

A Textbook Example of International Price Discrimination*

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Abstract

We investigate differences in book prices between the United States and other countries. We find that general audience books are similarly priced internationally, but textbooks are substantially more expensive in the United States (often more than double the price). This disparity is much more pronounced for commercial publishers than for university presses. We argue that supply-side factors like cost and market structure can not explain this phenomenon. We discuss several demand-side explanations; our preferred theory is that higher US textbook prices reflect the unique status of the textbook as a centerpiece of US college instruction.

Keywords: international price discrimination, book industry, textbooks.

JEL Classification: L15, L83, F1.

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1 Introduction

International price comparisons have a long history in economics. Macroeconomists have used them extensively to test for purchasing power parity and various forms of the law of one price. International trade economists have been interested in international price differences as evidence of trade barriers while industrial organization economists have studied issues of market structure. The popular and business press have also shown a keen interest and they frequently report intercity price comparisons for standardized products such as the Big Mac or a Starbucks cappuccino.

The law of one price states that identical goods should have identical prices in different countries once the prices are expressed in common currency units. Purchasing power parity is the much weaker notion that this should hold on average; similar baskets of goods should cost the same once expressed in common units. Both notions are fundamental building blocks of standard open economy macroeconomic models and it is no surprise that economists have expended much effort in determining whether these theoretical axioms hold true in practice. Early tests utilized time-series index numbers, which have the limitation that they compare relative rather than absolute prices. More recently, micro-level cross-sectional data have become available that track prices of individual products across cities or countries.¹

At an even more micro level, several papers have looked at international pricing for individual products. One of the most heavily studied markets is the automobile market, especially in Europe. Verboven (1996), Gil-Pareja (2003), Lutz (2004) and Goldberg and Verboven (2005) all report evidence of pricing-to-market behavior in the automobile market. Another major market with important public policy implications is pharmaceuticals. Danzon and Chao (2000) recently presented new evidence refuting the widely held view that drug prices are higher in the US than in other countries. Elsewhere, Haskel and Wolf (2001) analyze the pricing practices of the IKEA furniture company and report deviations of 20-50% from the law of one price. They argue that cost factors cannot account for these deviations and attribute them to strategic pricing.

Two clear conclusions emerge from this literature. First, price differences across countries are large, as well as persistent. Second, the degree of price inequality varies substantially across different industries. The challenge for economists is to determine why such differences exist, why they persist, and whether they will continue to persist. Arguably, this task can be best accomplished by detailed analyses at the product level. In this paper we aim to do just that by looking at the international market for books, particularly textbooks. In principle, the market for university textbooks satisfies all the conditions that are necessary for the law of one price to hold at least approximately. The physical product is perfectly homogeneous; shipping costs are relatively small; pricing information is easily available online; and the potential savings from engaging in arbitrage are substantial. Nonetheless, the evidence we present shows the existence of very large differences in the prices of textbooks across countries. The average hardcover

¹Key contributions in the early literature that uses index numbers include Engel (1993), Engel and Rogers (1996), Rogoff (1996), Frankel and Rose (1996) and Murray and Papell (2003). Studies that utilize micro data include Parsley and Wei (2001) and Crucini, Telmer, and Zachariadis (2005).

textbook price is roughly 50% higher in the United States than in the United Kingdom (or anywhere else in the world), while in some cases the US price is as much as double the UK price.

The extent of the price divergence is certainly striking, but its direction is interesting in its own right. The prevailing conventional wisdom is that consumer goods are cheaper in the US than in Europe. The question that naturally arises is, why are textbooks different? Possible explanations can be broadly categorized as relating to cost factors, preferences, or market structure. Later on in the text we argue that explanations based on cost and market structure can not explain differences of the observed magnitude. We claim that price differences are almost exclusively demand-driven and discuss several reasons why US consumers are willing to pay so much more than their UK counterparts for textbooks. Our preferred explanation is that demand differences are the result of the different status of textbooks in the educational systems of different countries. We also discuss why price differentials have persisted in the internet era and speculate on whether this is likely to continue.

The issue of textbook pricing has received a lot of attention in US national media. The *New York Times* has published several articles in the last couple of years.² Other national outlets such as *US News & World Report*, *LA Times*, *Boston Herald* and *Business Week* have also reported on high and rapidly rising textbook prices, while for specialized publications like *The Chronicle of Higher Education* and *Publishers Weekly* the topic is common fodder. Public Interest Research Groups (PIRGs) have taken up the issue and even launched a website named **MakeTextbooksAffordable.org**. The broad coverage – which is certainly disproportionate to the size of the industry – has even prompted US Senator Charles Schumer from New York to propose a tax break “to help students and parents deal with skyrocketing textbook costs.”³

Our interest in this issue predates that of the popular press and political circles. We embarked on a first phase of data gathering in 2002, collecting data on book prices and characteristics from the US and UK websites of Amazon, Inc. We created a broad sample that included both textbooks and books intended for a general audience. The data showed large price differences between the two countries in the case of textbooks but not in the case of general books. This finding prompted a second phase of data gathering which focused on textbooks, in particular economics textbooks. In this second phase we broadened our sample by including Canada in the search and collected more detailed information about each book. The existence of sizeable price differences was confirmed in the new data. We also find that paperbacks, which are typically substantially cheaper than hardcovers, are sometimes published only for the international market. We further show that price differentials are mostly due to pricing practices of commercial publishers as opposed to university presses.

