DEPARTMENT OF ECONOMICS
UNIVERSITY OF CYPRUS

BOOK VALUE: PRICE AND QUALITY DISCRIMINATION IN THE U.S. BOOK MARKET

Sofronis K. Clerides

P.O. Box 20537, 1678 Nicosia, CYPRUS   Tel.: ++357-2-892101, Fax: ++357-2-750310
Web site: http://www.econ.ucy.ac.cy

Book Value: Price and Quality Discrimination in the U.S. Book Market

Sofronis K. Clerides[*]

University of Cyprus

Abstract

Book publishers discriminate among consumers both intertemporally and in terms of quality by marketing the same book in hardcover and paperback formats that differ substantially in price and are introduced into the market at different points in time. Using detailed book-level data I show that prices depend on cost-related demand shifters but not on pure demand shifters. I argue that this behavior is consistent with a kinked demand curve arising from bimodal consumer preferenecs. The timing of market introduction has a strong effect on sales, suggesting that time is an important dimension of discrimination.

Keywords: price discrimination, quality discrimination, book publishing industry.

JEL Classification: L1, L82.

1 Introduction

Price discrimination is usually defined as the practice of charging different prices to different consumers for the same product. In its purest form, first degree price discrimination,[1] each consumer is charged his willingness to pay. Implementation of this technique in practice is limited, however, since it requires knowing individual consumers' willingness to pay. Of greater empirical relevance is the use of second and third degree price discrimination. The latter involves discrimination on the basis of observable consumer characteristics (such as student or senior citizen discounts). The former, also known as nonlinear pricing, discriminates based on *unobserved* consumer heterogeneity. The firm offers a menu of products and prices, each of which is targeted towards a specific type of consumer. The products (or bundles of products) are designed in a way that makes it optimal for consumers of each type to choose the product that was designed for them. Thus consumers *self-select* into the appropriate niche of the market and market segmentation is achieved not only by the choice of prices, but also by the choice of product quality.

The standard definition for price discrimination is not applicable in this last case because the products being compared are not identical. Stigler (1987) has proposed a more general definition that can be used in a differentiated product context. The definition states that price discrimination exists when the price-to-cost ratios of two products are not equal. An alternative approach is to use the price-to-cost differentials instead of the ratios. A number of recent empirical studies use this criterion to test for the presence of price discrimination in different markets.[2]

Books are a familiar example of price discrimination.[3] Publishers use publication time and binding quality as ways of discriminating among consumers with hetereogeneous valuations of those attributes. They typically publish a new title in hardcover format first, then follow it up with a paperback version several months (or even years) later. In some cases they publish the hardcover and paperback versions simultaneously, while in other cases they choose not to produce a paperback at all. Either way, there is a large price differential between hardcover and paperback. This practice of introducing an inferior version of an established product is quite common. New movies are usually released first in luxurious and expensive first-run theaters; several months later they hit the second-run theater circuit and are also made available on videotape. Patient consumers can therefore enjoy them at a significant discount. Other examples are bakers, who often sell their day-old bread at half-price, and fashion designers, who channel unsold items to stores that specialize in marked-down designerwear. In none of these cases can the price drop be attributed to changing costs. The same is not true for, say, computer prices. Even though the price of a new computer falls significantly within months of its introduction, one can argue that it may be falling costs that drive this price decrease. This argument can not be made for books, movies, bread, or designer clothing.[4]

The market for books is also characterized by substantial price rigidity. It is well known

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[1] The taxonomy of price discrimination techniques is due to Pigou (1920).

[2] I review some of these studies later on in section 4.

[3] Many introductory economics textbooks name hardcovers and paperbacks as an example of price discrimination, as does Stigler (1987) in the aforementioned book. Books are also frequently mentioned as an example of intertemporal pricing in the durable good pricing literature; for example, in Stokey (1979) and Bulow (1982).

[4] There is, however, a difference between books and movies on one hand and bread and designer clothing on the other. In the latter case the products that are sold in subsequent periods are leftovers while in the former case distinct copies are being sold.

that book prices in the U.S. are almost never raised, either by publishers or by booksellers. In the only study that tracks book prices of a U.S. publisher Kandel (1990) finds exactly *zero* price increases in his sample of 148 books. Price decreases are not as rare, but they are still usually limited to certain kinds of books, such as those on the New York Times bestseller list. Those discounts are initiated by the bookseller. Publishers typically give discounts only for books that have flopped in order to get rid of the extra copies sitting in the warehouse. By contrast, German publishers frequently increase but rarely decrease the price of a book from its initial level. Bittlingmayer's (1992) study of demand for books in Germany reports that about half of all prices change from one year to the next and almost all changes are increases. Siegfried and Latta (1998) present more evidence of price rigidity in a study on competition in the U.S. retail college textbook market. They find that textbook prices are very similar across bookstores and are not related to the number of competitors, entry barriers, or retail service cost differences.

This paper contributes to the existing literature in a number of ways. It is one of only a handful of economic studies of the book publishing industry and it uses what is probably the most detailed dataset, provided by Yale University Press. The dataset includes extensive, title-specific price and sales information and is comprehensive in that it covers the publisher's entire catalogue. Information is available for both hardcover and paperback versions of each book and it identifies the pattern of introduction of the different versions into the market. That is, I know whether the hardcover and paperback were introduced into the market at the same time (*simultaneous introduction*) or whether the hardcover was introduced first and the paperback followed (*sequential introduction*). Thus I am able to assess the relative importance of time and quality as dimensions of consumer heterogeneity. Moreover, for a subset of the titles I have data on production costs that are detailed enough to distinguish fixed from marginal costs. This allows me to apply Stigler's criterion to test for the presence of price discrimination in this market and to relate prices to actual costs. I also analyze the decision whether to publish simultaneously, sequentially or just in hardcover and provide some economic rationale for it.

As much as anything else, this paper is also a study on pricing. The price mechanism is the basis of economics, yet we often have to admit that we do not understand how prices are set. In addition to the intertemporal price rigidity discussed above, the analysis here suggests that book prices are fairly rigid across books once we control for observable physical characteristics such as size and binding quality. In particular, prices do *not* depend on the pattern of market introduction or an author's previous success. Sales, on the other hand, are strongly affected by these factors. This leads to a puzzle: why do prices depend on cost-related demand shifters but not on "pure" (not cost-related) demand shifters? I provide a possible explanation for this in terms of the shape of the demand curve. The time dimension is another interesting aspect of this market and the analysis here contributes to our understanding of intertemporal pricing of new products.

The rest of this paper is organized as follows. Section 2 provides an overview of the book publishing industry and section 3 introduces the dataset. Section 4 describes the cost data and tests for price discrimination. Section 5 describes the price and sales patterns in the dataset and investigates the decision to delay introduction of the paperback. Section 6 proposes a theory that explains the observed patterns of behavior. Finally, section 7 summarizes and proposes some directions for related future research.

2 An Overview of the Industry

Book publishing (SIC 2731) is not a large industry; the value of total shipments by producers was around $20 billion in 1995. The 1992 Census of Manufactures reports 2,644 publishing firms in the United States, but most industry experts put that figure closer to 20,000. The large discrepancy is attributed to the thousands of tiny publishing houses (basically one-person, do-it-yourself ventures) that do not qualify for inclusion in the Census reports. Nonetheless, a few large firms dominate the industry and are responsible for a significant proportion of sales. Twenty firms were responsible for 83.9% of industry revenues in 1993,[5] while the top 7 publishers held 87% of the spots on the weekly Top 30 bestseller lists compiled by Publisher's Weekly in 1995.

Firm practices in the industry vary markedly depending on the type of book. Trade (general interest) publishing is very different from scholarly publishing, adult books are different from children's books, and cookbooks are different from Harlequin novels. Nonetheless, some generalizations can be made. The publication process involves four main types of agents: authors, publishers, retailers, and consumers. The publisher and author agree on a contract which specifies the royalty the author is to receive on [usually net] sales. The royalty is typically increasing in units sold, and lower for paperbacks than for hardcovers. Established authors often get an advance on sales as part of the deal. The publisher decides which formats to publish the book in (hardcover, paperback or both), and chooses prices and time of publication for each of those.[6] He then sends his sales force around the country to try to convince bookstore managers to put the book on their shelves. Retailers place their orders with the publisher, and they receive the books at a substantial discount over list price. This discount is usually increasing in the number of books ordered and varies between 42-50% for trade books. For textbooks the discount is smaller and fairly standard at 20%. Additional discounts may be granted to bookstores that carry a large number of different titles from the same publisher. This, of course, benefits large chain bookstores that carry many titles.[7]

Traditionally, the publisher's list price is placed on the cover of most books. Booksellers do not have to adhere to that price, though quite frequently they do. Most bookstores today offer discounts on specific books (such as those on the New York Times bestseller list) and sell most other titles at list price. Sales and discounts at the retailer level are usually initiated by the retailer himself, without the publisher's involvement. Publishers do occasionally offer additional incentives to booksellers, but those usually come on poorly performing titles which publishers are anxious to promote. Most of the discounting on the part of the publisher is done in the form of 'remaindering': unsold books that have been sitting in the warehouse for too long are sold to wholesalers at large discounts of the order of 70-80%.

University presses are a very small portion of the book publishing industry, amounting to

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[5]Source: Greco (1997), p. 58.

[6]Contracts often have stipulations about these issues also. For instance, contracts for trade (general interest) books sometimes specify that the paperback must be published within a year of the hardcover.

[7]Not surprisingly, independent booksellers complain that this practice puts them at a disadvantage. In 1996 the American Booksellers Association filed a lawsuit against a number of big publishers for this very reason. The suit was eventually settled out of court, but not before months of bitter wrangling. In a different and more recent case a number of publishers were accused of offering different discounts to different bookstores. The publishers would offer the textbook discount (20%) to college bookstores where the book would be sold as a textbook, while other bookstores would get the full 42% discount that applies to general interest titles.

about 1.7% of dollars sales and only .7% of units sold in 1996.[8] Originally their main aim was to disseminate the research performed at their respective universities. Recently, however, subsidies have been shrinking and university presses have grown increasingly commercial. Some of the bigger ones have even expanded their operations into trade publishing. Their practices, however, still differ from trade publishing in several respects. They are more likely to introduce hardcover and paperback versions simultaneously, but when they do not, they tend to have a longer lag between the two. They are generally more reluctant to lower prices, they pay smaller (if any) advances to authors, they stick to traditional distribution channels, and they are dependent on sales to libraries and other institutions.

