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Financial aspects of open access journals*

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Resum. Les revistes d'accés lliure pretenen que els seus continguts siguin lliurement accessibles per Internet per a tots els lectors. Però, com finançar aquest objectiu? L'alternativa financera més coneguda al tradicional pagament per subscripció (*toll access*) és la del pagament per l'autor (*author pays*). Tanmateix, aquest model no és mancat d'inconvenients ni acceptat per tothom, per la qual cosa no es pot considerar un model definitiu. Per això, l'objecte d'aquesta xerrada és exposar les diferents maneres com les revistes que proporcionen accés lliure financen els costos de publicació, i analitzar-ne els pros i contres que, fins al moment, s'hi han apreciat. Per a això s'examinaran cinc formes diferents de funcionament: 1) Revistes gratuïtes per als autors i per als lectors; 2) Revistes gratuïtes per als autors i lectors de la versió en línia, però amb accés per subscripció a la versió en paper; 3) Revistes de pagament per l'autor; 4) Sistemes híbrids, i 5) revistes que proporcionen accés lliure als continguts després d'un període d'embargament.

Paraules clau: revistes d'accés lliure · models de finançament · via daurada

Abstract. The goal of open access (OA) journals is to offer free online access to the full texts of peer-reviewed research journal articles. But, how should this objective be financed? The best known alternative to the traditional subscription model (*toll access*) is the *author pays* model. Nevertheless, this model is not free from disadvantages and its lack of universal acceptance has prevented it from becoming the definitive model. This article examines the different ways in which OA journals have financed their publication costs, analyzing the pros and cons of each system. Thus, five different financial models are examined: 1) free OA journals for authors and readers; 2) free OA journals for authors and readers of the online version, with subscription payment for the paper version; 3) "author pays" OA journals; 4) hybrid systems: subscription journals with option to OA; and 5) free access to the contents after a period of embargo. Exceptions to these scenarios are noted as well.

Keywords: open access journals · economy models of publication · golden road

Open access (OA) means immediate, permanent, free online access to the full texts of peer-reviewed research journal articles [1]. Authors can provide open access to their work either by depositing their articles in institutional or thematic repositories (green road) or, directly, by publishing in OA journals (golden road) [2].

Journals are the most direct means to achieve the immediate availability of articles, although it is a path marked with difficulties. Some of these difficulties arise from ignorance of the goals pursued by open access, which is often portrayed as a threat to the traditional function of science journals as instruments for certifying the quality of research and as a means for its dissemination and preservation. Others are a consequence of the confrontation of the OA movement with a consolidated publishing industry that sees the benefits it has enjoyed up to now threatened. However, the greatest challenge that confronts OA journals is adopting a funding model that is compatible with their survival.

Open access journals and the different funding options provide a contrast to the ruling model in the scientific publishing industry, which is based on journals paid for by subscription or fees and on the retention of authorship rights by the publishers. This model, which has prevailed for many years, is inherently pathological and its symptoms have been exposed by the contrasting approach offered by the OA movement. For example, the excessive increases in the subscription prices set by the scientific publishing industry [3] has prevented institutions from accessing the very same journals whose content they produce because they cannot afford the subscriptions. Moreover, the imposition of package deals and the creation of a veritable commercial empire that controls the market's behavior are features that are difficult to find in any other market. In essence, traditional scientific publishing is an industry that obtains the

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raw material and part of the labor (the part relative to the publishing process) at no cost, withholds the exploitation rights of that raw material exclusively, and later sells the manufactured product, at prices and under conditions it determines, to the very same institutions and individuals who previously financed and elaborated the raw material. Additionally, the industry functions within an intermediate market, in which libraries bear the brunt of the purchase. The final consumer, as reader and author, is not directly affected by the journal's price, and when choosing a journal for publication of his or her work considers other parameters, such as impact, prestige, and visibility. The presence of this intermediary prevents the regulation that exists in other markets, in which the price of the goods is determined by the demand for them [4].

The current system has taken unfair advantage of scientists' need to have their work accredited by their peers and disseminated among them. This abuse went largely unnoticed until the relatively recent appearance of accessible and easy to use technologies that, while reducing publishers' costs and improving distribution of the information they sold, placed scientists at an even greater disadvantage. Nevertheless, these same technologies are now the best ally of those who search for alternative ways to provide universal access to knowledge, perhaps not for free cost but at least through fairer parameters.

