Economic implications of alternative publishing models:

Self-archiving and repositories

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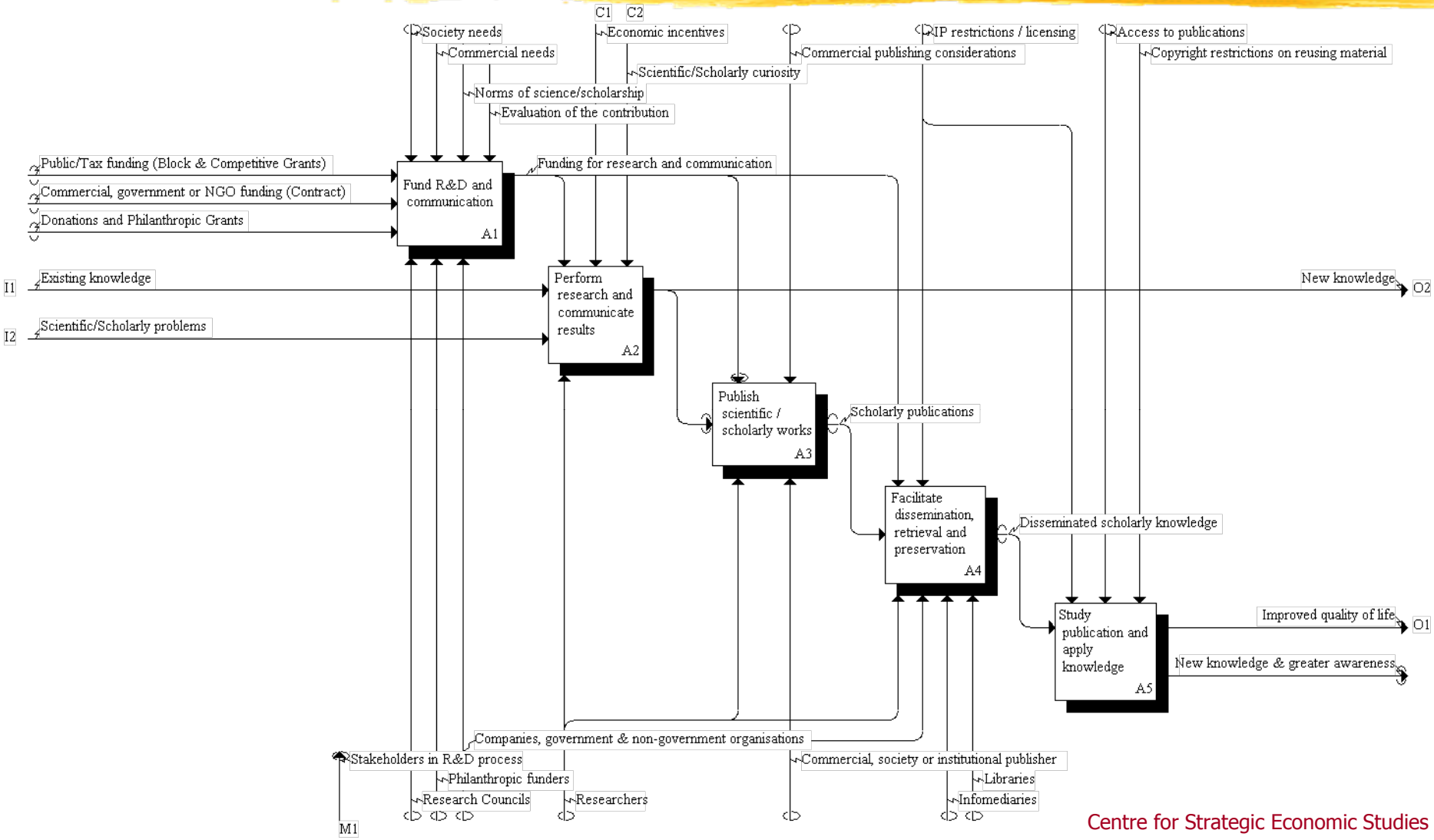
Implications of alternative publishing models (JISC EI-ASPM Project)