The paperback. The paperback is a relatively recent development in the book world. It first made its appearance in Europe after the first world war. Early attempts to introduce it into the U.S. market were unsuccessful, until the creation of Pocket Books (the American version of Britain's Penguin) and the introduction of the 25-cent paperback in 1939. Because book-stores were sceptical about these 25-cent books, Pocket Books marketed its products through a collaboration with magazine distributors. So the new book product reached the market not though the traditional avenue of bookstores, but through magazine racks, newspaper stands, and supermarket aisles. Thus it earned the title 'mass market paperback'. This name reflects the scorn with which most publishers greeted the arrival of the paperback. They considered it a degradation of the noble pursuit of publishing, and refused to participate in that activity. With time, however, more and more publishers started publishing paperbacks, and the 'quality paperback' eventually became accepted as a respectable product.[9] Today, most publishers make their books available in paperback, either directly or through paperback divisions within their firm.

3 The Data

I have constructed a dataset that includes essentially every book published by Yale University Press (YUP) in the last 25 years. Each title may come in different formats, the two most important of which are hardcover (or cloth) and paperback (others are deluxe editions, large-type editions, audio versions). The dataset identifies which formats each title has appeared in; specifically, I can tell which titles have appeared both in hardcover and in paperback, and which have appeared in only one format. For each format the following information is available: list price, total units sold, time of publication, number of pages, weight, subject matter (history, philosophy, etc.), number of authors, and whether this is a new edition of a previously published title. This information was obtained directly from the publisher. In addition, I have constructed a measure of the number of previous publications by each author. Information for this (admittedly noisy) variable was collected by searching through a number of databases, including Books in Print, Books out-of-Print, various library catalogs, and the online catalog of Amazon.com.[10] Note that I only observe cumulative sales data for each format (hardcover/paperback); no period by period breakup is available.

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[8]Source: Book Industry Study Group, Inc. (1996).

[9]For example, Harvard University Press struggled with the idea of paperbacks for many years before finally creating Harvard Paperbacks in 1971. See Hall (1986) for the story.

[10]Construction of this variable was difficult because there seems to be no comprehensive database that *uniquely* identifies authors. Among the sources used the Library of Congress comes the closest, but it has the disadvantage that it includes publications other than books (notably some journal articles).

The database becomes progressively less dependable as it goes back in time, so to avoid selection problems I drop books published prior to 1980. In addition, I drop titles published after 1990 in order to minimize truncation problems with books that continue to sell for many years after they are first published. To the extent that I am able to identify them, I also drop textbooks from the sample because they pose a different choice problem, both for the publisher and for the consumer.

The resulting dataset includes 1108 titles. Figure 1 summarizes the firm's timing choices. In 136 of the cases (12.3%) the hardcover and paperback were published simultaneously. More than half of the remaining titles never made it to paperback. Of the 434 titles that did, 21 were published by other publishers. The practice of selling paperback rights is followed for titles that succeed in gaining a broad appeal that extends beyond academic and scholarly circles. YUP, like most academic presses, lacks the distribution network and expertise to properly market such books, and prefers to sell paperback rights to other publishers when the opportunity arises. Since they are not YUP publications, I have no sales data for those paperbacks.

I now introduce some shorthand notation. I will refer to titles for which the hardcover and paperback were introduced simultaneously as SIM titles. Titles that were introduced sequentially will be referred to as SEQ titles, while those that came out in hardcover only will be called NOPBK titles. The last two types of books (SEQ and NOPBK) will be collectively referred to as NONSIM titles.

4 Costs and price discrimination

Book publishing is characterized by high fixed costs and low unit costs. Publication of a book involves three basic steps: manuscript preparation, book production, and distribution and marketing. The costs involved in the first and third steps are difficult to quantify and hard to collect. For example, the publisher's cost of preparing a manuscript is mostly the editor's time, which can vary considerably depending on how meticulous the author and editor are, and on the rapport between them. Similarly, marketing and distribution costs are not easily available.

The production process itself involves three stages: typesetting, printing, and binding. Typesetting (or composition) involves putting the manuscript into a printable form. This generally makes up a large portion of the fixed cost of the entire process. The cost is fixed in the number of books produced, but it does depend on book characteristics. Typesetting costs are higher for bigger books, and especially for books with pictures, tables, figures, maps, or other artwork.

In the printing stage the publisher decides how many books to print and places an order. The actual number printed can vary, usually by no more than 10% of the order. Printing costs include the cost of plates (which are fixed up to discrete jumps whenever a new set of plates must be used), and the costs of paper and press time, which are variable. Book covers and jackets for hardcovers are usually printed separately. Finally, the printed pages are sent to the binder. Almost all of the binding cost is variable; most binders do not even bother to break up costs into fixed and variable parts. The completed product must then be marketed and distributed to retailers.

Production cost data are available for a subsample of 110 titles published by YUP. The data cover the middle three stages of the publication process. For most of these titles I observe

the costs of composition, printing (fixed and variable), jackets, binding, and miscellaneous other costs. After deleting titles with missing data I end up with 96 observations that can be used to construct fixed and unit cost estimates. These are summarized in Table 1; all dollar values are in 1990 dollars. The table confirms the high-fixed-cost, low-unit-cost nature of book publishing. The unit (marginal) cost measures I constructed are comparable in magnitude to figures provided by the publisher and estimates by industry groups.[11]

The cost measures exhibit substantial variation. This is because both fixed and marginal costs depend on the physical characteristics of the book. Paper (pulp) prices are also quite volatile and contribute to cost variation. Marginal production costs average $2.95 for the hardcover and $1.74 for the paperback.[12] The difference in marginal cost is due almost entirely to the cost of binding. Fixed costs average $5,182 and for a typical title end up being about one-third of total production costs. The cost of composition is the biggest part and makes up about two-thirds of the fixed costs. Most of the rest is printing cost, which decreases for subsequent printings.

Using our data we can construct the Lerner index for this market. The index is defined as $(P - MC)/P$ and is a commonly used measure of market power. With prices averaging around $39 and $17 for the hardcover and paperback respectively, the implied Lerner index averages 92.1% for hardcovers and 87.9% for paperbacks. Even when we adjust for the fact that the net price received by the publisher (price minus discount to bookstore minus author royalties) is roughly 50% of list price, the average adjusted index remains quite high at 84.3% and 75.8% respectively. If the publisher prices as a monopolist then the inverse elasticity rule implies elasticities in the range 1.09 to 1.79 for hardcovers and 1.14 to 1.56 for paperbacks. By comparison, Bittlingmayer (1992) reports slightly higher estimates in the range 1.5 to 3.0 for his German data.

In the 'Other statistics' panel of Table 1 I report a number of other interesting aspects of the data. The number of print runs per title varies from 1 to 15, with a mean of 2.68 and median of 2; this, along with the size of printings, will be discussed further in the next section. Note also that 5 of the titles in the sample were new editions, while 2 titles were casebound, which is of higher quality than regular hardcover binding. An interesting feature of the data is the quite frequent occurrence (in the case of 28 out of 110 titles) of the 'strip-and-bind' phenomenon. This is the practice of stripping off the covers of unsold hardcovers and re-binding them as paperbacks. According to the publisher this is an unusually bad outcome for this particular set of books, and the overall occurrence of this practice is not nearly as frequent. Nonetheless, the fact that it occurs at all constitutes strong evidence of the publisher's aversion towards lowering hardcover prices. Clearly, it would have cost less to mark down the hardcover rather than to go through the strip-and-bind process. That, however, would have ruined the publisher's reputation of *not* marking down hardcovers, and it would seriously jeopardize the sales of new books in the future.

Table 2 reports estimates of simple cost functions. The number of pages and weight per page (a measure of the quality of the paper used) are important determinants of both fixed and marginal costs. The amount of artwork ("Figures" variable) affects fixed costs but not marginal

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[11]For example, the Book Industry Study Group (BISG) was, until recently, publishing such data.

[12]To get total marginal costs one should add some smaller cost components such as shipping and handling. These are not available for every title but from the few figures that are available I estimate the average shipping cost to be of the order of 10 cents per copy. Marginal costs should be even lower than that, so the error due to their omission should be small.

costs, as expected. I include the number of books printed in the regressions as a test of whether marginal costs are truly marginal. The significantly negative coefficient suggests that some fixed costs went into the marginal cost calculation, causing it to be slightly overstated. This is mostly due to the fixed part of the binding cost, which is not reported in the data.

Hardcover versions of new editions cost almost 60 cents more to produce than those of brand new titles. This may be because new editions are less risky than new titles, so the publisher is not as pressured to keep costs low. The same reasoning can explain why fixed costs are not lower for new editions, even though much of the preparation for the book was done for the first edition. This, of course, is hardly profit-maximizing behavior. An alternative explanation might be that the publisher needs to make a new edition particularly appealing in order to convince owners of previous editions to purchase the new one. Another oddity is the significantly positive coefficient on the simultaneous dummy in the hardcover marginal cost regression. I attribute this to a misallocation of fixed costs (in particular the unobserved fixed cost of binding) between hardcover and paperback when introduction is simultaneous.

Testing for price discrimination. As mentioned in the introduction, a number of recent empirical papers compare price-cost differentials across different products as a test for the presence of price discrimination. Borenstein (1991) compares the markups for leaded and unleaded gasoline; Shepard (1991) looks at gas stations with both full-service and self-service pumps versus those that offer only one of the two options; Borenstein and Rose (1994) look at variation in fares paid by different passengers on the same flight; Giulietti and Waterson (1997) compare markups for several products across Italian supermarkets; and Verboven (1999) compares the prices of gasoline and diesel cars in Europe. All of these papers find evidence of price discrimination in their respective markets. In Borenstein (1991) and Giulietti and Waterson (1997) discrimination is possible because of the cost (mostly transportation cost) of switching to another retailer, hence we can think of these as examples of third degree price discrimination based on geographical location. In Shepard (1991) and Verboven (1999) the discrimination is of the second degree: consumers have two options to choose from and they self-select into their preferred one. In Borenstein and Rose (1994) both second and third degree discrimination are observed; airlines use requirements like a Saturday night stay to separate business from leisure travelers, but also make special offers to specific groups, such as students.[13]

I will follow this literature in using Stigler's (1987) definition as a test of price discrimination. Formally, the definition states that price discrimination can be said to exist in a differentiated product context if

$$\frac{P_1}{MC_1} \neq \frac{P_2}{MC_2}. \tag{1}$$

Testing this definition requires price and marginal cost information for both hardcover and paperback. This information is available for 66 titles. In Table 3 I provide summary statistics for these; h and p subscripts denote hardcovers and paperbacks respectively. On average hardcovers have much higher price-to-cost ratios (and differentials) than paperbacks and, as the reported p-values show, this difference is very strongly statistically significant. This constitutes strong

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[13]For a dissenting view on the identification of price discrimination see Lott and Roberts (1991). The authors argue that many of the most commonly cited examples of price discrimination can be explained by alternative, cost-based arguments; they provide such explanations for several markets, including the gas and airline industries.

support for the price discrimination hypothesis. For an even clearer picture I provide the ratios for each title in a scatter plot (Figure 2). For 61 out of 66 titles the hardcover ratio is greater than the paperback ratio by at least 13%. For another title the ratio is about the same; this is a book that was casebound hence the high quality version of it was unusually costly to produce. For the remaining four titles the price-to-cost ratio is larger for the paperback than for the hardcover, and in all cases this is due to a very low hardcover price.[14] Apparently the publisher felt that he could not or should not discriminate in these cases. This does not diminish our result. In the large majority of cases, there is clear evidence of discrimination as it is usually defined in the literature.

