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Working with budget and funding options to make open access journals sustainable

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NICOLE WAIDLEIN, MARCEL WRZESINSKI, FRÉDÉRIC DUBOIS, CHRISTIAN KATZENBACH

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ABSTRACT

Within the realm of electronic publishing, journals are plenty and their publishing models vary greatly. A segment most in line with fair and transparent open access principles are journals that were born open access, are scholar-led, and do not levy any fees on authors or readers. But while promising for increasing access to quality research and furthering bibliodiversity (i.e., variety of content, publication formats and publishing institutions), a survey we did in Germany in 2020 suggests that many of the journals in that segment face the threat of extinction. This white paper provides preliminary answers to the monetary challenge by evaluating possible financing models, discussing their applicability, and facilitating the transferability of these findings by including a short case study of *Internet Policy Review*—an international, peer-reviewed diamond open access journal.

KEYWORDS

Open access, Scholar-led, Business models, Funding, Sustainability, Small sciences

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1 Introduction

Through open access, digitisation can and should be used for scientific purposes. Suber (2012) calls this development *the access revolution*. Any academic knowledge is to be made freely accessible on the web so that other scientists can reuse it and the interested public can access it. In this process of knowledge diffusion, open access journals play a key role. Even though the proportion of articles published through open access varies greatly across disciplines (Björk and Korkeamäki, 2020), the advantages are obvious. Open access publishing increases the visibility of research results and allows them to be disseminated worldwide beyond disciplinary, academic, or financial boundaries. With the help of new technologies (e.g., text and data mining), the re-use of published research results will be further accelerated (Bruch et al., 2015).

For open access to develop its full potential, however, there must be a change in the academic publishing culture. McGuigan and Russel (2008), for example, name four criteria that must be met to achieve this goal. First, libraries must be able to offer open access publications. Second, the scientific community must accept new open access journals as a valuable place for their publications. Third, open access journals have to meet quality standards—for example through a peer review process and an editorial board. And, finally, the universities must give open access publications an equal or special status in the evaluation of their scientists.

Within the realm of open access publishing, journals are plentiful and their publishing models vary greatly. The segment that is most in line with fair and transparent open access principles¹ is what is commonly referred to as diamond or platinum open access: journals that are published open access from the very beginning, are independent of a commercial publishing house (scholar-led), and do not levy any submission or author fees (non-APC).² And while this model makes curated, diverse, and quality-controlled knowledge freely available to everyone regardless of income and country of origin, many of the diamond open access journals face the threat of extinction. This white paper aims to address a few of these challenges and questions.

To provide preliminary answers and to be as instructive as possible, this white paper will start by evaluating possible financing models with particular relevance to the journal segment of non-APC, scholar-led open access journals. Following this, we discuss how practical and applicable these models are, mainly by presenting the findings of a survey we conducted as part of the open access research project ‘Innovative Open Access within Small Sciences’³. We carried out this anonymous study on the distribution of financing modules among scholar-led, non-APC open access journals in Germany (sample extracting via DOAJ) in order to highlight the difficult financial situation of scholar-led open access journals and provide

¹ See <https://www.fairopenaccess.org/>; <https://freejournals.org/>; <http://radicaloa.disruptivemedia.org.uk/>.

² The limitations of the APC model have been detailed in many studies, e.g., they disadvantage independent scholars, aggravate the rift between the global academic North and South, or simply miss out on opportunities to substantially transform the profit-oriented publishing market into a knowledge-first landscape (Keller 2017; Green 2019; Kändler 2020).

³ The InnOAccess project by HIIG and ZBW lasted from June 2019 to February 2021 and was fully funded by DFG, the German Research Foundation.

community-driven solutions.

To facilitate the transferability of the measures outlined in this white paper, we include the open access journal *Internet Policy Review* (published by the Alexander von Humboldt Institute for Internet and Society) as a use case. This journal should serve as a ‘better’ practice example and also provide better scalability for other publishing initiatives. Yet, we believe that there is no one-size-fits-all solution and therefore invite other journals to discuss and challenge our findings by reusing and remodelling them as they please.

2 Open access without fees: Multiple stakeholders, but who is responsible for what?

Academic open access publishing is a field of multiple stakeholders, each of them with different responsibilities, interests, and opportunities for creating a sustainable open access ecosystem. The focal point in any debate about sustainable, scholar-led open access publishing is obviously the *journals* themselves. Yet the costs of open access publishing remain obscure, because, among other factors, journal activities are carried out on a voluntary basis (e.g., editors and peer-reviewers work free of charge). In other cases, costs are cross-subsidised, like when research assistants publish a journal ‘on the side,’ or when an institute’s office space and technical infrastructure are used. This makes a complete recording of costs difficult.

As a result, a benchmark for effective cost calculations on the side of journals is often missing. Additionally, many journals and publishing initiatives have rather vague expectations about the actual resources needed for providing high-quality publication services, and lack a clear cost structure or business plan. In this paper, we attempt to open this black box by providing an initial overview of the cost structure of the journal *Internet Policy Review*.

With regard to resources and funding, public institutions such as university libraries, learned societies, and research institutions are central players. They are responsible for providing scientific knowledge and expertise to academic communities as well as offering financial support and a vast array of publication services. Therefore, this paper focuses especially on university libraries and research societies as a driving force in sustainable, scholar-led publishing. *University libraries* are often the main facilitators of open access by advocating for and *de facto* offering free access to scientific publications and data. They do not only advocate for open access within their respective institutional context; they also establish policies in addition to making founders of new open access journals aware of what is needed to publish high-quality open access articles and what technical options are available. At this crucial point, university libraries provide guidance and important assistance while fostering and co-managing a scholar-led open access ecosystem (Wise and Estelle, 2019).⁴

Beyond this key set of stakeholders in scholar-led publishing, *research societies* started renewing their vital role in the dissemination of academic knowledge by promoting open access. As (co-)publishers of high-quality and prestigious journals in their discipline, they seem more and more committed to the transformation towards open access, and are—as studies show—particularly well suited to promote this idea

⁴ In addition, publication funds for the acquisition of APCs are in the remit of university libraries (Pampel and Tullney, 2017).

amongst their peers and funding bodies (Wise and Estelle, 2020; Pampel and Strecker, 2020). Accordingly, this paper will shed light on the efforts and offers by large, disciplinary research societies for scholar-led open access publishing. And while we focus on practical advice regarding support of respective open access journals, the following shall act as a reminder of their historical duty to publish and promote research of their respective communities, thereby creating visibility and reputation.

Lastly, *research institutions and associations* (such as the Leibniz Association or the Max Planck Society in Germany) have increasingly become important contributors to the open access transformation. It is not only the recent DEAL negotiations⁵ that showcase the importance of acting in concert: public and private research institutions have funded open access projects for years.⁶

As a consequence, future avenues for funding scholar-led open access publishing might increasingly rely on cooperative funding and support structures (such as consortia, i.e. the association of several university libraries and scientific institutions). To make such cooperative models work smoothly, communication and transparency between all actors involved is key. Yet in many instances, funding bodies and journals find themselves being lost in transition: as we will detail later on, stakeholders report a communicational discrepancy between libraries/infrastructures and journals/publication projects. And while solving that problem is beyond the scope of this study, we have identified key aspects that might guide future discussions and developments, as part of a community effort to sustain scholar-led publishing (section 6).

3 How can an open access journal be sustainably financed?

Publishing high-quality research, either in the form of books or articles, requires resources and money. And while open access—especially scholar-led—publications can benefit from cost transparency and more realistic calculations, the usual ‘bill’ exceeds what many journals (or their funding institutions) can provide long term. So, is there a real ‘affordability problem in scholarly publishing’ (Grossmann and Brembs, 2019)? This white paper specifically asks how to support scholar-led journals in ways that ensure a sustainable publication output. In this context, sustainability is understood as having the resources to engage a qualified editorial team (including succession planning), to provide state-of-the-art publication infrastructures (that is, editorial management software and publishing services, e.g., continuous and long-term referencing and archiving), to enable creative edition scheduling, and to react agilely to unforeseeable editorial challenges.

Looking at the available options in the field, we note a significant lack of funding for non-APC, scholar-led journals. Even though this segment excels in realising all the goals manifested in major open access missions and policies, these very journals are ineligible for the most common financing models in the field. The consequence is that many OA journals cease operation (Laakso et al., 2020) or are not able to adhere to their own quality standards. Other journals fail to expand or to meet the needs of their peers for increased publication output—because they lack qualified editors, proofreaders, reviewers, and designers. At the same time, many journals are unable to comply with new and much needed publishing standards, like XML

⁵ <https://www.projekt-deal.de/about-deal/>.

⁶ This is what the Alexander von Humboldt Institute for Internet and Society does with its co-published journal *Internet Policy Review*. See section 5 for funding examples and publishing costs.

workflows, profound web accessibility, or journal management systems. These technological innovations can save time and reduce costs, which is key for a sustainable approach. In our understanding, journal publishing relies on tailored financial models and the use of modern, ideally open-source journal technology. We outline the most promising measures in this regard in a separate white paper on publishing technology (<https://doi.org/10.5281/zenodo.4558781>).

Yet, what are the actual costs of open access journal publishing according to the diamond model?⁷ There are only a few studies on this subject, but the existing ones concur that publication costs vary greatly and are often opaque⁸ (Willinsky, 2006, pp. 69–72; Neylon, 2017; Grossmann and Brembs, 2019). Regular publishing expenditures cover costs for infrastructure, staff, and facilities. In the scholar-led sector, this is often provided by the publishing institutes or libraries. In terms of editorial staff, voluntary work is widespread among journals in this segment as well (Keller, 2017). But depending on its publishing output, the journal may require several employees who cannot perform these tasks as volunteers—i.e. they require people responsible for reviewing, proofreading, translation, and layout (see details below). Anderson (2018) gives a very detailed account of what services publishers of journals provide and how they are priced. Looking more deeply into this, costs arise from maintenance and further development of the journal website and from operating the editorial system; a plagiarism check is needed and the peer review process has to be upheld; editors may provide proofreading, translation, and typesetting of manuscripts (but are often not qualified to do so). Finally, further costs are generated by basic publishing services like assigning persistent identifiers (e.g., DOIs) and standardised metadata, the indexing of the journal in databases and search engines, the provision of usage statistics, and potential marketing (Van Noorden, 2013; Crow, 2009).

