

# THE ECONOMICS OF OPEN ACCESS

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# THE CURRENT STATE OF PLAY

- Price rises higher than increase in library budgets – the Serials Crisis
- The Big Deal
- The rise of consortia
- The current economic climate is forcing libraries to cut their budgets

- Subscription model – good cash flow for publishers, predictable budgets for libraries, but makes it difficult for a brand new journal with no track record to get subscribed to
- Pay per view – becoming more popular, but leads to unpredictable budgets for publishers AND libraries, so will remain a minority income stream

# PROS AND CONS OF THE BIG DEAL

- Access to new material libraries did not have access to before
- This new material is well used
- Simplification of budget process
- But such deals lock libraries to the publisher – so a squeeze on journals from other publishers, and on book purchases

# OPEN ACCESS JOURNALS

- Model 1 – set up and run by volunteers
- Model 2 – as above, but some funding in grants/sponsorship
- Model 3 – “author pays”. In some cases, “Institutional Membership”. In practice, it is not the author who pays, but his/her institution or funder.
- Model 4 – hybrid journal with some OA materials paid for by author, and some TA where the author has paid nothing; only subscribers who have paid up can see the TA materials, but everyone can see the OA materials

# AUTHOR PAYS FEES

- They range from \$150 to \$5,000+, most \$2,000 - \$3,000 per article
- Some charge per page
- Some have reduced charges depending whether you have institutional membership, or are a personal member of the scholarly society in question

# REPOSITORIES

- Stand alongside toll-access journals
- Can be subject-based, such as Arxiv (physics, maths), or can be research from an institution (Institutional Repository, or IR)
- A third possibility is a repository covering all subjects and not just from one organisation, e.g., DEPOT, run by EDINA in the UK ([depot.edina.ac.uk](http://depot.edina.ac.uk))

# REPOSITORIES

- At least 1600 in existence
- Most are IRs, but also many subject based ones, including Ginsparg's arXiv, Harnad's CogPrints....
- Number of articles in archives currently growing by 50% p.a. – albeit from a small base – populating the repositories is a major problem
- Best source is [www.openoar.org](http://www.openoar.org)
- N.B. Arxiv costs an estimated \$500,000 p.a. to run, and is appealing for funds.



# ECONOMIC DISADVANTAGES OF OPEN ACCESS

- In the case of “author-pays” journals, it merely shifts the costs from libraries to the funding agencies or employers (or indeed maybe still stays with the libraries!)
- Repositories are NOT cheap to run, especially at the outset when staff have to be persuaded to deposit and systems are being set up

# SOME OA JOURNALS ARE REALLY MAKING A MARK

- The *PLoS* titles all enjoy high Impact Factors, sometimes top of their subject field
- Hindawi journals enjoy a good reputation and the company is making a profit – without any external financial support
- OA is an **excellent** way for a new journal, e.g., in a new subject area, to be launched, as there are no subscription costs, so users can readily access them through Google Scholar, etc.

# BUT SOME ARE NOT

- The Bentham journals attract few articles
- There is the argument made by commercial publishers that OA journal publishers, anxious to protect revenue, will adopt low refereeing standards to get more articles in – hence more income – and that does sometimes seem to be the case
- Many “volunteer” OA journals only have a modest reputation

# “AUTHOR PAYS” MODELS

- Submission fee – if it gets rejected, author has wasted his/her money
- Publication fees – only if article is accepted, but then successful authors are subsidising poor authors
- No easy answer, but most journals go for publication (acceptance) fee; a few go for a mixture of the two

# WHO PAYS IN “AUTHOR PAYS”?

- Funding agency – incorporated into bid; some funding agencies REQUIRE this as a condition of funding
- Employer, from a central fund
- Employer, through the Library
- Authors pays him/herself (rare) – do the name “author pays” is seriously misleading!
- Fees often waived if author pleads poverty
- However, some subject areas, such as humanities, are not funded much by funding agencies. As a result, these subjects may not get OA journals, though deposit into IRs will still happen