5 Price, sales, and the choice of timing

Table 4 reports price and sales data broken down according to the firm's choice of publication timing. On average, paperbacks are priced at less than half the hardcover price, and they sell more copies.[15] The latter is particularly true for SIM titles, which is the case for about one in every eight titles. Publishers seem to follow this strategy for two main kinds of publications: books that deal with current events, and books that are reprints or new editions of previously available titles.

Prices. There is little evidence that the timing of publication has any effect on prices. One might have expected the spread between hardcover and paperback price to be smaller when they are simultaneously rather than sequentially introduced, reflecting the smaller degree of differentiation between the two products. The data provide little support for this hypothesis; on the contrary, the spread is larger in the SIM case, though the difference is not statistically significant (test 1 in Table 4; separate tests also fail to reject the null that the prices of each format are equal across SIM/SEQ). This suggests that product selection plays an important role. If the decision between SIM and SEQ introduction was arbitrary, and given that prices are roughly equal in the two cases, then SIM titles should have higher overall sales (hardcover plus paperback) than SEQ ones. This is because any consumer who makes a purchase in the SEQ case would also make one in the SIM case, while the converse is not true. Again, however, the data point in the opposite direction. SIM titles have slightly lower overall sales. Although the difference is not significantly different from zero (test 3), this suggests that there is something *systematically* different between SIM and SEQ titles.

Hardcovers that never make it to paperback have a slightly higher price tag than the ones published in both formats and the difference is statistically significant at the 1% level (test 2 in Table 4). This may be an indication of overpricing of these hardcovers that leads to low sales and hence no paperback.

Table 5 presents the results of some descriptive price regressions. They confirm the intuition that longer (in terms of number of pages) and higher quality (in terms of weight and weight per page) books should be more expensive. Note that the number of pages is a better determinant of paperback price, while the weight variables do better with hardcover price. This is consistent with a policy that prices paperbacks fairly strictly according to the number of pages, while

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[14]Note that very similar conclusions can be drawn if we look at price-to-cost differentials instead of ratios.

[15]The price I observe is the list price, which is determined by the publisher and indicated on the actual book. Unlike trade books (like New York Times bestsellers), scholarly titles are typically not discounted.

allowing more freedom to price hardcovers according to overall quality and other factors.[16] This can also explain why the regressions explain more of the variation in paperback price (77%) than in hardcover price (68%).

The results also confirm earlier evidence that NOPBK titles are more expensive than SEQ ones, and that the timing of paperback publication does not affect hardcover price ('simultaneous' variable insignificant). There is some evidence that the paperback's time of introduction has an effect on its price, though the magnitude of that effect is fairly small. This is explored further in the third column, where I include only SEQ titles. The length of the wait has no effect on price here. I conclude that if there's any effect of timing on pricing, that is small and limited to the simultaneous/sequential dichotomy.

In this last regression I have also included hardcover sales, since they are observed before sequential paperbacks are published. The estimated coefficient is strongly significant and, surprisingly, negative. This is a difficult result to explain; intuition suggests that a paperback should command a higher price when the hardcover that preceded it is successful. One possible explanation (at least for an academic press) is that once some positive profit is assured (through high hardcover sales), the publisher is willing to sacrifice some profits in order to increase unit sales. The insignificance of the 'previous publications' and new editions variables suggests that previous success does not translate to higher prices. This may be an indication of lack of market power, or perhaps of the absence of 'brand name' authors in the scholarly market.

Two additional variables, the price of paper (pulp) and the average price charged by all university presses in that year have little effect on price. The price of paper is an important determinant of costs, but it is hard to capture any effect because of the lag between ordering, production, and marketing. The price charged by university presses is an estimate constructed by BISG, which cautions about year-to-year comparisons because of changes in the methods used. Hence, the absence of any impact of this variable on price should be interpreted with some scepticism.

The overall conclusion from these regressions is that price depends on cost characteristics like paper and binding quality and size of a book.[17] It does not, on the other hand, depend on "pure" demand shifters such as an author's past record or the success of an earlier edition or version of the book. I will take up this issue again in section 6.

Sales. The timing of publication has a strong effect on hardcover sales. When hardcover and paperback are introduced simultaneously, hardcover sales are only about 12% of total, as opposed to 38% of total when the paperback is delayed. This is strong evidence that at least some consumers place a high value on having a book immediately upon publication, and are prepared to pay a significant surcharge for that privilege.

NOPBK titles sell markedly fewer total copies than their dual-format counterparts (test 4). The latter do not do as well as books whose paperback rights are sold (though that difference is not significant (test 5) due to the small munber of books of the latter type). A scatter plot of hardcover and paperback sales (Figure 4) confirms this finding. Even though hardcover-only titles ("sitting" on the horizontal axis, since they have no paperback sales) make up half the

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[16]Conversations with YUP officials corroborate this interpretation of pricing policy.

[17]A regression of price characteristics and fixed costs (for the part of the sample that this is available) indicates that the latter is also a strong determinant of price. An extra $1,000 in fixed costs adds about $1.65 to the price of a hardcover and $.75 to the price of a paperback.

sample, very few have sales greater than 5,000 copies. Most successful hardcovers are published in paperback also, either by YUP or by some other publisher. Note that some titles with "normal" hardcover sales also end up being sold to other publishers, so this is not limited to blockbuster books. The very distinct sales patterns of simultaneous and sequential titles are also clear in these plots. The figure also shows that the distribution of sales is highly skewed. This underscores the unpredictability of the market for books. Much like firms engaging in R&D, publishers undertake many projects (publish many books). Many of these will turn out to be unprofitable, but a handful of big hits are enough to ensure overall profitability.

Figure 3 plots prices against sales for hardcovers and paperbacks respectively. Panels A and B include all available data points, while panels C and D 'zoom in' by plotting only hardcovers and paperbacks that sold fewer than five and ten thousand copies respectively (95.7% and 92.3% of all titles). Either way, there is very little evidence of a negative relationship and it is hard to argue for a negatively sloped demand curve.

The results from descriptive sales regressions are reported in Table 6. Dalaying the paperback increases hardcover sales by 1,167 copies on average. A previous publishing record has a positive and significant effect on sales, albeit a quantitatively small one. New editions, on the other hand, do not seem to be any more successful than titles appearing for the first time. This suggests that the advantage of new editions is not in that they are big sellers but in that they are less likely to be flops. This intepretation is corroborated by the fact that no new edition in our data sold fewer than one thousand (total) copies, while many new titles did.

The regressions also show price having no significant effect on sales. The length of a book (measured in number of pages) has an overall negative effect on sales, most of the impact being on the paperback. Physical quality (in terms of weight per page) gives a boost to hardcover sales. Overall, these regressions show although it is hard to predict a book's success from observable physical characteristics, the timing of introduction is a very important determinant of the relative sales of hardcovers and paperbacks.

Number and size of print runs. The number of books to print in each print run is an important choice variable for the book publisher. An over-optimistic print run means that the publisher will end up with stacks of unsold books in the warehouse, while underprinting can lead to lost sales as consumers unable to find the book when they look for it might turn to alternative options. Moreover, the size of the print run can serve as a signal of the publisher's sales forecast, and publishers often use a large print run as an advertising tool.[18]

For the same titles for which cost data are available, I also have information on the size and timing of every print run. This is laid out in a series of graphs in Figure 5. A number of interesting patterns jump out. First, the size of hardcover runs varies less than that of paperback runs, especially when the two are introduced simultaneously. Hardcover runs are much smaller under simultaneous rather than sequential introduction, while paperback runs are larger. This indicates that our publisher is aware of the effect of timing on sales and acts accordingly. The two graphs on the bottom row show that titles that do not make it to paperback also have relatively small hardcover runs. Recalling that hardcover-only titles are typically low-sellers, this suggests that the publisher has reasonably good sales forecasts.

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[18]Publishers with big expectations for a new book might find themselves advertising a very large print run, then realizing – when the advance orders from bookstores start coming in – that the book will not do as well as they thought, and end up printing much fewer books than they had originally advertised (and if orders continue to be low they may actually bind even fewer than that).

Another indication of the accuracy of the publisher's forecasts is the number of times each title goes to the printer. In choosing the size of the initial print run the publisher faces a tradeoff. If he prints too many copies he will be incurring unnecesssary production costs plus the cost of warehousing unsold books. If he prints too few copies he has to either make an additional printing, which involves a fixed cost, or forgo the sale. This analysis suggests that the publisher would rather err on the side of overprinting. The cost of printing one copy too many is the marginal cost of production plus the cost of warehousing. The cost of printing one too few copies, on the other hand, is the net price minus the marginal cost and is substantially higher.[19]

The data in Table 7 confirm that the publisher usually overprints. Out of 100 titles, 42 had only one print run. These are the 28 titles that never made it to paperback, plus 14 of the simultaneously introduced titles. Another 32 titles had two print runs (one for the hardcover, one for the paperback), meaning that a total of 74 out of 110 titles never had more than one hardcover or paperback print run. Of the remaining 36 titles, 27 had between 3 and 5 runs, and 9 had more, the maximum being 15. Note that a large number of print runs does not necessarily mean that the publisher keeps underpredicting demand. If demand is spread over time then it may be optimal to pay the fixed cost of the additional print run rather than print a lot of copies in advance and pay the warehousing cost.