²To name a couple: “Students Find \$100 Textbooks Cost \$50, Purchased Overseas,” Oct. 21, 2003; “When Books Break the Bank; College Students Venture Beyond the Campus Store,” Sep. 16, 2003.

³Press release dated October 10, 2003 available at http://www.senate.gov/~schumer/SchumerWebsite/pressroom/press_releases/PR02101.html [March 29, 2005].

2 Industry and data

2.1 General and academic publishing

Publishing is a busy industry. Bowker, the leading firm tracking the industry, reports that more than 120,000 new and revised titles were published in the US market in 2000. The Association of American Publishers (AAP) estimates that net industry sales in 2000 equaled \$25.3 billion. Only \$3.6 billion of that was generated by academic books; hence textbook publishing is a relatively small part of the industry. The National Association of College Stores (NACS) estimates the retail sales volume of the joint American and Canadian college textbook market as \$5.1 billion. In the UK, the Publishers Association reports that sales of manufactured books in 2000 totaled about \$5.2 billion.⁴

Publishing is characterized by scale economies due to high fixed and low marginal production costs (Horvitz 1965, Clerides 2002). The portfolio of a typical publishing firm includes only a few commercial successes that subsidize the less successful book publications. Publishing houses could be divided into three distinct categories: (i) the predominant large, international and highly diversified publishing houses, (ii) the numerous small-to-medium-sized entrepreneurial publishers and (iii) the university presses, which vary greatly in size. Publishing houses in the first category are large and powerful, yet the industry is quite fragmented.⁵ The textbook publishing industry is characterized by a similar structure with powerful commercial publishers and smaller but important publishing houses and university presses.

Prices in the publishing industry are fairly rigid. Clerides (2002) shows that prices are basically fixed markups over cost; in particular, demand variations have only a minor impact on price. The publisher's recommended list price is usually also the final price. Unlike general audience books, discounts on textbooks are hard to find. The price-setting strategy of textbook publishers has been described by academics and industry sources as one where publishers assume the existence of a kinked demand curve; they believe that an overpriced book will have a low sales volume whereas an under priced book will induce marginal increases in sales.⁶

The book industry has received a fair amount of attention from academic economists. Horvitz (1965, 1966) examined the relationship between the authors of economics textbooks and their publishers. He traced a conflict of interest between the two groups and he suggested changes in the pricing policy of textbooks so as to increase profits and royalties, while at the same time lowering costs. Siegfried and Latta (1998) compare retail textbook stores and markets where costs are higher or where the thread of competition and potential entry is lower, and find no evidence of higher prices being charged by the retail stores. Clerides (2002) shows that the price

⁴Sources: AAP Industry Statistics Report, 2002 edition, <http://www.publishers.org/industry/2002.cfm> [2003, March 11]; National Association of College Stores (2002); Publishers Association, UK book industry in statistics, <http://www.publishers.org.uk/> [2003, March 11].

⁵For example, in the UK in 1998, 3% of titles accounted for 50% of the volume of retail sales, fewer than 40 of 15,000 publishers accounted for 56% of bookshop sales and no one publishing house had a market share of more than 9% (Pira International 2002).

⁶See for example Horvitz (1966) and Bailey (1990).

difference between hardcovers and paperbacks is larger than the difference in production costs associated with the different publication formats. He concludes that the higher mark-ups on hardcovers, as compared to paperbacks, constitute a means of price discrimination.

Thanks to amazon.com, the book industry was one of the first to experience online competition. As a result, many internet studies were conducted using data from books. For example, Clay, Krishnan, and Wolff (2001) find that competition leads to lower prices and lower price dispersion, and that widely advertised items have lower prices. Clay, Krishnan, Wolff, and Fernandes (2002) find that even though the average prices are similar between online and physical stores, price dispersion is greater for the former, indicating that online firms do not charge the same prices. Chevalier and Goolsbee (2003) use reported sales ranks to proxy quantity and estimate demand and price indices for books sold at the Amazon and Barnes & Noble websites.

