

## JISC Response to:

**Some comments prepared jointly by The Publishers Association, the Association of Learned and Professional Society Publishers and the International Association of STM Publishers on the report**

### ***“Economic Implications of Alternative Scholarly Publishing Models: Exploring the costs and benefits”***

**by Houghton et al. & Oppenheim et al., commissioned by JISC (published January 2009)**

## JISC Responses interspersed in blue.

JISC welcomes dialogue with publishers and their representatives on ways in which scholarly communication can be improved. Following the publication of the 'Economic Implications of Alternative Scholarly Publishing Models: Exploring the costs and benefits' by Houghton et al. & Oppenheim et al (hereafter 'EI-ASPM'), JISC and the report authors were pleased to meet with publishers and their representatives on 27th March. At this meeting a number of valuable suggestions were discussed for further work in the area of scholarly publishing. There are now active discussions on this topic underway involving JISC, publishers, the Research Information Network RLUK, SCONUL and others.

On 7th April, the International Association of STM Publishers published a statement on the report, on behalf of The Publishers Association, the Association of Learned and Professional Society Publishers and the International Association of STM Publishers. We are glad to note that there will be a continuing dialogue between JISC and the publishers around the recommendations in the report. The statement also raised a number of specific points about the report, both in terms of the methodology and the findings. The points raised are important and we have considered them very carefully. Below is our detailed response to the issues raised, which we have made public as this is now clearly something that is of interest to a wider community which, we believe, will be interested to see how the discussion is evolving. JISC looks forward to continuing to work with publishers, publisher representatives and the wider community to take forward the dialogue around the recommendations and the further work which the publishers, JISC and others are jointly identifying.

The JISC responses in this document are limited to the integrity of the EI-ASPM report. JISC concurs with Professor Danny Quah, Head of Economics at the London School of Economics, who sat on the study steering group, and noted:

*“The report addresses an important and difficult problem, and is clearly the result of a lot of very careful thinking about the issues. The methodology is sound and the analysis is extremely detailed and transparent. The multi-stage model of production that is used is complex, and does require calibration according to a large number of parameters, many of which are necessarily estimates, where possible taken from published sources or the wider literature. If demonstrably better estimates become available then these could improve that calibration still further. The report represents the best evidence so far on the questions it addresses.”*

JISC considers this to be a balanced overall response to the report.

In the remainder of this document, comments by PA/ALPSP/STM are in black, and the JISC response is in blue.

As committed scholarly publishers, we acknowledge the efforts of the authors of this report to investigate the costs and benefits of alternative systems of scholarly publishing, and we fully share the objective of its sponsor to extend access to peer-reviewed research outputs as widely as possible. The investments of our industry over the last ten years and longer have already made rapid, widespread and profound progress against this objective while upholding very high standards of quality control, integrity and preservation. Indeed the industry has made substantially more progress than 'Author-Pays' or 'Manuscript-Archiving' models, which have uptake levels of the order of only 1% and 5% respectively after several years and which are the subject of the report.

JISC sees open access as a part of the industry, rather than separate from it. With respect to the figures quoted in this paragraph, there are other, significantly higher, recent estimates, based on detailed analysis (for example, Björk, B.C., Roos, A. and Lauri, M. (2009) Scientific journal publishing: yearly volume and open access availability. Information Research 14 (1) March 2009.)

Because the report is intended to inform policy making within and outside the UK, and because publishers and their associations were not consulted by the researchers during the preparation of this report, we have provided our comments in this document. We focus on those elements of the report that we consider as essential for policy makers to understand.

On the issue of consultation:

1. The study gathered data from public, trusted sources (e.g. SCONUL, HESA, etc.), from the literature (e.g. well-respected tracking studies by Tenopir and King), and from empirical data collected during the author's previous study for the then Australian Department for Education, Science and Training. There is a wealth of information in the literature on journal production costs, and the sources drawn upon are cited fully in the report and are those commonly used (e.g. in the recent study commissioned by the Research Information Network: "Activities, costs and funding flows in the scholarly communications system in the UK"). Therefore there was no need for formal fieldwork as a part of this study, no formal interviews with researchers, publishers, librarians, funders, etc were undertaken. Publishers were therefore treated no differently than anyone else.

2. Publishers do not typically make their cost data openly available, for commercial reasons. Therefore there was no reason to expect them to do so in this case, furthermore informal discussions early in the study confirmed this impression.

3. The fact that there was no formal primary data collection does not make the report a "think-piece" (as stated in the publishers' initial response). It makes it a work of analysis, not data collection.

4. The study is transparent. The assumptions / estimates are listed at the end of the report, together with the sources used as a base for those estimates. Where the report notes that a figure is an "Authors estimate", this is usually a conservative figure based on several sources from the literature, which are listed in the references section and can be specified if needed. The research that was undertaken was very detailed and during the research it was not possible to find any estimates that could be evidenced that were more valid than those within this report. Of course if there are other estimates that are demonstrably valid that could have been used here then the authors would like to hear more about those. Detailed responses are provided below to specific comments.

5. A version of the model is online for people to try out their own estimates, and publicise the results. One way of testing out the methodology thoroughly would be for publishers to undertake this process. As far as we know this has not happened so far and we would encourage this now to take place in order for us all to move forward with understanding the implications of the work.

6. The study was intended to be independent. Formal consultation with representative groups from any particular part of the domain would have risked this independence.

Our comments are based on the plain logic that, as independent self-sufficient publishers, both commercial and not for profit, we must operate within sustainable business models capable of earning revenue from those sources available in the marketplace. For scholarly journals published for a global market these sources are, in the main, library budgets. We are not opposed to 'Author Pays' as a business model since it has many clear advantages in terms of tracking the increase in R&D expenditure and the concomitant increase in research articles. Most major publishers already provide an 'Author Pays' option, although take-up (apart from a few individual titles in specific subject areas) remains consistently low, even after nearly a decade of advocacy from the Open Access movement. We remain sceptical, however, about inadequately researched or underfunded Manuscript Archiving mandates which have the potential to destabilize a system of peer-reviewed, quality-assured, and published research outputs that is evolving organically into a new paradigm based on the kind of internet technology in which publishers are already heavily invested, and which has already led to dramatic improvements in the productivity of researchers.

