

First submission

Please read the **Important notes** below, the **Review guidance** on page 2 and our **Standout reviewing tips** on page 3. When ready [submit online](#). The manuscript starts on page 4.

## Important notes

### Editor and deadline

Yarden Katz / 15 Jul 2017

### Files

2 Figure file(s)

2 Table file(s)

Please visit the overview page to [download and review](#) the files not included in this review PDF.

### Declarations

No notable declarations are present



Please read in full before you begin

## How to review






When ready [submit your review online](#). The review form is divided into 5 sections. Please consider these when composing your review:

- 1. BASIC REPORTING**
- 2. EXPERIMENTAL DESIGN**
- 3. VALIDITY OF THE FINDINGS**
4. General comments
5. Confidential notes to the editor

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To finish, enter your editorial recommendation (accept, revise or reject) and submit.

### BASIC REPORTING

-  Clear, unambiguous, professional English language used throughout.
-  Intro & background to show context. Literature well referenced & relevant.
-  Structure conforms to [PeerJ standards](#), discipline norm, or improved for clarity.
-  Figures are relevant, high quality, well labelled & described.
-  Raw data supplied (see [PeerJ policy](#)).

### EXPERIMENTAL DESIGN

-  Original primary research within [Scope of the journal](#).
-  Research question well defined, relevant & meaningful. It is stated how the research fills an identified knowledge gap.
-  Rigorous investigation performed to a high technical & ethical standard.
-  Methods described with sufficient detail & information to replicate.

### VALIDITY OF THE FINDINGS

-  Impact and novelty not assessed. Negative/inconclusive results accepted. *Meaningful* replication encouraged where rationale & benefit to literature is clearly stated.
-  Data is robust, statistically sound, & controlled.
-  Conclusions are well stated, linked to original research question & limited to supporting results.
-  Speculation is welcome, but should be identified as such.

The above is the editorial criteria summary. To view in full visit <https://peerj.com/about/editorial-criteria/>

## 7 Standout reviewing tips

3



The best reviewers use these techniques

### Tip

### Example

**Support criticisms with evidence from the text or from other sources**

*Smith et al (J of Methodology, 2005, V3, pp 123) have shown that the analysis you use in Lines 241-250 is not the most appropriate for this situation. Please explain why you used this method.*

**Give specific suggestions on how to improve the manuscript**

*Your introduction needs more detail. I suggest that you improve the description at lines 57- 86 to provide more justification for your study (specifically, you should expand upon the knowledge gap being filled).*

**Comment on language and grammar issues**

*The English language should be improved to ensure that your international audience can clearly understand your text. I suggest that you have a native English speaking colleague review your manuscript. Some examples where the language could be improved include lines 23, 77, 121, 128 - the current phrasing makes comprehension difficult.*

**Organize by importance of the issues, and number your points**

1. Your most important issue
2. The next most important item
3. ...
4. The least important points

**Give specific suggestions on how to improve the manuscript**

*Line 56: Note that experimental data on sprawling animals needs to be updated. Line 66: Please consider exchanging "modern" with "cursorial".*

**Please provide constructive criticism, and avoid personal opinions**

*I thank you for providing the raw data, however your supplemental files need more descriptive metadata identifiers to be useful to future readers. Although your results are compelling, the data analysis should be improved in the following ways: AA, BB, CC*

**Comment on strengths (as well as weaknesses) of the manuscript**

*I commend the authors for their extensive data set, compiled over many years of detailed fieldwork. In addition, the manuscript is clearly written in professional, unambiguous language. If there is a weakness, it is in the statistical analysis (as I have noted above) which should be improved upon before Acceptance.*