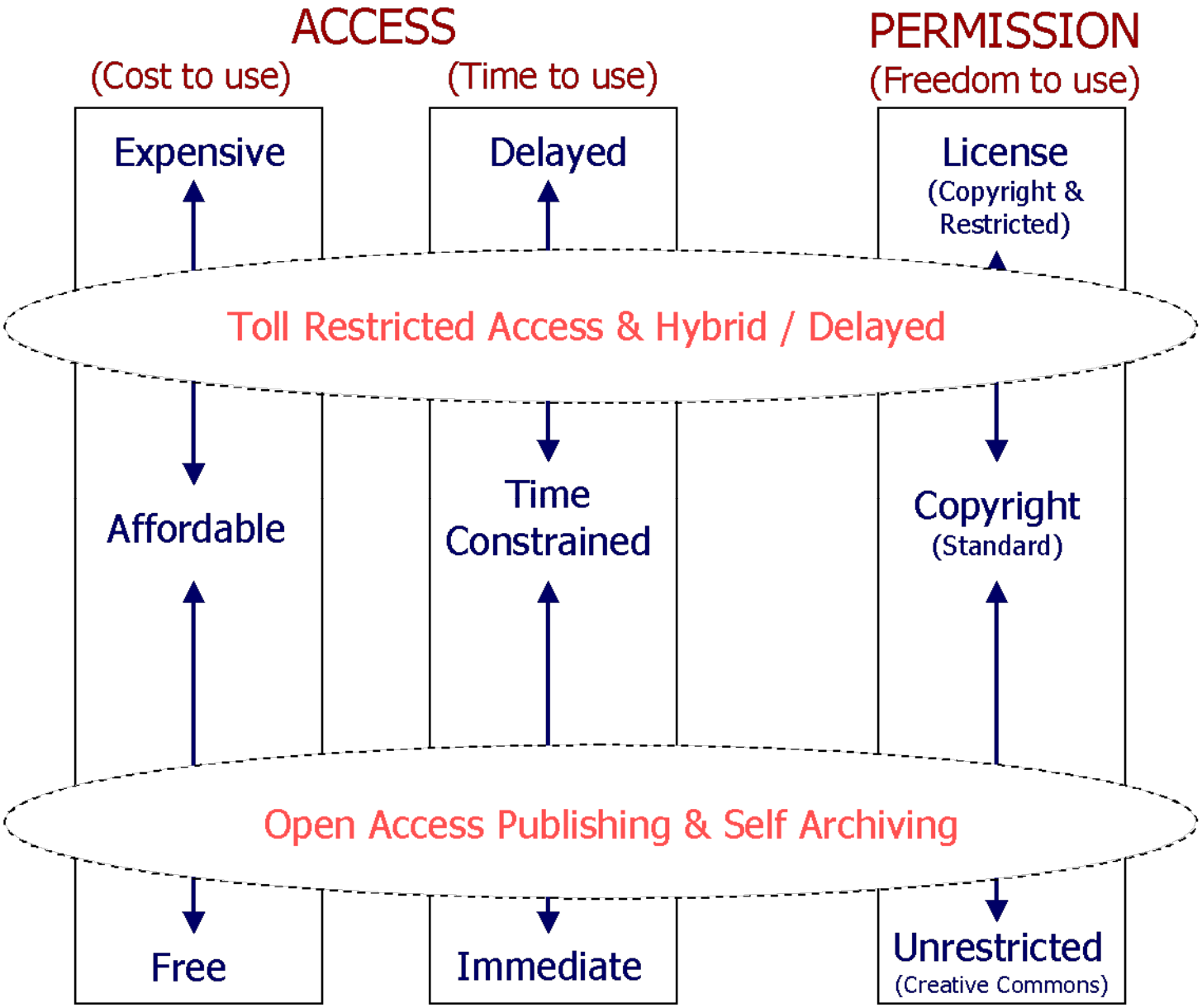
- JISC project on the Economic Implications of Alternative Scholarly Publishing Models, in collaboration with Loughborough University (Charles Oppenheim, *et al*.).
- The aim of the project was to explore the institutional, budgetary and wider implications of the major models for scholarly publishing (*i.e.* subscription publishing, 'author-pays' OA publishing, and self-archiving).
- To ensure that comparisons could be made, we explored two self-archiving models: (i) 'Green OA' self-archiving in parallel with subscription publishing; and (ii) the 'overlay journals' model of self-archiving with overlay production and peer review services.

