

The Great Experiment: Pricing on the Internet

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1. Introduction

The rise of business-to-consumer electronic commerce represents one of the greatest economic experiments in history. In its initial conception, anyone could start a business-to-consumer firm. By shipping goods directly from wholesalers, firms would run extremely efficient operations. They would spend only on the website and earn money from sales, possibly from advertising, and from interest earned because goods were sold before suppliers had to be paid. Customers would use comparison-shopping engines to choose the lowest cost suppliers for relatively standardized goods. Thus prices for these goods would fall to cost and price dispersion would fall to zero, because no firm could charge a price above market.

The reality as of 2001 is that business-to-consumer electronic commerce firms look a lot like physical retailers and many operate in both channels. Most customers do not use comparison-shopping engines, although usage is slowly increasing. Those who comparison-shop often do not choose the lowest price vendor. Thus, price has not fallen – and almost certainly never will fall – to cost. Further, price dispersion is significant, online as well as offline. The fact that the evolution of business-to-consumer electronic commerce did not conform to the initial rather far-fetched plan should not obscure the fact that the rise of business-to-consumer electronic commerce still represents a significant economic achievement.

Despite the importance of the achievement, we know remarkably little about how the rise of electronic commerce has affected retail prices both online and offline. In this paper, we survey the academic empirical literature as of mid 2001 on the impact of the Internet on retail prices. The survey examines three issues: market efficiency, retailer behavior, and consumer behavior. The market efficiency section examines four aggregate measures that are related to efficiency: price, elasticity of demand, price dispersion, and menu costs (the costs of changing prices). The next two sections examine more disaggregate measures of pricing on the Internet: how firms set prices and how consumers respond to prices. Each of the three sections ends with suggestions for future research.

2. Market Efficiency

Market efficiency occurs when all welfare-enhancing trades are executed. In a perfectly competitive market for homogenous goods, efficiency implies that price will fall to marginal cost, the price elasticity of demand that any one firm faces will be infinite, price dispersion will be zero, and prices will change instantaneously as supply and demand conditions change. Conventional wisdom suggests that by increasing competition, and lowering menu costs (the costs of changing prices), lowering search costs for prices and product information Internet markets should be more efficient than comparable physical markets. What happens in practice is potentially quite another matter. In this section we review the empirical literature regarding the level of efficiency in Internet markets.

2.1 Price Levels

Bailey (1998a, 1998b) conducted the seminal research to compare price levels in physical markets to price levels in Internet markets. Bailey compared prices for a matched set of books, CDs, and software titles collected from Internet and physical stores in 1996 and 1997. For this period, he found higher prices on the Internet than in physical stores. He hypothesize that this finding could be due to a lack of competition in Internet markets during this period of time. There were few well-known retailers in the market and thus customer search intensity across retailers may have been low. This hypothesis is supported by Bailey's observation of Barnesandnoble.com's entry into the Internet market in March 1997. Bailey observes that Barnesandnoble.com entered by undercutting Amazon.com's prices by 10 percent and that Amazon quickly matched these lower prices during the following months.

In a later study, Brynjolfsson and Smith (2000), examined prices for books and CDs gathered from Internet and physical retailers in 1998 and 1999. In contrast to Bailey, their study found that prices were lower on the Internet than in physical stores: 16 percent lower when just considering the item prices and 6-10 percent lower when taxes and shipping and handling charges were included. As noted above, a possible source for the differences between Bailey's and Brynjolfsson and Smith's results was increasing competition among retailers during this time period.

Both of the previous studies raise questions about the nature of competition over time. Using data collected between August 1999 and January 2000 covering 399 books and thirty-two online bookstores, Clay, Krishnan, and Wolff (2001) found that prices were stable or rising over the sample period. Separate regressions that controlled for the

number of bookstores selling a particular book indicated that prices were effectively stable and that prices were lower for books sold by larger numbers of stores.

A related question concerns how prices change with changes in Internet penetration when retailers set a single price for both physical and Internet markets. Brown and Goolsbee (2000) examined how the proportion of individuals using the Internet affects online prices for life insurance. Their data included regional Internet usage figures for customers in the United States and micro data on individual life insurance prices. They found that a 10 percent increase in the proportion of individuals using the Internet in a particular geographic area is associated with a 5 percent reduction in average insurance prices in those areas.