On sustainability: The report takes a system-wide view. It asks what is cost-effective for the UK and for UK research, not for any one particular actor within that domain. Sustainability needs to be looked at from that perspective, as well as from the perspective of universities, libraries, publishers, etc, all of whom need sustainable models. The report clearly states on Page 3 that it allows for commercial management, investment and operating margins to ensure that all three models compared would be commercially sustainable.

It is increasingly clear that serious questions can be asked about the sustainability of the subscription model from all perspectives; as this paragraph makes clear, the 'author pays' model would appear to scale better with higher levels of R&D expenditure anyway. JISC is committed to helping all actors to find sustainable alternatives that are cost-effective for the UK in the context of rapidly changing technology. The recent UK Government "Digital Britain" report notes that for the creative and publishing industries, *"if digital distribution and copying costs are lower so too are digital revenues from the product or the advertising impact; often, in current business models, an order of magnitude lower. New business models need to evolve for that environment. The role for regulation or intervention is not to prevent the emergence of new business models or to preserve old and unsustainable ones. It is to contribute constructively to the transition."* JISC's interventions are made in this spirit, and the EI-ASPM report is a part of that effort.

On the benefits of the author-pays model: For the UK to benefit fully from the author pays model, it needs to be fully open access, with articles fully open in terms of location and permissions, while respecting authors' rights.

On low take-up of the author-pays model: The advocacy has not been ongoing as long as stated. It has been hampered by the lack of adequate arrangements (among all stakeholders) for the payment of the fees, on which active steps are now being taken. Given the relative difficulty so far for authors in using this model, it is impressive that so many have taken up this option.

On self-archiving mandates: There does not appear to be any evidence that self-archiving destabilizes peer-review, this is backed up by subject areas such as some areas of the Physical sciences where self archiving has been largely universal for almost ten years. To add to this, Open Access models have potentially significant advantages for peer review, in making it easier for all reviewers to easily check references and follow leads, which under the subscription model is only possible if the reviewer's home institution has access to the material cited. An important advantage of Open Access is that over time it enables

researchers, professionals and practitioners outside the major institutions to participate in peer review, thus spreading the load of reviewing more widely and engaging a wider community of scholarship in review activities (see Section 3.3 of the report). By common consent, it is getting increasingly difficult to find good reviewers, so this aspect of Open Access should be welcomed by all those interested in the quality of research outputs.

While many research funders see the benefit of Open Access in maximizing the return on their investment, neither they, nor the EI-ASPM report, advocate a precipitate or unmanaged transition to it. Mandates need perhaps to be seen the context of a wide range of changes, some of which are recommended in the EI-ASPM report, to enable a managed transition.

We remain open to dialogue around the recommendations of this report. In particular we would want to address with the JISC:

- The nature of remaining 'access gaps' in the UK: where are they, and how might our industry work with policy makers and fund holders to close them?
- The costs and benefits of a rapid transition to 'e-only' delivery: it is not our industry that is holding this back, but the needs and the preferences of our customers.

In discussions with publishers and others we have agreed that these would be worthwhile areas of work to pursue, among others.

## Analysis of the Report: Executive Summary

The report attempts to quantify the costs and benefits to UK Higher Education (HE) institutions and the UK as a whole of scientific publishing operated under three publishing models: Subscription publishing, Author Pays publishing and Manuscript Archiving. In their analysis of the three models the authors identify hypothetical savings of moving from the existing, largely Subscription based publishing model, to an Author Pays system, or a system reliant on the posting of author manuscripts. The authors attempt to quantify the economic impact of such a transition to supposed savings realized by libraries, publishers, researchers and funding bodies. Separately the report attempts to quantify the broader impact on society from increased researcher access to published literature and increased researcher productivity.

On the aims of the report: The repository model is analysed both with and without overlay services such as peer-review. The benefits to the UK accrue because of greater access for everyone (not just researchers) to research outputs.

On the use of the terms “hypothetical” and “supposed”: the use of these words is misleading. Inasmuch as the report compares three models of scholarly communication as if each accounted for 100% of research output, then it is hypothetical. However, the activities and costs used in the analysis are taken from empirical evidence and so the findings are as robust as any cost-benefit analysis of policy options.

The report concludes that it is beneficial for UK HE to move towards Author-Pays and Manuscript Archiving models, and claims that:

- Open Access [Author Pays] publishing “might result in systems savings of which around £165 million would accrue in higher education.” (p. XVIII)
- With an “Institutional Repositories with overlay services’ [Manuscript Archiving] model... the potential net savings might be around £200 million per annum.” (p. XIX)

The figures quoted for HE are correct. However, focusing only on HE is misleading because the report is about the cost-savings and benefits for the UK as a whole. The UK nationally and the UK tax payer are the proper level of focus as it is their money that is being spent, and they have a right to expect that there is maximum return on their investment.

In contrast to the report’s assertions that **Author Pays publishing** would bring system savings to UK Higher Education institutions of £165 million, complete adoption of Author Pays would, according to the report’s own analysis, result in UK Higher Education spending 31% (£35 million) more in cash than the £113 million that it spends today on subscription journals.

This statement is misleading. The report includes very significant non-cash costs, that is, people’s time. Leaving this element out of the figures misrepresents them.

The study focuses on “alternative” models, and compares them as alternatives. Clearly, mixing the models would create a range of costs and savings, depending upon the mix.

Page 5 of the summary and in the body of the report says that “as no more than half of OA journals charge author fees, perhaps £75 million would be required for author-side payments...”.

Because UK articles account for only around 5% of global articles the UK would, however, still have to keep paying most of the £113 million on subscriptions to ensure access to non UK-authored articles. So total UK HE spending would increase to around £260 million, more than double what it pays today.

This comment seems to ignore the activity cost analysis and comparison in the report.

The report is not a prediction, but analysis to inform the direction of policy and practice, which are generally and globally moving in the direction of Open Access. The scenario described above is therefore not realistic. However, it is possible to test the outcome using the online model, and the outcome is that – even in this extreme case – the UK benefits via Open Access models. Results are available as an addendum at: <http://www.cfses.com/projects/EI-ASPM.htm>

The proportion of global articles that are UK-authored may be up to 8%, depending on how it is estimated.

