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Textbook bundling : is it really worth the sum of its parts

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Textbook Bundling:

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by

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Abstract

Studies have been conducted examining the impact of commodity bundling on company profits and the premium prices charged for these bundles. With recent news of the skyrocketing costs of higher education, it is critical to highlight the specific effects of commodity bundling on the prices of textbooks. A study performed by the Government Accountability Office in 2005 cited that a main cause of increasing textbook prices is the recent inclusion of textbook supplements such as software and workbooks. This paper investigates the impact that different types of supplements have on the overall price paid for the bundle. Aggregate sales data of psychology textbooks, including characteristics such as average new and used prices, edition year, and book quality are utilized in my analysis. By way of an ordinary least squares regression utilizing fixed effects I will estimate the price differentials of college textbooks containing supplements as well as identify bundling trends within the industry. When viewed in conjunction with studies of how students value these ancillary materials, conclusions can be drawn on the comprehensive utility of these bundles.

I. Introduction

In 2005 the United States Government Accountability Office released a report concerning the high cost of college textbooks. They found that in the last two decades textbook prices have increased at an average rate of six percent per year, over twice the rate of inflation. In recent years publishing companies have begun devoting much time and energy into the research and development of online workbooks, study guides, and other instructional supplements. "Publishers say they have increased their investments in the development of supplements to meet the demands of a changing postsecondary market" (GAO, 7). The cost of development of these ancillaries is then included in the price of the textbook itself. Moreover, used textbook packages do not often offer these accompanying materials and purchasing a new supplement separately may actually increase the overall price paid. However, students must perceive the value they are getting from bundling in order for a college bookstore to be successful in selling the bundle versus students purchasing the textbook alone from another source.

The main outcry of book bundling occurs in situations where professors require students to purchase a bundle of related materials, but only use one or two materials for class (NACS, 2007). Many retailers are trying to find ways to create their own packages of books and resources to fit the exact needs of their consumers. Nevertheless, publishers may still have a strategic advantage to bundling textbooks and supplements because it changes the substitutability relationship between the goods that consumers choose (Martin, 1999). When two goods are complements, increases in the price of one good will in turn cause the price of the second good to decrease. However, when these complementary goods are then bundled this relationship is altered. Different bundles

become substitutes for one another and an increase in the price of one bundle will force the price of the second bundle to increase as well.

A great comparison of textbook retailers comes when we choose college bookstores and online retailers such as half.com or amazon.com. Online retailers have become much more popular in the last few years, and in 2005 the National Association of College Stores reported that students purchased 23 percent of their textbooks online. This number has been growing and will continue to increase as more students become familiar with online retailers and their needs are increasingly met through these transactions. Online retailers have also given students a market in which they can sell their textbooks to other consumers once they have finished using them. Chevalier and Goolsbee (2005) study the theory of forward-looking consumers and reveal that when consumers expect to receive a high resale price for a good their initial demand will rise. Furthermore, when a new edition of a textbook is to be released in the near future consumers appropriately decrease the quantity demanded for the current edition, knowing the resale price of this current edition will be extremely low.

Detailed data on textbook prices from 1995 to the present can be gathered from Monument Information Resource, which provides new and used textbook sales and book-in-use information from colleges and universities across the nation. With this data we can accurately look at which textbooks contain packaged bundles, the price of these bundles versus single textbooks alone, and the adoption data of universities to these bundles. Specifically, this study will look at the price of new textbooks conditional upon the type of supplements, quantity of new and used texts, quality of used textbooks, and the price of these used texts as accounting for future resale price.

II. Literature Review

In recent years there have been many reports that examine the increasing price of college textbooks. The College Board reported that on average for the 2006-07 school year books and supplies ranged from $850 - $942. This range can be further expanded to $755 at public 2-yr colleges in the Southwest, to $1,187 at private 4-yr. colleges in the West. The studies blame greedy publishers and textbook authors, short revision cycles of texts, and high fixed costs.[1] It is also well known that professors choose the textbooks that will be used for class, but they themselves do not actually purchase the book. Moreover, instructors may not be fully aware of the final price of the book when examining the many different textbooks that they have received free from publishing representatives. This third-party decision making may lead to publishing companies increasing the prices of their books, knowing that students have little choice in whether or not to purchase the book, regardless of price. Overall demand, therefore, is relatively inelastic for adopted textbooks. This can also be seen in the healthcare sector where doctors prescribe medicine that is ultimately purchased by the patient. High final prices have led many students to purchase used or international versions of textbooks when available. The Government Accountability Office (GAO) completed a study in 2005 revealing that from 1984 – 2004 textbook prices have nearly tripled. They believe this has been caused by a large increase in the number of supplementary materials included with new textbooks. While there is a consensus that textbook prices have increased and may be becoming too expensive for students to afford, many economists and marketers have approached this topic from various viewpoints.

