

**Internet Price Discrimination:
Self-Regulation, Public Policy, and Global Electronic Commerce**

by

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Abstract

The Internet as a medium for commerce is only in the beginning stages of development. Already there are a proliferation of entrepreneurs and Fortune 500 companies alike trying to gain market share and brand name recognition while Internet commerce is still in its infancy. This early stage of Internet commerce involves experimentation of strategy and pricing to determine how to best position oneself for future profits. It is too early to tell whether Internet commerce today is representative of a market anomaly or is indicative of the future. Regardless, there are some unique aspects about the Internet which make it an excellent marketplace to test economic theory.

Internet commerce may reduce market friction. While it is difficult to formulate such a hypothesis in a testable form, this paper uses transaction cost economics, game theory, and menu costs to describe how a reduction in market friction may impact commerce on the Internet. The paper outlines four testable hypotheses and presents the results from an exploratory data set of over 30,000 observations to show that there may be more friction in Internet commerce than anticipated. Specifically, no data was found to support the hypotheses of pure price competition. However, there was data to support the hypothesis that reduced menu costs allow for more frequent price changes. Specifically, menu costs may be reduced to the point where prices can be rendered and changed dynamically. The ability to change prices dynamically for price discrimination purposes is the focus of this paper.

The paper describes why price discrimination is attractive to Internet retailers and how they can implement such a system. The paper then describes market features in the absence of regulation which may ensure protection of consumer surplus. Finally, the paper explores ways in which regulation can prevent Internet retailers from price discriminating both from self-regulation and government regulation perspectives. The paper concludes with a discussion of the drawbacks of federal or global policies at this time and recommends self-regulation of the industry along with market forces to keep price discrimination practices at bay.

1. Introduction

This paper will explore technical, economic, and public policy issues regarding Internet price discrimination by exploring the data analyzed by Bailey (1998) which showed that Internet retailers can use pricing strategies and are not subject to pure price competition in the Internet marketplace. Specifically, this paper will address the issue of what public policy concerns there are if an Internet retailer can set a price specific to an individual consumer.

The Internet may reduce market friction but strategic pricing is still evident. As the data in Bailey (1998) shows, Internet retailers do not have pure price competition even in markets for homogenous goods. Higher prices and a wider spread of prices show that a reduction of market friction with the introduction of the Internet does not ensure consumers will reap all the benefits. The Internet retailers have established themselves as differentiating their service in order to extract more consumer surplus and give consumers an incentive to develop a relationship with them. The relationship can be used to a retailer's advantage because consumers prefer transacting with someone they know and trust rather than someone they do not know. The extra cost in developing a relationship with a new retailer or searching for the lowest price may not be worth the price advantage.

This paper shows that in many cases, consumers can develop a strategy to counteract price discrimination, but there are some cases that may require government intervention. The analysis in this paper uses the foundations of economic analysis of regulation described by Kahn (1988) and Viscusi, Vernon, and Harrington (1997) to analyze public policy with respect to Internet price discrimination. The paper concludes with three policy recommendations:

- No regulation or self-regulation of pricing policies is most consistent with the culture of the Internet and is therefore the most likely to be accepted by Internet consumers and retailers.
- The Federal Trade Commission is the most appropriate U.S. agency to monitor Internet pricing practices and intervene when necessary.
- A global scope of Internet commerce requires coordination and cooperation internationally with organizations like the World Trade Organization.

Each of these policy recommendations will be discussed in detail in Section 6.

2. The Internet and Reduced Market Friction

Markets in practice never seem to approach the perfect equilibrium predicted by neoclassical economic theory. Any shift away from this equilibrium can generally be thought of as friction. Fortunately, developments in information technology, and specifically the Internet, have changed information asymmetries in the marketplace. For example, the Internet has helped consumers find information and bargain for better prices when buying new automobiles. Bailey (1998) describes two ways market friction can be formulated as testable hypotheses: transaction costs and menu costs. In the static description of markets, a transaction cost as described by Demsetz (1968) is a cost that prevents a class of consumers from transacting with suppliers. If the Internet reduce transaction costs, the result may be Bertrand competition (pure price competition) for homogenous goods. Bailey (1998) also describes why menu costs are an appropriate way to operationalize dynamic market friction. Reduced menu costs allow Internet retailers prices to change with ease moving markets to the competitive equilibrium. The following four hypotheses presented by Bailey (1998) may be true if market friction decreases:

- *Hypothesis 1: The price for an item sold on the Internet will be lower than the price for the same item sold in the physical marketplace.*
- *Hypothesis 2: For a given homogenous product, the price dispersion among Internet retailers will be smaller than the price dispersion among physical retailers.*
- *Hypothesis 3: Product and market characteristics have no effect on the prices and pricing dynamics for homogenous goods sold on the Internet.*
- *Hypothesis 4: Prices change more rapidly on the Internet than in the physical marketplace to the Bertrand equilibrium but otherwise remain constant.*

To test these four hypotheses, Bailey (1998) collected over 30,000 exploratory data points to perform an empirical analysis of Internet commerce.¹ The data was collected from February 1997 through January 1998 for three markets: books, compact discs, and software. Bailey (1998) found no data to support hypotheses 1, 2, or 3 but the data did support hypothesis 4. While there are many possible explanations for these results, it is clear from a dispersion of prices among Internet retailers that they are not price takers. Rather, Internet retailers set prices based upon their strategy. The next section will analyze the Internet book market to show how competition among three retailers eventually led to a price discrimination strategy.

3. Competition in the Internet Book Market

This section investigates the impact of the entry of Barnes & Noble, a large physical retailer, on the Internet book market. During February/March 1997, an exogenous force—the entry of Barnes & Noble to the Internet book retail market—was observed by Bailey (1998). Incumbent giant Amazon.com radically changed prices when Barnes & Noble entered the book market. However, few other Internet book retailers such as Books.com² seemed to take notice. This section explains the strategy and price competition among Internet retailers at the time of entry and the months that follow.

Barnes & Noble is a traditional physical retailer that is bringing consumers and a brand name to the Internet marketplace. Barnes & Noble started in 1965 in New York City as student book exchange and grew throughout New York providing better service, selection, and consumer support than other bookstores. Growing through traditional retail stores its growth through acquisitions like the B. Dalton bookstore chain in 1987 has established Barnes & Noble as an industry leader in the physical commerce world. In 1997, they began exploring the Internet marketplace.

¹ Details on the data collection and analysis methodology are found in Chapter Four and Five of Bailey (1998).

