Charitable Motives and Bidding in Charity Auctions

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Research on bidding in auctions has generally relied on the assumption of self-interested bidders. This work relaxes that assumption in the context of charity auctions. Because understanding charitable motives has important implications for auction design and charities’ fundraising strategies, this study investigates bidders’ specific types of charitable motives and the strength of these motives. We carry out three controlled field experiments consisting of real-life auctions conducted on a local Internet auction site. We use a novel design in which we simultaneously run charity and noncharity auctions for identical products and vary the percentage donated to charity. Results show that auctions with proceeds donated to charity lead to significantly higher selling prices, a result due to a higher bidding by bidders with charitable motives rather than to increased bidder entry. We also find that increased prices only occur when the charitable donation is a percentage of the auction revenue, and that a fixed charitable donation associated with each auction has no effect on prices. Furthermore, we find that prices are increasing in the percentage donated to charity. We find considerable support for a model of voluntary shill-like bidding, where charitable bidders try to increase proceeds in charity auctions. We also find that auctions with 25% of revenue donated to charity had higher net revenue than noncharity auctions. Hence, companies may be able to use charity auctions as part of a corporate social responsibility strategy and at the same time increase profitability even though they donate part of the proceeds to charity.

Keywords: charity auctions; charitable motives; controlled field experiments

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1. Introduction

A charity auction is held on behalf of a charity, which receives all or some of the proceeds. Charity auctions are a popular way for charities and nonprofits to raise money. In 2002, over 300,000 silent and live charity auctions generated as much as $18 billion in the United States (Wall Street Journal 2002). Increasingly, charities use Internet auctions for fundraising (Reis and Clohesy 2001, White 2006), often relying on websites like shoppgoodwill.com and cMarket.com to conduct the auctions. The popular auction website eBay.com has a special charity auctions section (eBay giving), where sellers select the percentage of proceeds (between 10% and 100%) to be donated to charity. These auctions provide charitable and nonprofit organizations with opportunities to raise funds, and they can be used by firms as part of their corporate social responsibility (CSR) strategy, bundling purchases of goods with donations to charity.

In a charity auction, a charitable donation accompanies the purchase of products for private consumption; therefore, charity auction bidders may receive both public and private gains. We define public gain to be the gain derived from donations to charity that help many participants (Hochman and Rogers 1969), whereas private gain is the gain from private consumption of an item. Some bidders will receive a “public” gain from helping the charity collect money for a good cause, and the winner receives a “private” gain (or loss) when winning the item for a price below (above) his or her valuation. Hence, owing to the public gain aspect, several researchers have proposed that, because the money goes to a good cause, certain bidders in charity auctions bid a higher amount, leading to higher selling prices (Carpenter et al. 2008, Engers and McManus 2007). However, other researchers have questioned this supposition, as mechanisms used to finance the public good, such as charities, often yield disappointing revenues (Isaac et al. 2009, Andreoni 2006); that is, simply soliciting donations often results in underprovision of the public good in that bidders may bid lower in a noncharity auction and then donate directly to the charity, or not donate at all. This result raises the questions of how effective charity auctions actually are as a fundraising mechanism, as well as to what extent people are willing to pay...
more in charity auctions—and if they are so inclined, why? Although charitable giving has received considerable academic attention (see Andreoni 2006 for a review), little is known about bidder motives in charity auctions. Understanding bidders’ motives is of great importance for auction design as well as for charities’ fundraising strategies (i.e., the recruiting and targeting of current and potential donors).

In this paper, we focus on bidders’ charitable motives. We first consider the extent to which bidders have charitable motives and the magnitude of these motives; since the question of whether consumers are selfish or charitable has been an important topic of debate (Ledyard 1995). To do so, we use controlled field experiments with an innovative design of auctioning pairs of identical products through simultaneous auctions, one a charity auction and the other a noncharity auction. This design allows us to study bidders’ selection into charity versus noncharity auctions as well as the premium bidders are willing to pay in charity auctions. In addition, we study the motives of charitable bidders. To distinguish between bidders’ charitable motives, we compare revenue of noncharity auctions with revenue of auctions having different donation formats. More specifically, we compare auctions with fixed versus variable donation amounts (i.e., a percentage of the dynamically determined ending time). The rank ordering in auction revenue allows us to distinguish between “see-and-be-seen” and “warm glow” motives, in which bidders have a desire to be associated with charitable donations or receive utility just from the act of giving (e.g., paying a premium in auctions with fixed donations), and volunteer shill motives, where bidders in auctions with variable donations act like a shill trying to drive up prices for other bidders in charity auctions.