# Growth of hybrid open access, 2009-2016

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Hybrid Open Access is an intermediate form of OA, where authors pay scholarly publishers to make articles freely accessible within journals, where reading the content otherwise requires a subscription or pay-per-view. Major scholarly publishers have in recent years started providing the hybrid option for the vast majority of their journals. Since the uptake usually has been low per journal and scattered, it has been very difficult to obtain an overview of how common hybrid articles are. This study, using the results of earlier studies as well as a variety of methods, measures the evolution of hybrid OA over time. The number of journals offering the hybrid option has increased from around 2,000 in 2009 to almost 10,000 currently. The number of individual articles has in the same period grown from an estimated 8,000 in 2009 to 45,000 in 2016. After a slower start, the growth in article numbers has clearly increased since 2014, after some major research funders in Europe started to introduce new centralized payment schemes for the OA charges (APCs).

Growth of hybrid open access, 2009-2016

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Abstract

Hybrid Open Access is an intermediate form of OA, where authors pay scholarly publishers to make articles freely accessible within journals, **where** reading the content otherwise requires a subscription or pay-per-view. Major scholarly publishers have in recent years started providing the hybrid option for the vast majority of their journals. Since the uptake usually has been low per journal and scattered, it has been very difficult to obtain an overview of how common hybrid articles are. This study, using the results of earlier studies as well as a variety of methods, measures the evolution of hybrid OA over time. The number of journals offering the hybrid option has increased from around 2,000 in 2009 to almost 10,000 **currently**. The number of individual articles has in the same period grown from an estimated 8,000 in 2009 to 45,000 in 2016. After a slower start, the growth in article numbers has clearly increased since 2014, **after** some major research funders in Europe started to introduce new centralized payment schemes for the OA charges (APCs).

# Introduction

Ever since the emergence of the world wide web, a quarter of a century ago, academics and scholarly publishers have experimented with different forms of Open Access (OA), a radically new business model for the dissemination of research publications. The one common characteristic of all different forms of OA is that the basic building brick of modern research reporting, the peer reviewed article, is available to anybody with Internet access free of charge and access barriers. The different variations of OA include immediate and delayed access, access just to read versus access with extensive reuse rights. OA can be provided with no charges to the authors and their institutions, or publishing charges (usually abbreviated APCs) can be levied to fund the publishing. In addition to the articles themselves being made OA by the publishers (gold OA), it is also possible that the authors legally upload manuscript copies to institutional or subject-specific repositories (green OA). And as with many other types of web content, illegal copies can be found for many articles behind subscription paywalls

Most of the OA content can thus be found through channels which are clear alternatives to subscription journals, or as substitutes for those in the form of manuscript version freely available. But there is one variation, which big commercial and society publishers have eagerly embraced in the last few years, the hybrid OA journal. A hybrid journal is a traditional journal, for which readers need a subscription (or where readers can pay to view individual articles). This essentially means that the revenue for the publisher comes mainly from readers or the organizations they work for. But in addition the journal offers authors the possibility to open up their individual article as OA immediately upon publication, against the payment of a surcharge similar to the APCs paid in many gold OA journals. The vast majority of journals from the leading scholarly publisher are nowadays hybrid, and the number of journals is close to 10,000. Due to the price level of typically around 3,000 USD, which by many authors and their institutions is perceived as high, the actual uptake of the option has however so far remained low, on average only a couple of percentages of eligible articles. There are however signs that the uptake is on the rise.

The first documented hybrid journals were published by the entomological society of America in the late 1990s (Walker, 1998). The APCs were low by today's standards, a couple of hundred dollars. David Prosser wrote an interesting analysis in 2003, where he outlined hybrid journals as a risk free transition path towards full OA (Prosser, 2003). Then in a bold move in 2004, Springer announced the hybrid option "Open Choice", for their full portfolio of over 1,000 subscription journals (Springer, 2004). Springer was also the first publisher starting to experiment with deals bundling together subscription e-licenses for whole universities or consortia, with "free" hybrid OA for articles from authors at these universities (Albandes, 2009).

