

4 The relevant markets and the effects of the proposed merger

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Introduction

4.1. This chapter identifies the market affected by the merger, and assesses the likely effects of the merger on competition. We begin by identifying and describing the main products common to RE and Harcourt, their production, distribution and use, and the potential for substitution between products. We then define the relevant product and geographic market. Following that, we discuss market shares, pricing behaviour, competition, market entry and buyer power.

Products

4.2. RE's business is divided into four segments: Science & Medical, Education, Legal, and Business. We examine the extent of overlap between RE and Harcourt in each of these areas in turn:

- (a) *Science & Medical*: Both RE and Harcourt are active in STM publishing,¹ and the activities of both parties in this area are described below.
- (b) *Education*: Both parties are active in the UK educational publishing market. However, RE told us that Harcourt's school publishing activities were exclusively aimed at the US school syllabus requirements. RE said that Harcourt's sales in the UK were therefore limited to schools where the US syllabus was taught to expatriate US children.
- (c) *Legal*: RE told us that Harcourt was not active in this segment.
- (d) *Business*: RE told us that Harcourt was not active in this segment.

We have received no evidence from third parties that the merger would have an adverse effect in the education (other than STM) or business markets. One third party commented on RE's performance in the legal market, but did not make any specific comments about the present proposed merger.

STM journals and books

4.3. Both RE and Harcourt publish STM journals and books. RE told us that, on the basis of data published by Outsell,² the two had a combined global share (in revenue terms) in the STM books market of 9.8 per cent (RE 1.8 per cent, Harcourt 8.0 per cent) by value, and a combined share in the UK of 11.0 per cent (RE 3.4 per cent, Harcourt 7.6 per cent). No concerns have been expressed to us by third parties about the effect of the merger in the market for STM books.

4.4. In the light of the above, the focus of the remainder of this chapter is on the supply of STM journals. In the present section (to paragraph 4.17) we describe STM journals and the publishing process. The following sections (paragraphs 4.18 to 4.56) consider the respective roles of publishers and content providers in more detail.

4.5. Around 90 per cent of global turnover in STM journals is accounted for by 'primary' journals, which consist of original research articles. The remainder is divided between secondary journals, containing summaries, abstracts or content lists of primary or tertiary journals; and tertiary journals, which contain reviews of articles in primary journals and of STM books.

4.6. A journal is a publication issued in successive parts. Journals are also referred to as serials or periodicals: the distinction between the two terms is not generally agreed, although the latter is more often used to denote a journal that is published at regular intervals. A collection of issues of a convenient size for binding together is called a volume. The frequency with which issues appear varies widely depending on the journal in question, from twice a year to more than once a week, but quarterly, monthly or bimonthly journals are the most common. STM journals have a number of distinct features from magazines, the most prominent being that they consist largely or entirely of articles which describe the results of research, written and submitted by the researchers, and not commissioned by the journal. Other distinctions are that sales of academic journals are almost invariably through subscription, and that most do not carry advertising.

4.7. Clinical medical journals have many of the features of other STM journals, but generally have a large proportion of personal subscribers. As such, they may be attractive to advertisers, and so the publisher may be able to use advertising revenue to supplement their subscription revenue.

4.8. Most journals have fewer than 2,000 subscribers worldwide, although there are some exceptions. There is no lower limit to circulation levels, and some highly specialized journals may have a very

¹STM is a widely-used term in the industry. A list of broad subject areas included under STM is shown in Table 4.15.

²Outsell, *Industry Trends, Size and Players in the STM Market*, 2000.

low circulation, but below a certain number of subscribers it becomes difficult for the publisher to cover its fixed costs.

4.9. Offprints are additional copies of an article, provided by the publisher to the author, which the author can then pass on to colleagues, funding bodies or prospective employers. In some cases, publishers provide free offprints as an attraction to contributing authors, but charge for offprints above a certain allowance.

4.10. Secondary, or bibliographic, databases contain the names, and in many cases abstracts, of a large number of journal articles. They are generally available in print, online and via CD-ROM. They allow users to carry out a literature search according to topic or author. Online secondary databases increasingly contain links to full text articles (see paragraph 4.51).

4.11. Both journals and databases are increasingly available in electronic form, either online or via CD-ROM. Electronic provision of journals is discussed in paragraphs 4.45 to 4.56.

Journal production

4.12. The articles contained in primary STM journals are provided by authors from universities and other research institutes (including non-academic organizations). When an article has been submitted, it is first considered by the editorial board of the journal. This board is made up of academics with expertise in the subject matter of the journal. Some of the editors of a journal, particularly the editor-in-chief, may be leading figures in the field.

4.13. If an editor consider a submitted article potentially suitable for publication, it is sent to one or more anonymous peer reviewers who advise on whether the article is suitable, and make specific comments or suggested amendments. The editor may ask the contributor¹ to make changes to the text. Following this, the article may be accepted for publication.

4.14. Almost all academic authors now submit their articles in electronic form. Some write their work using desk top publishing computer packages—for example, many mathematicians and physicists use the TEX package. Others use simple word-processing packages. As a result, the need for typesetting, traditionally a function of the publisher, has been greatly reduced in recent years,² although in some cases the electronic manuscript may not be reusable and may have to be typed again. In any event, some further work is usually required, such as checking files for integrity, and ensuring that the article conforms to the format of the journal (both in electronic and print form)—particularly in fields, such as chemistry, where elaborate diagrams are common.

4.15. RE told us that external typesetting and printing houses are generally used by publishers to deliver formatted digital files of the accepted articles. It said that some publishers contract out the function of mounting journal content on to electronic services. External printers prepare the print versions of journals and typically send them to a publisher's fulfilment centre. The fulfilment function involves preparing journals for despatch, and invoicing (usually via subscription agents). Again, RE told us, many publishers subcontract fulfilment and distribution. We note that such subcontracting is very widely used in publishing.

4.16. Some third parties take the view that publishers play a limited and passive role in the production of STM journals, in that they do not commission or edit the content of journals. In fact the Editor of the *British Medical Journal* told us that publishers add minimal value to STM journals. However, RE told us that publishers add considerable value to the management, financing, facilitation, coordination, production, marketing and distribution of journals. It said that the role of the publisher comprised the following:

- (a) neutrality in the decision of whether or not to publish submitted material;
- (b) provision of a professional service to contributing authors;

¹In practice, many articles have two or more authors.

²See, for example, Joan S Birman, 'Scientific Publishing: a Mathematician's Viewpoint', *Notices of the American Mathematical Society*, August 2000.

(c) typesetting, printing and preparation for online databases; and

(d) marketing, sales and distribution.

We note that publishers also have an active role in launching new journals and, in recent years, have also been active in developing electronic delivery systems. The process of launching a new journal is described in paragraphs 4.144 to 4.147, while electronic delivery is discussed in paragraphs 4.45 to 4.56.

4.17. Awareness of the identity of the publisher is generally low among readers, although the names of the larger publishers appear to be well known to university librarians. Electronic delivery may be an opportunity for publishers to make users more aware of their identity, or that of their electronic platform.

Overview of the market

4.18. This section describes how the market operates, and the role of the parties active within it. Two features have been pointed out to us by a number of third parties as being peculiar to the STM market. One is that journal content is provided to publishers for free by researchers (ie submitting authors), and then sold back to researchers (through the libraries of universities and other institutions). The other is that journal prices have been rising well above inflation for a number of years.

4.19. In the UK, STM publications play a key role in determining funding levels within higher education institutions (HEIs). HEIs are funded from a number of sources. The level of funding from the appropriate higher education funding council (HEFC) is determined by the HEI's research assessment exercise (RAE) rating (see paragraph 4.36). The RAE is carried out at the discipline level (of which there are 68) and is based on the quality of outputs—one of the main outputs being STM papers.

4.20. Research councils and private funding institutions provide funding to academic researchers (individually or to departments) to carry out research. These funding bodies are also influenced by the RAE rating and the publication record of the individual or department. In carrying out their research, academics also rely on past knowledge that is contained in publications in libraries and electronic sources, as well as the general infrastructure of the academic institution.

4.21. Once academic researchers have completed a piece of original research they will try to get it published. To do this they send the paper to a journal. The academic transfers the copyright to the publisher, generally without payment. The publisher employs an expert in the field to act as editor. The editor sends the paper to referees (other academics in the field) and asks for verification that the paper is of sufficient quality to publish. Authors, members of the editorial boards and peer-reviewers receive no financial remuneration. They are willing to perform these services for the reasons explained in paragraphs 4.34 to 4.37. Principal editors generally receive a modest remuneration.

4.22. When the editor has selected the papers, the publisher packages and distributes them (either in paper or electronic form). The costs to the publisher include a significant fixed element. The marginal costs of publication of an additional article or volume are very small (either in paper or electronic form).

4.23. This means that pricing at marginal cost is not viable in the long run. In addition it means that the average cost declines with increases in the quantity produced, so journals that have higher circulation will have lower average cost.

4.24. Publication serves the following purposes:

(a) It disseminates the research findings to a large audience—in general the value of a paper is greater the larger the number of people who know about it, because:

(i) the results of research are public goods: once created it is relatively cheap for an additional person to consume them; and they are non-rival: one person consuming them does not diminish their value to others—indeed, as more people use the results there are more people to talk to about them and to coordinate with on further research in the field;

(ii) it increases the author's reputation—which may improve job opportunities and pay, and also provides a major part of the job satisfaction of being an academic, as well as helping to secure future research funding for the academic's faculty; and

- (b) it provides those funding the research with independent verification that the results were of good quality and thus that the funded research was successful; publication is often a requirement of funding or of continued funding.

4.25. The value of publication accrues to:

- (a) the author in the form of recognition, prestige and possible career benefits;
- (b) the author's HEI in the form of a higher RAE rating and increased funding;
- (c) funding bodies, in that the publication process provides them with a monitoring mechanism (although some also monitor results directly);
- (d) society more generally since the research findings that are disseminated may have positive benefits (externalities), eg new drugs, environmental improvements, more efficient government policy etc; and
- (e) the editors of the journal in terms of prestige.

4.26. Libraries, individual researchers and others buy the publications in order to keep up with the latest developments (an input into their further research). Publications are generally sold on an annual (or longer-term) subscription basis. This means that purchasers have to commit to a purchase price before they know the content of the research contained in the journal. In addition, the true quality of the research is often not revealed until some time after publication. Because of these features academics, and hence libraries that buy on their behalf, prefer to have as comprehensive a set of relevant publications as possible, so they can ensure that they have the valuable ones. Where it is necessary to choose between relevant journals, they tend to base their purchasing decisions on the reputation of the journal.

4.27. Purchasing decisions are made within a fixed budget. Between 1980 and 1994, funding of UK libraries as a whole (not just for journal subscriptions) dropped from 4 per cent of total university budget to 3 per cent.¹ The desire for comprehensiveness and the reliance on reputation mean that libraries choose which publications to purchase by ranking publications by reputation (subject to relevance) and then purchasing all up to the point that their budget is depleted (see also paragraph 4.58). This means that reputation gives the journal market power, particularly if it is viewed as a 'must have'. For example, the publisher with the 'top' journal can (up to a point) increase its price without incurring any loss in sales.

Supply

4.28. Estimates as to the number of STM journals published vary. Harcourt told us that it estimated the number of peer-reviewed STM journals at around 12,000. It said that Ulrich's International Periodical Directory listed 15,000 peer-reviewed journals, but not all of these were STM; the International Association of Scientific, Technical and Medical Publishers estimated 12,000 core international titles with over 500 subscribers. The ISI (owned by Thomson) manages a bibliographic database of academic journals. It determines suitability of a title for inclusion on the basis of its 'visibility', scientific relevance and number of citations.² RE told us that a journal therefore needed to build credibility before the ISI would rate it. There were 7,710 STM journals in the ISI database in 1998.³

Supply of publishing services

4.29. Over 2,000 publishers produce at least one ISI-rated journal. Most are in one of three categories: commercial publishers, learned societies, or university presses.

¹ *Journal Publishing*, 1997, by Gillian Page (Pageant Publishing), Robert Campbell (Blackwell Science Ltd (Blackwell Science)), Jack Meadows (Loughborough University), published by Cambridge University Press.

² An article is cited when it is quoted as a reference in another published article, book, patent or elsewhere.

³ The most recent figures available, although we understand 1999 figures have since been published.

