

Report on offset agreements: evaluating current Jisc Collections deals

Year 1 – evaluating 2015 deals

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Introduction

Offset agreements for academic journals are designed to reduce the overall cost to academic libraries of supporting scholarly publishing. In these agreements, journal subscription costs and open access publication costs are *offset* against each other. There are different approaches to achieving this. Some offset agreements reduce the cost of article processing charges (APCs) – the fees sometimes paid to publishers to make research open access – and some reduce the amount an institution pays for a subscription in proportion to the amount it pays for APCs. Offsetting is intended as a transitional mechanism to support progress towards a fully open access scholarly publication system.

This report is a comparative study of the different offset agreements that Jisc Collections has negotiated to date on behalf of UK academic libraries. It relies on financial data provided by higher education institutions (HEIs) themselves about the amounts they have paid for subscriptions and APCs. The most recent full year for which financial data was available at the time of publication was 2015, so this report will focus on the five offsetting agreements in use for the duration of that year. These are from the publishers Wiley, Taylor & Francis, SAGE, the Institute of Physics, and the Royal Society of Chemistry. All five agreements are pilots and therefore subject to revision in subsequent years.¹

Each of the five offset agreements are analysed and compared based on the available data. The discussion section highlights key issues arising from the data, especially with regards to the total cost of publication (TCP).² The full costs of the transition to open access include much more than just APCs, so additional administration costs are also considered. This report is the first of three annual reviews of offset agreements: the 2017 report will use financial data for 2016, and the 2018 report will use financial data for 2017.

1 The Royal Society of Chemistry offsetting scheme will stop at the end of 2016 (Royal Society of Chemistry 2016).
2 See Pinfield, Salter, & Bath (2015) for a definition of TCP.

Data sources

APC expenditure data has been made openly available by numerous higher education institutions (HEIs) and research funders over the past few years.³ The analysis in this report is based on a sample of 34 HEIs that have made APC data for 2015 available; these institutions are listed in the Appendix. The sample is based on willing participation so it is not representative and is skewed towards more research-intensive institutions: the 34 HEIs contribute approximately half⁴ of the sector's subscription expenditure and receive 66%⁵ of RCUK's open access block grants (a rough proxy for APC expenditure). The date used to determine inclusion in the dataset is the date that the APC was applied for. Determining which APCs in the dataset had been paid as part of an offset agreement was not always easy because institutions had not all recorded this in the same way. In future years Jisc will provide guidance to help institutions record offset APCs more reliably. A copy of the APC data used in this report is available at <http://dx.doi.org/10.6084/m9.figshare.3985353>.

Subscription expenditure by HEIs with ten publishers during the years 2010-14 is openly available for almost all institutions in the UK.⁶ All publishers with offset agreements in this report are included in the public data. If an institution subscribes to a deal negotiated by Jisc Collections on behalf of the sector, annual changes in subscription prices are stated in the contract. Therefore the amounts paid in 2015 can be reasonably assumed to be the same as 2014 *plus* a certain percentage increase. The percentage increase for each publisher is noted below at the relevant points. For institutions that are not subscribers to the deals the contracted price increases do not apply, and we can see from the trend data in the tables below for 2010-14 that there is quite a lot of fluctuation year-on-year as institutions change their subscriptions.⁷

Table 1: Subscription expenditure of UK HEIs with five publishers, 2010-14

	2010	2011	2012	2013	2014
Wiley	£13,460,226	£14,662,250	£15,616,311	£16,369,917	£16,875,190
Taylor & Francis	£8,319,095	£9,140,572	£9,710,528	£10,084,350	£10,828,334
SAGE	£4,495,313	£5,085,196	£5,608,296	£5,869,791	£5,990,818
Royal Society of Chemistry	£806,129	£867,752	£1,062,237	£1,062,948	£1,101,860
Institute of Physics	£1,091,517	£1,119,070	£1,197,958	£1,279,691	£1,373,533

3 See Lawson (2016) for a figshare collection containing the majority of this data.

4 For the five publishers in question, 46.7% (£16,878,777 out of £36,169,735) in 2014.

5 £14,921,718 of the £22,626,781 made available to 107 institutions in 2015/16 (see <http://www.rcuk.ac.uk/RCUK-prod/assets/documents/documents/2015-16-BlockGrantAllocation.pdf>).