Open access journals are one such alternative, with their aim of broadening the range of possibilities beyond the status quo of the traditional scientific-publishing sector. Currently, with respect to the type of content access, the retention of author's rights, and the type of financing, there are at least seven types of OA journals (Table 1). Three of them grant free access, in which either the authors retain the copyright or those who hold it grant the rights of use to third parties [5]. The other four types of journals are variations of the traditional model, including a hybrid model and journals that provide free access to all or part of their contents, but with the publisher retaining the copyrights (free access journals). In the following, each type of journal is described in detail in order to illustrate the financial model that sustains it.

Table 1. Modalities of journals of with free access to their contents

1. Open access (OA) journals free for authors and readers
2. OA journals free for authors and readers of the online version, with subscription payment for the paper version
3. "Author pays" OA journals
4. Hybrid systems: Subscription journals with option to OA
5. Journals with free access to certain contents
6. Free access to the contents after a period of embargo
7. Free access to journals for countries with very low *per capita* incomes

Modalities of open access journals

OA journals free for authors and readers. This type of journal represents the most desirable situation in the open access context, and this model is referred to as the platinum way [6]. It is the approach usually adopted by new OA journals. An example is *Open Medicine* [7], a journal created in April 2007 with the support of Canada's British Columbia University and of several editors of the *Canadian Medical Association Journal*. *Open Medicine* is funded by "partners," donations, and non-commercial sponsors and does not accept contributions from the pharmaceutical industry, in order to guarantee editorial independence and to encourage free discussion and circulation of ideas. In Spain, among the very few such biomedical journals are the *Revista electrónica de la autopsia* [8], *Revista e-salud* [9], and *Revista electrónica de biomedicina* [10].

Institutional or national policies may support a scientific journal as a platform to promote the dissemination and visibility of research results and thus foster its transition from paper to an electronic format. Often, these policies are realized through the creation of web portals that host the journals. This is the case for the German web portal *German Medical Science* [11], which was recently created by the *Association of the Scientific Medical Societies* and developed in cooperation with the *German National Library of Medicine*. It is also the case for the Japanese J-Stage portal [12], created in 1999 by the *Japan Science and Technology Agency*, which currently hosts 447 journals, and for *SciELO* [13], an initiative that began in 1997 with the support of various Brazilian public institutions and which currently extends to several other Latin American countries and Spain. However, *SciELO-España* [14] cannot be considered an OA journal web portal since of the 34 journals that comprise the site only one (*International Microbiology*) [15] functions completely according to OA principles; for the others, the copyright remains in the hands of the publisher.

Another interesting example is *Bioline International* [16], a non-profit collaboration between researchers and librarians of universities in Toronto, Brazil, and the UK, whose aim is to assist journals in underdeveloped countries in the transition from paper to online versions.

Granting authors and readers free access can also be seen as a way for journals to promote themselves during their start-up phase. Once they have fostered consumer loyalty, it is easier to transition to another model that provides them with financial resources, e.g., one in which the costs are covered by the author ("author pays") or by the reader/intermediary, through subscriptions. An example is the journal *Evidence Based Complementary and Alternative Medicine* [17], published by Oxford University Press and initially financed (2004–2008) by Hokuriku University and the Ishikawa Natural Medicinal Products Research Center. Once the journal had gained a critical mass of authors and readers, by 2008, it switched from open access to a subscription model, except for original research articles, which remain open access [18].

Offering free access to readers and authors has an ally in the availability of free software such as the Open Journal System (OJS), developed by the Public Knowledge Project [19] of the University of British Columbia, or the Digital Publishing System (DPubS), the fruit of a cooperation between the libraries of Cornell University and Pennsylvania State University together with

Pennsylvania State University Press, which provides an affordable and convenient technological infrastructure [20]. OA journals that make use of this software avoid the need to invest resources in diffusion, marketing, and sales. This is especially advantageous since most of journals that avail themselves of this software are new and thus do not have the expense of digitalizing paper collections. However, if free access requires that these journals depend on advertising or sponsors from the pharmaceutical industry to assure their long-term sustainability, then potential conflicts of interest cannot be ruled out. Nevertheless, in most cases, OA financing comes from public sources. In 2004, Regazzi [21] estimated that nearly 55% of OA journals were financed with public funds, thus closing the cycle of institutional investment in the process of scientific production.