Researchers have also used Internet and physical retailer price comparisons to examine indirect characteristics of market efficiency. Png, Lee, and Yan (2000), for example, collected prices for books and CDs from physical and Internet retailers to examine the degree of competitiveness in the two markets. They found that their data is consistent with lower buyer search costs in Internet markets.

2.2 *Price Elasticity*

Increased price elasticity is a signal of increased customers search intensity in markets for homogeneous goods. Two recent studies analyze firm-level elasticity in the context of Internet markets. Ellison and Ellison (2000) analyzed price elasticity for three computer hardware products at a retailer who gains most of their sales through shopbot referrals. Their data exhibited extremely high price elasticity for motherboards and low quality memory modules. However, they also found negative cross-price elasticity between low and medium quality memory modules suggesting that the retailer is using a

price obfuscation strategy to soften price competition. Similarly, Smith and Brynjolfsson (2001) found that shopbot customers for books were very sensitive to the ordinal position of offers in a comparison table sorted by price.

2.3 Price Dispersion

In contrast to the results for price levels above, the empirical results for price dispersion are nearly unanimous. Almost all studies show a high degree of price dispersion in Internet markets for seemingly homogeneous physical goods. For data collected in 1996 and 1997, Bailey (1998a, 1998b) found more dispersion in Internet markets for books, CDs, and software than for these same products sold in physical markets. For data collected in 1998 and 1999, Brynjolfsson and Smith (2000) also found that dispersion is higher for books and CDs on the Internet than in physical stores. These high levels of dispersion have been confirmed in more recent studies for the Internet book markets (Clay, Krishnan, and Wolff 2000; Smith 2000), and DVD markets (Tang and Xing 2000). Recent work on the international online textbook market indicates that cross-country dispersion is also very large (Clay and Tay 2001).

Other researchers have studied dispersion in Internet markets for differentiated goods by using hedonic techniques to control for observable differences in products. Clemons, Hann, and Hitt (1998) analyzed markets for airline tickets sold by online travel agencies. They controlled for observable difference in the tickets (times, layovers, connections, airlines) and found that prices differed by as much as 20 percent across the online travel agents they surveyed. Bakos et al (2000) also found significant dispersion in trading costs for online retailer brokerage services.

There are a variety of possible explanations for these findings. One possibility is that there are other unobservable sources of product differentiation that were not accounted for in the price analyses. For example, it may be that while consumers have good information about prices across retailers, they have poor information about service quality across retailers. Because the Internet imposes a spatial and temporal separation between consumers, retailers, and products the Internet may increase the importance of service quality and decrease service quality cues available to customers (Smith, Bailey, and Brynjolfsson 2000).

It is also interesting to analyze the change in dispersion over time as markets change. Brown and Goolsbee (2000) found that the introduction of shopbots for life insurance initially increased the dispersion in life insurance prices. However, price dispersion fell as the share of customers using these shopbots increases further. Clay, Krishnan, and Wolff (2001) found dispersion did not change between August 1999 to January 2000 in the online book market.

2.4 *Menu Costs*

Although menu costs (the costs of changing prices) are an important aspect of market efficiency, they are difficult to measure directly. In physical stores, typically quantify menu costs by documenting the exact process retailers go through to change prices and assigning costs to each step (Levy, Bergen, Dutta, and Venable 1997).

Absent such information, another approach is to look for indirect signals of the size of menu costs. In this regard, Bailey (1998a, 1998b) found that Internet retailers undertake more price changes than physical stores. Brynjolfsson and Smith (2000) observed that over the course of their 15-month study, while Internet retailers regularly

made price changes between \$0.01-0.05, physical retailers never made price changes smaller than \$0.35 and rarely made price changes smaller than \$1.00. Since these are indirect measures, they are not conclusive. It is possible that smaller price changes are more common on the Internet because of higher price elasticity and it is possible that more price changes are caused by strategic pricing behavior on the part of Internet retailers. However, taken together these findings seem to confirm the conventional wisdom that Internet retailers should have lower costs to change prices in response to shifts in market supply and demand.

2.5 Future Research

There are a variety of ways to extend the empirical results mentioned in this section. Most of the studies to date have focused on low priced consumer products such as books, CDs, and software. Markets for more expensive products may have different search intensities and therefore different efficiency characteristics.¹ Also of interest are services such as logistics services and products such as airline seats and telecommunications bandwidth that have “perishable” capacity. Consider the case of airline tickets. To fill seats that would be empty otherwise, airlines developed yield management techniques. Using these techniques, airlines track inventory and iteratively modify the set of seats allocated to different price structures as flight time approaches (Belobaba 1987, Smith et al, 2001). As yield management techniques migrate to other domains and begin to incorporate new distribution channels such as online auctions, empirical research is needed to understand pricing in this important domain.