Starting from around 2010 most big publishers have announced similar schemes and the number of journal offering the hybrid possibility has dramatically increased. Starting a hybrid program for established journals is very low cost, since the investment cost of making the necessary changes to the web submission and publishing systems can be spread over hundreds of journals sharing the same infrastructure. It is also essentially risk-free, in contrast to starting new full OA journals or converting journals, since the revenue is

already there. Many academics and research funders have been quite critical of academics paying twice for the same content, a practice pejoratively named “double-dipping” (Cressey, 2009). Publishers have tried to reassure critics that this is not the case, and that they will decrease subscription prices in proportion to the hybrid uptake. But monitoring this has been very difficult due to the lack of data on the uptake. Publishers have different ways of “tagging” hybrid articles, and counting them manually in almost 10,000 journals is a daunting task. In addition, it would be very useful to see if the hybrid strategy shows any signs of becoming the road towards full conversion to OA that David Prosser had outlined in 2003 (Prosser, 2003).

The aim of this study was consequently to study the global number of journals offering the hybrid option and in particular the total number of articles published in them using the option. Due to the fact that the author of this article has carried out two earlier studies of a similar nature a further aim was to provide reliable estimates of the longitudinal development of both the number of journals and articles since 2009.

## Methods

The two aggregate parameters for understanding the evolution of over time of the hybrid OA market, are the number of journals offering the hybrid option and the total number of hybrid articles published yearly. Additional interesting parameters include the share of eligible articles for which the the hybrid option has been used.

It is very difficult to study the number of articles published in hybrid OA journals. Firstly, there is no general index of hybrid journals, so even identifying which journals are hybrid is challenging. The leading commercial publishers tend in particular to offer this option for the journals they own themselves, but the situation is less clear for journals that they publish on behalf of scholarly societies. Secondly there is no standardized way in which hybrid articles are labelled. Publishers indicate hybrid articles in varying ways in tables of content, and a few have search functions across their journal portfolios, which allow selectively picking out hybrid or OA articles. Manually browsing the tables of content of around 10,000 hybrid journals in order to find the hybrid articles for even a sample of the more than one million “eligible” articles published each year is just not feasible.

One option is to find the total numbers from published reports. Many publishers have announced the number of journals on their websites, and occasionally they have announced how many hybrid articles they published in a given year for instance in press releases. Another option is to count articles using some automated means from the journal websites.

In this study the evolution from 2009 until 2016 is studied, using data from a number of published studies as well as new data collected for this study. The earlier studies are listed in table 1.

Table 1. Earlier studies incorporated in the results

The SOAP study was carried out with EU funding by a consortium of partners which also included publishers (Dallmeier-Tiessen et al, 2010). The scope of the study was open access broadly, but the results also included an estimate of the situation concerning hybrid journals and articles, based partly on data obtained directly from publishers. My own study of the evolution from 2009 to 2011 followed in the footsteps of the SOAP study, and also used a mixed method of searching publishers' websites and asking them directly for numbers (Björk, 2012). The study that I carried out together with Mikael Laakso focused more on finding out the uptake level in individual hybrid journals, but it also produced overall article figures for 2011-2013 (Laakso & Björk, 2016). The method differed from the other studies, since it was based on automated identification of hybrid articles, using for instance the copyright labelling of such articles. The RIN study focused on the OA situation for UK authors, but also produced comparative global figures (RIN, 2015).

For this study 15 leading publishers were asked to provide the hybrid article numbers for 2014-2016. In order to increase the chance of getting answers, we promised only to report the total figures, not the figures for individual publishers. For this reason, the results are presented on the aggregate level only..

Twelve of the publishers provided the article numbers. For two of the publishers it was impossible to find out an appropriate contact person, and one publisher refused to provide the data. For these three the figures were estimated from their websites using browsing and/or using the search facilities of the publishing platform in question. In a follow-up query seven of the fifteen publishers also provided the current number of hybrid journals. For the rest it was easier to obtain the journal numbers directly from their websites.