6 See Lawson & Meghreblian (2014).

7 Source: <http://dx.doi.org/10.6084/m9.figshare.1186832>

Table 2: Annual change in subscription expenditure of UK HEIs with five publishers, 2010-14

	2010	2011	2012	2013	2014
Wiley	-	8.9%	6.5%	4.8%	3.1%
Taylor & Francis	-	9.9%	6.2%	3.8%	7.4%
SAGE	-	13.1%	10.3%	4.7%	2.1%
Royal Society of Chemistry	-	7.6%	22.4%	0.1%	3.7%
Institute of Physics	-	2.5%	7.0%	6.8%	7.3%

However, the average increases for these publishers in 2014 was reasonably similar to the contracted increases – within 1.1% for Wiley, SAGE, and the Royal Society of Chemistry – so the contracted increases have been used for analysis in this report. The exception is the Institute of Physics, which does not have a contracted increase and has a relatively low number of subscribers to the Jisc Collections deal, so in this instance an estimated increase of 7% – the average annual increase over three years – has been extrapolated from the trend data.

Wiley

Institutions that subscribe to the Jisc Collections 2015-17 Wiley agreement are eligible to join the offsetting pilot if they open a pre-pay Wiley Open Access Account (WOAA). This account is used to accrue credit to pay for APCs in Wiley journals.

This ‘offset credit’ is calculated based on total customer spend with Wiley on journal subscriptions, including fees for access to unsubscribed titles, and APC fees. This means institutions are tiered by total spend with Wiley – the more they spend, the more offset credit they receive to pay future APCs with.

The initial level of offset credit in 2015 was calculated based on an institution’s spend for 2014. Institutions were required to deposit a minimum of £12,800 into the WOAA for 2015. Wiley created a separate WOAA credit account run in parallel with the institution’s regular WOAA account. Provided there is cash in the credit account all APCs are deducted from there. Unused pre-payment funds are rolled over.

All institutions receive a 25% discount on the standard APC rate.

Duration of deal: 1 January 2015 – 31 December 2017

Duration of offset pilot: 1 January 2015 – 31 December 2017⁸

Table 3: 2015 Wiley expenditure by sample of 34 HEIs

Subscription spend:	£8,538,468 ⁹
APC spend:	£1,590,629
Total spend (subscriptions + APCs):	£10,129,097
Number of APCs published under offset deal:	272 ¹⁰
Amount saved through offsetting:	£489,600 ¹¹
Discount on Total Cost of Publication:	4.6%

The offset amount of 4.6% has been calculated by comparing the actual TCP (£10,129,097) with an estimate for what the TCP would have been without offsetting (£10,618,697).¹²

8 Offset credit was given to 34 HEIs in 2015. This figure is not to be confused with the 34 HEIs in the sample; it is just a coincidence that n=34 in both cases.

9 This figure is an extrapolation of data for 2014, when the total paid by the consortium was £16,875,190 and the total paid by the sample was £8,371,047. In 2015, subscribers to the big deal paid a 2% increase.

10 This includes 19 APCs that were not reported in the main dataset but that HEIs have confirmed separately.

11 Number of offset APCs (272) multiplied by amount of discount on each (£1,800 – the standard hybrid APC price for Wiley).

12 The limitation of this method is that some APCs that were offset may simply not have been paid if there was no offsetting agreement in place, in which case the baseline TCP used in the calculation would have been lower. It is not possible to control for this accurately but further conversation with institutional fund

Taylor & Francis

Institutions participating in the Jisc Collections 2015-17 Taylor & Francis agreement are included in T&F's offset pilot for 2015 and 2016. Participating institutions received vouchers entitling them to heavily discounted APCs in hybrid journals.