Timing choices. Apart from price, the firm's other important choice variable is the timing of paperback introduction. As the evidence above shows, whether introduction is simultaneous or sequential is an important determinant of sales and thus an important decision variable for the firm. But that does not say anything about the importance of the *length* of the wait as a choice variable. Figure 6 plots the distribution of waiting times. The first histogram measures the wait in months and includes only sequentially introduced titles. In the second one the year is divided into fall and spring seasons, which is the relevant time frame for time-of-introduction decisions. The lag is measured as the number of seasons between the hardcover and the paperback. About three-quarters of non-simultaneous paperbacks are introduced between one and two and a half years after the hardcover, and more than 90% are introduced by the fourth year. The mean lag when introduction is sequential is almost two and a half years; the median time is less than two years.

The extent to which this decision depends on observable characteristics is explored in a series of regressions reported in Table 8. The first column presents the results of a probit equation on simultaneous introduction. The results show that repeat authors' books are more likely to be published simultaneously, as are books that are new editions. The latter result is reasonable since the book is already on the market, albeit in a different form. A strongly significant result is that high-quality (in terms of weight per page) books are less likely to be introduced simultaneously. Interestingly, price does not affect the choice.[20] Finally, some types of books (ethnic studies, political science, science) are more likely to appear simultaneously

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[19]For example, consider a hardcover in our sample for which cost is available. The average price is $39.16 and marginal cost is $2.95. The cost of warehousing should be no more than a few cents, since the firm also has the option of destroying the book. Thus the marginal cost of overprinting can not be much more than $3. The net price is the portion of the price paid by the buyer that is received by the publisher and is usually at least 50%. Given that the average price of a hardcover in our sample is about $39 and the average marginal cost is close to $3, the marginal profit of the publisher from another sale (which is the marginal cost of underprinting) is roughly $17.

[20]Since price is an endogenous variable, I also ran a least squares regression on the same variables using weight to instrument for price. The results did not change.

than others.

The second column of Table 8 regresses the length of the lag (measured in seasons) on characteristics using SEQ titles only. The results are remarkable in their insignificance. Only hardcover sales are marginally significant. The negative coefficient implies that strong hardcover sales tend to speed up introduction of the paperback. Perhaps the opposite result would have been easier to explain: in the face of high hardcover demand the publisher delays the paperback in order to sell more hardcovers. The obtained result may be evidence of separation of the two markets. Strong hardcover sales prompt the publisher to introduce the paperback without fear of cannibalizing hardcover sales. For hardcovers selling slowly, on the other hand, the publisher prefers to wait and see if demand will build up to justify publishing the paperback.

The third column of Table 8 examines that factors that determine whether a NONSIM title will make it to paperback or not. As expected, hardcover sales are a strong indicator that a paperback will follow. Interestingly, so are previous publications by the author; perhaps the publisher has more confidence in an established author. Large books (in terms of number of pages) are also more likely to make it in paperback, while art books are less likely. This is because they often are glossy productions with lots of pictures that would not do well in an paperback edition.

6 Explaining price rigidities

Book prices exhibit two types of price rigidity: intertemporal rigidity, because the price of each title does not change over its lifetime; and rigidity across books, because books facing different demand are priced essentially the same. In this section I propose some explanations for this observed pricing behavior.

6.1 Rigidity across titles: the kinked demand curve

It was shown above that book prices depend on cost-related demand shifters (pages, quality) but not on 'pure' demand shifters (new editions, author's previous publications). Moreover, prices appear to be independent of the pattern of market introduction even though the latter has a very strong impact on relative sales. Could this be rational behavior on the part of publishers? Is there a theoretical model that can explain this behavior?

A simple answer is that firms just do not know what demand is, so they charge the same price for all products. This is refuted by the evidence that certain variables affect sales, and the firm should know that. Moreover, we know that the size of the print run varies across books, an indication that the firm has some information on the demand for each particular product.

In this section I argue that a kinked demand curve is an appropriate tool to use in order to explain this behavior.[21] The kinked demand curve is a somewhat controversial theory. Its first appearance in the economic literature dates back to Hall and Hitch (1939) and Sweezy (1939), and it was based on the intuition that in an oligopoly firms are quicker in matching

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[21]Kandel (1990) reports that "the persistent belief in the industry is that the demand for books can be represented by a step function." The author subscribes to a less strict version of this view that says that "the demand for books is inelastic over a large price range below the initial list price."

price reductions rather than price increases. The disadvantage of the theory was that it had no explanation why this was so. The theory was further discredited by Stigler's (1947) empirical study which found no evidence of asymmetries in firm's reactions to price changes.

It took several decades before formal models generating kinked demand curves appeared in the literature. One of the first ones was Salop's (1979) well-known 'circular city' model of product differentiation. The kink in Salop's model occurs when, as price goes down, the firm moves from a situation where it is a monopoly to a new regime where it faces competition from neighboring firms. Stiglitz (1979) relies on imperfect information to generate a kinked demand curve in a model where consumers search for the lowest price. A small price decrease would not attract many customers because of the cost of searching, thus there is no incentive for firms to lower prices. In Schmalensee's (1982) the kinked demand curve is generated by the presence of pioneering brands. Maskin and Tirole (1988) show that equilibria that lead to a kinked demand curve exist in a dynamic oligopoly model where firms alternate choosing prices. Firms are reluctant to lower prices because this may trigger a price war.

Here I will motivate the kinked demand curve somewhat differently. In Clerides (1999) I estimate a structural econometric model of the book market using the data described in this paper. The results I obtain suggest that demand for books can be described as coming from two distinct groups of consumers who have a natural interpretation as being libraries and individuals. These two consumer types have very different preferences for price, time, and book quality. With this in mind, one can think of a market demand curve that looks like that of Figure 7.[22] This demand is different from the standard textbook one in that it has two kinks. These are caused by the presence of the two types of consumers. For high prices (above P^*) the demand curve is fairly elastic; that is the range of prices at which high types transact. At P^*, all the high types have made a purchase, but the price is still too high for low types to enter the market. Therefore lowering the price does not bring in additional sales until the price hits $\underline{P}$, at which point low types start becoming active in the market.[23]

It is straightforward to derive the marginal revenue curve (thinner line in Figure 7) and find the optimal price for the firm. If marginal cost is constant (which it is in our case) and falls anywhere in the range $[\underline{c}, \overline{c}]$ then the optimal price will be P^*. Of course this does not imply that all books should have the same price, since the demand curve may vary from book to book.

The main question to be answered is why price does not depend on pure demand shifters such as the timing of market introduction. Consider a hardcover which, if introduced simultaneously with a paperback, would have a demand curve like the one in Figure 7, and suppose that the firm considers the option of delaying the paperback. This would clearly increase demand for the hardcover, thereby shifting the demand curve to the right (Figure 8). But this will *not* affect the optimal price as long as marginal cost is less than $\overline{\overline{c}}$. Instead, the increase in demand will manifest itself completely in terms of higher sales. Even if marginal cost lies in the range $[\overline{\overline{c}}, \overline{c}]$, in which case the optimal price will be higher than P^*, the difference will be small if the

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[22]Essentially I am assuming monopolistic competition. The publisher is small relative to the size of the market so it is safe to assume that he does not engage in strategic behavior.

[23]The kinked demand curve may also be motivated with a signaling story. The firm does not want to offer some books at lower prices than others because consumers may interpret this as a signal that the lower-priced books are of lower quality. This interpretation, however, would run into problems explaining why firms never raise prices of books that experience a surge in surge in demand due to some exogenous factor (like a successful adaptation into a movie). Hence I find the two-type story more convincing, more so because it is also useful in explaining why it pays the firm to price discriminate and why discrimination takes this form. See Clerides (1999) for details.

demand curve is flat (as in the picture).

Thus the crucial factor is whether an increase in demand shifts the demand curve upwards or to the right. Note the distinction: an upward shift means that consumers are willing to pay more for a given good, while a shift to the right means that more consumers are willing to purchase the good at a given price. Viewed this way, observed behavior seems reasonable. Cost-related demand shifters such as number of pages and quality of the book are more likely to shift demand upwards: consumers are willing to pay more for a bigger book. A popular author, on the other hand, is more likely to shift demand to the right: more consumers are willing to pay to buy his book, but the ones the would have bought it anyway are not necessarily willing to pay more. Thus price depends on cost-related demand shifters but not on pure demand shocks.

A limitation of the kinked demand curve story is that it considers the hardcover or paperback market in isolation, which is clearly not a rigorous way of analysing this market. A more complete treatment of the nature of demand would have to take into account the interdependence of the demand for the two products. Nonetheless, the kinked demand curve story is appealing since it explains much of the observed behavior in this industry and is therefore a useful descriptive tool.

6.2 Intertemporal rigidity: the Coase conjecture

Publishers do not raise prices of successful books, and they do not lower prices on underperforming ones. The latter practice is easy to explain. If a publisher had a reputation of lowering prices soon after a book's introduction into the market, then consumers would not purchase the product right away but would wait instead until the price is lowered. Thus the publisher would fall victim to the Coase conjecture, which was first proposed in Coase (1972) and states that the seller of an infinitely durable good can not credibly price his product at anything above marginal cost. The seller's incentive to lower prices in subsequent periods cannibalizes his sales during the introductory period. Publishers get around that problem by building a reputation that they never lower prices. The fact that they prefer to incur the added cost of turning hardcovers into paperbacks rather than discounting the hardcover shows how important it is for them to maintain this reputation. The practice of 'remaindering' described earlier does not detract from this explanation because it usually occurs quite a long time after the book's initial introduction.[24]

The kinked demand curve story as it is analyzed in Figure 8 can also explain upward price rigidity. The kink in the demand curve is more difficult to justify in this case, however, especially since in countries like Germany prices *are* raised when a book is successful. Bittlingmayer (1992) also points out this distinction but does not provide any insight as to the reasons why. Even though it is beyond the scope of this paper, this would make a very interesting case study of how the evolution of the same market in two distinct countries can result in different equilibrium behavior.

Kandel (1990) provides an interesting explanation based on the fact that all responsibility

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[24]Kandel (1990) also proposes the Coase conjecture as an explanation for downward price rigidity. In addition he suggests that signaling may play a role as a decrease in price may signal that the book is of low quality. This does not add much to the explanation, however. In the worst case scenario lowering the price would simply fail to attract new consumers. But those consumers would probably not have bought the book at the regular price, so the publisher is no worse off by lowering the price.

for unsold inventory lies with publishers. In other words, booksellers have the right to return any unsold books to the publisher for a full refund.[25] Kandel points out that this feature gives booksellers an incentive to overorder when they believe that a book's price may rise in the future. Thus publishers commit not to raise prices in order to avoid this inefficient outcome.