Amazon.com also started off small but based on a totally different economic model—Internet sales and book shipping. Although it did not have, or does it have today, any physical locations, Amazon.com was able to establish a global presence in less than two years because of the Internet’s global reach. It recognizes that competition is a factor that it “expects to intensify in the future. Barriers to entry are minimal, and current and new competitors can launch new sites at a relatively low cost.” (Amazon.com 1997) It hopes that providing better service at a good price along with its first-mover advantage will put it in a better position to compete with Barnes & Noble and other bookstores.³

The two companies, Barnes & Noble and Amazon.com, started to compete on the Internet in 1997. Barnes & Noble used a slow roll-out of their service to compete with the Internet incumbent, Amazon.com. Barnes & Noble only offered their electronic storefront to America Online (AOL) consumers who had a dial-up connection to the network in the beginning. The AOL users who had Internet connections were blocked from the Barnes & Noble store. In other words, they blocked all consumers who tried to connect using TCP (transmission control protocol) connections. Perhaps one reason to do this is technical—they reduced the amount of congestion at their server before it was fully functioning by blocking some users. Barnes & Noble lifted this restriction in late April 1997 and by May they had a web site running for all users.

One major difference between the two retailers involves the physical distribution of books. Because of their physical market presence, Barnes & Noble has a great number of distribution channels and warehouses full of books. To reduce overhead, Amazon.com keeps little inventory for most of the 2+ million titles listed on their web site. For the

² Books.com was called Book Stacks Unlimited in 1997 and was actually the first Internet bookstore. Their original storefront was a text-driven telnet window that predated the web.

³ Barnes & Noble and Borders are the two physical world book retailers Amazon.com mentions in its IPO (Amazon.com 1997).

books not in their warehouse, they order the books on-demand from nearby distributors.⁴ The result is that Barnes & Noble collects more books and Amazon.com collects more information about books.

Another difference is the way the two retailers use information. Amazon.com is an Internet retailer that is information intensive. They encourage reviews from consumers and the building of consumer communities to promote value. Barnes & Noble also uses information, but they are more likely to use their ability as a vertically-integrated retailer and not the information they process to maintain a price advantage to dominate the market. This difference in strategy between the two is illustrated by the following quote.

“‘Ultimately, we’re an information broker,’ says Mr. Bezos. ‘On the left side we have lots of products, on the right side we have lots of customers. We’re in the middle making the connections.’” (Economist 1997)

The competition between the two companies intensified during the first half of 1997. Table 1 lists some developments during this time period that indicate actions taken by the two firms including several law suits. While they reached an out-of-court settlement by late 1997, the price battle is still continuing in 1998 and the developments so far have been very interesting.

⁴ This difference between Barnes & Noble and Amazon.com underlies a lawsuit against Amazon.com in which Barnes & Noble claims that Amazon falsely claims to be the “Earth’s largest bookstore” when, in fact, it really does not have any books.

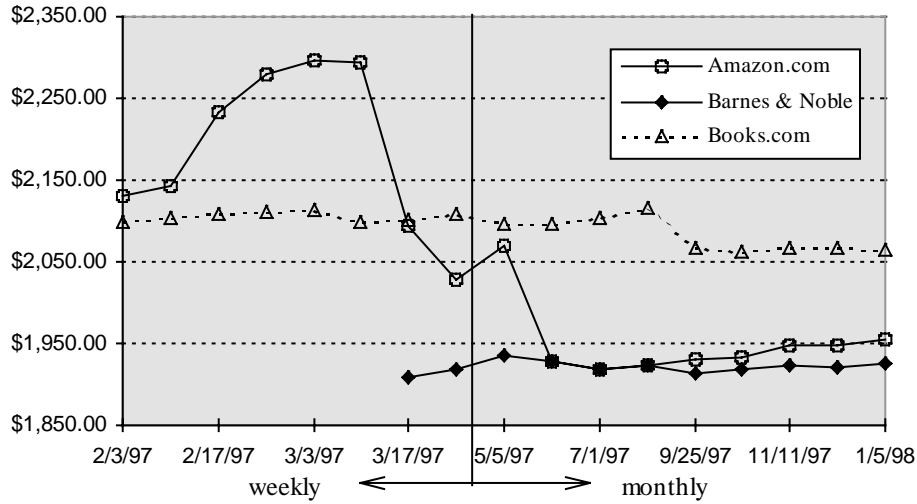
Table 1: 1997 Competition between Amazon.com and Barnes & Noble

Date	Amazon.com	Barnes & Noble
July 1995	start of web service	
19 March 1997	announces discounts for its most popular titles	start of AOL Service
25 March 1997	discloses that it will have an IPO	
12 May 1997		start of web service
12 May 1997		sues Amazon.com for claiming to have the “worlds largest bookstore” ⁵
10 June 1997	announces further discounts for its titles	
8 July 1997	pays AOL \$19 million to receive exclusive promotion on its service	
11 July 1997	announces a loss \$6.7 million in the second quarter of 1997—less than expected	
November 1997	out -of-court settlement with Barnes & Noble	out -of-court settlement with Amazon.com

Amazon.com did see the newcomer Barnes & Noble as a potential threat to their market power and their strategy to change prices reflects that. Figure 1 shows how prices changed at Amazon.com with the entry of Barnes & Noble from the time before Barnes & Noble entered the market until January 1998. This graph measures the price for a market basket of 125 books sold at Amazon.com and Barnes & Noble.

⁵ Some details about this lawsuit are detailed in Reilly (1997). In his article, Reilly explains that Barnes & Noble disagrees with Amazon.com’s claim to be the biggest because being the largest is the market positioning of Barnes & Noble.

Figure 1. Market Basket Price at Amazon.com, Barnes & Noble, and Books.com



Note: The list price for the same market basket of books is \$2,615.04.

The entry of Barnes & Noble into the Internet book retailing market appears to have led Amazon.com to significantly lower its prices as seen in Figure 1. While the price change was not immediate, there was almost the exact same price for the full market basket of books by June 1997—four months after the entry of Barnes & Noble. The price convergence is consistent with the theory of price competition. However, the data shows very little change in the prices for the market basket of book purchased at Books.com.

One of the many interesting things about Figure 1 is the anticipatory price increases at Amazon.com. The price of the market basket of 125 books increased slowly just before Barnes & Noble entered the market, and then Amazon.com lowered its prices dramatically just before Barnes & Noble entered. After sustaining a slightly higher price for almost four months after Barnes & Noble’s entry, Amazon.com then lowered its prices so it matched the prices at Barnes & Noble.

While convergence of the prices is interesting, it is also interesting to note which retailer changed their prices to reach convergence. It was the incumbent, Amazon.com, who changed their prices. Amazon.com would risk consumers switching to the lower prices at Barnes & Noble if they tried to maintain their higher prices. Another

possible explanation is that the price changes at Amazon.com and not Barnes & Noble may reflect Amazon.com's lack of experience in setting. Because Barnes & Noble has this experience in the physical marketplace, they can take this skill and apply it to their Internet sales—Amazon.com merely followed.