2.2 Data collection

We chose to study the US and UK geographical markets for several reasons. First, there are no language barriers. Second, we can exploit the existence of Amazon.com. The presence of an internet retailer who is an important player in both markets allows us to abstract from issues of heterogeneity in the retail environment and facilitates the data collection process. To address the question of whether the prices of a single retailer accurately depict the country's overall price level, we note two facts: in both countries, booksellers rarely discount textbooks and furthermore, publishers' suggested retail prices do not vary across booksellers of the same country.

The data were collected in two phases. First, in May 2002 we collected information on a broad range of books from the `amazon.com` and `amazon.co.uk` websites.⁷ Amazon assigns books to categories such as "Science & Nature", "Business, Finance & Law" and "Society, Politics & Philosophy". From each of the main categories we selected 20-30 of the best-selling titles. The collected titles included both general interest books and more specialized tomes that may be used as textbooks. The final sample included 268 that were sold on both websites. For each title we collected all available information, which included price (the publisher's list price and the discounted price, if any) and characteristics such as the year of publication, number of pages, and format (hardcover or paperback).

We note that the distinction between textbooks and general interest books is not clear-cut. Many books that target a broad audience are often adopted for use in college courses.⁸ We chose a fairly narrow definition, labeling as textbooks only books with titles like "Introduction to Microeconomics" or "Principles of Managerial Accounting". This process identified 158 titles as textbooks and 110 as general books. We refer to the resulting dataset as our "broad sample".

⁷We are grateful to students in Clerides' Spring 2002 Industrial Organization class at the University of Cyprus for assisting us with the data collection.

⁸Some examples include Dixit and Nalebuff's "Thinking Strategically" (Norton, 1993), Siegel's "Stocks for the Long Run" (McGraw-Hill, 2002) and Shiller's "Irrational Exuberance" (Princeton, 2005).

As we will show in the next section, the data collected in this phase indicate that price differences across countries are quite substantial for textbooks but less so for general books. In order to further investigate textbook differences we proceeded with a second phase of data collection in December 2002. To make our analysis as informed as possible, we concentrated on the familiar territory of economics textbooks.

For this second phase we wanted to expand our data collection to include more countries. Language considerations made Canada an obvious choice. We also did some research into other “amazon” countries, notably France, Germany and Japan. It turns out that in all three of these countries the prices of English language economics textbooks are the local currency equivalents of either the UK or the US price (depending on where the book is coming from). In fact, amazon reports the actual price in US dollars or UK pounds alongside the local currency price. Given that the market for English language textbooks in those countries is small, including them in the sample would not add any new information. We reached the same conclusion about English-speaking Australia; there is very little independent pricing of the textbooks we are examining. Hence, we ended up collecting information from the US, UK, and Canada (`amazon.com`, `amazon.co.uk` and `amazon.ca`).

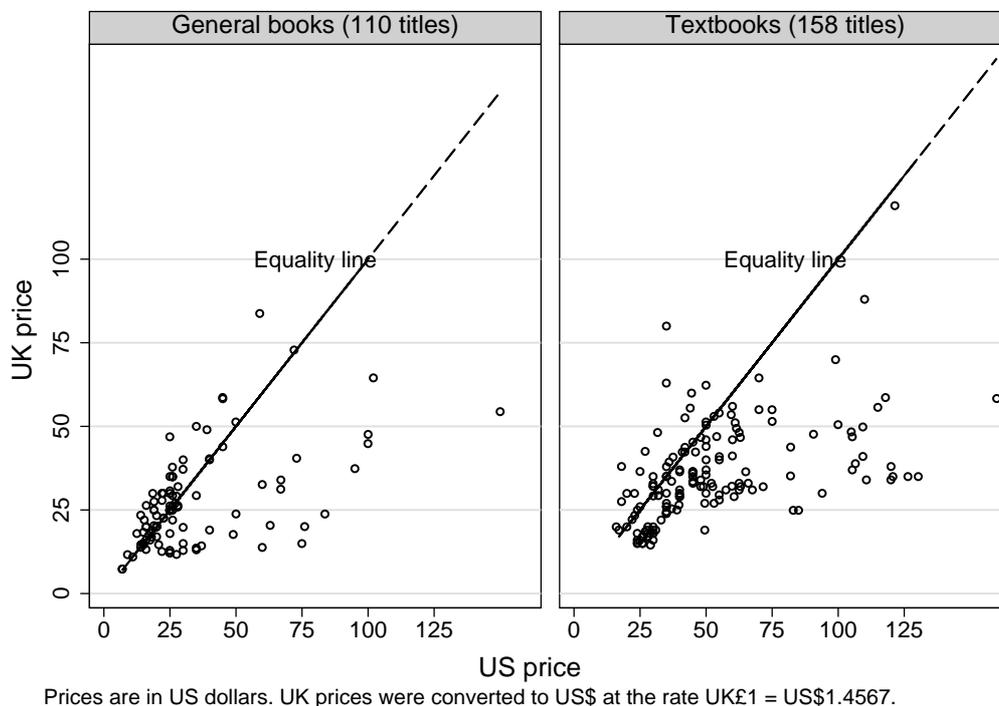
In selecting titles, we made an effort to include best-selling textbooks from several fields of economics. To that end, we used four different sources: (i) M.I.R.’s bestseller lists, which are course-specific and identify the 10 to 15 titles that represent 80%-90% of sales volume for a particular course (Guernsey, 1998). We selected 80 titles that represented courses in several fields of economics.⁹ (ii) Economics LTSN’s (CITE) list of recommended textbooks where we selected 30 titles for the same set of subjects. (iii) Sales rankings of economics textbooks at `amazon.com` where we selected the first 40 titles. (iv) Lastly, we created a random sample of 20 titles, to represent the large number of textbooks not covered by the bestseller lists.

