
Library Demand for E-books and E-book Pricing: An Economic Analysis

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This paper provides an economic analysis of the market in which libraries acquire electronic books (e-books) from publishers. It first analyses the differences between print and e-books and explains how these differences affect the willingness of libraries to pay for e-books. Next, it extends the analysis to consider how this willingness to pay is affected by the restrictions imposed by some publishers on the use of e-books by libraries, such as restrictions on simultaneous and total usage and on the duration of usage. It also analyses the effect of publishers' adoption of 'pure metering,' in which libraries would pay a publisher each time they lend an e-book to a patron. Finally, the paper analyses how the fact that readers can substitute direct purchases of e-books with borrowing from a library affects the behaviour of publishers.

Keywords: e-books, library demand for e-books, willingness to pay, e-book pricing, e-book usage restrictions

INTRODUCTION

Both the availability of electronic books (e-books) to libraries and the terms on which e-books are made available have become sources of controversy between publishers and libraries. Libraries have complained that many e-books are not provided to them on a timely basis or are not provided to them at all, that onerous restrictions are placed on the manner in which they can lend e-books to their patrons, and that the prices that they are charged for e-books are 'too high.'¹ This paper provides a preliminary economic analysis of how publishers provide digital content to libraries, focusing mainly on the value that libraries place on access

to e-books and how that is affected by the various restrictions that publishers place on access and use.

THE DIFFERENCES BETWEEN PRINT AND ELECTRONIC BOOKS

Print books have certain characteristics that affect the way that they are priced and the way that libraries make them available to their patrons. First, unless a library purchases multiple copies of the same print book, only one patron can borrow it at any given time. Second, print books ‘wear out’ after multiple uses, or may be lost or stolen, and so libraries must either purchase new copies or repair the copies that they have in order to be able to continue to lend them. Third, in order to borrow a print book from a library, a patron must be present at the library during a time when the book has not been checked out. Fourth, if a library maintains a waiting list for a print book, a borrower must wait for his or her name to reach the top of the list, at which point he or she must make a trip to the library within a given period of time in order to check the book out. Finally, a patron must return a print book to the library when he or she is finished using it and must do so within a specified period of time in order to avoid late fees.

On the surface, none of these characteristics applies to an e-book. Armstrong and Lonsdale define an e-book as ‘any content that is recognizably “book-like”, regardless of size, origin or composition, but excluding serial publications, made available electronically for reference or reading on any device that includes a screen.’² Algenio and Thompson-Young note that ‘one e-book could be accessed by multiple library users at a time,’³ and the Joint Information Systems Committee (JISC) reported that one of the ‘key attractions’ of e-books for libraries is that they ‘provide a solution to spikes in demand by providing concurrent access.’⁴

In addition, as Bosman notes, ‘unlike print books, library users don’t have to show up at the library to pick them up—e-books can be downloaded from home, onto mobile devices, personal computers, and e-readers, including Nooks, Sony Readers, laptops and smartphones.’⁵ Thus, the e-book technology does not require a library to maintain a waiting list for an e-book (unless, as we note below, the publisher places restrictions on simultaneous use).

Finally, an e-book need not be physically returned to the library when a patron is finished using it and, indeed, access to an e-book may be automatically terminated after a certain period of time.

THE COSTS OF PUBLISHING PRINT AND E-BOOKS

Many seem to believe that e-books cost far less to produce than print books because publishers save on printing and distribution costs. However, several recent articles, most notably Rich,⁶ point out that the basic tasks involved in creating e-books are very similar to those of creating print books: acquisition, financing, production, marketing, sales, and delivery of books. Similarly, in an entry on his personal blog, Michael Hyatt, former chairman and CEO of Thomas Nelson Publishers, argued that manufacturing and distribution expenses account for only about 12 per cent of a print book's retail price, and so eliminating these costs does not greatly reduce total publishing costs.⁷ Moreover, he points out that publishers are faced with three new costs when they publish e-books: digitized preparation (in multiple formats), quality assurance ('QAing' the book), and digital distribution to several different distributors or retailers, with varying upload protocols and digital asset management systems. Nonetheless, the cost of producing an *additional copy* of an e-book is undoubtedly substantially lower than the cost of producing an *additional copy* of a print book.⁸