¹ However, Smith (2000) observes that for books priced from \$1 to several thousand dollars, there is an increase in dispersion as price increases.

Price levels and price dispersion may also change over time as markets mature. It would be interesting to document how changes in markets over time affect measures of efficiency. Markets with price discrimination and auction markets may have different efficiency metrics than the consumer markets discussed above. It would be interesting to quantify and analyze appropriate efficiency metrics in these markets and compare them to the efficiency characteristics discussed above. Lastly, it would be interesting to analyze price elasticity among customers who do not use shopbots both as a point of reference and to increase the generalizability of current studies.

3. Retailer Behavior

Predictions about retailer behavior have ranged from perfect competition to some form of tacit collusion, to differentiation. As of this writing, empirical evidence to test these hypotheses is limited to a very small number of categories – books, travel, perfume, DVD players, and computer components. With the exception of the study of computer components, all of the retailers are selling branded commodity products, so it is easy to compare prices across vendors. The discussion that follows summarizes some stylized facts from the empirical literature and then outlines areas for future research.

3.1 Books

The online book industry has received the most intense scrutiny from academics and nonacademics, so we know the most about retailer behavior in this segment. Internet retailers post significantly different prices for the same books. One comprehensive study is Clay, Krishnan, and Wolff (2001). Their data cover the weekly minimum prices of 399 books at 32 online bookstores for the period August 1999 to January 2000. The books

include a mix of New York Times bestsellers, Amazon bestsellers, and random books selected from Books in Print. The lowest priced store in the sample is Buy.com, which had the lowest price 35 percent of the time. No other store had the lowest price more than 5 percent of the time. The “big three” offered very similar prices. Across all books and stores, the average difference between Amazon and the lowest price store ranged from a low of 10 percent for current New York Times bestsellers to a high of 25 percent for books that had moved off of the New York Times bestsellers list.

Another comprehensive study is Smith (2001). His data covered prices for 23,000 unique titles and 33 retailers for the period August 25, 1999 to November 1, 1999. In each case the prices were returned in response to searches for books initiated by customers visiting Dealtime.com, a prominent shopbot for books. An advantage of his data set relative to Clay, Krishnan, Wolff (2001) is the much broader range of titles that are included. A disadvantage is that prices are usually only observed on a single day. His data set, which does not include Buy.com, found that Kingbooks and A1Books returned the lowest price on 15 percent and 13 percent of the products respectively.

One question of interest is whether observed differences in prices reflect strategic decisions, cost differentials, or both. Buy.com’s financial documents make it clear that its price leadership in this category is a strategic decision. Other retailer’s marginal undercutting of Amazon, presumably to get better placement on shopbots, suggests that strategic decisions are important. Discussions with industry sources, case studies, and media reports suggest that – with the exception of the big three – all bookstores face the same wholesale costs for books. The big three appear to receive additional discounts of about 5-7 percent of publishers recommended price in return for co-op advertising,

warehousing books, and in some cases waiving the right to returns. According to recent financial documents, Amazon's fulfillment costs, including all fixed and marginal costs associated with distribution and call centers, is roughly 15 percent of net sales and the costs for BarnesandNoble.com appear to be similar. According to industry sources, differences in fulfillment costs across online vendors are not large. Thus, observed price differences seem to be primarily a result of strategic differences.

Another question of interest is how multi-channel vendors price across the two channels. Ten of the thirty-two vendors in the Clay, Krishnan, Wolff sample were multichannel. Seven of the ten were on-line branches of independent bookstores or small chains, and the remaining three were on-line branches large chains. The large chains – Barnes and Noble, Borders, and Books a Million – offered lower prices in the internet channel than in their physical stores, whereas the remaining stores appear to have offered the same prices in the two channels.

Finally, the issue of collusion has arisen because of the similarity in prices among the big three and possible leader-follower behavior with Amazon acting as an industry leader. Smith (2001) and Clay, Krishnan, Wolff (2001) document the similarity in prices among the big three and note that the several other stores post prices that are very similar to Amazon's. Kaufmann and Wood (2000) explicitly examine the issue of leader-follower behavior using a dataset comprised of bestselling books and compact disks. Unfortunately, the nature of their dataset does not allow them to differentiate between exogenous changes associated with items going off of the bestseller list and endogenous changes associated with leader-follower behavior.