After accounting for the overlap of the four sources and eliminating titles that were not available in both countries, this sampling procedure resulted in 144 titles. All but twelve of these textbooks were published by commercial publishers. Since we are interested in the differing pricing policies that university and commercial presses implement, we decided to augment the sample with more textbooks from university presses. We selected 60 additional titles from the major university presses that publish economics textbooks.¹⁰ The textbooks were chosen so that their subject matter would roughly match that of textbooks by commercial publishers. Thus, we ended up with information on 204 titles, 132 of which are published by commercial publishers and 72 by university presses. We refer to this as our “econ sample”.

⁹Such categories were: Principles of Economics, Intermediate Microeconomics, Intermediate Macroeconomics, Industrial Organization, International Economics, Econometrics and Game Theory.

¹⁰The list included, among others, the university presses of Cambridge, Chicago, Harvard, M.I.T., Oxford, and Princeton.

Figure 1: US and UK prices of general books and textbooks



3 International price differences

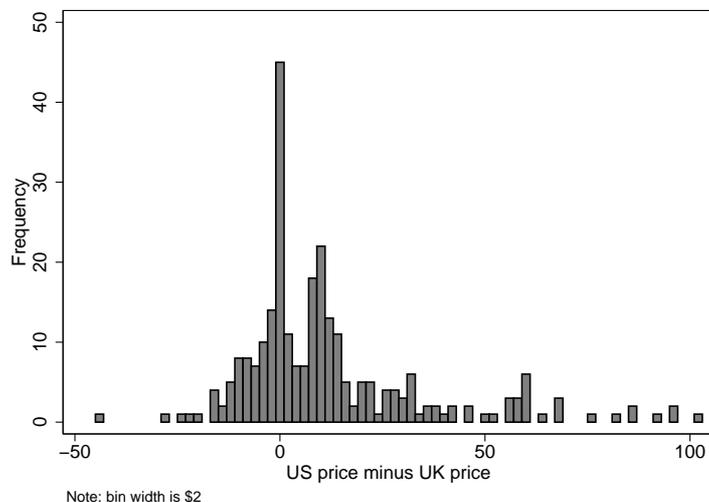
3.1 Broad sample

Figure 1 is a scatter plot of US and UK prices of the two sets of books from our broad sample. Starting with general books on the left, we note that most books are priced very similarly in the two countries (they lie on or very close to the price equality line). When prices differ, the US is usually more expensive and by a larger margin. Turning to textbooks, things get a bit more interesting. We still see a substantial number of books on the equality line. We also see, however, even more books lying below the line, meaning that they are more expensive in the US. Many of these titles are clustered near the bottom of the distribution, forming a line that is roughly parallel to the equality line and about ten dollars below it. Some other titles are even further away from the line, suggesting very large price differences between the two countries.

To make this point clearer, we plot the distribution of price differences in Figure 2. The mode of the distribution is at zero, indicating that the most likely outcome is for books to be similarly priced. But the distribution exhibits quite a bit of variance, and it is also skewed.¹¹ Abandoning the admittedly arbitrary “textbook” variable, we split the data into three groups:

¹¹The null of symmetry is easily rejected in a formal statistical test.

Figure 2: Histogram of price differences (N=268)



those that are more expensive in the US, those that are more expensive in the UK and those that are priced similarly. We define similar pricing to occur when the UK price is within 5% of the US price. This yields 45 titles that are priced similarly, 115 titles that are more expensive in the US and 39 titles that are more expensive in the UK. Thus, a lot more books are more expensive in the US than in the UK. Moreover, the magnitude of the price differentials is also different. When books are more expensive in the US, the price difference averages \$18.22, or 66.9% over UK price; when books are more expensive in the UK, the difference averages \$9.77, or 36.1% over US price.