In addition to these, five further publishers, from which the Open Access Scholarly Publishers Association had independently obtained data, were included in the study. The names of all 20 publishers are listed below in table 2. PNAS is a single journal published by the US National Academy of Sciences, rather than a publisher, but it has been included in the list, since it has a high uptake level of almost a third of articles, and publishes around 1000 hybrid articles per year.

Table 2. The hybrid publishers included in the study

The article numbers of 2009 and 2011 were taken from (Björk, 2012) and those of 2014-2016 were collected in this study.

The article numbers for all 20 publishers for the missing years 2010, 2012 and 2013 were estimated in the following way. For the years 2009, 2011, 2014-2016, for which data for a larger set of publishers was at hand, it was possible to calculate the share of the big five of all studied publishers. That share has over the years varied between 68 and 80 %. Total article number counts were available for the biggest five publishers for 2010, 2012 and 2013 (Laakso & Björk, 2016). These numbers were divided by that percentage share and multiplied by 100 using the average of 2009 and 2011 (71,4 %) for the 2010 estimate, and the average of 2011 and 2014 (73,6%) for the 2012 and 2013 estimates.

It is not possible to retrospectively estimate the growth in the number of journals on a year to year basis. But the existing earlier estimates can together with the new data collected be



combined to provide an approximate timeline. The SOAP study (Dallmeier-Tiessen, 2010) and the earlier study by this author (Björk, 2012) provide figures for October 2009 and February 2012. The RIN study (2016) provides a figure for approximately the end of 2014. The data for this study was collected in June 2017.

There are many smaller publishers who also have hybrid journals, so the results we report must be understood as lower boundaries. For instance, the RIN study (2015) provides an estimate for the percentage (49 %) of all Scopus indexed journals which were hybrid in 2014, which would indicate around 11,000 journals. This can be compared to their estimate for the leading 32 publishers in whose journals UK authors published, which was 8,230. Due to the difficulty in data collection, and since it would be difficult anyway to obtain historical data for the early years, no attempt was made in this study to go beyond the 20 publishers listed.

## Results

The evolution of the number of journals offering the hybrid option is shown in Figure 1. The evolution of the number of journals can only be given for four discrete points, indicated in the graph.

Figure 1. The evolution of the number of hybrid journals 2009-2017

The figure shows a period of rapid growth between 2009 and 2014, after which the trend has slowed down, probably because most big publishers have already converted the majority of their subscription journals to hybrid journals, reaching a saturation point. All the estimate of this study is that twenty leading publishers had 9,678 hybrid journals in June 2017. Data in table 2 of the RIN study (RIN, 2015, p. 17), can be used to calculate that at the end of 2014 73 % of the journals of the big 5 publishers were hybrid.

The evolution of the number of articles published in these journals (Figure 2) also shows a sustained growth, but a slightly different pattern.

Figure 2. The evolution of the number of hybrid articles 2009-2016

Compared to the number of journals, the growth rate of articles was slower in the period 2009-2013, But from 2014 onwards, the growth has been faster, meaning that the average number of hybrid articles per journal offering the option has started to grow. By 2016 the total number of articles had reached an estimated 44,395.

# Discussion

As long as the authors of **potential** hybrid articles have had to secure the funding of the APCs from personal or departmental funds, **alternatively** external research grants, the uptake levels have remained **very low for the vast majority of journals**. The **rather uniform price level of around 3,000 USD** for the extra feature of open access to an article which in any case will be published, seems to most authors like an expensive luxury, unless the journal in question is a very prestigious one. There are many journals with zero articles per year, and the average share for journals with at least one hybrid article per year was only 3,8 % during the period 2011-2013 (Laakso & Björk, 2016). But there are interesting cases of journals with a high uptake which have been able to use hybrid as a stepping stone to converting into full OA journals. For instance, Nature Communications was launched as a hybrid and electronic only journal in 2010 and converted to full OA from the start of 2016.