Commercial publishers

4.30. The largest publishers of STM journals, whether in terms of number of journals, articles, turnover or ISI citations (which are related to the number of papers published), are commercial publishers. RE currently publishes 1,212 STM periodicals, which includes 1,048 primary journals, while Harcourt publishes 529 STM journals, 390 of which are primary. The ISI covers 994 RE journals and 353 Harcourt journals. Other large commercial publishers include Harcourt, Wolters Kluwer, Blackwell Science, Bertelsmann Springer, Wiley, and Taylor & Francis, each with around 200 to 500 ISI-rated journals in 1998 (see Table 4.1). Medium-sized publishers include Holtzbrinck, Marcel Dekker and Karger. All of these publishers have an international presence. They each produce journals across a wide range of subject areas within STM, although they have different profiles in terms of their presence in each area (for example, Harcourt produces a greater proportion of medical journals than RE). RE told us that the number of articles published was more representative of comparative size or activity than number of journals. RE journals contain, on average, more articles than journals of other publishers—with Elsevier Science publishing 13 per cent of journals but 20 per cent of articles. Its number of citations per article (not shown) is around 19 per cent.

TABLE 4.1 Publishers of ISI-rated STM journals, 1998

<i>Publisher</i>	<i>Type of publisher</i>	<i>Number of ISI-rated journals 1998</i>	<i>Share of journals 1998 %</i>	<i>Share of articles 1994 to 1998 %</i>
Elsevier Science	Commercial	994	13	20
Wolters Kluwer	Commercial	552	7	7
Harcourt General	Commercial	353	5	5
Blackwell Publishers	Commercial	341	4	4
Bertelsmann	Commercial	326	4	4
Wiley	Commercial	279	4	4
Taylor & Francis*	Commercial	191	2	1
Sage	Commercial	123	2	0
Karger	Commercial	101	1	1
Institute of Electrical and Electronics Engineers	Society	93	1	1
Cambridge University Press	University press	84	1	1
Gordon & Breach	Commercial	84	1	1
Oxford University Press	University press	83	1	1
Marcel Dekker	Commercial	76	1	1
Holtzbrinck	Commercial	67	1	1
American Institute of Physics	Society	41	1	2
Scandinavian University Press	University press	39	1	0
University of Chicago Press	University press	39	1	1
Mary Ann Liebert Inc	Commercial	34	0	0
IOP Publishing Ltd (Institute of Physics)	Society	32	0	1
American Chemical Society	Society	31	0	2
Havas	Commercial	31	0	0
Others (2,028 publishers)		<u>3,716</u>	<u>48</u>	<u>40</u>
Grand total		7,710	100	100

Source: CC, based on ISI data.

*RE told us that Taylor & Francis had since acquired Gordon & Breach and Sage.

Learned societies

4.31. A society is made up of members with a common interest in a particular subject area. It is typically funded by membership fees, in return for which the members receive issues of the society's journal or journals. Many societies are non-commercial organizations with charitable status. The largest society, the Institute of Electrical and Electronics Engineers (IEEE—see Table 4.1) publishes close to 100 journals, while three others publish more than 30. More typically, a society will publish only one or two journals. Unlike commercial publishers, their publishing activities are limited to the subject areas which the society was established to research. Many societies supply their journals to all members, but in some cases a subscription fee may be charged, in addition to the society membership fee. Institutional libraries subscribe to learned society journals as non-members, and almost invariably pay a higher price (just as they pay a higher price than individual subscribers for the journals of commercial publishers).

4.32. It is common for a society to have its journals published by a commercial publisher—around 10 to 15 per cent of Elsevier Science’s journals and 20 per cent of Harcourt’s are published under contract with a society. This relationship can take a variety of forms: the society may share journal revenues with the publisher, or it may be paid a fee by the publisher. Similarly, the subscription price of a journal may be set by the society, the society may influence the publisher in setting the price, or it may be set independently by the publisher. The society retains control over such issues as the aims and scope of the journals.

University presses

4.33. These are publishers associated with a university. Worldwide, the largest university presses are Oxford University Press (OUP) and Cambridge University Press (CUP). Like learned societies, university presses are often charitable, non-commercial organizations, established to contribute to scholarship and education. Unlike societies, the publication of books is a significant part of their activity. RE told us that university presses and societies are just as motivated to maximize their revenues as commercial publishers, as these revenues are valuable sources of income for their other activities.

Supply of content

4.34. The primary function of a journal, from the viewpoint of the contributing author, and the research institution to which he or she belongs, is to communicate the results of their research as widely as possible, within the segment of the academic community to which it is of interest. Most public funding bodies also require that publication be the main form of dissemination of the research they fund. RE described the four functions of a journal as validation, registration, communication and archiving.

4.35. The research funding (public and private) that an institute attracts is closely linked to its record of published research. In turn, the career of the individual academic depends on his or her record of published research. The phrase ‘publish or perish’ is used to describe the position of academics.

4.36. The prestige attached to having research published, and therefore the rewards to both institute and author, are usually greatest when research is published in a journal that is well regarded in the field. To some extent this is reinforced in the UK by the RAE, which is carried out on behalf of the HEFCs to assess, as a basis for public funding, the quality of research in universities and other HEIs. The RAE told us that, while it treats all research equally regardless of where or how it was published, there is a widespread belief amongst HEIs that prestigious journals count most highly in the RAE and this produces an inevitable pressure to be published in them. The RAE estimated that around one-third of all funding of university-based research in the UK was provided in this way, and that overall around 60 per cent of funding was from the public sector.

4.37. Like contributing authors, the editors of academic journals are generally motivated by interest in the subject matter, and the prestige that attaches to editing a well-known journal. Not all editors are paid (although RE told us that it pays all its main editors), and in most cases remuneration is modest.

4.38. Articles are generally provided free to the publisher, and in some cases publishers require payment from authors to have their work submitted or published (RE told us this was mainly true of societies). It is industry practice for the publisher to require that the author assign full copyright of the article to itself. (An exception is where a learned society contracts out its publishing, in which case copyright is generally assigned to the society.) Authors are usually allowed to reuse their own material in later publications with due acknowledgement, but without seeking prior permission from the publisher.

4.39. The rejection rate for articles submitted to science journals is around 20 to 30 per cent but, in areas such as social sciences and humanities, the rate may be as high as 90 per cent. Most academic authors are likely to have a pecking order of journals, and begin by submitting an article to the highest-quality journal in which it has a chance of being published. If it is rejected, the author will submit it to the next best journal, and so on. Where a journal is known to make quick decisions on acceptance or rejection of articles, this reduces the risk, to the submitting author, of a long delay in publishing the article.

Production costs

4.40. *Journal Publishing* comments that ‘it would be helpful if one could give a clear indication of the percentage of income contributed by each item of income, and similarly with costs, for a typical journal. Alas this is not possible.’ The reason is that costs and revenues vary widely between journals depending on circulation levels (scale economies), subject matter, and the ability to attract advertising. However, *Journal Publishing* provides approximate figures, and these are reproduced in Table 4.2. The estimated gross margin for an established journal is around 35 per cent (similarly, OUP told us that it expected commercial publishers would aim to make 30 to 40 per cent gross margin on STM journals). Margins achieved by the main parties are shown in Tables 3.2 and 3.7.

TABLE 4.2 Typical income and costs of an STM journal

	<i>per cent</i>	
	<i>STM</i>	<i>Humanities and social sciences</i>
<i>Income</i>		
Subscriptions	85	74
Single-copy/back volumes	6	2
Advertising/mailling list	5	2
Offprints/reprints	1	8
Permissions	1	0
Page charges/submission fees	0	12
Other	<u>2</u>	<u>0</u>
Total	100	100
<i>Costs*</i>		
Production (87%)	58	56
Postage (9%)	6	7
Distribution (3%)	<u>2</u>	<u>2</u>
Total	66	64
Gross margin	34	36

Source: *Journal Publishing*.

*Percentage of costs excluding margins for STM journals shown in parentheses.

4.41. Harcourt provided us with a breakdown of its average costs, shown in Table 4.3. Like Table 4.2, it shows distribution and postage costs as around [≈] per cent of total costs (excluding margins). [

Details omitted. See note on page iv.]

TABLE 4.3 Costs of an STM journal

<i>Category</i>	<i>Share of costs %</i>
Production*	()
Editorial	
Distribution†	
Special sales‡	
Other§	

Source: Harcourt.

*Paper, printing, binding, freelance production costs, offprints, reprints electronic and other costs.

†Includes postage.

‡Includes selling of advertising space.

§Includes royalties, promotion and market research.

Document delivery

4.42. The term ‘document delivery’ encompasses both inter-library lending of publications, and supply of photocopies, usually from one library to another. The British Library is estimated to deliver over 3 million photocopied documents a year. This activity can be carried out without a copyright licence if certain conditions are met. The practice of publishers is not to impose a contractual charge in these cases. *Journal Publishing* estimates that the average academic UK library spends around 8 per cent of its acquisition budget on document delivery and 35 per cent on journal subscriptions. It reports several studies as finding that transaction costs are around \$30 per item, and quotes a financial study by a UK university library as concluding that the room for savings through the use of document delivery of this kind, as a substitute for print subscription, was very limited.

4.43. Electronic delivery may lead to an increase in document delivery by reducing transaction costs. However, contracts between publishers and libraries generally impose a charge on the library where this occurs.

4.44. An alternative approach is that of the ADONIS project, supported by the major journal publishers and libraries in Europe (including RE and Harcourt). Under this system a range of current issues of STM journals are supplied to the library on CD-ROM. Articles are printed out as required, and this is recorded electronically. These records are then used to charge the subscriber, with royalties divided between publishers.

Electronic publishing

4.45. While the preparation of articles, from submission to typesetting, is now almost invariably carried out electronically, an increasing number of journals are also delivered to customers in electronic form, either separate from, or in addition to, a print copy. CD-ROMs can be used for this purpose, but online supply is more common.

4.46. The online services relating to academic journals include:

- (a) access to current, peer-reviewed material;
- (b) access to pre-prints and other non-peer-reviewed material;
- (c) access to archived material;
- (d) access to abstracts and tables of contents; and
- (e) searching and cross-referencing.

4.47. There is considerable overlap in the provision of these services. Internet sites that contain full text articles for some journals may also provide abstracts of articles from other journals. In addition, a site that contains full text articles is also likely to include a search facility. Harcourt told us that ‘where the database provider and the publisher have a common cross-referencing system, seamless access can be achieved by re-directing the user to the publisher’s site. Subscribers will get automatic access; non-subscribers will be prompted to subscribe or pay a one-off fee to view the article.’

4.48. Harcourt also told us that ‘For the customer ... it is desirable for as many of these functions and as much content as possible to be accessible from the smallest number of platforms, to enable ease of use ...’. There is a possibility that such a preference for a limited number of platforms could lead to the neglect of platforms that offer a relatively small amount of content. For example, one university librarian told us there was concern in her institution that some students were limiting their literature searches to journals within ScienceDirect (Elsevier Science’s online journal supply service)—ie using it as though it were the only platform. RE told us that, being one of the earliest platforms to market and one of the first to reach a deal with NESLI/Consortium of University Research Libraries (CURL), it was inevitable to an extent that ScienceDirect might currently have disproportionate presence in certain libraries but that this would balance out over time. It said that one such statement could not be seen as representative, and that such concerns should be addressed through internal education within the institution. This subject is discussed further in paragraphs 4.139 to 4.142.

4.49. ScienceDirect was launched in 1999. It contains the full text of around 1,150 journals published by RE, along with Elsevier Science's secondary databases. RE also has a service called WebEditions, which gives all print subscribers to a journal online access to the issues of that journal they have purchased, at no extra charge.

4.50. IDEAL is Harcourt's electronic platform for publication of its journals, based on access over the Internet or intranets. IDEAL contains 320 journals, from both AP and HHS. (Harcourt has 529 STM journals, some of which are local medical titles.) Harcourt's MD Consult provides a range of web-based medical information to institutions and healthcare professionals. Content is derived from reference books, journals, drug information, practice guidelines and other sources, published by Harcourt or third parties. Its SciVision delivers a range of desktop scientific application and molecular modelling software products. Following the merger, the Harcourt titles currently on IDEAL will be made available through ScienceDirect. RE told us that, in future, some of the other Harcourt journals would also be made available on ScienceDirect.

4.51. The main providers of online STM services are shown in Table 4.4. A distinction can be made between provision of access to the full text of articles in the publisher's journals, and secondary services such as search engines, abstract databases, access to past copies (archives) of journals, or access via an aggregator (see paragraph 4.52) or other platform such as HighWire Press (HighWire) (see paragraph 4.53) to full text articles for which the user pays the journal publisher. These primary and secondary services are not mutually exclusive: most search facilities will lead users to the web sites on which full text articles are contained. As a result, providers of search facilities are to some extent dependent on the cooperation of the owners of destination web sites (although this dependency could also exist in the opposite direction). [

Details omitted. See note on page iv.

] (See also paragraphs 4.139 to 4.142.) We note that this is likely to be of particular concern to subscription agents, which are arguably in danger of being superseded due to the online provision of journals. RE told us that its commercial interests lay in allowing distribution of products through the widest number of channels, and that both itself and Harcourt would remain participants in CrossRef (see paragraph 4.55).