The entry of Barnes & Noble has also increased the number of price changes at Amazon.com. Figures 2 and 3 show that Amazon.com had three main price changes. The price change in the middle of February indicates the anticipatory price increase. The price changes in March 1997 shows the price decrease just before Barnes & Noble entered. Then, in June 1997, Amazon.com changed its prices to almost exactly match the prices at Barnes & Noble. In fact, for the prices that were still different in June 1997, the price differential was sometimes only \$0.01. The only other retailer to have any significant price changes was Books.com as seen in Figure 3 who changed the prices on approximately 90 of its books, but it had a less radical price reduction than Amazon.com. Aside from Amazon.com and Books.com, no Internet retailer seems to be changing its prices significantly.

Figure 2: Price Changes in Book Market, February/March 1997

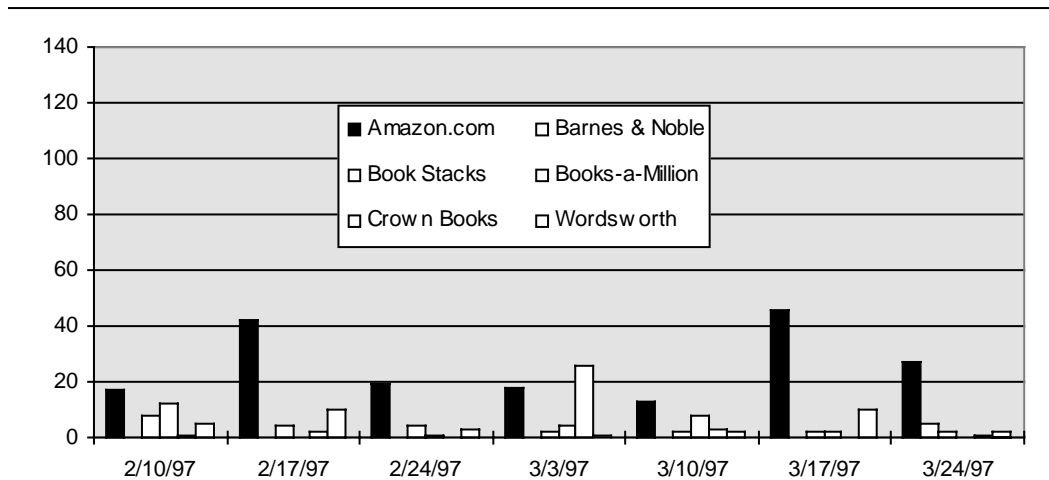
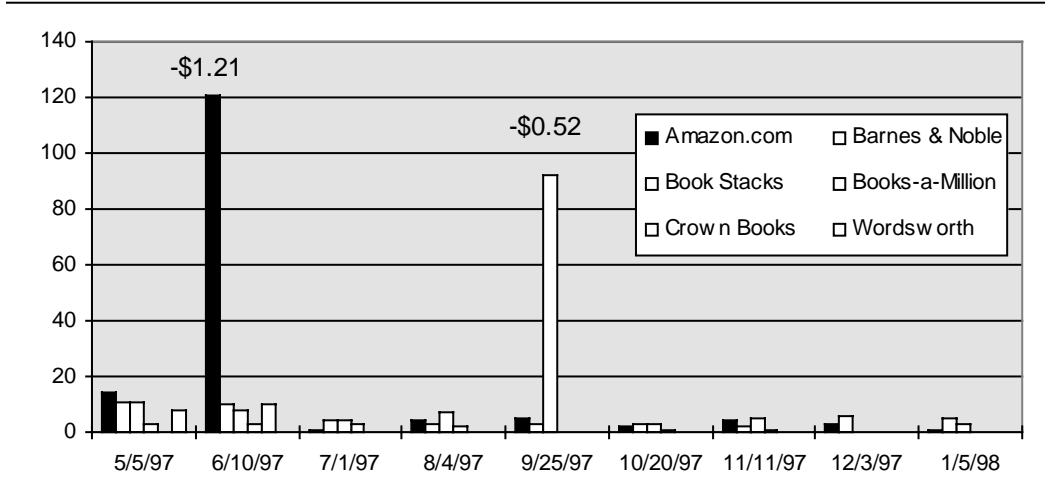


Figure 3: Price Changes in Book Market, May 1997 - January 1998



Barnes & Noble may not be able to change its prices as rapidly because of the inertia that their physical presence they have. In some preliminary discussions with Boston-area Barnes & Noble retailers, they said that prices on the web site are the same as the prices in the physical store. Since then, further research has shown that Barnes & Noble physical retail stores do not even charge the same price because they can price discriminate based on geography. Therefore, by definition the prices on the web site will not be the same as the prices in the store because the store prices are not uniform across retailers. While the Barnes & Noble physical retailers are quick to point out that the web site sales may have better prices for some items because of lower costs, they are still part of the same company. The Barnes & Noble web site is associated with brand name carried over from the physical marketplace. Therefore, the Barnes & Noble web site may not be as aggressive with price changes as Amazon.com can be because of their desire for their web site not to compete against their physical stores.

Amazon.com appeared to have fewer price changes after Barnes & Noble entered the market. With the first entry of Barnes & Noble, Amazon.com lowered its prices, on average, and differentiated itself from Barnes & Noble with frequent price changes and price differentials between the two Internet book retailers. However, after the price changes on June 10, 1997, there has been much less of an aggressive strategy by Amazon.com to change prices as frequently. Because there may be a convergence in prices, the consumer may choose between the retailers for reasons other than price.

Strategic pricing for Internet retailers is evident. Amazon.com and Barnes & Noble both have strategies to capture the same consumers but have different competitive advantages (Porter 1985) to leverage. The mere fact that strategic pricing of Internet retailers exists is prima facie evidence that Bertrand competition does not explain what is happening with Internet commerce. What is not clear from Figures 1 and 3 is that Books.com positioned themselves for a radical change in pricing strategy. They would be the first Internet retailer to adopt a price discrimination strategy.

4. The Threat of Internet Price Discrimination

The empirical data in Bailey (1998) shows that Internet retailers are not price takers, but use prices to differentiate themselves from their competitors. In early 1998, Books.com adopted a price discrimination pricing strategy whereby different Internet shoppers paid different prices for the same good depending upon their shopping behavior. While this is price discrimination in a relatively simple form, the threat of more complicated price discrimination strategies may shift some of the benefits of Internet commerce from consumers to retailers.