The figures tell a nice and clear-cut story of international price differences. In order to quantify and test price differentials more formally we ran a number of simple regressions, the results of which are presented in Table 1. In the first column we stack all books together and regress log price on available characteristics. As one might expect, price depends on the length of the book (number of pages) and on the format (hardcover vs. paperback).¹² Controlling for those cost-shifters, the coefficients on *US general book* and *US textbook* give us the percentage differences of US price over UK price for general books and textbooks respectively. Both types are more expensive in the US, and the premium is substantially higher for textbooks than for general books (30.6% versus 12.6%). The second column controls for the different book categories; the missing category is “general” books. The additional controls contribute significantly to the explanatory power of the regression but the key coefficients of interest remain virtually unchanged.

The results may be easier to interpret when viewed in difference form. In the last two columns of Table 1 we report estimates with the dependent variable being the log difference between US and UK price. We first regress the price difference on just the constant, a textbook dummy and

¹²Clerides (2002) shows that those two variables explain a large part of book price variation.

Table 1: Regression results from the broad sample

	Dependent variable:			
	$\ln(p)$		$\ln(p^{us}) - \ln(p^{uk})$	
Textbook	0.268** (0.052)	0.273** (0.062)	0.176** (0.051)	0.392** (0.055)
US general book	0.126** (0.044)	0.128** (0.044)		
US textbook	0.306** (0.031)	0.308** (0.031)		
ln(pages)	0.345** (0.048)	0.315** (0.046)		
Hardcover	0.343** (0.044)	0.307** (0.049)		
Diff. in format			.556** (.118)	.534** (.120)
Economics		0.171* (0.081)		-.085 (.120)
Management		0.199** (0.062)		-.192** (.054)
Computers		0.192** (0.064)		-.190** (.043)
Science & Nature		0.307* (0.212)		.307** (.093)
Intercept	1.045** (0.272)	1.080** (0.089)	0.114** (0.043)	0.027 (.0044)
N	536	536	268	268
R ²	0.454	0.476	0.173	0.288
F-stat	56.52	36.00	15.01	11.84

Robust standard errors are reported in parentheses. In the first two columns they are also adjusted to allow for correlation between the same titles. Significance levels: † : 10%, * : 5%, ** : 1%.

the variable “Diff. in format”. The latter takes the value of 1 if there is a difference in the format in which the book is sold in the two countries (that is, if it is available in hardcover in the US and in paperback in the UK). The coefficient on the intercept is thus the mean price difference between general books and the coefficient on the textbook dummy is the additional difference when textbooks are compared. The results are very similar to the previous specification: general books are 11.4% more expensive in the US, while textbooks have an additional 17.6% premium. In the last column we include our category controls which turn out to be quite significant, as price differentials vary substantially across book type. Controlling for the latter raises the coefficient on textbooks to 39.2%.

Summing up, the evidence presented in this subsection indicates the existence of significant differences in price between textbooks in the US and the UK. In the next section we present the data from our second sample, which takes a more detailed look at textbook prices.

3.2 Economics sample

As already mentioned, our second dataset includes information on the US, UK and Canadian prices of 204 economics textbooks. Most of those (132 titles, or 64.7%) are published by commercial publishers with the remaining titles being published by university presses. In Table 2 we report descriptive statistics on the availability of different formats in each country and the corresponding prices. Note that commercial publishers market about three quarters of their textbooks in hardcover only, while with university presses that ratio is only about half. Availability is essentially the same in the US and Canada, but in the UK commercial presses are less likely to offer books in hardcover only. This suggests that commercial presses are practicing price discrimination in the form of menu choices. Clerides (2004) has argued that firm product menu choices can in many cases be sufficient evidence of price discrimination, obviating the need to look at prices. In our case, the commercial publishers’ practice of selling some books only in hardcover in the US (and Canada) but in both hardcover and paperback in the UK can be interpreted as evidence of price discrimination across the two countries.

It may seem surprising that so few titles appear in both hardcover and paperback, as the practice is widely used in the case of general audience books. There is, however, a fundamental difference between textbooks and other books that can explain this fact. For general books, demand is largely a one-time phenomenon. Although there are general books that sell over long periods of time, for the vast majority demand is essentially exhausted within a few months. Publishers of general books thus have an incentive to produce a lower quality paperback in order to serve the lower quality segment. For textbooks, on the other hand, demand is continually renewed along with the student body. Textbook publishers have much less of an incentive to produce both hardcovers and paperbacks because they want to keep selling hardcovers to the new customers that enter the market every year.¹³

¹³There are several models of durable good production with renewable demand. Many of them, starting with Bulow (1986), deal with the issue of planned obsolescence. Recent empirical work on this issue includes Bond and Iizuka (2004), Iizuka (2005) and Chevalier and Goolsbee (2005).

