

Compete in Price or Service?—A Study of Personalized Pricing and Money Back Guarantees

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Available online 13 January 2017

Abstract

Retailers use both pricing and service strategies to respond to intensified competition. Here we develop a duopoly model to investigate the impact of the increasingly popular personalized pricing strategy (PPS) and the widely used Money Back Guarantee (MBG) customer returns policy. We consider two retailers who differ in customer satisfaction rates. Each retailer chooses a pricing strategy, PPS or uniform pricing, and a product return strategy, MBG or ‘no returns.’ We show that both PPS and MBG are dominant strategies, but their impact on retailers’ prices and profits are different; while PPS intensifies price competition and may lead to a prisoner’s dilemma in which both retailers may lose profit, MBG mitigates price competition and may result in a Pareto improvement in both retailers’ profits. Both PPS and MBG increase the size of the overall market, but not the total duopoly profit. The total customer surplus and social welfare may increase under either strategy. In addition, we obtain some interesting observations as to how our results may change if the product quality/customer satisfaction rate is endogenously chosen in the duopoly. Some of our findings are in contrast to related results reported in the literature.

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Keywords: Customer returns; Pricing; Game theory; Duopoly

Introduction

In an intensely competitive market, retailers often choose multiple strategies to compete based on their strengths; pricing and customer service are two common strategies (Bernstein and Federgruen 2004, 2007; Moorthy 1988; Tsay and Agrawal 2000). While uniform pricing remains ubiquitous, personalized pricing has emerged in the wake of recent advances in information technology and consumer analytics. In fact, many retailers have implemented personalized pricing strategies (PPS); Safeway, for example, has implemented the “Just for U” program nationally (Kharif 2013). About 45% of its sales are now generated from shoppers who receive special offers via the internet or mobile apps, up from almost zero in 2011. PPS allows retailers to create individualized pricing for key customers, key segments, and key markets, instead of joining the “me too” race

to the bottom seen with competitive pricing (Elliott 2015; Ross 2016).

On the service side, with customer returns being a common phenomenon in the retailing industry, post-sale services are critical to attract and keep loyal customers. More and more retailers choose to offer more lenient customer returns policies, and most major retailers, such as Amazon.com, Home Depot, and Safeway, offer Money-Back-Guarantees (MBG) for most items. More interestingly, these retailers are simultaneously experimenting with PPS (Abnett 2015; Clifford 2012; Gross 2012; Zhang 2012). This motivates us to study the newly-emerged PPS and commonly-adopted MBG together, to examine how retailers compete using both pricing and service strategies.

While it is well understood that both PPS and MBG benefit a *monopolistic* retailer’s profit and market size, the impacts of these policies on retailers and customers in the more common *competitive* market are not yet as clear in the literature. Do both strategies enhance a retailer’s competitiveness? How do the two strategies impact retailers’ market size, profits, and prices, as well as customer surplus? Should a retailer select one or both strategies? In this paper, we use a game theoretic model to systematically analyze the combined impact of the two

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popular retailer strategies. We find that, even though they show some commonalities, PPS is more likely to be “lose-lose” and MBG to be “win-win” for competing retailers in terms of profit. Furthermore, when the two retailers can choose their customer satisfaction rates (quality levels) endogenously, the “prisoner’s dilemma” in which both retailers lose profit is more likely when both retailers switch to PPS, and the higher quality retailer is more likely to benefit in profit from adopting an MBG.

Although it has attracted much attention from academics over the past two decades (Chen, Narasimhan, and Zhang, 2001; Murthi and Saekar 2003), PPS has only recently become feasible and practical. Rapid advances in information technology and consumer analytics allow retailers to collect and process large amounts of customer data (Aydin and Ziya 2009) and more accurately gauge a customer’s willingness to pay (Chen and Iyer 2002; Wertenbroch and Skiera 2002), and these developments make it possible to implement PPS. Firms can implement PPS by offering price reductions in various forms (Acquisti and Varian 2005; Arora et al. 2008), such as coupons, special codes for rebates, and credit. For example, Safeway’s Just for U loyalty program gained significant ground in 2012 (McVie 2015), and Abnett (2015) reports that Staples, Rosetta Stone, and Home Depot show customers different prices based on “a range of characteristics that could be discovered about the user.” PPS leads to an expanded market for retailers and is becoming a powerful management tool (Obermiller, Arnesen, and Cohen 2012).