7 Summary and conclusions

In this paper I analyze the pricing and market introduction practices of a book publishing firm. Using appropriate price and cost data I establish that the pricing of hardcovers and paperbacks constitutes price discrimination as this is usually defined in the economic literature. The data suggest that prices are functions of observed physical product characteristics, but not of the timing of introduction of the two products in the market or of other pure demand shifters such as an author's popularity. Sales patterns, on the other hand, are strongly affected by these pure demand shifters. I suggest a way to explain this behavior in terms of a model of monopolistic competition with the firm facing a kinked demand curve. I motivate the kinked demand curve as being generated from a bimodal distribution of consumer preferences where the two modes can be thought to be libraries and individuals. I also explain downward price rigidity over time as a result of the firm's need to build a reputation that of not lowering prices, so as to avoid the fate prescribed by the Coase conjecture.

One might ask whether this explanation can be extended to the industry level and to other types of books. Even though it is hard to imagine libraries as being an important group in the trade book category, it may still be possible to talk about hardcover buyers and paperback buyers. Some people like to buy hardcovers because they are sturdier and they look good on the bookshelf. I would venture to guess that most people do not alternate between buying hardcovers and paperbacks. Consumers who think the additional quality is worth the extra money probably think that for all books. These people are hardcover buyers. Other consumers do not value quality as highly and they are paperback buyers. Hence the two-type story may still make sense, albeit in a slightly modified form.

The price rigidity that we observe here is not unique to books. Movies and music CDs are examples of other families of products that are all priced the same (after conditioning on cost-related characteristics) regardless of the level of demand. The book publishing, movie production, and music publishing industries share one key feature. Every firm that is active in one of these industries produces a large number of new and largely unrelated products every year. Demand for these products is very idiosyncratic and therefore hard to predict. Even Schwarzenegger movies occasionally flop. This paper makes a contribution in our understanding of the nature of demand in these industries. A lot of work remains to be done, however, before we can say we fully understand the complex problem faced by firms operating under such conditions of high uncertainty.

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[25]See Kandel (1996) for a formal analysis of this practice.

References

BITTLINGMAYER, G. (1992): "The Elasticity of Demand for Books, Resale Price Maintenance and the Lerner Index," *Journal of Institutional and Theoretical Economics*, 148(4), 588–606.

BOOK INDUSTRY STUDY GROUP, INC. (1996): *Book Industry Trends*. Book Industry Study Group, Inc., New York.

BORENSTEIN, S. (1991): "Selling Costs and Switching Costs: Explaining Retail Gasoline Margins," *Rand Journal of Economics*, 22(3).

BORENSTEIN, S., AND N. L. ROSE (1994): "Competition and Price Dispersion in the U.S. Airline Industry," *Journal of Political Economy*, 102(4), 653–683.

BULOW, J. (1982): "Durable Goods Monopolists," *Journal of Political Economy*, 90(2), 314–332.

CLERIDES, S. K. (1999): "Product Selection as Price Discrimination in the Market for Books," Discussion Paper 99-08, Department of Economics, University of Cyprus.

COASE, R. H. (1972): "Durability and Monopoly," *Journal of Law and Economics*, 15, 143–149.

GIULIETTI, M., AND M. WATERSON (1997): "Multiproduct Firms' Pricing Behaviour in the Italian Grocery Trade," *Review of Industrial Organization*, 12(5/6), 817–832.

GRECO, A. N. (1997): *The Book Publishing Industry*. Allyn and Bacon, Needham Heights, MA 02194.

HALL, M. (1986): *Harvard University Press: A History*. Harvard University Press, Cambridge, MA.

HALL, R., AND C. HITCH (1939): "Price Theory and Business Behavior," *Oxford Economic Papers*, 2, 12–45.

KANDEL, E. (1990): "Intertemporal Pricing in the Book Publishing Industry," mimeo., University of Chicago.

———— (1996): "The Right to Return," *Journal of Law and Economics*, XXXIX(1), 329–356.

LOTT, J. R., AND R. D. ROBERTS (1991): "A Guide to the Pitfalls of Identifying Price Discrimination," *Economic Inquiry*, XXIX, 14–23.

MASKIN, E., AND J. TIROLE (1988): "A Theory of Dynamic Oligopoly, II: Price Competition, Kinked Demand Curves, and Edgeworth Cycles," *Econometrica*, 56(3), 571–599.

PIGOU, A. C. (1920): *The Economics of Welfare*. Macmillan Publishing, London.

R.R. BOWKER (1997a): *Books in Print*. R.R. Bowker, New Jersey.

———— (1997b): *Books Out-of-Print Internet Edition*. R.R. Bowker, New Jersey, http://www.bowker.com/bop/.

SALOP, S. C. (1979): "Monopolistic Competition with Outside Goods," *Bell Journal of Economics*, 10, 141–156.

SCHMALENSEE, R. (1982): "Product Differentiation Advantages of Pioneering Brands," *American Economic Review*, 72(3), 349–365.

SHEPARD, A. (1991): "Price Discrimination and Retail Configuration," *Journal of Political Economy*, 99(1), 30–53.

SIEGFRIED, J. J., AND C. LATTA (1998): "Competition in the Retail College Textbook Market," *Economics of Education Review*, 17(1), 105–115.

STIGLER, G. J. (1947): "The Kinky Oligopoly Demand Curve and Rigid Prices," *Journal of Political Economy*, 55, 432–449.

——— (1987): *The Theory of Price*. Macmillan, New York.

STIGLITZ, J. E. (1979): "Equilibrium in Product Markets with Imperfect Information," *American Economic Review*, 69(2), 339–345.

STOKEY, N. L. (1979): "Intertemporal Price Discrimination," *Quarterly Journal of Economics*, 94, 355–371.

SWEEZY, P. M. (1939): "Demand under Conditions of Oligopoly," *Journal of Political Economy*, 47(4), 568–573.

VERBOVEN, F. (1999): "The Market for Gasoline and Diesel Cars in Europe," *CEPR Discussion Paper No. 2069*.

Figure 1: Frequency of firm choices

1108 titles

HCR & PBK / HCR

136 (12.3%)   972 (87.7%)

NO PBK   PUB. PBK   SELL PBK

538 (48.6%)   413 (37.3%)   21 (1.90%)
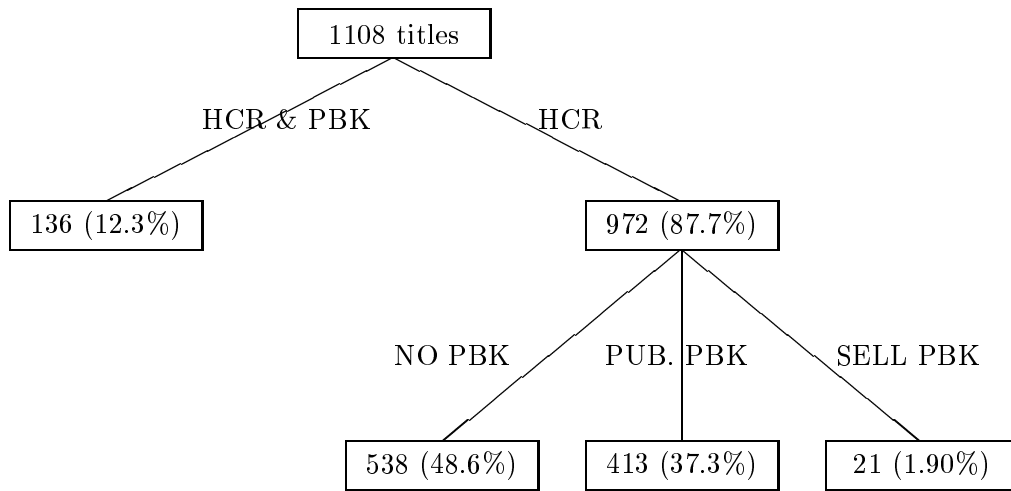
Figure 2: Price-to-cost ratios of 66 titles
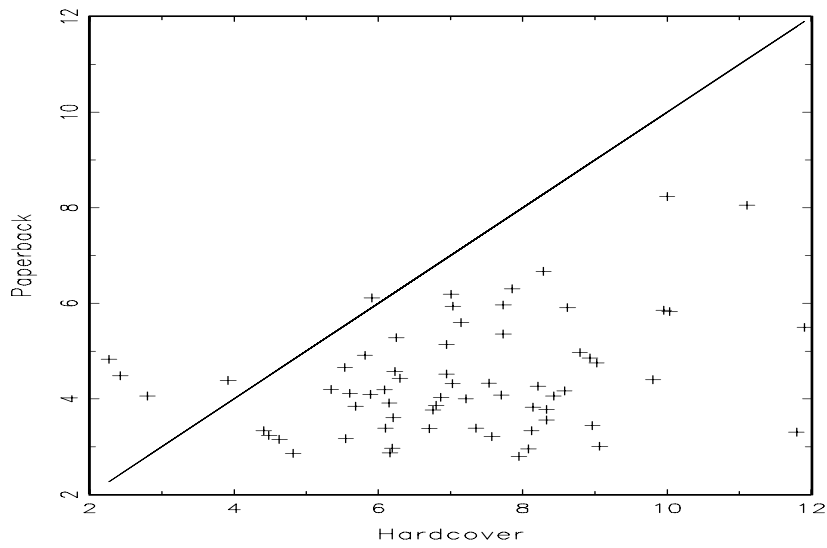
Figure 3: Prices and sales for hardcovers and paperbacks