4.52. In most cases, where full text is available online, access to the article is controlled by the journal publisher, although a third party ('aggregator') may provide links from its own database to that of the journal publisher. One of the exceptions to this is ScienceDirect, which contains both RE titles, and 80 titles by other publishers. In total, ScienceDirect contains 1,180 titles, more than any other full text service, followed by Wolters Kluwer with over 600, Harcourt with 320, and Wiley with 300. Several other publishers—commercial, university presses and societies, offer similar services on a smaller scale. In addition to those shown, Harcourt told us of four learned societies which each supplied a single journal online.

4.53. HighWire, an initiative of Stanford University Library, is a not-for-profit platform which enables publishers to provide their journals online. At present it carries 256 journals, including many high-quality titles, in biomedicine and other areas. Users do not pay for the HighWire service, but they must take out subscriptions with the publishers of the journals they want to access. Ingenta is a free search facility which links to full text with pay-per-view facilities.

4.54. We asked university libraries which online STM services they used, and a summary of 11 responses is shown in Table 4.5. RE told us that it had commissioned a survey of 105 organizations in Europe and North America, which suggested that the most widely-used electronic journal services were the secondary services of EBSCO online and OCLC ECO, each used by around 30 respondents. Three primary services (ScienceDirect, IDEAL and Wiley) and four secondary services were used by around 20 respondents.

4.55. A further development in electronic delivery is called CrossRef. This was developed by the not-for-profit organization Publisher International Linking Association (PILA). PILA was created by publishers including the main parties, who were among the founder members. CrossRef is a system for providing links between the articles of participating publishers. There are currently 60 members, including commercial and non-profit companies, and it covers 3,500 journals.

TABLE 4.4 Principal suppliers of online STM services

Name	Address	Pre-prints/ non-peer- reviewed	Search for full text	Full text/peer reviewed*	Number of journals	Number of publishers	Provider	Provider type	
<i>Primary services†</i>									
ScienceDirect	www.sciencedirect.com	No	Yes	Yes	1,180‡	7	RE	Commercial	
Kluwer	www.kluweronline.nl	No	Yes	Yes	Over 600§	1	Wolters Kluwer	Commercial	
IDEAL	www.idealibrary.com	No	Yes	Yes	320	1	Harcourt	Commercial	
Wiley InterScience	www.interscience.wiley.com	No	Yes	Yes	300	1	Wiley	Commercial	
Oxford Journals	www.oup.co.uk/jnls	No	Yes	Yes	110	1	OUP	University press	
IEL	www.ieee.org/ieeexplore	No	Yes	Yes	106	2	IEE and IEEE	University press	
UCP Journals Division	www.journals.uchicago.edu	No	Yes	Yes	45§	1	University of Chicago Press	University press	
Nature	www.nature.com	No	Yes	Yes	38	1	Nature Publishing Group	Commercial	
American Society for Microbiology	journals.asm.org	No	Yes	Yes	10		American Society for Microbiology	Learned society	
<i>Description</i>									
<i>Secondary services¶</i>									
BioMed Central	www.biomedcentral.com	No	Yes	Yes	Over 50	1	BioMed Central	Commercial	Free access to directly- submitted articles (peer-reviewed)
HighWire	highwire.stanford.edu	Yes	Yes	Yes	256	-	Stanford University Library	University library	Free platform for journal publishers
JSTOR	www.jstor.org	No	Yes	Yes	150	85	JSTOR	Non-profit organization	Free access to archives
PubMed Central	www.pubmedcentral.nih.gov	No	Yes	Yes	25	-	US National Library of Medicine	Library	Free access to archives (life science)
Ingenta	www.ingenta.com	No	Yes	Yes	4,500	160	Ingenta PLC	Commercial	Free search facility
Synergy	www.blackwell-synergy.com	No	No	No	280	2	Blackwell Science and Munksgaard	Commercial	Free abstract facility
NASA Astrophysics Data System	adswww.harvard.edu	No	Yes	No		-	NASA	Public	Primarily a free abstract facility for astrophysics
LINK	link.springer.de	No	Yes	No	487§		Bertelsmann Springer	Commercial	Paid-for abstract service
Swetsnet Navigator	www.swetsnet.nl	No	Yes	No	5,359	156	Swets Blackwell Ltd	Subscription agent	Paid-for search facility
EBSCO Online	www.uk-ebSCO.com/online	No	Yes	No	4,000	410	EBSCO	Subscription agent	Paid-for search facility
Ovid	www.ovid.com	No	Yes	No	440	'Dozens'	Wolters Kluwer	Commercial	Paid-for search facility

Source: CC.

*Refers to articles held on web site, rather than provision of access through links to other web site.

†Paid-for full text of own journals (peer reviewed).

‡Includes 80 journals from other publishers.

§Includes some arts and humanities journals.

Note: This list is not exhaustive: RE told us that notable omissions included ISI (Web of Science), Silver Platter, Rowecom and Chemical Abstracts Service.

TABLE 4.5 Online services used by university libraries

	<i>Subscribed to*</i>	<i>Most widely used†</i>
<i>Primary</i>		
RE and Harcourt:		
ScienceDirect	7	5
IDEAL	4	1
HHS	<u>1</u>	-
Total	12	6
IEL	2	-
Kluwer Science	1	-
Association Computing Machinery	4	-
American Chemical Society	3	-
<i>Secondary</i>		
Synergy	6	-
Ingenta/UnCover	4	1
Ovid	3	3
JSTOR	2	-
Web of Science	2	-
Embase	1	-
BioMed Central	1	-
Swetsnet Navigator	1	-
MathSciNet	2	-
Others‡	29	-

Source: CC.

*Number of respondents subscribing to that service

†Number of respondents describing that service as the most widely used.

‡Primary or secondary, mentioned by one respondent each.

Note: Based on 11 respondents.

4.56. Print STM journals are treated in the same way as all paper publications in the UK and are currently VAT exempt, whereas electronic versions are classified for VAT purposes as the provision of services, and attract VAT at the standard rate of 17.5 per cent. Most HEIs would be unable to reclaim VAT on electronic versions because of their VAT status, and hence the imposition of the standard rate in effect represents a one-off price increase. RE told us that this had resulted in much slower uptake of electronic-only versions in the UK. This problem also exists in a number of other European countries, but is most significant in the UK where the difference between the existing rate of VAT on print and electronic products is greatest.

Demand

4.57. STM journals are of value to their subscribers as the primary source of information on the ‘cutting edge’ of scientific research, while the peer-review process assures readers that the research is valid, significant and original. Because of the importance of up-to-date information,¹ demand for current or recent issues of a journal is considerably greater than for back issues. Indeed, the opportunity to read papers prior to their publication is a considerable incentive to editors and peer-reviewers. This is not to suggest that past issues of journals are of no value—RE told us that half of all citations in any year are to publications more than six years old.

4.58. The ultimate consumer of a journal is the individual researcher or other reader, but the purchase is usually made by the library of the institution to which the reader belongs, and the purchasing decision is generally the result of a process involving both library and end-user. Purchasing practices vary by institution, but in most cases, the library budget is allocated between different faculties, and a faculty must choose between relevant journals (ie it cannot begin a new subscription without cancelling an old one of equivalent value). Faculties may also be required to cancel some of their journals, as a result of an increase in journal prices above the increase in size of the budget. In choosing between journals, faculties will, inter alia, generally have regard to their ‘cost per use’—ie their price relative to

¹The importance of being up to date may be greater in some fields than others.

their usage. The extent of use of journals in print form is not easily measured (although electronic usage can be measured), and some subscribers may compare journals on the basis of quality measures such as the number of citations.

4.59. Most sales of STM journals are to academic libraries (those of universities and research institutions), though corporate research libraries and government agencies also account for a significant proportion of STM journal sales by RE and Harcourt, and hospital libraries and individuals for sales by Harcourt.

TABLE 4.6 Share of STM journal revenue by customer type, 2000

	per cent			
	RE	Harcourt		
		AP	HHS	
Academic libraries	<i>Figures omitted. See note on page iv.</i>			
Corporate research libraries				
Government agencies				
Hospital libraries				
Individuals				
Society members				
Consolidators*				
Research				
Others				
Total†				

Source: CC, based on information from RE and Harcourt.

*A 'consolidator' is a freight forwarder, a form of subscription agent who takes delivery of journal subscriptions for forwarding to a number of institutions (of different types).

†Totals may not sum because of rounding.

Distribution

4.60. Most institutional buyers of STM journals subscribe to several hundred, supplied by a large number of publishers. Most purchase journals through subscription agents, which take their orders and arrange subscription with the relevant publishers. The largest subscription agents serving the UK are Swets Blackwell Ltd (Swets Blackwell),¹ Rowecom and EBSCO: these three are estimated to account for between 70 and 90 per cent of UK sales of STM journals.

4.61. Harcourt described subscription agents as trade intermediaries who collate, place and administer subscriptions for STM journals on behalf of libraries, and monitor despatch and delivery. STM journals are, however, posted directly to the customer by the publisher, so they are not technically distributed by the subscription agent. However, packing and dispatch may be contracted out to printers or other external operations by the publisher. Postage is a small but significant cost to publishers of STM journals (see Table 4.2), although this will be considerably reduced if customers cancel print subscriptions in favour of electronic provision.

Substitution

4.62. The range of STM journals produced is both large and diverse. The RAE assesses STM journals within 30 subject categories. In 1998, the ISI used 260² categories. Even within one of these ISI categories, two journals may have overlapping or entirely different subject matter. To take a random example, and judging by titles only, journals published by Elsevier Science within the ISI's Mathematics category include *Topology* and *Topology and its Applications*, which may be expected to have similar

¹There are ownership links between Swets Blackwell and Blackwell Publishing Ltd, but the two are run as separate concerns.

²The ISI includes categories, in social sciences and humanities, in which neither RE nor Harcourt is present. RE told us that 205 of the 260 categories were relevant to the proposed acquisition.

subject matter. In contrast, within the Materials Science category, Elsevier Science publishes *Diamond and Related Materials* and the *Journal of Nuclear Materials*, which clearly do not. In addition, a substantial proportion of ISI-rated journals belong to more than one category. This diversity has consequences in considering substitution for journals both on the supply side (authors and editors choosing which journal to contribute to or work for) and on the demand side (purchasing decisions).

4.63. RE and Harcourt told us that, within the 205 relevant ISI categories, there were 14 in which the two main parties had a combined share (of articles) over 40 per cent, and with an increment of 5 per cent. (We note that there are 39 categories in which the group would have a share over 25 per cent, with a 5 per cent increment.) Within these 14 categories, they measured the level of ‘author overlap’ between RE and Harcourt. This was defined as the proportion of authors with work published in a journal of either party within the category, who also had work published in a journal of the other party within a five-year period (ie a supply-side approach). They said that the low level of author overlap—between 1 and 21 per cent, and below 10 per cent in at least 8 of the 14 categories—confirmed that competition between journals within a category was very limited.

4.64. It is not clear what level of author overlap should be expected, even if the comparison were to be made within a set of journals of similar scope and prestige. This would depend on a variety of factors including the frequency with which authors submitted articles, the rate of rejection of articles and turnover of authors—whether due to retirement, loss of tenure, or a change in the focus of the author’s research. RE told us that in a five-year period only 11 per cent of authors, on average, are associated with more than one paper in the same journal. We note that this suggests that even where two journals were directly competing for authors the extent of author overlap would be very low.

4.65. Moreover, and as indicated in paragraph 4.62, each of the 205 ISI categories is likely to be too wide for an assessment of supply-side substitution. Instead, most authors are likely, in submitting their articles, to choose between a relatively small number of journals within a category (or across categories). As a result, competition between publishers for articles may take place within a very large number of small, imprecisely-defined competitive clusters of journals.

4.66. We next consider demand-side substitution. The main parties told us that, from a reader’s perspective, each of the individual articles that make up the content of each journal represents a unique piece of scientific research, and thus journals are virtually never substitutable. However, we note that the decision to subscribe, or continue subscribing, to a journal, is usually made before the start of the subscription period. As a result the subscriber does not know what the content of the journal will be (ie what ‘unique pieces of scientific research’ it will contain) at the time of making the purchasing decision. Rather, the decision is likely to be based on the prestige of the journal, and the quality of research contained in previous issues.

4.67. Nevertheless the level of substitutability between different journals is generally very low. The average own-price elasticity of demand (ie the sensitivity of buyers to an increase in price) for an STM journal has been estimated at -0.3^1 (ie a 10 per cent increase in the price of a journal causes, on average, a 3 per cent decrease in subscriptions). This insensitivity to the price is due, in part, to a low level of functional interchangeability between individual journals: where two journals cover a similar subject matter and each attracts papers of high quality, a researcher in the field will generally require access to both of them.