Phase I: Scholarly communication process

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



Dimensions of impact: Access and Permission

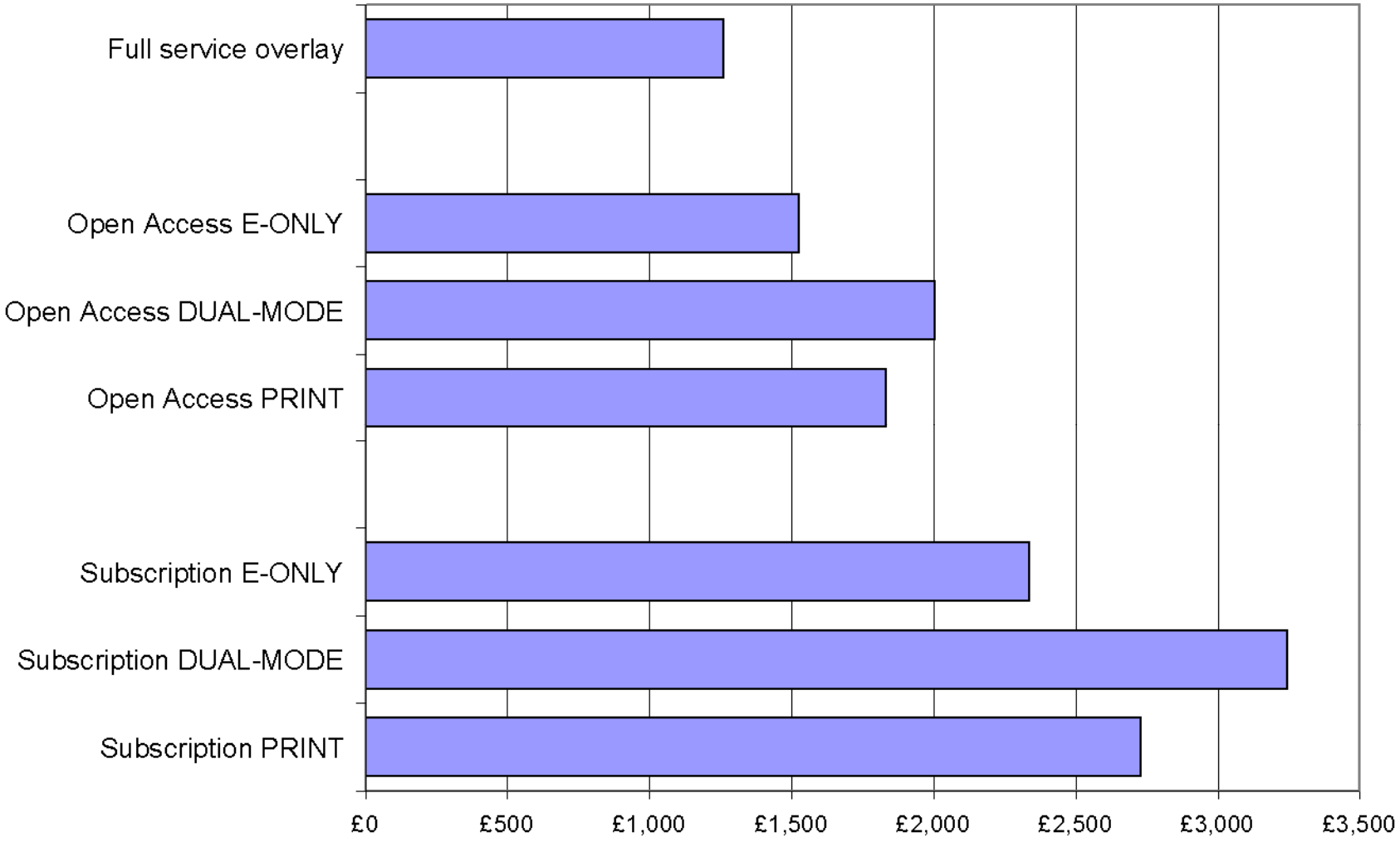


Phase II: Quantifying costs and benefits
(JISC EI-ASPM Project)

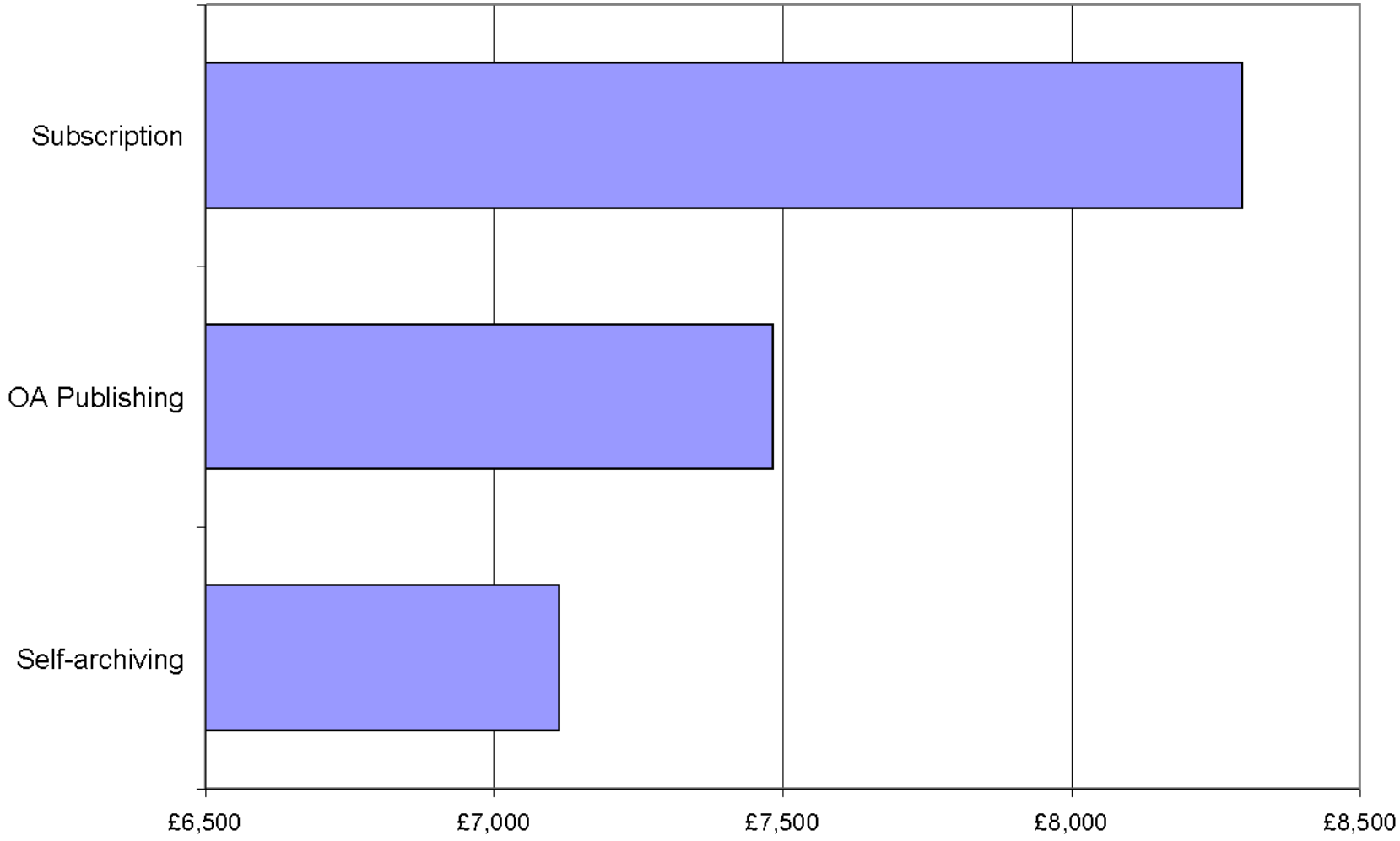
- We adopted a staged approach to Phase II that tackles it from the bottom-up (as case studies and scenarios) and the top-down (in a simple economic model):
  - We explore the costs of the process activities and system costs, to see cost differences and direct savings.
  - We present cases and scenarios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