The accelerating growth in hybrid article numbers in 2014-2016 is in addition to the increased number of journals, probably mainly due to two major changes in the funding infrastructure. **Firstly, several leading research funders setting up of centralized funds for paying APCs and secondly a new type of consortial electronic subscription licenses which also include the payment of hybrid APCs.**

The centralized funding scheme makes a break with the earlier practice of making APCs (both for full OA and for hybrid journals) allowable costs in externally funded research grants. That idea has not worked well, because it essentially means that if a researcher does use grant funds for APCs, that correspondingly decreases uses for other items, such as a research assistants or conference trips. The new scheme was pioneered by Wellcome Trust and received considerable UK governmental support following the Finch report (Finch, 2013). In the **funding of research funding** organizations like the UK research councils and the Austrian Science Fund (FWF), the money is separately budgeted for just APCs on a central level, and payment is more or less automatic. An additional advantage is that the transaction costs of handling APC payments is usually much lower, than in the allowable cost option.

After the introduction of such mechanisms several research funders have started to publish breakdowns of their APC expenditures. For instance Jisc, FWF and Wellcome Trust together funded 5,612 hybrid articles in 2014 and 5,912 articles in 2015 (Jahn & Tullney, 2016). Some of these funders have, however, been alarmed by the fact that they are paying more APCs for hybrid than full OA journals, and at higher prices. For this reason, they commissioned a report in 2014 outlining different ways for capping APC levels, in particular for hybrid journals (Björk & Solomon 2014).

The other option, an extension to the subscription e-license to also include APCs for OA articles in hybrid journals, which had been piloted already around 2008-2009 by Springer, is now again becoming popular. Many national library consortia are very keen to negotiate such deals, which also an increasing number of major publishers seem willing to make. The boost to hybrid uptake is demonstrated by for instance the Springer "Compact" deal with a consortium representing 32 Swedish universities (Neidenmark 2016). In 2015 only 157

230 articles with Swedish corresponding authors were published in Springer hybrid journals.  
 231 But in 2016 after the new deal was in place, 236 articles in Springer subscription journals  
 232 automatically became OA already in the first three months of the year. **That would mean an**  
 233 **estimated almost 1,000 articles per annum.**

234 Due to institutional arrangements such as these the uptake of hybrid OA has started to **to**  
 235 vary a lot between countries. Some European countries with centralized research funding  
 236 and strong OA strategies, seem to be leading the development. For instance, UK authors in  
 237 2014 published 6,4 % of their Scopus-indexed articles as hybrid OA, when the  
 238 corresponding global average was 2,4 % (RIN, 2014).

239  
 240 Hybrid OA publishing is just a part of the overall changing OA picture. Another important  
 241 type of gold OA publishing consists of the OA megajournals, which have rapidly emerged in  
 242 the wake of the phenomenal success of PLOS ONE (Spezi et al, 2016). Starting megajournals  
 243 is for major established publishers another strategic way of gradually increasing their OA  
 244 presence, a way in which they can leverage their prestige and infrastructure. Although the  
 245 number of such journals is low, their combined article volumes and growth rate is quite  
 246 similar to hybrid OA. Our on-going research shows that the article volume of 16 leading  
 247 megajournals has increased from 6,913 in 2010 to 56,247 in 2016 (extended from Björk,  
 248 2015). Together hybrid OA and megajournal articles constituted around 5 % of all scholarly  
 249 articles indexed in Scopus in 2016 (our ongoing research). A large share of the growth of  
 250 gold OA in the past five years has thus in fact come within these two categories.



## 251 Acknowledgements

252  
 253 This study would have been difficult to carry out without the co-operation of the twelve  
 254 publishers, which were kind enough to provide the hybrid article counts for 2014-2016.  
 255 Very useful additional data was provided by Claire Redhead, from the Open Access  
 256 Scholarly Publisher's Association.

