Bid-Elicitation Interfaces and Bidding Behavior in Retail Interactive Pricing

Martin Spann a,∗, Gerald Häubl b,1, Bernd Skiera c,2, Martin Bernhardt d

a Munich School of Management, Ludwig-Maximilians-University (LMU Munich), 80539 Munich, Germany
b School of Business, University of Alberta, Edmonton, AB, Canada T6G 2R6
c Faculty of Business and Economics, Johann Wolfgang Goethe-University, 60323 Frankfurt am Main, Germany
d Kampmann, Berg & Partner, Am Sandtorkai 77, 20457 Hamburg, Germany

Abstract

Advances in information technology have led to a substantial increase in the use of interactive pricing mechanisms, where buyers (i.e., consumers) and sellers (i.e., retailers) enter a formal computer-mediated price-negotiation process during which consumers submit bids for a specific product. This article examines how the interface used for bid elicitation affects bidding behavior and, ultimately, retailer profit. Our focus is on one key aspect of the bid-elicitation interface—how retailers require bidders to articulate their bids. Evidence from four experiments involving economically consequential bids demonstrates that the candidate bid amounts specified by the retailer have a strong influence on bidding behavior, and consequently also on retailer profit. In particular, the level of candidate bid amounts has a positive effect on actual bid amounts, whereas it has a negative impact on the likelihood that a consumer will actually submit a bid. Crucially, we show that the former effect can more than offset the latter to cause an increase in retailer profit. We propose and find support for two distinct pathways driving this phenomenon—the candidate bid amounts (1) influence bidders’ valuations of the offered product and (2) shape bidders’ beliefs about what bid amounts will be successful. Our results highlight the importance of the design of user interfaces for interactive pricing, demonstrating that even seemingly innocuous aspects of interfaces can have a dramatic impact on bidding behavior and retailer profit.

Keywords: Electronic commerce; Interactive pricing; Bidding behavior; Name-your-own-price; Select-your-price; Laboratory experiment; Field experiment

Advances in information technology are transforming buyer–seller interactions and have led to a significant shift from posted-price selling formats to interactive pricing mechanisms (e.g., eBay, Priceline, Google, Facebook, entertainment shopping auctions such as those listed at www.allpennyauctions.com), under which consumers play a more active role in determining the selling price of a product (see, e.g., Bapna, Jank, and Shmueli 2008). In interactive pricing, buyers (i.e., consumers) and sellers (i.e., retailers) enter a formal computer-mediated price-negotiation process during which consumers typically submit bids that determine whether the bidder is allowed to purchase a product and, if so, at what price (e.g., Kannan and Kopalle 2001). Thus, unlike in posted-price markets, the retailer does not set the purchase price. However, a retailer who uses interactive pricing does control the price-negotiation mechanism. The appropriate design of such a mechanism is of utmost importance for retailers, and this requires an understanding of how particular aspects of the mechanism might influence bidding behavior (Bajari and Hortacsu 2004; Haruvy and Popkowski Leszczyc 2009; Jap and Haruvy 2008). While the body of economic literature on mechanism design for price negotiation is vast (e.g., Bapna, Goes, and Gupta 2003; Barrot et al. 2010; Hinz, Hann, and Spann 2011; Klemperer 2002; Krishna 2002; Myerson 1981; Spann, Zeithammer, and Häubl 2010), much less attention has been devoted to shedding light on the determinants of consumers’ bidding behavior in connection with interactive pricing mechanisms (e.g., Dholakia, Basuroy, and Soltyssinski 2002; Fay and Laran 2009; Kamins, Dreze, and Folkes 2004; Spann and Tellis 2006). An important aspect of interactive pricing mechanisms is the design of the bidder–seller interaction, which received significant interest in auction design (for an overview, see Bajari and Hortacsu 2004). Examples are unlimited rebidding and the soft close ending rule at eBay auctions, the hard close ending rule at...
former Amazon auctions or the limited rebidding with instant feedback on bid success at Priceline. The design of the bidelicitation interface has received very little attention to date. The only exception is Chernyev’s (2003) study of user perceptions of different bid-elicitation interfaces – which did not, however, examine the potential impact of such interfaces on actual bidding behavior or seller profit. One reason for this neglect might be that the most prominent current interactive pricing applications require bidders to freely articulate their bids (e.g., eBay, Priceline). However, a key alternative to free bid articulation is to present bidders with a list of pre-specified candidate bid amounts as has been done by less prominent companies such as the European charter airline LTU in their offering of “Bid & Fly”. In a different setting, fundraising initiatives, for example, frequently propose specific amounts on their website to provide donors with some guidelines of how much to donate (e.g., http://support.wpt.org/donate or http://www.convio.com).

Prior work has shown that consumer behavior in posted-price settings is sensitive to the particular way in which price information is presented (e.g., Chandrashekaran and Grewal 2003; Janiszewski and Lichtenstein 1999; Kalyanaram and Winer, 1995; Puccinelli et al. 2009). Extending these findings to the domain of interactive pricing, one might expect that the bidelicitation interface that a retailer provides to consumers, by identifying a set of specific candidate bid amounts, can influence bidding behavior. However, this is in no way a straightforward extension since, in interactive pricing, consumers do not merely react to a given price, but instead actively choose whether to submit a bid and, if so, decide on the particular bid amount. Thus, the results of research on consumer response to posted-price offers may provide little insight into the possible effects of how bids are elicited on bidding behavior in interactive pricing. An understanding of how the bid-elicitation interface affects bidding behavior has important implications for both retailers and consumers. Retailers are naturally interested in designing interfaces that increase – and, ideally, maximize – their profit. On the other hand, consumers, regulatory agencies, and consumer advocacy groups may be interested in identifying and guarding against psychological influences that might cause consumers to submit high bids and potentially overpay for products they acquire in interactive pricing markets.

The objective of this article is to enhance our understanding of whether and how the bid-elicitation interface influences bidding behavior and, consequently, a retailer’s profit. In doing so, this research sheds light on the psychological forces that underlie consumers’ decisions about whether to submit a bid and how much to bid for a product in an interactive-pricing setting, and it examines how these decisions are affected by the design of the bid-elicitation interface. We focus on the role of the candidate bid amounts for a product that are specified by the seller, and we examine different pathways through which these influence consumer bidding behavior.

The unique contribution of this article is that it is the first to examine the role of the bid-elicitation interface in interactive pricing. While prior research in the domain of interactive pricing has studied the effects of price-related information such as minimum bid requirements and buy-now prices (Kamins, Dreze, and Folkes 2004; Popkowski Leszczyc, Qiu, and He 2009; Reiley 2006), incidental prices of unrelated products (Nunes and Boatwright 2004), secret reserve prices (Haruvy and Popkowski Leszczyc 2010), and comparative price information (Wolk and Spann 2008), the impact of the manner in which bids are elicited on bid amounts (and seller profit) has not been investigated. Moreover, the present research is the first to examine the psychological forces that underlie the effect of the bid-elicitation interface on bidding behavior in a reverse-pricing setting.

The remainder of the article is organized as follows. We first characterize our theoretical predictions about how – in terms of two key pathways – the candidate bid amounts specified in a bid-elicitation interface influence bidding behavior in interactive pricing, and we present a conceptual model that encapsulates these predictions. After that, we present evidence from four experiments designed to empirically examine the predicted effects of the bid-elicitation interface on bidding behavior as well as on retailer profit, and to test the proposed pathways underlying these influences.