In sum, financing models for scholar-led open access publishing are diverse, but the conditions are often precarious. There is a remarkable community commitment to the principle of diamond open access, with almost a state of emergency when it comes to implementing these principles. Precarity increases for journals in small, inter-, and transdisciplinary contexts because the latter lack clear disciplinary responsibilities and communities equipped with resources. In what follows, we outline a set of financing modules that we deem relevant for this journal segment. This overview generalises necessarily and cannot specifically take into account the legal, community, or institutional setups of specific journal cultures.⁹

3.1 Open access journals: a few scenarios

The open access ecosystem, particularly the segment of scholar-led publishing, consists not only of a variety of financing models, but also a plethora of journal setups. In order to gain a structured understanding of what financing models would make sense for which particular journal context, we suggest the following four scenarios that are based on our overview of scholar-led open access journals in Germany. This necessary simplification is intended as a heuristic tool to estimate a certain level of applicability of individual

⁷ Diamond open access stands for journals that are freely accessible and do not charge APCs (see <https://blogs.tib.eu/wp/tib/2018/10/24/gold-gruen-bronze-blau-die-open-access-farbenlehre/>). Thus, the diamond model means a financing model that is not based on APCs.

⁸ See PlanS regarding the demand for more transparency. <https://www.coalition-s.org/>.

⁹ These specificities can include budget laws, institutional setups and responsibilities to the corresponding academic community.

financing models; the boundaries between the scenarios are fluid, while the classification is ambiguous and may be incomplete. Every individual journal scenario is based on indicators like staff size and experience, corresponding research community, governance model, budgetary options, publishing technology, and cooperations. These scenarios should not be utilised as a way of classifying the open access journal ecosystem in Germany; international perspectives and studies on how journals operate and administrate may enrich it.



Journal scenario: Newcomer

In the Newcomer scenario the journal is published by a collective of researchers committed to the idea of contributing to the OA landscape and their (sub-)field of research. Since the journal is still relatively young, the editorial team has yet to gain experience. The journal is dedicated to interdisciplinary topics and/or has a small community, e.g., there is no (large) research society present. The budget is small or there is no significant budget at all, leading to a more DIY approach when it comes to financing models.



Journal scenario: Achiever

In the Achiever scenario, the journal is published by a small but experienced team and adheres to basic governance standards (with an editorial board and team, as well as a set of esteemed colleagues as advisers). The journal may be published by a research organisation or an (independent) institute, who also provide core funding for the journal. This basic budget enables the journal to outsource some tasks and makes strategic funding decisions possible.



Journal scenario: Experienced

In the Experienced scenario, the journal is published by a comparatively large and experienced team. The journal is professionally governed by an editorial board, an advisory committee, and a backlist of experienced researchers providing feedback and additional editorial capacity. Published by several influential actors, e.g., major research institutions or large research societies, and operating within a large-scale international field of research, the journal commands an average budget.



Journal scenario: The A-list

In the A-list scenario, the journal is published by a professional, independent editorial team and governed by internationally renowned scholars. It might be published by an institution or society, but due to its high reputation and large corresponding research community, it easily attracts authors and readers. The editorial board, as an independent body, has access to an above-average budget provided by committed stakeholders

in the field. Yet the journal is still looking for additional funds to increase its impact and carry out research in publishing technology.

Figure 1 below illustrates how the four journal scenarios are positioned in terms of support and experience. Here, support can be understood as financial support from, say, an institution or also as technical support, for example from the university library. It also indicates the possibility of horizontal and vertical mobility, that is journals become more experienced and/or receive more support.

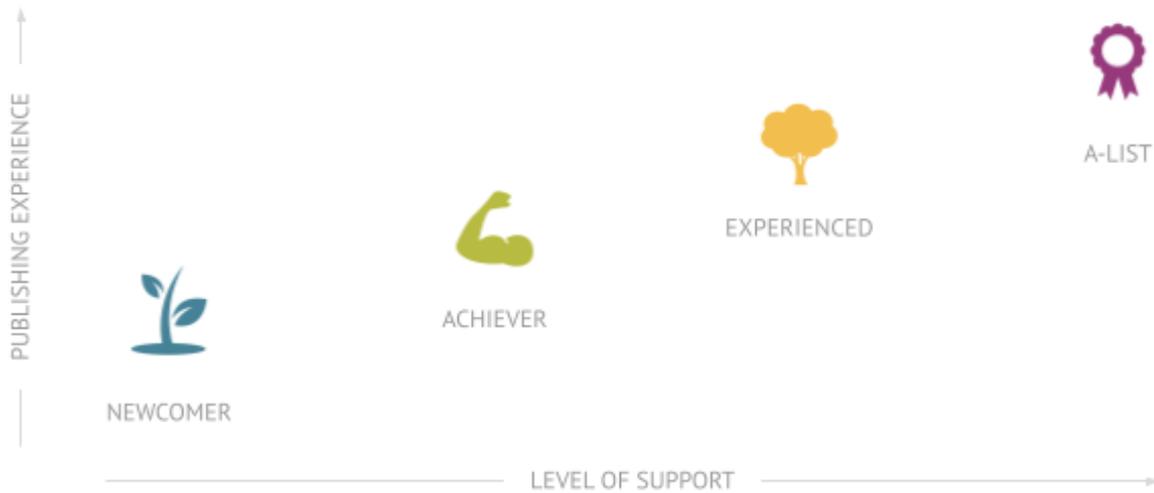


Fig. 1: Ratio of support and experience

The table below provides an overview of which funding model tends to match which journal scenario based on our evaluation (section 3.2) and with regard to certain levels of accessibility, applicability, and sustainability. Any such estimation will necessarily be flawed in the sense that the local contexts and attitudes of respective research communities are too diverse to be taken into account.

				
FINANCING MODEL	Newcomer	Achiever	Experienced	A-list
Donations			■	
Advertising				■
Crowdfunding	■			
Sponsoring	■			
Publication fees			?	?
Freemium			x	x

Consortium	x	x	x	x
Subsidies	x	x	x	x

Table 1: Financing models and journal scenarios

3.2 Open access financing models

3.2.1 Donations: small income flow, large administrative effort?

A call for donations on a journal's homepage is a simple option to acquire financial support. Especially in small research communities, the solidarity and willingness to support a specific journal with donations can be strong. Crow (2009) advises making donations as easy as possible for the readers using existing services such as PayPal. In addition, he points out that the willingness to donate increases if the journal promotes itself accordingly and possibly rewards the donation with a membership or something similar.¹⁰ But first the readers need a connection to the journal before being willing to donate.

In his study, Reinsfelder (2015) analyses the frequency and effectiveness of donations for open access journals in the United States. His study is based on a sample drawn from the Directory of Open Access Journals (DOAJ). He first examined the website of the selected journals and found that only 54 (4.8 %) of the 1,133 journals within his sample solicit donations. He then sent a questionnaire to these 54 editors, which was completed by half of them. This survey showed that 69% of the donations came from individuals. 22.7% of the journals received no donations at all.

¹⁰ The membership model will be detailed later on; incentivising donations through subscription-like privileges remains a strategy worth pursuing.

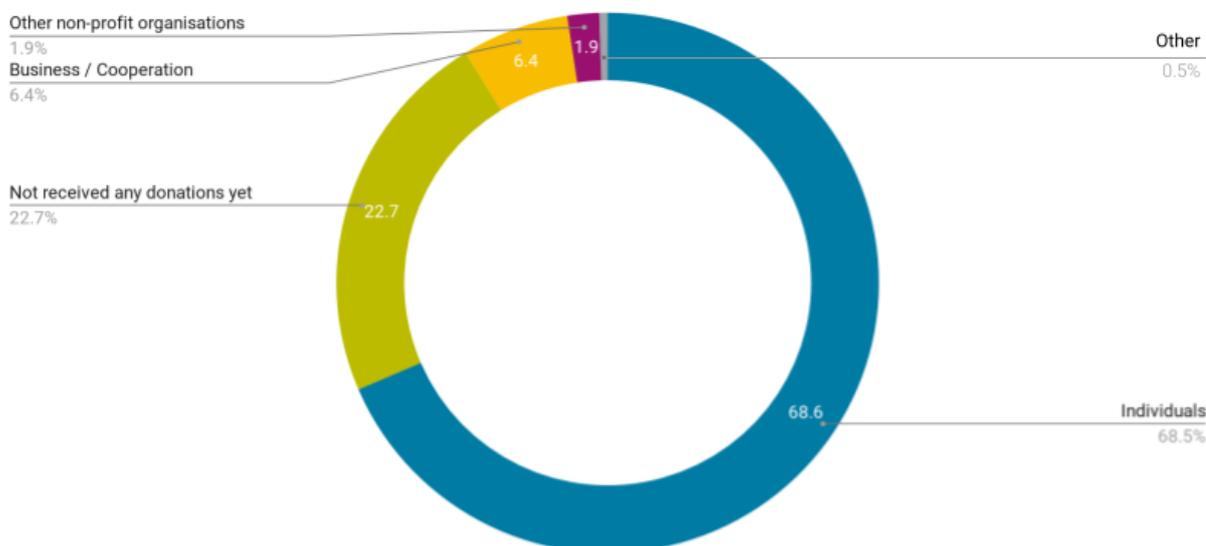


Table 2: Who donates? (Reinsfelder, 2015)

The reported donation amounts vary greatly, from no donation (US\$ 0) to US\$ 40,000 in this sample. Half of the editors stated that donations were ineffective or very ineffective. As this small survey in the US context shows, donations seem to be a minor source of income. This is probably true for journals with few page visits and readers with low financial endowments. In addition, donations might be considered inappropriate in some disciplines and are therefore less suitable.