The level of discount depends on the institution's total expenditure. Each voucher gives a 75% APC discount on one APC in a hybrid journal, reducing the APC from £1,788 to £450 (excluding VAT). The number of vouchers issued is calculated by institutional spend divided by the average hybrid APC price (£1,788):

$$\text{number of vouchers} = \text{institutional spend} / \text{average APC price}$$

For example, if institutional spend is £120,000, then the number of vouchers is $120,000/1788 = 67$ vouchers.

Duration of deal: 1 January 2015 – 31 December 2017

Duration of offset pilot: 1 January 2015 – 31 December 2017

Table 4: 2015 Taylor & Francis expenditure by sample of 34 HEIs

Subscription spend:	£5,023,742 ¹³
APC spend:	£282,790
Total spend (subscriptions + APCs):	£5,306,532
Number of APCs published under offset deal:	157
Amount that has been offset:	£210,066 ¹⁴
Discount on Total Cost of Publication:	3.8%

The offset amount of 3.8% has been calculated by comparing the actual TCP (£5,306,532) with an estimate for what the TCP would have been without offsetting (£5,516,598). It has been noted that in order to increase uptake, 'a smaller number of vouchers covering a larger percentage of the APC would be preferred'.¹⁵

managers could reveal whether it is a major or minor issue.

13 This figure is an extrapolation of data for 2014, when the total paid by the consortium was £10,828,334 and the total paid by the sample was £4,832,844. In 2015, subscribers to the big deal paid a 3.95% increase (assuming they subscribe to a single collection (SSH or S&T); it was 3.75% if both collections were taken).

14 Number of offset APCs (157) multiplied by amount of discount on each (£1,338 – the standard hybrid APC price for Taylor & Francis is £1,788 and this was reduced to £450).

15 Jones (2015)

SAGE

UK institutions that subscribe to the SAGE Premier collection receive a discount on APCs in hybrid titles. The discounted APC is currently reduced to £200 for authors publishing in titles within the SAGE Choice Scheme (hybrid open access journals) and SAGE Premier titles. Authors enter a code and an invoice is raised at the discounted rate.

Subscription pricing of hybrid journals: where the number of gold open access articles reaches a relatively low threshold, SAGE will moderate the subscription rate proportionally. Once open access articles reach a significant proportion, SAGE will transition from the author discounts to moderating the journal's pricing and it reserves the right to withdraw the title from the discount scheme at its own discretion.

Duration of deal: 1 January 2015 – 31 December 2016

Duration of offset pilot: 1 January 2014 – 31 December 2016

Table 5: 2015 SAGE expenditure by sample of 34 HEIs

Subscription spend:	£2,540,592 ¹⁶
APC spend:	£60,672
Total spend (subscriptions + APCs):	£2,601,264
Number of APCs published under offset deal:	75 ¹⁷
Amount that has been offset:	£97,800 ¹⁸
Discount on Total Cost of Publication:	3.6%

The offset amount of 3.6% has been calculated by comparing the actual TCP (£2,601,264) with an estimate for what the TCP would have been without offsetting (£2,699,064).

16 This figure is an extrapolation of data for 2014, when the total paid by the consortium was £5,990,818 and the total paid by the sample was £2,461,814. In 2015, subscribers to the big deal paid a 3.2% increase (3.2% for 'top-up + maintained', 3.4% for 'e-only single invoice').

17 These fall into two categories: 39 APCs at £200, and 36 at £400. It appears that the £400 APCs were used to retrospectively apply open access to previously published articles.

18 The number of £200 offset APCs (39) multiplied by amount of discount on each (£1,400 – the standard hybrid APC price for SAGE is £1,600), plus the number of £400 offset APCs (36) multiplied by amount of discount on each (£1,200).

Institute of Physics Publishing

Hybrid APCs for articles published in one year are offset against institutions' expenditure on subscription and licence fees in the following year, provided institutions maintain subscriptions to IOPscience. Ninety per cent of a university's expenditure in one year on APCs is offset, or the total cost of their subscriptions, whichever is the greater.

IOP will monitor articles published on an open access basis in hybrid journals by authors at participating institutions during the course of each year and report to each institution at the end of the year on the number of published articles and their publication costs.