[1] See Carbaugh & Ghosh (2005), GAO Report (2005), National Association for College Stores <www.nacs.org>, and Fairchild (2005).

A number of studies, even going back thirty years, have focused on publishing companies "killing off" the market for used texts by releasing new editions of textbooks – so called planned obsolescence (Iizuka (2006), Merriman (2004), Miller (1974), Rust (1986)). Both Miller (1974) and Merriman (2004) determine that it is unlikely for publishers to release new textbook editions solely for the purpose of killing off the market for used texts. They present the idea that the initial price set for a good encompasses the present value of all future transactions – mainly the students' resale value. Thus, if no used market existed then textbook prices would be lower. Iizuka (2006) furthered this investigation by researching the influence of used competition on revision cycles. He found that a large used book market had more affect on the revision of "applied" textbooks rather than "principles" texts. There is the notion that publishers have a set revision cycle, say three years, where they will then release a new edition of their current textbooks. This cycle may simply be more apparent with principles textbooks whereas applied texts may have longer revision periods that give the used market time to influence supply and demand. John Rust (1986) concluded that three factors affect durability of goods: consumer aversion to used goods, fixed costs, and monopoly power. Since it seems as though students do not mind used texts the durability of these books are lower. However, larger fixed costs from the development of supplements drive durability back up – publishers must find even ground.

A variety of general studies of product obsolescence have also been conducted. Levinthal and Purohit (1989) find that the extent of obsolescence deals with the magnitude of improvements in the new product as well as the competitive interaction between the goods. Waldman (1993) agrees with this finding and asserts that a firm's

incentive to make new goods incompatible with used goods will be high. Bulow (1986) notes that in situations where there are only a few suppliers a firm's durability choices will affect competitor's future strategies. If these oligopolies can obtain some level of collusion, then it is beneficial for them to opt for planned obsolescence.

Adams and Yellen (1976) hold one of the first discussions concerning bundled goods, and the profitability stemming from the ability to sort customers into separate groups and extract consumer surplus. William Cready (1991) extends this model to find that in certain cases sellers price discriminate by charging more for a bundle of goods relative to the prices of each component in the bundle. This can occur when the seller is able to restrict a consumer from purchasing all of the individual pieces of the bundle and making her own bundle. Nalebuff (2000) adds to this topic by noting how bundling may be used as an entry deterrence device to firms that can only compete on a one product level. He also observes that a potential disadvantage of bundling is the cost of including items that customers do not desire. However, when these ancillary materials are complementary and have an extremely low marginal cost of production this disadvantage is less important.

Moreover, recent studies of the textbook market have begun to discuss consumer behavior and purchase decisions. Gabaix and Laibon (2005) look at the uneducated consumer and the firm's role in "shrouding" attributes of its product. Firms try to exploit myopic customers by schemes that hide the price of add-ons. In the textbook industry this can be seen with higher prices of bundled books and supplements. However, not all ancillary materials are used in classes requiring a group of texts. Sophisticated consumers who have figured this out will instead go elsewhere to purchase single books

at a lower price. Chevalier and Goolsbee (2005) have spent their time researching the forward-looking behavior of consumers and estimating demand when students successfully predict publisher's actions. Taking into account the resale value of their books, students purchase new and used texts accordingly. Bond and Iizuka (2005) show that because some students place value on used texts, prices may increase over the life of the product. This may help explain the ever increasing price of books and supplies in today's markets.

Finally, as our society becomes more technologically savvy, a larger number of students are opting to purchase their textbooks online. According to a NACS study, students reported purchasing 23% of their books online, one-third of these being from a college bookstore's website. These statistics are expected to grow as the number of internet retailers expand and students become aware of their buying options. Various studies have also begun to examine the attributes of websites and those of consumers that lead to these patterns (Foucault and Scheufele (2002), Talaga and Tucci (2001), Yang et. al (2006)). Significant attributes of websites include price, feeling of security, ease of purchase, and variety of products (Yang et. al, 2006). Students also respond to buyback policies, and are much more likely to purchase texts online if they themselves lead a "wired" lifestyle and have friends that have purchased books from an internet retailer (Foucault and Scheufele (2002), Talaga and Tucci (2001)). Thus, online purchases may increase exponentially in the future as consumers become familiarized with textbook websites and discover those around them who are making similar buying decisions.