## 257 References

- 258  
 259 **Walker T. 1998.** Free internet access to traditional journals. *American Scientist* **86**(5): 463-  
 260 471. <http://www.jstor.org/stable/27857100>  
 261  
 262 **Prosser D. 2003.** From here to there: a proposed mechanism for transforming journals  
 263 from closed to open access. *Learned Publishing* **16**(3): 163-166.  
 264 <http://onlinelibrary.wiley.com/doi/10.1087/095315103322110923/epdf>  
 265  
 266 **Springer. 2004.** Open Choice: Springer adds new publication model. Press Release, 1st July  
 267 2004.  
 268 [http://www.springer.com/about+springer/media/pressreleases?SGWID=0-11002-2-](http://www.springer.com/about+springer/media/pressreleases?SGWID=0-11002-2-803577-0)  
 269 [803577-0](http://www.springer.com/about+springer/media/pressreleases?SGWID=0-11002-2-803577-0)  
 270

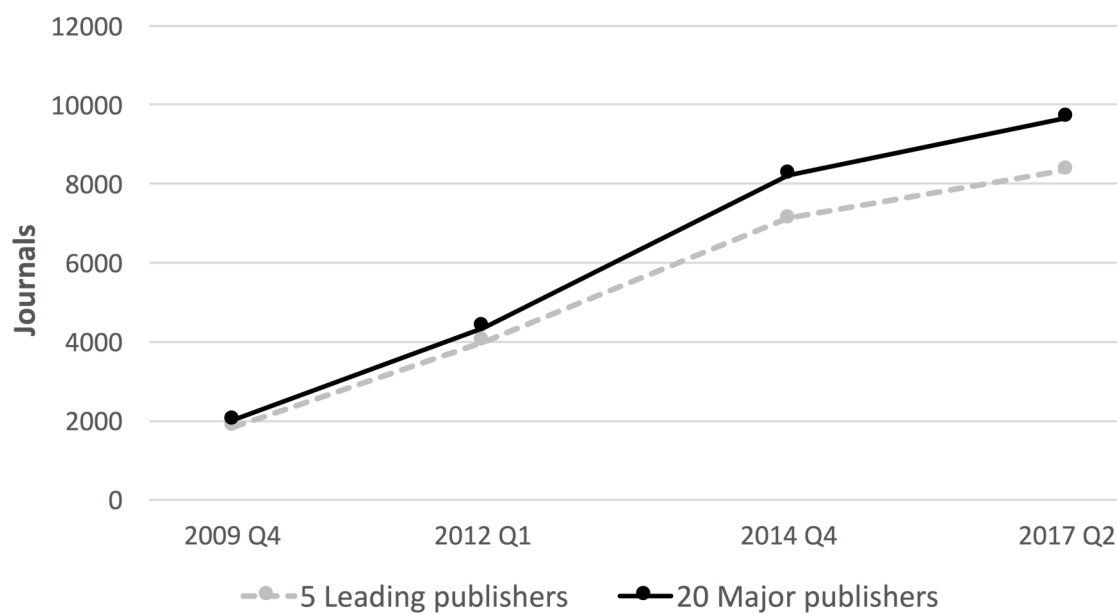
- 271 **Albantes A. 2009.** University of California libraries, Springer strike open access deal,  
272 *Library Journal*, January 22nd 2009.  
273 [http://lj.libraryjournal.com/2009/01/academic-libraries/university-of-california-](http://lj.libraryjournal.com/2009/01/academic-libraries/university-of-california-libraries-springer-strike-open-access-deal/#_)  
274 [libraries-springer-strike-open-access-deal/#\\_](http://lj.libraryjournal.com/2009/01/academic-libraries/university-of-california-libraries-springer-strike-open-access-deal/#_)  
275
- 276 **Cressey D. 2009.** Open access: are publishers ‘double dipping’? *Nature News*, 20.10.2009.  
277 [http://blogs.nature.com/news/2009/10/story\\_landis\\_resigns\\_from\\_auti.html](http://blogs.nature.com/news/2009/10/story_landis_resigns_from_auti.html)  
278
- 279 **Dallmeier-Tiessen S, Goerner B, Darby R, Hyppoelae J, Igo-Kemenes P, Kahn D. 2010.**  
280 Open Access Publishing – Models and Attributes. Max Planck Institute, Digital  
281 Library/Informationsversorgung, 62p. <http://edoc.mpg.de/478647>  
282
- 283 **Björk B.-C. 2012.** The hybrid model for open access publication of scholarly articles – a  
284 failed experiment? *Journal of the American Society of Information Sciences and Technology*  
285 **63**(8): 1496–1504. <http://onlinelibrary.wiley.com/doi/10.1002/asi.22709/full>  
286
- 287 **Laakso M, Björk B.-C. 2016.** Hybrid Open Access – a longitudinal study, *Journal of*  
288 *Informetrics* **10**( 4) :919-932. <https://doi.org/10.1016/j.joi.2016.08.002>  
289