Finally, we consider how charity auctions can be used by firms as part of their CSR strategy, where a firm sells its goods in an auction and donates part (or all) of the proceeds to charity. The successful implementation of CSR strategies has become of great concern to companies and is increasingly considered to be a key to long-term business success (Lichtenstein et al. 2004, Sen and Bhattacharya 2001). Companies spend millions of dollars on social responsibility initiatives and often collaborate with nonprofits to advance their reputations as good corporate citizens. To consider charity auctions as part of a CSR strategy, we examine bidder’s responses to different donation promises, comparing partial donations (25% of selling price donated) with full donations (100%) and noncharity auctions.

We use controlled field experiments to study actual consumer purchases under real market conditions. Results across three experiments show that selling prices are significantly higher in charity auctions. We attribute this difference to charitable motives by bidders rather than to increased bidder entry. As for bidder motives, we find considerable evidence that specific bidders behave in a way that is consistent with acting like volunteer shills trying to drive up prices in charity auctions. Finally, we find that auctions with 25% of revenue donated to charity had higher net revenue than noncharity auctions. Hence, companies may be able to use charity auctions as part of a CSR strategy and at the same time increase profitability by donating part of the proceeds to charity.

Next, we present the literature related to charity auctions and bidders’ motives in charity auctions. In section three, we provide theory and state our research hypotheses. Then, we describe our field experiments and their analyses. Finally, we discuss our results and offer recommendations for future research.

2. Literature Review and Bidders’ Motives

2.1. Literature on Charity Auctions

Theoretical research indicates that charity auctions lead to higher selling prices because they collect money for a good cause (Carpenter et al. 2008, Goeree et al. 2005, Engers and McManus 2007, Salmon and Isaac 2006). Charity auctions benefit from increased revenue because some bidders receive utility from seeing auction revenue go to charity, regardless of whether they win the auction. However, the focus of most theoretical papers has been on the comparison of different charity auction formats, and most empirical work has tested the predictions made by the above theoretical models.

Schram and Onderstal (2009) compared the revenue of different fundraising mechanisms obtained from laboratory experiments and found that all-pay auctions, in which all bidders pay the amount of their bid, outperform first-price winner-pay auctions and lotteries. Furthermore, only for all-pay auctions did they find a greater than expected revenue for charity auctions than noncharity auctions. Carpenter et al. (2008) conducted controlled field experiments comparing revenues of first-price, second-price, and all-pay auctions. In contrast to previous investigators (Goeree et al. 2005, Schram and Onderstal 2009), they found that revenues in first-price auctions were higher than in all-pay auctions, in which revenues did not differ from second-price auctions. They attributed

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1 These are auctions with price externalities in which losing bidders care about how much the winner pays. Previous research has found that price externalities in auctions tend to lead to higher prices (e.g., in dividing partnerships (Cramton et al. 1987), reauctions by bidding rings (McAfee and McMillan 1992), and estate auctions among heirs (Engelbrecht-Wiggans 1994)).
the difference in their results to reduced bidder entry in all-pay auctions. (The other papers did not allow for endogenous bidder entry.) However, Carpenter et al. (2008) did not compare revenue of charity versus noncharity auctions.

Isaac et al. (2009) conducted a laboratory study comparing revenue for several alternative models of charitable bidding with revenue for noncharity auctions. They employed a basic altruistic model, a see-and-be-seen model, and a raise-rival-costs model. Although they found that charity auctions do lead to slightly higher selling prices, the results were not significant. Elfenbein and McManus (2010) compared revenue of regular versus charity auctions on eBay and concluded that, on average, bidders paid a 6% premium in eBay giving auctions, in which a percentage of proceeds is donated to charity.

