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An Empirical Analysis of Bidding Fees in Name-your-own-price Auctions

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Abstract

Interactive pricing mechanisms integrate customers into the price-setting process by letting them submit bids. Name-your-own-price auctions are such an interactive pricing mechanism, where buyers' bids denote the final price of a product or service in case they surpass a secret threshold price set by the seller. If buyers are given the flexibility to bid repeatedly, they might try to incrementally bid up to the threshold. In this case, charging fees for the option to place additional bids could generate extra revenue and reduce incremental bidding behavior. Based on an economic model of consumer bidding behavior in name-your-own-price auctions and two empirical studies, we analytically and empirically investigate the effects bidding fees have on buyers' bidding behavior. Moreover, we analyze the impact of bidding fees on seller revenue and profit based on our empirical results.

Keywords: Interactive pricing; Bidding fees; Laboratory experiment; Field experiment

Introduction

Interactive pricing mechanisms that integrate customers into the price-setting process are an essential part of the Web economy and electronic commerce (Bapna, Goes, and Gupta 2003; Jap and Naik 2004; Pan, Ratchford, and Shankar 2004; Ratchford 2009). Online marketplaces apply a broad variety of interactive pricing mechanisms, such as ascending bid auctions (e.g., eBay), reverse auctions (e.g., MyHammer), or name-your-own-price auctions (e.g., Priceline). As opposed to posted prices set by the seller or the retailer, buyers can interactively influence the final price of a product through the submission of bids or the exchange of messages with a seller through the auction interface.

Given certain consumer and market characteristics, the specific design of interactive pricing mechanisms determines consumers' bidding behavior and thus seller revenue and profit. Previous research (for an overview see Bajari and Hortaçsu 2004 or Jap 2007) derives design recommendations for standard online auction mechanisms. However, the Internet has also given rise to new interactive pricing mechanisms such as name-your-own-price auctions, which have generated considerable research interest (e.g., Fay 2004; Hann and Terwiesch 2003; Spann, Skiera, and Schäfers 2004; Wang, Gal-Or, and Chatterjee 2009; Wolk and Spann 2008). Name-your-own-price auctions were pioneered by Priceline, which sells travel services such as airline tickets, hotel rooms or car rentals on its electronic platform. Broadening Priceline's concept, where many firms vie to make a sale to a particular consumer (Pinker, Seidmann, and Vakrat 2003), other companies use name-your-own-price auctions to sell products or services in B2C-markets (e.g., low-cost airlines (www.germanwings.com) or software sellers (www.ashampoo.com)). eBay's "Best Offer"-feature is yet another example of this mechanism.

At the outset of a name-your-own-price auction, a seller sets a secret threshold price indicating her minimum acceptable price. A buyer's bid then determines the price of the product if it at least equals the seller's threshold price. Hence, buyers in name-your-own-price auctions always pay the price denoted by their bid. Moreover, information about the seller's threshold

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price or other buyers' bids is never published. Name-your-own-price auctions differ from standard auctions in that bidders do not compete with each other based on their bid amount but only have to surpass the secret threshold price set by the seller in order for a transaction to occur.

As buyers at Priceline are typically allowed to place one bid for a specific product (e.g., airline tickets) within 24 h, Priceline's implementation of a name-your-own-price auction has been referred to as a single-bid policy (Hann and Terwiesch 2003). Despite this restriction to a single bid, bidders may place multiple bids, for example, by the illegitimate but practicable use of multiple credit cards (Fay 2004). Thus, perfect enforcement of the single-bid policy may not be feasible. This is part of the reason why some name-your-own-price sellers–including Priceline for some product categories such as calling capacity–have used a multiple-bidding policy to allow their customers to engage in "online haggling" (Hann and Terwiesch 2003) and raise their bids if an initial bid did not surpass the secret threshold price. Given this flexibility to place additional bids, buyers generate a higher expected consumer surplus due to the possibility of transacting at lower prices when they start bidding sequences at lower values. Further, buyers might bid closer to their reservation price with a multiple-bidding policy (Spann, Skiera, and Schäfers 2004). This, in turn, could lead to a higher number of successful bids and increase seller profit.