# WHP PAYS FOR IRs?

- Out of library budget, as library might now save money?
- Out of other central budget?
- Contribution from all departments according to volume of input?
- No clear pattern emerging yet

# THE HOUGHTON REPORT

## (JANUARY 2009)

- Written by John Houghton, an Australian economist and myself with the help of others.
- Looks at the costs and benefits of scholarly publishing in the UK
- Found that massive savings - £100 million p.a. – could be achieved by going OA, and that UK plc would reap similar benefits
- Cost savings include quicker searching, less negotiation with publishers over Big Deals, etc. – not just library budgets but throughout the scholarly communication chain
- Available at:  
<http://www.jisc.ac.uk/media/documents/publications/summary-economicoa.pdf>

# DETAILS OF THE PROJECT

- The aim was to explore the institutional, budgetary and wider implications of the major models for scholarly publishing (*i.e.* subscription publishing, OA publishing and self-archiving).
- Phase I sought to describe the publishing models, and identify all the costs and potential benefits involved.
- Phase II sought to quantify as many of the costs and benefits as possible, and to compare costs and benefits.



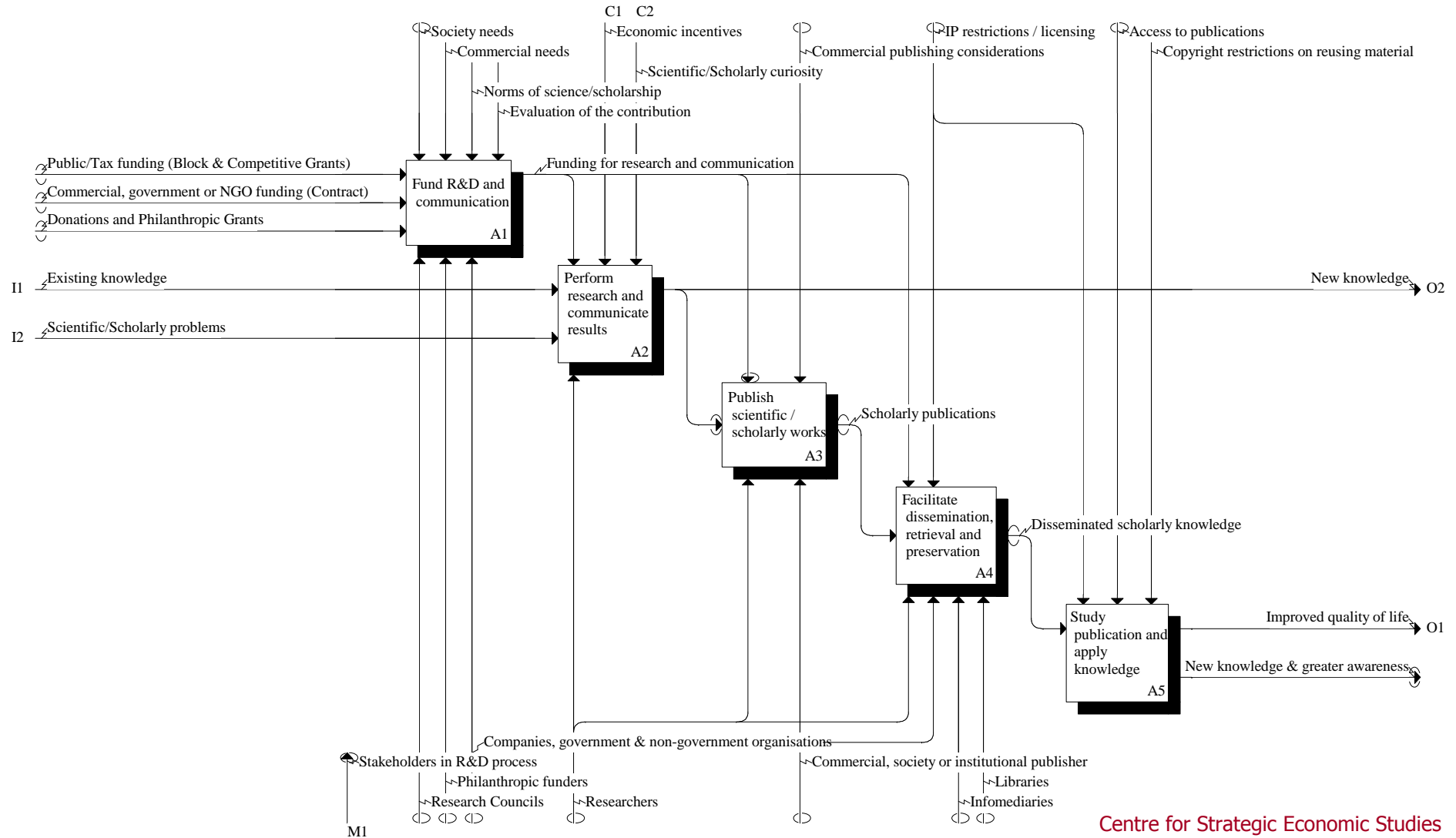
# Activities and data items (costs)

