

Internet Prices and Price Dispersion

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INTRODUCTION

In the pre-Internet era, consumers relied on media such as Sunday newspapers and flyers for product and price information. Such search process is time-consuming and unlikely to be exhaustive. The existence of incomplete information leads to price dispersion in the marketplace (Stigler, 1961). Recent advances in information technology have dramatically changed the manner in which consumers and businesses gather and transmit information. With a few mouse-clicks, consumers are able to obtain price information from a wide range of stores. With the advent of the Internet, especially the introduction of price comparison sites (or shopbots), competition among online retailers escalates and, as a result, we expect prices to converge in the new economy.

However, an extensive literature on Internet pricing has documented persistent price dispersion in various online markets. In this chapter, I review this and related literatures, and discuss future research directions. A wide range of audiences, including scholars and practitioners, may benefit from this collection of up-to-date research findings on Internet prices and price dispersion.

BACKGROUND

During early days of e-commerce, retailers selling search goods, such as books and CDs, first emerged. The rise of consumer confidence, coupled with the development of information technology, has led (more expensive) experience goods to the new economy. This trend is indicated by the delayed entrance of luxury goods onto the online marketplace. One direct benefit of participating in e-commerce is cost savings for retailers, although it is less clear to which extent consumers benefit from these savings. To examine this issue, one strand of the literature compares prices of matched products sold in both online and brick-and-mortar stores. Most studies have documented lower online prices in various industries (see in Table 1), indicating the relative efficiency of e-commerce.

Online shoppers enjoy enhanced search capability through effective tools. Search sites, such as Google and Yahoo!, have become indispensable for comparison shopping. A recent comScore Media Matrix monthly qSearch™ analysis reports a total of 18.8 billion unique desktop search queries submitted in January 2015.¹ With the rising popularity of mobile devices, from smartphones to tablets, one would only expect a greater utilization of search engines.² However, the prevalence of search engines needs not eliminate all barriers to perfect competition among e-retailers, as recent research still reports persistent price dispersion (e.g., Jin & Kato, 2006 on ungraded baseball cards; Baye & Morgan, 2009 on consumer electronics; Chellappa et al., 2011 on airfares; Ghose & Yao, 2011 on service supply products; Dinerstein et al., 2014 on video games). The empirical literature has developed several measures of price dispersion:³ In a given product market,

- **Price Range:** The difference between the highest and the lowest price.
- **Percent Price Range:** The ratio of price range to the lowest price.
- **Coefficient of Variation:** The ratio of the standard deviation to the average price.
- **Gini Coefficient:** $Gini = 1 + \frac{1}{N} - \frac{2}{\lambda N^2} \sum_{i=1}^N (N + 1 - i) p_i$ where p_i is the price of observation i , with $i=1,2,\dots, N$, λ is the mean price. (Gaggero & Piga, 2009).
- **Price Gap:** The price difference between the two lowest-priced firms (Baye et al., 2004).

Prices on the Internet

The Internet provides an ideal setting for empirical studies with abundance of data.⁴ In this section, I review research on pricing issues on the Internet. In general, we may sort e-retailers into two categories: web-based e-retailers (Dotcoms), such as eBay and Amazon, who exclusively conduct their business on the Internet and have no physical presence,⁵ and multi-channel retailers (MCR), such as Best Buy's online branch, which is an extension of the brick-and-mortar establishment. Tables 1 and 2 compare prices and price dispersion between online and brick-and-mortar sellers, and between Dotcoms and MCRs, respectively.

Determinants of Price Dispersion

When the "law of one price" fails to hold, a number of explanations are provided in the literature.

Branding/Reputation

Because consumers have to submit the payment before receiving an order, trust plays a crucial role in online shopping. Naturally, risk-averse online shoppers prefer more reputable stores (Smith & Brynjolfsson, 2001). Thus, consumer awareness and sensitivity to branding allow some sellers to charge premia (Baylis & Perloff, 2002; Dinlersoz & Li, 2006), resulting in price dispersion (Chen & Hitt, 2002).⁷

Channel Substitution

As sellers expand to the online channel, various coordination issues arise. While there is some evidence of cannibalization of the Internet channel in the publishing industry (Gentzkow, 2007), the actual outcome varies across product markets, and probably over time as well. For instance, Goolsbee (2001) finds evidence of channel conflict when consumers buy computers between channels; Pozzi (2013) estimates a 13% rise in overall revenue resulting from the establishment of the Internet channel by a supermarket chain, with little impact on traditional sales.

Competition

The level of competition may determine sellers' pricing strategies. With only a handful of competitors, high prices can be sustained through tacit collusion. As more sellers join the competition, it would drive down the price as well as price dispersion. Evidence from various online markets suggests that competition leads to lower prices (Haynes and Thompson, 2008) and lower price dispersion (Nelson et al., 2007; Gaggero & Piga, 2011).

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