Books.com is able to use its web site design to separate their price-sensitive consumers from other consumers and charge different prices for the same good. After a consumer shopping at the Books.com web site searches for a book and determines the price, there is a button on the web page labeled “compare prices.” By clicking on this button, a query is made by the Books.com server to determine the price for the same book sold at Amazon.com’s and Barnes & Noble’s web sites. If Books.com does not have the lowest price, it will automatically lower the price *for the consumer who compares prices only*. For example, a consumer who shopped the Books.com web site on April 8, 1998 may have selected the book Singing in the Comeback Choir for \$17.41 (which is a 30% savings off the list price). If the consumer compared prices by clicking on the appropriate button, they would see a new web client window indicating the prices for the same book sold at Amazon.com (\$17.47) and Barnes & Noble (\$14.97). Since the Barnes & Noble price is below the Books.com price, there is a note on this web page which states, “We’re lowering our price to beat Barnes & Noble!” By clicking on the button labeled “Click here to see our new lower

price!”, the consumer sees a web page identical to the one with the \$17.41 price tag however the price is now \$14.67. If this same consumer returns some time later to the Books.com web site, the price would return to \$17.41 unless the consumer compared prices again.

The dynamically rendered pricing example at Books.com may seem benign or even beneficial to consumers at first. However, Internet retailers may use complex consumer information along with shopping behavior to go beyond a binary separation of consumers who compare prices and those who do not. The ability of computers to store and process large amounts of information may make other forms of price discrimination possible and very profitable for Internet retailers.

This section describes why Internet retailers may choose to price discriminate and how they can develop the technology to approach first degree price discrimination. Underpinning this discussion is a description of the economic effect price discrimination has on consumer and producer surplus. How price discrimination may work and what tools retailers and consumers have to aid or hinder price discrimination is described. The final section then assesses how price discrimination may help or hurt retailers and consumers.

4.1 Price Discrimination as a Profit-Maximizing Strategy

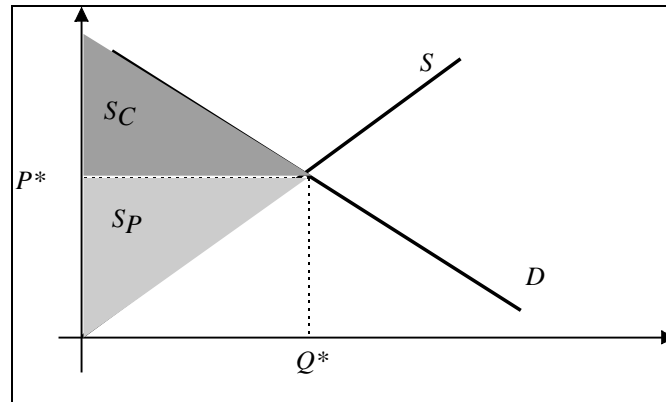
Price discrimination is the charging of different prices for the same product or service to different consumers (Varian 1989). There are three degrees of price discrimination. The first degree is perfect price discrimination, where the price is exactly equal to the consumer’s reservation price (the maximum price a consumer is willing to pay) of the consumer. Second degree price discrimination is based on consumer behavior—this includes non-linear pricing.⁶ Third degree price discrimination is based on setting different prices for different groups of consumers. The distinction between second and third degree price discrimination may be difficult to discern because the implementation of price discrimination may appear to be both second and third degree price discrimination. For

⁶ For a detailed description of non-linear pricing, see Wilson (1992).

example, some types of airline travelers pay less than others, but it is unclear if the airlines are separating different groups of consumers (third degree price discrimination) or are the airlines are charging different prices based on behavior (second degree).

The reason why a retailer finds price discrimination an attractive pricing strategy is because they can garner higher profits without a sizable increase in their costs. From the consumer's perspective, they would prefer paying a lower price even though they may be willing to pay a higher price (their maximum price they are willing to pay is their reservation price). The difference in what they are willing to pay and what they actually pay is called their consumer surplus. The difference in what the retailer is willing to sell at and what the actual price they charge is called the producer surplus. Price discrimination moves some of the consumer surplus to producer surplus.

The shift from consumer surplus to producer surplus is shown graphically in Figure 4. The market is in competitive equilibrium where the demand and supply curve meet. This is where the price for the good is P^* and the quantity sold is Q^* . Consumer surplus is shown by the triangle labeled S_C which represents the total benefit to consumers who were willing to pay more for the good but only paid P^* . Similarly, the producer surplus is shown as the triangle S_P which represents the total benefit to producers who sold at a price above what they were willing to sell at. When price discrimination occurs, the price producers charge is no longer P^* for all consumers, but varies from consumer to consumer. First degree price discrimination would have the price equal to the consumer's reservation price. The effect would be to enlarge the producer surplus from S_P to $S_P + S_C$.

Figure 4: Producer and Consumer Surplus

Second and third degree price discrimination do not shift as much consumer surplus to producer surplus as does first degree price discrimination. By separating consumers into groups or distinguishing them based upon their behavior, the producer hopes to make more profits than they do at the competitive equilibrium. The price they charge an individual consumer is then greater than P^* but may be less than the consumer's reservation price. By adopting such a strategy the producer surplus shifts to S_p to $S_p + \delta$ (s.t. $\delta > 0$) which is less than $S_p + S_c$.

The success of price discrimination as a strategy is dependent on the nature of the product. When products are unique to the exchange between supplier and consumer (i.e. they have a higher degree of asset specificity), it is more likely that price discrimination can be used because the product features and price are negotiated. The products investigated in Bailey (1998) were homogenous with low asset specificity and broad appeal. Therefore, it is unlikely that first degree price discrimination would be evident. Because the Internet may become a tool for mass-customized products and custom-tailored information, the products and services become highly asset specific. The movement from "mass marketing" where consumers demand general-purpose products to the specifically-tailored to an individual ("mass customized" products) is described by Pine, Peppers, and Rogers (1995). The Internet may increase the importance of suppliers positioning their products and services in "marketspace" because of the large number of competitors in a global scope as described by Rayport and Sviokla (1994). Therefore, it is unlikely that the price discrimination tools that are described above will apply to the book, compact disc, and software markets analyzed in Bailey (1998). Price discrimination may be more likely in news clipping services, collaborative filtering, and other customized Internet markets.

The example of Books.com's price discrimination strategy does not shift all consumer surplus to producer surplus as first degree price discrimination would. However, retailers using the Internet as a medium for commerce may gather larger amounts of information about their consumers so that they may better estimate the consumer's reservation price. Furthermore, the computing power of the Internet retailer's web server can be used for complex algorithms to determine prices to approach first degree price discrimination. The next subsection discusses the details of a price discrimination strategy that Internet retailers could use to shift more consumer surplus to producer surplus.