Because it is an additional activity that occurs after publication rather than a standalone publishing model, **Manuscript Archiving** would also result in an increase in cash spend for the UK of around £18 million. HE institutions would pay this on top of journal subscriptions, so that the UK's spending would increase from £113 million to £131 million.

Again, this comment seems to ignore the activity cost analysis and comparison in the report. The report was an analytic comparison of alternatives.

Manuscript archiving was explicitly modeled with overlay services such as peer-review, so that it was a standalone publishing model, albeit one with few real-life examples so far.

In addition, manuscript archiving was modeled as a supplement to subscription-based publishing, and this too showed a clear benefit to the UK. This is clarified in an addendum available at: available as an addendum at: <http://www.cfses.com/projects/EI-ASPM.htm>

The hypothesized savings would not, as the report claims, offset these increases in cash expenditures. The authors themselves are tentative in their conclusions, noting only that net benefits 'might' or 'could' accrue.

On the main claim in this paragraph: The report is carefully phrased, and says the shift to Open Access may be affordable within current budgetary allocations, including those for staff time. By referring to 'cash' expenditures only, most of the point of the analysis is excluded.

On the use of modals ("could", etc): This is appropriate given the nature of the work, and the authors would have been criticized if they had been more categorical. However, the study is the best evidence that we have so far, and therefore in this respect is a good basis for policy development.

- The hypothesized savings that the report claims would offset these increases in cash spend are based on flawed assumptions about the amount of time that librarians, researchers, publishers and funders would save in Author Pays and Manuscript Archiving systems relative to Subscription publishing.

This assertion is based on detailed points later in this document, which are addressed there.

The sources of the savings are described in detail in the report. Necessarily when they relate to activities involved in systems that are not currently in widespread operation they are in some sense 'hypothetical'. However, many of the savings are due to alternative models not requiring activities that are currently performed. These activities are costed in detail and the savings resulting from their non-performance are real and concrete.

- The assumptions are flawed because the report significantly understates the efficiencies of the current subscription system, in which the vast majority of UK researchers already have electronic access to the vast majority of journals they need for their area of research, and therefore over-estimates the time-savings potential of alternative systems. The report also significantly underestimates the time that would have to be spent on activities associated with non-subscription systems, such as the collection of author fees in Author Pays publishing. These flawed assumptions could have been avoided if the authors had consulted with a representative sample of publishers, which they did not.

On possible understatement of the efficiencies of the subscription model: Time savings for researchers are not based on the proportion of articles available under that model, but are dependent on, for example, the non-availability to researchers of the full-text for discovery, access and use, without managing (cash and non-cash) subscription barriers.

On the costs of managing author charges: The collection costs are included in the modeling at £20 per article published, as was the case in the RIN/CEPA report, which is cited. Many of the basic journal publishing parameters are widely agreed, and were sourced in the EI-ASPM and RIN/CEPA reports from the same basic sources (e.g. Tenopir and King). In round numbers, they include that there an approx average of 120 articles per title and an average of approximately 1,200 subscribers. Hence in an OA journal there would be 120 author transactions and in a subscription journal 1,200 subscriber transactions. Sales administration per subscriber is included at £10 (as in the RIN/CEPA report since the figure is sourced from the same place), or £12,000 for the average title. At £20, author transaction costs would be £2,400 for the average title. Furthermore, most of the major publishers' websites offer articles for sale pay per view for those without subscription access, at a typical costs of USD30 to USD35 per article. Hence it is clear from the publishers' websites that individual transactions with people can be done around the world for USD 30 or less (approximately £15 at 2007 average annual exchange rates).

On consultation: As this example shows, and as noted above, consultation with publishers (and researchers, libraries, etc) was not part of the research process, with the rationale that the evidence required was already publicly available and ready to be deployed.

- Many of the savings hypothesized in the report would not accrue unless the rest of the world fully adopted Author Pays or Manuscript Archiving. Given that only around 1% of all STM articles are currently published under an Author Pays model and that only 5% of authors post their manuscripts – numbers which have remained constant for the last five years – the 100% adoption of Author Pays or Manuscript Archiving outside the UK is extremely unlikely. As such, the postulated savings that rely on this assumption would not be realized.

On the figures for Open Access papers: the figures quoted are not consistent with Bjork *et al* (cited above).

On the main claim in this paragraph: This misunderstands the report, which is not about trends in scholarly publication but about cost-effectiveness. It is also worth mentioning that international moves in support of Open Access appear to be gathering momentum. JISC and publishers agree that moves toward more universal access are desirable, and we look forward to working together to achieve that.

- Even if the hypothesized time-savings were realized, which is highly doubtful, they would only result in cash savings for UK HE if they translated into widespread job losses, e.g. over 200 UK librarian job losses to realize the hypothesized £11 million in 'library savings' alone. To achieve the overall £165-£205 million savings postulated in the report, several thousand UK job losses would have to be incurred.

On the issue of job losses: There are two ways to realize efficiency: (i) by producing the same output with fewer input resources, or (ii) by producing more output with the same resources. European countries, including the UK, have set and are committed to ambitious R&D spending targets. In such an environment, there is no suggestion that there would be substitution at the margin. Savings realized would release resources to more research and research support activities, and would not be clawed back in funding cuts. So, the savings suggested by the report indicate the level of resource that could become available to libraries (and publishers) to address the challenges of the digital age, e.g. curating and sharing data, improving information literacy, building tools to enable researchers to do their work better and more efficiently, and do new kinds of work based on text mining, data mining, complex research workflows and so on. The benefits to the UK economy of being able to address these challenges effectively, with the resources released by Open Access, could be considerable. The EI-ASPM report comments on time savings only. However, these other benefits may also become very significant to the UK and are already recognized by policy makers and research funders.