With regard to our journal scenarios, donations may be used by our Experienced and A-list journals. If the support of a small community is indeed strong, it would also be a conceivable, albeit a less likely, source of income for our Newcomer journals.

3.2.2 Advertising: little revenue and a challenge for editors

Revenues can also be generated by selling advertising space on the journal's homepage. In particular, advertising can provide income where the journal's readership is specialised or where the journal reaches a large readership (Keller, 2017; Crow, 2009).

Advertising has been used in print journals for a long time. Crow (2009) believes that there is no reason not to advertise in open access journals. In the case of scientific journals, editors should ensure that only advertisements that scientists consider useful and helpful are shown. In this way, they avoid advertising being regarded as a nuisance.

On the other hand, Keller (2017) points out that journal advertising revenues have declined in recent years. She also shares the view that the advertising space on the homepage is used less for third-party content and more for the journal's own advertising.

In addition, marketing agencies contact journals directly to find out whether advertising can be placed on

the journal's homepage. Nevertheless, the financial return remains low and the editorial effort comparatively high.

Yet, different forms of advertising exist. A journal can implement Google AdSense, which places the advertising content on a journal page according to an algorithm. Here, no marketing personnel is required, but the journal has little influence on the advertising content. Limited additional work is needed to implement this form of advertising. On the other hand, journals can sell advertising space to companies that are willing to pay for it. This form of advertising needs marketing experience and consumes more time and resources (Frantsvag, 2010; Keller, 2017).

In the case of journals with a small readership, advertising should also be tailored to this professional community. This could include event announcements, calls for papers and job advertisements as well as advertisements for software, databases, or services that facilitate scientific work. The journal could also include a link to an online bookseller or other platforms where e-books are available (Frantsvag, 2010; Keller, 2017).

Frantsvag (2010) uses a survey to investigate whether publishers use advertising as a source of income and which form of advertising is used. In addition, he asks why advertising might be rejected by publishers. The result of this survey (474 representatives of journals answered his questionnaire) is that most journals do not advertise because they do not consider it appropriate. Journals that use advertising are comparatively large. In addition, direct negotiations with the advertising companies are especially widely used. This form of advertising is comparatively labour- and cost-intensive. Google AdSense, a very simple form of advertising, was usually not chosen. Frantsvag (2010) concludes that, among other things, ignorance of possibilities and forms contributes to the fact that (AdSense) advertising is not used. Unfortunately, the publishers did not provide any information on advertising revenues (only those journals that used Google AdSense were asked for this information).

In the case of a small journal—like our Newcomer journals—the income from advertising is expected to be a small but permanent source of income (given a reasonable amount of administrative effort). If publishers take into account the interests of their peers and research community when selecting advertising, then advertising could likely be considered appropriate. This applies in particular to our Experienced and A-list journal scenarios.

3.2.3 Crowdfunding: one way to start

Crowdfunding is generally an opportunity to raise money for projects in the scientific field (Keller, 2017; Bullock, 2018; Kändler, 2020). There are various platforms on the web that advertise different crowdfunding projects (e.g., Kickstarter, Experiment, Sciencestarter, or Startnext). For a project to garner trust, it is rightly expected that an outline be provided of costs towards which the funding would go. Individuals or organisations can then pledge a certain amount of money (Reinsfelder and Pike, 2018). On many of these crowdfunding platforms, funds are transferred only when the previously defined funding goal has been reached.

Crowdfunding is particularly suitable for starting a project or developing a certain product, as money is given by individuals and free access can be offered at the end of a project (e.g., free access to an e-book or an open access special issue). It is more difficult if a project like an open access journal is already running and funds are needed to keep the publishing process going. The incentive is much smaller to contribute to an ongoing project. Crowdfunding is also a one-off source of financing, which needs to be complemented by other sources. If a journal has a small community, crowdfunding can still be used if the special interest of the readership (e.g., in technical developments) is addressed. Crowdfunding is therefore a possible source of income, especially for our Newcomer journals.

In addition to the possibility of having your own small crowdfunding project, there is also the option of being included on a platform operated by third parties (see section 3.1.5 on consortial models). There are various platforms on which individual journals, books, or entire collections can be purchased via the means of crowdfunding.

3.2.4 Sponsoring

Sponsoring usually covers a whole journal or single special issues. In contrast to crowdfunding, a single sponsor usually provides a large financial contribution. This supporter is then commonly announced by name, and receives advertising space on the journal's web page or other means of credit (Keller, 2017).

For a scholar-led open access journal, sponsorship is a promising source of income. When searching for sponsors, editors should consider the main topics and subjects of the individual issues, which play an important role. Depending on the focus, the subject, or the planning of a special issue, different sponsors may be available. In addition, sponsors can be sought for thematic events (conferences, workshops, etc.), from which a publication is subsequently produced. The financial means not only benefit the event but also the publication. In addition, personal contacts and networks play an important role in creating momentum for sponsors to support the journal and its activities.

However, the search for sponsors takes time and causes additional work. Moreover, sponsors are often only willing to give money once or a few times. Therefore, this option can only provide temporary solutions. Sponsoring thus provides a partial contribution to overall financing, which can and should be combined with other financing models. Yet, it may be attractive for all journal scenarios. The higher the reputation of the journal, the easier it will presumably be to attract sponsors.

3.2.5 Publication fees

Even though the focus is on non-APC journals, we still want to point out the possibilities of APCs. Publication fees or article processing charges (APCs) may also be charged to cover open access journals' publishing costs (Keller, 2017). APCs may become due upon submission or acceptance of the article. They may also depend on the length of the text (page charges) or the number of charts (colour charges) (Schmidt, 2007).

The publication fees are covered by the authors or their institutions. In addition to research institutions, several libraries have also set up *publication funds* in order to finance publication fees for their affiliate

scientists. The German Research Foundation (DFG) supports these publication funds or authors directly.¹¹

By charging a fee on the supply side—i.e., to the authors—journals ensure that access to the articles remains free of charge for the readers. Another advantage of APCs is that prices for publishing services can be compared. Thus, the author can decide whether he wants to publish for \$5,000 USD in *Cell*, for \$1,350 USD in *PLoS ONE*, or for a one-time fee of \$299 USD in *PeerJ* (Van Noorden, 2013).

However, there are also a number of drawbacks of the collection of APCs. The reimbursement of the costs by an institutional publication fund is often only possible for the authors of this very institution. Authors without the backing of a scientific institution often do not have this possibility. In addition, the journal must also have the legal option and administrative capacity of charging APCs and issuing invoices. Furthermore, journals often require APCs that have previously gone through a flipping process. Here, there exists a danger that the previously excessively high subscription fees will simply be converted into high APCs. There is often a lack of transparency regarding the actual costs for an open access article. A further disadvantage arises on the journal side, as the editorial team has to check whether an author has paid a voluntary or compulsory APC or not. This organisational effort can in turn be time-consuming and labour-intensive (Keller, 2017; Green, 2019; Kändler, 2020).

Open access publishing is often equated with APCs, but many studies show that a comparatively small proportion of OA journals levy APCs. This is mainly due to the size of the journal and the discipline and whether it is a commercial publisher (Crowford, 2019; Kozak and Hartley, 2013; Dallmeier-Thiessen et al., 2010).

DOAJ's current metadata shows that 73% of the listed journals do not collect APCs. For the journals that collect APCs, there is a wide range in the amount of those dues. They can vary greatly from publisher to publisher (Björk and Solomon, 2014; Crawford, 2019; Nassi-Calò, 2013). Looking solely at journals that collect APCs, we see a range between a few USD and \$5,200 USD (e.g., by *Cell Report* from Elsevier).

In principle, publication fees can be charged in all journal scenarios. The basic issue here is whether or not the editors reject that sort of charge. Also, the design of publication fees may vary; they could be reasonably low in general, there could be individual discounts or fee waivers, or there could be dedicated fees for special issues only.

3.2.6 Freemium

Within the framework of a Freemium model—the name a portmanteau of free and premium invented by Jarid Lukin in 2006—a simple version (e.g., HTML) of an article is offered free of charge (Keller, 2017; Green, 2017). In addition, higher-value forms—with higher functionalities—such as PDF or XML, may then be offered for purchase by paying a fee. Furthermore, other licenses, e.g., for text and data mining, may also be offered for purchase. If the study is empirical, editors can offer readers the chance to acquire data in a specific format (Jason or Excel) or information on analytical methods. Also, a newsletter,

¹¹The fees should not exceed 2000 euros per article.

https://www.dfg.de/foerderung/programme/infrastruktur/lis/lis_foerderangebote/open_access/.

COUNTER statistics, or MARC records could be offered. In addition to the digital version, a print version could also be purchased for a fee. This financing module is initially suitable for all disciplines. However, if the print version is not the standard, high costs may arise due to short editions and non-standardised processes (Dallmeier-Thiessen et al., 2010).

In addition to premium services for readers, authors could also be offered additional services for which they have to pay. Services such as proofreading, editing, or transforming into XML could be offered (Green, 2017).

Green (2017) points out that this financing model is always subject to change. Depending on the state of technology, services can be regarded as premium services or as basic services. In addition, new services can always be added when a technical innovation is introduced.

A further advantage of the Freemium model is that all components of the publication process are broken down and a price must be calculated for each. In this way, components that may be costly but unnecessary can come to light. Overall, there is greater transparency in terms of costs and pricing (Green, 2017).

This model makes sense if there is a sufficiently large number of readers who also use and pay for the premium services. In particular, our Experienced and A-list journals will have the opportunity to use freemium as a source of funding. This model could also be interesting for a community with a high affinity for technical details and digital tools, as is the case with *Internet Policy Review's* audience.