4.2 Implementing Internet Price Discrimination

This subsection will describe how Internet retailers can use Internet tools to set prices with such sophistication, they approach first degree price discrimination. While no Internet retailer is currently doing so, Internet retailers could implement such a system in the future as they focus less on market share and more on profitability. Furthermore, as the size of Internet commerce grows, Internet retailers will have more information about consumers they can leverage to dynamically set prices.

The Internet may reduce menu costs which makes Internet price discrimination feasible. Menu costs are the economic costs of changing prices or "printing menus" which contain the prices for the items you carry.⁷ As the creation of "menus" becomes electronic, the only cost associated with changing this price is the marginal cost of someone entering in a new number. This is different from the physical marketplace where there is evidence that menu costs are not insignificant. For example, Levy, et al. (1997) approximate the cost of changing a price for an item found in a supermarket to be approximately \$0.52 per price change. To the extent that the price is determined by an algorithm which can change costs in an automated environment, the short-run marginal menu cost approaches zero. As the data in Bailey (1998) indicates, prices may change more frequently for Internet retailers because menu costs decrease.

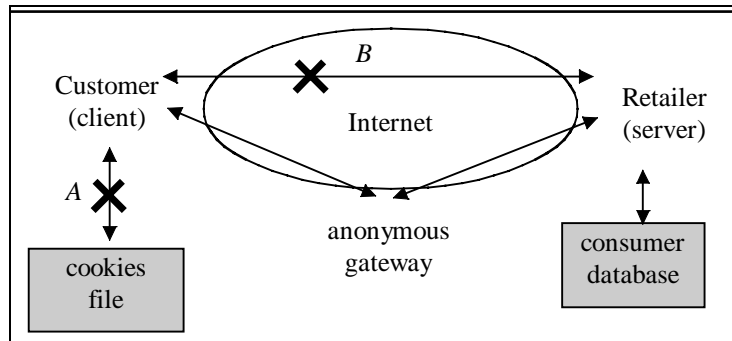
To identify a consumer and determine a price, retailers must have information about a consumer. This information can be purchased from marketing firms, passed among Internet servers, or collected within the confines of a consumer/retailer relationship. This paper only looks at information specific to a consumer/retailer relationship because it is the most likely scenario. Marketing information can help if the information can be correlated with the consumer. This is not easy because consumer identifiers like Internet Protocol addresses often change because they may be dynamically allocated. Information exchanged among Internet servers is more likely if some protocols—such as network protocols to reserve bandwidth—are widely adopted, but sharing information among Internet service providers (ISPs) may reduce an ISP's competitive advantage. If two retailers share information about their consumers, they may both compromise their competitive position. The most widely used tool for consumer information in use with Internet commerce today is tracking the information exchange between consumer and retailer.

The consumer-retailer information can be collected and stored in a number of ways. Figure 5 shows the two most likely places that this consumer tracking information may be stored: in a cookies file at the consumer site, or in a consumer database at the retailer site. The cookies file is a “writable” file for the retailer on the consumer's client. Any information can be stored there and that information can be retrieved at some time in the future by the same retailer. Information stored at the retailer site involves tracking user's Internet Protocol (IP) addresses or requiring consumers to identify themselves when they access the server. The IP approach has the problem of dynamically allocated IP addresses previously described. Having a consumer identify themselves with a username and possibly a password is cumbersome and may make an Internet user suspicious of the retailer's intention for collecting such information, but retailers have been able to do this to offer consumers membership “discounts” or a user-interface designed to fit the consumer's preferences. web server software has been developed to customize web pages after a consumer has been identified.⁸

⁷ Sheshinski and Weiss (1993) describe how menu costs affect the setting of prices and often explain the non-optimal prices in an economy.

⁸ An example of such a software package is the web software developed by Broadvision.

Figure 5: Mechanisms For Consumer Profiling



The price with consumer information may be higher or lower than the price with no consumer information. If the information indicates a higher reservation price, then the price discrimination algorithm can increase the price. For example, a consumer that often selects hardcovers over paperbacks when both are available is a good candidate for higher prices. Conversely, a consumer who returns to the Internet shop examining the same title week after week looking for a reduction in price is a likely candidate for a price discount.

A consumer can try to prevent information collection about their behavior by one of two methods. The consumer can prevent the server from writing to their cookies file. This block is seen as point “A” in Figure 5. The default setting for web browser client software is for the cookies privileges to be enabled. The user must disable cookies if they so desire. However, even if a consumer blocks the cookies write command by the server, it is not the only place to keep records of behavior and transactions.

The consumer database on the retailer’s site can also collect consumer information. The consumer’s strategy to prevent collection of information on their behavior can be done by using an anonymous gateway shown in Figure 5. In effect, the consumer is preventing direct communication from the client to the server through the Internet. This is shown as blocking communication channel “B” in Figure 5. With the current Internet, some Internet users use anonymous gateways to send email without disclosing their identity but use of anonymous gateways to prevent price

discrimination is not used. This is mostly due to the fact that price discrimination is not used. However, if Internet retailers start using price discrimination more widely, the anonymous gateways may become more popular.

Full identity hiding to prevent consumer information is not always possible. If a consumer orders a physical product which requires shipping, then the consumer reveals their identity when they give their shipping information.

Payment can also reveal information about the user. Once the user reveals their credit or debit card information, they reveal their name which can be correlated with past history. From the consumer's perspective, it is important to reveal this information after the price has been negotiated on and not before. Also, keeping one's identity private but paying for a product is one of the advantages of electronic cash transactions. With such micropayment systems, the identity of the user can remain anonymous because the cash is fungible.

Just because price discrimination practices and price discrimination in the Internet marketplace can be done, there is no certainty that it will be done. From the retailer's perspective, the marginal cost of price discrimination is likely to be small and the benefits may be large. Therefore, it would seem logical to price discriminate. However, there may be competitive pressures and consumer satisfaction reasons why price discrimination is unlikely even without regulation. The next section will explore when price discrimination is and is not a likely outcome for Internet retailers in a competitive market.

5. Consumer Actions in an Unregulated Environment

This section explores how consumers can avoid first degree price discrimination by Internet retailers without any regulation. Four possible mechanisms are explored: price competition, consumer strategies, reputation, and intermediation. Each mechanism prevents a total shift of consumer surplus to producer surplus. While each mechanism can be used independently, combination of these mechanisms may give consumers even greater assurance that they are not being taken advantage of.

