Briefing Paper: Article Processing Charges

Authors: Marieke Guy (Open Knowledge) and András Holl (Hungarian Academy of Sciences)

Reviewers: Nina Karlstrøm (CRIStin) and Victoria Tsoukala (EKT)

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Article Processing Charges (APCs) are the fees that some scholarly publishers charge authors of academic papers to publish their papers in Open Access journals.

This briefing paper provides an overview of basic issues regarding APCs, an important component of the business model of Open Access publishing. It reviews how APCs are levied, the frequency of their use and APC practices among publishers and funders. It also considers the development of Open Access publication funds led by institutions, funders and disciplines. The paper ends with a review of future questions and trends.

An Overview

Article Processing Charges (APCs) or Article Processing Fees are the most widely used commercial method for financing Open Access publishing. APCs can be charged by Open Access publishers and by subscription-based journals. However, not all Open Access journals charge APCs: the majority publish articles for ‘no fee’. APCs are more likely to be charged for publishing of science articles.

Traditional journal publishing is financed through subscriptions and subsidies from institutions. The system was created because production prices were dependent largely on the number of readers: printing and mailing costs heavily depend on circulation volume. Since the advent of computers and the Internet the production cost of journals have come to depend primarily on the number of articles/volume of published material (pages, figures etc.) and are largely independent of the number of downloads or reads. In recent years scholarly publishing is gradually moving away from subscriptions and towards Open Access. Publishers explore different models for financing publishing in Open Access. One of the ways of financing it is by charging authors (and their institutions and/or funders) at publication time through APCs. Other means of financing will be detailed later on in this paper.

Author-side fees existed in the print-era, through these were called page charges (as they were charged by the number of pages in the article). In the cost model page charges covered partly the (then) minor component of production costs proportional to the publication volume. Surcharges were often applied for oversized papers and for colour figures.

APCs are levied in 2 ways:

- **Open Access journal**: Authors charged to publish.
- **Subscription-based journal**: Authors charged to make their publication Open Access in an otherwise subscription-
Based collection. Known as the hybrid model.

A detailed study by Kozak and Hartley in 2013 found that of 9,000 Open Access journals investigated only 28% charged authors for publishing. This figure was found to be “highest in various disciplines in medicine (47%) and the sciences (43%) and lowest in the humanities (4%) and the arts (0%)”. A 2014 survey found that 26% of journals listed in the Directory of Open Access Journals (which does not accept hybrid Open Access or embargoed journals) charge APCs and that at least 61% of publishers of these journals were commercial in nature, with the remaining percentage not-for-profit or unknown types. In May 2015 Peter Suber indicated that in the DOAJ data showed that 32% of listed journals charged a fee while 67.9% charged no publication fee. Since costs exist for Open Access publishing as well, it is assumed that these are covered in ways other than APCs.

APC practices among publishers

APCs vary from publisher to publisher. One major area for concern is the lack of transparency in the process for deciding on an APC fee.

APCs are primarily charged for published articles, but some journals apply other methods including submission fees or offer membership or bulk payment options for institutions, reducing the costs.

While many publishers have fixed prices, others charge different fees for different types of articles (such as full articles or shorter research notes). There may also be discounts for authors whose institution participates in the publisher’s membership programme, or for those who have negotiated a discount (these usually involve block money transfers and advance payments). Some Open Access publishers have schemes for waiving APCs for authors from developing or low-income countries (e.g. BioMed Central waives APCs; the Public Library Of Science offers Publication Fee Assistance). The extent of fee waiving among the largest toll access and Open Access publishers is measured in a report written by Stuart Lawson of Jisc.

While APC costs vary, Walt Crawford found that 25% of the journals (roughly) fall into each of the four ranges indicated in figure 1.