Impact of the Bid-Elicitation Interface on Bidding Behavior

We examine the influence of the bid-elicitation interface on bidding behavior in the context of an interactive pricing mechanism, with a successful bidder paying the price of his or her bid if it surpasses a hidden threshold price set by the retailer. The applications of such an interactive pricing approach for retailers include Priceline’s “Name Your Own Price®” mechanism or eBay’s “Best Offer” auction, which enable the retailer to accept a consumer’s bid instantly if it exceeds some threshold (see, e.g., Hann and Terwiesch 2003; Hinz and Spann 2008; Terwiesch et al. 2005; Wang et al. 2009). In the context of such interactive pricing mechanisms, bidders are typically restricted to a single bid for a particular product offering, as this prevents them from discovering the threshold price (see Fay 2004; Spann, Skiera, & Schäfers 2004).

For this type of interactive pricing, the bid-elicitation interface determines how consumers are to indicate the amount they are prepared to pay for a given product. This can be done either by allowing consumers to freely articulate their bids (“name-your-price” interface) or by providing bidders with a list of pre-specified candidate bid amounts from which they must select one if they wish to submit a bid (“select-your-price” interface). We focus on bidding behavior in connection with different select-your-price interfaces. However, our experiments also include name-your-price conditions for comparison.

Conceptual Model

Our conceptual model of how the bid-elicitation interface influences bidding behavior in interactive pricing is based on the notions that consumers’ valuations of specific products are malleable (i.e., that these valuations are constructed in response to environmental cues) and that consumers are uncertain as to how high their bid for a particular product might have to be in order to be successful. We propose that the candidate bid amounts identified in the bid-elicitation interface have a systematic impact on
two aspects of bidding behavior – consumers’ decision whether or not to submit a bid at all (i.e., bidder entry) and how much they bid if they do enter (i.e., bid amounts). In particular, we hypothesize that consumers, instead of simply using the set of candidate amounts as a device for articulating their bid if indeed they wish to bid one of these amounts, are influenced by these candidate bid amounts via two distinct pathways: (1) the construction of their subjective valuations of the offered product and (2) the construction of their beliefs about what bid amounts will be successful. Our predictions about how the level of candidate bid amounts influences both bidder entry and actual bid amounts through these two pathways are summarized in the conceptual model depicted in Fig. 1.

In what follows, we characterize the two proposed pathways and outline how each is hypothesized to contribute to the overall effect of the bid-elicitation interface on bidding behavior. Both of these pathways are deliberative in that they involve reasoning on the part of consumers – either about their valuation of the offered product or about what bid amount might be successful. In addition, we discuss the possibility that candidate bid amounts might affect bidding behavior through a third route that does not involve deliberate reasoning by the bidder.

**Pathway 1: Construction of Product Valuations**

A large body of research in the area of human decision-making suggests that preferences tend to be constructed on the spot when people make decisions (see Lichtenstein and Slovic 2006). One aspect of the constructive nature of preference is that individuals are often uncertain about how much a particular object is worth to them, and that they tend to use cues that are available in their external environment in order to construct their own valuation of that object (Johnson, Häubl, and Keinan 2007; Slovic 1995). For instance, research on ascending-bid auctions suggests that bidders tend to use seller-specified minimum bid amounts as a basis for constructing their own valuations of an auctioned product (Ariely and Simonson 2003; Häubl and Popkowsk-Leszczycz 2003). Similarly, the particular set of candidate bid amounts under a select-your-price interface may be perceived as revealing some information about a product’s market value and, consequently, about a bidder’s valuation of that item as well. Based on this, we hypothesize that the level of candidate bid amounts has a positive influence on consumers’ product valuations.

In turn, consumers’ (constructed) product valuations are expected to have an impact on both aspects of bidding behavior. First, all else being equal, a higher valuation should make a consumer more likely to enter (i.e., to submit a bid). Moreover, it should increase the consumer’s bid amount if s/he does enter. The underlying rationale for both of these effects is that a higher product valuation increases the expected consumer surplus (i.e., the difference between a consumer’s product valuation and the price s/he has to pay for the product) from submitting a bid in an interactive-pricing market (Spann and Tellis 2006). Thus, bidders’ use of the information conveyed by the set of candidate bid amounts specified by the retailer in constructing their own valuation of a product is one route (depicted as dashed arrows in Fig. 1) through which the bid-elicitation interface might influence bidding behavior in interactive pricing.

**Pathway 2: Construction of Beliefs about What Bid Amounts Will Be Successful**

The decision-making literature shows that the interface used to elicit individuals’ responses to a closed-answer question (e.g., the properties of a rating scale) can influence response behavior in a predictable fashion (Schwarz 1990; Schwarz et al. 1985; Tourangeau 2003). These findings are based on the idea that response scales are not merely instruments of measurement, but that they also convey relevant information about the state of the world. In line with the principle of conversational logic (Grice 1975), a particular response interface tends to reflect the knowledge and expectations of those who designed it, and it may therefore imply something about the range of common behaviors or states. For instance, several studies show that the middle option in a set of candidate responses tends to be seen as the most typical one and that, as a result, people are more likely to select it (Kivetz, Netzer, and Srinivasan 2004; Tourangeau, Rips, and Rasinski 2000). A set of candidate bid amounts is, in fact, a response scale designed by the retailer. Therefore, bidders may perceive it as informative with respect to the retailer’s threshold price and use it in constructing their beliefs about what might constitute an acceptable bid amount. This is consistent with research on negotiations suggesting that bargainers’ perceptions of opponents’ reservation prices influence the magnitude of their own offers (see Srivastava, Chakravarti, and Rapoport 2000). Thus, we hypothesize that the level of candidate bid amounts has a positive effect on consumers’ beliefs about the retailer’s threshold price.

In turn, (constructed) beliefs about the threshold price are expected to have a negative effect on bidder entry. All else being equal, anticipating that a higher bid amount will be required in order to be successful reduces the expected consumer surplus from bidding and should, thus, reduce the inclination to submit a bid in the first place. On the other hand, conditional on entry, bidders’ beliefs about the threshold price should have a

---

Please cite this article in press as: Spann, Martin, et al, Bid-Elicitation Interfaces and Bidding Behavior in Retail Interactive Pricing, Journal of Retailing (xxx, 2011), doi:10.1016/j.jretai.2011.06.001
positive impact on their bid amounts, as long as they intend to maintain roughly the same probability of their bid being successful. In contrast to the first route, which affects bidding behavior (i.e., whether to bid and, if so, how much) by influencing one’s valuation of the offered product, this second pathway (shown as dotted arrows in Fig. 1) determines bidding behavior given one’s valuation.