THE INTRODUCTION OF E-BOOKS AND THE LIBRARY DEMAND FOR BOOKS⁹

In purely economic terms, the value of a book to a library's patrons reflects both the utility that the patrons obtain when they read the book and the additional costs that they must incur in order to do so. The introduction of e-books reduces the costs incurred when library patrons borrow a book because they no longer must make trips to the library either to check out or to return a book, although some patrons may still choose to do so.¹⁰ This, in turn, increases the value of a book to the patrons and, because the value of a book to a library is assumed to reflect the value to its patrons, increases the willingness of a library to pay for a given e-book.¹¹

Nonetheless, the price that a library actually pays for an e-book, which is determined by the publisher or, in the case of the wholesale model, the aggregator or vendor, may be either higher or lower than that of a comparable print book. Whether the introduction of e-books raises or lowers the price of a book to a library depends on a number of factors in addition to a library's willingness to pay. One such factor is the relative cost of producing a copy of an e-book compared to a print

book. Another is the nature of the restrictions that are placed on the use of e-books by publishers, an issue that we discuss in some detail below.

THE EFFECTS OF USAGE RESTRICTIONS ON A LIBRARY'S WILLINGNESS TO PAY

Many publishers place restrictions on the manner in which libraries provide e-books to their patrons. For example, as Grigson notes, 'most business models impose a cap on usage, limiting either the number of users who can access the e-book at the same time, or the number of times the book can be accessed within a set time period.'¹² Some publishers place limits on the ability of users to download or print all or portions of an e-book. This section examines the effects of various types of restrictions on a library's willingness to pay.¹³ Throughout our discussion, we assume that the same restrictions are imposed on all libraries. However, publishers could choose to offer a 'menu' of licences that differ with respect to licence terms, prices, and content, from which libraries could choose those licences that best suit their needs. We restrict our attention to for-profit publishers, although we recognize that the behaviour of not-for-profit publishers, such as university presses, may be different.

Restrictions on simultaneous usage

Suppose that a publisher restricts the number of simultaneous users of an e-book (sometimes referred to as the 'one copy, one user' model).¹⁴ This has two implications. First, it raises the costs of borrowing, either because the e-book may be unavailable when a patron requests it or because the e-book has been placed on 'hold' and the patron may have to wait to reach the top of the waiting list. This tends to reduce the amount that an individual library is willing to pay for a single copy of the book compared to the case in which there is no restriction. Second, some libraries may choose to purchase multiple copies of an e-book in order to better accommodate their patrons, which is more likely to be the case for large libraries than small ones. This implies that small libraries may actually benefit from restrictions on simultaneous use because these restrictions tend to lower the price of a copy of an e-book relative to the price that would be charged for a copy if there were no restrictions.¹⁵

Finally, note that the amount that a library is willing to pay for an e-book can be higher than that of a comparable print book even if there are restrictions on simultaneous use. For example, e-book usage may be

higher than that of print books because e-books can be ‘returned’ electronically to libraries as soon as they are read, whereas print books require a trip to the library when the reader is done with them.

Restrictions on total usage

Now consider the effect of a limit placed by the publisher on the total number of times that an e-book may be checked out, whether or not the uses are simultaneous.¹⁶ This will not affect the value of the book to a library for which the limit is not reached (i.e., a library for which the number of uses is less than the limit imposed by the publisher). For other libraries, however, the value of an e-book with a limit on the number of uses will be less than the value of a comparable print book without a limit, and this will reduce the price libraries are willing to pay.¹⁷ If publishers recognize this and offer a lower price for an e-book with restrictions, some libraries that would not have purchased an e-book at the higher price may do so, and so the revenues of the publisher may increase despite the reduction in price. Recognizing that the value of the second copy to libraries is lower than that of the first, HarperCollins offers additional copies at a discount, which may mean that more libraries will purchase additional licences once the limit is reached.