Figure 1: Range of APC Costs

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2 Open Access Article Processing Charges: DOAJ Survey May 2014: http://www.mdpi.com/2304-6775/3/1/1
4 Peter Suber APC research: https://plus.google.com/v/PeterSuber/posts/Cqv4oq3LuFr
5 Other models for financing Open Access publications are the so-called collective models, such as for example the Open Library of the Humanities model (https://about.openlibhums.org/).
6 Examples include: PLOS Institutional Account: https://www.plos.org/about/get-involved-2/institutional-account-program/
7 BMC waiver country list: http://www.biomedcentral.com/authors/oawaiverfund/
8 PLOS Publication Fee Assistance https://www.plos.org/publications/publication-fees/plos-publication-fee-assistance/
9 Lawson, S. (2015) Fee waivers for open access journals http://figshare.com/articles/Fee_waivers_for_open_access_journals/1415955
10 Universal survey of Open Access (OA) journals: http://walt.lishost.org/2015/03/the-open-access-landscape-1-background/
According to the comprehensive Study of Open Access Publishing (SOAP)\(^\text{11}\), APCs are paid by the article author only 12% of the time, hence the conscious move away from the use of the term author-side fees or author pays. The majority of payments are made by funders (59%) or by universities (24%). Researchers with a funded research project can, in principle, cover APCs from their grants and funders often support this approach. However in countries where the average grant sizes are low, there is simply no way to cover APCs from grants.

Björk and Solomon found that APCs for hybrid Open Access journals tend to be significantly higher than APCs for Open Access journals\(^\text{12}\) at a cost of $2,727 on average per article rather than $1,418. A different study looking at the relationship between APC cost and the prestige of a journal was carried out at the University of Edinburgh. They found that some journals (both hybrid and Open Access) with high impact factors applied significantly higher article processing charges\(^\text{13}\).

Many funders and institutions are less keen to pay Open Access fees for hybrid journals, and are concerned about paying for the same content twice (known as ‘double dipping’) by paying both a subscription to the journal and APCs for articles to be published Open Access. The Norwegian Research Council has made grant money available for APCs but only for purely Open Access journals. It should be noted that page charges (mentioned earlier) do still exist and can be levied on top of APCs or Open Access fees, though some funder policies may specify that where an Open Access cost is charged no other publication costs should be paid on top. In another strategy, the Austrian Science Fund (FWF) (Austria) funds hybrid APCs, but applies a lower price cap than applied for Open Access journals\(^\text{14}\).

Work is still taking place to investigate the best ‘value for money’ approach for funders and institutions. In the aforementioned paper, Björk and Solomon outline three combined (full Open Access and hybrid) scenarios believed to be the most beneficial for APC-funding policies:

- APCs are refunded at list prices, with mechanisms put in place on the local level for hybrid Open Access in order to ensure savings on subscriptions and avoid “double dipping”;
- APCs are funded according to value-based price caps set for each journal and based on the journal’s relative “value”;
- Funders cover a fixed percentage of the APCs’ costs up to a certain maximum and the remaining portion is covered by universities/authors through other sources.

Developing Open Access publication funds

In response to the increasing requirement for APCs by large commercial publishers, funders and institutions have been developing Open Access publication funds to assist their researchers. A publication fund is a pool of money set aside by an institution to pay APCs or reimburse money spent on Open Access publishing. The Open Access Directory provides...
a list of APC supporting funds or assistance schemes\textsuperscript{10} and Taylor and Francis online offer a list of institutions which will offer Open Access prepayment\textsuperscript{16}.

SPARC provides information for institutions planning to implement a publishing fund\textsuperscript{17}. The Open Access working group of the Alliance of Science Organisations in Germany published a recent hand-out on Open Access Publication Funds\textsuperscript{18}. The guide suggests a number of key policy decisions to be made when establishing the fund including:

- Who manages the fund? Where do the funds come from? What charges should the fund cover? What content types are eligible? Are any access restrictions acceptable? Who within your community is eligible to receive support from the fund? How are intramural collaborations handled? Are there restrictions on repeat usage?

Another approach is centralising funds. SCOAP\textsuperscript{3}\textsuperscript{19} (Sponsoring Consortium for Open Access Publishing in Particle Physics) is a pioneering project looking at covering APCs centrally for a particular scientific field: particle physics. The APC level can be collectively negotiated resulting in agreed-upon APCs for SCOAP3 participating journals. Negotiation can take place as a country, institution or as a discipline.

In the Netherlands – the Association of Dutch Universities (VSNU) and the Koninklijke Nederlandse Akademie van Wetenschappen (KNAW) have established a countrywide agreement with Springer that covers the open access charge for affiliated corresponding authors in subscription-based journals\textsuperscript{20}.

An analysis of the financial background to the transition from subscription-based to Open Access publishing has recently been published by the Max Planck Digital Library\textsuperscript{21}. The report provides insights into what institutions can do to move towards Open Access publishing as an alternative to subscriptions.