**Non-Deliberative Influences**

The two pathways outlined above imply that bidders use the information conveyed by the bid-elicitation interface as a basis for making inferences, either about their subjective valuation of the product or about what bid amounts might be successful. However, the set of candidate bid amounts might also have a more direct influence on bidding behavior that does not involve deliberate reasoning. Such an influence would be analogous to the effect of arbitrary anchors on response behavior, where an initial reference (anchor) value that is provided as part of the task environment influences an individual’s subsequent numeric response (Tversky and Kahneman 1974), with responses being closer to the anchor value than they would have been in the absence of an anchor. Such effects have been demonstrated in various domains, and anchoring effects are commonly found even in connection with anchors that are unrelated (Nunes and Boatwright 2004) or completely arbitrary (see Chapman and Johnson 2002). The influence of anchors has been explained either as resulting from insufficient adjustment of responses away from the anchor (Epley and Gilovich 2001) or as being driven by increased accessibility of anchor-consistent information in one’s memory (Chapman and Johnson 1999; Strack and Mussweiler 1997). In the present research, we examine whether the bid-elicitation interface affects bidding behavior in such a manner, either instead of or in addition to the two proposed pathways that are encapsulated in our conceptual model.

**Implications for Retailer Profit**

According to the conceptual model depicted in Fig. 1, higher candidate bid amounts are hypothesized to both increase actual bid amounts (conditional on entry) and reduce bidder entry – i.e., decrease the number of consumers who actually submit a bid. Thus, in designing a bid-elicitation interface for interactive pricing, the retailer faces a trade-off between maximizing the magnitude of submitted bids (through higher candidate bid amounts) and maximizing the number of consumers who submit a successful bid (through lower candidate bid amounts), which implies a non-monotonic relationship between the level of candidate bid amounts and seller profit.

Two of the experiments presented in this article were designed to permit an analysis of the implications of different bid-elicitation interfaces for seller profit. In these studies (Experiments 1 and 4), participants had a choice of whether or not to submit a bid – as consumers do in reality – thus bringing into play the trade-off between bid magnitude and the number of bids above the threshold price. The two other studies (Experiments 2 and 3) were designed such that it was always optimal for participants to submit a bid (thus explicitly controlling for the effects of the bid-elicitation interface on bidder entry), motivated by the objective of testing the distinct pathways hypothesized to underlie the effect of candidate bid amounts on bidding behavior.

In what follows, we present evidence from four experiments that were designed to test the predictions about the influence of the bid-elicitation interface on bidding behavior encapsulated in our conceptual model, and to investigate the implications of these effects for retailer profit. The general approach was to randomly assign individuals to one of several bid-elicitation interfaces – i.e., different levels of candidate bid amounts, as well as free bid articulation – and observe whether these manipulations caused systematic differences in bidding behavior (and retailer profit). In all experiments, participants’ bids were of economic consequence to them, thus ensuring high external validity and the practical relevance of our findings within a rigorous experimental paradigm.

**Experiment 1**

The objective of Experiment 1 is to provide a first test of the effects of the bid-elicitation interface on bidding behavior, as well as to begin examining the pathways hypothesized to underlie these effects. Specifically, this study is designed to examine whether the bid-elicitation interface influences bidders’ valuations of the offered product and/or their beliefs about what bid amounts will be successful (see Fig. 1). Moreover, Experiment 1 allows us to analyze the implications of the different bid-elicitation interfaces for retailer profit.

**Method**

This experiment was conducted in a classroom setting in connection with an introductory marketing class at a Western European university. A total of 582 participants took part in the experiment and were given the opportunity to submit a single bid for a coffee mug. A hidden threshold price for the mug was set in advance. While participants were free not to place a bid, all submitted bids represented binding offers, and participants understood that, if their bid was successful, they would have to purchase a mug for the amount they bid.

We used a between-subjects experimental design to examine the effect of the bid-elicitation interface on bidding behavior. Each participant was randomly assigned to one of the following three treatment conditions: “SYP-low” (select-your-price, low candidate set), “SYP-high” (select-your-price, high candidate set), and “NYP” (name-your-price) as a control condition. For the two SYP conditions, participants were presented with a list of 25 candidate bid amounts (displayed in ascending order), of which they have to select one in order to place a bid. For the SYP-low condition, the candidate bids ranged from 0.50€ to 6.50€ (Euro), and for the SYP-high condition, they ranged from 3.50€ to 9.50€ (all in 0.25€ increments). For the NYP condition, bids were free to articulate their bid in the context of an unconstrained interface.

At the start of the experiment, oral instructions explaining the interactive pricing mechanism in general, and the participants’
Once all completed questionnaires had been collected, the experimenter then displayed a sealed envelope containing a piece of paper with the threshold price printed on it. After that, three different versions of a questionnaire, each containing one of the elicitation interfaces, were distributed. Participants were randomly each assigned to one of the conditions – 207 of them to NYP, 208 to SYP-low, and 167 to SYP-high.

The questionnaire contained a page on which participants were able to indicate their bid for the mug. Once they had recorded their bid (if they chose to), participants were asked to state their valuation of the mug (“What is the highest price you would be willing to pay for this mug?”) and to express their belief about what bid amounts might be successful (“What is your estimate of the hidden threshold price?”). Next, they were asked whether they happened to know the mug’s retail price.1

The experimenter asked one of the participants to open the envelope and announce the threshold price, which was 5.00€. Those who had submitted a bid equal to or greater than this threshold price paid their bid amount and received a mug in exchange.

Results

Bidder Entry. Overall, 94.3 percent (n = 549) of participants submitted a bid. The propensity to do so varied across conditions. First, as expected, it is greater when the candidate amounts are lower – the proportion of participants who placed a bid is significantly larger under SYP-low (97.1 percent) than under SYP-high (90.4 percent, χ^2-test: p < .01). Moreover, NYP also results in a greater proportion of submitted bids (94.7 percent) than does SYP-high, but neither this difference (χ^2-test: p > .1) nor the difference in terms of bidder entry between NYP and SYP-low (p > .2) is significant.

Bid Amounts. The mean of the submitted bid amounts is 72.22 percent higher under SYP-high (4.02€) than under SYP-low (2.33€, p < .01), which is conditional on participants’ having placed a bid. A better indicator of the effect of the set of candidate amounts – one that also takes non-bidders into account – is a comparison of the two SYP conditions in terms of the number of participants whose bids are greater than or equal to the lowest SYP-high candidate amount (i.e., 3.50€). This is true of 90.42 percent of those in SYP-high but only 21.15 percent of those in SYP-low (χ^2-test: p < .01). The median bid for all participants (including those who did not submit a bid) is significantly higher under SYP-high (3.75€) than under SYP-low (2.38€, Mann–Whitney Test: p < .01), demonstrating that the set of candidate bid amounts has a considerable positive effect on actual bids.

We now turn to a comparison of SYP to NYP. First, ignoring non-bidders, the mean of the submitted bid amounts under NYP (2.60€) is significantly lower than that under SYP-high (4.02€, p < .01), but statistically indistinguishable from that under SYP-low (2.33€, p > .1). In terms of the number of bids in excess of a common target amount, 19.3 percent of participants under the NYP condition submit a bid greater than or equal to 3.50€ (the lowest SYP-high candidate amount), which is significantly lower than the 90.4 percent rate under SYP-high (χ^2-test: p < .01) but no different from the 21.2 percent under SYP-low (p > .6). Finally, the median bid for all participants (including non-bidders) is significantly lower under NYP (2.39€) than under SYP-high (3.75€, Mann–Whitney Test: p < .01) but indistinguishable from that under SYP-low (2.38€, p > .9). However, it is important to note that bidding behavior in the NYP condition reflects consumers’ valuations and beliefs about the acceptance probability unencumbered by candidate bid amounts. The effect of providing a SYP interface relative to a NYP interface on bidding behavior thus depends on consumers’ initial product valuations and beliefs about the seller’s threshold price, as well as the specific candidate bid amounts chosen.