As in the case of restrictions on simultaneous use, restrictions on total use are likely to result in lower prices for a copy of an e-book compared to the case in which there are no restrictions. Moreover, as in the case of restrictions on simultaneous use, the effect of a limit on total use is likely to induce large libraries to purchase additional copies of an e-book and to cause small libraries to purchase some e-books that they would not otherwise have purchased. In effect, the limitation permits the publisher to charge different prices to different libraries for the same e-book—large libraries pay more for the e-book because they purchase multiple copies. Thus, like a restriction on simultaneous use, a limit on total use permits the publisher to engage in price discrimination among different types of libraries, discrimination from which small libraries benefit.¹⁸

Restrictions on the duration of e-book licences

Publishers may place limits not on the number of times that an e-book may be borrowed before a new copy must be purchased but on the amount of time that a library’s borrowers may have access to an e-book before a new purchase is required—that is, on the *duration* of an e-book

licence (e.g., an annual subscription). Limits on total usage require libraries with many users to purchase more copies than libraries with relatively few users, and some small libraries may purchase an e-book that they would not have if it came with a higher price and no limits on usage. Thus, limits on total usage permit publishers to, in effect, discriminate among large and small libraries by influencing large libraries to pay higher prices *per title*. By contrast, under an arrangement in which there are time limits, libraries of all sizes pay the same price for a licence of any given duration. Because large libraries are likely to be able to accommodate larger numbers of users during any time period, their cost *per use* will be lower than that of smaller libraries.¹⁹ Thus, limits on total use and time limits on use have different implications for the costs incurred by libraries of different sizes.

Pure 'metering'

Still another way in which a publisher might charge libraries for e-books is to charge by the use, what may be thought of as a pure 'metering' model.²⁰ In this case, large libraries will pay more *per book* than small libraries will, because the number of uses at large libraries will be greater. In this model it may be more difficult to predict how quickly a library's e-book budget would be exhausted, and so a library could charge the patron a fee for e-book borrowing in order to supplement its budget.

Other licence terms

There are also a number of possible variations in the types of licences that are likely to affect the value that library patrons, and hence libraries, place on e-books. One is whether the licence permits library patrons to download and/or print an e-book or whether it limits them to online reading.²¹ Library patrons are likely to place greater value on books that they can print or download than on those that they must read online; as a result, libraries will place greater value on them. In addition, the ability of patrons to download is likely to increase the extent to which a book is accessed by multiple readers in a single transaction, which has the same effect.²² The willingness of a library to pay may also be affected by the extent to which restrictions are placed on the identities of users to whom a library is authorized to lend (for example, whether inter-library loans are allowed). Although some publishers limit the availability of e-books

to users of an individual library or consortium and prohibit inter-library loans to other institutions,²³ some libraries have formed consortiums to deal with publishers, aggregators, or vendors. These libraries then pay a fee, generally based on circulation or population, and content is shared across the member libraries.²⁴

BUDGET CONSTRAINED LIBRARIES

Up to this point, we have implicitly assumed that a library can and will purchase every book for which total surplus—the excess of reader valuations over borrowing costs—exceeds the price charged by the publisher. However, libraries generally will not have sufficient resources to purchase every such book.²⁵ In that case, a library that is maximizing the net value of its collection will adopt the following simple rule: Arrange books according to the *ratio* of total surplus to price and purchase books starting with the highest ratio and continue until the library's budget is exhausted.²⁶

THE EFFECT OF THE EXISTENCE OF DEMAND BY INDIVIDUALS

Publishers may be concerned that the availability of e-books through libraries will cause many users to substitute individual purchases with borrowing from the library.²⁷ For example, the CEO of Faber and Faber is quoted as saying that lending of e-books by libraries could 'undo the entire market for e-book sales.'²⁸ There are many ways in which publishers might respond to this concern.