- 290 **RIN. 2015.** Monitoring the Transition to Open Access, A report for the Universities UK  
291 Open Access Co-ordination Group. Research Information Network.  
292 [https://www.acu.ac.uk/research-information-network/monitoring-transition-to-open-](https://www.acu.ac.uk/research-information-network/monitoring-transition-to-open-access)  
293 [access](https://www.acu.ac.uk/research-information-network/monitoring-transition-to-open-access)  
294
- 295 **Finch J. 2012.** Accessibility, sustainability, excellence: how to expand access to research  
296 publications. Report of the Working Group on Expanding Access to Published Research  
297 Findings, 140p. <http://www.researchinfonet.org/publish/finch/>  
298
- 299 **Jahn N, Tullney M. 2016.** A study of institutional spending on open access publication fees  
300 in Germany. *PeerJ* **4**:e2323 DOI 10.7717/peerj.2323  
301
- 302 **Björk B.-C, Solomon D. 2014.** Developing an Effective Market for Open Access Article  
303 Processing Charges. Report, Wellcome Trust, London, United kingdom.  
304 [https://wellcome.ac.uk/sites/default/files/developing-effective-market-for-open-access-](https://wellcome.ac.uk/sites/default/files/developing-effective-market-for-open-access-article-processing-charges-mar14.pdf)  
305 [article-processing-charges-mar14.pdf](https://wellcome.ac.uk/sites/default/files/developing-effective-market-for-open-access-article-processing-charges-mar14.pdf)  
306
- 307 **Neidenmark T. 2016.** Boosting Open Access – First Evaluation of the Springer Compact  
308 agreement in Sweden. Stockholm University Press Blog, 26.10.2016,  
309 [https://blog.stockholmuniversitypress.se/2016/10/26/boosting-open-access-first-](https://blog.stockholmuniversitypress.se/2016/10/26/boosting-open-access-first-evaluation-of-the-springer-compact-agreement-in-sweden/)  
310 [evaluation-of-the-springer-compact-agreement-in-sweden/](https://blog.stockholmuniversitypress.se/2016/10/26/boosting-open-access-first-evaluation-of-the-springer-compact-agreement-in-sweden/)  
311
- 312 **Spezi V, Wakeling S, Pinfield S, Creaser C, Fry J, Willett P. 2017.** Open-access mega-  
313 journals: The future of scholarly communication or academic dumping ground? A review.  
314 *Journal of Documentation* **73**(2): 263 – 283,  
315 DOI 10.1108/JD-06-2016-0082  
316

317 **Björk B-C. 2015.** Have the “mega-journals” reached the limits to growth? *PeerJ* **3**: e981.  
 318 DOI 10.7717/peerj.981  
 319