**APCs and Funders Policies in EU**

APCs are becoming a more acceptable and understandable component of the business model of Open Access publishing.

As mentioned earlier a number of European funders now allow the payment of Open Access article fees or accept that research grant funding could be used to pay for APCs. These include RCUK, Deutsche Forschungsgemeinschaft (DFG), the Dutch NWO, the Norwegian Research Council, the Swiss National Science Foundation and the Swedish Research Council. A list of these funders is provided in the information section. Another interesting approach is demonstrated by the Hungarian Scientific Research Fund (OTKA), which earmarks a part of the institutional overhead to be used for funding APCs.

One area of work funders have been involved with is providing guidance to publishers introducing

\textsuperscript{10} Open Access Directory: Open Access Journal funds: http://oad.simmons.edu/oadwiki/OA_journal_funds
\textsuperscript{11} Taylor and Francis Open Access information: http://www.tandfonline.com/page/openaccess/funders
\textsuperscript{12} SPARC Funds FAQ: http://www.sparc.arl.org/initiatives/funds
\textsuperscript{13} Open Access working group of the Alliance of Science Organisations in Germany Open Access Publishing Funds: http://doi.org/10.2312/allianzoa.007
\textsuperscript{16} Springer Agreement with the Association of Dutch Universities and Academy Institutes: http://www.springer.com/gp/open-access/springer-open-choice/agreements/42388
\textsuperscript{21} Disrupting the subscription journals’ business model for the necessary large-scale transformation to open access. Max Planck Digital Library Open Access Policy White Paper. http://dx.doi.org/10.17617/1.3
offset systems and to academic institutions in evaluating proposals for such systems.

In the future funder mandates and APC funding policies may well affect the pricing of publishers. As Richard Poynder points out: the indication of ample funding might encourage publishers to raise APCs. It is possible some funders may try to orient the market and influence the APCs with appropriately adjusted price caps.

For Horizon2020 researchers are encouraged to publish in Open Access journals or in hybrid journals that offer the possibility of making individual articles openly accessible. When applicable the APCs incurred by beneficiaries are eligible for reimbursement during the duration of the action. It is advisable to indicate anticipated costs for publishing Open Access in grant proposals.

As part of OpenAIRE2020 a Gold Open Access Pilot was launched supporting FP7 projects finished after 2013. The pilot will make 4 million Euro of funding available to cover the cost of publications arising from FP7 projects up to 2 years after the project has ended. In this pilot hybrid APCs are not eligible for funding.

**Future Trends and Conclusions**

Use of APCs by publishers continues to be diverse and often opaque. However, while APCs often present a burden for both researcher and the publisher, both financially and bureaucratically, they do provide a compelling opportunity as a mechanism to ensure that researchers are aware of costs in the publishing process. Further, this supply-side model entails the full disclosure at the outset of the costs per article, which lends transparency to the process of charging for the publication of literature on the side of the publishers.

It is possible that this engagement will bring hitherto often undiscussed elements of the scholarly publishing environment to a new audience, and allow opportunities for discourse and feedback.

This paper has shown that there is growing recognition that financial help could be provided for APCs from funders and institutions alike. One suggestion might be that funders coordinate their APC support policies to achieve larger impact on publishers, and that they remain aware of the possible effect of such policies on publishing costs. The PASTEUR4OA regional meetings offer a venue for developing coordinated APC funding policies.

It is clear that there is a political and economic question about who pays for scholarly publication. However, scholarly communication should be viewed in the context of what society pays for when it funds research, rather than just seen as a cost for academics to shoulder. Effective future policy will need to consider what is required for scholarly communication to work effectively and think more imaginatively about the opportunities available.

The Max Planck Digital Library Open Access Policy White Paper cited earlier in this briefing document begins to look at alternate options in more detail. It argues that a true transformation

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22 Jisc Collections principles for offset agreements: https://www.jisc-collections.ac.uk/Global/News files and docs/Principles-for-offset-agreements.pdf


24 Open Access policy for FWF projects: https://www.fwf.ac.at/en/research-funding/open-access-policy/


of scholarly publishing will be achieved by “converting the existing library acquisition funds into a budget for publication services, which can be expected to be eventually rather more stratified than article processing charges (APCs) as we know them today.” It might be that APCs are only an interim measure on the road to Open Access.