## (JISC EI-ASPM Model)

- We created a series of spreadsheets containing each of the elements identified in a process model, then sought to populate the model with cost data.
  - The research funding activities worksheet has more than 350 items;
  - The perform research worksheet has around 565 items;
  - The publisher activities worksheet has around 670 items; and
  - The dissemination activities worksheet, mainly research library activities, has around 730 items.
- So there are 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.).

# Scholarly communication process model

<http://www.cfses.com/EI-ASPM/SCLCM-V7/>



# UK national scholarly publishing

(Annual costs in GBP, circa 2007)

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	<i>Estimate</i>
Reading (Published Staff)	2,775,000,000
Writing (WoK based estimate)	1,599,700,000
Peer Review (Scaled to publication counts)	202,800,000
Editorial activities (Scaled to published staff)	63,600,000
Editorial board activities (Scaled to published staff)	7,000,000
Preparing Grant Applications (RCUK, Wellcome & Leverhulme)	117,500,000
Reviewing Grant Applications (RCUK, Wellcome & Leverhulme)	18,600,000
Publisher Costs (Scaled to publication counts)	573,900,000
Total National System	5,358,200,000

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Source: JISC EI-ASPM Model.

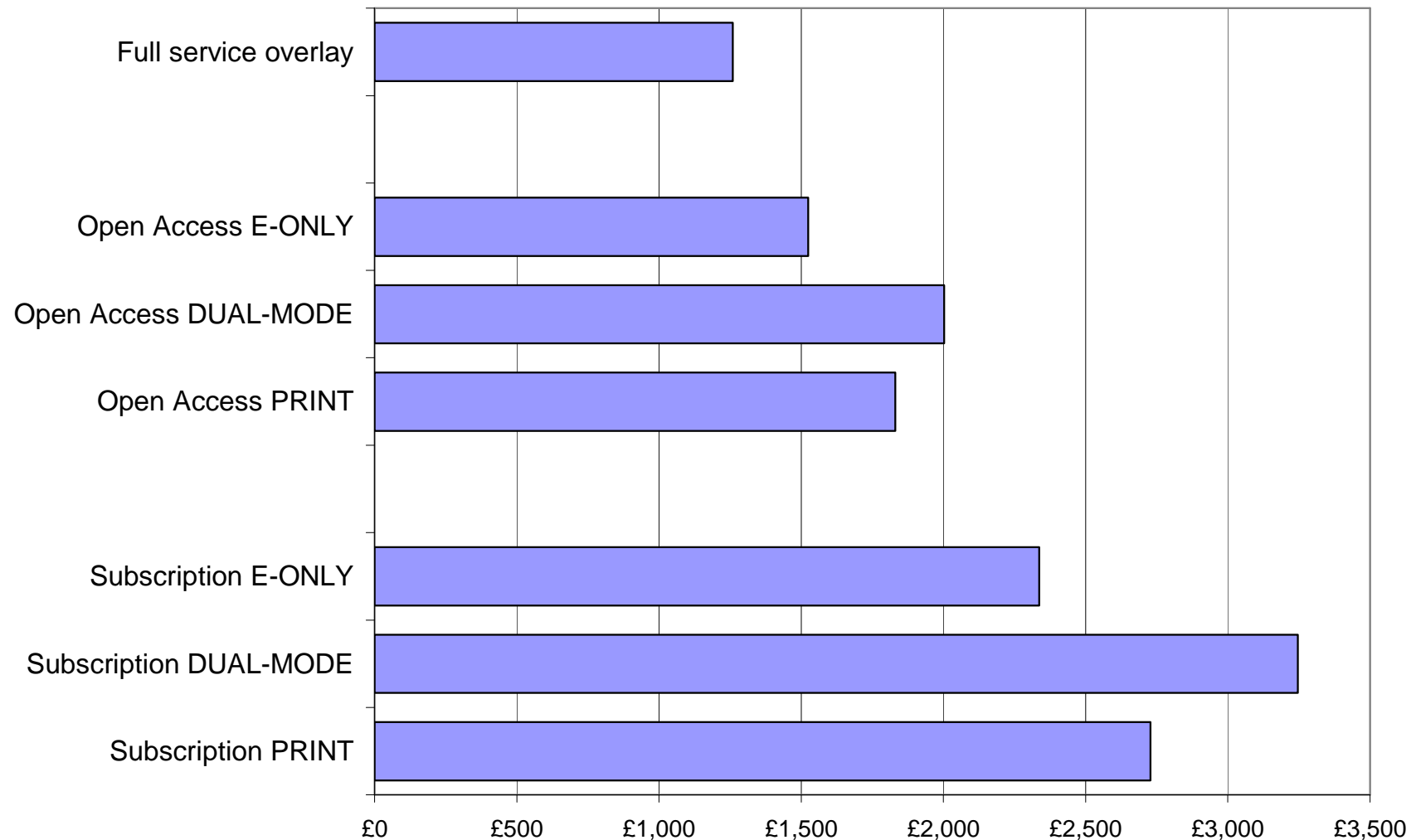
# Phase II: Quantifying costs and benefits

## (JISC EI-ASPM Project)

- We adopted a staged approach to Phase II that tackles it from the bottom-up (as case studies and scenarios) and the top-down (in a simple economic model):
  - We explored the costs of the process elements and system costs, to see cost differences and direct savings.
  - We presented cases and scenarios exploring the cost savings resulting from the alternative publishing models throughout the system, to see the indirect cost differences and savings.
  - Then we modelled the impact of changes in accessibility and efficiency on returns to R&D.