3.2.7 Consortia: hard to get in, but very promising

One of the most promising ways of financing and improving the publication situation of open access journals is through cooperative support structures such as consortia. Here, libraries and research institutes form a consortium to finance a portfolio of journals (Solomon et al., 2016; Aasheim et al., 2020; Kändler, 2020). This financing model is very similar to crowdfunding, except that it is not private individuals who provide money but public institutions or financially-stable private research institutions.

A well-known example for a consortial solution is the 'Open Library of Humanities' (OLH) with its Library Partnership Subsidy model (Kändler, 2020). OLH was founded in 2013 with core funding by the Andrew W. Mellon Foundation. In this model an open access journal joins the OLH platform, which is supported by libraries. According to OLH, no article processing charges (APCs) can be levied due to a lack of financial resources in the humanities. Therefore, the platform relies on the financial resources of the participating libraries.¹² In addition to 25 fully open-access journals from the humanities, OLH also has its own multidisciplinary journal. OLH claims to be cost efficient due to economies of scale. The cost per article is about \$500 USD. In addition, OLH argues that libraries can contribute the funds that are released by cancelling subscriptions for traditional license-based journals to OLH. In detail, libraries' contributions will depend on the size of the institution and the country.¹³ However, the OLH platform only admits

¹² <https://www.openlibhums.org/site/about/the-olh-model/>.

¹³ The OLH-DE project, funded by the DFG, was established for German-speaking countries. The project aims to make the model known in German-speaking countries and to increase the participation of German-speaking

journals that flip from toll access to open access. OLH does not accept open access journals that have never applied a subscription model in the past.

Another example is Open Edition Journals. This platform not only provides a consortium in the humanities and social sciences but also combines funding with a so-called ‘Freemium model’ (OpenEdition Freemium distribution programme). This programme is aimed at libraries, universities, and research institutions. OpenEdition Freemium for Journals is an annual subscription to their bundle of journals. In addition to journals, OEJ also offers books, events, and blogs. The different programmes provide 519 open access journals and 7,949 open access books.¹⁴ The prices also vary according to the size of the institution and the country of origin.¹⁵

If certain admission criteria are met, a journal can apply for membership in OpenEdition Journals. Among other things, the journals must already have published four issues and the articles must be available in open access. In addition to financial income, the participating journals benefit from services, such as support in optimising infrastructure. Especially for open access journals from the field of humanities and social sciences, this platform seems to provide a possibility for increasing the journal’s visibility and, to a certain extent, income. Yet the benefits might not be substantial enough to justify the cost and effort that comes with, for instance, moving an existing journal to a new publishing infrastructure or adapting the editorial workflow to the needs of such platforms.

Knowledge Unlatched (KU) is another well-known, commercial open access project in the field of humanities and social sciences, primarily providing services related to forming consortial structures by organising pledging rounds (Kändler, 2020). And while KU is best known for converting book portfolios to open access (at present 2,000 books), they offer 30 journals that are *unlatched*. Most journals have been converted from toll access to open access journals (journal flipping). In this approach, journals are financed throughout a three-year period. In this model, a committee that consists of librarians representing the pledging libraries decides which journals will be selected. Libraries can participate in this crowdfunding project and then pledge at different levels for the selected journals for a three-year period.¹⁶ KU has underscored that the *relevance* to the research community of the respective journal plays a decisive role. Furthermore, it seems difficult for diamond open access journals to be included in this platform as the focus is, again, on journal flipping. Adding to that, journals with a small community or a focus on emerging research subjects might lack the impact and reputation to be considered for the funded portfolio.

Aggregating these observations from the market analysis, cooperative funding models such as consortia may become a promising source of financing in the future. Nevertheless, there are not yet many opportunities for single open access journals to actually become part of a funded journal portfolio, especially if they have never used a subscription model or are publishing without a huge research community backing them. Current consortia almost exclusively foster the flipping of subscription-based journals to open access.

institutions in OLH. <https://www.kim.uni-konstanz.de/das-kim/ueber-das-kim/projekte/aktuelle-projekte/olh-de/>.

¹⁴ <https://www.openedition.org/14043>.

¹⁵ <https://www.openedition.org/8850>.

¹⁶ <https://knowledgeunlatched.org/>.

As far as we could tell, there are no consortia that enable sustainable open access right from the start. That aside, a lot of public institutions and libraries are confronted with the free-rider problem: why pay for accessing content by becoming part of a consortium when one could leave that duty to other institutions?

As most studies indicate, the organisation and management of a consortium is a very complex, work-intensive endeavour. But the promised outcome and benefits for the open access ecosystem are immense, and every effort in setting up new consortial models or extending existing ones should be made. The key actors and drivers of change are libraries, journals, research institutions, and research societies alike.¹⁷

Accordingly, a consortium would be a conceivable financing option for all outlined journal scenarios, if there were a corresponding offer.

3.2.8 Subsidies: institutional funding is a possibility

Subsidies are a widely used way of financing an open access journal. The sources of these subsidies can be manifold. Often, open access journals are financed by their own university or institute, by the university library, or by a research society (Solomon et al., 2016; Aasheim et al., 2020)

In contrast to the consortial approach, in this model, a single journal can be supported by different institutions. Here, institutional proximity often plays a decisive role. For example, a research society supports its own journal or the traditional outlet of their research community,¹⁸ the university library supports journals from the institutes of its own university, etc.¹⁹

In the case of institutional funding, however, a high dependency on one or only a few institutes can be a problem. If the budget of one institute decreases, the financing of the open access journal can also be at risk. Likewise, a change of institutional management can change the focus of interest. If the journal then no longer corresponds with this new focus, funding may also be jeopardised.

As mentioned before, university libraries can play a significant role in accelerating the open access transformation by supporting open access journals instead of subscribing to journal portfolios by publishing houses. With often many years of experience in the acquisition and provision of scientific literature, university libraries can and should provide open access journals with the best possible advice and support. Among others, they may publish an open access journal themselves or provide publishing infrastructure (e.g., Open Journal Systems) and additional services pertinent to professional publishing (indexing, referencing, archiving). In many cases, these efforts can lead to the establishment of scholar-led publishing houses, such as the Göttingen University Press (see their ‘American Studies Journal’) and Heidelberg University Publishing, which supports scholars from Heidelberg University in publishing their own open access journal free of charge (‘Heijournals’). These services often include setting up new journals, ensuring

¹⁷ See also Open Book Publishers (<https://doi.org/10.11647/OBP.0173.0088>) for a concept that could be transferred to journals.

¹⁸ For example, the communications society DGpuK in Germany supports the open access journal *Studies in Communication and Media*: <https://www.dgpuk.de/de/scm.html>.

¹⁹ For example, the library of the Universitat Oberta de Catalunya supports 11 journals in total: <http://biblioteca.uoc.edu/en/resources/resource/uoc-academic-journals>.

the long-term availability of all published content, researching and testing new publication formats or workflows, and providing the greatest possible visibility.²⁰ One major advantage of such models and scholar-led presses is that researchers and scholars remain in charge of the publishing ecosystem.²¹

Another way of profiting from subsidies is through applying for research grants of national and international research funding agencies. There are a large number of foundations with very different funding priorities. Grants from foundations are usually provided as means of core funding for the development of a project or realising a certain goal or aspect. Financial support from foundations cannot therefore serve as the sole source of long-term funding. However, it can be very useful in combination with other sources. Also, the search and selection of a suitable foundation can be time-consuming and resource-intensive. Universities or research institutes may offer support in the search for appropriate foundations. In the German context, the most pertinent funding bodies are the DFG and the Federal Ministry for Research and Education, both of which offer various funding options for open access journals.²² Adding to that, on a European level, the European Commission has provided several research grants within the current Horizon 2020 programme²³ and subsequently the Horizon Europe research framework. These programmes are tailored to promote European ambitions to accelerate the open access transformation, and are complemented by other international funding opportunities, although their highly competitive nature makes them less accessible for open access journals that have yet to build reputation both within their communities and beyond.²⁴

Looking at our journal scenarios, subsidies of any kind are a good way to provide funding. Especially newcomers are advised to contact their own university library or corresponding infrastructures. Here, technical support can be offered in addition to financial help; in many cases libraries and others may also assist with a respective grant application (e.g., by the DFG or other entities).

3.2.9 State funding, public platforms

Finally, one of the more long-term approaches to sustaining open access journals is state subsidies, either directly towards relevant journal projects or indirectly by funding national publishing platforms that provide necessary infrastructures and services (see for example Solomon et al., 2016; Keller, 2017; Crow, 2009; Aasheim et al., 2020). In the latter case, the support is not limited to financial resources, but also results from technical assistance. This way, journals can reduce the resources they need. The financial

²⁰ Services include hosting, updates and archiving; introduction to the software; advice on journal editing; layout adjustments; cataloguing at article level; directory in relevant international databases; DOI and URN generation for articles; ISSN application for online journal.

²¹ See, for example, *Heidelberg University Publishing*: <https://journals.ub.uni-heidelberg.de/index.php/ojs>.

²² Examples include the German Research Foundation (Infrastructure for Electronic Publications and Digital Scholarly Communication) as well as the Federal Ministry of Education and Research (Förderlinie des freien Informationsflusses in der Wissenschaft – Open Access), information as of September 2020.

²³ OpenAIRE2020 (EC FP7 post-grant Open Access Pilot).

²⁴ For example, the Andrew W. Mellon Foundation is dedicated to the support of the humanities (scholarly communications, digital publications, and publication processes; <https://mellon.org/programs/scholarly-communications/electronic-publishing/>).

contribution is therefore indirect.