Beliefs About What Bid Amounts Will Be Successful. The bid-elicitation interface has a significant overall effect on valuations of the mug (ANOVA: p < .01). In particular, the mean valuation is significantly higher for the SYP-high condition (4.22€) than for the SYP-low (3.40€, p < .01) and NYP (3.56€, p < .01) conditions, with the difference between the latter two being statistically indistinguishable (p > .3). This result suggests that when a set of possible bid amounts is provided, bidders use these candidate amounts as a basis for constructing their own valuation of the offered product.

Table 1 provides an overview of the effects of the bid-elicitation interface on bidding behavior.

### Table 1: Bidder entry and bid amounts (Experiment 1).

<table>
<thead>
<tr>
<th>Bid-elicitation interface</th>
<th>Mean bid amount</th>
<th>Median bid amount</th>
<th>Number (share) of bidders</th>
<th>Number of bids ≥ 3.50€</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYP-low</td>
<td>2.33€</td>
<td>2.38€</td>
<td>202 (97.1%)</td>
<td>44</td>
</tr>
<tr>
<td>SYP-high</td>
<td>4.02€</td>
<td>3.75€</td>
<td>151 (90.4%)</td>
<td>151</td>
</tr>
<tr>
<td>Control (NYP)</td>
<td>2.60€</td>
<td>2.39€</td>
<td>196 (94.7%)</td>
<td>40</td>
</tr>
</tbody>
</table>

SYP (low): select-your-price, low (high) candidate set; NYP: name-your-price.

1 Including non-bidders.

---

1 Seven of the 582 participants claimed to know the retail price; accounting for this in the analyses reported below does not affect the findings.
Implications for Retailer Profit. We examine the implications of the three bid-elicitation interfaces for retailer profit (based on participants’ actual bid amounts). Fig. 2 illustrates the relationship between the threshold price (horizontal axis) and retailer profit (vertical axis) for each of the three elicitation interfaces given variable costs per sale of either 1€ (Panel A) or 3€ (Panel B). Fixed costs are assumed to be zero in this analysis, which is conservative in that relaxing this assumption would result in greater relative (i.e., percentage) differences in retailer profit between interfaces. (However, the absolute differences in profit are not affected by the level of fixed costs.)

For the bids submitted in this experiment, the SYP-high and NYP interfaces clearly dominate the SYP-low interface for all interesting levels of the threshold price, and this is true for both levels of variable costs. Moreover, SYP-high dominates NYP for threshold prices up to 4.50€ when variable costs are 1€ and up to 4.20€ when they are 3€. The opposite is true for threshold prices higher than that. However, when threshold prices are set so as to maximize retailer profit, SYP-high dominates at all reasonable levels of variable costs. For instance, for variable costs of 1€, the maximum retailer profit under SYP-high (365€) is 37 percent higher than that under NYP (267€) and 47 percent higher than that under SYP-low (248€); for variable costs of 3€, the maximum profit under SYP-high (127€) is 48 percent higher than that under NYP (86€) and 159 percent higher than that under SYP-low (49€).

Discussion

The results of this experiment demonstrate that, as predicted, the bid-elicitation interface can have a systematic influence on bidding behavior and retailer profit in interactive-pricing markets. In addition, this study sheds light on the distinct routes through which the bid-elicitation interface affects bidding behavior and, ultimately, retailer profit in interactive-pricing markets. Specifically, the results of Experiment 1 provide support for two such pathways: bidders’ use of the information conveyed by the bid-elicitation interface in constructing both their valuations of the offered product and their beliefs about what bid amounts might be successful. However, a greater degree of experimental control is required to more conclusively disentangle these two pathways, and to test whether another (non-deliberative) route also plays a role in bidders’ reactions to the bid-elicitation interface. That is the focus of Experiments 2 and 3.

Experiment 2

Experiment 2 is designed to provide a strong test of whether the bid-elicitation interface has an effect on bidding behavior above and beyond its influence on bidders’ valuations of the offered product. To rule out the possibility of such value construction altogether, we remove bidders’ uncertainty with respect to their valuation by using products that are of known monetary value to bidders.

Method

This experiment used an induced-values paradigm (Smith, 1976). In an interactive pricing market, participants had the opportunity to bid for tokens that had a known monetary value and that would be cashed in by participants at the end of the experiment. The amount of money that participants knew they would receive for a token represented the latter’s “induced value.” To illustrate, if a bid of 1€ were successful for a token of value 3€, the successful bidder would receive a surplus of 2€ (i.e., 3€−1€). Thus, the induced-values approach controlled for participants’ valuations and, in particular, precluded the possibility of valuations being constructed based on properties of the bid-elicitation interface.

In this experiment, participants were asked to submit a single bid for each of six hypothetical products (tokens): a vacation package, a television set, a laptop computer, a digital single-lens-reflex camera, a pair of concert tickets, and a laser printer. They were informed that, if they “purchased” the product (i.e., if their bid for it was greater than or equal to the hidden threshold price), they would receive a token that

---

This is an article from Spann, Martin, et al. Bid-Elicitation Interfaces and Bidding Behavior in Retail Interactive Pricing, *Journal of Retailing* (xxx, 2011), doi:10.1016/j.jretai.2011.06.001
was worth a certain amount of money, known to them a priori, instead of getting an actual product.

For each successful bid, the difference between a product’s induced value and the amount that a participant bids for it constitutes bidder surplus (described to participants as their “profit”). An unsuccessful bid, on the other hand, results in a bidder surplus of zero. The bids submitted in this experiment were consequential in probability in that three out of every 20 participants, selected at random, were paid a cash amount equal to one tenth of the cumulative surplus they realized through their six bids.

Given the induced-values paradigm, the dependent variable of interest is the bid amount relative to the induced value. Therefore, we examine whether the bid-elicitation interface had any influence on the fraction of the known value of the offered product that participants chose to bid.

The bid-elicitation interface was again manipulated at three levels, although this time the manipulation was implemented within-subject: SYP-low, SYP-high, and NYP (as a control condition). Participants completed the interactive pricing task for the six products in sequence. The order of experimental treatments was counterbalanced across subjects. To minimize the number of transitions between elicitation interfaces, two instances of each treatment were always presented consecutively. Participants were randomly assigned to one of six order conditions: LLHHNN, LLNNHH, HHLLNN, HHHLNN, NNLLHH, or NNHHLL, where “L” = SYP-low, “H” = SYP-high, and “N” = NYP. The six products were always presented in the same order (as listed above), and the manipulation of the bid-elicitation interface is therefore independent of product category.

Under the NYP condition, bidders expressed the amount they wished to bid by entering any positive integer value. For the two SYP conditions, they were presented with a list of 15 evenly spaced candidate bid amounts (displayed in ascending order), from which they had to select one in order to place a bid. The manipulation of SYP-low vs. SYP-high was implemented such that the set of candidate bids either included eleven amounts below the product’s induced value and four amounts above it (SYP-low) or four amounts below the induced value and eleven amounts above it (SYP-high). Thus, the product’s induced value was always within the range of candidate amounts, and the absolute difference between it and the highest possible bid was either one third (SYP-low) or three times (SYP-high) the difference between the induced value and the lowest candidate bid amount. The set of candidate bids never included an amount equal to the induced value.