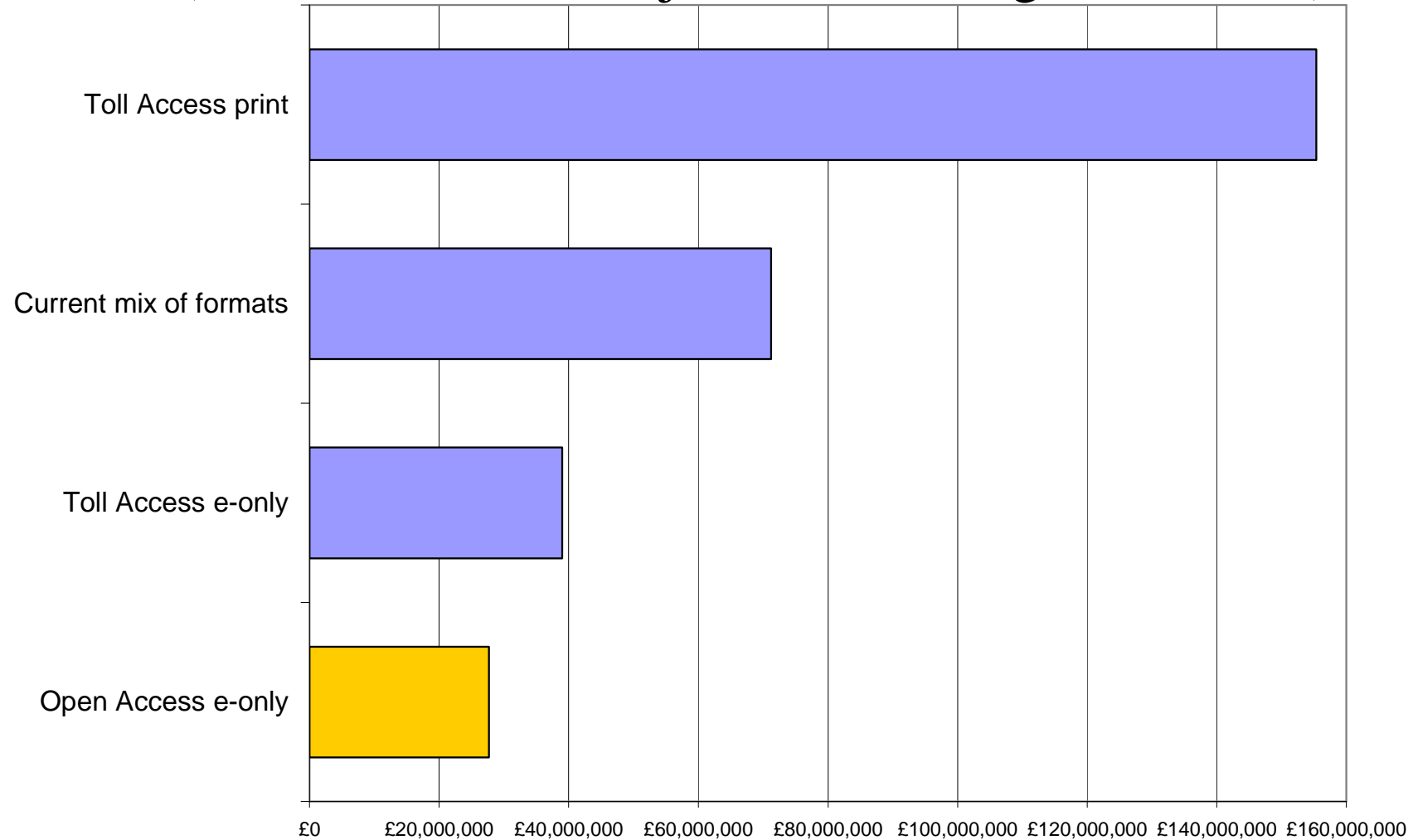
# Publisher costs by mode and model

(Per article cost, GBP)