Finally, Ku et al. (2005) reported unexpectedly high prices (seven times initial estimates) for a charity auction of 140 decorated life-sized cows. While studying jump bidding, Isaac and Schnier (2005) conducted three charitable auction field experiments and reported bidding above market value in about 10% of the auctions for only one of these.

Overall, results from theoretical models that include price externalities predict superior revenue for charity auctions as compared to noncharity auctions. However, results from empirical studies are mixed, suggesting the need for further research, and our study addresses this need through the use of controlled field experiments.

2.2. Charitable Motives

Bidders may participate in charity auctions for different reasons (see Table 1). As discussed above, bidders with charitable motives are assumed to receive additional utility from money going to charity. As in the case of most theoretical models, for illustrative purposes we use an example in which payoffs are proportional to the ending price; hence, the winning bidder’s utility can be specified as

$$u = v - p + \beta p,$$

where $v$ is the bidder’s valuation, $p$ is the price paid, $\beta p$ is the additional utility the winning bidder receives for each dollar of revenue to charity, and $\beta$ is a coefficient that determines the proportion of selling price added to the utility, where $0 \leq \beta < 1$.

The utility for the losing bidder is $u = \alpha p$, where $0 \leq \alpha < 1$ is the additional utility the losing bidder receives from money going to charity. When all bidders are noncharitable ($\alpha = \beta = 0$), the winning bidder’s utility is simply equal to $u = v - p$, and losing bidders do not receive any utility.

When bidders do receive utility from charitable giving, this utility may result from several causes. For example, utility may come from expressing selfless concern for the welfare of others, i.e., pure altruism. In the pure altruism model (the public-good theory of philanthropy), consumers who donate gain psychological well being only from the improved welfare of beneficiaries of the donation, regardless of the source of funding (Halfpenny 1999). Hence, whether they win or lose the auction, they obtain equal utility from money going to charity ($\alpha = \beta > 0$).

However, it has frequently been suggested that bidders may give because of selfish reasons (Fisher et al. 2008). Giving or acting prosocially may result in internal rewards to the donor, such as feeling proud or reducing guilt or sadness. Therefore, Andreoni (1989) proposed a model of impure altruism, wherein consumers obtain a warm glow utility from the act of giving. Hence, bidders will receive a greater utility from their own contributions to charity than from the contributions of others ($\beta > \alpha > 0$). In addition to the experience of warm glow (Andreoni 1989, Isen 1970), researchers have proposed related concepts like the purchase of moral satisfaction (Kahneman and Knetsch 1992), an aspiration to “do the right thing” (Dawes and Thaler 1988), a desire “to view oneself as good and kind” (Walster et al. 1973), or the goal of making a difference (Duncan 2004).

Individuals may also donate to signal social status or prestige (Arnett et al. 2003, Rose-Ackerman 1996) or wealth (Glazer and Konrad 1996), to receive donor recognition (Romano and Huseyin 2001), or because...

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<thead>
<tr>
<th>Table 1</th>
<th>Overview of Different Charitable Motives in Auctions</th>
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<tr>
<td>Model of charitable motives</td>
<td>Characteristics of charitable motives</td>
</tr>
<tr>
<td>A noncharity model ($\alpha = \beta = 0$)</td>
<td>Bidders do not pay a premium in a charity auction (i.e., no price externalities exist).</td>
</tr>
<tr>
<td>A model of pure altruism ($\alpha = \beta &gt; 0$)</td>
<td>Bidders obtain extra utility from money going to charity, and they are willing to pay a premium in a charity auction; however, they do not care about the source of the donation.</td>
</tr>
<tr>
<td>A warm glow model (a model of impure altruism) ($\beta &gt; \alpha &gt; 0$)</td>
<td>Bidders obtain a greater utility from their own giving than from giving by others; therefore, they will bid higher to win the auction such that they are the ones donating to charity.</td>
</tr>
<tr>
<td>A see-and-be-seen model ($\beta &gt; \alpha$)</td>
<td>Bidders only obtain utility from their own contributions to charity (i.e., they only value being the winner in an auction). This is a limiting case of the warm glow model, where $\alpha = 0$.</td>
</tr>
<tr>
<td>A volunteer shill model ($\alpha &gt; \beta$)</td>
<td>Bidders obtain greater utility from giving by others (i.e., they will try to raise prices in charity auctions without winning the auction).</td>
</tr>
</tbody>
</table>