Ninety-seven undergraduate and MBA students participated in this experiment. Data were collected in a laboratory setting in small groups, ranging from 10 to 15 in size. At the start of each session, the experimenter provided oral instructions explaining the interactive pricing mechanism in general, the nature of the bidding task that the participants were about to complete, and the manner in which their payment was to be determined. (A printed version was also distributed.) Once it had been verified that all participants in a session fully understood the task, they were given a card revealing their induced value for each of the six products. They then completed a version of the experimental questionnaire (reflecting one of the order conditions), on which they were able to indicate their bids for the six products in sequence.

Once all sessions of the experiment had been completed, the actual threshold prices for the six products were revealed. Participants were also informed about the outcomes of their bids and whether they would receive a payment. Fifteen participants were selected at random to receive payments, and each received an amount equal to one tenth of the total surplus resulting from their six bids. The average payment was 17.60 €.

Results

In this experiment, it was optimal for participants to submit a bid for each of the six offered products in order to maximize their expected surplus. Indeed, all 97 participants did so, resulting in 582 bids.

We first consider the effect of the set of candidate amounts on participants’ actual bid amounts relative to induced value. The mean relative bid amount was significantly higher under SYP-high (89.33 percent of the induced value) than under SYP-low (85.25 percent, repeated-measures ANOVA: $p < .01$), demonstrating that this property of the bid-elicitation interface does not only affect bidding behavior via its influence on bidders’ (constructed) product valuations. However, the relative magnitude of this effect (SYP-high produced an increase in mean relative bids of 4.79 percent compared to SYP-low) is considerably smaller than that of the corresponding effect observed in Experiment 1, which is consistent with our conclusion that bidders tend to use the set of candidate bid amounts as a basis for constructing their valuation of an offered product.

Having demonstrated the influence of the set of candidate amounts in a SYP interface on actual bid amounts, this time with induced values, we now compare bidding behavior under SYP to that under NYP, the control condition. In this experiment, the mean relative bid for NYP (83.04 percent) was significantly lower than those for SYP-high ($p < .01$) and even SYP-low ($p < .05$), suggesting that the effect of providing a set of candidate amounts on actual bids is not limited to sets consisting mostly of amounts that are above the bidder’s valuation of the product. Fig. 3 shows the mean relative bid amounts for the three elicitation interfaces.

The within-subject design used in this experiment allows us to control for order effects, and to account for them explicitly in the above analyses. Within each treatment block for a particular

---

3 A base design specifying the sets of candidate bid amounts relative to the induced value for each of the two SYP conditions was created. For consistency with market prices, the actual € amounts used in the experiment were generated by scaling all base amounts multiplicatively for each of the products using the following multipliers (in parentheses): vacation (9), television set (6), laptop (11), camera (13), concert tickets (2), printer (3).

4 The threshold prices (in parentheses) were: vacation (960 €), television set (600 €), laptop (1,200 €), camera (1,330 €), concert tickets (150 €), printer (230 €).
bid-elicitation interface, the first relative bid amount was higher than the second one ($p < .01$). This was the case consistently across the three interfaces. No other (main or interaction) effects of order were observed.

**Discussion**

The results of this experiment demonstrate that the effects of the elicitation interface are present even when consumers know the value of a product to them with certainty – i.e., when the possibility that bidders might use the information conveyed by a particular bid-elicitation interface in constructing their product valuations can be ruled out.

The fact that the effects observed in this Experiment 2 (based on experimentally induced valuations) are considerably smaller in magnitude than those found in Experiment 1 (based on valuations of real products) further corroborates the evidence that the bid-elicitation interface influences bidders’ construction of their own valuation of an offered product. However, the key finding of Experiment 2 is that such value construction is independent of the elicitation interface. In particular, this evidence suggests that in addition to affecting constructed valuations, the bid-elicitation interface either influences bidders’ beliefs about what bid amounts will be successful or has a more automatic impact on bidding behavior that does not involve deliberate reasoning (or both). Experiment 3 is designed to disentangle a possible effect on bidders’ beliefs from a possible non-deliberate reaction by bidders.

**Experiment 3**

**Method**

The design of Experiment 3 is the same as that of Experiment 2, with one critical difference: bidders’ beliefs about what bid amounts might be successful were now fixed by revealing the exact probability distribution of the threshold price. Thus, Experiment 3 removed bidders’ uncertainty with respect to both their product valuations and the distribution from which the seller’s threshold price was drawn. For each offered product, participants were presented with six amounts and informed that one of these would be selected at random, with equal probability, as the threshold price. Participants submitted a bid for each of the same six products as in Experiment 2, and the bid-elicitation interface was again manipulated within subject at three levels ($SYP-$low, $SYP-$high, and $NYP$ as a control condition) while counterbalancing treatment order. As in Experiment 2, participants were randomly assigned to one of six order conditions and presented with a list of 15 evenly spaced candidate bid amounts on each of the SYP treatments. SYP-low included eleven amounts below the product’s induced value and four amounts above it; SYP-high included four amounts below the induced value and eleven amounts above it. The set of candidate bids never included an amount equal to the induced value.

The list of possible threshold prices differed between products, but it was constant across the three bid-elicitation treatments within product. For each product, the six possible threshold prices were equally spaced and displayed in ascending order. They were set such that three of them were below and the remaining three were above the participant’s induced valuation of the offered product. Moreover, all six possible threshold prices were always within the range of candidate bid amounts in the case of both the SYP-low and the SYP-high treatments for each of the products. Thus, it was always possible for a participant to submit a bid below, equal to, or above any one of the six possible threshold prices.

Given the induced-values paradigm, the bid amount relative to the induced value is again the dependent variable of interest. Bids were consequential in probability: three out of every 20 participants were selected at random to receive a cash amount equal to one tenth of the total surplus they had realized through their six bids. Sixty-nine undergraduate and MBA students participated in this experiment.

Once all sessions of the experiment had been completed, participants were notified about the actual threshold prices for the six products,5 the outcomes of their bids, and whether they would receive a payment. Twenty participants were selected at random to receive payments, and these averaged 15.64€.

**Results**

As in Experiment 2, it was optimal for participants to submit a bid for each of the six products. Indeed, all 69 participants did so, resulting in a total of 414 bids. Recall that, here, bidders’ beliefs about the threshold price were fixed by revealing its exact probability distribution. Therefore, to the extent that the influence of the bid-elicitation interface on bidding behavior

---

5 The actual threshold prices (in parentheses) were: vacation (855€), television set (600€), laptop (1,100€), camera (1,300€), concert tickets (230€), printer (315€).
observed in Experiment 2 was driven by bidders’ construction of their beliefs about what bid amounts might be successful, this effect should have vanished in the current study.

The results of Experiment 3 are straightforward. There were no significant differences in mean relative bid amounts between any of the three bid-elicitation interfaces (SYP-low: 93.80 percent, SYP-high: 94.44 percent, NYP: 94.50 percent; repeated-measures ANOVA: \( p > .2 \)). Moreover, bid amounts were not affected by treatment order (\( p > .7 \)).