The costs of publication of an OA journal depend on the frequency of publication, the complexity of the material for the layout, and, especially, whether there is simultaneous publication with a paper version. In a recent article, Clarke [22] analyzed the costs of the alternative models of OA journals and estimated that for a quarterly journal with a population of 300 subscribers, an average of five articles per issue (of preferably original research content), and approximately 100 original papers received per year (20% acceptance rate), the costs could be completely absorbed by sponsors if the journal was published only online. The cost of publishing that same journal on paper was estimated at 20,000 US$.

OA journals free to authors and readers of the online version, with subscription payment for the paper version. In a period of transition such as the current one, in which paper and online formats coexist, it is not uncommon to find journals that provide free access to their online versions while access to their paper versions is restricted to subscribers. In fact, this is estimated to be the case for approximately 28% of OA journals [21].

This modality is more frequently used by not-for-profit publishers than by commercial ones. A journal's decision to adopt this model can be based on several reasons. The most important are perhaps economic, since for these journals income from subscriptions to the paper version is often sufficient to defray the total costs of publishing the journal while allowing it to provide open access to the online version. Thus, for example, the decision of the Spanish journal *Neurocirugía* to allow free access to its online version was based on the fact that "while for the printed version, each new reader increases the costs of publication, the costs of the online version are only imputable to the first copy and the marginal cost incurred from each new reader of the online version is practically null. " Another of the model's benefits is the increased visibility and impact of papers that are available for free on the Internet. This is a much more relevant advantage than the economic one, as authors are not paid to market their work [23].

This is the model used by the more than fifty biomedical journals published by the Indian publisher, Medknow Publications [24] and by several journals published by scientific societies, such as *International Microbiology*, which has used this system since 1998 and whose editors declared their support for open access even before the OA movement came into official being [25]. The coexistence of paper and online versions also provides complementary sources of financing, such as derived from advertisements, reprints, or gift subscriptions.

From the financial point of view, this model is viable a long as there is a paper version and a sufficient number of subscriptions. There are also cases in which, if the price of the paper subscription is not excessive, libraries and individuals are willing to subscribe in order to support the journal in its aims, i.e., essentially a form of donation analogous to sponsorship subscriptions.

"Author pays" OA journals. Of the different funding modalities available to OA journals, the "author pays" model is considered by some as the only one that can compete with the traditional subscription model—perhaps because it is unique in providing the journal with sources of income that go beyond grants or sponsorships.

Nonetheless, the "author pays" model is not the most widespread and it has been adopted by less than half of the OA journals (Kaufman [26] estimated it to be ~47%). The controversy associated with this model starts with its name. Thus, there are those who prefer it being referred to as "author-side fees," with the argument that only in very rare cases does the author pay the publishing fees out of his or her own pockets; instead, usually it is the institution, library, financing agency, or even a sponsor who pays. Moreover, the term "author pays" can provoke rejection among authors since in the framework of the traditional system it is not uncommon for them to pay fees associated with the publication of their articles (per page, for color images, etc.) [27].

The "author pays" system has been adopted by both commercial and not-for-profit publishers, among which *Biomed Central* [28] should first and foremost be mentioned. *Biomed Central* was established in 1999 and currently offers 187 OA biomedical journals. The fees vary depending on the journal; the average is 1100€ and is typically paid by the authors or their institutions. In addition, there are member institutions, whose paid membership allows its researchers to publish for free, and supported members, whose fee guarantees discounts in publication fees. Currently, there are 310 member institutions in 39 countries (the majority in the USA, Germany, UK, and Canada). Member institutions also are provided with a webpage with links to the works published by that institution. *Biomed Central* has additional sources of financing, such as advertisement and payments from value-added products. Another publisher, a not-for-profit one in this case, is *PLoS* [29], co-founded in 2003 by the Nobel Prize winner and former director of the National Institute of Health, Harold Varmus. *PLoS* started with grants from the Gordon and Betty Moore Foundation and the Sandler Family Supporting Foundation (9 and 4 million US$, respectively). It currently publishes eight biomedical journals and is basically funded by author fees (the lowest is 1250 US$, and the highest 2750 US$), although it also has a funding system made up of institutional members, individual

members, sponsors, and donations. However, *PLoS'* acceptance of donations from the pharmaceutical industry—in amounts between 25,000 and 100,000 US$—have been criticized as potentially compromising the editorial independence of its journals. Other criticisms are directed at *PLoS'* economic viability and possible financial deficits [30].