19

Figure 4: Hardcover and paperback sales

A. Hardcover and paperback sales, all titles (N=1108)

B. As above, for hardcover sales < 10,000 and paperback sales < 30,000

20

Figure 5: Distribution of initial run size
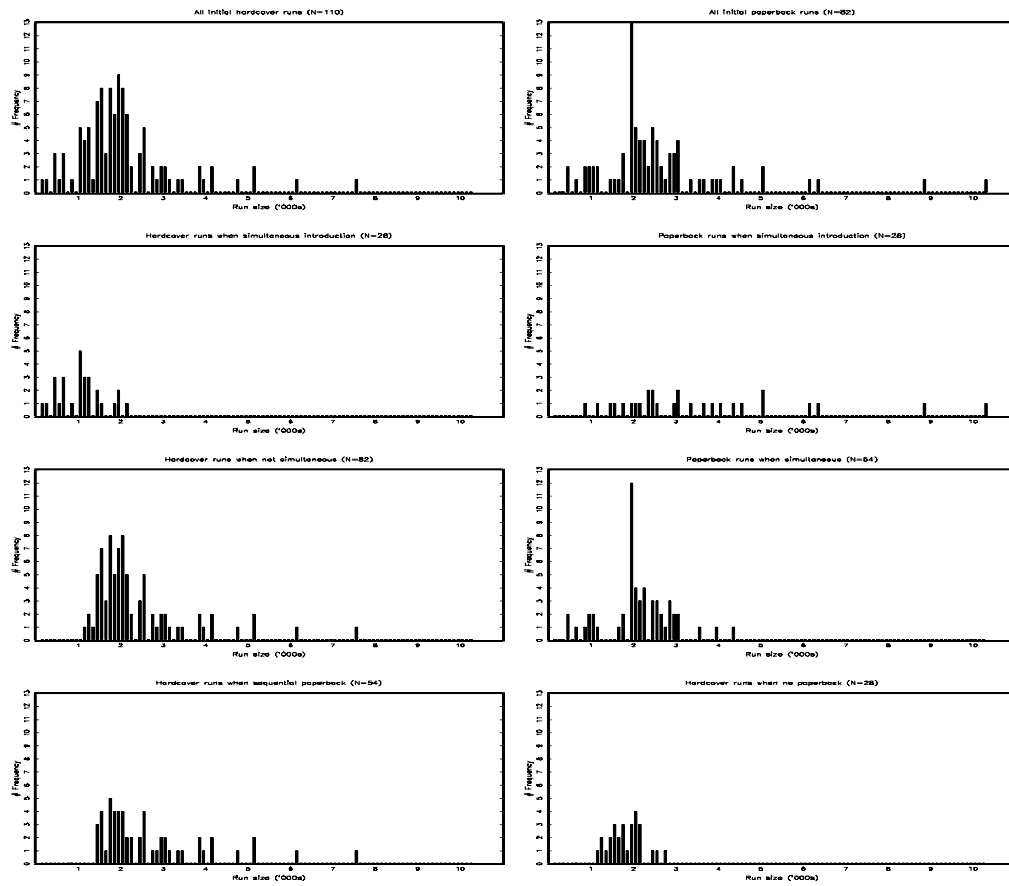
Figure 6: Distribution of waiting times for paperback

Distribution of waiting times for paperback

A. In months, excluding simultaneous (N=413)

B. In seasons (1 season = 6 months, N=549)
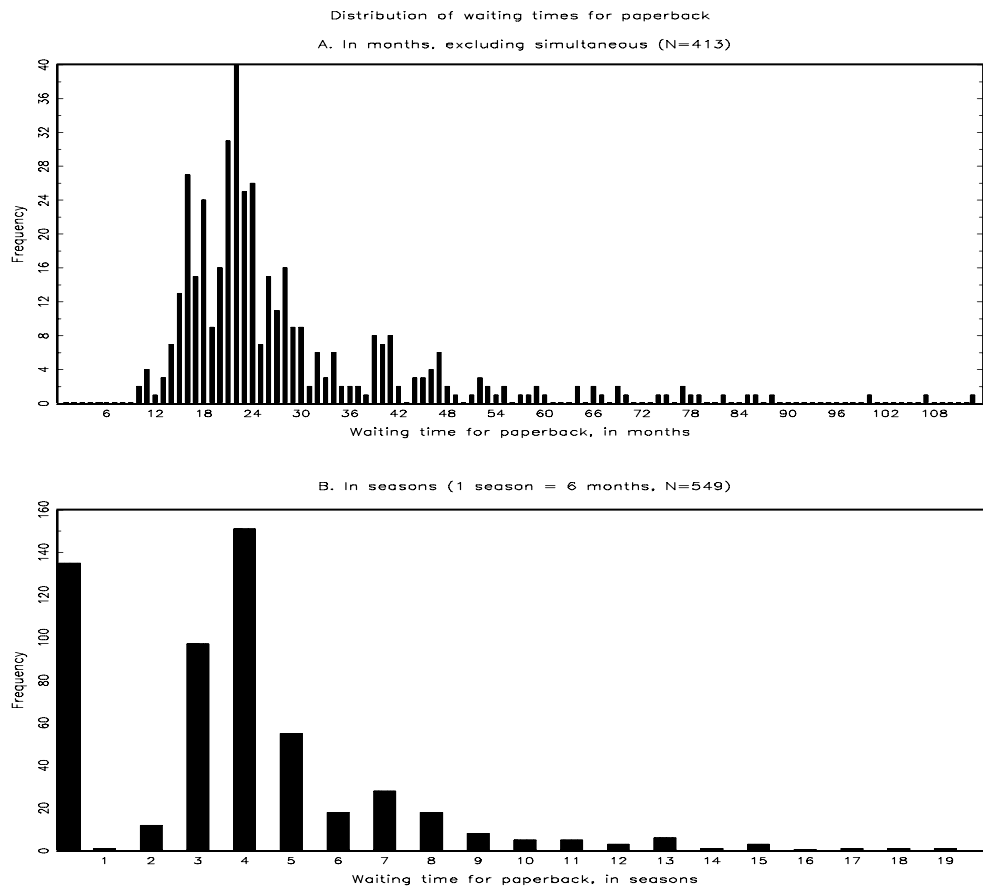
Figure 7: A kinked demand curve
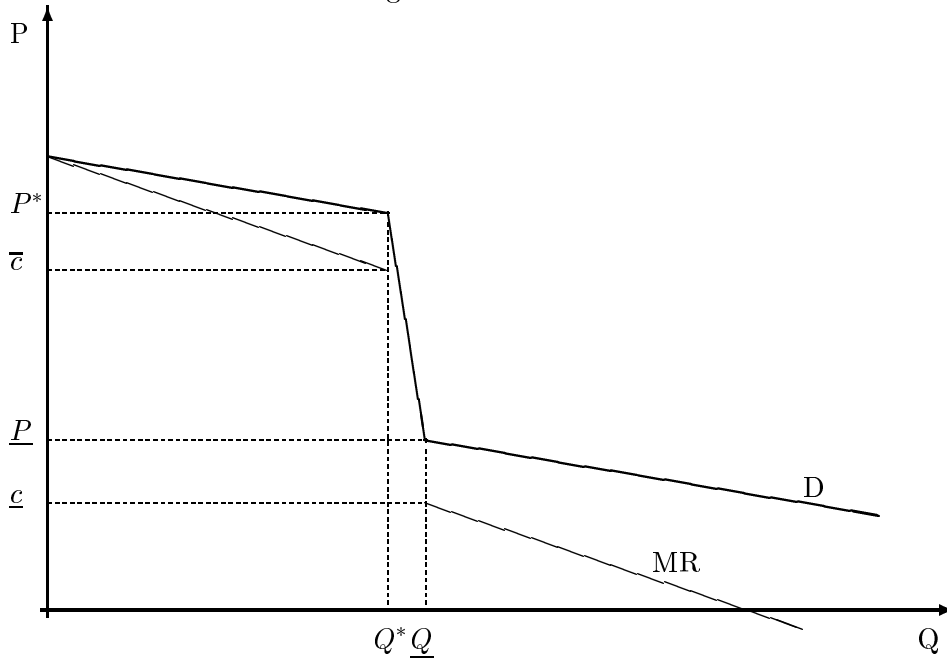
Figure 8: Result of a horizontal shift in the demand curve
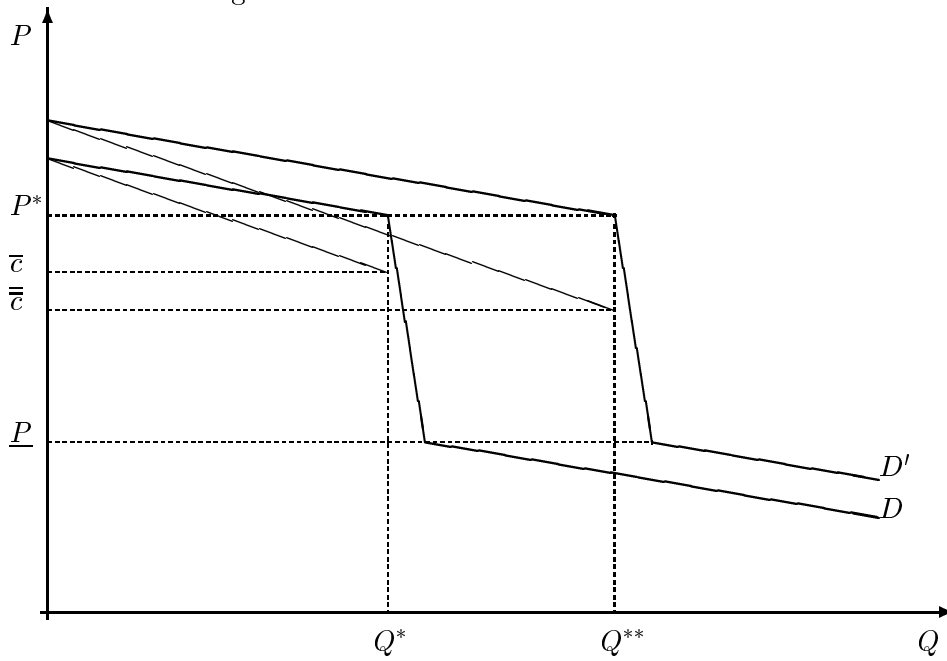
Table 1: Summary of cost data