Publisher costs by mode and model

(Per article cost, GBP)

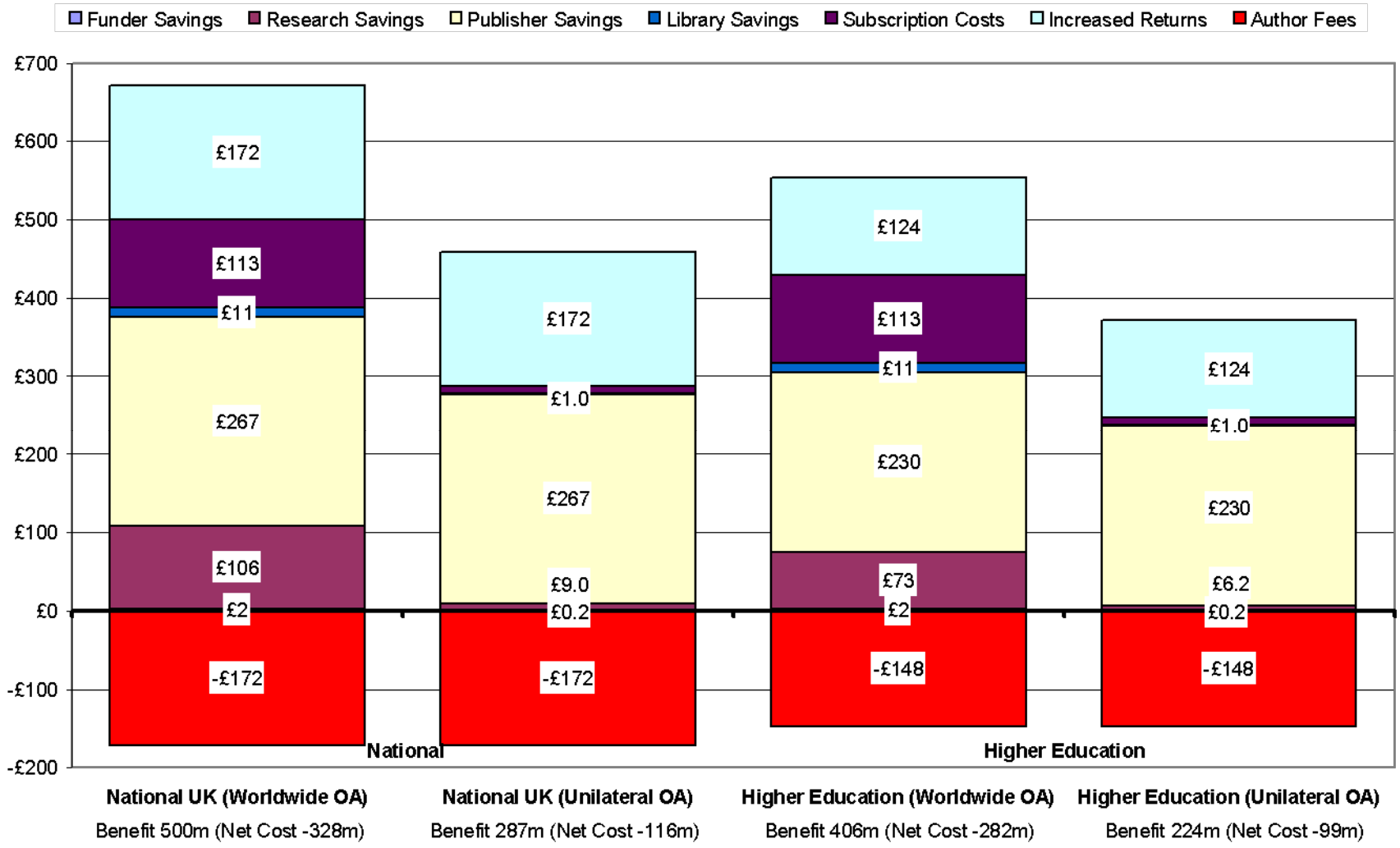


Estimated system costs per article