Offsets cannot exceed the value of subscription and licence fees. For example, an institution with an expenditure of £50,000 in hybrid APCs in 2014 and of £40,000 in licence fees in 2015 will be able to offset a maximum of £40,000 in 2015. APCs for fully open access journals will not be offset, as they have no subscription or licence income against which to offset.

Duration of deal: 1 January 2016 – 31 December 2016

Duration of offsetting pilot: 1 May 2014 – 31 December 2017

Table 6: 2015 IOP expenditure by sample of 34 HEIs

Subscription spend:	£917,465 ¹⁹
APC spend:	£186,340
Total spend (subscriptions + APCs):	£1,103,805
Number of APCs published under offset deal:	n/a
Amount that has been offset:	£148,171 ²⁰
Discount on Total Cost of Publication:	11.8%

The offset amount of 11.8% has been calculated by comparing the actual TCP (£1,103,805) with an estimate for what the TCP would have been without offsetting (£1,251,976).

The estimated subscription expenditure used here may be inaccurate *because* of the offset agreement – the rebate given to institutions in return for their 2014 expenditure may reduce their expenditure on either subscriptions or APCs in 2015.

¹⁹ This figure is an extrapolation of data for 2014, when the total paid by the consortium was £1,373,533 and the total paid by the sample was £857,444. In 2015, subscribers to the big deal paid approximately 7% more than in 2014.

²⁰ This figure is an estimate, used in lieu of knowing the precise amount spent on APCs in 2014 that would be used to calculate institutions' rebate. It has been calculated by taking the number of APCs (125) the sample paid to IOP in 2015 (at an average price of £1,620 this totals £202,500), and then factoring in the 23% overall growth rate from 2014 to 2015 to reach a figure of £164,634 for 2014. So the offset amount is 90% of £164,634.

Royal Society of Chemistry

The RSC's 'Gold for Gold' pilot scheme was introduced in 2012 and has since been rolled out globally. Subscribers to the RSC Gold collection of journals, databases, and magazines receive voucher codes to publish gold open access articles free of charge, without paying the article processing charge.

Duration of deal: 1 January 2013 – 31 December 2015²¹

Duration of offsetting pilot: 2012 – 2016

Table 7: 2015 RSC expenditure by sample of 34 HEIs

Subscription spend:	£366,297 ²²
APC spend:	£193,806
Total spend (subscriptions + APCs):	£560,103
Number of APCs published under offset deal:	165 ²³
Amount that has been offset:	£264,000 ²⁴
Discount on Total Cost of Publication:	32%

The offset amount of 32% has been calculated by comparing the actual TCP (£560,103) with an estimate for what the TCP would have been without offsetting (£824,103). As noted above, a limitation of this method is that some APCs that were offset – in this case by using a voucher – may simply not have been paid if there was no offsetting agreement in place, in which case the baseline TCP used in the calculation would have been lower. Since RSC vouchers cover 100% of the APCs cost it is likely that this is more of an issue with RSC than the other publishers.

21 This three-year deal was renewed for a single year in 2016 (1 January 2016 – 31 December 2016). The Gold for Gold offset scheme will also end at the same time as the main deal.

22 This figure is an extrapolation of data for 2014, when the total paid by the consortium was £1,101,860 and the total paid by the sample was £355,628. In 2015, subscribers to the big deal paid a 3% increase.

23 It is hard to verify the precise accuracy of this figure due to confusion regarding use of the vouchers. There were 164 listed in the dataset, and an extra 13 vouchers from the University of Bristol which were not included in the main dataset, bringing the total to 177. However, RSC provided Jisc with a different dataset of all gold open access articles for 2015. In this a further 19 were identified as belonging to the sample, but the University of Reading's exceptionally high number, 35, was reduced to 4. Therefore the total number used is 177+19-31=165.

24 Number of offset APCs (165) multiplied by amount of discount on each (£1,600 – the standard hybrid APC price for RSC).