Nevertheless, buyers could exploit their ability to place multiple bids and–starting at the lowest price–increase their bids with minimum increments. Using such an "epsilon strategy" (Hann and Terwiesch 2003), bidders could ensure that they purchase the product for the minimum price accepted by the seller (i.e., the seller's threshold price). Simultaneously, sellers can employ a number of constraints to avoid such minimum increment bidding behavior. For example, sellers could ask buyers to pay a small monetary fee per bid and thus charge buyers for the additional flexibility they gain over the single-bid format. Given such bidding fees are solely imposed upon the rejection of an initial bid free of charge, they constitute a form of a name-your-own-price auction in-between the single-bid format (i.e., virtually "infinite" bidding fees following the initial bid) and a multiple-bidding policy with no bidding fees.

We distinguish bidding fees from both costs of entry (McAfee and McMillan 1987; Samuelson 1985) and frictional costs (also "search costs" or "bid evaluation costs") such as the opportunity cost of time necessary to log on the bidding site and to place the bid and the cost of the mental effort to determine optimal bid values (Bakos 1997; Carr 2003; Hann and Terwiesch 2003; Shugan 1980; Snir and Hitt 2003; Stigler 1961). Yet, unlike these frictional costs, bidding fees are explicitly charged by the seller and have to be paid by the buyer on top of her successful bid. Therefore, sellers could use bidding fees to increase profits in name-your-own-price auctions with a multiple-bidding policy. In this case, the profit-increasing effect of bidding fees for a seller depends on the additional profit from these fees and their effect on bidding behavior. Moreover, the use of bidding fees has recently gained momentum with the rise of entertainment shopping platforms such as Swoopo (www.swoopo.com) and DubLi (www.dubli.com).

Factors potentially influencing bidding behavior suggest ambiguous implications for seller revenue and profit. Since bidding fees reduce expected consumer surplus, fewer buyers will have an incentive to engage in a name-your-own-price auction. Moreover, bidding fees could diminish maximum bid values if bidders account for the decreasing consumer surplus, thus reducing the likelihood that bids surpass the seller's threshold price. Both effects could reduce the number of products sold and seller revenue. However, bidding fees could encourage bidders to increase consecutive bid values by higher amounts if they want to enhance the likelihood of success with a lower number of bids. This, in turn, could result in a higher degree of price discrimination when some buyers "overbid" the seller's uniform threshold price by a larger amount than other buyers would in a multiple-bidding scenario. Apart from the monetary amount of the bidding fees, employing this strategy could generate higher profit margins and thus increase seller profit.

As a result of this potential benefit, bidding fees as a design option in a name-your-own-price auction require a thorough study of their effect on bidding behavior, revenue and seller profit. Therefore, the aim of this study is to analytically and empirically investigate the effects that bidding fees have on buyers' bidding behavior. The contribution of our paper is fourfold. First, we develop an economic model of bidding behavior to derive theoretical explanations for the effects of bidding fees on bidding behavior in a name-your-own-price auction. Second, we empirically compare multiple-bidding with single-bid policies. Third, we analyze the effects of bidding fees on bidding behavior in two empirical studies: a laboratory experiment with induced valuations and a field study with real-world transactions over the Internet. Fourth, we derive revenue and profit implications from the use of bidding fees based on the data gathered in the field study.

Our paper is structured as follows. In Analytical Model of Bidding Behavior with Bidding Fees, we develop an economic model of bidding behavior in a name-your-own-price auction with bidding fees charged by a seller. Building on this model, we provide theoretical hypotheses for bidding behavior in such name-your-own-price auctions. In Empirical Studies of Bidding Behavior with Bidding Fees, we test our hypotheses in two empirical studies: a laboratory experiment and a field experiment. Further, we use the results of the field experiment to draw revenue and profit implications on the usage of bidding fees for name-your-own-price sellers. Conclusion concludes the paper with final implications and directions for future research.

Analytical Model of Bidding Behavior with Bidding Fees

Bidding can be costly for consumers engaging in online transactions, such as placing a bid in a name-your-own-price auction. First of all, bidders face frictional costs (Hann and Terwiesch 2003; Shugan 1980; Stigler 1961). Additionally, sellers could charge a monetary fee for the option to place a bid and thus manipulate the cost incurred for bidders when placing bids. Extending economic models of consumer bidding