One example is the institution Consejo Superior de Investigaciones Científicas (CSIC), a large Spanish public research organisation. Its objective is to promote and develop research that contributes to scientific and technological progress in the different areas of knowledge transfer. CSIC acts as a publisher of scientific monographs and journals in the areas of science and technology, social sciences, arts and humanities. This institution publishes 34 journals and other types of publications.²⁵ Another example is the Scientific Electronic Library Online (SciELO).²⁶ *SciELO* is a platform containing some 1,747 open access journals. This enables each journal to achieve higher visibility and keeps publication costs low. In this way, the journals can use editorial services.²⁷

The Norwegian Open Journals in the Social Sciences and Humanities platform operates in a similar way.²⁸ Originally, selected journals were supported by the Norwegian Research Council. Most of the journals had published print editions before. In 2015, the Norwegian Research Council announced that from 2017 on, only open access journals would be supported. Although only a few journals were open access from the beginning, most journals have managed to change. In addition to the Norwegian Research Council, the Ministry of Education and Research and the four largest universities in Norway are also participating in the cooperative financing of this structure.

Countries like the Netherlands or Sweden have moved in a similar direction. The Netherlands started the project OpenJournals.nl on July 1, 2020, through which journals can participate in the platform if they do not charge APCs, are registered with the DOAJ, have a solid peer-review system and publish on a regular basis.²⁹ The National Library of Sweden is developing a national platform for scholarly open access journals as well, which aims at increasing the visibility of their open access journals and streamlining the publication process.³⁰

Surprisingly, there is no such model or approach in Germany, either in the form of a state-subsidised platform or as a centralised support structure providing professional publishing services at a reasonable cost. The foundation of such a national platform or infrastructure seems more timely than ever, especially since major funding organisations in Germany have signalled on multiple occasions that project-based open access transformation grants are not considered to be a long term solution and will successively decrease in volume. Whether there will be major public or state funding for a national (or German-language), cross-disciplinary open access platform in Germany remains unclear; initial steps towards supporting the German speaking open access community have been taken by funding the ‘open-access-network,’ a contact point

²⁵ <http://editorial.csic.es/publicaciones/portal/la-editorial/quienes-somos/48354e88-7970-4689-877a-17767f1e2595>.

²⁶ <https://scielo.org/en/about-scielo>.

²⁷ *SciELO* is the product of the cooperation between the São Paulo State Research Support Foundation (FAPESP) and the Latin American and Caribbean Center on Health Sciences Information (BIREME/OPS/OMS), national and international institutions related to scientific communication, and scientific editors (Crow, 2009; Nassi-Calò, 2013).

²⁸ <https://www.openaccess.no/english/humsam/>.

²⁹ <https://openjournals.nl/english/>.

³⁰ <https://www.kb.se/samverkan-och-utveckling/nytt-fran-kb/nyheter-samverkan-och-utveckling/2020-04-30-swedish-open-access-journals-on-joint-platform.html>.

offering information and coaching on any open access related matter.³¹

Furthermore, it would make sense to think about transnational platforms in addition to platforms at the country level. Why does each country need its own platform? Can't there be, for example, a European platform for open access journals?

This indirect form of financial support is also extremely interesting for all four journal scenarios. However, journals must ask themselves the fundamental question of whether they are willing to give up a certain degree of autonomy and individuality in order to become part of a standardised platform.

3.2.10 The price of quality: publication costs, budgeting, and transparency

Such an analysis of potential flows of income is only one side of the coin when it comes to sustaining a journal. Another important aspect is to focus on the expenditure side and therefore to address the actual costs of high-quality open access journal publishing. Yet there are only few studies that deal with this aspect of open access publishing (Crow, 2009; Van Noorden, 2013; Anderson, 2018).

An inefficient publication process increases costs disproportionately and drains even the most steady sources of financing eventually. Publishers should therefore try to use standardised and open software. This software is used by a large number of journals and is therefore being continuously developed further. It thus promises the highest efficiency (Solomon et al., 2016). Cost reduction through professionalisation of publication operations should therefore be a priority objective.

There are several ways to reduce costs. Publishers can join forces and jointly operate a website for their journals. It is a good opportunity, especially for small journals, to exploit synergy effects in the publication process. In addition, authors and readers are more likely to visit joint journal homepages. Furthermore, publishers can use third-party infrastructure. In this way, development costs and costs for the maintenance of the homepage and other services can be reduced. There are various providers who offer a publication infrastructure or accompanying services. One such example is the Collaborative Knowledge Foundation (CoKo), which is used by *eLife Sciences*, Hindawi, or the University of California Press.³²

Open Journal Systems (OJS), developed by the Public Knowledge Project (PKP), is a widely used software for administration and publication of scientific journals. OJS covers the entire publication process. All steps from submitting a paper, reviewing it, publishing it, and indexing it can be done with the help of this software. The publication process is standardised and partially automated, while the open source code allows for easy reuse and adoption plus constant updates by an active international community.³³ By relying on some sort of external infrastructure and hosting, certain costs can be successfully outsourced: university libraries, university presses, and public data centres are often willing to cover hosting and maintenance of

³¹ <https://open-access.network/>.

³² <https://coko.foundation/>

³³ See the GitHub section (<https://github.com/pkp/ojs>) for constant updates and developments as well as the German OJS network and information platform (OJS-de.net).

the publication infrastructure.

In any case, publishers and journals are advised to fully disclose their costs and calculations to increase transparency and create trust. For non-profit publishers and journals, this has to include actual facts and figures about total expenditure, salaries, and costs (transparency of cost/expenditures); for-profit publishers and journals should at least break down costs and outline in detail what services are provided (transparency of provided services).³⁴ Initiatives like Open APC (INTACT)³⁵ provide additional bibliometric data and contribute further to an open access ecosystem where openness determines publishing choice and not a toll access black box. Taken together, a good level of transparency appears to help in finding new donors and a wider audience (Crow, 2009).

But if there is a price tag on quality, funders and supporters need criteria to assess the quality of the research and the standards of publication. Related to this are the scholarly and societal impacts that published research gains and the reputation that the journal therefore acquires—both of which are determining factors for being granted additional funding (Ganz et al., 2019). The criteria to assess quality vary widely, although some standardised sets have been recognised and are manifested in various library policy documents.³⁶

4 Which financing models are actually used by journals? An overview of the German journal landscape

To provide accurate information and grounds for evaluating the previously described financing models, the InnOAccess project carried out a preliminary survey on the distribution of financing modules among non-APC, scholar-led open access journals that are based in Germany. The sample is drawn from the Directory of Open Access Journals (DOAJ) and therefore based on journal-level metadata. The sample was drawn from the DOAJ on November 11, 2019. At this time, the DOAJ had indexed 13,892 open access journals, of which 269 had a publisher located in Germany. The geographical focus takes into account that journals within the same national framework are basically facing the same obstacles and opportunities regarding funding and financing: university libraries, universities, and research institutions are dealing with similar requirements and budget regulations. There are also national guidelines, for example on funding via the DFG or individual ministries.

In the sample 184 journals (68%) do not levy APCs and 83 (31%) do. Two journals for which no information about APCs is available were excluded. We further limited our sample by only looking at journals that operated without a commercial publisher, since we particularly wanted to shed light on the financial situation of (small) scholar-led journals. Thus, our sample contains 102 journals that are listed in

³⁴ The publisher EMBO, for example, discloses a large part of its income and costs in order to approximately quantify the costs per article. Another example is SciPost and their PubFractions system, which indicates the individual support of SciPost articles by research institutions. In general, this openness regarding income and expenditure can be realised by any journal.

³⁵ The Open APC data is available via their GitHub section in structured form: <https://github.com/OpenAPC/openapc-de>.

³⁶ OANA Checklist Journals, <http://www.oana.at/checklist-oa-journals>, Free Journal Network Acceptance Criteria, <https://freejournals.org/2019-2/>, FAIR Open Access Principles, <https://www.fairopenaccess.org/the-fair-open-access-principles/>; as well as the membership criteria for AG Universitätsverlage, <http://doi.org/10.5281/zenodo.3954902>.

the DOAJ and do not collect APCs, which are scholar-led, and are located in Germany.

The scientific disciplines are represented very differently in this sample. Biology and medicine journals represent 3% of the total (Biomed), 23% pertain to technology, engineering and mathematics (STEM), and 75% concern the humanities and social sciences (HSS). This distribution reflects that especially in the field of HSS, most of the journals do not collect APCs. In the other two main disciplines APCs are common (Crawford, 2019).

In the following section, we analyse how these journals without APCs finance their publication processes. We sent out a questionnaire and asked the editors in detail about their sources of financing. Using this approach, we managed to gain a deeper insight into the funding sources in our open access journal sample.

We mailed our questionnaire (see appendix) to editors who are German-speaking, publish their journal relatively independently (that is without a commercial publishing house or a large research institute/association backing them financially), and who actively operate their journal. These limitations reduced the sample size, and we surveyed 71 editors. This questionnaire was to understand and find out about business models and financing approaches that are not obvious, multi-layered, and at best creatively sustainable. The survey had a high response rate of 45% (32 answers), which indicates that the topic is of high relevance for the selected journals. In addition, most participants in the survey stated that they wanted to be informed about the results of this research project.

4.1 Key findings

First, we asked the participants to indicate to which subject areas the contributions in their journal belong. History and archaeology were mentioned most frequently (10 times). These were followed by the disciplines of education, sociology, media and communication studies, linguistics and literature studies, and other social sciences (7 times each). However, disciplines such as biology (4 times), computer science, and mechanical engineering (once each) were also mentioned. Thus, there is a wide range of disciplines represented in the survey.

With regard to the organisation of the journal, 15 editors (47%) stated that they have fixed job shares for editorial work. These percentages ranged from 2 to 0.2 full-time equivalents or corresponded to one research assistant. In addition, we asked the editors whether they used hourly shares of scientific/student assistants, e.g., for editing, proofreading, layout. To this question, 22 editors (69%) answered yes. The full-time equivalents ranged from 0.1 to 0.6.