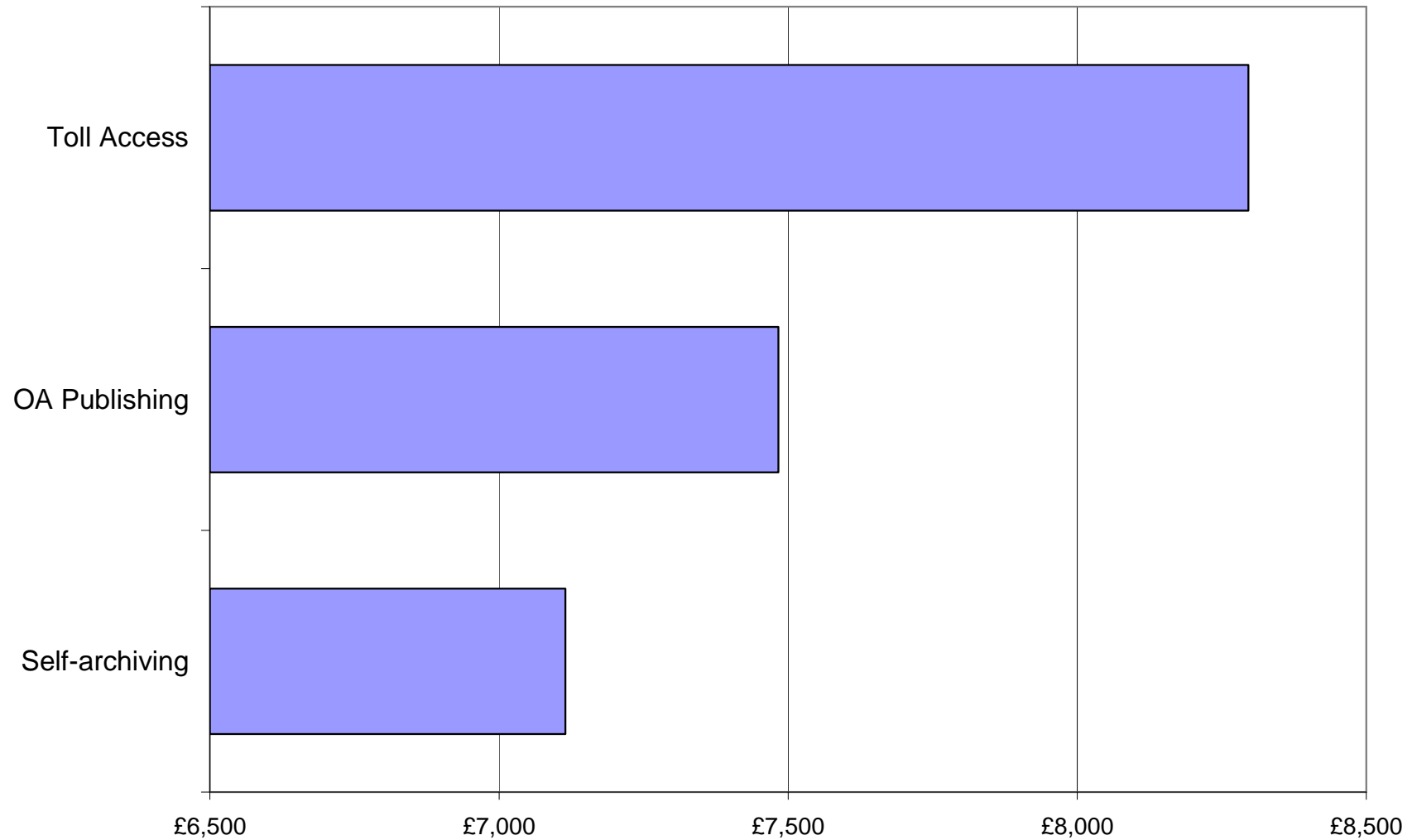


# Library costs by mode and model

(SCONUL Libraries journal handling costs, GBP)



# Estimated system costs per article (E-only format, GBP)



# An approach to overall impacts

## (A modified Solow-Swan model)

- There is a vast literature on returns to R&D, which while varied shows that social returns to publicly funded R&D are high – typically 20% to 60% a year.
- The standard approach assumes that all R&D generates useful knowledge (efficiency) and all knowledge is equally accessible (accessibility), which is unrealistic.
- We introduced ‘accessibility’ and ‘efficiency’ into the model as negative variables, and looked at the impact of increasing access and efficiency.