Another, more traditional, piece of the retail toolkit to enhance customer service is the product return policy. The ability to accommodate customer returns of unsatisfactory products represents a key competitive advantage. According to the National Retail Federation report (2015), the customer returns rate averages 8% and can be as high as 35% for those products distributed through e-tailers or mail order (Dekker and Van Der Laan 2003). For catalog retailers of fashion items, returns rates can be as high as 75% (Mostard and Teunter 2006). This service comes with significant costs; total merchandise returns account for almost \$260.5 billion in lost sales for US retailers (National Retail Federation report 2015). The MBG, which allows customers to return, for a full refund, products that do not meet their expectations, is the most popular returns policy, and has been implemented by many retailers (Akçay, Boyacı, and Zhang 2013). MBGs benefit customers in several ways (Suwelack et al. 2011). Primarily, they protect customers against product mismatch, and thus may stimulate purchases (Davis, Gerstner, and Hagerty 1995; Wood 2001), but they may also serve to attract customers’ attention (Davis, Gerstner, and Hagerty 1995), reflect high product quality (Moorthy and Srinivasan 1995; Shieh 1996), increase customers’ expected utility (Anderson, Hansen, and Simester 2009), reduce consumers’ perceived risk (Heiman, McWilliams, and Zilberman 2001; Lei, de Ruyter, and Wetzels 2008), and above all increase consumer satisfaction (e.g., McCollough and Gremler 2004). MBGs have thus been widely implemented by retailers to respond to intensified competition, even though they impose substantial costs on the retailers (Sullivan 2009). Several theories and models have been developed to explain the ubiquity of MBGs, including the signaling theory of Moorthy and Srinivasan (1995) and the

monopoly model of Davis, Gerstner, and Hagerty (1995). Davis, Gerstner, and Hagerty (1995) conclude that the retailer should offer MBGs if its net salvage value, from a returned product is positive.

Both PPS and MBG strategies have been shown to expand the monopoly retailer’s market size and enhance profit (Davis, Gerstner, and Hagerty 1995; Ghose et al. 2002). The impact of these two strategies is less obvious and less well understood when retailers compete. For a symmetric duopoly, it has been shown (Shaffer and Zhang 1995) that implementation of an optimal PPS for each retailer may make both retailers worse off and lead to a prisoner’s dilemma. Shaffer and Zhang (2002) also show that, if the retailers are asymmetric and differ in the size of their loyal customer base (vertical differential), and customers have heterogeneous brand loyalty, the firm with more loyal customers can earn higher profit in equilibrium when both firms engage in one-to-one promotions. These results are inconsistent because they are context-specific, as pointed out by Aydin and Ziya (2009). Choudhary et al. (2005) consider an asymmetric duopoly under vertical product differentiation. They study the impact of PPS on retailers’ choice of product quality at equilibrium and are unable to show that PPS is a dominant strategy. McWilliams (2012) develops an asymmetric duopoly model to study the impact of an MBG under uniform pricing. He uses the signaling theory (Moorthy and Srinivasan 1995) and assumes that the retailer with a high (low) customer satisfaction rate is the high (low)-quality retailer. It is assumed that both retailers recoup the same salvage value from the returned product and incur the same handling cost of the returned product. In addition, the costs for customers to return their products to both retailers are assumed to be the same. The author focuses on the situation in which the two retailers co-exist, and shows that MBG always benefits the lower quality retailer, and that when the high quality retailer’s customer satisfaction rate is sufficiently high (>0.5), it suffers from offering MBGs.

In this paper, we develop an asymmetric duopoly model that takes into consideration both pricing strategy (either uniform pricing or PPS) and service strategy to handle customer returns (either MBG or no returns) for two competing retailers. The two retailers are assumed to select a different quality of service and thus have different customer satisfaction rates. Unlike the model assumption in McWilliams (2012), the two retailers may incur different costs in handling customer returns and receive different salvage values for the returned product. In addition, the costs for customers to return the product to the two retailers may also be different. Our model captures the pricing and service strategy competition, the long-term quality competition, and the short-term price competition through a multiple-stage game. It allows us to comprehensively answer the following questions: (1) When do retailers choose PPS and/or MBG? (2) How do PPS and MBG affect each retailer’s pricing, demand, and profit? (3) Will PPS and MBG benefit both retailers? (4) How do PPS and MBG affect the total market size, duopoly profit, customer surplus, and social welfare? (5) How do PPS and MBG interact with each other? (6) How do the retailers choose their quality levels, if the quality level is an endogenous decision?

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