Discussion

Subscription expenditure, APC expenditure, and the total cost of publication by UK HEIs have been investigated by other researchers.²⁵ This analysis borrows from previous insights to examine the influence of offset agreements on the total cost of publication. Before addressing five key questions, a few points can be made about the overall state of offsetting:

- All five offset agreements require an institution to subscribe to the publisher's main deal in order to participate in them. Participation is automatic for subscribers to the Taylor & Francis, SAGE, and RSC agreements but not for the Wiley and IOP agreements.
- The Wiley and RSC agreements apply for articles in both hybrid and full open access journals, whereas the Taylor & Francis, SAGE, and IOP agreements only offset the cost of articles in hybrid journals.
- The word *offset* is used to distinguish agreements in which the costs of subscriptions and open access are offset against each other in recognition of the 'total cost of publication', as opposed to deals which simply offer a discount. How closely the two elements of offset agreements are related varies between publishers depending on the exact mechanism chosen; in some cases the word *discount* may in fact be more accurate than *offset*. Many publishers offer discounts on APCs through prepayment agreements or membership agreements, such as the American Chemical Society's AuthorChoice scheme. However, these schemes are independent of journal subscriptions and are not related to the total cost of publication. The five mechanisms used by the publishers analysed above all include some element of recognition for total combined expenditure and can thus be said to be true offset agreements.
- Payment for page and colour charges are still distributed within institutions rather than centrally managed²⁶ and it is difficult to know exactly how much is spent on them or how many page and colour charges are mistakenly included in APC expenditure.
- Springer introduced an offset agreement in October 2015; this was too late for inclusion in this year's data analysis – Springer will be included in the 2017 report – but early indications from the first six months' worth of data are that the agreement is effective in reducing costs and is easy to administer for institutions.²⁷

25 See Björk & Solomon (2014); Johnson, Pinfield, & Fosci (2015); Jubb et al. (2015); Lawson, Gray, & Mauri (2016); Pinfield, Salter, & Bath (2015, 2016); Shamash (2016).

26 See Gray (2015).

27 Picarra (2016)

Question 1: Is offsetting leading to a reduction in the total cost of publication (when compared to projected expenditure levels if a deal was not in place)?

The answer to this question appears to be a clear ‘yes’:

Table 8: The value of publishers’ offset agreements compared

	Wiley	T&F	SAGE	IOP	RSC
Subscription spend:	£8,538,468	£5,023,742	£2,540,592	£917,465	£366,297
APC spend:	£1,590,629	£282,790	£60,672	£186,340	£193,806
Total spend:	£10,129,097	£5,306,532	£2,601,264	£1,103,805	£560,103
Number of APCs published under offset deal:	272	157	75	n/a	165
Amount offset:	£489,600	£210,066	£97,800	£148,171	£264,000
Discount on TCP:	4.6%	3.8%	3.6%	11.8%	32%

Although uptake could certainly be higher, the combined value of offset across all publishers is significant at £1.2m. (This is skewed towards the most research-intensive institutions: UCL alone accounts for 163 APCs (£293,400) of the Wiley offset value.²⁸) Since the HEIs in the sample represent two-thirds of the sectors’ APC expenditure (see Note 5 on p.4), the total value of the five offset agreements can be estimated at £1.8m. The 368 articles published under the Springer Compact agreement in the final three months of 2015²⁹ pushes the value of offset agreements to the sector in 2015 to around £2.5m.

However, this is not the whole picture. Although there is no evidence yet of authors changing where they publish based on the presence of offset agreements, some APCs that were offset may simply not have been paid if there were no agreements. Unfortunately, it is not possible to estimate accurately what institutions might have paid in 2015 in the absence of offsetting. This is because the market changes too much each year to make projections based on long-term trends. For example, the two publishers with new offset agreements for 2015 – Wiley and Taylor & Francis – counter-intuitively bucked the sector-wide trend of a 23% increase in APC revenue and saw a *decrease* over their 2014 numbers.³⁰ The reason for the decline is almost entirely due to the reduction in UCL’s APC expenditure (the number of Wiley APCs down from 460 to 168, and Taylor & Francis from 237 to 40). This highlights the precarious nature of the current market.