Discussion

The results of Experiment 3 show that the effect of the bid-elicitation interface on bidding behavior vanishes once consumers’ valuations of the product and their beliefs about what bid amounts will be successful are both controlled for. In particular, the absence of a difference in relative bid amounts between the SYP-low and SYP-high treatments suggests that bidders are not simply reacting to the particular set of candidate amounts without deliberation. Instead, these pre-specified candidate bid amounts appear to influence bidding behavior only when they convey information about the value of the offered product, about what bid amounts might be successful, or both.

Experiment 4

The aim of Experiment 4 is to test the relevance and external validity of the effect of a bid-elicitation interface on bidding behavior and retailer profit in a real-world setting.

Method

We created a commercial interactive pricing website for a retailer selling DVDs and ran a promotional campaign to attract consumers to this retailer’s website. A total of 611 consumers from a major Western European country (mostly non-students) self-selected to participate by visiting this website and registering as potential bidders. Participants had the opportunity to submit a single bid for a bundle of three DVDs of their choice, which they were able to select from a set of 100. A bid was successful if it surpassed the hidden threshold price of the retailer. These bundles had a retail value of about 55€. Upon completion of the experiment, the retailer notified the participants as to whether or not their bid was successful. If so (i.e., if the bid was greater than or equal to the hidden threshold price), participants were required to pay the retailer (via bank transfer) the amount they had bid, and the three DVDs for which they submitted a successful bid were mailed to them. All transactions were completed as determined by the interactive pricing mechanism.

As in Experiment 1, the bid-elicitation interface was manipulated at three levels between subjects – SYP-low, SYP-high, and NYP (as a control condition) – and each participant was randomly assigned to one of these three treatment conditions. Under the NYP condition, bidders were free to express the € amount they wished to bid in an unconstrained interface by entering any positive integer value. Under the two SYP conditions, bidders were presented with a list of 18 pre-specified candidate bids amounts (displayed in ascending order), from which they had to select one to place a bid. These amounts ranged, in 2€ increments, from 22€ to 56€ (SYP-low) and from 38€ to 72€ (SYP-high). The number of participants assigned to each of the three conditions was 205 for SYP-low, 203 for SYP-high, and 203 for NYP. The dependent variables of interest are whether a participant submitted a bid and, if so, the amount s/he bid.

Results

Bidder Entry. Overall, 482 of the 611 participants (about 79 percent) submitted a bid.\(^6\) However, this propensity to “enter” (the market) varied significantly across bid-elicitation interfaces. First, the proportion of participants who submitted a bid was significantly greater in the SYP-low condition (83.4 percent) than the SYP-high condition (58.6 percent, \( \chi^2 \)-test: \( p < .01 \)). As anticipated, more participants chose to submit a bid when the candidate amounts were lower.\(^7\) Furthermore, the NYP interface resulted in the highest proportion of bids (94.6 percent) of all three treatments, and this proportion was significantly higher than that in each of the two SYP conditions (\( p < .01 \) for all pairwise differences). This difference suggests that imposing constraints on the set of possible bids tends to reduce the number of participants who submit a bid even if, as in the case of SYP-low, the remaining set of candidate bid amounts includes values that are well below the product’s retail value.

Bid Amounts. Fig. 4 shows the cumulative distribution of bid amounts by bid-elicitation interface (Experiment 4). Bid amounts (displayed in ascending order), from which they had to select one to place a bid. These amounts ranged, in 2€ increments, from 22€ to 56€ (SYP-low) and from 38€ to 72€ (SYP-high). The number of participants assigned to each of the three conditions was 205 for SYP-low, 203 for SYP-high, and 203 for NYP. The dependent variables of interest are whether a participant submitted a bid and, if so, the amount s/he bid.

Results

Bidder Entry. Overall, 482 of the 611 participants (about 79 percent) submitted a bid.\(^6\) However, this propensity to “enter” (the market) varied significantly across bid-elicitation interfaces. First, the proportion of participants who submitted a bid was significantly greater in the SYP-low condition (83.4 percent) than the SYP-high condition (58.6 percent, \( \chi^2 \)-test: \( p < .01 \)). As anticipated, more participants chose to submit a bid when the candidate amounts were lower.\(^7\) Furthermore, the NYP interface resulted in the highest proportion of bids (94.6 percent) of all three treatments, and this proportion was significantly higher than that in each of the two SYP conditions (\( p < .01 \) for all pairwise differences). This difference suggests that imposing constraints on the set of possible bids tends to reduce the number of participants who submit a bid even if, as in the case of SYP-low, the remaining set of candidate bid amounts includes values that are well below the product’s retail value.

Bid Amounts. Fig. 4 shows the cumulative distribution of bid amounts by experimental condition. For each bid-elicitation interface, the number of bids that exceed a given amount (vertical axis) is plotted along the horizontal axis. The lowest possible bid amounts under the SYP-low and SYP-high conditions are 22€ and 38€, respectively, and this is reflected in the shapes of the observed bid distributions for these interfaces.

---

\(^6\) Of the 482 submitted bids, 20.1 percent were greater than or equal to the threshold price of 40€.

\(^7\) Entry under SYP-high was substantially lower here than in Experiment 1, which was likely due to the difference in setting (field vs. classroom) and the specific candidate bid amounts used.
We begin our formal analysis of the influence of the bid-elicitation interface on bidding behavior (see Table 2 for an overview) by examining the effect of different sets of candidate amounts on actual bids. First, the mean of the submitted bid amounts is 36.7 percent higher under SYP-high (40.37€) than under SYP-low (29.53€, \( p < .01 \)), which is not surprising given that this is conditional on participants having placed a bid. A better indicator of the effect of the set of candidate bids on bidding behavior – one that is based on all participants (including those who did not submit a bid) – is a comparison of the two SYP conditions in terms of the number of consumers whose bids are greater than or equal to the lowest SYP-high candidate amount (38€). As is evident from the results presented above, this is true of 58.6 percent of those under the SYP-high condition. By contrast, significantly fewer participants in the SYP-low condition bid at least 38€ (13.7 percent, \( \chi^2 \text{ test: } p < .01 \)). Moreover, the median bid for all participants (including non-bidders, whose bid is coded as zero) is significantly higher under SYP-high (38€) than under SYP-low (26€, Mann–Whitney Test: \( p < .05 \)).

Having demonstrated the predicted influence of the set of candidate bid amounts under SYP on actual bids, we now turn to a comparison of SYP and NYP. Ignoring non-bidders, the mean bid amount under NYP (24.79€) is significantly lower than that under both the SYP-high (40.37€, \( p < .01 \)) and the SYP-low (29.53€, \( p < .01 \)) conditions. Moreover, in terms of the number of bids in excess of a common target amount, one notes that 12.5 percent of all participants under the NYP condition bid at least 38€, which is significantly lower than the 58.6 percent under SYP-high (\( \chi^2 \text{-test: } p < .01 \)), but statistically indistinguishable from the 13.7 percent under SYP-low (\( p > .6 \)).

**Implications for Retailer Profit.** As in Experiment 1, we examine the implications that the three bid-elicitation interfaces used in this field experiment have for retailer profit based on the observed bid amounts. The NYP interface does not impose any constraints on bidder entry. By contrast, SYP interfaces do affect entry by only allowing bids from a pre-specified set of candidate amounts. The profit implications of using a particular SYP set are determined by a trade-off between its effect on bid amounts and its effect on the number of consumers who submit a bid greater than or equal to the threshold price.