First, a publisher might simply refuse to sell e-books to libraries. Owen notes, for example, that Macmillan and Simon & Schuster do not make any of their e-books available to libraries.²⁹ Bosman quotes a spokesman for Simon & Schuster as saying, 'Our e-books are not currently available in libraries because we haven't yet found a business model with which we are comfortable and that we feel properly addresses the long-term interests of our authors.'³⁰ However, Grigson also notes that 'other publishers see e-book availability as a driver for print book sales.'³¹ Even more recently, Penguin Group USA stopped making new e-books available to libraries citing 'concerns about the security of [its] digital editions,'³² among other reasons.

Second, publishers might choose to delay library access to new titles for a period of time while making those same titles available to consumer markets in order to preserve e-book sales to individuals. This is similar

to an existing publisher practice called ‘windowing,’ where publishers release the hardcover format of a title before the paperback format.

Third, a publisher might base certain e-book prices more or less exclusively on the demand by libraries, leading to relatively few purchases by individuals. That is, a publisher may set a price so high that it expects few, if any, sales to individuals. This is more likely to happen with reference books, particularly in the scientific, technical, and medical fields.³³ Of course, as discussed above, the magnitude of the resulting price increase will depend on whether, and the extent to which, the publisher places restrictions on simultaneous and/or total use, with the increase being inversely related to the extent of the restrictions.

Fourth, a publisher might attempt to charge higher prices to libraries than to individuals (i.e., to engage in price discrimination). The most prominent example of this practice involves Random House and its pricing of e-books. Another example may be found in academic journals, where it is customary for libraries to be charged prices that are several multiples of the prices for individual subscriptions.³⁴ Whether this is feasible will depend both on whether a publisher can identify the different types of purchasers and prevent those who purchase at low prices from reselling to those who would otherwise purchase at high prices.

Fifth, some publishers or vendors might offer a subscription model, where a large variety of content is offered to a library for an annual fee. The seller would be able to monitor usage and update content as required. This could be offered as a tiered service so that budget-constrained or smaller libraries could opt for the more basic service while others could choose greater or more varied access. Publishers could also make available a ‘menu’ of choices so that the aggregator could allow the library to choose a subscription model for some titles, a ‘purchase’ model for others, and a per-use or limited usage model for still others.

Sixth, a publisher might adopt the ‘bookshelf’ model, in which it selects a number of titles available for libraries to purchase and retain the use of only for a limited period of time. At the end of the period, the books are ‘returned.’ If the library subscribes again, another, possibly different, set of books is made available. A library’s willingness to pay for such books is limited both because the set may contain titles that it would not otherwise acquire and because the period of use is limited. That is, both bundling and restrictions on use serve to reduce somewhat

the willingness to pay and, thus, the number of books purchased by the library.

Finally, publishers can ignore the existence of the library market and continue to set prices exclusively according to the demand by individuals. That practice was apparently adopted by the Walt Disney Company for pre-recorded videocassettes that it classified as 'collectibles' (i.e., ones that many individuals would be expected to desire to own and replay often). In that case, video rental stores, such as Blockbuster, were able to purchase the videocassettes at relatively low prices despite the fact that they would rent them to a large number of individuals. Similarly, libraries could obtain 'collectible' e-books at prices that are substantially lower than those that would exist if they were the only purchasers. In this case, libraries would become just another set of customers.