All of the above studies have examined the textbook market when few cases of bundled materials were present. Bundles include a textbook along with additional

materials such as study guides, CD-ROMs and access to internet sites linked with a particular text. I will be looking at a more recent time period and investigating whether the knowledge of assigned texts being bundled, and the type of bundle created, has an effect on the demand of new textbooks.

III. Student Survey

In order to gain a better understanding of how students are responding to increasing textbook prices a survey was prepared and sent out to all undergraduate students currently studying at the University of Richmond in the spring of 2008. Of the 780 respondents (an approximate 30% response rate), over sixty percent spent more than $300 on course materials for the semester and only approximately forty-two percent purchased all required texts from the campus bookstore. The most popular alternative supplier of required textbooks is online retailers such as amazon.com, half.com and eBay.com. Other students tried borrowing or sharing books with friends or checking them out of their local/campus libraries.

Revealing the trends of the time, over seventy percent of respondents answered that at least one of their books came bundled with supplementary materials. However, roughly sixty percent of students with bundled texts rarely or never used the included supplements. Students are most willing to use study guides and practice tests to aid their studies, but do not want to pay big bucks for these ancillary materials. Approximately two-thirds of respondents would only pay up to $15 for a supplement to his/her textbook. A copy of the survey and corresponding results can be found in Appendix A.

This empirical study examines the effect that various types of supplements have on the average price of a new textbook. If prices are significantly increased by the addition of these ancillary materials, publishers may be exploiting those students who place a much lower value on the supplements that are being bundled. Professors can also help to relieve student frustration by using supplements to aid with class work and improve the learning of their students, or by simply not ordering these bundles but rather the textbook alone. If prices do not seem to be largely affected by the inclusion of supplements then further probing will need to be done to discover new reasons for the increasing price of textbooks used in higher education.

IV. Theoretical Model

Basic Demand

Basing our model on a standard model of consumer behavior seen in Martin (1999) we can write our consumer utility as a function of two goods of the form

$$U = m + a(Q_1 + Q_2) - (1/2)(Q_1^2 + 2\Theta Q_1 Q_2 + Q_2^2) \quad (1)$$

where m represents all other goods and Θ represents the relationship of good 1 and good 2. The parameter lies between -1 and 1, where $\Theta>0$ implies substitutability between goods and for $\Theta<0$ goods 1 and 2 are complements. In our scenario we will examine when $\Theta<0$ as supplementary materials are considered complementary of the textbooks that they are bundled with.

Setting up a Lagrangian to maximize utility subject to a budget constraint leads us to

$$£ = m + a(Q_1 + Q_2) - (1/2)(Q_1^2 + 2\Theta Q_1 Q_2 + Q_2^2) + \lambda(I - P_1 Q_1 - P_2 Q_2) \quad (2)$$

where $\delta £/\delta Q_1 = a - Q_1 - Q_2\Theta - \lambda P_1$ (3)

and

$$\delta £/\delta Q_2 = a - Q_2 - Q_1\Theta - \lambda P_2 . \quad (4)$$

The inverse demand curves are then simply

$$P_1 = a - Q_1 - Q_2\Theta \quad (5)$$

and

$$P_2 = a - Q_2 - Q_1\Theta. \quad (6)$$

Solving equation (6) for Q_2 and substituting this into equation (5) leads us to

$$P_1 = (1- \Theta)a - Q_1(1- \Theta^2) + \Theta P_2 . \quad (7)$$

Here we can see that as consumer tastes and preferences for good 1 (the parameter a) rise then the price of good 1 will also rise. As the demand for good 1 increases, its price will fall and as the price of good 2 increases the price of good 1 will fall since we have assumed goods 1 and 2 are complementary.

Bundled Demand

By simplifying our textbook market we can look at how our model changes when bundled goods are introduced. We will generalize using two firms; firm A is the college bookstore, which sells textbooks bundled with their supplements, and firm B can be thought of as an online retailer which only sells single textbooks. We will assume that it is rarely cost effective to purchase a textbook and its supplement separately, as it can be shown that many firms have an incentive to bundle (Nalebuff, 2000).