3.2 *Other Products*

Clemons, Hitt, and Hann (2000) compared the prices of 939 unique tickets for 436 unique combinations of departure and return cities at 8 online travel agents on four days in 1998.² Although the price of an identical ticket did not differ across the 8 online travel agents, differences in the way they processed search queries led to different return sets. These differences arise, because different search algorithms have different implicit weights on price, match to specified departure and return times, and connecting vs. direct flights. Even accounting for differences in the quality of the tickets, Clemons, Hitt, and Hann still found substantial variation in the lowest price ticket offered by an online travel agent that met specific criteria. Of particular concern was the fact that online travel agents offered tickets that were strictly dominated by tickets offered by other online travel agents from 3 percent to 28 percent of the time. Their evidence suggest that online travel agents were differentiated both in the quality of the tickets returned and in the quality of interface and search algorithms that they offered.

Carleton and Chevalier (2001) examined the prices of 1106 unique fragrances and 201 DVD players sold online and in physical stores in June 2000. Although their primary focus is on manufacturer's decisions about distribution, they provided some evidence on individual retailer behavior. Seventy-six percent of the fragrances in their sample could be purchased from an Internet retailer. Prices for fragrances at internet stores varied systematically across stores with online branches of department stores and some high-end beauty sites charging the manufacturers suggested price, and perfume sites and drugstores

² The online travel agents were not identified by name. The eight were generated by studying 4 online travel sites and one proprietary site. Three of the five sites allowed individuals to specify whether they were more interested in price or quality of match, generating the equivalent of three additional sites for a total of eight.

charging substantially lower prices on average. All of the DVD players in their sample could be purchased from an Internet retailer. Prices for DVD players were higher at retailers that also had physical stores, retailers that were authorized resellers, and manufacturer's websites. This fits with evidence from online books that there is significant price variation across retailers and that multichannel stores tend to charge the same price in both channels. One interesting difference between perfumes and DVD players, and books and travel is not all manufacturers of perfumes and DVDs chose to sell all products through all sites.

Ellison and Ellison (2001) examined the prices of two types of computer memory upgrades and one type of computer motherboard as reported by Pricewatch.com from May 2000 to January 2001. Unlike books, where the variation in prices, even within the first page of a comparison shopping engine can be 30 percent, they found that the difference between the first and the tenth lowest price was just 4 percent. This suggests that competition in prices across unbranded items of apparently similar quality may be intense. One of the reasons, however, to offer low prices is to attract customers and then "upsell" them to a higher quality. This hypothesis is supported by evidence on the cross elasticities of demand, which were large and negative. The fact that retailers engage in such loss-leader behavior is in part a reflection of the difficulty of using comparison-shopping engines to search for unbranded goods.

3.3 *Future Research*

The studies cited above are an important start in understanding retailer pricing in online markets. Collectively, however, they cover relatively few markets and fairly short time periods, suggesting that much more work is needed to understand how Internet

retailer behavior varies within and across markets and over time. Specifically, future work should address questions of whether certain stores are systematically cheaper or more expensive, whether price differences reflect cost advantages or strategic decisions, the extent of differentiation, the relationship between price, differentiation and sales, and whether the behavior of multichannel retailers differs from internet-only retailers. It should also address dynamic issue such as how individual retailer's price and nonprice attributes are changing over time and whether observed changes are driven by exogenous changes in cost or demand or factors internal to the market.

4. Consumer Behavior

The Internet raises many interesting questions about consumer behavior: How will consumer behavior change in electronically mediated markets from what is observed in physical markets? How does web page design impact consumer choices? How do consumers respond to asymmetric information regarding retailer quality? We survey selected empirical research on these questions. Discussion is organized based on the source of the data: retailer data, shopbot data, aggregator data, and experimental data. In each case we discuss the advantages and disadvantages of the particular type of data. The section closes with a discussion of areas for future research.