Biomed Central and *PLoS* are, undoubtedly, the best-known of the publishers using the "author pays" model, but other publishing houses specialized in science, medicine, and technology are increasingly choosing this option. For example, *Libertas Academica* [31] is a New Zealand company with 33 journals; its fees are much lower than the aforementioned ones (between 675 and 775 US$). *Bentham Science Publishers* publishes more than 200 OA journals through its division *Bentham Open* [32]. *Hindawi* [32], with more than 100 OA journals, combines the "author pays" model (with a fixed fee of around 60 US$) with subscription charges for the journals' paper versions.

The "author pays" system offers a change in the financial model of scientific publications. It has advantages as well as its inconveniences and unresolved matters. Among the former, the most important is that the "author pays" strategy offers a fair alternative to the traditional model, since the manufacture of the final product is only paid for once and the resulting gratuitousness promotes the conversion of scientific knowledge into a common good. Moreover, being responsible for the fees sensitizes authors to the costs of publication, introducing a possible equilibrium point in the market between demand and supply. Among the inconveniences, critics of this system cite that [34] it can lead to inequalities in publication, evolving into a system based more on financial capacity than on merit, and that it is not adapted to academic fields with little funding, such as those of the humanities and social sciences. Such considerations can also be applied to biomedicine, since more than 25% of the papers published in non-English medical journals do not have funding, a figure that increases depending on the specialty [35]. At the same time it should be highlighted that most "author pays" journals offer discounts in their fees for those authors without resources to publish, although it is not clear which criteria are used to determine ability to pay. Another drawback to this model is the difficulty in establishing a new journal, since it effectively discourages sending out articles and may also influence the quality of a journal's content, since a journal that receives too few original papers may be forced to accept those of lower quality in order to survive. Finally, this system has been accused of demanding that the most productive research groups and institutions pay higher author charges. Yale University, for instance, recently stopped being a member institution of *Biomed Central*, arguing that the continuously increasing rates were no longer sustainable by the university's budget [36].

Of the non-resolved aspects, financial questions persist regarding the amount that should be paid, who should pay, and at what stage. The other problem is sociological and involves gaining author acceptance of this model.

As for the amount to be paid, the fees vary. In Clarke's aforementioned study (2007) the fees that result from the transformation of a subscription journal to an "author pays" model were calculated. The results showed that the rates vary depending on whether only the online version is considered, or both the online and paper versions, and whether the publisher is a commercial publishing house or a not-for-profit one. Thus, for a scientific society with 10,000 members and publishing five quarterly journals containing seven or eight articles each, with free distribution of the paper version to all members and open access to the online version after a 1-year embargo, each journal would cost 112,000 US$ per year, and its transformation to an "author pays" system would imply rates of 3750 US$ per article. Suppressing the paper version would reduce the editorial costs to 20,000 US$ per year, which could be recuperated with article fees of 730 US$. By contrast, for a commercial publisher of similar characteristics, the cost would be higher, with a paper and online edition costing 137,000 US$ per year and an author fees of 4600 US$. If the journal is available only as an online version, the costs are still significantly higher: 112,000 US$ per year and 3700 US$ per article.

With these figures, Clarke showed that the transformation of a journal to the open access model through an "author pays" system can be done more efficiently by a non-commercial publisher. Thus, one of the most significant reasons for the high price of commercially published journals is the high level of investment by their publishers, who must cover costs arising from marketing and positioning of the journal, customer relations, and legal aspects related to content protection. The high costs for these journals has been addressed in several studies. The European Commission's report on the economic and technical evolution of scientific publication in Europe concluded that journals from commercial publishers are three times more expensive than those from non-commercial ones [4].

As for who should pay the publication fees, the possibilities are: the authors themselves, the institutions to which they belong, libraries, and agencies that finance research. It is seldom the case that the author pays the fees for his or her publications; instead, the costs are usually covered as part of the research funding or by institutional funds [2]. Another proposal has been that libraries progressively assume these expenses insofar as open access frees that portion of their budgets formerly allocated to subscription payments.