CONCLUSION

The analysis provided in this paper is intended as a guide to thinking about the issues related to the demand for e-books from libraries and the conditions under which publishers supply e-books to them. As we have shown, some publishers are offering e-books to libraries in much the same way that they have provided print books in the past; others are experimenting with alternative distribution and pricing arrangements; still others have chosen not to offer e-books to libraries at all. Librarians have complained about limited or delayed access to e-books, high e-book prices, and restrictions on the use of the e-book titles that are available to them. Some of the observed behaviour of publishers is an attempt to exploit the fact that libraries may place higher values on e-books than on comparable print books, both because the costs to their patrons of accessing e-books are lower and because some e-books have 'value added' features. Other publisher behaviour can be explained as an attempt to engage in price discrimination—that is, to charge a higher price to larger libraries than to smaller ones for the same e-book title. Other aspects of observed behaviour are being driven by the fact that publishers are increasingly concerned that the lower costs of library borrowing and wider access to e-books through libraries may result in smaller sales to individuals. This concern about lower demand from individuals affects both the prices that publishers charge libraries and the restrictions that they place on the supply and use of e-books, including delayed access of some popular e-books and refusal to supply some titles. The paper

provides an economic framework within which these issues can be examined and understood.

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NOTES

1. See, generally, American Library Association, *EBook Business Models for Public Libraries* (8 August 2012), available at http://www.americanlibrariesmagazine.org/sites/americanlibrariesmagazine.org/files/EbookBusinessModelsPublicLibs_ALA.pdf.
2. C. Armstrong and R. Lonsdale, 'Introduction,' in K. Price and V. Havergal, eds., *E-books in Libraries: A Practical Guide* (London: Facet 2011): XXI–XL, XXV
3. E. Algenio and A. Thompson-Young, 'Licensing E-books: The Good, the Bad, and the Ugly,' in K. Rupp-Serrano, ed., *Licensing in Libraries: Practical and Ethical Aspects* (Binghamton, NY: Haworth Information Press): 113–28, 114
4. JISC, *JISC National E-books Observatory Project: Key Findings and Recommendations*, final report (November 2009), available at <http://observatory.jiscebooks.org/reports/jisc-national-e-books-observatory-project-key-findings-and-recommendations>, 26

5. J. Bosman, 'Publisher Limits Shelf Life for Library E-books,' *New York Times* (14 March 2011), available at <http://www.nytimes.com/2011/03/15/business/media/15libraries.html>. However, at least one UK publisher (the CEO of Faber and Faber) has proposed that library patrons be required to be on-site in order to access e-books from libraries, as described in A. Watters, 'Will Your Local Library Lend E-books? (Or Can They?),' *ReadWriteWeb* (10 November, 2010), available at http://readwrite.com/2010/11/10/will_your_local_library_lend_e-books_or_can_they.
6. M. Rich, 'Math of Publishing Meets the E-book,' *New York Times* (28 February 2010), available at <http://www.nytimes.com/2010/03/01/business/media/01ebooks.html>. See also J. Claypool, 'Publishing E-books: Challenges and Perspectives' in K. Price and V. Havergal, eds., *E-books in Libraries: A Practical Guide* (London: Facet 2011): 3–17.
7. M. Hyatt, *Why Do Ebooks Cost So Much? A Publisher's Perspective*, (2 November 2010), available at <http://michaelhyatt.com/why-do-ebooks-cost-so-much.html>
8. See R. Wischenbart, *The Global Ebook Market: Current Conditions & Future Projections* (Sebastopol, CA: O'Reilly Media 2011), 34. He provides a comparison of the average discounted print price and the average e-book price of the top 10 fiction U.S. bestsellers in the United Kingdom (U.K.), U.S., France, and Germany. The average e-book price ranges from 9 percent lower (U.K.) to 23 percent lower (Germany) than the comparable print book price.
9. Our analysis initially assumes that libraries purchase individual titles. We briefly discuss subscription models, where libraries acquire access to a number of books in a single transaction, in a later section.
10. Of course, borrowers must incur the cost of purchasing an e-reader (and its periodic replacement as technology advances or if the unit is lost, stolen, or broken) and the cost in time of learning how to use a new model in order to be able to borrow e-books from their libraries. However, once that cost is incurred, the additional cost of borrowing an e-book will be less than the additional cost of borrowing the same book in print form.
11. In order to offer e-books to their patrons, libraries must incur certain fixed costs to host their own e-book lending sites or contract with a distributor like OverDrive to provide the hosting service. However, once a library incurs these costs, they do not affect the willingness of a library to pay for any given book. Nonetheless, such costs could affect the number of e-books that a library purchases if these costs are paid from the same (limited) budget that is used to pay for e-books.
12. A. Grigson, 'An Introduction to E-book Business Models and Suppliers,' in K. Price and V. Havergal, eds., *E-books in Libraries: A Practical Guide* (London: Facet 2011): 19–36, 31.