Finally, the editors were asked whether the technical administration (e.g., archiving, indexing) was done in-house or externally contracted. 17 journals (53%) stated that technical administration was carried out exclusively internally. The remaining journals also used the university library, the university press, or the services of journal platforms. With one exception, they specified that these services are free of charge.

Besides the organisation of the journals, their sizes also varied. The journals whose editors participated in this survey received between 6 and 1,000 articles per year. Between 5 and 100 articles are then published per year. To highlight the distribution of our data, we calculated box plots for the tree variables submitted

articles, published articles, and acceptance rates. As Figure 2 shows, the distribution is quite uneven. The median for the submitted articles was 37.5, and for the published articles it was 22. The interquartile range (IQR) for the submitted articles was 50; for the published articles it was 20.

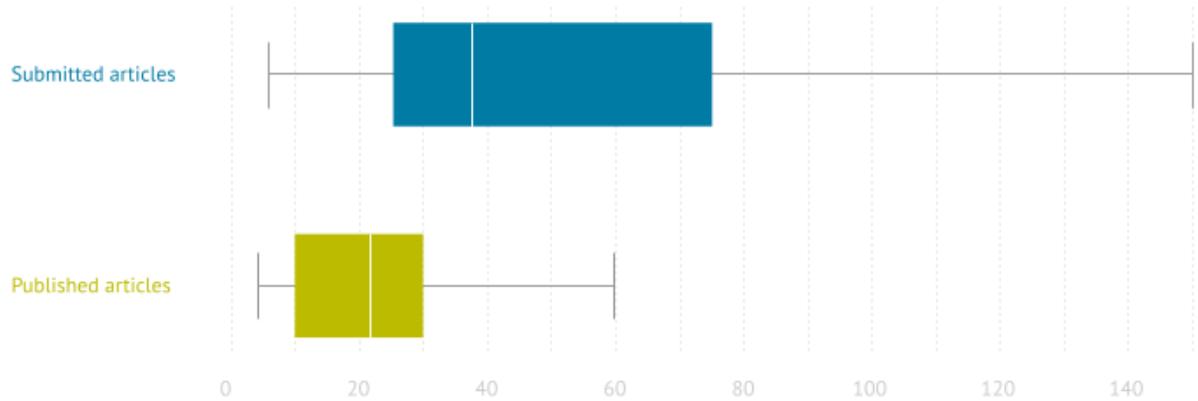


Fig. 2: Box plot of submitted articles and published articles

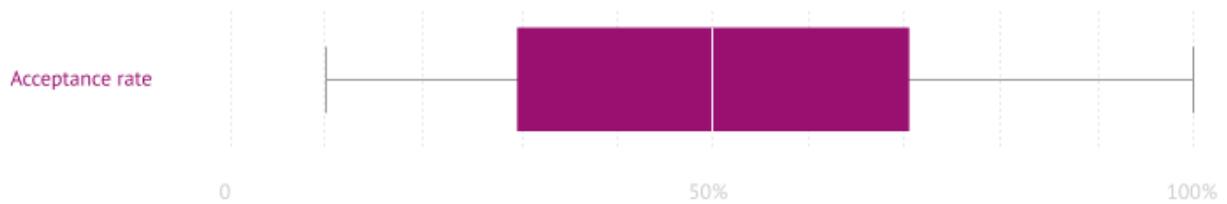


Fig. 3: Box plot of acceptance rate

Figure 3 shows the box plot for the calculated acceptance rate. In contrast to Figure 2, the distribution is symmetric. The acceptance rate within the sample ranged from 10% to 100% and the median is 50%. Some journals had low acceptance rates (e.g., 10%) and can choose from a variety of submitted articles. Other journals published (almost) every submitted article.

Moreover, these figures show that in addition to small open access journals, large journals were also represented. The different visitor numbers on the respective homepages ranged from 1,000 to 180,000 per year. Likewise, article downloads varied from 100 to 120,000 per year. These figures illustrate that the journals in this sample are very different in size and publication behaviour.

We then asked when open access publishing started for the journal. There are journals in our sample that have been publishing open access since 1995. However, most of the journals did not switch or start

publishing open access until after the year 2000 and increasingly did so in 2014, 2015, and 2017, as Figure 4 shows. The strongest growth was in 2015, with the launch of five additional open access journals.

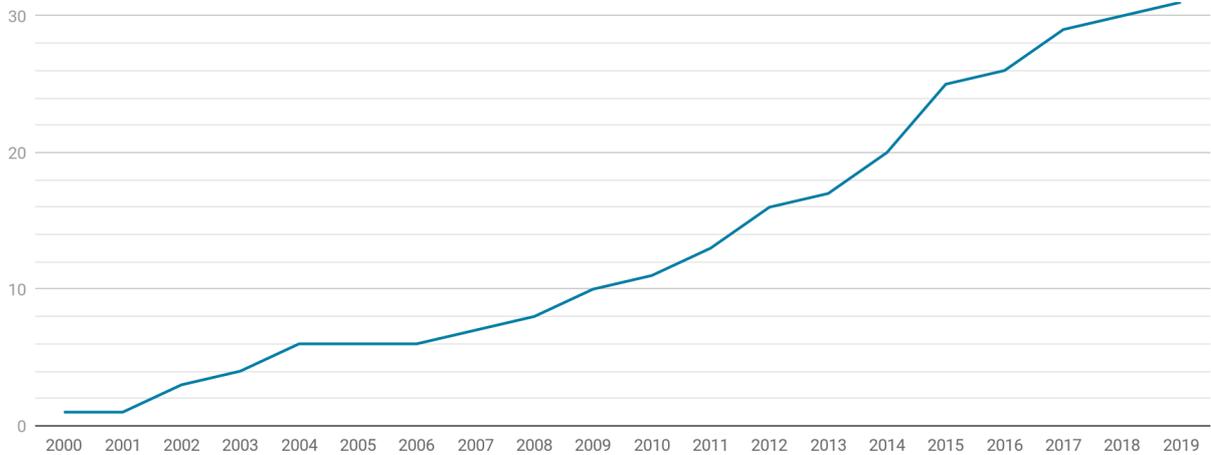


Fig. 4: Number of journals publishing open access

When asked about the sources of funding for their journals, all editors confirmed that they do not charge APCs—as to be expected given the sample composition. As Figure 5 illustrates, two journals charged publication fees. These fees were charged for colour illustrations and special issues, the latter on a voluntary basis. Potential financing models such as donations, crowdfunding, and freemium were not used. One journal asked for donations, but the amount of donations was described as low. In contrast, 21 of the 32 editors (66%) stated that they receive financial support/subsidies.



Fig. 5: Applied financing models

There was a wide array of subsidy-based support (Figure 6), but the most common source was university funds, which were mentioned 10 times (32%). The university library came in second place (13%). Foundations, research institutes, ministries, and the DFG were also listed as financial supporters. Finally, associations, research societies, and the EU were each mentioned once as supporters. Several journals listed

more than one supporter.

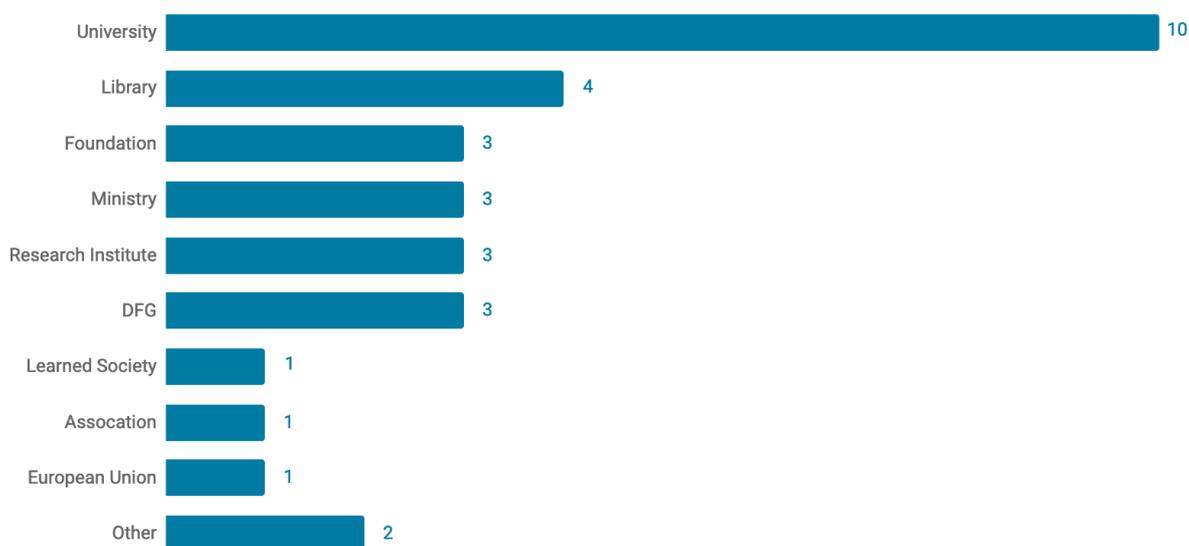


Fig. 6: From which actors does your journal receive financial support?

In addition, we asked the editors whether the journal cooperates with another journal or university library. 12 (36%) editors answered *no* and 20 (64%) answered *yes*.

The majority of cooperation partners were university libraries, which were mainly responsible for (long-term) archiving and hosting. Support with technical issues was also mentioned. In addition to the allocation of DOIs, respondents pointed to editorial support and the exchange of information and experience. This shows that there is already an active cooperation between the open access journals surveyed and (university) libraries. This form of cooperation seems to have proven itself in many places and should be further expanded in the future.

When asked about the financial recipe for success, however, it becomes clear that journals' financial situations are indeed precarious at times. Besides idealism, self-exploitation, and voluntary work, editors widely mentioned their own institutions as financial supporters. In addition, research societies and third-party funds also contributed to covering costs. However, the financial support is time-limited and therefore has to be procured again and again.