**Fig. 5** depicts the relationship between the threshold price (horizontal axis) and retailer profit (vertical axis) for each of the three bid-elicitation interfaces, and it does so for two illustrative levels of variable costs per sale to the retailer: 10€ (Panel A) and 30€ (Panel B). Retailer profit for a given bid-elicitation interface and a particular level of threshold price is calculated as the sum of all successful bids (i.e., all bid amounts equal to or greater than that threshold price) placed in connection with that elicitation interface minus variable costs times the number of successful bids. Fixed costs are assumed to be zero in this analysis. Relaxing this assumption would result in greater relative (i.e., percentage) differences in retailer profit between interfaces. (However, the absolute differences in profit are not affected by the level of fixed costs.)

Based on consumer bids in this field experiment, SYP-high clearly dominates SYP-low and NYP for all interesting levels of the threshold price and for both levels of variable costs (see **Fig. 5**). The differences in retailer profit between the three bid-elicitation interfaces are quite dramatic. For variable costs of 30€, the maximum profit under SYP-high (1,234€) is 171.8 percent higher than that under SYP-low (454€) and 187.6 per-
cent higher than that under NYP (429€). For variable costs of 10€, SYP-high also dominates the other two interfaces, but its advantage is less extreme in this case – the maximum profit under SYP-high (3,614€) is 8.2 percent higher than that under SYP-low (3,340€) and 25.7 percent higher than that under NYP (2,874€). Indeed, SYP-high results in the highest retailer profit for all reasonable levels of variable costs.

Discussion

The results of this field experiment corroborate the previous findings regarding the systematic influence of the bid-elicitation interface on bidding behavior in interactive-pricing markets. Presenting consumers with a list of higher candidate bid amounts under a SYP interface has a substantial positive effect on actual bids. Moreover, in this study, asking consumers to express their bids by selecting one of a number of pre-specified amounts resulted in higher bids than did using an unstructured elicitation interface (i.e., NYP). However, no conclusions about the comparison between SYP and NYP interfaces in general should be drawn based on this particular finding since the latter may have been due to the calibration of the SYP interfaces (i.e., the specific sets of candidate bid amounts) used in this experiment.

Finally, the profit analysis shows that, in this field experiment, the positive effect of the SYP-high interface on bid amounts outweighed its negative effect on the number of participants who submitted a bid. Consequently, the SYP-high interface resulted in the highest profit. However, this finding may be sensitive to the particular set of candidate bids used in the SYP interfaces. Indeed, if the lowest amount on the list of candidate bids is so high that a sufficient number of consumers will decide not to submit a bid, the reduction in the number of bidders will outweigh the increase in bid amounts for those who do submit a bid, thus diminishing retailer profit.

General Discussion

In this article, we examine how the bid-elicitation interface affects bidding behavior and retailer profit in the context of interactive pricing mechanisms. Overall, our findings show that bidders are highly susceptible to variations in bid-elicitation interface. The particular manner in which consumers are asked to indicate their bids can have a substantial impact on the amount they bid and, consequently, on how much they end up paying for a product, which in turn affects retailer profit.

We have reported the results of four experiments that were designed to examine this phenomenon and to tease apart the two pathways that we had identified as possible drivers of the proposed influence of the bid-elicitation interface on bidding behavior. All four experiments, including a large field experiment at an online retailer, required participants to make decisions that were of economic consequence to them. Our findings demonstrate that, in the presence of a list of pre-specified candidate bids (i.e., a select-your-price interface), the particular amounts included in this list have a systematic effect on consumers’ actual bid amounts. In addition, we compare bid-elicitation interfaces that require bidders to select one of a number of candidate bids to the name-your-price interface, in which consumers can freely articulate their bid amount. The results show that providing a set of candidate bid amounts may lead to either an increase or a decrease in actual bids relative to those placed under the name-your-price interface, depending on the particular set of candidate amounts, as well as consumers’ initial product valuations and their beliefs about the seller’s threshold price.

Our evidence suggests that the effects of the retailer’s choice of bid-elicitation interface on bidding behavior in interactive-pricing markets are driven by two distinct pathways. First, the bid-elicitation interface influences bidders’ valuations of an offered product, which in turn affect bid amounts. The second pathway operates through bidders’ beliefs about what bid amounts will be successful (i.e., about the retailer’s threshold price), and these beliefs affect the amounts consumers bid given their valuations of the product. Thus, our findings demonstrate that bidders tend to view a bid-elicitation mechanism not merely as a means of expressing their bids, but also as a source of information about both the offered product (e.g., its quality or market value) and the retailer (e.g., what bid amounts might be acceptable). Once both bidders’ product valuations and their beliefs about what bid amounts will be successful are controlled for, the bid-elicitation interface no longer influences bid amounts (as demonstrated in Experiment 3), which provides evidence against bidders’ non-deliberative reactions to the bid-elicitation interface.

The findings of the present research significantly enhance our understanding of bidding behavior in interactive-pricing markets by establishing the link between the bid-elicitation interface, bidder entry, bid amounts, and retailer profit. In particular, we demonstrate that by simply specifying higher candidate bid amounts, it might be possible for retailers to increase actual bid amounts to an extent that more than offsets the concomitant reduction in the number of consumers who actually do submit a bid, resulting in higher profit overall. From the seller’s perspective, the optimal design of a SYP interface implies solving the trade-off between maximizing the magnitude of submitted bids (given higher candidate bid amounts) and maximizing the number of consumers who submit a successful bid (given lower candidate bid amounts) to determine the intermediate level of candidate bid amounts that maximizes profit. In addition, consumers’ a priori valuations of the product and beliefs about (the distribution of) the threshold price must also be taken into account (e.g., in order to avoid setting candidate bid amounts too low relative to prior valuations and beliefs).

Our results regarding the effects of providing a SYP interface relative to a NYP interface on bidding behavior cannot be generalized because they depend on consumers’ initial product valuations and beliefs about the seller’s threshold price, as well as the specific candidate bid amounts chosen. The SYP mechanism could diminish profit relative to NYP by reducing bidder entry. In particular, when the lowest of the candidate bid amounts under SYP is sufficiently high to prevent a substantial portion of consumers (who would bid under NYP) from submitting a bid, this negative effect on bidder entry might outweigh the pos-
itive effect on bid amounts. However, the use of SYP could also help companies distinguish themselves from their competitors – particularly if consumers prefer a SYP bid-elicitation interface over a NYP interface (Chernev 2003). The effect of the SYP interface may diminish if the candidate bid amounts are outside of consumers’ latitude of price acceptance. Thus, extremely high or extremely low candidate bid amounts may be viewed as unrealistic or unacceptable, leading consumers to ignore this information. Moreover, if the specific set of candidate bid amounts in a SYP interface is between a consumer’s initial product valuation and her belief about the seller’s threshold price, this interface may have uncorrelated, or even opposing, effects on product valuations and on beliefs about threshold prices. Thus, the optimal design of the bid-elicitation interface in interactive pricing is an interesting question for future research. This requires information on consumers’ initial valuations and beliefs about acceptable bids. In addition, the optimal number of candidate bid amounts in a SYP interface, the optimal difference between candidate bid amounts, the importance of the lowest and highest levels, and potential nonlinear effects of candidate bid amounts on bidding behavior are promising questions for future research. Finally, learning effects or consumer antagonism (Anderson and Simester 2010) may change consumers’ reactions to candidate bid amounts and the optimal design of the bid-elicitation interface over time.