**In summary, according to the report's own data, cash expenditures for UK HE would increase by around £150 million in an author pays system and by around £20 million in one of manuscript archiving. The hypothesized benefits would almost certainly not offset these increases in expenditure, and if they did, it would be due to the loss of several thousand UK jobs.**

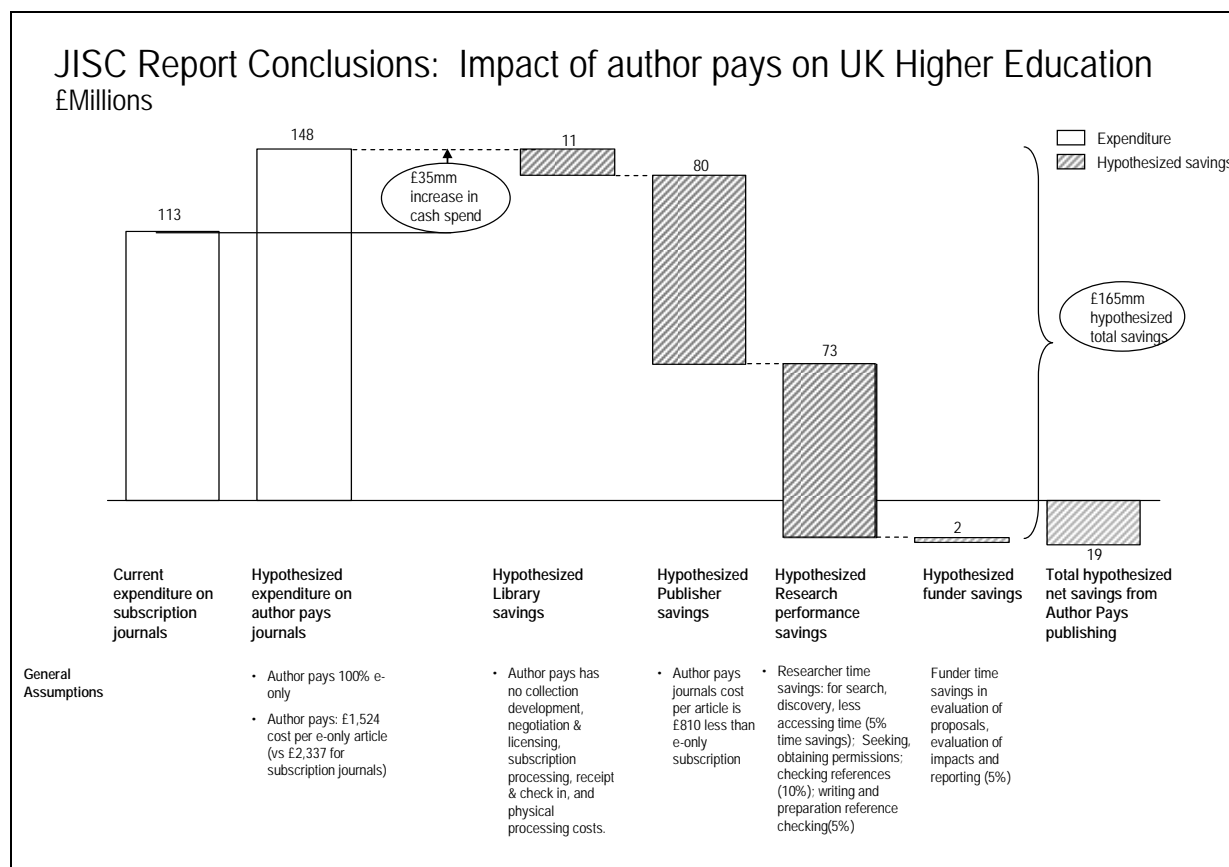
This statement is a misrepresentation of the report for the reasons outlined above.

## Analysis of the Report: Detail

Note: many of the figures quoted here are taken out of the context described in the report. As many have noted, the report is long, and this is to ensure that a complete picture is given.

### a) Author Pays Publishing

The following figure represents the purported economic impact on UK Higher Education resulting from a full-scale shift to Author Pays (based on the data in Figure S-VI, page XIX).



The report's data indicate that the UK would increase its expenditure of £113 million on subscriptions to £148 million in a system of Author Pays journals, i.e. an increase of £35 million or 31%.

Artificially limiting comments to 'cash' payments misrepresents the report.

However, because a UK-funded Author Pays model would only make available articles resulting from UK-funded research (about 5% of all articles), the UK would still have to pay to access the remaining 95% of articles published by non-UK authors. As a result, the UK would continue to spend the vast majority of what it currently pays today on subscriptions (£113 million), while also paying £148 million in Author Pays fees, i.e. a total of around £260 million, more than double what it pays today.

This point has already been discussed above and a response given, please see pp5-6.

The only way the UK would pay the £148 million that the report claims is if the 95% of articles published by non-UK authors were also made available on an author pays basis. Given that only 1% of articles are published on an author pays basis today, a number that has remained constant since 2004, this is highly unlikely.

This point has already been discussed above and a response given, please see pp5-6.

The report hypothesizes that the increase in cash spend would be offset by £165 million of hypothesized time savings in other key areas of funding and research activity. The result, it claims, would be a £19 million net savings for UK HE institutions.

The analysis of savings that could be achieved by saving researchers time, however, is highly flawed and hypothetical. The words “could” “might” and “may” are used frequently. The authors primarily use ‘author estimates’ and consistently overlook or downplay costs incurred by the Author Pays model. We examine each element of their analysis:

On the use of modals (“could”, etc): This point has already been discussed and a response given on p6, above.

The main claim in this paragraph is addressed below.

- i. **Hypothesized expenditure on Author Pays journals:** The report underestimates what the UK would spend for a full Author Pays system by around £70 million, because it dramatically underestimates the true costs to publish an article. A more realistic figure was provided by the recent independent study by RIN, which estimated that the Author Pays fees for UK Higher Education would be at least £222 million<sup>i</sup>.

The EI-ASPM approach to activity costing and much of the costing took place before the release of the RIN report and costings were completed during the second half of 2008, in part, in the light of the RIN report. It would be possible to commission an independent comparison of the two pieces of work. Such a review has not been carried out and claims made about the relative adequacy of each are therefore difficult. However, an initial review suggests that:

- (a) Since the two reports relied on the same basic sources, the per article costs identified by the two reports are very similar.
- (b) The RIN report had flaws. For example, CEPA took the costs cited in Tenopir and King’s 2000 SLA study, which were in 1995 US dollars, and divided them by 2 on the grounds that the US dollar was worth 50p in early 2008. Houghton preferred the more rigorous approach of accounting for inflation and exchange rate fluctuations, and converted to pounds using the OECD/IMF annual average exchange rates and applied the NSO published CPI index.
- (c) The costings in the Houghton report triangulate well with other indicators, including:
  - i. Surveys of OA publishers (e.g. Hedlund, T., Gustafsson, T. and Björk, B-C. (2004) ‘The open access scientific journal: an empirical study, *Learned Publishing* 17(3), pp199-209, July 2004);
  - ii. OA publishing fees actually charged, which are said to be converging on USD 3000 or around £1,500 at 2007 annual average exchange rates (compared to our estimated cost of £1,524);
  - iii. Simply dividing the number of articles published by publisher revenues.