Finally, we asked what the average annual budget of the journal is. Only 14 editors replied (4 of them specified a budget of €0). Nevertheless, it is clear that the budget varies greatly and ranges from €0 to €60,000 per year in our sample, as Table 2 shows. If the annually available budget is put in relation to the submitted as well as the published articles, the different financial situations of the journals become more meaningful. As Table 3 shows, the budget per submission varies from €7 to €4,000. In addition, the budget per published article ranges from €23 to €6,000. Here, only 9 editors gave figures for all three variables, which reduces the significance of the results. The question arises of how journals with a budget of only a few euros per submitted article offset their work, as well as how much volunteer time is involved in

processing the submitted articles.

Journal	Average annual budget	Budget per submission	Budget per published article
A	700 €	7 €	23 €
B	1,000 €	33 €	40 €
C	1,500 €	45 €	278 €
D	2,500 €	75 €	94 €
E	5,000 €	143 €	167 €
F	40,000 €	526 €	3,125 €
G	45,000 €	900 €	1,800 €
H	50,000 €	1,600 €	2,000 €
I	60,000 €	4,000 €	6,000 €

Tab. 3: Average annual budgets, Budgets per submission and published article

4.2 Conclusions

Our survey shows that most of the financing models presented in Section 3 are not used at all, while institutional subsidies are a common source of income. In addition, the financial resources of the open access journals vary greatly. From here, multiple questions on the suitability and implementability of the common open access financing models arise. These are as follows: Are the journals considered so small or insignificant that no other sources of funding can be found? Are any financing opportunities beside the present one explored or tested? Do the editors simply lack the necessary time and human resources, or is there a more substantial reason?

It is greatly important to test and continuously evaluate open access financing models and to check their transferability and scalability to scholar-led, small, and interdisciplinary open access journals. This can help extend and secure the financial basis for open access diamond journals.

5 Use case: Financing of *Internet Policy Review*³⁷

Internet Policy Review is an open access e-journal on internet regulation published by the non-profit Alexander von Humboldt Institute for Internet and Society (HIIG), Berlin. It is the sole academic journal that this institute publishes. The journal is published in cooperation with three other research institutes,

³⁷ The following description is necessarily shortened and simplistic in order to outline one possible financing strategy. Maintaining and fostering *Internet Policy Review* (as well as every other journal) comes with many budgetary and fiscal provisions.

respectively in France³⁸, Spain³⁹, and the UK,⁴⁰ with a total operating budget of approximately €50,000.⁴¹ The HIIG has ideationally and financially supported *Internet Policy Review* for its 1) qualitative value (high quality research output); 2) community value (leading international research network in internet studies); and 3) open science value (innovation in open access).

5.1 Subsidies

Internet Policy Review benefits from subsidies from its publishing institution as well as to a lesser extent from the cooperating institutes. This core funding is then mainly complemented by project-based sponsorship and state funding.

Internet Policy Review has already received financial support from several funders. These include the .au Domain Administration, Swinburne Institute for Social Research, the Vodafone Institute for Society and Communications, and the Strathclyde Library open access fund. The funders agreed to make voluntary contributions (donations) towards specific special issues in the range of €2,500 to €5,000. The funders were all approached once the editorial decision was taken to publish a special issue, thereby keeping the editorial decisions separate from any financial constraints. The E-Plus Group supported *Internet Policy Review* with a larger sum in the journal's start-up years. This grant enabled the journal to publish news pieces alongside its scholarly papers.

Grants can take various forms, and some can be especially adapted to journals that operate in flexible ways. In the case here, the journal is hosted by a non-profit company, which is allowed to receive grants and donations. The following is a good illustration: in the case of *Internet Policy Review*, the Vodafone Institute made a donation to HIIG supporting a Best Paper Award and a special issue accompanied by high profile event series. This meant the journal could offset publication costs for an entire special issue, plus benefit from exposure at the event. At the event, one Best Paper Award was handed over to one of the authors in the special issue. Although this is just one of many possible funding scenarios, it goes to show that these temporary injections of funds can have collateral benefits in terms of outreach and prestige. Other funders have helped *Internet Policy Review* publish print booklets, or offered support in the form of cost waivers, such as getting a license to use the proprietary software Prince to publish accessible PDFs or by getting DOI registration for free with Crossref.

As a complementary and temporary source, the 8-year-old *Internet Policy Review* has received funding for open access specific projects: from the European Commission (OpenAIRE programme) for the implementation of technical improvements; from the German Research Foundation (LIS programme), for a study on open access business models and technology that journals in small sciences use.

5.2 Costs and governance

³⁸ Centre Internet et Société du Centre National de Recherche Scientifique (CIS-CNRS).

³⁹ Internet Interdisciplinary Institute of the Universitat Oberta de Catalunya (UOC's IN3).

⁴⁰ RCUK Centre for Copyright and New Business Models in the Creative Economy.

⁴¹ This includes only permanent direct expenses, not project-specific or temporary expenses or indirect costs/overheads.

Out of the operating budget, *Internet Policy Review* employs a part-time managing editor, a part-time student assistant (editorial and technical), and covers operating expenses related to technical website development, design and maintenance expenses, minor communication costs, and travel-related costs.

In terms of the breakdown of total direct costs (€50,000), the journal allocates 72% to personnel (60% for the managing editor; 12% to a student assistant), 20% to website development, design and maintenance, and 8% to cover communication and travel costs.⁴²

Apart from the financial side, *Internet Policy Review* benefits from editorial partnerships with two research associations: the Association for Internet Researchers (AoIR) and the International Association for Media and Communications Research (IAMCR)—particularly pertaining to their respective annual conferences.

Also, in terms of governance, *Internet Policy Review* works with an editorial board of 18 people, a managing board of six, and an editorial team composed of seven academic editors, one managing editor, and one student assistant.

Over the eight years of its existence, the business model of *Internet Policy Review* has evolved from a non-sustainable one, dependent on the funding of one single institution, to an ‘almost sustainable’ one—where on average the four publishing institutions contribute financially, and temporary open access funding help the journal stay true to its mission of ‘engaging in continuous innovation in open access.’ Figure 7 provides a projection for 2022.

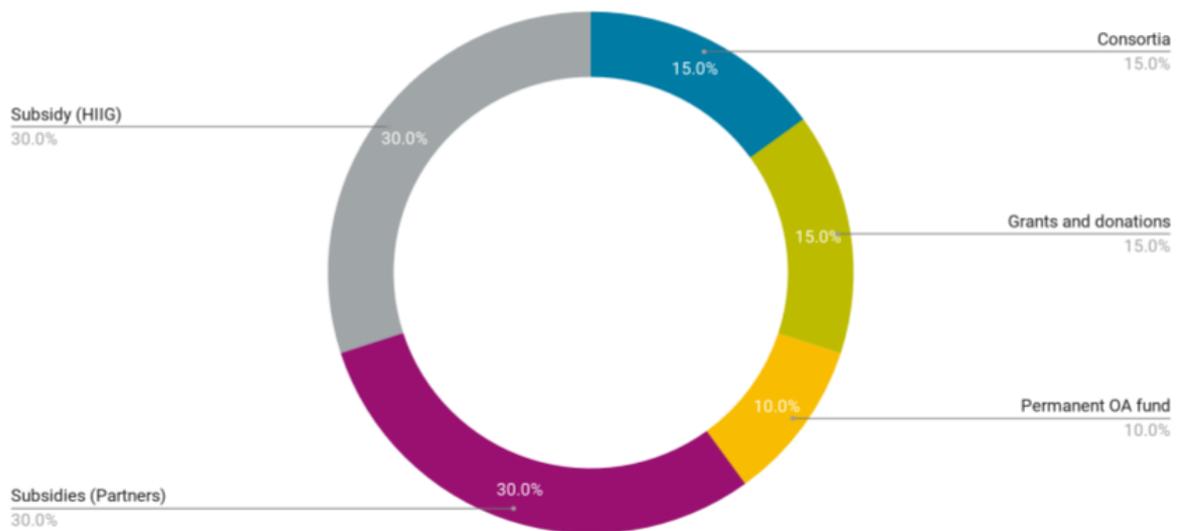


Fig. 7: Projected financing mix at *Internet Policy Review* in 2022

⁴² These figures use 2019 as a reference year. They vary from year to year but do give an idea of what investment is needed to publish some 50 papers a year. Furthermore, this includes only permanent direct expenses, not project-specific or temporary expenses or indirect costs/overhead.

6 What is the (hard and difficult) way to go?

Libre open access is a desideratum for the fast and unhindered dissemination of research results beyond disciplinary and academic boundaries. Even though numerous open access journals have been founded in the academic publishing sector, sustaining them is difficult, especially in the realm of scholar-led journals. With that said, this study aimed at doing two things: first, collecting and evaluating existing business models for open access publishing; and second, making recommendations on what options are available for the long-term financing of open access journals. In addition, this study attempts to provide indications as to which financing models are promising, but whose development needs to be further advanced.

We have seen that income from donations and advertising is extremely limited. Here, journals should act carefully to avoid channelling work and time flows into the development of these small sources of revenue. In contrast, financing through sponsors, grants, and donations may generate a bigger income, yet it is only short-term and temporary.

Publication fees are not well established in all disciplines. Nevertheless, a journal with an APC model has access to publication funds provided by research institutions and university libraries (often publicly funded). And while there is rightful criticism of the APC model, accessing these funds one way or another seems paramount to sustaining journals (e.g., by negotiating access to publication funds through issue-based publication fees). Likewise, the Freemium model is based on charging institutions and necessarily author as well: providing additional services for target groups (e.g., XML formats for repositories) can create revenue to enable a more well-planned way of publishing the actual research articles for free.

As our survey has shown, subsidies are a more promising form of financing. The sources of these subsidies can be manifold. Often open access journals are financed by their own university or institute, the university library, or a scientific society. However, our survey also revealed that this sort of financing is often unstable, even precarious, and that self-exploitation plays a role alongside idealism.