Note. $\beta$ is utility bidders obtain from their own contributions, and $\alpha$ is utility from others’ contributions.
of social influences (Frey and Meier 2004). In the see-and-be-seen model (e.g., Salmon and Isaac 2006), bidders receive utility only from their own contributions to charity and not from contributions made by others ($\beta > \alpha = 0$).

Finally, bidders may be motivated to try to make others pay more in a charity auction. In such an instance, bidders act as so-called volunteer shills who are trying to raise the auction outcome. These bidders receive greater utility from giving by others than from their own giving ($\alpha > \beta > 0$).

3. Theory and Hypotheses
Potentially higher prices in charity auctions may be the result of increased bidder entry, increased willingness to pay, or both. Therefore, to better understand the difference in outcome between charity and noncharity auctions, we need to consider the potential impact of both bidders’ participation and their willingness to pay. Because we conduct both charity and noncharity auctions, bidders will need to consider first which type of auction to enter and subsequently how much to bid in either type of auctions. We suggest that different bidders have different charitable motives, leading to different bidding strategies and resulting in different outcomes.

Previous research has shown that bidder entry may significantly affect a charity auction outcome (e.g., Carpenter et al. 2008). In addition, research in cause-related marketing has demonstrated that consumers tend to select products bundled with a donation to charity. Strahilevitz and Meyers (1998) found that a majority of subjects preferred a product for which part of the price is donated over a discount equal to the amount of the donation. Webb and Mohr (1998) reported that over one-third of survey respondents indicated that cause-related marketing activities influenced their brand choice. Therefore, we expect that bidders with positive charitable motives are more likely to be drawn to charity auctions, because they benefit from the charity receiving donations. The presence of more bidders should in turn lead to higher selling prices (e.g., Bulow and Klemperer 1996, Engelbrecht-Wiggans 1987). This reasoning leads to the following hypothesis:

**Hypothesis 1 (H1).** Selling prices for identical items will be higher in charity than in noncharity auctions owing to increased bidder entry in charity auctions.

Deciding how much to bid in a noncharity auction is straightforward. In an ascending-bid auction, a bidder optimally continues bidding up to her value and then quits. Because no charity benefits from this auction, the decision regarding value is independent of the extent of bidder’s charitable motives.

How much to bid in a charity auction depends on the bidder’s charitable motives. Bidders with no charitable motives should bid exactly as they would in noncharity auctions—they should stop bidding when the auction price reaches their value. However, bidders with charitable motives have an incentive to bid higher in charity auctions. This response is consistent with both empirical and anecdotal evidence (e.g., Ku et al. 2005, White 2006), as well as with theoretical models of bidding from charitable motives (Carpenter et al. 2008, Goeree et al. 2005, Engers and McManus 2007, Salmon and Isaac 2006). Therefore, we expect that bidders are willing to pay higher prices in charity auctions, because the charity collects money for a cause they set store by. This rationale results in the following hypothesis:

**Hypothesis 2 (H2).** Selling prices for identical items will be higher in charity than in noncharity auctions owing to bidders with charitable motives paying a premium in charity auctions.

3.1. Factors that Influence Charitable Motives

3.1.1. Influence of Donation Type. The type of donation can influence the behavior or motivations of bidders with charitable motives. We consider the following types: (A) nothing is donated to charity, (B) a charity receives a fixed amount, regardless of outcome, and (C) a percentage of the dynamically determined price is donated. An auction with a fixed donation regardless of the outcome is similar to a strategy commonly used in cause-related marketing, where a fixed amount is donated per product sold. Auctions in which a percentage of the dynamically determined price is donated are consistent with proposed theoretical models in the literature.