It can be written in this instance that firm A has a monopoly of the supplement, which we will label good 1, and both firms sell textbooks.

$$Q_1 = q_{A1} \quad (8)$$

$$Q_2 = q_{A2} + q_{B2} \quad (9)$$

Because supplements differ in their characteristics we will use a variable k_A in describing good 1 in relation to good 2. A larger value of k is superior to a smaller value and may represent durability or helpfulness of the supplement. The data has been sorted to account for many different supplements and to classify each bundle by either the type or number of supplements included in order to examine how each type influences the price of the bundle as a whole. We will also use a variable k_B that will help to control substitutability differences between new textbooks sold by the bookstore in their bundles and used texts. The variable k_B measures the quality of these traded textbooks and takes into consideration the fact that after a few years in the life of a book the probability has risen that a new edition will be released. Controls include the edition and age of publication as well as the book materials (ie. softcover v. hardcover). The range of these variables is (0,1); a value of 0 representing there is no supplement used by Firm A, or there is a non-substitutable book sold by Firm B.

Firm A (bookstore) sells bundles

$$(k_A, 1) \tag{10}$$

and Firm B (Amazon.com) has bundles

$$(0, k_B) \tag{11}$$

since it sells no supplement.

Substituting these new bundles in for q_A and q_B in equations (8) and (9) we get

$$Q_1 = k_A b_A \tag{12}$$

$$Q_2 = b_A + k_B b_B \tag{13}$$

where b_A is the number of bundles sold by firm A and b_B is the number sold by B.

If we substitute these two new equations into our general untility function (1) we get

$$U = m + a(b_A(1+k_A) + k_Bb_B) - (1/2)[(k_Ab_A)^2 + 2\Theta(k_Ab_A)(b_A + k_Bb_B) + (b_A + k_Bb_B)^2]. \quad (14)$$

We will take our new Lagrangian

$$£ = U + \lambda(I - P_Ab_A - P_Bb_B) \quad (15)$$

and find the partial derivatives to discover our new inverse demand curves for bundles.

$$\delta£/\delta b_A = a(1+k_A) - (1 + 2\Theta k_A + k_A^2)b_A - b_B(k_B + \Theta k_Ak_B) - \lambda P_A \quad (16)$$

$$\delta£/\delta b_B = ak_B - b_A(k_B + \Theta k_Ak_B) - k_B^2b_B - \lambda P_B \quad (17)$$

Our new inverse demand curves are

$$P_A = a(1+k_A) - (1 + 2\Theta k_A + k_A^2)b_A - b_B(k_B + \Theta k_Ak_B) \quad (18)$$

$$P_B = ak_B - b_A(k_B + \Theta k_Ak_B) - k_B^2b_B \quad (19)$$

When we solve equation (19) for b_B and substitute it into (18) we can see the factors that affect P_A by taking partial derivatives.

$$P_A = a(1+k_A) - (1 + 2\Theta k_A + k_A^2)b_A - (k_B + \Theta k_Ak_B)(ak_B - P_B - b_A(k_B + \Theta k_Ak_B)/(k_B)^2 \quad (20)$$

$$\delta P_A/\delta a = k_A(1-\Theta) \quad (21)$$

$$\delta P_A/\delta k_A = a(1- \Theta) + 2k_A(b_A\Theta^2 - \Theta - b_A) + \Theta(2b_A + P_B/k_B) \quad (22)$$

$$\delta P_A/\delta P_B = (1 + \Theta k_A)/(k_B) \quad (23)$$

$$\delta P_A/\delta \Theta = k_A(P_B/k_B + 2k_Ab_A\Theta - a) \quad (24)$$

$$\delta P_A/\delta k_B = -(P_B + \Theta\, k_AP_B)\,/(k_B)^2 \quad (25)$$

It is interesting to note that when looking at two goods that are complements we find that $\delta P_1/\delta P_2 < 0$. On the other hand, when we bundle these goods the packages are modified and now become substitutes. As preferences and the price of bundle B rise, so should the price of bundle A. P_B not only drives up the price of the textbook in package A but because Firm B may be looked at as an internet retailer, a higher price on Amazon.com implies a higher resale value of the textbook purchased with package A. A

majority of students look to sell their books back after one semester of use, and these retailers are perfect options. Moreover, as k_B decreases P_A will also rise. A decrease in the quality of used texts will decrease substitutability between bundles and thus firm A can charge more for their bundle A. It is ambiguous here as to the effects of changes in both k_A and Θ on the price of bundle A. We can, however, assume the intuitive signs for these partial derivatives and then discuss what must be true for these signs to appear.