Price discrimination when there is price competition is not sustainable. Because price discrimination requires market power to set a price, it may not be possible to charge higher prices when consumers can choose another retailer. In the Bertrand competition model (a game theory model of perfect price competition) the competitors must sell at the market equilibrium price or else they will have zero sales for that product. In many markets that Internet commerce currently supports—such as books, compact discs, and software—different retailers carry the same product and compete on price. While this is not perfect price competition as Bailey (1998) shows, prices that are noticeably higher than a competitor's prices may encourage the consumer to switch retailers. If competition were driving pricing strategies of Internet retailers, the dynamic pricing on the Internet could be an advantage for consumers. For example, Books.com may automatically lower the price to beat their competitors regardless of how a consumer behaves while shopping at their web site.

Consumers may develop a strategy that, while not perfect, would result in them being treated like an “average consumer.” This strategy counteracts a retailer's price discrimination strategy. Examples of this are described in the previous section where the consumer uses an anonymous gateway to create a virtual identity to remain anonymous. With no information about the consumer,⁹ the retailer can only set a price for an average consumer (most likely P^* from Figure 4). Similarly, the retailer also has their choice of strategies once it knows what the strategy of the consumer is.

The consumer may be willing to pay higher prices if the retailer uses the consumer information to help the consumer find the product they are looking. For example, the retailer could help the consumer search large volumes of information about product features and then help them choose the product most appropriate. After revealing information, the retailer's best strategy would be to price discriminate this consumer. It is possible (although not in the interest of the consumer if they are trying to maximize their welfare) that the consumer may allow themselves to be price discriminated if they find this search and matching service worthwhile. A more price conscious consumer

⁹ The consumer may also convey misinformation about themselves to the retailer hoping that such information will lead to a price discount. For example, the consumer may reveal themselves as a student to a price discriminating retailer because they know students get discounts.

may search for features at one retailer and then visit another retailer anonymously to purchase the product because their identity and behavior has not been revealed and they would expect to pay a lower price if they remain anonymous.

Retailers may not want to price discriminate because they can harm their reputation they have in the marketplace. When a retailer and consumers have repeated transactions, the retailer would not only be interested in immediate payoffs, but payoffs in the future as well. If their price discrimination strategy was discovered by consumers, the retailer may lose its ability to attract sales because of damage to their reputation. Because Internet commerce is expected to grow and Internet retailers place a large emphasis on growing market share and brand recognition, the negative impact of being labeled a “greedy” price discriminator may be enough to deter some retailers from practicing such a tactic.

The impact of a reduction in reputation is lost sales. Consumers with repeated transaction have options available to them to ensure they are less likely to be subjected to price discrimination. If the consumer perceives that they are taken advantage of by a retailer, the consumer can exit that relationship to shop and transact with a different retailer. If the initial retailer promoted some loyalty with the consumer, the consumer may choose to voice their concern over the retailer’s practice of price discrimination. Analysis of exit, voice, and loyalty in markets was introduced by Hirschman (1970). In fact, the Internet may help promote the importance of consumer loyalty and voice in markets. As the speed of communication accelerates and the response to changes in the market become almost instantaneous with the Internet, consumers can shape a retailer’s pricing policy and see the impact quickly. Consumer feedback, if internalized by the Internet retailer and acted upon, can help suppliers be more competitive with their product offerings and consumers benefit when a product better suits their needs.

Finally, market intermediaries can help ensure that price discrimination does not shift consumer surplus to producer surplus. Intermediaries that allow for low cost search on product features and price can increase the amount of price competition and therefore keep prices in check. The introduction of a search intermediary in the software market described in Bailey (1998) partially explains why the software market has more price competition than the book or compact disc markets. If software retailers started to price discriminate, a search intermediary such as UVision

(www.uvision.com) could help consumers price search away from them. Intermediaries who take on the role of trust help consumers feel confident that the retailer is not going to take advantage of them. For example, TRUSTe (www.truste.org) promotes consumer confidence by certifying that some web sites do not share consumer information for marketing purposes.

While there are many ways to ensure price discrimination does not erode consumer welfare for Internet commerce, none of them may not work in practice. Therefore, Internet price discrimination becomes a public policy question of whether or not the government should get involved. While this is a complex policy and political problem, the next section of this paper explores the viability of self-regulation, U.S., and International policies to ensure fair Internet commerce transactions.

6. Public Policy, the Internet, and Price Discrimination

This section explores public policy with respect to Internet commerce developments. Specifically, this paper finds that the policy papers developed by the U.S. (Clinton and Gore 1997), European (CEC 1997), and Japanese (MITI 1997) governments currently support no or few restrictions on Internet commerce to promote growth. However, none of the three documents addresses the questions of price discrimination introduced in this paper. Therefore, this section explores the feasibility of regulating price discrimination practices of Internet retailers, and addresses the difficult question of who should regulate. Furthermore, the question of regulating price discrimination practices on the Internet is part of a larger question of communications policy that Garcia (1995) argues should not be examined compartmentally.¹⁰

¹⁰ The Internet is proving to be a tremendous funding opportunity for the U.S. government research and education agencies but a headache for telecommunications regulation. As Werbach (1997) explains, the existing policies of the Federal Communication Commission are difficult to apply to the Internet because the Internet is fundamentally different than traditional communication medium with regard to technology and market structure.

Promoting electronic commerce is a high priority for many developed nations. The United States (Clinton and Gore 1997), European (CEC 1997), and Japanese (MITI 1997) governments all issued policy papers in 1997 that encourage electronic commerce development in their jurisdictions. While the reports differ on some issues such as taxation, the reports are mostly similar—they all indicate their government's intentions to promote global commerce with minimal regulation.

The United States, as a leader in Internet commerce development, recommends that the government should have a limited regulatory role as detailed by the “Magaziner Report” (Clinton and Gore 1997). Much of the report describes why the government should not get involved. For example, the report discusses how electronic commerce should have no new taxes and promote the Internet as a “duty-free” zone. There are some statements in the report indicating how trusted transactions are important for electronic commerce. For example, the report describes why it is important for Internet commerce to “maintain privacy and the integrity of personal information” but does not indicate how this policy should be implemented. The normative sections of the document for government intervention suggest a limited government role. Self-regulation is noted as preferred to government regulation. When government does get involved, the report suggests partnering with industry. The two items specifically directed as positive actions the government should take related to electronic commerce protection in a global environment. One is the protection of intellectual property in a global economy. The other is to create a “Uniform Commercial Code” for electronic commerce.

The report by the European Union (CEC 1997) is very similar to the Magaziner Report. The EU report also describes the need for international cooperation and how governments should avoid new regulations which may hinder the development of electronic commerce. The EU report is slightly more normative by promoting some new policies. Specifically, the EU report describes the need for telecommunications liberalization to ensure greater access to the tools necessary to conduct electronic commerce. Furthermore, the report promotes a “Single Market” framework for global electronic commerce whereby electronic commerce can have globally uniform policies. While the specifics of the framework are not detailed, the document suggest a more proactive role for governments to coordinate globally to promote trust in electronic markets.