Taking all of this into account, the most promising form of financing arises through cooperative approaches, which have been established in basically two variants: on the one hand, an open access journal can finance a specific project or issue through crowdfunding efforts, while promising a specific 'product' in return for favourable donations. On the other hand, the journal can join a supportive infrastructure (such as a platform) that raises funds on behalf of an entire bundle of journals and provides further services like managing the flow of income (e.g., Open Library of Humanities). The latter takes place within a fixed framework that is modelled after library consortia.

As this paper has shown, many possible financing models are actually left unused by the respective journals; most journals' financing is neither secured nor sustainable; the working and publishing conditions are, in many cases, precarious. Beyond these findings, new challenges arise: Further investigation into why journals aren't using certain financial models is necessary, particularly by assessing why certain models are preferred to others. The financial base for individual journal financing needs to be diversified, e.g., by

educating scholar-led journal editors and publishers about the existing opportunities and founding new, ideally cooperative support structures to enrich the scholar-led open access ecosystem.

7 References

- Aasheim, J. H., Schirrwagen, J., Kuchma, I., Franck, G., Hermans, E., Rettberg, N., & Steiner, T. (2020). *D6.2 – Best Practice Guide for Co-Operative Models of Publishing*. OpenAIRE1 report. Bielefeld University. <https://doi.org/10.5281/ZENODO.3701428>
- Anderson, K. (2018, February 6). Focusing on Value – 102 Things Journal Publishers Do (2018 Update). *The scholarly kitchen*. <https://scholarlykitchen.sspnet.org/2018/02/06/focusing-value-102-things-journal-publishers-2018-update/> (Accessed: 10 September 2020).
- Björk, B.-C., & Korkeamäki, T. (2020). Adoption of the open access business model in scientific journal publishing – A cross-disciplinary study. *College & Research Libraries*, 81(7), 1080–1094. <https://doi.org/10.5860/crl.81.7.1080>
- Bruch, C., Deinzer, G., Geschuhn, K., Hätscher, P., Hillenkötter, C., Kreß, U., Pampel, H., Schäffler, H., Stanek, U., Timm, A., & Wagner, A. (2015). *Positionen zur Schaffung eines wissenschaftsadäquaten Open-Access-Publikationsmarktes*. Positionspapier der Ad-hoc-AG Open-Access-Gold im Rahmen der Schwerpunktinitiative 'Digitale Information' der Allianz der deutschen Wissenschaftsorganisationen. <https://doi.org/10.2312/allianzoa.008>
- Bullock, C. (2018). Crowdfunding for Open Access. *Serials Review*, 44(2), 138–141. <https://doi.org/10.1080/00987913.2018.1472477>
- Crawford, W. (2019). *Gold Open Access 2013-2018: Articles in Journals (GOA4)*. <https://waltcrawford.name/goa4.pdf>
- Crow, R. (2009, September). *Income Models for Open Access: An Overview of Current Practice*. SPARC Consulting Group. https://sparcopen.org/wp-content/uploads/2016/01/incomemodels_v1.pdf
- Frantsvåg, J. E. (2010). The role of advertising in financing open access journals. *First Monday*, 15(3). <https://firstmonday.org/ojs/index.php/fm/article/view/2777/2478>
- Ganz, K., Wrzesinski, M., & Rauchecker, M. (2019). Nachhaltige Qualitätssicherung und Finanzierung von non-APC, scholar-led Open-Access-Journalen. *LIBREAS. Library Ideas*, 36. <https://libreas.eu/ausgabe36/ganz/>
- Green, T. (2019). Is open access affordable? Why current models do not work and why we need internet-era transformation of scholarly communications. *Learned Publishing*, 32(1), 13–25. <https://doi.org/10.1002/leap.1219>
- Grossmann, A., & Brembs, B. (2019). Assessing the size of the affordability problem in scholarly publishing. *PeerJ Preprints*, 7:e27809v1. <https://doi.org/10.7287/peerj.preprints.27809v1>
- Keller, A. (2017). Finanzierungsmodelle für Open-Access-Zeitschriften. *Bibliothek Forschung und Praxis*, 41(1), 22–35. <https://doi.org/10.1515/bfp-2017-0012>
- Kändler, U. (2020). Open-Access-Finanzierung. In K. Lackner, L. Schilhan & C. Kaier (Eds.), *Publikationsberatung an Universitäten. Ein Praxisleitfaden zum Aufbau publikationsunterstützender Services*. (pp. 181–202). Bielefeld: transcript Verlag. <https://doi.org/10.14361/978383839450727-010>
- Laakso, M., Matthias, L., & Jahn, N. (2020). Open is not forever: a study of vanished open access journals. *arXiv preprint arXiv:2008.11933*. <https://arxiv.org/abs/2008.11933>
- McGuigan, G., & Russel, R. (2008). The Business of Academic Publishing: A Strategic Analysis of the Academic Journal Publishing Industry and its Impact on the Future of Scholarly Publishing. *Electronic Journal of Academic and Special Librarianship*, 9(3). https://southernlibrarianship.icaap.org/content/v09n03/mcguigan_g01.html
- Nassi-Calò, L. (2013, September 18). How much does it cost to publish in Open Access? *SciELO in Perspective*. <https://blog.scielo.org/en/2013/09/18/how-much-does-it-cost-to-publish-in-open-access/#.X9smzdHkg2w> (Accessed: 10 September 2020).
- Neylon, C. (2017). Pushing costs upstream and risks downstream: Making a journal publisher profitable. *Science in the Open*. <http://cameronneylon.net/blog/pushing-costs-upstream-and-risks-downstream-making-a-journal-publisher->

- profitable/ (Accessed: 10 September 2020).
- Pampel, H., & Tullney, M. (2017). Open-Access-Publikationsfonds. In K. Söllner & B. Mittermaier (Eds.), *Praxishandbuch Open Access* (pp. 162–172). Berlin, Boston: De Gruyter Saur. <https://doi.org/10.1515/9783110494068>
- Pampel, H., & Strecker, D. (2020). *Wissenschaftliche Fachgesellschaften und Open Access in Deutschland: Bericht*. Potsdam: Helmholtz Open Science Office. <https://doi.org/10.2312/os.helmholtz.009>
- Reinsfelder, T. (2015). Donations as a Source of Income for Open Access Journals: An Option to Consider?. *The Journal of Electronic Publishing*, 18(3). <https://doi.org/10.3998/3336451.0018.307>
- Reinsfelder, T. L., & Pike, C. A. (2018). Using Library Funds to Support Open Access Publishing through Crowdfunding: Going Beyond Article Processing Charges. *Collection Management*, 48(2), 138–149. <https://doi.org/10.1080/01462679.2017.1415826>
- Schmidt, B. (2007). Auf dem goldenen Weg? Alternative Geschäftsmodelle für Open-Access-Primärpublikationen. *Zeitschrift für Bibliothekswesen und Bibliographie*, 54(4–5), 177–182. <http://resolver.sub.uni-goettingen.de/purl?gs-1/5832>
- Solomon, D. J., Laakso, M., Björk, B.-C., & Suber, P. (Ed.) (2016). *Converting Scholarly Journals to Open Access: A Review of Approaches and Experiences*. Harvard Library. <http://nrs.harvard.edu/urn-3:HUL.InstRepos:27803834>
- Suber, P., & Sutton, C. (2007). Society publishers with open access journals. *SPARC Open Access Newsletter*, (issue 115). https://dash.harvard.edu/bitstream/handle/1/4387568/suber_societies.html?sequence=1 (Accessed: 10 September 2020).
- Suber, P. (2012). *Open Access*. Cambridge: MIT Press.
- Van Noorden, R. (2013). Open access: The true cost of science publishing. *Nature*, 495(7442), 426–429. <https://doi.org/10.1038/495426a>
- Willinsky, J. (2006). *The Access Principle: The Case for Open Access to Research and Scholarship*. Cambridge: MIT Press Cambridge.
- Wise, A., & Estelle, L. (2019). How Libraries Can Support Society Publishers to Accelerate Their Transition to Full and Immediate OA and Plan S. *Insights*, 32(1), 23. <http://doi.org/10.1629/uksg.477>
- Wise, A., & Estelle, L. (2020). How society publishers can accelerate their transition to open access and align with Plan S. *Learned Publishing*, 33(1), 14–27. <https://doi.org/10.1002/leap.1272>

8 Appendix

Questionnaire of the journal survey

1. On which subject areas or topics are contributions published in your journal?
2. In which year was the first issue of your journal published?
3. From which year onwards were the newly published articles published in open access?
4. Please indicate the publishing institution.
5. Are there fixed percentages for editorial work in the journal?
6. Are parts of the hours used by scientific/student staff* (e.g., for editing, proofreading, layout)?
7. Does the technical administration (e.g., archiving, indexing) take place within the editorial department or are fee-based services used for this?
8. How many articles are submitted to your journal on average per year?
9. How many articles are published in your journal on average per year?
10. How many visitors does your journal have on average per year?
11. How many article downloads do you record on average per year?
12. Do you charge a submission fee?
13. Do you charge author fees/publication fees?
14. Have you placed advertising on your homepage or in the print version?
15. Do you call for donations on the homepage?
16. Does your journal receive financial support?
17. Have you ever used crowdfunding - perhaps to launch the journal?
18. Do you use a freemium model where, in addition to free access to articles, additional (higher value) services are offered for a fee?
19. Does your journal cooperate in any way with other journals or with libraries?
20. Are there other - not yet mentioned - forms of financing that your journal uses?
21. Is there something that makes your financing model unique / special?
22. What is the financial recipe for success of your journal?
23. What is the average annual budget of your journal per year? (Answer in €)
24. If you would like to be informed about the project results and the publication of the white paper, please leave a contact address (e.g., e-mail). This information will not be evaluated in connection with previous replies.