We would expect that as the durability and helpfulness of a supplement increases the price of bundle A, which includes this supplement, would rise. For this to be true individual tastes and preferences, a, would need to be large, namely greater than $2k_A(\Theta + b_A - b_A\Theta^2)/(1-\Theta) - \Theta(2b_A + P_B/k_B)/(1-\Theta)$. Furthermore, when $a > P_B/k_B + 2k_Ab_A\Theta$ then $\delta P_A/\delta\Theta < 0$ which shows that as substitutability between bundles A and B increases, the price of bundle A will fall. Because there is a third-party purchaser in the textbook market these equations may not hold true. Students may not prefer to purchase supplements, and would most likely be equally satisfied using an old copy or edition of a textbook, but purchase the package that is designated by their professors.

V. Data

My data comes from Monument Information Resources, a market intelligence source for the higher education textbook publishing industry. MIR collects data for every field of study starting with 1995. However, I am currently using textbook information for the department of psychology, covering the period from 2000 through 2006. In order to focus my research on the effects of bundling on new textbook prices I have elected to use all sales data for introductory level psychology books sold to four year colleges and

universities. The data are given according to the ISBN number of each book and gives the quantities sold and average prices for both new and used texts. Other characteristics of the texts such as author, edition, publisher and age of book are also included. Table 1 shows descriptive statistics and definitions for these variables.

After sorting the data for each year by bundle type I removed all observations with missing information. Beginning with 4633 observations over all seven years, observations were removed because of missing price data (57), quantity sold (386), and publishing date (368). All observations that had no specified edition are assumed to be in their first edition. A total of 3840 data points were left and then 123 observations were further removed because of their lack of relevance to psychology. A final count of 3717 data points will be used in the analysis of new textbook price. Tables 2 and 3 list the average new and used prices, respectively, for each of the categories of bundles that will be included in the empirical analysis. Table 4 shows the frequency of each type of bundle throughout all seven years. All prices are in constant 2006 dollars for comparison over the seven year period. It can be seen that the price of all supplements increased over this period, and that in the vast majority of cases the average price of a bundle including supplementary material is higher than the average price of the book alone.

VI. Empirical Analysis

Before any analysis can be performed a few assumptions must be made concerning the model. Firstly, I am assuming that the quantity supplied equals the quantity demanded; the market is in equilibrium. Secondly, due to the fact that I am regressing price on quantity a statement on this relationship must be made. Price does

not seem to directly influence quantity demanded, as professors may only be aware of a price range for the textbooks that they are considering to adopt. Also, publishing companies have said that the quantity produced does not influence the price that is set. The price is set at the beginning of the academic year and books are printed as needed. Thus, by including quantity in my regressions, I can test to see if I have correctly controlled for other factors influencing price. If not enough controls have been made than a positive sign on quantity would be assumed as this could be capturing the popularity of a book. Books that are more popular, because of a well-respected publisher or due to the fact that revisions have made it a reliable source, may sell more copies and also be priced higher.

In estimating the inverse demand relationship I regress average new textbook prices on the quantity of new textbooks, the share of used texts in the market, the bundle type, and other book characteristics affecting sales price such as edition year, book materials (hardcover v. softcover), age of book and publisher. Thus, my empirical model is:

$P_A = f(b_A,$ *used share, bundle type, edition, book materials, age, year, publisher, error)*

where the error term follows the classical OLS assumptions.

Using dummy variables to account for the various categories of bundles, I will exclude the bundle consisting of solely the textbook in order to compare the effects of bundles that include supplements against the textbook alone. Dummy variables will also be inserted to control for book material. Age is calculated as the sales year minus the publication date of the current edition. In combining all seven years of data I account for

both period and cross-sectional fixed effects. Period effects are modeled by the inclusion of binaries for each of the years 2001–2006 with 2000 being the reference period. Publisher binaries rather than textbook binaries are included to model cross-sectional fixed effects. Tracking a textbook through various editions with the possible inclusion of a new author is intractable for the hundreds of textbooks in the data set. Additionally, an individual textbook might only be sold for two or three years, perhaps nonconsecutive, and not the full seven. By including publisher binaries, I argue that a publisher employs a broad pricing and marketing strategy that is general to its textbooks and relatively unchanging over the years 2001-2006.

Two main regressions were run, one to capture the effect of the number of supplements packaged with a new textbook, and the other to discover the individual effects of various supplements. In this regression SG, INT, and CD represent a study guide, internet or infotrac site, and a CD-ROM, respectively. The 'Other' category refers to all other supplements such as practice tests and subscriptions to certain readers.