Market definition

4.68. The standard approach to identifying the market to which a product belongs is to consider whether a hypothetical monopoly supplier of that product would be able to sustain a significant (5 to 10 per cent) price increase without (a) customers switching to an alternative product or (b) other suppliers switching production from alternative products. If the result of such a price increase would be a net loss in revenue to the supplier due to (a) or (b), the alternative products in question are viewed as being part of the same market. The use of this approach in defining the market or markets for STM journals would, on the demand side, suggest that all journals are unique markets in themselves. In paragraphs 4.62 to 4.65 we consider the possibility that supply-side substitution (ie by submitting

¹Mark J McCabe, ‘The Impact of Publisher Mergers on Journal Prices: An Update’, (unpublished) September 1999.

authors) takes place, at least to a limited extent, between individual journals within small clusters. Such competitive clusters may have potential to be considered as relevant markets for the purpose of identifying the effects of the merger. In practice, however, no objective means exist of identifying and defining such clusters—indeed their boundaries are likely to be very indistinct. Harcourt contended that ISI categories, though imperfect, were the best means by which difficulties of segmentation might be addressed. Our view is that no meaningful conclusions can be drawn from an analysis of these categories, as they are not a reasonable approximation of the real competitive clusters.

4.69. However, while individual STM journals account for very small shares of total journal sales, and are confined to a narrow subject area, many (see Table 4.1) are produced by large publishing groups with a large number of titles across a wide range of subject areas (although different publishers have different strengths in different areas). These publishing groups monitor the quality of their individual journals, and makes strategic decisions about issues such as pricing and electronic availability. These decisions may be made centrally for all titles—one example of this is Elsevier Science’s continuing policy, introduced two years ago, of holding price increases for the complete package of its print journals to less than 10 per cent (see paragraphs 4.117 and 4.118). Another is the pricing policy applied to electronic provision of journals, which is often based on the same increment on the subscription price for all journals (for example, see paragraphs 4.128 and 4.133).

4.70. As regards customers, the majority of subscriptions are to institutions, which, similarly, buy a large number of titles across a wide range. The libraries, budgetary committees and faculties of institutional purchasers each appears to have a considerable influence on the choice of journals purchased, and the decision whether or not to purchase a journal is made in the context of other journal purchases by the institution.

4.71. In view of the above, the sale of STM journals may be characterized as a single market in which suppliers, each with a range of differentiated products, all compete to maximize their overall share of library budgets. Indeed, although journals are differentiated from one another, they are increasingly being packaged as a single product which is supplied electronically—for example, subscribers to RE’s ScienceDirect have told us that they are encouraged to pay for access to all Elsevier Science journals. As such, the increased use of journals in electronic form is likely to mean that direct competition within clusters will be less important, unless a new electronic pricing model emerges which is based on usage of individual journals within the package. At present, STM journal publishers are competing to produce electronic products that are attractive and useful, relative to those of their competitors.

4.72. As noted above, price sensitivity to individual journals is very low, although the very high level of price increases over a long period appears to have led to some increase in journal cancellation rates in recent years. On the whole, though, journals are perceived as competing with one another on quality rather than price. While increased prices may not lead quickly to a loss of subscriptions, it is widely perceived in the industry that a reduction in quality will, so editors and publishers are very concerned to maintain high standards. *Journal Publishing* comments that: ‘One of the truest sayings in the industry is that good articles sell subscriptions’.

New journal launches

4.73. A journal that allows its quality to decline may lose subscriptions to a rival journal. However, the competitive threat is by no means limited to existing journals. New journal launches are also an important competitive dynamic. While a journal may face a very limited number of competing titles (within a ‘competitive cluster’), another STM publisher, even one without a presence in that subject area, could produce a new journal in direct competition if it believed that the incumbent was vulnerable due to declining quality. This is similar in directness to the approach currently being taken by the Scholarly Publishing and Academic Resources Coalition (SPARC)—although SPARC’s practice is to launch journals in areas where the incumbent is considered to be overpricing—see paragraph 4.160. But even before SPARC existed, competition to launch new journals was a feature of the market.

4.74. In addition to competition to launch new journals, STM publishers may be a source of benchmark competition to one another. OUP told us that, although its pricing was cost based, it would certainly take account of competitor prices, and might take the view that it could not recover its higher costs because of competition. Such comparative pricing is facilitated by the high level of price transparency in the market.

4.75. Some observers have questioned whether learned societies and university presses are in the same market as commercial publishers. However, OUP told us that ‘there is really quite intense competition between both commercial publishers and not-for-profit publishers for the best authors and the best journals’. We note that the journals of commercial publishers, societies and university presses all compete for a share of the same library budgets. As regards competition to develop new journals, it appears (see Table 4.17) that such organizations are actually more effective than commercial publishers in this.

4.76. Harcourt told us that, because learned societies that contract out their publishing business can and do switch between publishers, journals which are provided in this way would be more properly attributed to the society and not the commercial publisher. However, we note that the distinction is far from clear cut, as far as pricing is concerned. A society journal may have been launched as a joint initiative between the society and a commercial publisher. In many cases the publisher is able to decide, or at least have a considerable influence on, the price charged. Furthermore, the society can have an incentive to increase revenue from its journals to fund other activities (see paragraph 4.33), although this may be tempered by concerns about attrition of membership or damage to its reputation among academics.

4.77. Harcourt also told us that a number of society journals have left, and joined, it in the last three years. It said that ‘given the demonstrated ease with which society journals switch between ... publishers ... there is little theoretical basis to include them as part of a commercial publisher’s share’. We note, however, that market shares, generally, are subject to the switching activities of third parties (more usually customers), but that this does not, in itself, render them meaningless. On the whole, therefore, while recognizing that the part of market share based on non-proprietary journals is less stable, we consider that such journals should be treated as belonging to the publisher’s portfolio.

4.78. We also note that a number of different customer types exist—institutional customers are generally the libraries of universities, hospitals, government agencies and private companies, while some journals also have a substantial proportion of individual subscribers. Most subscribers to learned society journals are members, although society journals are also bought by institutional libraries in the same way as non-society journals. The demand profiles of customers may vary by type—for example, due to the flexibility or overall size of their library budgets, or the areas of research and study covered by the institution. Nevertheless, we do not consider that different institutional customer groups constitute separate markets, as for any given journal a single price is generally charged to all institutions. A lower price may be charged for individual subscribers, and as such it may be argued that they constitute a separate market. However, in the areas of science and technology we considered that the proportion of individual subscribers was too small to warrant a separate analysis.

4.79. A special case may be argued for clinical medical journals: as mentioned in paragraph 4.7, these tend to have more individual subscribers and as a result some are able to attract advertising revenue. The main parties told us that, because of this, such journals had a different pricing model from other STM journals, in that they are not solely reliant upon subscription revenue. However, we note that publishers of such journals are not a distinct group from STM publishers. Nor are such journals clearly defined: Figure 4.1 shows, for 298 journals of HHS,¹ the number of individual subscribers as a proportion of all subscribers. While a handful of journals are sold exclusively to individuals (at the top of the curve), and a handful to institutions or society members (at the bottom), the remainder form a continuum with no clear cut-off point (albeit that, as Harcourt told us, most HHS journals have a higher proportion of individual subscribers than most AP journals).

¹Including some non-primary journals.

FIGURE 4.1

Unit sales of HHS journals to individual subscribers

Details omitted. See note on page iv.

Source: Harcourt.

4.80. To summarize, demand for many successful journals is highly price inelastic, and prices can be raised substantially before subscribers will switch to another supplier. It may also be noted that a price increase is unlikely to lead to another publisher attempting to launch an identical journal. However, such journals face a threat from some existing journals and from potential entrants, in that any decline in quality on the part of the incumbent is likely to lead to a loss of sales and submitted articles to these alternative journals. As such, the typical 'must have' journal may be regarded as a sequential monopolist, in that it can charge high prices if it maintains its quality, but other publishers will look for opportunities to take its place. Having said that, most journals are sold by publishers with a large number of journals (over 30) in their portfolios, who compete against one another for share of library budgets across both their existing journals, and those they could potentially launch. As a number of publishers now provide access to a collection of their journals in electronic form, competition in the market may increasingly be characterized as taking place between platforms rather than between journals. Ultimately the most appropriate definition of the market depends on what aspect of competition is being examined.

4.81. As regards the geographic market, we note that the main parties and other publishers generally charge a global price (or separate prices for the USA and the rest of the world). Elsevier Science lists its prices in three different currencies. In addition there will be some difference in the price of electronic provision from one country to another, depending on the outcome of negotiations with purchasing consortia. However, these differences do not appear to be sufficient in themselves to suggest that the market is not global. The large majority of STM journals are written in English and sold worldwide in the same language. There are some exceptions to this, in that some journals are written in other languages and may as a result be sold in only one or a few countries. Nevertheless most STM journals are supplied in an identical form worldwide and for a standard price which does not vary widely from country to country, other than as a result of exchange rate movements. We therefore consider that the market for STM journals is global. However, we are required to identify the effects of the merger on the public interest in the UK. As such the focus of our investigation has been on the UK part of the market, both in respect to the third parties from which we have sought evidence, and the data we have collected on the market.

4.82. *Journal Publishing* notes that:

The geographical distribution of subscribers varies with subject, but, in rough terms, about one-third of the subscribers to an international scientific journal published in Europe might be in the USA and Canada; one-third in Europe (10 per cent in the UK) and one-third elsewhere, with perhaps 10 per cent in Japan and 5 per cent in Australia and New Zealand. Journals published in the USA often have a higher proportion of subscribers in North America.

Sales and market share

4.83. Data on worldwide and UK market shares for the supply of STM journals are available from various sources, but there is no comprehensive collection of market share data, and all the available published figures are based on incomplete information. Publishers do not make their sales or circulation data freely available, so analysts must estimate STM journal sales on the basis of published accounts, which may contain sales from other activities. There are also a very large number of small suppliers (eg learned societies), which increases the difficulty of data collection. Furthermore, the precise definition of an STM journal is not widely agreed.

4.84. In addition to these difficulties, a number of measures of market share have been put forward. Of these, the most conventional is that of value sales. An alternative is unit sales, or circulation—although this has the drawback of treating all STM journals as equal, which they clearly are not (ie a subscription to a journal that produces two issues a year, or one that produces two issues a week, would each be counted as a unit). Shares are also measured by some industry participants on the basis of number of journals, articles, (ISI) citation ratings or impact factors.¹

4.85. RE told us that value sales were not relevant in STM publishing. It said that there was little accurate data on this, and publishers do not monitor each other's total sales. Nevertheless we note that in STM publishing, as in other markets, value sales are a reflection of the actual demand for a publisher's portfolio of journals, on the assumption that a journal for which there is a greater demand will be able to command a higher price than a less popular title. As regards the lack of accurate data, paragraphs 4.87 and 4.88 describe our attempts to overcome this.

4.86. Table 4.7 segments publishers into six groups, according to the number of journals they publish (see also Table 4.1). Only two (RE and Wolters Kluwer) publish more than 500 ISI-rated journals. Seven more publish 100 journals or more, and six more publish at least 50 journals each. There are 1,600 publishers that produce one ISI-rated journal each. As a comparison, RE and Harcourt together publish 1,347 journals.

TABLE 4.7 Profile of journal publishers

<i>Number of ISI-rated journals</i>	<i>Number of publishers</i>
500–999	2
100–499	7
50–99	6
10–49	61
5–9	73
2–4	314
1	1,587

Source: CC, based on ISI data.

4.87. Another way of viewing market share is to look at the total UK libraries budget for STM journals and compare the proportions taken by different publishers. We asked a range of librarians for data on the share of their STM journal expenditure accounted for by each of the larger publishers. The results from eight responses are shown in Table 4.8 (the response rate was surprisingly low, given the level of concern about the merger expressed to us by university librarians). These suggest that the combined group would have market share of 34 per cent of STM journal expenditure. RE told us it doubted that responses from only eight librarians, out of 150 or so HEIs and many other medical,

¹A measure of how often the average article is cited in a given time period after publication.

government and commercial libraries, could be regarded as sufficient to produce statistically significant results. It said that, based on officially-published data from HESA and LISU, it estimated that Elsevier Science represented about 20 per cent of serial expenditure in the UK higher education sector.