- ii. **Hypothesized library savings:** The authors suggest that a move to an Author Pays model would result in a time savings for libraries of £11million, suggesting that under

the Author Pays model there will not be negotiation and licensing, subscription processing, receipt and check in, and physical processing costs.

- The authors overlook new costs that libraries or the HE institutions would incur with an Author Pays journals system that would negate the claimed savings of £11 million. For example, Author Pays publishers also negotiate with libraries to establish institutional sponsorship agreements. These costs are not accounted for by the report.

The alternative models were as described in detail in section 1.2 of the report. In the author-pays model the authors pay. However, if universities decide it is better for them to adopt library 'membership' approach, then we would assume that they would do so on the basis that it would cost them less, not more.

- The cost savings stated by the report are based on calculating time spent by library staff on activities. To capture these hypothetical savings of £11 million, we estimate that more than 200 UK librarians would have to lose their jobs (based on a rough estimate of £50,000 fully-loaded compensation and benefits costs per librarian).

This point has already been discussed above and a response given on pp7-8.

- iii. **Hypothesized publisher savings:** The authors state that switching to an Author Pays model would result in savings of £80 million for publishers over the current system. Cost savings are attributed to savings in time and money spent on rights management, legal and licensing, pricing, marketing, negotiation, sales, distribution and operating online access and entitlement systems on a per-article basis. As a result of these purported savings, the authors estimate that it would cost £813 less per article to produce an Author Pays article than an e-only subscription article. Based on per author savings the report scales the savings up to UK HE's output (it appears that the authors estimate that the UK HE output is approximately 98,500 articles per year) to determine the potential UK HE savings. Both the calculation method and assumptions are flawed. The reality is that articles published in the same format at the same quality level will have essentially the same production and distribution costs, as any cost-savings in subscriber pays processes will be off-set by new processes/requirements for Author Pays.

The assertion made in the last sentence is precisely what the study debunks. There is now significant evidence that the business and distribution model does materially affect the costs. We are unaware of evidence to the contrary.

- By performing erroneous calculations on a per article level and then multiplying by almost 100,000 articles, the total estimates of Author Pays publishing costs are significantly underestimated. For example the authors assume that online subscription journals cost £120 more per article to deliver online than Author Pays titles costs (no justification is given for this difference and access and entitlement calculations are performed separately). This erroneous assumption alone accounts for £12 million in purported savings (or two thirds of the entire purported net savings from the shift to Author Pays publishing).

This comment is not correct The report notes that delivery and fulfillment costs are £120 per article for **print** and £30 for e-only subscription. The models are compared and savings are based on e-only formats for all models.

- The authors generally underestimate costs of Author Pays journals relative to Subscription journals with little rationale and no evidence. For example, Author

Pays marketing costs are assumed to be one third of traditional Subscription publishing. Again, these assumptions were made without consulting journal publishers.

In the author-pays model, the balance of marketing focus would shift towards authors and away from subscribers. There are a number of metrics that can be examined:

- As noted, the average journal is said to contain around 120 articles per year and have around 1,200 subscribers. Simplistically, author-pays marketing could cost as little as 10%. However, as some papers have multiple authors and some papers are rejected, the author-side cohort for titles will be larger than the 120 principal authors of published papers.
- There is little agreement about the average article reading under subscription publishing and little to guide us as to the potential reading in OA. However, it is clear that there are far fewer authors than readers.
- Evidence from the universities, RAE returns, Tenopir and King tracking studies, etc. suggest that around 50% of academics and researchers are publication active (i.e. twice as many read as write).

Hence, in the absence of a definitive metric, the evidence suggests that the target cohort for marketing might be between 10% and 50%. The online model allows readers to explore the impacts of varying this parameter.

- Additional costs present in the Author Pays model are not considered. For example, while the authors do estimate a £10 processing fee for author side payments, there is no detail on the infrastructure required to process 98,500 individual articles' invoices and payments a year, or the time spent by authors, their institutions and funding bodies in managing and accounting for these costs.

As noted above, the fee collection costs are included in the modeling at £20 per article published (as was the case in the RIN/CEPA report, which is cited), not £10 as stated in this comment.

This point has already been discussed above and a response given, please see pp 7 and 10

- iv. **Hypothesized research performance savings:** In the report, the authors hypothesize that an Author Pays model would lead to research performance savings of £73 million in serving UK Higher Education institutions.

- In evaluating savings potential from research, the authors arbitrarily estimate 'access' benefits ranging from 5% to 50% reductions in time spent by researchers on a variety of activities. These estimates are presented as actual savings, but they are entirely hypothetical and are based on purported time saved by researchers and academics that would still have to be paid for. The only way savings would actually be realized is if these researchers and academics were made redundant as a result of the time saved. There are also no estimates of the potential negative impacts of a shift to such models.

The time savings of 5%-50% are not "arbitrary" but based on data and modeling, as described in the report. The analytic modeling contains around 2,300 activity items that are costed and another 550 or so basic data items (e.g. the number of researchers and publications, R&D spending, etc.).

On the "hypothetical" nature of the report: this point has been addressed above. The activity costing and savings are 'concrete' rather than hypothetical when they relate to activities no longer required.

On the issue of job losses: This point has already been discussed above and a response given, please see pp7-8

- v. **Hypothesized funder savings:** The report suggests that under the Author Pays model, there would be a saving for funders of UK HE research of £2 million. This saving is attributed to an estimated 5% efficiency saving on time spent on the internal evaluation of proposals, on the evaluation of impact and on reporting. In addition, the authors suggest that under the Author Pays model, funders will gain greater visibility and will have lower “lobbying” costs. Again, these time savings are entirely hypothetical and do not translate to an actual reduction in spending. It is purely conjecture that publishing in an Author Pays journal would increase the visibility of the funding agency.