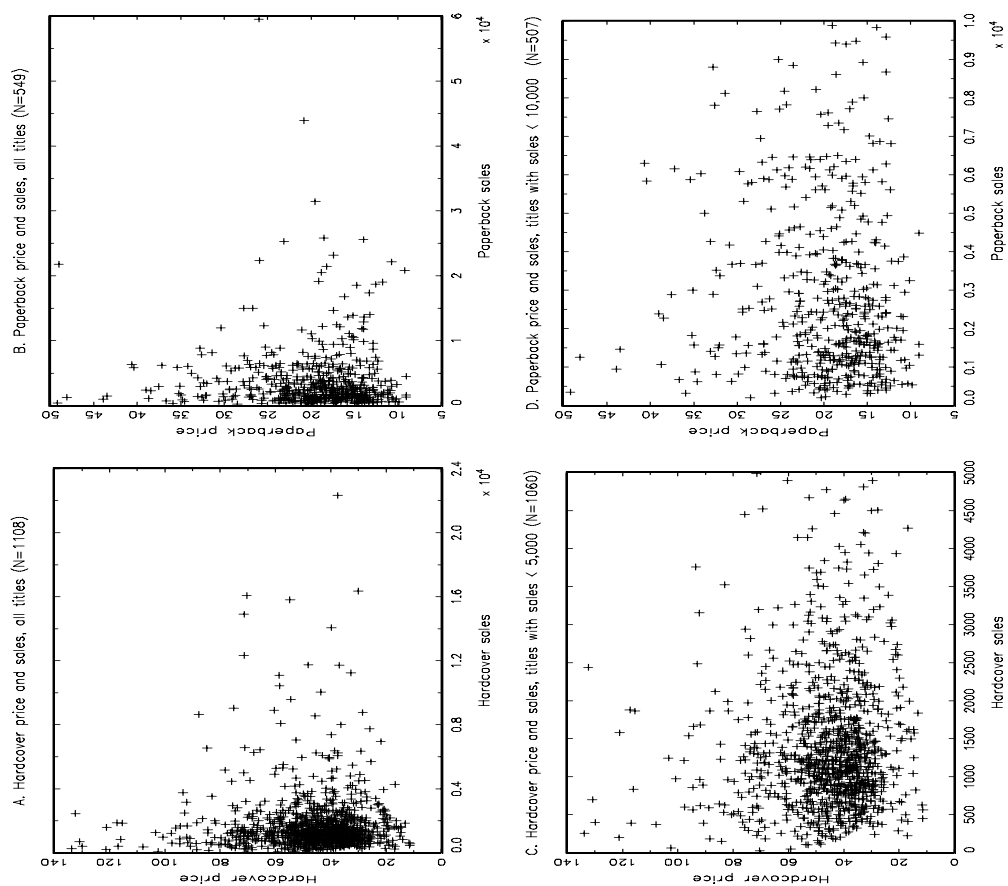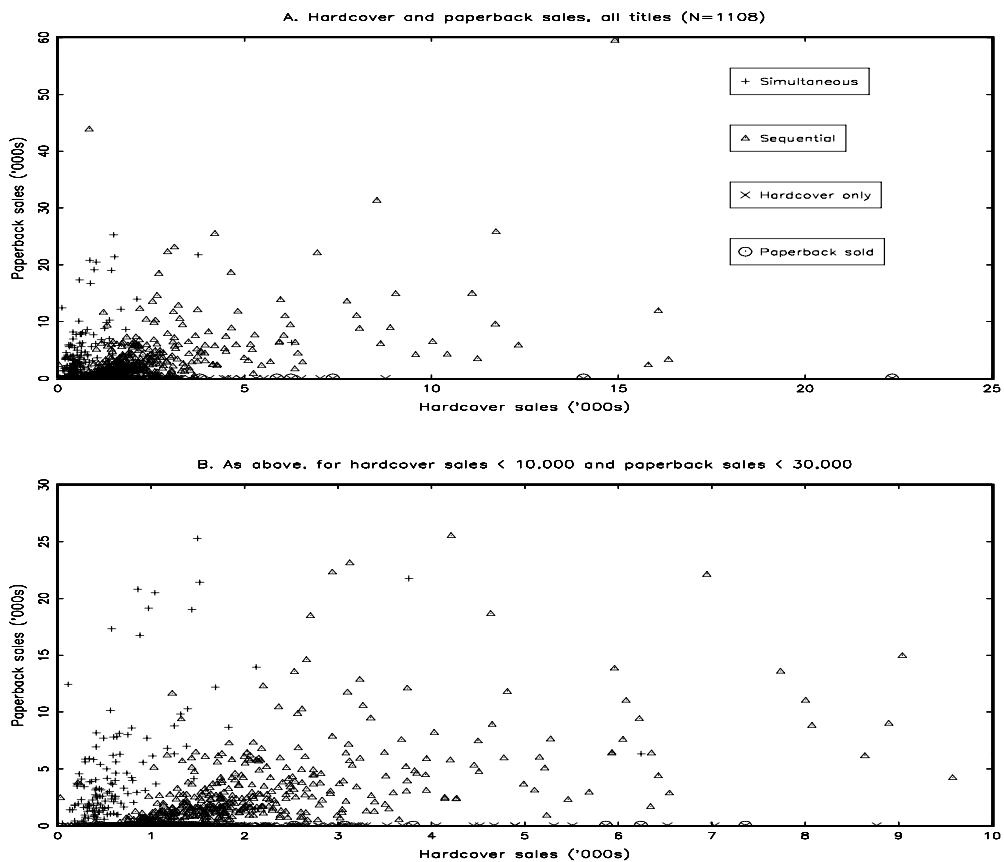| Variable	N	Mean	Std Dev.	Minimum	Maximum
Fixed Costs					
First printing	102	5,182	2,030	1,394	12,509
Subsequent printings	64	469	215	150	1,360
Marginal costs					
Hardcover	105	2.95	0.73	1.60	5.54
Paperback	75	1.74	0.47	0.75	3.01
Total Cost					
Total cost	107	19,086	10,128	5,839	55,296
Prices					
Hardcover	109	39.16	12.30	14.76	83.40
Paperback	77	17.04	4.05	10.85	29.08
Other statistics					
First printing	110	2,990	1,907	1,200	12,000
Total ordered	110	6,202	6,155	1,200	45,000
Print runs	110	2.682	2.369	1	15
Bindings	110	3.436	2.758	1	16
Number of titles					110
Hardcover & paperback					80
Simultaneous					28
Strip-and-bind					19
New edition					5
Casebound					2

Table 2: Cost regressions

	Hardcover Marginal cost	Paperback Marginal cost	First printing fixed cost
Intercept	-3.083*	-2.261*	14.53*
	(1.034)	(0.720)	(3.03)
Pages ('00s)	0.4498*	0.310*	1.367*
	(.0549)	(0.037)	(0.161)
Weight/page	0.373*	0.524*	1.360*
	(0.123)	(0.131)	(0.360)
Year	0.0470*	0.028*	-0.190*
	(0.011)	(0.0079)	(0.032)
Number printed	-0.142*	-0.039*	0.023
	(0.029)	(0.017)	(0.086)
Figures	0.000509	-0.535e-2	0.035*
	(0.00406)	(0.478e-2)	(0.012)
Figures^2	-0.592e-5	0.954e-4*	-0.881e-4*
	(0.935e-5)	(0.454e-4)	(.274e-4)
New edition	0.588*	0.063	-0.086
	(0.218)	(0.128)	(0.641)
Simultaneous	0.651*	-0.087	0.602
	(0.139)	(0.089)	(0.407)
Casebound	0.184		-1.152
	(0.338)		(0.992)
Adj. R^2	0.652	0.730	0.626
Observations	96	64	96

Table 3: Price-to-cost statistics (66 titles)

Variable	Mean	S.d.	Min.	Max
Prices and marginal costs				
P_h	34.38	9.12	13.95	55.00
MC_h	2.51	.70	1.26	4.46
P_p	15.28	2.85	8.95	22.00
MC_p	1.85	.60	.85	3.31
Price-to-cost ratios				
P_h^{net}/MC_h	7.14	1.97	2.27	11.90
P_p^{net}/MC_p	4.42	1.18	2.80	8.24
p-value for equality of means test:				.0000
Price-to-cost differentials				
$P_h^{net} - MC_h$	14.68	4.36	4.49	25.19
$P_p^{net} - MC_p$	5.79	1.16	3.37	9.20
p-value for equality of means test:				.0000

Table 4: Data summary

	N	Price	(s.e.)	Sales	(s.e.)
All books					
Hardcovers	1108	45.96	(17.07)	1,708	(1,863)
Paperbacks	549	19.67	(6.34)	3,980	(5,225)
Simultaneously published titles					
Hardcovers	136	46.31	(18.79)	668	(667)
Paperbacks	136	20.11	(6.94)	4,958	(6,053)
Sequentially published titles					
Hardcovers	413	44.16	(16.58)	2,587	(2,275)
Paperbacks	413	19.52	(6.13)	3,658	(4,888)
Hardcovers when:					
Pbk by YUP	549	44.69	(17.16)	2,112	(2,165)
Pbk rights sold	21	42.11	(11.55)	3,809	(5,324)
No pbk	538	47.40	(17.05)	1,215	(855)
Equality of means tests					
Variable	Grouping				p-value
1. Price spread	SIM vs SEQ				.2426
2. Hardcover price	SEQ vs NOPBK				.0051
3. Total sales	SIM vs SEQ				.3254
4. Hardcover sales	SEQ vs NOPBK				.0000
5. Hardcover sales	SEQ vs PBK sold				.3074

Table 5: Price regressions

	Hardcover Price		Paperback price			
			All titles		Sequential	
Intercept	47.30	(35.20)	20.41	(19.11)	-9.523	(20.59)
Prev. pubs	-.028	(.078)	.031	(.030)	.016	(.032)
Prev. pubs^2	.42e-3	(.46e-3)	.346e-3	(.188e-3)	.283e-3	(.205e-3)
New edition	.348	(1.783)	-.017	(.585)	.224	(1.434)
Authors	2.902*	(.830)	.279	(.325)	.340	(.326)
Simultaneous	1.222	(1.025)	.559	(.436)		
Hardcover only	2.252*	(.625)				
Paperback sold	-4.472*	(1.786)				
Pages	3.755	(2.846)	5.154*	(1.739)	6.501*	(2.491)
Pages^2	-.191	(.170)	-.474*	(.118)	-.497*	(.163)
Weight	19.33*	(5.94)	2.025	(4.796)	-3.197	(6.924)
Weight^2	-1.959*	(.823)	.380	(.917)	1.099	(1.257)
Weight/page	-7.360*	(3.551)	-3.039	(2.527)	-.640	(3.785)
(Weight/page)^2	.653*	(.290)	.871*	(.276)	.848*	(.389)
Pulp price	14.02	(8.39)	-2.533	(4.127)	-.632	(3.935)
UP price	-1.316	(1.970)	-1.265	(4.221)	3.960	(4.419)
Hardcover sales					-.193*	(.065)
Publication lag			.257*	(.105)	.232	(.315)
Publication lag^2					.0017	(.037)
Adj. R^2		.680		.772		.803
Observations		842		435		328

Time and category dummies also included.
* denotes significance at the 5% level.