By comparing the ordering of selling prices in auctions with these three types of donations, we can distinguish between different charitable motives (i.e., the models summarized in Table 1). First of all, when all selling prices are identical, bidders do not possess charitable motives. When bidders bid higher in charity auctions with fixed donations as compared to noncharity auctions, their actions will be driven mostly by the winning bidders’ concern with other matters, such as a warm glow from their own giving (Andreoni 1989), their own association with the charity, or others observing them being charitable (Glazer and Konrad 1996, Romano and Huseyin 2001). That is, because the charity does not receive additional donations when bidders bid higher, winning bidders receive extra utility from “giving of themselves.” This interpretation is consistent with the see-and-be-seen and warm glow models.

In both the warm glow model and the see-and-be-seen model, bidders care most about their own donation ($\beta > 0$). The difference
with a fixed donation to charity are equal to selling prices in auctions with variable donations to charity, and both are greater than selling prices of noncharity auctions, we obtain either a see-and-be-seen or a warm glow model, and results are inconsistent with the pure altruism and volunteer shilling models.

Cases in which selling prices in auctions with variable donations are greater than in those with fixed donations are consistent with a model of volunteer shilling, where bidders try to drive up prices to increase the revenue that goes to charity. Furthermore, if selling prices in auctions with fixed donations are equal to selling prices in noncharity auctions, we can rule out see-and-be-seen motives because bidders are not willing to pay extra to be seen as the winners in the auction. These results will be more consistent with volunteer shill motives and less so with a warm glow model. However, when selling prices in auctions with variable donations are greater than in those with fixed donations, and those in turn are higher than prices in noncharity auctions, results may be consistent with various charitable motives (pure altruism, warm glow, and volunteer shilling). On the basis of the above discussion, we propose the following ordering of selling prices, where the equality or dominance of selling prices will depend on the specific charitable motives:

**Hypothesis 3 (H3).** Selling price in noncharity auctions ≤ selling price in charity auctions with fixed donations ≤ selling price in charity auctions with variable donations.

### 3.1.2. Influence of the Amount of the Donation.

In employing a cause-related marketing strategy, firms bundle the sales of their goods with donations to charity. We therefore want to consider consumers’ responses to different donation promises, specified as a percentage of a dynamically determined selling price. Above, we proposed that bidders with positive charitable motives will obtain additional utility from money going to charity, and are therefore willing to pay more in charity auctions. Theory has proposed auction models with price externalities where bidders’ extra utility is proportional to the ending price. Therefore, if utility is proportional to the charitable donation, bidders should be willing to pay a greater premium if a larger percentage of revenue is donated to charity. This reasoning is consistent with findings by Olsen et al. (2003), who reported that higher percentages of donations had a positive effect on perceptions and attitudes of brands, and Pracejus et al. (2003), who found that higher levels of fixed donations affected brand choice. Therefore, we hypothesize that the amount of the donation, as a percentage of proceeds, will have a positive influence on auction outcome:

**Hypothesis 4 (H4).** An auction that promises a higher percentage of proceeds (of the dynamically determined ending price) to be donated to charity will lead to a higher ending price.

### 4. Empirical Analysis: The Edmonton Sun’s Christmas Charity Auctions

#### 4.1. General Procedure

We conducted three controlled field experiments consisting of real-life auctions on a local Internet auction website. These auctions were part of the Edmonton Sun’s annual Christmas auctions, with proceeds going to several charities. We selected a three-day period to coincide with the Edmonton Sun charity auctions, which are an annual event co-organized by the first author and conducted on the same website. Experiments 1 and 3 were part of the 2004 *Edmonton Sun* charity auctions that were conducted from November 3 to 5, 2004, and consisted of 152 auctions with combined proceeds of C$141,707. All proceeds were divided equally across all charities involved (the United Way, Sign of Hope, and the Christmas Bureau of Edmonton). The second experiment was part of the 2006 *Edmonton Sun* charity auctions conducted from October 31 to November 2, 2006, and consisted of 211 auctions with combined proceeds of C$261,776, which were donated to the same three charities as well as to the Stollery Children’s Hospital Foundation. Proceeds from our charity auctions were divided equally among the charities involved.