Some agreements are better value than others, and reduce the total cost of publication (TCP) more than others. The Wiley agreement provides the largest cash savings due to having the highest number of APCs, but the IOP and RSC agreements proportionally reduce the TCP

28 For high-spending institutions such as UCL, the Wiley agreement can lead to great variation in the amount of credit each year, with the total amount paid swinging higher and lower in alternate years. This creates problems for the institution and analytical difficulties in making year-on-year comparisons.

29 Picarra (2016)

30 See *Figures 3 and 8* in Shamash (2016).

significantly more than the Wiley, SAGE, or Taylor & Francis agreements.

Question 2: Are cash savings outweighed by administrative burden? Are some agreements more efficient than others?

The administrative burden of implementing open access is significant for institutions.³¹ Various arrangements have been put into place in an attempt to streamline the administration process. Pre-payment deals, where a bulk sum is paid up front, is one such arrangement and has been found to save time over invoicing.³² Vouchers or discount codes for APC payments have also been used – sometimes as part of a pre-payment deal – although these are not recommended by most institutions who use them because of the extra administrative work.³³

The per-article administration cost for gold open access has been calculated variously at £88³⁴ and £25-103.³⁵ Since the £88 estimate is based on a much bigger – albeit less detailed – dataset and has subsequently been used in other analyses,³⁶ it has also been used in this report. Using this estimate we can look at what the administrative cost of APCs would be if they were outside of an offset agreement and processed as usual:

Table 9: Administration costs of processing APCs

Publisher	Number of APCs	Potential admin cost of APCs
Wiley	224	£19,712
T&F	156	£13,728
SAGE	43	£3,784
IOP	-	-
RSC	156	£13,728
Total	579	£50,952

The total of £50,952 is slightly below earlier estimates of the admin costs of the TCP, at 0.3% rather than 0.6%.³⁷ However, the figure only takes into account administration costs associated with individual APC transactions, and not further overheads such as management costs associated with setting up offset agreements, decisions on how to implement offsetting within the institution, or advocacy and communication of deals to researchers. The administrative burden of different offset agreements has been investigated from a qualitative

31 Burgess (2015: 21–25), De Castro (2015), Johnson, Pinfield, & Fosci (2015)

32 Holliday & Jones (2015, 2015a)

33 Jisc OA Good Practice Pathfinder project (2016)

34 Johnson, Pinfield, & Fosci (2015)

35 Holliday & Jones (2015)

36 Such as Pinfield, Salter, & Bath (2016).

37 $£50,952 / £18,815,487 = 0.3\%$. For the 0.6% figure see Johnson, Pinfield, & Fosci (2015) and Pinfield, Salter, & Bath (2016).

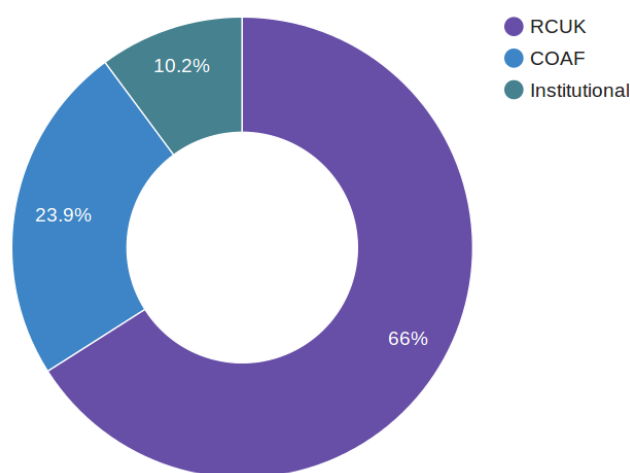
perspective³⁸ which provides valuable insight – telling us that, for example, the SAGE and IOP agreements appear to have been easier to implement than the RSC one – but this brings us no closer to accurately quantifying the costs. Since all offset agreements remove the need for invoicing individual APCs it may be the case that they all have slightly lower overheads than the average, thus balancing out any extra administration costs accompanying the deals, but this is purely speculative and not measurable at present. The estimate given in Table 9 will suffice for now but in future years it will hopefully be possible to produce more accurate figures.³⁹

Question 3: What proportion of the total cost of publication comes from research funders providing extra cash, and would institutions rely on offset agreements if the cash is withdrawn?