Table 2: Descriptive statistics by country and publication mode

Country		Hardcover only		Paperback only		Hardcover & paperback	
		N	\bar{p}	N	\bar{p}	N	\bar{p}
Commercial Press	US	98	107.0	17	63.4	17	80.9
	CA	101	88.2	15	57.8	16	73.6
	UK	82	62.1	22	50.7	28	81.2
University Press	US	37	67.1	12	31.3	23	62.2
	CA	37	70.6	14	33.7	20	66.9
	UK	35	61.2	10	36.1	27	60.1

N is the number of titles; \bar{p} is the mean price.

Turning our attention to prices, there appear to be quite substantial price differentials between the three geographical regions. The largest mean price difference is traced in the market of hardcover titles published by commercial press, where the US mean price is approximately 72% higher than the corresponding mean price for the UK. Canada lies in between the two other countries and for the same category of books the mean price is 42% higher than the UK. To a significantly lesser degree, we also observe mean price differences in the categories of hardcover books published by university press as well as paperback books by commercial press.

We quantify and test these differences formally through a number of regressions which are displayed in Table 3. For each format and type of publisher we estimated a regression of the form

$$\ln(p_i) = \alpha + \beta_1 \text{LN PAGES} + \beta_2 \text{US} + \beta_3 \text{CA} + \beta_4 \text{DELTIME} + \varepsilon_i, \quad (1)$$

where subscript i indexes titles; LN PAGES is the natural logarithm of the number of pages; US and CA are dummies for the US and Canada respectively; and DELTIME is the reported delivery time when using the cheapest shipping option.¹⁴ The coefficients on the US and CA dummies measure the percentage price premium charged in those countries relative to the UK. In the case of commercial publisher hardcovers, this premium for the US is a striking 48.6%. In Canada it is a smaller but still sizable 26.7%. For university press hardcovers, the premia are much smaller and quite similar at 14.3% and 13.2% respectively. Premia are much smaller in the case of paperbacks. Relative to the UK, paperbacks by commercial publishers command a 14.3% premium in the US and a statistically insignificant 7.1% in Canada. University press paperbacks are essentially priced the same in all three countries. This finding is consistent with the claim made by several university presses that they follow a “single price policy”.¹⁵

¹⁴The variable takes values from 1 to 12, with a larger number indicating a longer waiting time for shipment.

¹⁵Harvard University Press is an example of this policy; see http://www.hup.harvard.edu/order/win_faq.html [June 11, 2005].

Table 3: Estimates from the economics sample (dep. variable: $\ln(p)$)

	Commercial hardcovers	Univ. press hardcovers	Commercial paperbacks	Univ. press paperbacks
$\ln(\text{pages})$	0.182** (0.065)	0.251** (0.083)	0.425* (0.209)	0.376** (0.058)
US	0.486** (0.042)	0.143** (0.045)	0.143* (0.068)	-0.048† (0.026)
CA	0.267** (0.047)	0.132** (0.030)	0.071 (0.070)	0.011 (0.036)
Delivery time	0.025** (0.006)	0.021* (0.008)	-0.002 (0.012)	0.007 (0.006)
Intercept	2.903** (0.424)	2.517** (0.525)	1.191 (1.333)	1.270** (0.355)
N	304	170	109	99
R^2	0.300	0.152	0.154	0.413
F -stat	60.25	6.30	3.40	15.64

Significance levels: † : 10%, * : 5%, ** : 1%.

Robust standard errors in parentheses.

One explanation for the price differences that has often come up in conversations with fellow economists is the difference in delivery times between the US and UK. It is certainly true that it takes longer to ship items overseas than domestically but this should not make any difference because we are using list prices that are set by publishers, not retailers. Nonetheless, we collected delivery time data and included the resulting variable DELTIME as a control in the regressions. The surprising result is that delivery time is significant and positive. This runs counter to economic intuition as it implies that longer delivery times lead to higher prices. We tested this result further by comparing the price difference on a one-to-one basis for each title and concluded that it is quite robust. Our explanation is that the more expensive books are not always readily available in the UK (they are not held in inventory) and that their higher price reflects the fact that these books are actually imported from the US where we have shown that they are higher priced anyway.

Further insight into the different pricing structures across countries can be gained by comparing the price of a format when it is published on its own to the price of the same format when it is priced along with the other format. This is implemented by estimating the following set of regressions:

$$\ln(p_i^{f,c}) = x_i \beta^{f,c} + \gamma^{f,c} \text{BOTHFORMATS}_i^c + \varepsilon_i, \quad (2)$$

where subscript i indexes titles and superscripts f and c are shorthand for format (hardcover or paperback) and country (US, UK, CA). That is, we estimated the regressions separately for each format-country pair. The variable BOTHFORMATS is a dummy variable that takes the

Table 4: Estimates of $\gamma^{f,c}$ in equation (2)

	United States		United Kingdom		Canada	
	Hardcover	Paperback	Hardcover	Paperback	Hardcover	Paperback
$\hat{\gamma}^{f,c}$	0.198**	-0.082	0.506**	-0.043	0.265**	-0.102
(s.e.)	(0.045)	(0.078)	(0.057)	(0.054)	(0.055)	(0.082)
N	173	68	171	85	173	64
R ²	0.592	0.415	0.353	0.391	0.333	0.260
F-stat	72.81	12.01	26.84	15.49	25.36	6.04

Significance levels: † : 10%, * : 5%, ** : 1%.. Robust standard errors are reported.