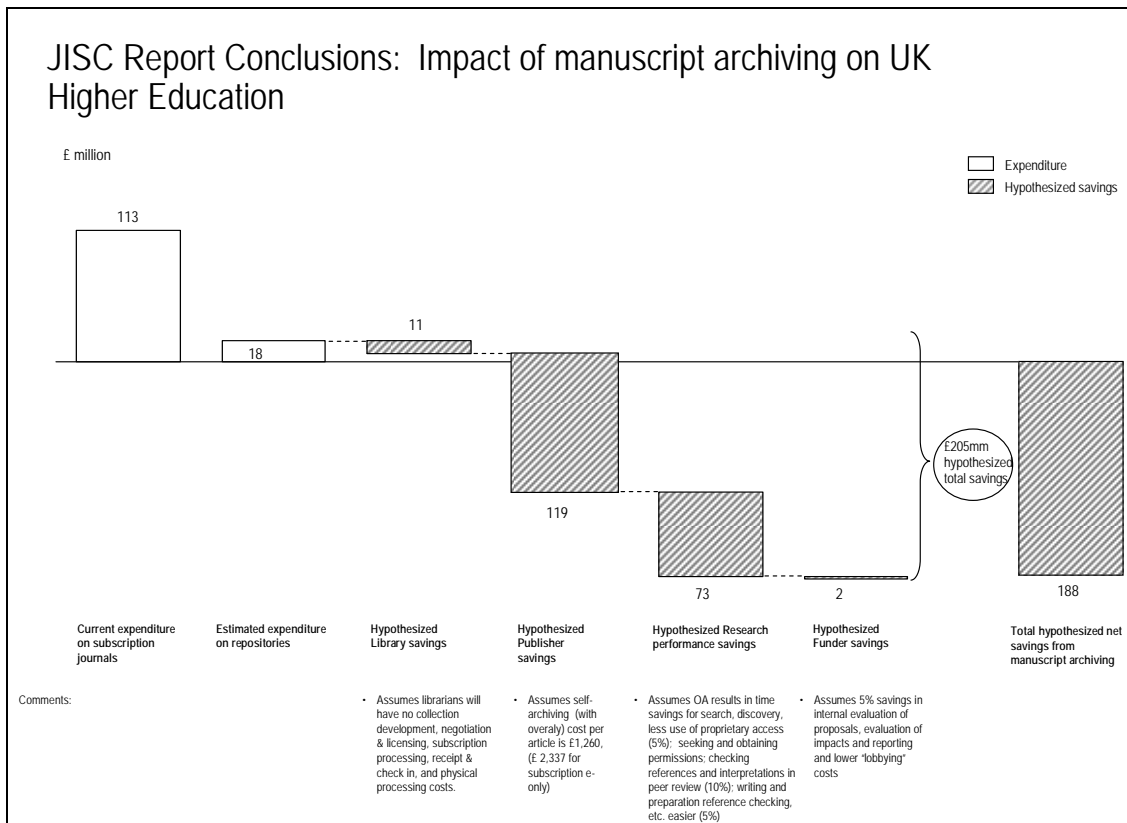
On the “hypothetical” nature of the report: this point has been addressed above. The activity costing and savings are ‘concrete’ rather than hypothetical when they relate to activities no longer required.

Research funders are aware that enhanced accessibility would make research outputs more visible, this is one of the motivations behind them adopting open access policies.

## b) Manuscript Archiving

The following figure shows the report's analysis of the economic impact of a shift from the Subscription publishing model to a Manuscript Archiving model.

The model includes services such as peer-review and copy-editing.



In summary, the authors assert that a “Manuscript Archiving system” would require an estimated spend of £18 million on institutional repositories for UK Higher Education. In the report’s model, publishers would perform just a selection of ‘overlay’ services — peer review, editing and proofing, and article hosting — for articles hosted on the repository. This system, the authors speculate (since there is no such system currently in existence), could result in a net cost saving of £188 million for the UK. While the authors do not explicitly claim there would be subscription cancellations, the elimination of the subscription journals is clearly envisaged in this model, and the report notes that “library acquisition costs could be avoided” (p. 181).

On the claim that the model is speculative: It is true that this model is not common (although there have been experiments with it). This argument is not valid though, since the activity costing model allows for such arrangements to be investigated rigorously. Cost-benefit analyses that were constrained to options that were already common would be of limited value.

On the claim that subscription cancellations are envisaged: One scenario investigated is that the repository plus overlay services model is an alternative to both subscription and Author-Pays models. Similarly, the subscription model is modeled without the costs of repositories. The comparisons in the various scenarios modeled are even-handed.

The report notes that there are potential benefits to the UK economy without any journal subscriptions being cancelled.

As with Author Pays publishing, however, because a UK-funded Manuscript Archiving system would only make available manuscripts resulting from UK-funded research (about 5% of all manuscripts), the UK would still have to pay to access the remaining 95% of articles published by non-UK authors. As a result, the UK would continue to spend the vast majority of what it currently pays today on subscriptions (£113 million), while also spending £18 million on institutional repositories, i.e. a total of around £131 million.

This point has already been discussed above and a response given, please see p6.

The only way the UK would pay the £18 million that the report claims is if the 95% of manuscripts published by non-UK authors were also made available. Given that only around 5% of articles are posted by authors today, a number that has remained constant since 2004, this is highly unlikely.

This point has already been discussed above and a response given, please see p7.

The report does not address the grave implications for science and society of replacing the current global system of published journal articles with a global system of author manuscripts, which frequently contain errors and omissions, posted in thousands of disparate repositories with different operating, security and preservation standards.

On author manuscripts containing errors and omissions: This is certainly true, which is why peer-review, copy-editing and so on are included in all three models analysed. There is no “quality” issue in comparing the models, except as noted above that Open Access has some potential (not factored into the report) to improve the situation.

On the variety of repository platforms: Repositories adopt standards to enable them to interoperate effectively, and the repository community is actively working together in an open way to improve the situation further. Some of this work is funded by JISC, some by the European Commission and other funders. JISC acknowledges that publishers have been active in pursuing standards, and recognize the important role played, for example, by CrossRef. JISC has, of course, funded work with publishers in this area, through the PALS Metadata and Interoperability programmes. Many of the challenges are common to both publishers and repositories.