(E-only format, GBP)



OA publishing savings and costs

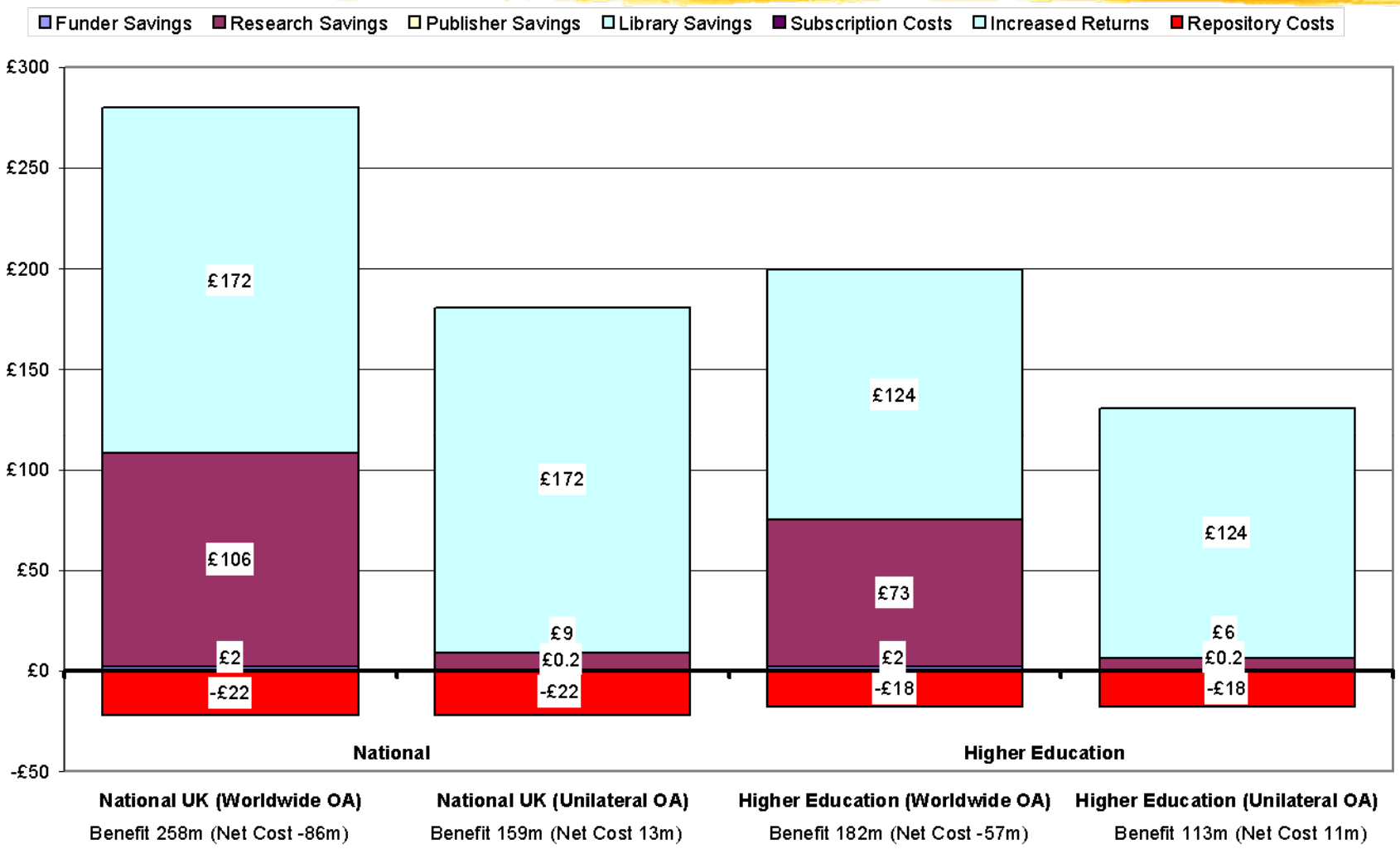
("Author-pays" in GBP millions, 2007)