The regressions control for number of pages and for commercial vs university press.

value of 1 if the title appeared in both formats in the country of interest.¹⁶

Estimates of $\gamma^{f,c}$ from each of the six regressions are reported in Table 4. The results are remarkably consistent across countries. Hardcovers that are accompanied by a paperback are more expensive than equivalent hardcovers that are published on their own. The premium ranges from around 20% in the case of the US to a striking 50% in the UK. We believe that the similarity of this premium with the 48.6% observed in column 1 of Table 3 is not coincidental. Rather, it is an indication that when they make a paperback available in the UK, publishers essentially charge US prices for the hardcover. This is trademark market segmentation: the paperback caters to the lower end of the market and the price of the hardcover is raised to exploit the high end of the market.¹⁷

Paperbacks that are published along with hardcovers are somewhat cheaper than standalone paperbacks in all three countries but the difference is never statistically significant. This may be due to the small sample. Laband and Hudson (2003) have a much larger sample and find a statistically significant 23.7% premium for sole-edition paperbacks. On the other hand, their sample is also more differentiated as it includes general economics books, not just textbooks.

Overall, two patterns emerge clearly from the analysis in this section. First, there exist substantial price differences in textbook prices across countries, with the US being the most expensive and the UK the cheapest. Second, commercial publishers practice international price discrimination to a much greater degree than university presses. In the next section we discuss several demand and supply side explanations of this phenomenon.

¹⁶This specification exploits the same feature of the data that Shepard (1991) used in the classic paper on price discrimination in the gasoline market. More recently, Cohen (2004) used a similar specification to test for the effect of adding a size to a line of paper towels.

¹⁷One might object to this conclusion on the grounds that BOTHFORMATS is a choice variable and is thus endogenously determined. It could be that books published in both formats are high-demand books that command a higher price. In order to check this possibility, we looked at the sales ranks of the different titles. It turns out that dual-format books have smaller sales than standalone hardcovers, which is not consistent with the high-demand story.

4 Sources of price differentials

We have documented the existence of a large premium in the prices of textbooks in the United States compared to other countries. For firms to be able to charge different prices it must be that market conditions such as cost, market structure and demand vary across regions. In this section we discuss a variety of factors that could give rise to price differentials. We argue that market structure and cost factors are unlikely to vary substantially and that price differences are almost entirely demand-driven.

We start by considering possible differences in cost. The cost of selling a book at different locations may vary because of production, transportation or other costs of doing business in each location (distribution, marketing, labor, taxes). Production costs could differ if books were printed in the country that they are sold. This is not usually the case. Even if it were, it would not explain the large price differentials because physical production costs are only a small part of a book's price.¹⁸ For transportation cost to be a valid explanation it must be that books are printed in Europe and the cost of shipping across the Atlantic is substantial. Neither of these is true. Although we do not have complete information, almost all the textbooks we checked were in fact printed in the United States. If transportation costs were important, books should be cheaper in the US, not more expensive. In any case, shipping costs are probably too small to explain a significant part of price variation. Similarly, it is hard to imagine why other costs like distribution and marketing should be that much greater in the US. And even if such cost differences did exist, they would not explain why price differences exist for some types of books (textbooks) but not for others.¹⁹

Price differences could also arise if market structure differed significantly across countries, even if demand and cost are the same. If publishers have greater market power in the US than elsewhere, they will be able to charge higher prices. This could occur if locally produced alternatives were available at lower prices. For example, US publishers may have to lower UK prices in order to compete with books written by UK academics and published by UK publishers. But there does not appear to be much of that going on; there are relatively few textbooks written by UK-based academics.

We conclude that differences in cost and market structure are unlikely to be the source of international variation in textbook prices. This must be a demand-related phenomenon. But why would demand be so different in the United States than anywhere else in the world? Why are Americans willing to pay so much more for textbooks? In considering possible sources of demand variation across countries, it is important to keep in mind that price differences of the magnitude we observe here are rare. Even within the book industry, they are mostly confined to the narrow textbook segment. We did informal price comparisons for products that might be thought of as similar to books: video tapes, CDs/DVDs and video games. Differences between US and UK prices for those products are quite small; if anything, they are slightly cheaper in the

¹⁸See Clerides (2002).