TABLE 4.8 Share of all STM journal expenditure by eight UK libraries, 2000

	<i>per cent</i>					
	<i>Science and technology*</i>	<i>Medicine</i>	<i>Print subscription</i>	<i>Electronic access†</i>	<i>Total STM journal expenditure: all media</i>	<i>Number of STM journals purchased</i>
<i>RE</i>						
Elsevier Science	34.4	25.3	28.4	19.3	26.6	17.8
<i>Harcourt</i>						
AP	6.6	6.5	5.5	18.8	6.4	3.6
W B Saunders	0.0	1.7	0.3	1.2	0.4	0.5
Churchill Livingston	0.0	2.1	0.5	0.0	0.5	1.2
Mosby	<u>0.0</u>	<u>0.2</u>	<u>0.1</u>	<u>0.0</u>	<u>0.1</u>	<u>0.3</u>
Total	6.6	10.6	6.4	19.9	7.3	5.6
RE and Harcourt combined	41.0	35.9	34.7	39.2	33.8	23.5
Range			14–44			
<i>Other commercial publishers</i>						
Wolters Kluwer	5.0	6.7	6.5	5.3	6.3	10.0
Blackwell Science	3.5	7.9	5.4	11.2	5.5	9.0
Wiley	9.3	13.2	12.5	1.4	12.0	3.3
Bertelsmann Springer	7.1	7.8	8.9	0.0	8.4	2.8
Taylor & Francis	0.5	0.0	0.4	0.0	0.4	0.0
Others	<u>11.1</u>	<u>17.7</u>	<u>15.3</u>	<u>23.0</u>	<u>15.3</u>	<u>22.0</u>
Total	36.9	53.4	49.3	40.8	48.2	47.3
All commercial publishers	77.9	89.3	84.1	80.1	82.0	70.7
<i>University presses</i>						
OUP	0.79	2.17	1.31	0.00	1.02	1.85
CUP	0.89	0.96	1.03	0.00	0.80	1.58
Other university presses	<u>0.44</u>	<u>0.64</u>	<u>0.55</u>	<u>0.56</u>	<u>0.97</u>	<u>2.76</u>
Total	2.1	3.8	2.9	0.6	2.8	6.2
Learned societies	19.2	6.5	12.7	19.4	14.6	23.0
Other	0.8	0.4	0.4	0.0	0.3	0.7
All publishers	100.00	100.00	100.00	100.00	100.00	100.00

Source: CC.

*There is disagreement in the industry as to whether social sciences should be included in STM, and social science journals may have been included in the responses of some librarians.

†Taylor & Francis told us that it includes free online access to journals as part of its subscription to printed journals. More generally, expenditure figures for electronic access may not be comparable, as different publishers charge for access in different ways.

4.88. We asked the large UK subscription agents to provide us with data on their sales, in the UK, of STM journals.¹ Subject categorizations were provided for some of these sales (two-thirds of sales by number of subscriptions, and three-quarters by value), and these are grouped into medical and science and technology in Table 4.9. The Table also gives a total STM figure, which includes journals for which a subcategorization was not provided. On the basis of these figures, it appears that the main parties have a combined value share of 32 per cent—almost one-third of the STM market. RE's share of science and technology journals (33.1 per cent) appears considerably greater than its share of medical journals, while Harcourt has a similar share in both. RE's share of value sales is more than double its share of units sold—suggesting that it has a greater proportion of high-priced journals in its portfolio than other publishers (although this may be due to differences in the size of these journals: see paragraph 4.154). This result appears to be consistent across different broad categories of science and technology and medical journals.

¹[

Details omitted. See note on page iv.

]

TABLE 4.9 Sales of STM journals, 2000

per cent

<i>Publisher</i>	<i>Unit sales</i>			<i>Value of sales</i>		
	<i>Medical</i>	<i>Science/technology</i>	<i>STM</i>	<i>Medical</i>	<i>Science/technology</i>	<i>STM</i>
RE	8.4	14.1	10.1	18.1	33.1	24.3
<i>Harcourt</i>						
AP	1.8	4.5	2.5	1.5	6.0	1.5
W B Saunders	8.4	0.0	3.8	3.6	0.0	4.8
Mosby	<u>5.5</u>	<u>0.0</u>	<u>2.5</u>	<u>0.9</u>	<u>0.0</u>	<u>1.1</u>
Total	15.7	3.4	8.8	6.0	6.0	7.4
Combined Science	24.1	14.8	18.9	24.1	39.1	31.7
Blackwell Science	3.5	2.8	7.0	8.4	1.6	8.6
Wiley	3.2	4.1	3.2	4.6	8.6	4.5
Wolters Kluwer	0.7	3.1	3.0	4.1	4.2	4.4
McGraw Hill	1.4	4.1	3.0	1.9	0.5	3.7
OUP	1.6	1.6	2.9	4.6	0.8	1.6
Bertelsmann						
Springer	2.0	4.7	2.3	3.0	5.5	1.0
CUP	0.8	1.2	2.2	0.6	0.6	0.9
Thomson	2.0	0.0	1.3	0.1	0.1	0.5
Other publishers	<u>60.7</u>	<u>59.6</u>	<u>56.1</u>	<u>48.6</u>	<u>39.1</u>	<u>43.1</u>
	100.0	100.0	100.0	100.0	100.0	100.0
Global sales (£m)				(⊗)

Source: CC, based on subscription agent data.

4.89. The main parties have suggested that market share figures do not fully reflect the competitive position, because, on a journal-by-journal basis, many journals of learned societies are in a strong position relative to journals of RE and Harcourt (in that they are well regarded and widely cited). On the other hand, we note that the strength of the combined group could be greater than is usually associated with a market share of 32 per cent given the fragmentation of the market. (Based on Table 4.9, only one other supplier has more than 5 per cent share by value, and over 40 per cent is accounted for by publishers with very small individual shares.)

Pricing

4.90. Prices of STM journals have increased rapidly in recent years—well above the rate of inflation. The Standing Conference of National and University Libraries (SCONUL) told us that prices rose by around 11 per cent a year between 1990 and 2000, while RE told us that the industry has seen double-digit inflation in the last five years. These increases have been strongly criticized by subscribers, in the UK and elsewhere, who generally blame them on the exercise of market power by commercial publishers (although prices of learned society and university press journals have also increased above inflation). In the following section we examine how prices are set, how they have changed in recent years, and whether they are likely to be affected by the merger.

4.91. Prices for most STM journals are global, transparent, and set well in advance. RE and Harcourt generally conform to this pattern, as described below.

4.92. Elsevier Science operates a global pricing policy for journals. However, it produces separate annual (institutional) price lists in each of Dutch guilders (NLG), US dollars and Japanese yen. Harcourt told us that HHS prices varied by customer type (individual, institution or student) and, for journals published in the USA, by customer location (USA or the rest of the world). AP UK journals had one global price for institutional, and one for individual customers, while AP US had separate prices (individual and institutional) for USA and the rest of the world. Harcourt told us that prices were not negotiated with customers and did not vary by value of client, size of order, or other such factors.

4.93. Annual subscriptions with payment in advance for the whole year are the industry norm. Elsevier Science sets prices in the second and third quarters of each year, and price lists are published (in

hard copy and on the corporate web site) in August/September for the forthcoming year. Harcourt prices are announced in July (HHS) and August (AP). The early setting of prices appears to offer some benefit to university libraries, in that they are able to plan expenditure well in advance. However, it also means that if a price reduction is negotiated there will be a delay of five to sixteen months before it is implemented. For example, Joan Birman¹ reports that when the Association of Logic Publishing (ALP) asked for the price of the *Journal of Logic Programming* (an Elsevier Science journal adopted by the ALP as its 'standard' journal) to be reduced in July 1998, it was told that the price for 1999 was already fixed.

4.94. Both parties offer discounts to subscription agents. Elsevier Science offers discounts of [x%] per cent of the list price to around [x%] agents, and [x%] per cent to all others. Harcourt offers a 5 per cent discount to all subscription agents. Harcourt told us that subscribers buying direct did not receive a discount, although RE told us that there was a limited exception to this in the case of Elsevier Science for some very large customers. Agents charge the full listed subscription price to the libraries (ie they do not pass on the discount), along with a fee for their services.

4.95. Prices, and annual price changes, by a publisher are not uniform across all its journals, as they depend on a number of factors which will be of differing importance to each journal (see below). However, a publisher may have an overall strategy when changing the prices of its portfolio. For example, Elsevier Science has announced that average prices will not exceed 10 per cent over the full package of its STM print journals for institutional customers (see paragraphs 4.117 and 4.118).

4.96. Where a learned society journal is published commercially, the society often has some influence over the price charged. In some instances, the editorial board of a proprietary journal may have a view on the price, but its influence will be substantially less than that of a society. RE gave us two examples of the editorial board of a journal resigning en masse to form its own journal in direct competition. These were RE's *Journal of Logic Programming* (mentioned in paragraph 4.93, the new journal being *Theory and Practice of Logic Programming*), and Wolters Kluwer's *Evolutionary Ecology* (the new journal being *Evolutionary Ecology Research*). These same examples were also mentioned to us by a number of third parties, and appear to have been exceptional cases. RE told us that the fact that only two editorial boards had used this ultimate sanction did not mean that the threat of such action was not being effectively used in other cases. It gave us ten other examples of its editors raising pricing issues (ie around one for every hundred RE journals, although RE said the list was 'not intended to be exhaustive'). In one case (*Artificial Intelligence*), prices were reduced by 15 per cent over four years. Three others resulted in at least some price reduction, and a further two led to the introduction of an offer to subscribers of 50 per cent discount for immediate electronic access and delayed print access.

Determinants of price

4.97. RE told us that the majority of STM journals (other than some medical journals) relied on institutional subscriptions as virtually their only source of income. Medical journals of the kind referred to by RE differ in their ability to attract personal subscriptions and advertising revenue (see paragraphs 4.7 and 4.79).

4.98. The main parties told us that prices were set with regard to a number of factors. The most important of these were: the number of articles published, the level of subscriptions, the economy-wide rate of inflation, and the pricing model (ie whether there were sufficient individual subscribers to generate advertising income). A former publisher told us that cancellation of subscriptions was the key driver of price increases (see also paragraph 4.101).

4.99. The main parties have estimated the growth in number of STM articles published at around 3 per cent a year. Mabe and Amin² found that, on the basis of US data, growth in the number of STM journals was more closely correlated to the growth in the number of scientists than to the growth in research funding. From this they concluded that the growth in the number of articles published (and hence journals) appeared to be a product of the growth in the number of research scientists.

¹See footnote to paragraph 4.14.

²Michael Mabe and Mayur Amin, 'Growth dynamics of scholarly and scientific journals'. This paper, by two Elsevier Science employees, was presented at the Sixth International Conference on Science and Technology Indicators, and has been accepted for publication in *Scientometrics*, a journal published by Wolters Kluwer and Akademia Kiado.

4.100. Growth in the number of published articles may go some way towards explaining the price increases introduced by publishers. It may be argued that, while research librarians are fully aware of the difficulty of maintaining their subscription and purchase levels when prices rise, they are not aware of the benefit of additional articles to the journals' readers. However, there is a potential detriment to competition in the fact that an increase in the number of articles, although a result of the growth in research activity, tends to provide leverage to the incumbent 'must-have' journals which attract the best articles (see also paragraph 4.154 on market entry). *Journal Publishing* notes that: 'Since some of the costs in publishing a journal are fixed, increases in extent (the number of pages) can make economic sense', and also that:

STM journals incur higher costs, particularly of production, than journals in the humanities ... but their purchasers are accustomed (sometimes resentfully) to paying higher prices. That makes it easier to increase the number of pages and issues in STM journals if the editor is receiving enough good material to fill them. The increase—and the consequent price increase—will not be welcomed by subscribers, but the cost per page may be lower.

4.101. The main parties told us that another reason for price increases was attrition—ie cancellation of subscriptions. RE said that:

attrition in the number of subscriptions per journal gradually increased in the 1980s and 1990s and is believed to have been between 5 per cent and 8 per cent per annum in the period 1995 to 2000. Eventually publishers began to feel the serious negative impact of attrition due to the reduction in visibility and accessibility of their journals. This in turn resulted in fewer references to the articles published in these journals and hence in lower impact factors with a consequent reduced ability to attract good quality authors and editors.

4.102. The ASA told us that worldwide cancellation rates were usually an average of 4 per cent, but had probably been 8 per cent in the last couple of years. The Association of Research Libraries (ARL)—see glossary) has collected statistics indicating that the typical research library cut journal subscriptions by 6 per cent, and reduced spending on books by 26 per cent, between 1986 and 1999.

4.103. There is a perception in the industry that the supply curve is downward sloping—ie that a fall in quantity demanded can lead to an increase in the price of a journal, as the publisher tries to cover the same fixed costs from a smaller subscription base.

4.104. On the one hand, demand for journals is price inelastic (see paragraph 4.67), so that a publisher can generally increase net revenue by charging a higher price, with the gain from the higher price more than offsetting the loss from cancelled subscriptions. But on the other hand, net revenue cannot generally be increased by reducing prices to sell more units—particularly as the largest possible demand (at a zero price) is limited to the number of specialists interested in the journal, which can be very small. However, as circulation figures drop, fixed costs can be high relative to subscription revenue, and it may be necessary to increase prices in order to cover them. RE told us that the element in price increases to reflect attrition is in anticipation of attrition over the next year, and actual attrition levels may be higher than expected.