Note: National library savings and subscriptions is SCONUL only.

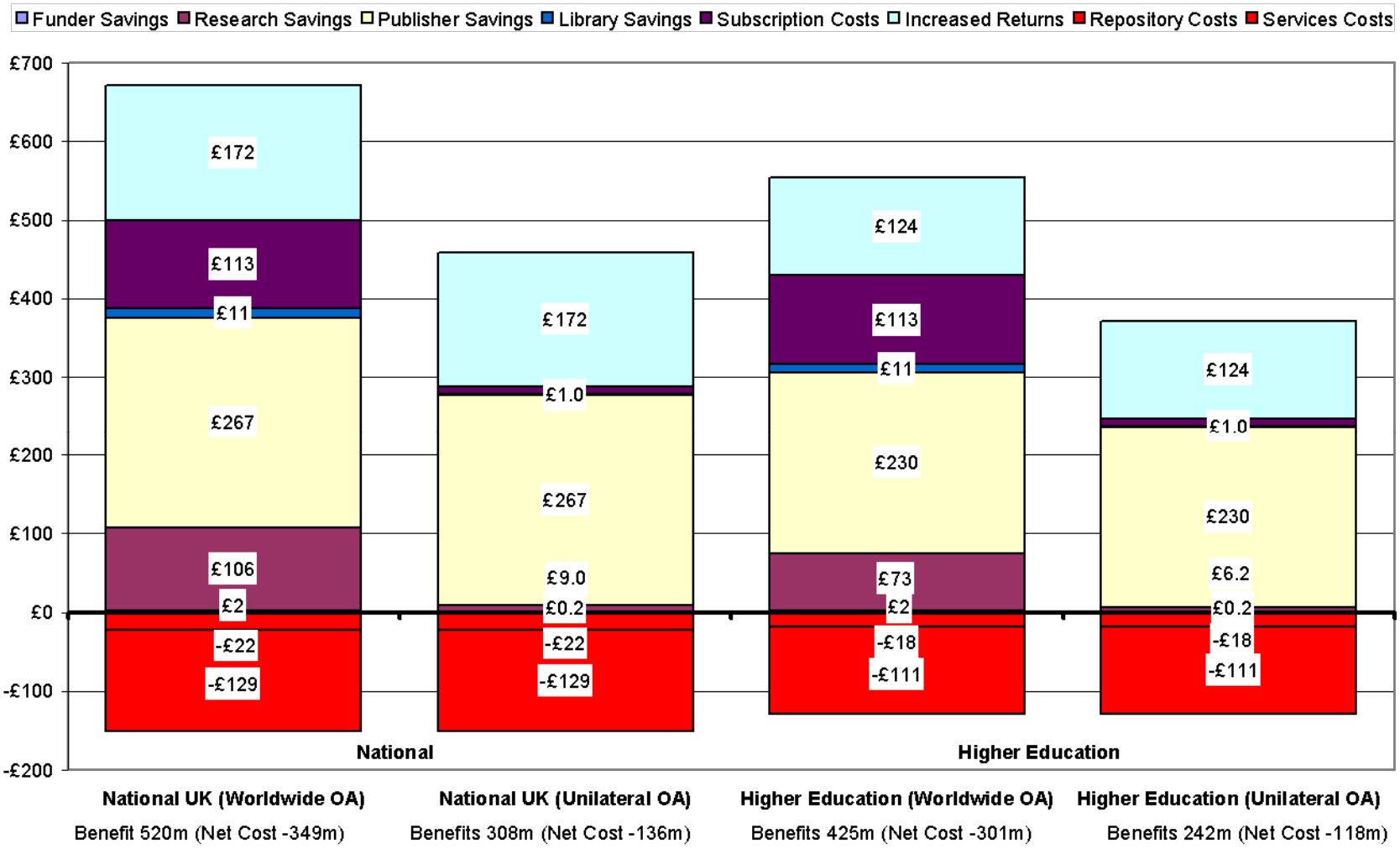
OA self-archiving savings and costs

("Green OA" in GBP millions, 2007)



OA self-archiving savings and costs

("Overlay Journals" in GBP millions, 2007)



Note: National library savings and subscriptions is SCONUL only.

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 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 introduce 'accessibility' and 'efficiency' into the standard model as negative or friction variables, and look at the impact of reducing the friction by increasing accessibility 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 RCUK 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 from one year's R&D expenditure.

Comparing cost and benefits
(JISC EI-ASPM Project)

- It is difficult to compare subscription and OA publishing at the national level: subscription publishing seeks to provide UK subscribers with access to worldwide research, whereas OA publishing seeks to provide worldwide access to UK research.
- We approach it from both sides and try to explore the lower and upper bounds by looking at:
  - *Ceteris paribus scenarios* – the implications of simply adding OA publishing and self-archiving to current activities, all other things remaining the same; and
  - *Net cost scenarios* – the implications of OA publishing and self-archiving as alternatives to current activities, by adding the estimated savings to estimated returns.

Cost-Benefit comparisons
(GBP millions and benefit/cost ratio)

Transitional Model	Costs	Benefits: Savings	Benefits: Increased returns	Benefit / Cost Ratio
Scenario (UK Unilateral OA)				
OA Publishing in HE	1,787	2,990	615	2.0
