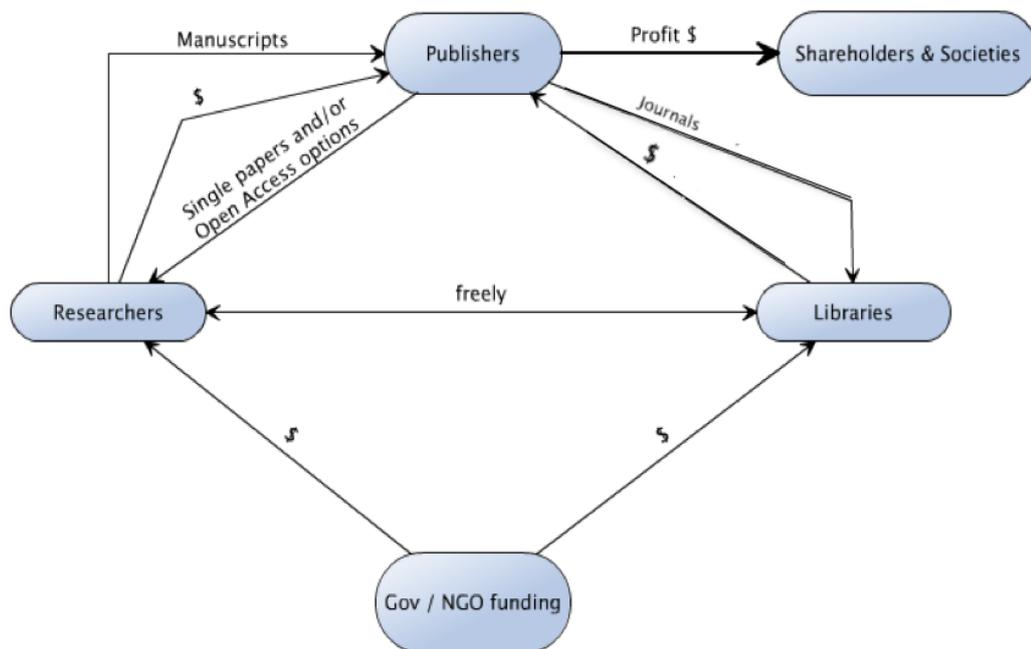


Figure 1. Circle of production, distribution and consumption of scientific information in material and financial flows

Measures to Resist the “Publish or Perish” Doctrine and to Stop Bibliometric Games

It is time to put an end to this harmful practice by, for instance, adopting a declaration to boycott those publishers who set an annual subscription fee to their journals of over \$1,000 and the cost of the Open Access option and a publication fee for publishing one article of over \$500. This declaration, along with the DORA, would become a powerful leverage to restrain the publication race under the motto “*Publish or Perish*” and to stop bibliometric games.

An ‘inflated’ impact factor of journals in the global science is the same as an “inflated” dollar in the global economy. If the majority of developing countries abandon the dollar in their mutual trade and mutual settlements of accounts, there will follow a sudden collapse of the global economy and its institutions. If most of the same countries refuse from the impact factor of the journal when evaluating the results of their research and planning scientists’ careers, it will lead to a rapid collapse of the “*Publish or Perish*” doctrine and monopolist-publishers of scientific periodicals acting in this sphere.

The world should encourage multi-polarity not only in economics and politics, but also in science. We can now witness the uni-polar model of the Anglo-American science leads only to instability of the global and national scientific systems. In the same way as biodiversity is vital for the sustainable ecological and economic development in a globalized world, countries and certain territories certain, a cultural and linguistic diversity is important for the development of scientific systems. English cannot have a monopoly to present research findings, especially if there are adequate online translation tools.

The slogan we proposed instead of “*Publish or Perish*” - “*Publish Best or not Publish at All*” - should not be based on an exhausting publication race, but rather on thorough and fundamental research, as well as on a thoughtful and unhurried way of writing articles.

Conclusion

Thus, having studied the problem of “bibliometric games”, which is closely linked with the publication race going on under the slogan “*Publish or Perish*”, we have shown how publishers of hybrid journals, high- IF OA-Journals and low-IF OA-Journals behave in these conditions. In the first case, with Elsevier, Springer and Wiley Publishers, as it was shown, the cost of the Open Access - option ranges from \$500 to \$5,000. In the second case, there has been obtained a simple balanced equation showing that if when moving from a subscription journal to an OA-Journal an editor intends to keep his incomes at the old level, then he should keep the annual average number of articles equal to the circulation of his subscription journal, and the cost of publishing one article should be equal to the annual subscription fee (about \$2,000-3,000). In the third case, low-IF OA-Journals, charging far less for publishing an article (about \$300-500) compared to high-IF OA-Journals, compensate for their losses by publishing a large number of articles in each issue of a journal. But in all three cases, the main burden falls on taxpayers.

Therefore, certain measures to resist the “*Publish or Perish*” doctrine and to stop bibliometric games have been proposed, which can be grouped as follows:

1. to boycott those publishers who set an annual subscription fee to their journals of over \$1,000 and the cost of the Open Access - option and a publication fee for publishing one article of over \$500;
2. to refuse from the Impact Factor of a journal when assessing scientific results and planning scientific careers (it is what is suggested in DORA);
3. to support a multipolar scientific community with its cultural and linguistic diversity; and
4. to refuse from the slogan “*Publish or Perish*” by substituting it with the slogan “*Publish Best or Do Not Publish*” (Moskovkin et al., 2014) or “*Publish Best in Order Not to Perish*” (Moskovkin & Serkina, 2016).

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