**Figure 1**(on next page)

The evolution of the number of hybrid journals 2009-2017

The evolution of the number of hybrid journals 2009-2017

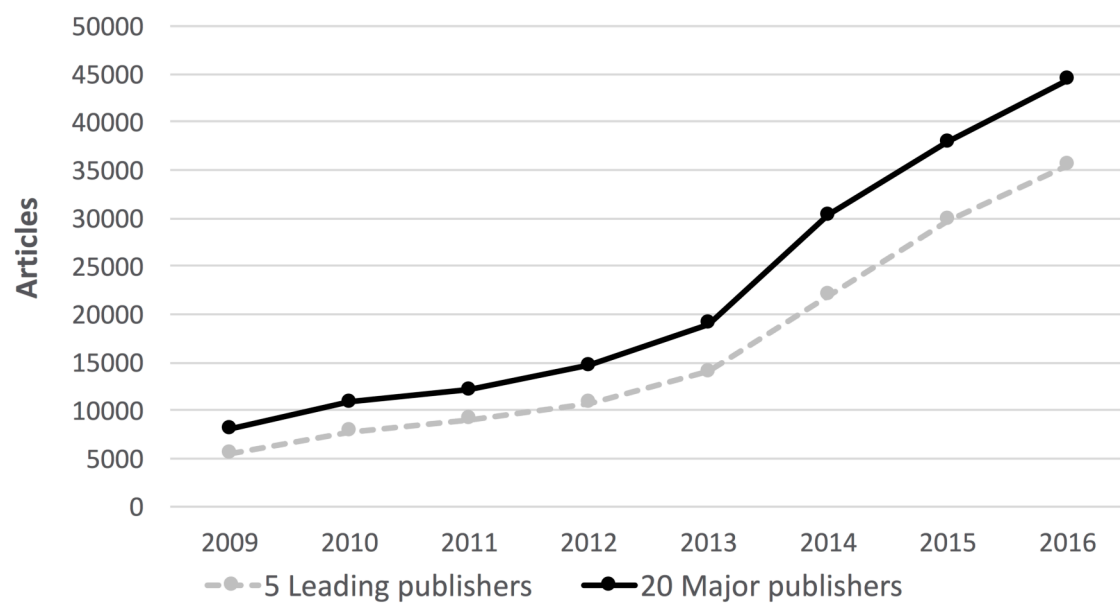


# **Figure 2**(on next page)

The evolution of the number of hybrid articles 2009-2016

The evolution of the number of hybrid articles 2009-2016





**Table 1**(on next page)

Earlier studies incorporated in the results

Earlier studies incorporated in the results

1

|                                | No. of Journals      | No. of Articles | No of Publishers studied |
|--------------------------------|----------------------|-----------------|--------------------------|
| <b>SOAP study</b>              | Oct. 2009            | 2009            | 12                       |
| <b>Björk 2012</b>              | Febr. 2012           | 2009, 2011      | 15                       |
| <b>Laakso &amp; Björk 2016</b> | Not directly studied | 2011-2013       | 5                        |
| <b>RIN 2015</b>                | 2012, 2014           | 2012, 2014      | 32                       |

2

3

## **Table 2**(on next page)

The hybrid publishers included in the study

The hybrid publishers included in the study

1

|                   |   |
|-------------------|---|
| <b>5 biggest:</b> | Elsevier  |
|                   | Springer Nature Group                                 |
|                   | Wiley-Blackwell                                       |
|                   | Taylor & Francis                                      |
|                   | Sage  |
| <b>15 other:</b>  | Emerald   |
|                   | Oxford University Press                               |
|                   | Cambridge University Press                            |
|                   | BMJ Group   |
|                   | Royal Society   |
|                   | Royal Society of Chemistry                            |
|                   | American Physical Society                             |
|                   | American Institute of Physics                         |
|                   | American Chemical Society                             |
|                   | Proceeding of the National Academy of Sciences (PNAS) |
|                   | International Union of Crystallography                |
|                   | Institute of Physics (IOP)                            |
|                   | Company of Biologists                                 |
|                   | Portland Press  |
|                   | Brill   |



2

3