OA Repositories in HE (Green OA)	189	67	615	3.6
OA Repositories in HE (Overlay Services)	1,588	2,990	615	2.3
OA Publishing Nationally	2,079	3,479	850	2.1
OA Repositories Nationally (Green OA)	237	96	850	4.0
OA Repositories Nationally (Overlay Services)	1,580	3,000	850	2.4
Scenario (Worldwide OA)				
OA Publishing in HE	1,787	5,198	615	3.3
OA Repositories in HE (Green OA)	189	786	615	7.4
OA Repositories in HE (Overlay Services)	1,588	5,198	615	3.7
OA Publishing Nationally	2,079	6,054	850	3.3
OA Repositories Nationally (Green OA)	237	1,132	850	8.3
OA Repositories Nationally (Overlay Services)	1,580	5,224	850	3.8

Note: Compares Open Access alternatives against subscription publishing, with costs, savings and increased returns expressed in Net Present Value over 20 years (GBP millions). Returns are to public sector and higher education R&D spending. HE = Higher Education.

Key findings

- In an OA world, 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 enhanced access may also be sufficient to cover the costs of self-archiving, so when the cost savings and additional returns are added together the benefits of alternative OA models are likely to substantially exceed the costs.
- As modelled, both of the self-archiving and repositories models appear to be more cost-effective than 'author-pays'.

EI-ASPM project website

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

- The JISC report and summary documents.
- The scholarly communication process model in html.
- An on-line cost-benefit model with simplified versions of the models for journal and book publishing, OA publishing and self-archiving, research and library handling costs. These can be explored at the national, sectoral and institutional levels.