We ran the auctions on a local Internet auction site under our complete control. The site was established in September 2002 for the purpose of conducting academic research. It had approximately 3,000 registered members at the time of the first and third experiments and about 5,000 members at the time of the second. All auctions were open ascending-bid auctions with a fixed ending time, identical in format to those run by

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3 The United Way—a catalyst for community action—is a system of volunteers that brings individuals and resources together, helping deserving people in their own communities. The *Sign of Hope* campaign is a Catholic social services organization serving people of all faiths and cultures throughout central and northeast Alberta. The Christmas Bureau of Edmonton, a local charity, provides festive meals for Edmonton’s less fortunate. The Stollery Children’s Hospital Foundation funds equipment, education, and research for children’s health.

4 In both 2004 and 2006, approximately 600 new members registered during the charity auctions.
eBay.com. The winner is the bidder with the highest bid at the fixed ending time. Bidding is through a proxy bidding machine, which bids on behalf of the bidder. A bidder can place any bid above the current high bid and let the computer continue bidding until this amount is reached. The computer will only bid the amount needed to become the current high bidder, and a bidder can increase her proxy bid at any time. When entering an auction, the bidder sees the current high bid and the number of bids placed. In addition, by clicking on a link, she can observe the bid history, which shows the amount and the bidder ID for each of the bids placed. In these experiments, at the completion of an auction, winning bidders paid for and collected items at a local retail store.

The experimental auctions were sold through an established vendor with over 100 positive feedbacks from previous transactions. Registered users mostly know this vendor from regular auctions rather than from charity auctions. Hence, whereas some users may have come to the website intending to participate in charity auctions, others were primarily interested in getting a good deal. The Edmonton Sun items are sold through a different vendor specifically created and known for charity auctions. The experimental auctions were advertised independently as regular auctions with a mention that proceeds of some of the auctions are donated to charity (or, in studies 2 and 3, that part of the proceeds are donated to charity). In addition, local newspapers carried advertisements, posters were hung at strategic locations throughout the city, and flyers were distributed locally (advertising equally both the charity and noncharity auctions). Finally, for the duration of the experiment, the website featured a list of all the daily auctions, indicating which auctions were charity auctions and which were not.

In addition to the Edmonton Sun charity auctions, some other sellers were also active (mostly in noncharity auctions). However, in total there were fewer than 100 daily auctions by other sellers, and none of these auctions was for items identical to any of the items sold in the experiments.

4.2. Experiment 1: Controlled Field Experiment of Charitable Motives in Charity Auctions

This experiment examined bidders’ charitable motives and the effects of charitable donations on auction outcome. We compared revenues of charity auctions with noncharity auctions across different products. In addition, to study the potential impact of volunteer shills in charity auctions, we used covert bidding agents as additional bidders in some auctions to outbid all other bidders and win the auction. By using bidding agents, we obtain the otherwise unobserved highest bidder’s willingness to pay, not just that of the second-highest bidder. (Because we used eBay-style progressive auctions, the winning bidder in the absence of the agent pays the bid of the second-highest bidder plus the minimum bid increment.) Thus, we can observe the uncaptured surplus amount and the additional premium bidders are willing to pay in charity auctions. This amount is the upper bound that a volunteer shill could have extracted from the winning bidder.

This experiment addressed H1 and H2.