VII. Results

Both models perform well overall, explaining approximately 45% of the price variance in introductory psychology textbooks. Before investigating the impact of bundling supplements with texts I will examine the results of the control variables. Table 5 presents regression results for these regressions. Both regressions quantify the fact that books have gotten more expensive over the years, as the year coefficients rise over time. If students correctly take into account the relative ease with which they can resell a book because of a larger used market, they should be more willing to spend extra money on the

newest version. This is evidenced by a positive and significant coefficient on *used share*. On average a soft cover book is ten dollars cheaper than hardcover and edition has a quadratic effect on price. As a book goes through several editions it becomes more reliable as errors have been corrected and new examples and applications have been added. However, by the time a textbook has gone through multiple revisions, new books have been published that may include up-to-date data and information which is relevant for class work. Approximating from the coefficients on *edition* and *editionsq* this downturn occurs at edition twelve. Important to note is the fact that in both regressions the quantity of new texts sold has a small and insignificantly positive effect on the price of new textbooks. *New Total Units* was included for the completeness of the model. An insignificant coefficient tends to corroborate that the regressions have both controlled for effects of book popularity through edition, used book market share, publisher, and age. This result accentuates the findings of the research and the robustness of the test. I also examined the variance of the residuals by year; these results are listed in Table 6.

It can be seen that, on average, bundling one supplement with a new textbook raises the price of the package by $16.70. Bundling two or three supplements adds $17.98 and $20.42 compared to the book alone, respectively. Because the addition of another supplement to a package does not drastically change the price of the bundle it is revealed that publishers face a very low marginal cost of production. Fixed costs of development of supplements may be spread over all texts sold with ancillary materials, independent of the quantity of supplements contained in the package.

My second regression breaks down the different types of supplements that can be bundled with a textbook. The presence of a study guide adds the most to the price of a

book package, namely $18.52. Internet/Infotrac, CD-ROMS, and other one-supplement packages add, on average, $17.67, $14.51, and $16.21 to the price of a new textbook. Furthermore, these values are just the beginning of the story. Once college bookstores purchase these texts from publishers there is an additional price mark-up that the students must pay. Thus students' value of a textbook bundled with related materials must be high enough to cover this new shelf price.

VIII. Conclusions – Policy Implications

Because the act of bundling is seen from an economic standpoint as a form of price discrimination, it will continue to be looked at in relation to laws that limit this act of unfairness. In addition, the textbook industry is unusual because the consumer may not place a higher value on the bundle versus the book alone. Students are the consumers, but they do not have a choice when browsing their college bookstores as to what combination of goods they buy. From the student survey that was conducted, it seems that some students do not place a value on ancillary materials that is high enough to warrant the prices charged for these textbook bundles. Publishers may be capitalizing on creating these "premium bundles" and restricting the supply of individually packaged study guides and workbooks. Further investigation of student preferences is also necessary so that stronger general conclusions can be drawn. Students attending larger schools in which class size is considerably bigger than the University of Richmond may place a higher value on supplementary resources to aid in their learning of classroom material. A study which separates textbooks sold to private and public universities may be able to capture different trends in both pricing and bundling practices.

Nevertheless, many students are discovering the growing supply of new and used textbooks available through the internet, and the phenomenon of e-books is now entering the market. Students may soon be able to purchase an electronic version of their texts through a license, cutting costs extraordinarily. Additionally, publishers have recently begun to sell textbooks directly to students in which the college bookstore is completely eliminated from the equation. These methods will save consumers money but limit the resale of texts, possibly leading publishers to lower prices, yet by less than the amount that a text purchased traditionally could receive in the used market. Economists will need to keep a watch on the industry to see if these practices come into existence.

If the trend of bundling textbooks and supplementary materials continues to rise some implications may include the requirement of single textbooks to be sold at bookstores along with the chosen bundles. Moreover, professors can work to tailor packages of books, study guides, and other ancillary material to their specific courses, making certain to use each piece that is purchased. Many publishers have now begun to include only chosen chapters in a custom bound book to reduce costs for students. Conversely, a number of these practices may lower the cost of new textbooks, but will also reduce the probability of being able to resell a book after its use is complete. Students will have to tolerate the rising price of textbooks for the time being while alternatives are in the developmental stages, but the future holds many opportunities.