Historical price increases

4.105. Journal prices have increased well above the rate of inflation for the past decade. Table 4.10 shows the year-on-year percentage increase (based on a broad selection of journals of different publishers, and compiled by Blackwell's Periodicals Division, now part of Swets Blackwell) broken down into three categories—science and technology, medicine and humanities. The average year-on-year growth rate over the decade was 11 per cent and ranged from 6 per cent in 1998 to 21 per cent in 1994.

TABLE 4.10 **Journal price changes (sterling), 1990 to 1999**

					<i>per cent</i>
	<i>Science and technology</i>	<i>Medicine</i>	<i>Humanities</i>	<i>Mean</i>	<i>Inflation*</i>
1990	12.5	13.5	11.9	12.6	9
1991	9.0	-1.9	18.3	8.5	6
1992	14.1	16.5	14.5	15.0	4
1993	7.8	5.9	6.9	6.9	2
1994	23.5	21.8	17.2	20.8	2
1995	10.5	8.8	7.3	8.9	3
1996	13.5	12.3	11.1	12.3	2
1997	9.3	10.7	7.4	9.1	3
1998	2.4	6.0	9.5	6.0	3
1999	10.6	5.9	9.4	8.6	2
Mean	11.3	9.9	11.3	10.9	4

Source: CC, based on Blackwell's Periodicals Division, National Statistics.

*Percentage increase in RPI from previous year.

4.106. A comparison of RE prices and those of an 'industry average' (from a US library journal survey) was provided by RE and used as the basis for Table 4.11. We have expressed prices as an index to show how RE's prices moved relative to the industry between 1994 and 2001. It appears that RE increased prices considerably above the industry average between 1994 and 1998, but since then it has increased prices at a rate below the industry average, moving it closer to the average trend for the period.

TABLE 4.11 **Elsevier Science price increases compared with industry average**

	<i>Index, 1994/95 = 100 (based on \$ prices)</i>	
	<i>Elsevier Science</i>	<i>Industry average</i>
1994	100	100
1995	111	111
1996	139	128
1997	161	143
1998	173	156
1999	182	170
2000	196	185
2001	209	201

Source: CC, based on main parties' data.

4.107. Elsevier Science's prices are listed in three currencies: US dollars, NLG (effectively euros since the start of 1999) and yen. Some variation in prices will therefore be explained by exchange rate fluctuation. Table 4.12 shows the price increases in sterling, NLG and US dollars for the last four years. In recent years the strength of sterling has meant that price increases in the UK have been lower than in euros.

TABLE 4.12 **Elsevier Science price increases**

	£	NLG	\$
1997/98	-4	17	9
1998/99	15	19	5
1999/2000	7	8	8
2000/01	0	7	7

Source: CC, based on main parties' data.

4.108. Changes in the prices of Harcourt's journals between 1998 and 2001 are illustrated in Table 4.13. Column 1 shows several different groupings of Harcourt subscribers—eg by company division, journal type and subscriber type. Column 2 shows the proportion of subscriptions within each

group—for example, taking the first row of figures, [§] per cent of Harcourt subscriptions are institutional subscriptions to journals published by AP. Columns 3 to 5 show price changes over three years. Prices for institutional subscriptions, which account for [§] per cent of subscriptions (but around [§] per cent of revenue) have grown by between [§] and [§] per cent a year since 1999. Increases in prices to members and individuals have varied more from year to year, but have generally been lower, and were between [§] and [§] per cent in 1999 and 2000 and 2000/01.

TABLE 4.13 Changes in Harcourt journal prices, 1998 to 2001(§)

Details omitted. See note on page iv.

Comparison of prices of main parties

4.109. One possible reason for expecting a merger to lead to price increases would be that the acquiring company was more aggressive in pricing than the company it acquired. This could be either because it was less averse to the risk of being disintermediated by the academic community, or because it had a clearer idea of how far it could increase prices before this happened. OUP told us that ‘typically Elsevier Science discounts are not as generous as AP discounts for things like consortia, so the published price might not increase, but perhaps the price that the customer pays would increase’. We now go on to compare the relative price levels of RE and Harcourt.

4.110. The main parties provided us with data on cost per article by different publishers in a range of broad subject areas. Data relating to RE and Harcourt are reproduced in Table 4.14. RE’s titles are more expensive than Harcourt’s in seven subject areas (by an average of 38 per cent) and lower in five, (by an average of 25 per cent). Of the Harcourt titles shown, 304 are in areas where Harcourt has a lower average price than RE, and 134 in areas where it has a higher price. (In fact there is considerable

duplication of titles across subject areas, and Harcourt has a total of only 257 journals in all of these areas.)

4.111. Harcourt told us that this was the best information it had on price comparisons between competitors. However, it said there were a number of distorting factors that would vary by publisher according to the range and nature of journals published. The main factors were circulation—in that high circulation journals would have a lower price—and the print quality of the journal. We have not, however, received evidence that the average circulation rates of journals published by Harcourt are less than those of RE (see paragraph 4.113), nor that their print is of a lower standard. RE told us that an average price per article is only wholly meaningful when the mix of journals is taken into account. It said that, in the first three of the subject areas shown in Table 4.14, Harcourt had a number of journals with significant numbers of individual subscribers, and that this distorted the comparison.

TABLE 4.14 Average price per article for RE and Harcourt journals in broad subject areas, 2001

Broad subject area	Number of titles		Average price per article £*		RE premium %†
	RE	Harcourt	RE	Harcourt	
Pharmacology and toxicology	46	10	6.76	3.15	115
Clinical medicine	173	138	2.31	1.27	82
Fundamental life sciences	155	79	5.06	3.93	29
Earth sciences	77	4	8.23	7.10	16
Neuroscience	59	22	4.80	4.20	14
Biological sciences	100	40	6.09	5.52	10
Chemistry and chemical engineering	129	11	5.34	5.28	1
Materials science and engineering	267	8	6.04	6.51	-7
Social sciences	258	61	5.99	7.28	-18
Environmental sciences	53	6	6.22	8.18	-24
Mathematics and computer science	131	46	7.35	9.97	-26
Physics	<u>87</u>	<u>13</u>	<u>4.55</u>	<u>9.30</u>	<u>-51</u>
Overall‡	835	257	5.10	3.07	66

Source: CC, based data from main parties.

*Where the pricing currency was other than UK, exchange rates were applied by RE.

†RE average price as a percentage of Harcourt average price.

‡Also includes some arts and humanities titles. Figures do not add to total as many journals are in more than one category.

4.112. We also considered whether prices could be compared more accurately by using narrower subject definitions, and accounting for circulation levels. As described in paragraph 4.63, the main parties provided us with details of journals within 14 ISI categories in which they appeared to overlap. RE also provided us with data on the institutional prices of a large subset of ISI-rated journals. We brought these two data sources together to compare prices of RE and Harcourt journals, within each of the 14 categories. The results are shown in Table 4.15.

4.113. It appears, on the basis of journals for which data was provided, that average prices charged by RE were higher in 10 of the 14 categories, and at least double those of Harcourt in four. [

Details omitted. See note on page iv.

] Comparing circulation and price per article across all 14 categories, there is a statistically significant negative relationship between circulation and price, but this is not sufficient to explain the difference in price between the parties.¹

4.114. We considered whether the high level of variation between journal prices, and the small sample sizes, affected these results. In five of the ten subject areas where RE prices were higher than

¹[

Details omitted. See note on page iv.

]

Harcourt's (marked '¶' or '⊠' in Table 4.15), the price difference was statistically significant. It was not significant in any of the areas where Harcourt prices were lower than those of RE. Commenting on Table 4.15, RE noted that the analysis relates only to institutional prices and circulation, and not sales to individuals. It also said that 'unless the data relates to equivalent products with equivalent pricing structures the end result is largely meaningless'. However, it did not demonstrate to us that, in these specific instances, price differences could be explained by differences in products or pricing structures.

TABLE 4.15 Average price per article for RE and Harcourt journals in 14 ISI categories, 1999*

ISI category	Number of titles†		Global circulation 2000		Average price per article £		RE premium %‡	RE relative sales %§		
	RE	Harcourt	RE	Harcourt	RE	Harcourt				
Biochemical research methods¶	8	5	⌈	⌋	3.16	1.16	172	-7		
Respiratory system	4	3			1.73	0.66	160	59		
Behavioural sciences⊠	8	4			4.00	1.77	126	-10		
Toxicology¶	17	3			2.89	1.45	100	-29		
Chemistry, physical⊠	27	4			2.87	1.44	99	-43		
Biophysics	15	3			2.57	1.76	47	-33		
Mechanics¶	25	2			3.40	2.51	35	-20		
Neurosciences	35	11			2.67	1.98	35	168		
Computer science, interdisciplinary applications	23	4			⊗		3.97	3.39	17	-22
Parasitology	4	1					2.06	1.79	15	-42
Cardiac and cardiovascular systems	8	4					0.82	0.88	-6	34
Mathematics, applied	23	7					2.70	3.18	-15	-21
Ergonomics	4	1					2.86	3.67	-22	-34
Physics, atomic, molecular and chemical	8	3					2.71	3.78	-28	-25
Average¶	190	50			2.90	2.09	39			

Source: CC, based data from main parties.

*Latest date for which data on number of articles has been compiled.

†RE and Harcourt had 353 titles in these 14 categories. 1999 prices were provided for 240 of these journals, 24 of which appeared in more than one category. (190 for RE and 50 for Harcourt, as shown.)

‡RE average price as a percentage of Harcourt average price.

§RE circulation as a percentage of Harcourt circulation.

¶Difference between average prices found to be statistically significant at 95 per cent confidence level.

⊠Difference between average prices found to be statistically significant at 90 per cent confidence level.

4.115. Harcourt told us that a greater proportion of its journals are society owned or affiliated and so tend to be lower priced, and this would not change as a result of the merger. We note that, although a number of Harcourt journals are published on behalf of societies, it has an influence on the prices of at least some of these (see paragraph 4.32). Furthermore, around three-quarters of Harcourt's UK revenue in 2001 was from proprietary, rather than society, journals.

4.116. RE told us that its average price increase was 7.5 per cent in 2000 and 6.7 per cent in 2001, whereas Harcourt's had been around 11 per cent. We note that sterling price increases for Harcourt were around 9 to 10 per cent for institutional sales in 2001 (see Table 4.13), while the equivalent sterling figure for Elsevier Science was 0 per cent (see Table 4.12). However, the rate at which RE has increased its own prices in the past two years would not necessarily be an indication of how it would change Harcourt's prices following the merger.

4.117. However, RE also told us that it would immediately extend its pricing policy to the journals of Harcourt. It said that its pledge to keep average annual price increases below 10 per cent applies separately to each of the three invoicing currencies (NLG/euro, US dollars, yen), and that it would absorb the effect of currency fluctuations in order to achieve this. In each currency it measures compliance with the pledge by taking the simple sum of the subscription prices of all individual journals which are available in both years. RE told us that it considered it critical to implement the policy in a clear, transparent and credible manner. To this end, it said, the policy was implemented to ensure that all customers, irrespective of their holdings, experienced an overall price increase in line with the

announced average increases. RE told us that this could be achieved only by ensuring that approximately 90 per cent of journal prices were increased by the average.

4.118. RE told us that the pledge will be extended beyond 2001 and is expected to remain in place in the future. It would consider varying it only in the event of a significant change in the macroeconomic climate, such as a return to the high inflation levels of the late 1980s and early 1990s.

Effects on prices of previous mergers

4.119. Several third parties drew our attention a recent US study by Professor Mark McCabe.¹ A version of this paper is to be published in the *American Economic Review* (a peer-reviewed journal).

4.120. McCabe uses the US dollar price of biomedical journals (along with other information about library spending) to estimate the impact that publishing mergers have had on the price of journals. McCabe's thesis is that publishing firms have portfolio power, which increases following a merger, because they can internalize pricing externalities that the pre-merger parties fail to consider when they act independently. If the price of one journal goes up, it can be profitable to increase the price of others, and firms that have a large portfolio are better able to capture these benefits.

4.121. McCabe looks at how the prices of biomedical journals change before and after the owner is taken over by another publisher. The takeovers studied include the Elsevier acquisition of Pergamon in 1991. McCabe tries to address the problem of controlling for what would have happened if a merger had not taken place by using a standard approach from the economic/econometric literature called difference in differences. He compares the change in prices before and after a merger in publishers that were taken over, with that in firms which did not merge. The idea is that if all publishers are subject to the same external pressures then the journal prices of firms that did not merge should reflect what would have happened to prices of the firms that did, had they not merged.