The report hypothesizes that the £18 million in cash spend would be offset by £205 million of hypothesized savings in other key areas of funding and research activity. The result, it claims, would be a £188 million net savings for UK HE institutions.

The analysis of savings that could be achieved by saving researchers time, however, is also flawed and hypothetical. We examine each element of their analysis:

- i. **Hypothesized library savings:** Again, the authors claim that a move to Manuscript Archiving could save libraries £11million as they would not spend time on negotiation and licensing, subscription processing, receipt and check in, and physical processing, as is the case when maintaining subscriptions. However:
  - The authors assume that librarians would be likely to maintain subscriptions, so these costs cannot be negated.  
The report assumes that there would be no subscription cancellations in Green OA self-archiving or in any of the models where the shift to OA was by the UK alone.

Subscription cancellations are anticipated in an “all OA world”, be it OA publishing or self-archiving with overlay services.

- Although the authors suggest that subscriptions could be cancelled, only 39% of librarians regard an archived manuscript as an acceptable substitute for a journal.<sup>ii</sup> The system of Manuscript Archiving would therefore not meet most librarians’ stated needs.

The system of manuscript archiving with overlay services probably would meet librarians’ needs, since the articles would benefit from the overlay services not often available at the moment. An independent survey of librarians on this point might be useful.

- Librarians may have to spend significant time in assisting their researchers in archiving manuscripts and creating appropriate metadata to enable efficient search and retrieval. These costs are not included in the report.

This assertion is incorrect. The costs of self-archiving are included. They are included as literal self-archiving by authors at average academic pay rates, and the report notes that costs would likely be lower than estimated if the ‘self-archiving’ were done by library staff.

- ii. **Hypothesized publisher savings:** By reducing the role of publishers to just peer review, editing and hosting content, the report disregards and does not account for the value and cost of essential services that publishers provide, and also fails to assess the negative impact and costs that would result from removing services such as:

- Assisting in search and discovery by associating content with trustworthy publisher brands.
- Investing in new scientific domains and the development of communities of authors, reviewers and researchers
- Certifying research in partnership with the scientific community.
- Defending authors rights from plagiarism or distortion
- Author, editor and reviewer workflow tools
- Manuscript preparation beyond just editing and copyediting such as verifying references, inserting online tags, preparation of graphics and multimedia files, typesetting, XML coding, visual enhancement, reference linking and indexing.
- Preserving the Version of Record in perpetuity for researchers and society
- Managing various ‘post-publication’ activities, such as updates, corrections and retractions

With respect to the points made above, please note that all models in the report include the same activities, plus commercial management, investment and operating/profit margins, and so they are compared on a like-for-like basis.

- iii. **Hypothesized researcher performance savings and funder savings:** The authors use the same calculation for researcher performance savings and funder savings under a Manuscript Archiving model as they do for Author Pays publishing. In addition to the concerns documented above on how this calculation was performed there are additional costs to researchers that are overlooked under the Manuscript Archiving model:

- Readers are not well served by Institutional Repositories which hold a tiny portion (2%) of the full body of literature. There is no explanation of how this gap will be filled effectively, especially for historic literature.

The report explores alternative models. Alternative models include self-archiving (i.e. the putting of articles into repositories). It would be possible to develop retrospective approaches, but they were not the focus for the report and their absence does not affect its findings.

- Readers’ efficiency will fall if they must spend time locating articles from incomplete Institutional Repository collections fragmented among dozens of repositories operating on different software platforms with varying policies and service levels. It

will further be reduced as authors check whether posted versions have been altered since being subject to rigorous peer review. These costs are not included in the report's cost assessment.

All costs are included in the modelling.

The emerging system of repositories offers simple, often one-stop, interfaces for search, discovery and access by anyone. Subject repositories often offer alerting and other value added services, and offer the potential for new services to be built to support researchers.

- The additional researcher costs (and lack of productivity) that result from lack of article XML coding, indexing and interconnectivity of articles within the research spectrum are not considered in the report.

All models include the same production activities.

### c) Hypothesized benefits to society from Authors Pays and Manuscript Archiving models

The report deploys simplistic economic models in an attempt to quantify the broader benefits of increased 'accessibility' and researcher 'efficiency', and estimates what combined increases in these two dimensions would monetarily provide as a return to society. For example, an increase of 5% in each category would supposedly provide a £124 million return to Higher Education, as well as returns to public sector R&D, and government and RCUK funded research. While the conclusion that higher researcher productivity would result in societal benefit is sensible, the authors erroneously begin with the assumption that access and efficiency levels in today's system are low, and that Author Pays journals or Manuscript Archiving are mechanisms that can improve access and efficiency, without due discipline in their methodology or consideration of the facts.

On the economic model being "simplistic": The model of economic growth is the most widely used in economics. It was developed by Robert M Solow, who won the Nobel Prize for economics in 1987 for "his contributions to the theory of economic growth".

On the main claims of lack of due discipline or consideration of the facts: The report authors regard these as serious charges and expect a retraction of these statements on the grounds that they cannot be supported.

On estimating the returns to R&D: There is a very large literature on estimating returns to R&D, and a consensus about the average return to publicly funded R&D. The highlights of the literature are given in Table 5.1 in the report, taken from Salter, A.J. and Martin, B.R. (2001) 'The economic benefits of publicly funded basic research: a critical review,' Research Policy 30(3), 514.

On the current level of efficiency: There is no assumption about the current level of efficiency, as the current situation is taken as the baseline.

- i. The authors report an 'access gap' stating that 50% of possible journal titles are not available to UK researchers (and one is led to conclude this represents 50% of research). The authors make the estimate of 50% access by dividing institutional subscriptions by the number of journals published and making minor adjustments. The methodology is deeply flawed.
  - As a result of consortia deals many UK institutions have full access to many journals although they do not subscribe to the specific titles. For example, Elsevier estimates that 97% of UK STM researchers are at institutions that have access to at least 90% of Elsevier journal articles.

It is not clear what the Elsevier figures refer to. Taken at face value though, it is worth noting that the Elsevier package is likely to be the last one librarians might consider cancelling and, to maintain access to Elsevier titles, they have

cancelled many others and cut book acquisitions. The figure is therefore very far from representative, even within research universities.