# Estimating potential impacts

## (Publicly funded research in the UK)

- With public sector R&D spending at £8.4 billion a year in 2006 and a 20% return to R&D, a 5% increase in accessibility and efficiency would be worth £172 million pa.
- With higher education R&D spending at £6.1 billion, a 5% increase in accessibility and efficiency would be worth £124 million pa.
- With public competitive grants funding at £1.6 billion, a 5% increase in accessibility and efficiency would be worth £33 million pa.
- These are recurring annual gains

# Comparing cost and benefits

## (JISC EI-ASPM Project)

- It is not possible to compare directly toll and OA publishing at the national level: toll access publishing seeks to provide UK subscribers with access to worldwide research, whereas OA publishing seeks to provide worldwide access to UK research.
- We approached it from both sides and tried to explore the lower and upper bounds by looking at:
  - the implications of simply adding OA publishing and self-archiving to current activities, all other things remaining the same; and
  - the implications of OA publishing and self-archiving as alternatives to current activities

# CONCLUSIONS OF HOUGHTON REPORT

- System cost savings may be sufficient to cover the costs of OA publishing or self-archiving, so it should be possible to meet the costs of alternative OA publishing models from within current budgetary allocations.
- The increase in returns to R&D resulting from more Open Access means that when the cost savings and additional returns are added together, the benefits of alternative OA publishing models are likely to substantially exceed the costs.

<http://www.cfses.com/EI-ASPM/>

## Project website containing:

- The full JISC report and summary documents.
- The scholarly communication process model.
- The cost-benefit model, including versions of the models for journal and book publishing, OA publishing and self-archiving, research and library handling costs.

# UK PUBLISHER REACTIONS TO HOUGHTON REPORT

- In a word, furious
- They drafted a document with arguments why the methods and results are flawed
- John Houghton and I wrote a rebuttal
- There have been further criticisms in a report produced by Mark Ware and Michael Mabe for STM, and in papers given by publishers at conferences

## OPEN ACCESS – WHAT ARE THE ECONOMIC BENEFITS? A COMPARISON OF THE UNITED KINGDOM, NETHERLANDS AND DENMARK

- John Houghton modelled the costs and benefits of Open Access in three countries - the UK by (JISC), in the Netherlands (SURF) and in Denmark (DEFF).
- Same methods used for each study
- Adopting OA could lead to annual savings of around EUR 70 million in Denmark, EUR 133 million in The Netherlands and EUR 480 million in the UK.
- The report concludes that the advantages would not just be in the long term; in the transitional phase too, more open access to research results would have positive effects. In this case the benefits would also outweigh the costs.
- Use the title words above in Google to obtain a pdf of the report!

# THE PUBLISHERS' CRITICISMS

- You didn't approach us
- The model is flawed
- The data/assumptions in the model are flawed
- You've made all sorts of technical errors/have overlooked efficiencies in the current system/have under-estimated the problems of a transfer to full OA
- You've looked at a few countries only – need to consider the world situation
- You are anti-publisher and (by implication) deliberately skewed the research to get the result you wanted

# OUR RESPONSE

- We did TRY to approach publishers, but they refused to co-operate because of commercial confidentiality
- If you think the model is flawed, suggest an alternative (they haven't done so far)
- If you think the data/assumptions are incorrect, tell us the correct figures (they haven't done so far)



- We've refuted each of the alleged technical errors in turn
- Yes, we looked at a few countries only, because that is what the funders asked us to do; we'd LOVE to do USA, but need funding to do it
- We are not anti-publisher and approached this with a genuinely open mind; we would have published the results whatever the outcome

# MY PREDICTIONS ON THE FUTURE ECONOMICS OF OA

- OA journals (author pays) will form a small niche market
- OA journals (no charge) will rely on enthusiasm of individuals and their employers – a struggle
- Repositories (especially IRs rather than subject-based ones) will grow significantly in number, and some will get significant populations of articles, but it will be understood that they are no panacea for the serials crisis
- Some of the less important toll-access journals will die as libraries switch from “nice to have” journals to OA alternatives
- “Must have” toll-access journals will continue to thrive
- Future for small publishers and scholarly societies grim
- Lots of new OA publishers will be launched, and won't have the “baggage” of existing TA publishers