4.122. McCabe's paper suggests that the average price of biomedical journals rose in each year from 1989 to 2001. Ten of the 11 mergers studied were associated with a higher price rise in the merged firms than in the rest. The average price of Elsevier and Pergamon journals was around 7 per cent higher than others before the merger and around 17 per cent higher after.

4.123. McCabe considers whether price rises could be associated with events that affected only the merging companies, such as a change in the quality of the journal. He uses the cost:use ratio to find that some, but not all, of the explanation for the price increase is a change in the quality.

4.124. RE put a number of criticisms of McCabe's work to us. It pointed out that he does not use a consistent definition of the 'post merger period'. In most cases he used the first full year after the merger, but, in analysing mergers in the late 1990s he uses prices in later years, arguing that there was a longer delay in reaction in this period than in the mergers of the early 1990s.

4.125. RE also pointed out that McCabe's work does not demonstrate a causal relationship between mergers and price increases. Because past mergers have been associated with price increases this does not mean that the mergers caused the increase. There could be other events associated with mergers, or characteristics of the journals owned by the merged publishers, that meant that their prices were more likely to increase.

4.126. Finally, RE pointed out that variation in exchange rates and in journal quality could explain some of the price movement. Harcourt provided us with evidence suggesting that the price increases in Pergamon journals after the 1991 merger were to a considerable extent the legacy of decisions taken before the merger.

¹Mark McCabe, 'Journal Pricing and Mergers: A Portfolio Approach', March 2001.

Pricing of electronic provision

4.127. RE told us that, because of the advent of electronic-delivery technology, the business models of STM publishing were in transition and, at present, publishers were experimenting with new pricing models. However, it also said that it did not expect the current pricing model to change dramatically over the next five years. Harcourt also told us that its pricing model for electronic journals was still in development. At present, the main elements of the electronic pricing models currently used by the two parties are quite similar.

4.128. Elsevier Science, following negotiations with NESLI (see paragraph 4.156), offers the following pricing options to UK customers:

- (a) Electronic access to individual journals via its Web Editions system, at no extra charge to subscribers to the print copy.
- (b) Maintenance of print-copy subscriptions plus access to the same titles in ScienceDirect, for an average of around 110 per cent of the hard-copy price. This is not a NESLI option. In the case of NESLI, (c) applies.
- (c) Maintenance of print-copy subscriptions plus access to the same titles in ScienceDirect, for 106.5 per cent of the print-copy price plus £1,400. Price increases are capped at 6 per cent annually, and a commitment is required to maintain spending at 95 per cent of current level or above for the period of the contract (usually two or three years).
- (d) Maintenance of print copy subscriptions plus access to *all* titles in ScienceDirect, for 106.5 per cent of the print-copy price plus £1,400, and a fee of 0 to 4 per cent. Price increases are capped at 6 per cent annually, and a commitment is required to maintain spending at 100 per cent of current level or above for the period of the contract (usually two or three years).
- (e) Electronic access via ScienceDirect only at 90 per cent of paper-subscription price.

4.129. ScienceDirect has a substantial advantage over Web Editions (option (a)), in offering greater functionality, such as the ability to search for articles and access to archives. On the other hand, many libraries are reluctant to switch to electronic-only subscription (option (e)), because of concerns about the lack of a national digital archiving system that would guarantee access to back copies. Of the remaining options, (d) has the advantage of giving users access to a large number of Elsevier Science titles, while libraries can avoid the expense of inter-library loan for these titles.

4.130. Several third parties complained to us about the requirement for a commitment to maintain spending levels in return for full access to ScienceDirect. CURL, which generally represents libraries with subscriptions to a large number of STM journals, told us that it was dissatisfied with the outcome of NESLI's negotiations. It said that its members were clearly seeking 'the ability to select electronic journals ... individually, and that these journals should be made available on a pricing model which reflects use'. RE told us that its intention was to protect revenue streams during the transition from paper to electronic provision, while providing subscribers with access to as many journals as possible. It also said that customers receive benefits from this option in guaranteed lower price increases (than have prevailed in the past) and savings in document delivery costs for the additional titles received. RE said that if libraries spend around 8 per cent of their acquisitions budget on document delivery (see paragraph 4.42), and if Elsevier Science holdings represent 20 to 25 per cent of total holdings, then access to all Elsevier Science titles should result in a saving of around 2 per cent of the total acquisition budget, or 6 per cent of spending on journals. It said that this would more than offset the additional charge of up to 4 per cent of journal expenditure with Elsevier Science. It also said that libraries would be able to monitor usage of different journals provided electronically, and this would allow them to make a more informed and selective choice of journals in the future.

4.131. Finally, RE said that 'the 100 per cent spending commitment only relates to one option' (although we note that a 95 per cent commitment applies in another of the options).

4.132. We note that this approach has the potential to significantly strengthen RE's position in the market. Where a library has committed to maintaining spending levels at 100 per cent, any further

attrition by that library over the period of the spending commitment will be at the expense of RE's competitors.

4.133. Harcourt told us that for the APPEAL licence, which gives full access to its IDEAL library of STM journals, the cost is between 90 and 94 per cent of the price of the print subscriptions previously taken by that institution or consortium. This price does not include print copies, but a licensed institution may buy print subscriptions at 25 per cent of the regular price. Harcourt also offers options such as pay-per-view and access to individual journals in electronic form.

4.134. Packaging of electronic journals into a single product has meant that different institutions effectively pay different amounts for electronic products. One third party commented to us that smaller universities got a better deal because they did not have a large subscription base with Elsevier Science, and so received electronic access to all ScienceDirect journals at a lower price.

Competition

4.135. A large number of third parties, particularly university libraries, have expressed serious concerns to us about the proposed merger. Most of them told us that the market was not competitive at present, and that the merger would reduce competition further. In the following section we consider the likely effect of the merger, having regard to the nature of competition in the market. We begin by assessing the competitive strength of other publishers relative to the main parties. Following that, we examine the extent of any anti-competitive practices in the market, and consider whether these could be exacerbated by the merger. Finally, we consider the effect of electronic delivery on competition.

4.136. As discussed in paragraphs 4.83 to 4.89, estimates of the market shares of the main parties range from 14 to 44 per cent on the basis of expenditure. Apart from the uncertainty regarding the correct figure, there is also disagreement about how well a market share can reflect RE's and Harcourt's competitive position. On the one hand, the remainder of the market is taken up by several large-to-medium-size publishers (all considerably smaller than RE), and a long tail of small publishers. It may be argued that even a market share of around 30 per cent is high in such a fragmented market. Alternatively, the main parties told us that many smaller players (particularly learned societies) are in a strong position as a result their ownership of highly-regarded journals in their fields, and their ability to market new journals to their existing membership base.

4.137. Harcourt told us that the competitive playing field was tilted in favour of the learned societies, because of their prestige, non-payment of subscription agent fees, tax-exempt status, ability to guarantee authors/advertisers access to a large pool of subscribers, absence of the need to satisfy shareholders and greater ability to achieve government funding. OUP also told us that societies benefited from having an established customer base among their members. RE told us that the American Chemical Society, a relatively large society publisher, had successfully launched two journals in direct competition with RE (one of them supported by SPARC—see paragraph 4.160). In practice, however, most of the largest publishers are commercial (see Table 4.1). Furthermore, learned societies are generally less focused on publishing per se, and this tends to limit their effectiveness as competitors, although their presence in the market is valuable in maintaining lower prices. Indeed, Harcourt attributed the growth of commercial journals in the 1950s and 1960s to the failure of societies to expand sufficiently to meet the growing volume of, and demand for, scientific research. It added that: 'To that extent, the commercial publishers have feasted merely on the crumbs from the societies' table'. *Journal Publishing* comments that 'a learned society may be restricted in what it can do. ... For a society, publishing is a means to an end, but it is rarely the society's main objective. Time spent on publications might be better spent on doing things which only the society can undertake'. RE told us that this was not true for a number of the larger societies.

4.138. As mentioned, many third parties told us that this market was uncompetitive. Most of their comments focused on increases in journal prices, which are discussed in paragraphs 4.105 to 4.108. However, other features of this market were also mentioned as tending to indicate or reinforce a lack of competition. Among these were the terms relating to electronic access to journals (discussed in paragraphs 4.127 to 4.134). Another was the difficulty in finding back copies of publications. The Radcliffe Science Library told us that back copies are usually difficult to obtain after one to two years. SCONUL and CURL told us that a decision to cut a journal is not taken lightly as it might be difficult to get back copies if a library wanted them in the future. However, both RE and Harcourt told us that back

copies were always available, and there was no restriction on purchasing them. One competitor suggested that Elsevier Science controlled secondary databases that directed users to Elsevier Science titles. However, we were given no evidence of this.

4.139. We now consider the potential impact of electronic delivery on competition in the STM market. Both main parties have invested substantially in this area, and RE appears to have successfully transferred its print journal market leadership to ScienceDirect. Besides providing access to current journal articles over ScienceDirect, RE has included accessories such as cross-links between journals (although such functions are not unique to ScienceDirect), and is extending the electronic archive as far back in time as possible. It has also extended this platform to host, at this stage, 80 journals from six other publishers (non-exclusively). Following the merger, ScienceDirect will be substantially increased in size with the addition of Harcourt's journals.

4.140. The enlarged ScienceDirect will offer users full access to (potentially) 1,550 journals from a single portal.¹ As such, it will be a very convenient and attractive package to users. There is a concern among some third parties that because of this ScienceDirect will increasingly be used by academics as a convenient starting point for literature searches. The greater the coverage of ScienceDirect, the more likely this is to happen and, above a certain size, the growth of ScienceDirect's coverage may be self-perpetuating. Smaller publishers and learned societies, that want their titles to be seen by as wide an audience as possible would, in this scenario, have a strong incentive to join ScienceDirect. This would mean that the merged group could, through ScienceDirect, use its large portfolio of titles as a lever to increase the indispensability of its product to users.

4.141. RE told us that the fact that something is a starting point does not mean that it is the end point of research. It said that a researcher would consider all articles of relevance to his topic wherever they were published. Moreover, concerns of the kind described above might be lessened, as the main parties have argued, by the presence of other aggregated search facilities such as CrossRef, and those provided by subscription agents. However, no such aggregated facility is fully comprehensive as yet, and all rely on the cooperation of publishers, allowing links to be created to their journals. If the merged group were to deny access to its journals through other search routes, and perhaps to develop its own search facility as the only one to include ScienceDirect, competing facilities would be in a substantially weaker position. Even if such a competitor were as successful as the merged group in obtaining the consent of other publishers to create links to their journals, RE would have its additional 1,550 journals which would only be available through its search facility. Elsevier Science recently launched Scirus.com, which it described to us as 'an Internet search/browser product tailored towards scientific information as a stand alone product and which is freely available independent of ScienceDirect'.

4.142. RE said it does not consider that there is anything to indicate that it would seek to deny linkage between ScienceDirect and other platforms. We note that, if its policy were to change, such a situation could give rise to competition concerns, in that the merged group could have a substantially increased scope to increase its prices to libraries, which would not be in a position to cancel ScienceDirect. Given the budgetary constraints of libraries, such a price increase would be largely at the expense of competitors.

Market entry and expansion

4.143. Entry or expansion may be achieved by the acquisition of existing journals or by the establishment of new journals. Halfway between these, but far less common than either, is the poaching or defection of an editorial board from an existing journal to launch a new one of similar scope, and perhaps with a similar title. Examples of this are given in paragraph 4.96. Any of these strategies can be carried out by new or existing commercial publishers, university presses and learned societies. With the exceptions of acquisition, and increases in journal size, the standard 'unit' of entry or expansion is the launch of a new journal, and we now go on to consider this process in detail.

4.144. OUP told us that that the majority of successful new journals (other than spin-offs from existing titles) were those that launched because a new sub-specialism was emerging within a particular

¹This will consist of around 1,150 Elsevier Science titles, 80 third party titles, and around 320 Harcourt titles.

subject area, which was not fully covered by the existing journals. Mabe and Amin¹ describe the response to a 'key research event' (eg a new discovery) which stimulates further research along the same lines. Initially, new papers on the sub-specialism are spread around a large number of titles. Demands from researchers for information to be concentrated initially lead to the creation of specialized sections within existing journals, but if the research boom continues, these sections are spun off as new journals or entirely new titles are launched. If research in the new area declines, the process is reversed, with specialized journals closing, or merging back into long-standing titles.

4.145. The initiative to produce a journal may come from either the academic side (whether an individual academic, group of academics, or learned society) or from a publisher. In the former case, the academics may put the publishing of the proposed journal out to tender. In the latter, the publisher will try to secure a high profile and well-connected editorial board from within the academic community. Alternatively, new ideas may emerge as a result of ongoing communication between the two sides.