In 2014-15, 12% of the total cost of publication was spent on APCs.⁴⁰ In the sample of 34 institutions, 90% of all money used to pay APCs came from two research funders: RCUK and the Wellcome Trust (see Fig 1). So at present institutions are relying almost entirely on funders to cover the costs of the transitions to open access.⁴¹ This is a situation that offsetting aims to change.

It is an open question whether the research councils will continue to provide a similar level of funding for APCs after their current funding scheme ends in July 2018. The current uncertainty in higher education finance and policy at the national level means open access is not seen to be the highest priority right now, and few institutions have significant funds to pay for APCs themselves as yet.⁴² Therefore a withdrawal of RCUK/UK Research and Innovation (UKRI)

Fig 1: Sources of APC funding



38 Jones (2015); Manista (2016)

39 The Jisc OA stakeholders group would like to reflect a concern that this report may underestimate the administrative costs and inefficiencies associated with offset deals.

40 Shamash (2016: 18). The same figure is given by Pinfield, Salter, & Bath (2016).

41 As an aside, much of the apparent sudden growth in APC expenditure in 2014 can be attributed to a shift in the internal distribution of expenditure within institutions towards central payment. In most cases, central funds are primarily from research funders – notably RCUK. However, this does not necessarily mean that researcher funders are now covering costs previously borne by others, because many of the distributed payments prior to 2014 were from project grants of the same research funders. At present there is not enough data to place exact figures on these assertions. Pinfield & Middleton (2016) estimate that non-centrally-funded APCs add 17% to the total known APC spend at the University of Nottingham, while Andrew (2016) estimates 20% at the University of Edinburgh.

42 Sharp (2015) notes at least 18 institutions which have an institutional fund, so it would be worth monitoring whether this number increases over time.

funding would almost certainly lead to a significant reduction in APC expenditure.

This highlights a key role for offset agreements. If RCUK withdraws funds but keeps the open access mandate, then HEIs will still be able to fulfil the mandate to some extent – but only if authors publish predominantly with publishers that their institution has an offset agreement with. In this instance HEIs will have to advise researchers to publish with certain publishers, a position which is likely to provoke strong resistance from researchers. A balance may be sought whereby funders will continue to pay APCs but only if an acceptable offset agreement is in place, which would reduce the funders' expenditure while also supporting the continuation of offsetting.

There is a huge knock-on effect for small specialist institutions in all of this, as they are often unable to subscribe to big deals – or it makes no financial sense for them to do so – and so are not able to benefit from current offset agreements. For a research-intensive specialist institution such as the London School of Hygiene & Tropical Medicine, which does not subscribe to journal packages, current offset agreements could not replace APC funds from RCUK. And as demonstrated by RSC's decision to end its Gold for Gold scheme, the provisional nature of offset agreements adds to the uncertainty about how this will all play out.

Question 4: International politics of different countries taking different approaches to open access: will big deals and offset agreements be able to cope with the continually increasing number of articles?

The global number of articles published each year is now around 2.5 million and this is continuing to grow at a rate of around 3-6%.⁴³ The number of subscription articles and the number of open access articles are both growing, so although the *proportion* of articles which are gold open access continues to slowly increase (now at least 12%)⁴⁴, there has been no corresponding decline in the number of articles for an institution to subscribe to. There are complex geopolitical factors at play in this growth, much of which is driven by rapidly increasing publication outputs from China.

Will big deals be able to cope with a continued increase in the number of articles? The deals have already expanded beyond the ability of most library budgets to support them all and are now inflated further by large numbers of articles from majority-world authors. However, the proportion of big-deal articles that UK researchers want to read – and need a subscription for – may be declining. This is because articles by northern European authors tend to be read and cited much more by UK researchers, and while this may reflect biases within the research community rather than the quality of research, if a large proportion of articles needed by UK

43 Ware & Mabe (2015: 27–28). The precise growth rate is unclear because there is no definitive source for counting journal articles.