- In the few instances where a researcher does not have a subscription the researcher can obtain the article with little or no payment through interlibrary loan, and can often purchase the article if they require it immediately.

Inter-Library Loans are expensive to institutions, both in formal costs to, for example, the British Library, and in time spent on processing them by library staff. These are the sort of concrete costs in cash and time for publishers, researchers and librarians that are listed among the savings from the OA models.

- The study assumes that it is exactly the same 50% of titles that are missing at all UK HE institutions and that librarians have not developed their collections to suit the requirements of the users at their institution. Further, the actual research content (articles) represented by these “missing” titles will be considerably less than a crude count of titles suggests. As a result the average researcher will have direct access to considerably higher proportion of the research literature than the study assumes  
A number of metrics are explored in section 5.1 of the report.
  - One simple proxy is that of SCOUNL subscriptions which suggest that perhaps 50% of peer reviewed journal titles are not available in UK HEIs. Another is the OA citation advantage.
  - The full discussion of the 5% accessibility parameter in section 5.1, including its true relationship to these proxy indicators.

- ii. The authors presuppose that the current peer-review publishing system (which is largely subscription based) does not lead to efficient and productive research. The fact is that due to the e-revolution since at least 1997 (largely driven by publishers) the productivity of researchers has dramatically increased and is at very high levels today. For example, science is the only information sector where the amount of time that researchers spent gathering (vs. analyzing) information decreased from 2001 to 2005.<sup>iii</sup>

On the efficiency of the current system: as noted above, the current situation is the baseline, and no assumptions are made about its efficiency

On improvements: It is not clear that the “e-revolution” has been driven largely by publishers. Certainly publishers have played an important role, but so have users, librarians and JISC.

Furthermore,

- The authors attribute benefits to the Author Pays and Manuscript Archiving model citing the so-called “OA citation advantage.” But it is not clear that any such ‘advantage’ exists.<sup>iv</sup>

As discussed in the report, there is a generally accepted consensus that there is an OA citation advantage, with discussion now focusing on why. A number of studies are discussed in the report, and their methodology examined.

- The authors attribute improvements in research efficiency (e.g. by less risk of duplicative research performed and less risk of pursuing blind alleys) to Author Pays and Manuscript Archiving models, without any supporting evidence.
  - It is assumed that the Author Pays models would reduce the risk of duplicative research, while in fact there is evidence that Author Pays titles have less stringent review standards (ALPSP, 2005), increasing the onus on readers to duplicate reported results to evaluate reproducibility.<sup>v</sup>  
On duplicative research: this relates to that done because the researcher was unaware of previous publications due to access limitations, etc.  
On review standards: all models explored include the same peer review activities and costs.
  - It is assumed that Manuscript Archiving would reduce the risk of scientists going down ‘blind alleys.’ However, archived manuscript content cannot be guaranteed

by publishers and frequently differ from the published version.<sup>vi</sup> This could result in research being developed based on flawed findings.

Self-archiving mandates can encourage the “publication” of results from unsuccessful or inconclusive research, etc. and are likely to facilitate the emergence of a more complete record of science (See Section 3.2.5).

- It is assumed that Manuscript Archiving would lead to more ‘negative’ results being made available, with no evidence for this assertion. The authors have since clarified that this would be in the form of depositing grey literature that has not been submitted to peer review which (a) would clearly be an additional cost and (b) could be achieved under any of the business models under discussion. This is addressed in section 3 of the report, for example, on the impacts of funder and institutional mandates.

#### d) Other considerations

- The report hypothesizes that a transition to Author Pays and Manuscript Archiving will likely result in job losses for the UK, but does not quantify how many jobs would be affected, and how much these losses would cost the UK in tax receipts, unemployment benefits, etc.  
The issue of job losses has been dealt with above. Job losses are unlikely to be significant.
- The report implies that only publishers will suffer job losses, and neglects to quantify the impact on jobs in the library sector, although it does note (p. 93) that libraries “core activities can be limited...as a result there is potential for substantial cost savings.” We estimate that over 200 UK librarians would have to lose their jobs to capture the hypothesized savings of £11 million ‘library savings.’  
The issue of job losses has been dealt with above. Job losses are unlikely to be significant.
- The report fails to assess the impact of different journal publishing models on society that depends on unbiased, high quality, peer reviewed research. For example:
  - Archived Manuscripts contain errors. Medical articles containing typos in, for example, drug dosage information could have serious consequences. There is no consideration given to how procedures (e.g. recalls, retractions) of the current system would be managed and at what cost.  
This is unfounded. All the models are compared on the same basis and with the same activities factored in.
  - The report neglects to consider the negative impact that free online models may have on revenues from advertising, membership fees or reprints. These revenues subsidize the subscription costs for high-end and many society journals.  
The author-pays model includes all publisher costs in the author-fees. To the extent that there is advertising revenue, then author-fees can be reduced. Given the potentially wider readership of OA journals there should be opportunities for increased advertising revenues – as discussed (See Kaufman-Wills (2005) The facts about Open Access: A study of the financial and non-financial effect of alternative business models for scholarly journals, ALPSP Special Report., p13).

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<sup>i</sup> RIN 2008

<sup>ii</sup> ALPSP survey of librarians on factors in journal cancellation, Mark Ware Consulting Ltd,

<sup>iii</sup> Outsell I-Market Hot Topics, vol 1, May 6, 2005: “2001 vs. 2005, Research study reveals dramatic changes among information consumers”

<sup>iv</sup> Moed, The effect of “open access” on citation impact: An analysis of ArXiv’s condensed matter section. JASIST 58 (13): 2047-2054 (2007); Davis *et al.*, Open access publishing, article downloads, and citations: randomised controlled trial. BMJ 337: a568 (2008); Frandsen, The effects of open access on un-published documents: A case study of economics working papers. Journal of Informetrics (2008)

<sup>v</sup> ALPSP report on “The facts about open access”, Kaufmann Wills Group, LLC, Oct 2005.  
<http://www.alp.org/publications/pub11.htm>

<sup>vi</sup> Goodman et al. Open access and accuracy: author-archived manuscripts vs. published articles. *Learned Publishing* July 2007.