¹⁹Note also that the rise of the internet leads to a homogenization of the retail environment and therefore tends to equalize marketing and distribution costs.

US. The only other example we could think of that features such large price differentials is the market for pharmaceuticals. Unfortunately, heavy regulation in that market makes it difficult to make any meaningful comparisons.

One explanation that quickly pops up in our conversations with fellow economists is agency. Textbooks are adopted by professors but paid for by students. This give rise to an agency problem: one individual (professor) is acting on behalf of another (the student) without bearing any cost relating to his action. In fact, there is often a second level of agency inasmuch as it is parents who pay for the books, not students. But agency issues arise everywhere, not just in the US. Unless one thinks that US professors care less about how much the students pay than professors in other countries, then agency can not explain observed price differentials.

A second explanation is related to the degree of copyright enforcement. Illegal copying of textbooks is probably less common in the US than most other countries. Competition from the photocopying machine would drive prices down in countries where this is prevalent. This is likely to be an important factor where copyright enforcement is very weak. It may be a stretch, however, to include the UK in that group.

An alternative explanation with a behavioral flavor relates the cost of textbooks to the cost of a university education. The latter is much higher in the United States than most other countries, including the UK and Canada. One could posit that consumers' willingness to pay for textbooks is a function of tuition. If students pay several thousand dollars per year for tuition, paying a few hundred extra for the required textbooks might not seem exorbitant. If, on the other hand, one is conditioned to expect free (or almost free) university education, the cost of textbooks may come as a bit of a shock. The weakness of this theory is that it does not explain why textbooks are not as cheap in Canada as they are in the UK, but it can be argued that the ease of arbitrage between the US and Canada severely restricts publishers' ability to price discriminate.

We believe that the most likely explanation lies in the culture of college education in different countries. In the United States the textbook is an integral part of college education. In most courses instruction centers around a single textbook that contains most of the material, as well as exercises and practice problems. The textbook is the main reference for students and it is usually labeled as "required" for the course.²⁰ In the UK, textbooks are not used in the same way. Students are usually given a list of books that are meant to be study aids rather than mandatory textbooks.²¹ Thus students feel much less of an obligation to buy particular books, meaning that willingness to pay for textbooks is lower than in the United States.

²⁰This is certainly true in the physical sciences and to a lesser but significant degree of the social sciences; textbooks are less common in the humanities.

²¹The interested reader can easily confirm this by browsing online course syllabi at UK universities.

5 Concluding remarks

We have documented the existence of substantial price differences in the international textbook market. Textbooks are much more expensive in the US than other countries, especially if they are published by commercial publishers. We argue that this difference is a demand-based phenomenon that stems from the central role the textbook plays in US college instruction.

Why don't such differences get arbitrated away? Until recently, lack of information could perhaps explain the presence of large and persistent differences. With the advent of the internet, however, this is becoming more and more difficult to sustain. Word is out there that one can buy the same book for much less from amazon.co.uk than from amazon.com. It is even possible to visit amazon.com and buy from an independent seller a brand new textbook that often "ships from the United Kingdom" and is sold at half the list price.²² In addition, there is now a multitude of search engines that can quickly locate the cheapest textbooks both within the US and internationally.²³ On the other hand, buying online imposes a few days' delay until books arrive. Students who often wait until the first or second week of classes to choose their courses may not be willing to delay obtaining the required textbooks further by buying online.

The time sensitivity of textbook purchases and the agency problem (students purchase books but parents often pay for them) will likely continue to allow publishers some leeway in pricing. On the other hand, it is unlikely that they will be able to sustain price differentials of the observed magnitude in the long run. Which way will prices go? We think it is unlikely that US prices will drop much. The US market is by far the largest and publishers would probably prefer to price themselves out of international markets rather than give up profits in the US. If prices do converge, it's more likely that they will rise overseas rather than drop in the US. Even more likely, publishers will probably react by further differentiating international editions and expanding their use. There is already talk of books that will be custom-made to the needs of each lecturer. This will allow publishers to maintain high US prices while limiting arbitrage. US students should not expect too great a benefit from lower search costs and greater price transparency in this market.

At a broader level, the example of textbooks is a striking illustration of how market idiosyncracies can generate large variations in demand and prices for otherwise standardized products. Surely many more similar situations must exist and remain to be uncovered. Identifying such differences and exploring their causes can be useful in helping us understand price variation both within and across international borders.

²²One can easily confirm this by visiting amazon.com and looking up industrial organization textbooks such as Carlton and Perloff's *Modern Industrial Organization* and Pepall, Richard and Norman's *Industrial Organization: Contemporary Theory and Practice*.

²³<http://www.Bublos.com>, www.CheapestTextbooks.com and www.FastBookfinder.com are a few examples.

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