The Japanese report (MITI 1997) on electronic commerce is the most descriptive (least normative) of three documents. The document does not promote a particular policy specifically, but it does indicate the current thinking of the Japanese government with respect to electronic commerce. The report describes the close collaboration of government and industry to develop testbeds and conduct studies for electronic commerce. This is not surprising because the document comes from the Ministry of International Trade and Industry which has a history of collaboration with the private sector. While the report indicates the Japanese government is still in the early stages of developing policies with respect to electronic commerce, they do describe U.S. and European initiatives indicating their recognition that electronic commerce is a global initiative that may require international cooperation.

6.1 Self-Regulation of Internet Price Discrimination

While the Internet has some degree of government intervention, this intervention is kept to a minimum. This government intervention comes in many forms. For example, users access the Internet through regulated telephone lines or pass traffic through government-funded Internet resources. However, most of the Internet is decentralized and coordinated through the use of competitive markets as described by Gillett and Kapor (1997). Those resources which are unique and require centralized control, such as the domain name system, have recently come under the scrutiny of Internet users as being too monopolistic. The heterogeneous and decentralized nature of the Internet and criticism of centralized authority defines much of the Internet culture.

To protect the minimal government intervention culture of the Internet, businesses conducting commerce on the Internet are looking to govern themselves instead of government regulation. For example, the CommerceNet consortium of companies are working together to grow the Internet as a medium for market transactions even though its members compete with one another. By working together, the Internet commerce participants hope to avoid standardization difficulties and conflicts which may require costly lawsuits or government regulation.

Mechanisms to protect consumers and promote trust in Internet commerce are already being developed in a self-regulatory manner. TRUSTe, a non-profit organization developed by the CommerceNet consortium, reviews the

privacy policies and practices of Internet web sites to add their seal of approval. In many ways, they are similar to the Good Housekeeping seal found on some products or the Underwriters Laboratories seal found on electrical appliances. When a consumer sees the TRUSTe seal on a web site, they are more likely to trust that web site. TRUSTe has come under the scrutiny of the Federal Trade Commission (FTC) because it only certifies that the policies and practices are consistent and does not hold the web sites they certify up to a particular standard. However, even the FTC has commended TRUSTe in their initiatives to be a self-regulating body to protect consumers.

While TRUSTe has not identified price discrimination as an important element of their mission, they are in an excellent position to extend their current role to start certifying the pricing policies and practices of Internet retailers. Similar to the way TRUSTe already certifies web sites, they could ask Internet retailers to articulate their pricing policy which could be as simple as a statement of whether or not they price discriminate. Then, TRUSTe could examine the practices of that Internet retailer to make sure they are telling the truth. TRUSTe could then give their “no price discrimination” seal of approval to Internet retailers such as Amazon.com or Barnes & Noble. Books.com would have a different seal reading “price discrimination” so consumers know the pricing practice of their Internet retailer.

The ability for mechanisms other than government intervention to thwart the threat of Internet price discrimination seem to have potential at this early stage of Internet commerce. They are consistent with Internet culture and do not have the cumbersome bureaucratic delays which often slow down the public policy making process. Furthermore, the technology of Internet commerce and Internet price discrimination is changing rapidly and can best be monitored by the practitioners and not government regulators. *No regulation or self-regulation of pricing policies is most consistent with the culture of the Internet and is therefore the most likely to be accepted by Internet consumers and retailers.*

6.2 *Federal Policy*

The U.S. federal government's three branches are at the root of all public policy. The government protects consumer transactions ex ante through lawsuits and a priori through market regulation. Currently, much of the current U.S. public policy debate concerning Internet commerce relates to taxation. This subsection will explore the taxation question briefly, and then focus on Internet price discrimination specifically.

Even though the Magaziner report suggests a "duty-free" Internet, the view does not represent all Americans. Many states have bonded together to assert their jurisdiction over Internet commerce and, therefore, claim that existing tax laws apply (Fox 1997). However, much of commerce is termed as interstate commerce and, therefore, under federal jurisdiction and requires coordination among states (McLure 1997). The American Governor's Association is backing a plan that will allow states to determine whether or not they will allow Internet commerce taxation.¹¹ Meanwhile, at the time of this paper's writing, there are bills in both the House of Representatives and the Senate to give the U.S. federal government jurisdiction over Internet commerce. While the resulting Internet tax policy has yet to be determined, there is much at stake for the coffers of both state and federal governments as well as the future growth of Internet commerce.

With the focus of state, national, and international public policy with regard to Internet has been on taxation none of these reports have as yet examined the question of price discrimination. There is a policy question of whether or not such a price discrimination strategy by a retailer is legal under existing laws. If price discrimination tools are used to exercise or to create a monopoly or to be anti-competitive, then price discrimination is not legal (Armstrong and Vickers 1993). There are also other instances where price discrimination may be seen as a threat to consumers.

¹¹ Not all states support state taxation of Internet commerce. For example, Governor Celluci of Massachusetts is in favor of the Internet Tax Freedom Act (a.k.a. the Cox-Wyden Bill) in U.S. Congress which would make Internet taxation of federal, not a state, issue. Furthermore, some states have allowed Internet service providers to operate without collecting state taxes from their subscribers to help promote Internet growth. Massachusetts is one such state.

The beginning of consumer protection came under the presidential leadership of U.S. President Woodrow Wilson. The Federal Trade Commission Act (which created the Federal Trade Commission) was established around the same time as the Clayton Anti-Trust Act. According to Dahl (1976) the passing of such a bill was possible because President Wilson was very effective in gaining congressional support for his policies. The Federal Trade Commission (FTC) is an executive branch agency whose budget is approved by the Congress, appointments come from the president, and they can be sued by private interests and have to defend themselves in court.

Since the creation of the FTC, the commission has changed to adapt to a changing marketplace. The FTC and the Department of Justice often work together on issues related to antitrust. While their jurisdictions often overlap, the FTC is more concerned with protection of consumers through trade practices while the Department of Justice is more concerned with the industrial structure of markets leading to monopolization. The current Department of Justice's investigation of Microsoft, for example, is an instance where the FTC is involved because of the trading practices of Microsoft, but the Department of Justice has the lead role because of the monopoly nature of Microsoft in the operating systems market. The FTC is currently involved with many fraud and privacy issues regarding Internet commerce and direct marketing using the Internet. While they have not directly addressed the question of Internet commerce price discrimination, they have taken steps to educate Internet consumers about potential privacy problems and fraudulent businesses on the Internet. The FTC has even set up their own web site (www.consumer.gov) to convey this information to Internet consumers. Through their web site, the FTC is acting like a market intermediary which takes on the role of promoting trust in Internet commerce. While the FTC's education initiative is laudable, sharing information among consumers and retailers can help slow down price discrimination, it cannot prevent price discrimination. While the FTC has done little more than investigate Internet consumer information sharing, TRUSTe has been very involved ensuring consumer information will be protected. The FTC's Bureau of Economics and Bureau of Competition are leery at best about the effectiveness of TRUSTe to self-regulate the marketplace and protect consumers. Therefore, these two bureaus are positioned to intervene if consumer privacy protection fails.