Finally, regarding the stage at which the fees should be paid, it has been argued that a fee should be charged for every article sent for revision, with supplementary fees should the article be accepted; alternatively, that a fee should only be paid for accepted articles. The consequences are not trifling, especially when it is noted that prestigious journals such as *JAMA* have a rejection rate of around 92% [37].

Last but not least, scientists' opinions and perceptions of this model should be considered. Studies have shown that the frequency of publication in "author pays" journals is still very low [38] and that a high percentage of scientists have asserted that they would stop publishing in a journal in which they normally publish if it adopted an "author pays" model [39]. According to data from the latter study, 35% of those polled believed that with the "author pays" system it would be easier to publish a greater amount of content; 31% believed it to be a simpler

and prompter route of publication, but 27% also thought that journals with this system had lower impact factors and 46% were of the opinion that with this system anyone who could pay would publish [39].

Modalities of journals with subscription access and options of free access to their contents

Subscription journals with the option of open access: hybrid systems. The growing support for the open access movement has been reinforced by resolutions of organizations such as the Wellcome Trust (UK) [40], the UK's Research Councils [41], and the National Institute of Health (US) [42], which recommended and/or required that articles resulting from research funded by them be available in open access format within a certain period of time. In this environment, traditional publishers have been compelled to establish channels through which authors can, after paying publication fees, choose to provide open access to their papers. This possibility has given rise to what is now known as hybrid systems. One of the first publishers to implement the hybrid approach was Springer Verlag, which created the *Open Choice* program [43]. Others appeared later, each with a different name, such as Blackwell Publishing's *Online Open* system [41] and Oxford University Press' *Oxford Open* [45]. The fees vary between publishers but are typically between 2000 and 3000 US$.

Within this system, publishers meet the above-mentioned requirements of research funding agencies but are not subject to the financial risks of open access since they still function through a subscription system. The payment of fees to grant open access to certain articles has positive repercussions for society as a whole, since it implies a reduction in journal subscription prices (because the journal has been partly funded directly by its authors). Springer's *Open Choice* was the first system to propose a specific reduction in subscription costs, and the model was soon followed by other publishers. The strategy behind the hybrid system is that the fees paid during one year contribute to reducing the subscription price the following year [46].

Journals with free access to certain content. Some journal publishers that operate according to the traditional subscription system and retain the copyrights to the material they publish may also offer free access to part of the content and, on occasion, to all of it. This model is used by journals that are available both on paper and online or only online.

When a journal provides free access to its entire content, the only conceptual difference from an OA journal involves the copyrights. Journals whose publishers retain the copyrights are referred to as free access journals, to differentiate them from OA journals. An example of the separation of these journals can be seen in *PubMed Central*, which clearly distinguishes between journals whose contents are freely accessible and databases that are open access [47].

It is now becoming increasingly common for journals to provide free access to part of their content, especially to original papers. This has been the case since 2006 for the *British Medical Journal*, which from 1999 until 2006 experimentally provided free access to its full text, but then decided to allow access to only some of the content. This is also the strategy planned for the aforementioned *Evidence Based Complementary and Alternative Medicine* [17], which will shift from granting open access to a subscription basis.

Free access to content after a period of embargo. By definition, an embargo goes against the concept of open access, i.e., free, immediate access to publications [1]. Some not-for-profit publishers that offer access to full text after a period of embargo subscribe to the Washington D.C. Principles for Free Access to Science [48], which supports the free dissemination of knowledge. For these publishers, the embargo represents an intermediate solution between open access and subscription. It is a compromise that guarantees the journal's sustainability and allows the profits to be reinvested in knowledge-promoting activities. Currently, 102 medical journals have adopted this model [49]. An important resource for locating journals that provide partial or total access to their texts, with or without embargo, is *HighWire Press* [50]. This service, provided by a division of Stanford University Libraries, develops and maintains the online versions of a wide range of journals. Through the libraries' webpage, free access is provided to more than 1,800,000 articles from 1101 journals.

Free access journals for countries with very low *per capita* incomes. Countries with scarce financial resources have long made a case for their free access to scientific information, not only as a means to promote research but also to ensure quality medical care. In 2002, following an initiative of the World Health Organization (WHO), a program was started in which six of the largest publishing groups (Blackwell, Elsevier Science, the Harcourt Worldwide STM Group, Wolters Kluwer International Health and Science, Springer Verlag, and John Wiley) granted very-low-income countries free (or very low cost) access to more than 1000 medical journals [51]. Currently, many journals have initiated similar programs. The cost of this measure for traditional publishers is minimal since providing online access does not increase expenses, but it does guarantee a broad readership.