4.1 *Retailer Data*

While it is easy to gather price and other product data directly from retailers, data on consumer behavior is typically harder to come by. In most cases, data on customer choice must be gathered with the cooperation of the retailer in question. For example, Degeratu, Rangaswamy, and Wu (2000) used data obtained from Peapod to compare the behavior of online grocery shoppers to physical world shoppers. They found that price

sensitivity can be lower and brand sensitivity can be higher among online customers. Fader and Hardie (1999) and Moe and Fader (2000) used data provided by CDNOW to model customer purchase and visit behavior over time. Fader and Hardie found that standard marketing models can do a surprisingly good job of predicting trial and repeat purchases. Moe and Fader found that retailers should take into account changes in customer behavior over time — not just total number of visits — when forecasting which customers are most likely to buy.

Other studies correlate offline survey data with online customer behavior. Scott-Morton, Zettelmeyer, and Risso (2001) correlated data from car referrals made through Autobytel to physical sales reports obtained through J.D. Powers and Associates. They found that Autobytel customers typically pay 2 percent for their cars less than typical physical world customers. Shankar, Rangaswamy, and Pusateri (1998) used customer survey data to show that Internet customers who had prior positive experience with a hotel brand were not as price sensitive as other Internet customers.

Finally, a number of studies use bid data collected directly from Internet auction sites such to analyze customer bidding behavior. Zeckhauser and Resnick (2001) found that reputation ratings have a positive effect on prices in eBay auctions. Wilcox (2000) found that more experienced bidders tend to bid more rationally than less experienced bidders in eBay auctions.

Data gathered directly from retailers typically excels in both richness and accuracy. However, this does come at a cost. Gathering such data typically involves the cooperation of the retailer. This is even true in some cases where consumer data available directly from web pages, such as the eBay bidding data mentioned above. eBay carefully

monitors its site to block automated data gathering spiders. Obtaining cooperation from retailers may come at a cost either in terms of the time to negotiate with the retailer for access or in the form of limitations placed on publication of results.

4.2 *Shopbot Data*

Data from Internet shopbots allow researchers to analyze the response of customers comparing products offered by different retailers. Shopbots are Internet tools that allow customers to search for prices from numerous Internet retailers with just a few clicks. The prices are typically presented to the customer in an easy to read comparison table that lists price, delivery time, and other salient characteristics of the available products. Studies in this category include Brynjolfsson and Smith (2000) and Smith and Brynjolfsson (2001) who used a multinomial logit model to analyze choice behavior among customers at DealTime.com. These authors found that shopbot customers, while price sensitive, were also very sensitive to retailer brand name and to retailers they have visited before. In a hybrid study, Ellison and Ellison (2001) combined shopbot price data with data on customer behavior at one of the retailers listed at the shopbot. They used this data to infer price elasticity among the retailer's customers. They found extraordinarily high price elasticities, but also evidence of obfuscation strategies practiced by the retailer.

The advantage of shopbot data is that it documents the competing prices available to the user at the time of their decision and thus can provide an accurate picture into their evaluation of different offers. Disadvantages of this data include the need to obtain an agreement from the site to observe customer choices, the difficulty of associating customer clicks with purchases, and the fact that shopbot customers are likely to be systematically different from the typical Internet customer.

4.3 Aggregation

Customer behavior can also be obtained from aggregation data. Aggregation data can come from html request logs maintained by Internet backbone companies, or through consumer panels from companies such as Media Metrix or private studies such as Carnegie Mellon University's HomeNet study.

In the category of html request logs, Adamic and Huberman (2001) used logs obtained from AOL tracking customer html requests. They found that the number of web page hits was highly concentrated among a few sites: the top 1 percent of sites capture over half of the total number of customer visits.

In Internet consumer panel data, a representative set of customers has their surfing behavior tracked over time (Lohse, Bellman, and Johnson 2000; Montgomery 2001). This data typically includes the self-reported demographic data of the household, the family member making the visits, the sites visited, and the timing of the visits. Montgomery (1999) used data provided by Media Metrix to forecast the future behavior of customers from past behavior. Johnson et al (2000) used Media Metrix data to show that the depth of customer search was surprisingly low in Internet markets. Johnson, Bellman, and Lohse (2000) used this data to analyze how learning to use a retailer's site can create "cognitive lock-in" among customers. Goldfarb (2001) used data gathered from Plurimus to study the portal choice among Internet households.

Similar data is available through private studies such as the HomeNet at Carnegie Mellon University (Kraut et al 1996). HomeNet collected data from new users of residential Internet service in the Pittsburgh area starting in 1995. In addition to information comparable to the Media Metrix data documented above, the project collected newsgroup messages, logs of help requests, and data from customers through

home interviews and periodic questionnaires. Christ et al (2000) and Christ (2001) used this data to study the depth of customer search behavior over time, and found that customers appear to visit fewer sites as they gain more experience with the Internet.