Although the experiments reported in this article were conducted in the context of a specific interactive pricing mechanism entailing a hidden bid-acceptance threshold, the bid-elicitation interface is likely to also influence bidding behavior in other forms of interactive pricing. In classic auctions, for instance, consumers are typically allowed to submit their bids using an essentially unconstrained interface. Alternatively, retailers could provide bidders with a list of pre-specified candidate bid amounts. The findings of the present research suggest that the particular amounts included in such a list would have a systematic effect on bidders’ valuations of the offered product, on their actual bid amounts, and consequently also on retailer profit.

Our results are applicable to retail settings where consumers have at least some uncertainty with respect to their subjective valuation of the product and what might constitute an acceptable bid amount (as determined by the seller’s threshold price or, in the case of other auction formats, by competing bidders’ bids). These conditions are very common in markets for perishable, highly differentiated products such as airline, hotel, car rental services (different flight or rental times are different products), live performances and sporting events, restaurants, and even online advertising. Furthermore, in a new market where consumers are highly uncertain about valuations and acceptable bids, SYP interfaces for bid elicitation (and the specific candidate bid amounts used) will likely have a stronger impact on consumers’ product valuations and beliefs about the threshold price than in mature markets with ample price information and, thus, less consumer uncertainty.

Our results are also of interest for regulatory agencies and consumer advocacy groups. While there are many legal regulations pertaining to how retailers are to provide price information in posted-price markets, this is (currently) not the case for the domain of interactive pricing. Such regulations for posted-price selling include the requirement to disclose unit prices (e.g., in cents per ounce), as well as the ban on deceptive price promotions and advertised “regular prices”. Our results highlight that the susceptibility of consumer behavior to the presentation of information is also relevant in interactive-pricing.

A current example of the use of a bid-elicitation interface in an attempt to inform, and perhaps influence, bidders is the traffic estimator that Google provides to prospective clients of its AdWords targeted-advertising program (see https://adwords.google.com/select/TrafficEstimatorSandbox). For a given search keyword, this tool automatically proposes a bid amount that, with a certain probability (e.g., 85 percent), leads to rank one – i.e., the top display position – for an advertiser when that keyword is entered by a user of Google’s search engine. Our findings suggest that Google’s provision of this particular information increases bid amounts relative to revealing the bid amount required for a lower display position (say, rank three) or that required for achieving the top position with a lower probability. While the provision of this type of information is legitimate, it is important for regulatory agencies, consumer advocacy groups, and bidders themselves to be cognizant of the influence of bid-elicitation interfaces on bidding behavior in interactive pricing.

Appendix A.

A.1. Instructions for Experiment 1

A Study of Interactive Pricing Mechanisms

The focus of this study is on interactive pricing mechanisms. In the course of this study, you will have the opportunity to purchase a product via an interactive pricing mechanism (see below for details). We will also ask you to complete a short questionnaire. Note that there are no correct or incorrect answers to the questions you will be asked in this study – only your opinions are relevant. Please answer all questions in the order in which they are listed.

How does the Interactive Pricing Mechanism work?

This interactive pricing mechanism allows you to influence the price you pay for a product by placing a single bid for that product. If your bid is greater than or equal to a threshold price that was set in advance by the retailer but is unknown to you, your bid is successful and the transaction will be completed at a price corresponding to your bid. However, if your bid is below the threshold price, your bid is unsuccessful and you will not be able to obtain the offered product.

In this study, you have the opportunity to place a single bid for a coffee mug such as the one shown here (see picture, as well as the physical display at the front of the room). If your bid is at least as high as the threshold price, you must buy the coffee mug in exchange for the amount you bid. If your bid is lower than the threshold price, you cannot buy the mug. The threshold price will be revealed at the end of the study.
A.2. Instructions for Experiment 2

How does the Interactive Pricing Mechanism work?

This interactive pricing mechanism allows you to influence the price you pay for an offering by placing a single bid for that offering. If your bid is greater than or equal to a threshold price that was set in advance by the retailer but is unknown to you, your bid is successful and the transaction will be completed at a price corresponding to your bid. However, if your bid is below the threshold price, your bid is not successful and you will not be able to obtain the offering. In this study, you have the opportunity to place a bid for each of six different “products.”

How is Your Profit Determined?

The bidding decisions you make in this study will determine your profit – i.e., the amount of money you might earn.

Only successful bids (i.e., those equal to or greater than the relevant threshold price) can result in a profit for you. Each of the six “products” has a known monetary value to you. If your bid for a given product is successful, you will receive a token that is worth a certain amount of money instead of getting an actual product. For each of the six products, the value of this token is listed on the card you have been given. In the event of a successful bid, the difference between the value of the token and the amount you bid will be added to your account for this study. Thus, a bid that you place will influence your account balance if it is equal to or greater than the threshold price. The following figure illustrates the relationship between your bid and your profit:

For each product that you will be able to bid on, the threshold price will be determined as follows: You will receive a card showing six possible amounts. One of these amounts will be chosen at random, with equal probability, as the threshold price for that product.

At the end of the study, we will select three out of every 20 participants at random to receive 10 percent of their final account balance in cash. Therefore, depending on your bids, you can earn up to 40€ in this study.

A.3. Instructions for Experiment 3

How does the Interactive Pricing Mechanism work?

This interactive pricing mechanism allows you to influence the price you pay for an offering by placing a single bid for that offering. If your bid is greater than or equal to a threshold price that was set in advance by the retailer but is unknown to you, your bid is successful and the transaction will be completed at a price corresponding to your bid. However, if your bid is below the threshold price, your bid is not successful and you will not be able to obtain the offering. In this study, you have the opportunity to place a bid for each of six different “products.”

How is Your Profit Determined?

The bidding decisions you make in this study will determine your profit – i.e., the amount of money you might earn.

Only successful bids (i.e., those equal to or greater than the relevant threshold price) can result in a profit for you. Each of the six “products” has a known monetary value to you. If your bid for a given product is successful, you will receive a token that is worth a certain amount of money instead of getting an actual product. For each of the six products, the value of this token is listed on the card you have been given. In the event of a successful bid, the difference between the value of the token and the amount you bid will be added to your account for this study. Thus, a bid that you place will influence your account balance if it is equal to or greater than the threshold price. The following figure illustrates the relationship between your bid and your profit:

For each product that you will be able to bid on, the threshold price will be determined as follows: You will receive a card showing six possible amounts. One of these amounts will be chosen at random, with equal probability, as the threshold price for that product.

At the end of the study, we will select three out of every 20 participants at random to receive 10 percent of their final account balance in cash. Therefore, depending on your bids, you can earn up to 40€ in this study.

References


Please cite this article in press as: Spann, Martin, et al, Bid-Elicitation Interfaces and Bidding Behavior in Retail Interactive Pricing, Journal of Retailing xxx (xxxx) xxxx–xxx