4.146. Having established the aims and scope of the journal, it is necessary to predict its potential demand, in order to determine its feasibility and likely price (see paragraph 4.104). At this point the publisher is likely to choose either a high- or low-cost strategy—balancing promotional spending with expected sales. The next stage is usually a 'call for papers': academics in the field are invited to contribute to the journal, usually in a letter from the editor explaining the aims and scope of the journal, and its attractions for authors. At around the same time, and possibly in the same 'mail-shot', potential subscribers are told about the journal. This promotion is usually aimed primarily at academics, but may also include librarians. Other promotional methods include appearances at conferences and advertising in other journals. Harcourt told us that the time from management approval to launch of a new journal is typically less than two years.

4.147. Harcourt told us that a journal could potentially cover all its entry costs within a year (see Table 4.16), while RE told us that total costs would be covered by the third year of operation. However, information from other sources suggests a longer period: OUP told us that a new journal usually takes between five and ten years to break even. *Journal Publishing* produced a chart of the accumulated profit/loss of a well-produced STM research journal launched in the late 1980s, and this is reproduced as Figure 4.2. It estimated that losses would typically reach a maximum of over £60,000 in the third year of publication, and that a net accumulated profit would not be achieved until the sixth year. While the level of investment is small in absolute terms, the sum required is likely to be significant relative to the expected sales of the journal. *Journal Publishing* commented that 'the size of the investment explains why new STM journals are mainly launched by large publishers'.

¹See footnote to paragraph 4.99.

TABLE 4.16 Example of income and costs of a new STM journal in its first year*

	\$	%
<i>Income</i>		
Subscription		
Reprint		
Advertising		
Miscellaneous		
Total income		
<i>Costs</i>		
<i>Publishing:</i>		
Printing		
Paper		
Production		
Reprint		
<i>Editors:</i>		
Editors' honoraria		
General' editorial		
Editors' expense		
Editorial		
<i>Online:</i>		
Postage and wrappers		
Postage and supplies		
<i>Sales:</i>		
Promotion		
Advertising commission		
<i>Other:</i>		
Circulation salaries		
Administrative		
Profit		

Figures omitted.
See note on page iv.

Source: CC, based on information from [88].

*[88] did not provide detailed explanation of the income and cost categories.

FIGURE 4.2

Accumulated profit or loss of a new journal

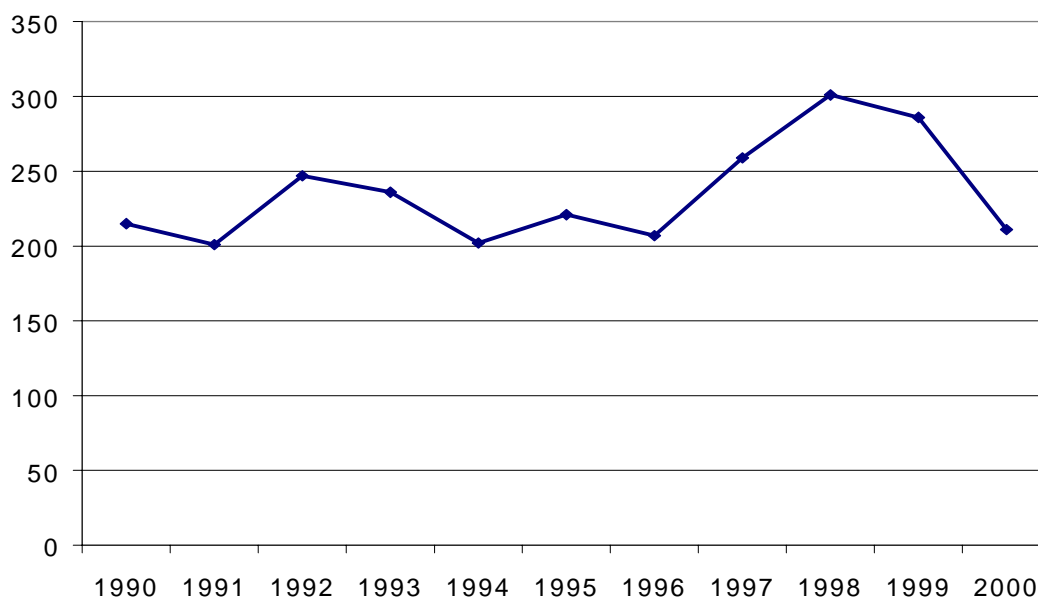


Source: Journal Publishing.

4.148. The number of new journals published each year from 1990 to 2000 is shown in Figure 4.3. Over this period, between 200 and 300 were launched each year—the number varied considerably from year to year but with no obvious trend. However, the number of STM journals which are successfully established each year is considerably lower than 200, and this is discussed in the following paragraphs.

FIGURE 4.3

Number of new journals published



Source: CC, based on RE.

Note: Some non-STM titles may be included in the data.

4.149. Harcourt provided us with an analysis of recent market entry. It identified journals which had no papers published in 1994, but which were among the top ten journals (in terms of number of citations) in at least one of the 205 relevant ISI categories in 1999. These journals could therefore be viewed as successful entrants, having achieved ISI recognition and a high level of citation. A total of 120 journals met these criteria—ie around 1.5 per cent of all ISI-rated journals entered the market and achieved a ‘top ten’ rating between 1994 and 1999.

4.150. Of these journals, 74 out of 120 are published by commercial organizations, although at least 25 of the 74 are owned by learned societies. RE publishes 19 and Harcourt 3 (including, respectively, three and one society-owned journals). Of the remainder 41 are published by learned societies, and 5 by university presses. In total, 66 journals are learned society journals (published by the society or by a commercial publisher), 49 are owned by commercial publishers, and 5 by university presses. The above figures are set out in Table 4.17.

TABLE 4.17 Publishers of new entrant ‘top 10’ journals, 1999, by publisher type

Publisher	Number of journals published			Share of journals published %	Indicative market share %*
	Proprietary	Society-owned	Total		
<i>Commercial</i>					
RE	16	3	19	16	27
Harcourt	2	1	3	3	7
Other commercial	<u>31</u>	<u>21</u>	<u>52</u>	<u>43</u>	<u>48</u>
Total commercial	49	25	74	62	82
Learned societies	N/A	41	41	34	15
University presses	<u>5</u>	-	<u>5</u>	<u>4</u>	<u>3</u>
Total	54	66	120	100	100

Source: CC, based on Harcourt and ISI.

*From Table 4.8.

Note: N/A = Not applicable.

4.151. In Table 4.18, the number of successful launches is analysed by size of publisher (based on number of ISI-rated STM journals produced in 1999: this analysis was provided by Harcourt, and excludes social science journals). Of the 120 successful journal launches, 52 were by publishers which individually had more than 100 journals in 1999. A further 36 were by publishers with more than ten ISI-rated titles, while 32 were by societies or university presses with less than ten titles. If the number of new launches within each size category is compared with the market share (based on number of journals) accounted for by publishers within that category, it appears that the largest publishers (those with over 300 journals) had a 35 per cent market share and a 32 per cent share of successful launches. Very small publishers (with one to four journals) accounted for 27 per cent of the market and 23 per cent of new launches. Medium-sized publishers with between 50 and 100 titles account for a large share of successful launches (14 per cent) relative to their market share (8 per cent). Overall it does not appear that the number of successful journals launched by large publishers is disproportionate to their market share.

TABLE 4.18 Publishers of new entrant 'top 10' journals, 1999, by publisher size

<i>Number of ISI-rated journals published in 1999*</i>	<i>Number of successful launches 1994-99</i>	<i>Share of launches %</i>	<i>Share of ISI-rated journals 1999 %</i>
300+	38	32	35
100-299	14	12	10
50-99	17	14	8
10-49	19	15	13
5-9	5	4	7
1-4	<u>27</u>	<u>23</u>	<u>27</u>
Total	120	100	100

Source: Harcourt.

*Note that intervals are not equal. Excludes social science journals.

4.152. An immediate barrier to successfully establishing a new journal is the limited budgets of libraries: most are unable to take out a new subscription without cancelling an existing one. In this context, a successful new journal is one that has predicted and responded quickly to a shift in the interests of the research community. *Journal Publishing* notes that some publishers announce new journals before they have been developed, in widely-read publications such as *Nature*, to deter rivals from launching journals on a similar subject.

4.153. Most of the work attached to publishing journals takes place on a small scale relative to other industries. The main parties have told us that there are no significant economies of scale or scope in STM journal publishing, and Table 4.18 suggests that small and medium-sized publishers are not disadvantaged in publishing new journals.

4.154. It is also possible to expand market share without launching new journals: the number of issues of a journal, and the number of articles published, is flexible. In practice most commercial publishers have been increasing the content delivered through their more prestigious titles, although RE told us that this tactic would be equally available to society publishers or university presses. To take a simple example, if the publisher of a 'must have' journal doubles the number of articles published and, on the basis of this, doubles the price of the journal, it has increased its market share by as much as it would have done by successfully launching an equivalent journal.¹ Both of the main parties have taken the approach of increasing journal content. Between 1994 and 1998 the average number of articles in the ISI-rated journals of the 100 largest published (in terms of number of articles over the entire period) increased by 16 per cent, while the average number of articles in journals of the smallest 100 publishers declined by 35 per cent. RE told us that if growth or decline had been measured for a sample of different sized publishers taken in the past a different picture may have been found.

4.155. Apart from the question of whether the increased benefit of more issues of a journal justifies the increased cost to customers, this practice could potentially be an entry barrier. *Journal Publishing*

¹This example is provided as an illustration only. In practice, the ability to increase a journal's size is limited by the amount of material of suitable quality submitted to the journal.

notes that 'if pressure of space causes an editor to reject good papers, that provides an opportunity for rival journals to establish themselves or strengthen their position'. Conversely, a publisher may, by increasing the size of the incumbent journal, reduce the amount of high-quality material that is available to potential competitors. On a broader level (in that the effect is not limited to directly competing journals), libraries that pay these increased prices have less scope to buy rival journals, so the strength of the incumbent is increased.

Buyer power

4.156. Various attempts have been made by libraries to form consortia for buying STM journals. The main ones in the UK are NESLI and CURL, discussed in Chapter 5. RE told us that buyer power has become significant only with the emergence of electronic delivery. It said that both NESLI and CURL had been able to negotiate significant discounts with RE for electronic access to journals. As mentioned in paragraph 6.100, the NESLI steering group told us that it had difficulty negotiating with Elsevier Science, on features of agreements which NESLI had been able to agree with most other publishers. It said Elsevier Science was unwilling to aggregate its journals into Swetsnet, and instead insisted that NESLI went direct to Elsevier Science's server. RE told us that it initially informed Swets Blackwell that it was willing to link with Swetsnet, subject to 'resolution of technical issues', and 'creating a model for access which would give customers choice, now and in the future'. RE said that it discovered that Swets Blackwell did not communicate this position accurately to NESLI, and RE subsequently decided to insist on direct communication with the NESLI steering group, and to open discussions with Ingenta to provide an alternative point of access to ScienceDirect content. Swets Blackwell told us that the issues referred to were contractual as well as technical. It denied that it had failed to communicate the position accurately, and said that it had kept the NESLI steering group informed throughout.

4.157. CURL told us that it had not been established to act as a purchasing consortium. In the past it had considered doing so to take advantage of the collective size of its members, but had felt that there were 'potentially adequate purchasing consortia within the UK ... both at a national and regional level'. However, it said that in the past buyers had been weak in coordinating their collective strength. CURL told us that it was currently in negotiation with publishers because it was dissatisfied with the outcomes of the NESLI negotiations in respect of Elsevier Science and AP.

4.158. Historically, and from a global perspective, buyer power does not appear to have been effective in constraining price increases by journal publishers. However, the recent slowing of the rate of increase of journal prices has broadly coincided with the development of NESLI and the involvement of CURL in price negotiations, and RE told us that its price pledge (see paragraphs 4.117 and 4.118) was introduced partly in response to the increased organization of buyers.

4.159. Having said that, both NESLI and CURL told us they might expect more difficulty in negotiating terms with an enlarged RE than had previously been the case.

4.160. RE told us that a further example of buyer power derived from the academic communities' dual role of content provider and consumer. Attempts by the editorial boards of RE journals to influence prices are discussed in paragraph 4.96. Both of the new journals mentioned there (*Theory and Practice of Logic Programming*, and *Evolutionary Ecology Research*) are published by the SPARC initiative. SPARC describes itself on its web site as:

a world-wide alliance of research institutions, libraries and organisations that encourages competition in the scholarly communications market. SPARC introduces new solutions to scientific journal publishing, facilitates the use of technology to expand access, and partners with publishers that bring top-quality, low-cost research to a greater audience. SPARC strives to return science to scientists.

4.161. We note that while SPARC, and other initiatives encouraging new entry, may be an indication of a future trend, to date their effect has been limited to a very small number of journals.