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Table 1. Descriptive Statistics of Variables and Description of Noted Variables

Variable	Definition	Predict. Sign	Mean	Std. Dev.	Min.	Max.
New_Avg_Price	Average price of a new bundle package		77.45	31.12	1.11	332.19
New_Total_Units	The number of units sold of a particular bundle	+/-	581.85	1384.69	1	25572
Used_Share	Used Total Units/(Used Total Units + New Total Units	+	0.28	0.32	0	0.998
Edition	Edition number of textbook in bundle	+	4.24	3.64	1	36
Editionsq	Edition * Edition	-	31.2	78.35	1	1296
Age	Sales year - Publication data	-	2.46	4.13	-2	60
Softcover	Non-hardcover textbook in bundle	-	0.11	0.31	0	1
SG	Textbook bundled with study guide only	+	0.19	0.39	0	1
Int	Bundle with internet or infotrac website only	+	0.17	0.37	0	1
CD-Rom	Bundle with CD-Rom only	+	0.20	0.40	0	1
Other	Bundle with a supplement other than a study guide, internet site or CD-Rom	+	0.16	0.37	0	1
Supp 1	Bundle with any 1 supplement	+	0.30	0.45	0	1
Supp 2	Bundle with any 2 supplements	+	0.14	0.35	0	1
Supp 3+	Bundle with at least 3 supplements	+	0.06	0.23	0	1

Table 2. Average New Price of Textbook Packages

	2000	2001	2002	2003	2004	2005	2006	%Δ 00-06
Book	70.89	73.34	77.41	82.62	81.26	80.83	88.55	24.91%
SG	79.41	82.00	85.41	82.55	77.77	83.07	100.79	26.92%†
Int	91.31	92.00	92.34	92.77	88.79	87.96	94.98	4.02%
CD	87.54	87.78	89.91	90.47	96.15	92.61	89.05	1.73%
Other	75.68	81.71	81.70	85.68	90.34	92.69	98.88	30.65%
Supp 1	83.63	86.88	88.84	88.75	88.80	89.30	95.00	13.59%
Supp 2	83.26	82.70	85.84	91.38	92.06	92.08	97.90	17.58%
Supp 3+	85.10	90.33	93.44	90.55	90.32	96.85	92.14	8.27%

† The change for 00-05 is 4.61%

Table 3. Average Used Price of Textbook Packages

	2000	2001	2002	2003	2004	2005	2006	%Δ 00-06
Book	66.32	59.33	63.54	64.63	65.02	64.27	65.55	-1.16%
SG	58.15	55.47	58.37	62.03	56.31	54.81	56.37	-3.06%
Int	65.80	70.04	72.02	69.53	68.73	67.90	70.61	7.31%
CD	62.95	67.13	67.00	69.43	69.77	71.81	57.97	-7.91%
Other	54.88	72.49	72.84	68.30	67.99	69.33	72.13	31.43%‡
Supp 1	62.53	67.53	70.47	68.99	67.07	66.64	67.90	8.59%
Supp 2	63.20	59.13	56.84	60.04	65.36	72.46	73.43	16.18%
Supp 3+	58.90	63.22	67.05	66.05	64.43	72.55	69.23	17.54%

‡ The change for 01-06 is -.49%

Table 4. Frequency of Bundles by Year

	2000	2001	2002	2003	2004	2005	2006
Book	49.89	47.05	44.10	45.12	51.54	52.47	60.11
SG	11.63	8.66	5.81	6.45	5.41	5.42	4.51
Int	5.59	7.48	7.80	7.62	8.30	10.69	9.03
CD	6.71	7.09	7.80	8.59	9.27	8.61	4.87
Other	5.59	7.28	5.63	7.81	8.11	7.97	7.94
Supp 1	31.10	30.71	27.04	30.47	31.27	32.70	26.35
Supp 2	14.09	15.16	18.33	17.58	13.90	11.32	10.83
Supp 3+	4.92	7.09	10.53	6.84	3.28	3.51	2.71

Table 5. Ordinary Least Squares Regression Results
Coefficients and Significance
Dependent Variable: *New Average Price*

Variable (Predicted Sign)	Model 1: Type of Supplement	Model 2: Number of Supplements
Intercept	54.55840***	54.41479***
	(28.76)	(28.85)
Edition (+)	3.63594***	3.63347***
	(15.73)	(15.73)
Edition Sq (-)	0.14703***	-0.14668***
	(-13.85)	(-13.82)
New Total Units	0.00039122	0.00040939
	(1.36)	(1.42)
Used Share (+)	5.67543***	5.60581***
	(4.14)	(4.10)
Softcover (-)	-9.57529***	-9.51247***
	(-7.02)	(-7.00)
Age (-)	-1.08046***	-1.07424***
	(-7.85)	(-7.81)
SG Only (+)	18.51717***	
	(11.02)	
INT Only (+)	17.66964***	
	(11.14)	
CD Only (+)	14.50627***	
	(9.09)	
OTHER Only (+)	16.21458***	
	(10.05)	
Supp 1 (+)		16.69852***
		(16.38)
Supp 2 (+)	17.91501***	17.98471***
	(3.83)	(13.89)
Supp 3&up (+)	20.29813***	20.41715***
	(10.94)	(11.01)
y2001	2.08083	2.03378
	(1.37)	(1.34)
y2002	5.31653***	5.22356***
	(3.52)	(3.47)
y2003	6.91686***	6.80494***
	(4.46)	(4.40)
y2004	7.10339***	6.95305***
	(4.49)	(4.40)
y2005	9.55226***	9.42199***
	(6.15)	(6.08)
y2006	14.09046***	13.98812***
	(8.73)	(8.69)
R^2	0.4554	0.4548
Adj. R^2	0.4425	0.4423
# of observations	3713	3713