13. For comparisons of licensing provisions in contracts between a number of major e-book publishers and libraries, see R. Maier, 'DCWG Big Six Matrix for Ebook License Comparisons: An Update,' *American Libraries* (27 September 2013), available at <http://www.americanlibrariesmagazine.org/blog/big-six-publishers-and-library-lending-update>.
14. This appears to be the predominant model currently used by publishers. For a discussion of this restriction in some OverDrive licences, see K. Boehret, 'New Way to Check Out Ebooks,' *The Digital Solution*, *Wall Street Journal* (23 February 2011), available at <http://online.wsj.com/article/SB1000142405274870352900457616042156195208.html>. However, we understand that some OverDrive licences contain 'simultaneous use, always available' provisions. Grigson, 'An Introduction to E-book Business Models,' gives MyiLibrary and NetLibrary as examples of other distributors that offer licences that place limits on simultaneous use. A publisher may limit simultaneous use both in order to increase its profits from sales to libraries and to encourage the purchase of the book by individuals.
15. A smaller library is less likely to need simultaneous access, whereas the price of such a licence will reflect this capability.
16. HarperCollins's licences require a library to re-purchase an e-book after it has been checked out twenty-six times if the library wishes to continue lending the title; Bosman, 'Publisher Limits Shelf Life'. Grigson gives Dawsonera and EBL as examples of distributors that limit the number of times that a book can be viewed during a certain period of time but that do not place limits on simultaneous usage (Grigson, 'An Introduction to E-book Business Models,' 31). On this type of arrangement, see Algenio and Thompson-Young, 'Licensing E-books.' Grigson also notes, 'Purchasing e-books is usually more expensive than paying for a subscription,' which is not surprising since a purchase permits the book to be loaned in perpetuity whereas a subscription does not (Grigson, 'An Introduction to E-book Business Models,' 27).
17. Armstrong and Lonsdale note that 'purchase gives perpetual access at higher per title cost' (Armstrong and Lonsdale, 'Introduction,' XXVI).
18. In characterizing this type of behavior as price discrimination, we do not mean to imply that it is necessarily undesirable. Indeed, it is well known that price discrimination can result in an increase in total output—in this case the number of e-books that are sold to libraries—and in some cases may be required for a product to be produced at all. For a good general discussion of the effects of price discrimination, see R.P. McAfee, 'Price Discrimination,' in *Issues in Competition Law and Policy*, vol. 1 (Chicago: ABA Section of Antitrust Law 2008): 465–84.