44 Ware & Mabe (2015: 33–34)

authors are available through gold, green, or piratical open access⁴⁵ then continuing to subscribe to big deals is becoming less vital. So even as the amount of content in big deals expands, the proportion of that content that UK researchers actually *need* does not. However, although the negative side of big deals has been well understood for over a decade⁴⁶ there is little sign that they will disappear just yet.⁴⁷

There has been a slight trend among other northern European nations of pivoting towards supporting gold as well as green open access⁴⁸ and a strong trend of rhetoric aspiring to full open access with the next 5-10 years.⁴⁹ If these aspirations are successful then the increase in gold articles may finally be enough to end the growth in subscription articles. It is too early to predict this with any confidence though, especially since at present it is unclear what effect the UK's exit from the EU will have given its leading role in promoting gold open access. And Chinese open access policy will be crucial in any global-scale changes.⁵⁰ Offset agreements such as the Springer Compact are also spreading among those nations with gold-centric policies, so perhaps big deals will keep their dominant market share by pursuing innovative offsetting arrangements.

Question 5: Do offset agreements consolidate 'lock in' with particular publishers?

Yes. In contravention of Jisc's principles for offset agreements,⁵¹ all existing agreements require an institution to maintain a subscription to a big deal – in some cases over multiple years – in order to receive any benefit from offsetting. The largest subscription publishers tend to be the largest recipients of APC funds⁵² because 74–80% of APCs tracked in the UK are paid to hybrid journals,⁵³ which will only change if funders and institutions take action to stop it. So tying offset agreements to big deals will continue to consolidate market concentration – potentially amplifying the dysfunctional nature of the subscription market.

45 Piratical open access refers to academic piracy sites such as Sci-Hub (<http://sci-hub.cc>) and Library Genesis (<http://libgen.io/>).

46 See Edlin & Rubinfeld (2004)

47 See Gillies (2014) on the persistence of big deals and how library consortia can include APCs in them.

48 For example in Norway (CRISTin 2016) and the Netherlands (NWO 2016).

49 See Bauer et al. (2015) and EU2016 (2016).

50 See Van Noorden (2014) for the position in China as of 2014.

51 Jisc (2015). The only one of the five principles which is used by all participating publishers is that offset should occur at the local as well as global level. This is a given, since applying local offset is a condition of being included in the list of participating publishers.

52 Shamash (2016)

53 Shamash (2016); Wellcome Trust (2016)

Conclusion

The combined value of offset agreements to the higher education sector in 2015 has been estimated at £2.5m. Some agreements reduce the total cost of publication more than others, with the Wiley agreement providing the largest cash savings but the IOP and RSC agreements proportionally reducing the TCP the most. Administration costs are harder to calculate but make up a small percentage of the TCP.

For the UK, the possibility of RCUK/UKRI discontinuing support for APC payments in the future is the biggest risk to progress on the transition to gold open access. In this scenario, offset agreements would be key to maintaining continuity and allowing authors to publish open access. The Springer agreement is an example of how this could work.

This report is the first of three annual reports to evaluate the offset agreements that have been negotiated by Jisc Collections on behalf of UK academic libraries. Subsequent years will repeat the data analysis and expand it to new publishers as they embrace offsetting.

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Appendix: List of the 34 higher education institutions used in the sample

University of Aberdeen
Aston University
University of Birmingham
University of Bristol
University of Cambridge
Cardiff University
Cranfield University
Durham University
University of Glasgow
University of Huddersfield
University of Hull
Imperial College London
Institute of Cancer Research
King's College London
University of Leicester
University of Liverpool
London School of Economics
London School of Hygiene and Tropical Medicine
Loughborough University
University of Manchester
Northumbria University
University of Oxford
Plymouth University
Queen Mary, University of London
Queen's University Belfast
University of Reading
Royal Holloway, University of London
University of Sheffield
University of St Andrews
University of Surrey
Swansea University
University College London (UCL)
University of Warwick
University of York