Final considerations

The different models discussed herein reflect the changing environment of scholarly publications. The growing demand and support for open access has broadened the dissemination of scientific information, not only through OA journals themselves but also through the alternatives that traditional publishing houses have been forced to provide in response to the OA movement.

The financial survival of OA journals depends essentially on two sources: (1) institutional financing through direct payment for the journal or of its expenses, and (2) advertisement revenues. However, each of these raises concerns regarding the

independence of the journal, amateurism in its management, and sustainability.

With regard to journal independence, it should be mentioned that this concern is not limited to OA journals but has long been a source of controversy in research science and its publications, especially in the field of biomedicine due to its frequently close ties to the pharmaceutical industry. An awareness of the problem does not make new journals less vulnerable. Accordingly, questions of credibility can be avoided by journals enacting measures such that their financing, whether public or private, is as transparent a process as possible. An example in the preservation of this impartiality is the policy of the previously mentioned journal *Open Medicine*, which systematically rejects funding from the pharmaceutical industry.

Another aspect worth mentioning is amateurism. It is well known that many scientific journals owe much if not all of their existence to the non-paid work carried out by a group of enthusiasts. The risk for this type of journal is that once its devoted core is no longer available, the journal declines or disappears completely. OA journals already make use of free tools, such as OJS or DPubS, to speed up the editorial process, the management of submitted papers, as well as their layout, editing, and diffusion. But for the journal to succeed, it must eventually be able to count on long-term funding either to raise its profile or to retain a staff whose job it is to maintain the journal. Public financing cannot be so meager that a journal can only be sustained by volunteers but should be sufficient to cover much if not all of the journal's expenses.

The last aspect to discuss, given the short trajectory of OA journals, is their sustainability. In 2005, Kaufman [26] reported that more than 40% of OA journals were still not meeting their costs and that, unlike subscription journals, there was no reason to assume that the passage of time would bring an increase in the number of articles submitted to OA journals, their quality, or their impact [26]. Thus, the future of open access is uncertain and, given the problems of the existing models, it is easy to understand why. The question considered here is whether these or other financial models will improve access to research results.

While, ideally, open access strives to be synonymous with free access, the editorial process of scientific journals obviously entails a series of expenses that have to be covered, and the dedication and professionalism needed to maintain a high level of quality should be rewarded. Thus, the search continues for financial models in which a fair price is paid for the goods received. Interesting possibilities are the adoption of public financing, in which the institutions that fund research complete the research cycle by paying to maintain scientific journals, or the implementation of "author pays" ("author side fee" models) type models—but no doubt other options will be developed in the future.

The financial models proposed thus far have not been in use long enough to confirm their success in terms of guaranteeing sustainability. What can be stated with certainty, however, is that these models have not left the publishing industry indifferent, neither the commercial sector, which sees open access as a threat to its monopoly and has been forced to adjust its position in the market, nor the not-for-profit sector, represented by the scientific societies, for whom journals provide a powerful tool to attract new members and to finance other educational or diverse related activities [52]. While in either case, open access is a threat to the status quo, it also has been an incentive for journals to search for and develop value-added products or to evolve along new paths in the provision of scientific information.

There is still a long way to go in achieving open access through journals, and progress has been slow. This is due, in part, to the fact that many of open access' defenders argue that, at least in these initial stages, efforts should focus on development of the green way, i.e., the implantation of thematic or institutional repositories, since in terms of potential success it is the most feasible alternative. In this view, the objective of creating OA journals or transforming traditional journals into OA journals (golden road) is relegated to a second phase of development. Priority for the green road is also advocated by national and supranational organizations, as can be deduced from their policies. Academic and research institutions are very aware of the enormous financial power of the publishing industry, and it seems that, al least for now, they prefer to avoid a direct conflict of interest.

The golden and green roads, however, are complementary, representing confluent paths with the same objective [53]. Together they offer interesting opportunities not only to achieve open access, but also to introduce a variable that will help regulate an editorial market that, at least financially, seems to have lost sight of the objective that gave rise to its creation: to develop a tool with which free dissemination of and access to scientific information is realized.

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