Further Information

Papers and articles
http://dx.doi.org/10.1087/20120207

http://www.amssecpub.com/pdf/10.2466/01.17.CP.1.4


LSE & HEFCE (2015) Economic analysis of business models for open access monographs
http://bit.ly/1g8e2vh

doi: 10.1087/095315108X356680

Schimmer, R., Geschuhn, K. K., & Vogler, A., 2015, “Disrupting the subscription journals’ business model for the necessary large-scale transformation to open access”.
http://dx.doi.org/10.17617/1.3

Solomon, D.J.; Björk, B.-C., 2012, “A study of open access journals using article processing charges”, Journal of the American Society for Information Science and Technology, 63, 8, 1485
doi: 10.1002/asi.22973


Which subjects are most likely to charge article processing charges? by Heather Morrison
http://sustainingknowledgecommons.org/2015/05/05/which-subjects-are-most-likely-to-charge-article-processing-charges/

Suber, P., 2006, “No-fee open-access journals”, SPARC Open Access Newsletter, November 2,
http://dash.harvard.edu/handle/1/4552050

Some funders that support the payment of APCs

Austria: Austrian Science fund (FWF)
https://www.fwf.ac.at/en/research-funding/open-access-policy/

Germany: Deutsche Forschungsgemeinschaft (DFG)
http://bit.ly/1FygSPR

Netherlands: Dutch Organisatie voor Wetenschappelijk Onderzoek (NOW)
http://bit.ly/1HAr9R0

Norway: Norwegian Research Council
http://bit.ly/1o6nifc

Sweden: Swedish Research Council
http://bit.ly/1EYqGUX

Switzerland: Swiss National Science Foundation
http://www.snf.ch/en/theSNSF/research-policies/open-access/Pages/default.aspx

UK: Research Council UK (RCUK)
http://www.rcuk.ac.uk/research/openaccess/

APC information can also be found through a search on ROARMAP
http://roarmap.eprints.org/
See Advanced search > Funding for APCs where charged by journals

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Annex 1 – Article Processing Charges Timeline

**Article Processing Charges Timeline**

1960s – 1990s

- 1960s - In the United States the government authorized researchers with federal grants to pay page charges, in order to support not-for-profit organisations
- 1970s - Half of all science articles written by U.S. authors required some form of author payment
- 1994 - Revised guidelines in NIH Grants Policy Statement allowed page charges to be paid not only by government-sponsored contributors, but also by non-funded contributors

2002 - 2003

- American Physical Society (APS) devised page charges in the 1930s to help finance journals. The reasoning was that the research published in that journal was not only of interest to those in academia, but also in the broader research community – from “Paying for Knowledge One Page at a Time”
- 2002 - Biomed Central start charging processing costs
- 2003 - Public Library of Science (PLOS) launch journals that charge processing costs
- 2003 - Journal of Translational Medicine starts charging APCs for articles accepted for publication

2006

- Finch report released with cost of APC anticipated
- RCUK Open Access policy agrees to pay APC by offering block grants to universities to establish publication funds
- Public Library of Science (PLOS) raise publication fee by up to $1,000
- EC Communication and Recommendation on access to and preservation of scientific information and Recommendation C(2012) 4890 on access to and preservation of scientific information

2012

- Consortium of partner funders [Jisc, Research Libraries UK, Research Councils UK, the Wellcome Trust, the Austrian Science Fund (FWF), the Luxembourg National Research Fund (FNR) and the Max Planck Institute for Gravitational Physics] commission a study to examine the rapidly developing market for open access article processing charges (APCs)
- Jisc APC pilot launched

2013

- RCUK Independent Review of Implementation. Spending on APCs is tracked
- Wellcome Trust report: Developing an Effective Market for Open Access Article Processing Charges
- Wellcome Trust publish details of spending on Open Access publishing in the year 2012-2013. Publication results in collective sharing of publication spending
- Jisc Monitor launched – Cross-institutional APC monitoring initiative

2014

- Max Planck Open Access Policy White Paper on ‘Disrupting the subscription journals’ business model for the necessary large-scale transformation to open access
- EC OpenAIRE Gold Open Access Pilot to fund OA publications for finalized FP7 projects

A more detailed version of this timeline is available on the Open Access Working Group blog: [http://access.okfn.org/2015/05/18/apcs-timeline/](http://access.okfn.org/2015/05/18/apcs-timeline/)