All significance is at the 1% level, t-values are in parentheses. Publisher binaries are not shown.

Table 6. Check of variance of residuals by year

Year	Observations	Mean	Std. Dev	Min	Max
2000	447	-7.29E-13	19.94	-68.39	43.73
2001	508	-2.50E-14	21.21	-70.62	60.41
2002	551	6.37E-14	21.08	-74.57	50.21
2003	512	3.26E-15	22.54	-74.89	56.27
2004	518	4.85E-14	23.50	-74.46	105.72
2005	627	1.53E-14	25.44	-78.53	242.81
2006	554	3.04E-14	25.49	-78.49	78.68

Because of the similarity of both regressions only one table is shown for Model 1. Comparable results were found for Model 2.

Appendix A. University of Richmond Student Survey

Q1. What is your sex?

Count	Percent	
285	36.54%	Male
495	63.46%	Female

Q2. What is your graduation year?

Count	Percent	
203	26.03%	2011
195	25.00%	2010
166	21.28%	2009
216	27.69%	2008

Q3. How much did you spend during spring 2008 on course materials?

Count	Percent	
102	13.08%	Under $200
198	25.38%	$200 - $300
232	29.74%	$301 - $400
153	19.62%	$401 - $500
95	12.18%	$501 +

Q4. Did you buy all of your required textbooks from the bookstore?

Count	Percent	
326	41.79%	Yes
454	58.21%	No

Q5. How many books did you purchase elsewhere?

Count	Percent	
64	14.10%	1
82	18.06%	2
68	14.98%	3
40	8.81%	4
200	44.05%	5 +
454	Respondents	

Q6. Where do you purchase the books that you do not buy from the bookstore? (Check all that apply)

Count	Respondent %	Response %	
41	9.05%	7.47%	A different bookstore
68	15.01%	12.39%	A friend
419	92.49%	76.32%	Online retailer (e.g., Amazon.com, Half.com, eBay.com)
21	4.64%	3.83%	Other (please specify)
454	Respondents		
549	Responses		

Q7. How many of your textbooks came with supplementary materials (e.g., study guides, CD-ROMs, companion websites, etc.)?

Count	Percent	
235	30.13%	0
260	33.33%	1
222	28.46%	2
54	6.92%	3
9	1.15%	4 +
780	Respondents	

Q8. In those classes that required books with supplements, how many supplements did you use?

Count	Percent	
231	42.70%	0
235	43.44%	1
65	12.01%	2
8	1.48%	3
2	0.37%	4 +
541	Respondents	

Q9. How often were the supplements used for work?

Count	Percent	
48	8.87%	Always
95	17.56%	Often
82	15.16%	Sometimes
109	20.15%	Rarely
207	38.26%	Never
541	Respondents	

Q10. What courses required you to buy a book and supplement? (Check all that apply)

Count	Respondent %	Response %	
184	34.01%	18.40%	Intro-level (100-level)
253	46.77%	25.30%	200-level
161	29.76%	16.10%	300-level
79	14.60%	7.90%	Physical sciences (physics, chemistry, biology)
74	13.68%	7.40%	Social sciences (economics, psychology)
40	7.39%	4.00%	Humanities
166	30.68%	16.60%	Business
43	7.95%	4.30%	Other (please specify)
541	Respondents		
1000	Responses		

Q11. What textbook supplement would you find most helpful in aiding your learning experience?

Count	Percent	
290	37.52%	Study guide
329	42.56%	Practice tests
76	9.83%	Online workbook
78	10.09%	CD-ROM
773	Respondents	

Q12. How much would you be willing to pay for a supplement to your textbook?

Count	Percent	
317	41.01%	$0 - $10
221	28.59%	$11 - $15
125	16.17%	$16 - $20
76	9.83%	$21 - $25
34	4.40%	$26 +
773	Respondents	