27

Table 6: Sales regressions

	Hardcover		Paperback		Total sales	
Intercept	-8.46	(7.20)	36.6*	(18.4)	22.1	(21.5)
Prev. pubs	.111*	(.0157)	.0684	(.0663)	.142*	(.0475)
Prev. pubs^2	-6.57e-4*	(.91e-4)	-8.94e-4*	(3.91e-4)	-1.03e-3*	(.271e-3)
New edition	-.143	(.365)	.339	(1.30)	.696	(1.07)
Authors	-.067	(.171)	.347	(.730)	-.259	(.511)
Simultaneous	-1.167*	(.194)	-3.17*	(1.44)	-.0205	(.599)
Publ. lag (yrs)			-2.44*	(.816)		
Publ. lag^2			.227*	(.0977)		
Hardcover only					-4.49*	(.379)
Price ($s)	-.0194	(.0198)	-.241	(.363)	.0748	(.0583)
Price^2	-1.80e-4	(1.70e-4)	1.19e-3	(7.49e-3)	-9.37e-4	(4.99e-4)
Pages ('00s)	.405*	(.194)	-1.60	(1.16)	-1.19*	(.575)
Pages^2	.0194	(.0187)	.299*	(.119)	.199*	(.0557)
Weight/page	1.05*	(.299)	.574	(2.10)	1.56	(.886)
(Wgt/page)^2	-.0947*	(.0357)	-.0566	(.401)	-.198	(.105)
Pulp price	1.58	(1.72)	-17.7	(8.36)	.844	(5.07)
UP price	.420	(.403)	-1.31	(3.73)	-.872	(1.02)
Adj. R^2		.209		.148		.265
Observations		842		435		821

The dependent variable (sales) is in thousands of copies.
Time and category dummies also included.
* denotes significance at the 5% level.
The price used in the last regression is hardcover price.

Table 7: Print runs and bindings per title

Frequency	Print runs	Cloth bindings	Paper bindings
1	42	82	30
2	32	23	21
3	9	1	11
4	6	1	5
5	12	2	8
6	3	1	3
7	2	0	0
8	0	0	1
9	1	0	1
10	1	0	0
11	0	0	0
12	1	0	1
13	0	0	0
14	0	0	0
15	1	0	1

Table 8: Timing regressions

	Probit on SIM		Lag length		Pbk?	
Intercept	.8538	.8823	3.163	2.546	-.3769	.7387
Previous pubs	.1214*	.0368	-.0637	.0425	.0466	.0166
Prev. pubs^2	-.0038*	.0018	.0003	.0002	-.0001	.0001
New edition	2.093*	.3452	1.341	1.927	-1.242	.6788
Authors	.0594	.1861	.8552*	.4315	.1766	.1643
Price	-.1220	.7812	-.1440	2.208	-1.768	.7815
Pages	-.2145	.2050	-.1938	.5943	.5050	.1936
Pages^2	.0211	.0186	.0377	.0660	-.0433	.0200
Wgt/page	-1.042*	.3290	1.495	1.165	-.1243	.2883
(Wgt/page)^2	.0995*	.0352	-.1627	.1525	.0137	.0336
Hardover sales			-1.553	.0802	.1994	.0338
Adj./pseudo R^2		.336		.123		.170
Observations		841		326		732
Time and category dummies also included.						
* denotes significance at the 5% level.						

SELECTED RECENT PUBLICATIONS

Bertaut, C. and Haliassos, M,. "Precautionary Portfolio Behavior from a Life - Cycle Perspective", *Journal of Economic Dynamics and Control,* 21, 1511-1542, 1997).

Caporale, G. and Pittis, N. "Causality and Forecasting in Incomplete Systems", *Journal of Forecasting*, 1997, 16, 6, 425-437.

Caporale, G. and Pittis, N. "Efficient estimation of cointegrated vectors and testing for causality in vector autoregressions: A survey of the theoretical literature", *Journal of Economic Surveys*, forthcoming.

Caporale, G. and Pittis, N. "Unit root testing using covariates: Some theory and evidence", *Oxford Bulletin of Economics and Statistics*, forthcoming.

Caporale, W., Hassapis, C. and Pittis, N. "Unit Roots and Long Run Causality: Investigating the Relationship between Output, Money and Interest Rates". *Economic Modeling*, 15(1), 91-112, January 1998.

Clerides, K., S. "Is Learning-by-Exporting Important? Micro-Dynamic Evidence from Colombia, Morocco, and Mexico." *Quarterly Journal of Economics* 113(3), pp. 903-947, August 1998, (with Lach and J.R. Tybout).

Cukierman, A., Kalaitzidakis, P., Summers, L. and Webb, S. "Central Bank Independence, Growth, Investment, and Real Rates", Reprinted in Sylvester Eijffinger (ed), *Independent Central Banks and Economic Performance,* Edward Elgar, 1997, 416-461.

Eicher, Th. and Kalaitzidakis, P. "The Human Capital Dimension to Foreign Direct Investment: Training, Adverse Selection and Firm Location". In Bjarne Jensen and Kar-yiu Wong (eds), *Dynamics,Economic Growth, and International Trade,* The University of Michigan Press, 1997, 337-364.

Gatsios, K., Hatzipanayotou, P. and Michael, M. S. "International Migration, the Provision of Public Good and Welfare", *Journal of Development Economics*, 60/2, 561-577, 1999.

Haliassos, M. "On Perfect Foresight Models of a Stochastic World", *Economic Journal,* 104, 477-491, 1994.

Haliassos, M. and Bertaut, C., "Why Do So Few Hold Stocks?", *The Economic Journal,* 105, 1110- 1129, 1995.

Haliassos, M. and Tobin, J. "The Macroeconomics of Government Finance", reprinted in J. Tobin, *Essays in Economics,* Vol. 4, Cambridge: MIT Press, 1996.

Hassapis, C., Pittis, N. and Prodromidis, K. "Unit Roots and Granger Causality in the EMS Interest Rates: The German Dominance Hypothesis Revisited", *Journal of International Money and Finance*, pp. 47-73, 1999.

Hassapis, C., Kalyvitis, S., and Pittis, N. "Cointegration and Joint Efficiency of International Commodity Markets", *The Quarterly Review of Economics and Finance,* Vol 39, pp. 213-231, 1999.

Hassapis, C., Pittis, N., and Prodromides, K. "EMS Interest Rates: The German Dominance Hypothesis or Else?" in *European Union at the Crossroads: A Critical Analysis of Monetary Union and Enlargement*, Aldershot, UK., Chapter 3, pp. 32-54, 1998. Edward Elgar Publishing Limited.

Hatzipanayotou, P. and Michael, M. S. "General Equilibrium Effects of Import Constraints Under Variable Labor Supply, Public Goods and Income Taxes", *Economica*, 66, 389-401, 1999.

Hatzipanayotou, P. and Michael, M. S. "Public Good Production, Nontraded Goods and Trade Restriction", *Southern Economic Journal,* 63, 4, 1100-1107, 1997.

Hatzipanayotou, P. and Michael, M. S. "Real Exchange Rate Effects of Fiscal Expansion Under Trade Restrictions", *Canadian Journal of Economics,* 30-1, 42-56, 1997.

Kalaitzidakis, P. "On-the-job Training Under Firm-Specific Innovations and Worker Heterogeneity", *Industrial Relations,* 36, 371-390, July 1997.

Kalaitzidakis, P., Mamuneas, Th. and Stengos, Th. "European Economics: An Analysis Based on Publications in Core Journals*." European Economic Review*,1999.

Lyssiotou, P., Pashardes, P. and Stengos, Th. "Testing the Rank of Engel Curves with Endogenous Expenditure", *Economics Letters,* 64, 1999, 61-65.

Lyssiotou, P., Pashardes, P. and Stengos, Th. "Preference Heterogeneity and the Rank of Demand Systems", *Journal of Business and Economic Statistics*, Vol 17, No 2, April 1999, 248-252.

Lyssiotou, Panayiota, "Comparison of Alternative Tax and Transfer Treatment of Children using Adult Equivalence Scales", *Review of Income and Wealth*, Series 43, No. 1 March 1997, 105-117.

Mamuneas, T.P. (with Demetriades P.). "Intertemporal Output and Employment Effects of Public Infrastructure Capital: Evidence from 12 OECD Economies", *Economic Journal,* forthcoming.

Mamuneas T.P. (with Kalaitzidakis P. and Stengos T.). "A Nonlinear Sensitivity Analysis of Cross-Country Growth Regressions", *Canadian Journal of Economics,* forthcoming.

Mamouneas T.P. (with Bougheas S. and Demetriades P.)."I´nfrastructure, Specialization and Economic Growth", *Canadian Journal of Economics,* forthcoming.

Mamuneas, Theofanis P. "Spillovers from Publicly – Financed R&D Capital in High-Tech Industries", *International Journal of Industrial Organization,* 17(2), 215-239, 1999.

Mamuneas, T. P. (with Nadiri, M.I.). "R&D Tax Incentives and Manufacturing-Sector R&D Expenditures", in *Borderline Case: Interntational Tax Policy, Corporate Research and Development, and Investment*, James Poterba (ed.), National Academy Press, Washington D.C., 1997. Reprinted in *Chemtech*, 28(9), 1998.

Michaelides, A. and Ng, S. "Estimating the Rational Expectations Model of Speculative Storage: A Monte Carlo Comparison of three Simulation Estimators", *Journal of Econometrics,* forthcoming.

Pashardes, Panos. "Equivalence Scales in a Rank-3 Demand System", *Journal of Public Economics*, 58, 143-158, 1995.

Pashardes, Panos. "Bias in Estimating Equivalence Scales from Grouped Data", *Journal of Income Distribution*, Special Issue: Symposium on Equivalence Scales, 4, 253-264, 1995.

Pashardes, Panos. "Abstention and Aggregation in Consumer Demand", *Oxford Economic Papers*, 46, 502-518, 1994 (with V. Fry).

Pashardes, Panos. "Bias in Estimation of the Almost Ideal Demand System with the Stone Index
Approximation", *Economic Journal*, 103, 908-916, 1993.

Pashardes, Panos. "What Do We Learn About Consumer Demand Patterns From Micro-Data?", *American Economic Review*, 83, 570-597, 1993 (with R. Blundell and G. Weber).

Pashardes, Panos. "Non-Linearities and Equivalence Scales", *The Economic Journal*, 103, 359-368, 1993 (with R. Dickens and V. Fry).

Spanos, Aris " Revisiting Date Mining: ´hunting´ with or without a license", forthcoming *Journal of Methodology,* July 2000.

Spanos, Aris. "On Modeling Heteroscedasticity: The Student's *t* and Elliptical Linear Regression Models", *Econometric Theory*, 10, 286-315, 1994.

Spanos, Aris. "On Normality and the Linear Regression Model", *Econometric Reviews,* 14, 195-203, 1995.

Spanos, Aris. "On Theory Testing in Econometrics: Modeling with nonexperimental Data", *Journal of Econometrics,* 67, 189-226, 1995.