19. If the publisher also imposes a limit on simultaneous use, the difference between the per-use costs of large and small libraries will be smaller than if there is no such limit.
20. Library Ideas, LLC, has announced a business model in which libraries pay a per-use fee instead of making an upfront payment. See 'Library Ideas, LLC to Launch Innovative New E-book Service for Libraries,' *PRNewswire* (27 June 2011), available at <http://www.prnewswire.com/news-releases/library-ideas-llc-to-launch-innovative-new-e-book-service-for-libraries-124593953.html>.
21. Grigson notes 'In some cases, the e-books must be accessed fully online at the website. . . . In other cases, the library user may be able to download the e-book from the website to be read offline' (Grigson, 'An Introduction to E-book Business Models,' 20).
22. For example, a borrower may lend the book to others before 'returning' it to the library. For a discussion of e-book lending 'clubs,' see S. Woo, 'E-book Lending Takes Off,' *Wall Street Journal* (11 March 2011), available at <http://online.wsj.com/article/SB10001424052748703726904576192923709743108.html>.
23. See Algenio and Thompson-Young, 'Licensing E-books,' 120. One of the licenses described in Maier, 'DCWG Big Six Matrix' does not permit purchasing by a consortium, one allows such purchasing on a case-by-case basis, and one places limits on the geographic scope of a purchasing consortium.
24. Under these arrangements, libraries can choose to pay for additional services, depending on their patrons' demands. One library mentioned paying the additional fee to obtain maximum access to a subset of titles to which its patrons would otherwise have had only limited access.
25. It is theoretically possible, of course, that a library will have sufficient resources to purchase not only books for which the total surplus exceeds the price set by the publisher but also books for which the price exceeds the surplus. We regard that case as unlikely.
26. This assumes that the net values of books are independent of one another. The rule that we describe is analogous to that employed by firms constrained by the amount of investible funds when they make investment decisions. Investment projects are listed by the ratio of their present values to their initial capital costs. Moreover, as noted above, the fixed costs that a library must incur in order to be able to provide e-books to its patrons will reduce the amount available to purchase e-books and thus the number of e-books that the library purchases if they are paid from the same (limited) budget.
27. A countervailing force is that some libraries make it easy for patrons to purchase e-books for which there are extended waiting lists. LibraryBIN (Buy It Now), allows patrons of OverDrive's partner libraries to make e-book purchases, the

- proceeds of which are divided among OverDrive, the publisher, and the participating library. See OverDrive, *How eBook Catalogs at Public Libraries Drive Publishers' Book Sales and Profits*, Thought Leadership White Paper (Cleveland, OH: 2010), available at <http://www.overdrive.com/files/PubWhitePaper.pdf>.
28. Quoted in Watters, 'Will Your Local Library Lend E-books.' However, the same article quotes the director of channel marketing for Springer Verlag as saying, 'Libraries buy direct from us and own the content. Once users download content, they can give it out, share, whatever. They own it. Some of our competitors are afraid to do this, but we say, free the content.'
 29. L.H. Owen, 'How Libraries Are Bypassing Big Publishers to Build Their E-book Offerings,' *paidContent* (16 May 2011), available at <http://paidcontent.org/2011/05/16/419-how-libraries-are-bypassing-big-publishers-to-build-their-ebook-offerin/>.
 30. J. Bosman, 'Kindle Connects to Library E-Books,' *New York Times* (21 September 2011), available at <http://www.nytimes.com/2011/09/22/books/amazons-kindle-to-make-library-e-books-available.html?ref=arts>.
 31. Grigson, 'An Introduction to E-book Business Models,' 22
 32. H. Italie, 'Penguin Suspends Library E-books, Citing Security,' *USA Today* (22 November 2011), available at <http://usatoday30.usatoday.com/tech/news/story/2011-11-22/penguin-suspends-ebook-library-lending/51344738/1>.
 33. On 'indirect appropriability' generally, see S. M. Besen and S. N. Kirby, 'Private Copying, Appropriability, and Optimal Copying Royalties,' *Journal of Law and Economics* 32, 2 (October 1989): 255–80.
 34. For a quantitative analysis of this practice see S. J. Liebowitz, 'Copying and Indirect Appropriability: Photocopying of Journals,' *Journal of Political Economy* 93, 10 (1985): 945–57; and E. Issman-Weit and O. Shy, 'Pricing of Library Subscriptions with Applications to Scientific Journals,' *Journal of Economics and Business* 55 (2003): 197–218.