Aggregation data combines many of the advantages of retailer and shopbot data. Like retailer data it provides a very rich picture of customer behavior. Like shopbot data it provides measures of customer behavior across multiple sites. Aggregation data in many cases also provides additional demographic data that can be associated with individual customers.

4.4 Experiments

Experiments offer researchers the opportunity to control and manipulate the shopping environment and observe subsequent customer response. Such experiments have been used in the context of Internet markets to analyze how customers respond to different aspects of a site design (Mandel and Johnson 1999, Menon and Kahn 2000), web site response time (Dellaert and Kahn 1999), and product information (Lynch and Ariely 2000; Urban, Sultan, and Qualls 1998). Other experiments simulate the results of auctions over an electronic channel (Lucking-Reiley 1999).

In each case, the primary advantage of the experimental approach is that researchers can control the shopping environment in ways that would not be possible in most “working” markets. The art of this technique is in designing experiments that produce the same outcomes as would be observed in the “working” markets (Kagel and Roth 1995).

4.5 Future Research

Much work remains to understand both customer behavior in current Internet markets and how this behavior is likely to change over time. It would be interesting to see more studies partnering with Internet sites to conduct online experiments using actual web site customers. Such experiments would combine the control possible in experimental research with the authenticity of retailer data. In the category of shopbot data it would be interesting to analyze customer response to different shopbot interface designs to explore how shopbots can use customer preferences to improve their customer interface (see Montgomery et al 2001). In the context of aggregation data it would be interesting for researchers to make more use of the timing and sequencing of web requests to predict customer characteristics.

5. Conclusions

We do not yet have definitive answers to the questions of whether Internet markets are more efficient than their physical counterparts or whether Internet markets are themselves becoming more efficient over time. The primary barrier to addressing these questions is obtaining data that covers a wide range of products sold in both Internet and physical stores over a reasonably long time span. Early studies suggest that prices are lower on average online. At least for some products, lower online prices appear to put pressure on offline prices, narrowing differences between the two channels. Estimates of elasticity indicate that individuals who use shopbots are extremely price sensitive. We know almost nothing about elasticity for other customers either offline or online. Price dispersion appears to be substantial, both on and offline. More specific inferences are limited by the fact that virtually no online measures of dispersion are

weighted by actual sales and by the fact that it is extremely difficult to get appropriate comparison data for physical stores. Finally, vendors do seem to take advantage of the lower cost of changing prices online to make smaller, more frequent changes.

Retailers continue to experiment with pricing on the web. One of the highest profile experiments was Amazon's experiment with DVD prices. More broadly, vendors continue to adjust prices, offer coupons or individual specific discounts, and provide free shipping to attract new customers and retain existing ones. Four patterns emerge from investigations of retailer behavior. First, highly branded retailers are generally more expensive than less well-known retailers. One puzzle is the vendors that do not seem to fit into either of these categories, particularly those that charge higher prices than highly branded retailers. Second, multichannel retailers are typically more expensive than internet-only retailers. Higher prices may be a reflection of channel conflict and customers' ability to return goods to a physical store. Third, manufacturers, if they sell online at all, almost always sell at full price to minimize conflict with their retailers. Fourth, less-well known vendors dynamically adjust their prices to ensure that they appear in the first few entries of a shopbot. More generally, patterns of prices over time suggest that firms monitor one another carefully and that they may be engaging in leader-follower behavior.

Consumers appear to be both more and less price sensitive on the Internet relative to physical channels. Customers who are already price sensitive can more easily search for low prices online than offline, leading to extremely high elasticities. At the same time, customers who are already price insensitive because of high income or limited time may appear extremely price insensitive. Part of their apparent insensitivity may be the limited

information available to them in the Internet context. For instance, a customer who shops for groceries online may be less able to evaluate quality than she would be if she were actually in the store. Thus, she may rely more on brand, appearing to be extremely price insensitive. A similar effect shows up in Ebay auctions, where buyers pay higher prices for identical goods sold by sellers with better reputations (effectively more highly branded sellers).

Overall, we have only begun to learn about the effects of the great experiment that the rise of Internet sales represents. Much more work remains to be done.

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