The Clayton Act gives the FTC authority to prevent price discrimination in cases where the intent of price discrimination is to be anti-competitive. According to Pindyck & Rubinfeld (1992, p. 375), the Clayton Act of 1914

“prohibits price discrimination unless it is ‘affirmatively justified’ (e.g. leads to lower cost).” . In 1936, Section 2 of the Clayton Act was amended by the Robinson-Patman Act which details how price discrimination to act anti-competitively is not legal. While proof of price discrimination practices is necessary, it is not a sufficient condition to show that a company such as Books.com is in violation of being anti-competitive.¹² Therefore, it is unlikely that Internet retailers who implement price discrimination could be subject to a suit by the FTC because there are many consumer choices to transact with many Internet retailers. It is difficult for any one retailer to stifle competition by adopting a price discrimination strategy. Furthermore, an ex post lawsuit may not be enough to promote trust in Internet commerce and it is often difficult to prove intent to monopolize such as the Department of Justice’s case against Microsoft.

A more appropriate legal question regarding Internet price discrimination is whether Internet commerce is commerce via the mail and, therefore, bound by the Racketeering Influenced and Corrupt Organizations (RICO) Act. RICO makes fraudulent or misrepresented businesses illegal including those conducted by the mail system. Within RICO, it is important for the price discrimination cases not to be isolated, but for the firm to have a history of price discrimination with a possible intent to harm. This was the basis for argument in the *Katzman v. Victoria’s Secret Catalogue* (1996) case. In this case, Katzman received a catalog from Victoria’s Secret with a price discount which was different than the discount her male colleague at work received. Katzman tried to prove that Victoria’s Secret was price discriminating based on gender. Even though the plaintiff lost this case (and also lost the appeal), the interest in the pricing practices of Victoria’s Secret caught the attention of the Federal Trade Commission. In an out-of-court settlement, the Federal Trade Commission was able to act on behalf of consumers by stopping the gender price discrimination practices of Victoria’s Secret.

¹² An example of a Robinson-Patman case of where price discrimination was an indication of anti-competitive behavior is the *National Association of College Bookstores, Inc. v. Cambridge University Press, et al.* (1997). In this case, major book publishers gave “unjustified quantity discounts” and “secret discounts” to retailers affiliated with the National Association of College Bookstores. The FTC argued that their actions would provide incentives for bookstores to exit from the association and thereby reduce the bargaining power of the association. This is anti-competitive and a violation of the Robinson-Patman Act (www.ftc.gov/os/9609/d9217let.htm).

The FTC combines the ability to understand the necessities of commerce such as consumer rights and marketing practices. By launching their Internet consumer education web site, the FTC has already positioned themselves as the leading U.S. agency to address Internet commerce issues. This experience along with their expertise of price discrimination issues to protect consumers makes them the natural choice to address Internet price discrimination in the marketplace and intervene when the self-regulating entities like TRUSTe fail. *The Federal Trade Commission is the most appropriate U.S. agency to monitor Internet pricing practices and intervene when necessary.*

6.3 International Efforts to Monitor Internet Price Discrimination

Public policy makers such as the FTC should examine and monitor the competitive forces and self-regulation of the Internet marketplace and coordinate their actions internationally. Because of jurisdictional questions, the FTC may not be policy maker with the authority to protect some groups of consumers. The Internet retailer and/or the Internet consumer may not be conducting commerce in the United States so it becomes unclear whether or not the FTC has any jurisdiction. Already Internet gambling sites have emerged outside the U.S., beyond the jurisdiction of the U.S. government, even though these web sites target U.S. consumers. Because the Internet has a global scope, the FTC is just one of many international government bodies that has jurisdiction over commerce regulation. In international cases, it is important for the FTC to cooperate with foreign governments to protect consumers both at home and abroad.

An international approach to Internet price discrimination is consistent with the policy papers from the U.S. (Clinton and Gore 1997), European Union (CEC 1997), and Japan (MITI 1997). As exemplified by the discussion in Bailey (1998), the Internet's global scope hopes to make new market opportunities possible by leveraging this global scope. Therefore the U.S. must work with international bodies like the World Trade Organization to ensure that there are consistent regulations about Internet price discrimination such that consumers globally are protected.

Policy documents authored by the U.S. government regarding electronic commerce should have input from the FTC. If the U.S. supports a "tax-free" environment for commerce transactions, Internet retailers may get the impression

that this means “lawless.” This may result in price discrimination policies by Internet retailers that then need to be undone through FTC lawsuits. By incorporating concerns about Internet price discrimination in current policy papers, the U.S. can send the right signal to consumers and retailers in the U.S. and abroad: unfair price discrimination in Internet commerce will not be tolerated. Just as the Magaziner Report was created with the input of the FTC, so should future federal documents pertaining to Internet commerce.

The Internet is still a small influence in the global marketplace but it is growing quickly. The policy papers of developed nations emphasize the need to coordinate actions globally. Even though these papers do not specify Internet price discrimination, it is a natural outgrowth of the issues the papers raise. U.S. monitoring and self-regulation should have input and coordinate globally on Internet price discrimination policies. *A global scope of Internet commerce requires coordination and cooperation internationally with organizations like the World Trade Organization.*

7. Conclusion

The Internet may be in its nascent stages, but there are already some business practices that may concern policy makers such as Internet price discrimination. The ability to single out individual consumers and charge them higher prices becomes feasible with the technology of the Internet and the Internet’s economic characteristic of reduced menu costs. Pricing, like some web pages, can be rendered dynamically using consumer preference and information. The potential movement to perfect price discrimination is a concern of Internet consumers who may find that their consumer surplus erodes as more Internet retailers adopt price discrimination policies.

The market forces of competition along with the potential for self-regulation of Internet commerce is an important part of the emerging Internet commerce marketplace, but it may not be enough. The U.S. government working in cooperation with foreign and international organizations can help monitor the Internet’s ability to combat price discrimination practices. The Federal Trade Commission has already worked with non-profit corporations such as TRUSTe to promote trust in Internet commerce. The future of pricing practices on the Internet is unknown.

However, consumers can protect themselves by comparing prices among Internet retailers and being careful about the personal information they reveal.

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