4.2.1. Method. The unit of analysis in our experiments is the auction, and the dependent variables are selling price and number of bidders. The experiment had two dimensions: charity versus noncharity (i.e., percentage donated), and bidding agent versus no bidding agent. This format resulted in a 2 (percentage donated: 100% or 0%) × 2 (presence or absence of a bidding agent) design, where each condition was manipulated within product. We had four identical copies of each of 80 different items, auctioned off over a three-day period. Each auction lasted approximately one day, starting at 10:00 p.m. one evening and ending at about 8:00 p.m. the next (auctions ended one at a time at 30-second intervals). We decided that it was particularly interesting to compare the charity versus noncharity auctions within a single day, to understand bidders’ choices when both types of auctions for the same item are available. Accordingly, we took each quadruplet of identical items and partitioned them into two pairs, where within each pair one auction always had 100% donation and the other had 0% donation, and for each auction a bidding agent was either present or not. In this way, one replicate was always assigned to each of the four conditions. The pairs were auctioned on each of two different days to get more independent observations. The pairs were randomly assigned to two of the three days, and the conditions were counterbalanced such that there was an equal proportion of each condition during each day (although day 3 had several extra auctions). Finally, we randomized and counterbalanced the order within the day such that half the pairs of charity auctions were listed first for the first half of the auction, and for the other half they were listed second.

For bidding agents, we used confederates who placed a single high proxy bid during the first half of the auction, varying the time within a one-hour period.
period across auctions. Agents bid relatively early in the auction, because bidding early is more consistent with a volunteer shill model than is bidding late. Different accounts were established for each of the 25 agents. Note that this covert agent, when present, was not a shill (shill bidding is illegal when used to drive up prices and benefit from the increased revenues) because the agent always won the auction and the charity received the total amount of the agent’s winning bid.6 In noncharity auctions won by a bidding agent, we took possession of the goods.

Items used in the auctions included electronics, computer goods, collectables, handcrafts, art, and jewelry. All auctions included pictures and descriptions of the items, starting bids of C$0.01, and no reserve price. Each auction stated at the bottom of the product description (directly above the bid box) in boldface font, sized larger than the description, either “100% of the proceeds of this auction will be donated to Edmonton United Way, Sign of Hope and Christmas Bureau” or “Proceeds of this auction will NOT be donated to charity.” We controlled all other auction characteristics. The online appendix (provided in the e-companion)7 to this paper contains a screen shot with a sample auction, plus a table with specifics of the items used.

4.2.2. Results of Experiment 1. In total, 198 bidders participated in this experiment, and 145 different bidders won an auction. All auctions ended in a sale, and 94% of the items were picked up and paid for. Table 2 provides summary statistics related to Experiment 1. The mean selling price for all auctions was C$22.38; on average, 4.11 bidders participated per auction. The mean selling price was C$25.98 when proceeds were donated versus C$19.13 when they were not, a difference that is highly significant (p < 0.01).9 In particular, bidders tended to enter sooner in both charity auctions and auctions in which bidding agents participated. Also, in both conditions, the time between bids was shorter, indicating a faster response to competitive bids.

Figure 1 provides a frequency distribution of selling prices for identical products. The distribution of selling prices for charity auctions is less left skewed than the one for noncharity auctions, particularly when a bidding agent is present.

4.2.3. Choosing Between Charity and Noncharity Auctions. To test H1 regarding the impact of bidder entry on selling prices in charity auctions, we first need to consider whether charity auctions attract more bidders. To do so, we estimate a Poisson regression with the number of bidders as the dependent variable. The number of bidders is a count process that is assumed to have a Poisson distribution (Engelbrecht-Wiggans 1987), with mean (λi), where

$$\log \lambda_i = \alpha_i + \beta_1 Donate_i + \beta_2 Agent_i + \beta_3 Day1_i + \beta_4 Day2_i + \beta_5 RetailPrice_j$$

(1)

αi is a product specific intercept, Donatei is a dummy variable indicating whether auction i is a charity auction, Agenti is a dummy variable indicating whether auction i has a bidding agent, Day1i and Day2i are dummy variables indicating the day auction i ran (because auctions ran over a three-day period), RetailPricej is the retail price of product j, and the βs are the coefficients for the independent variables.

Table 3 shows the results of the Poisson regression of the number of bidders. We find a negative significant

Table 2 Summary Statistics for Experiment 1 Across Conditions

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<th>Noncharity auctions</th>
<th>Charity auctions</th>
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<tbody>
<tr>
<td></td>
<td>(0% donated)</td>
<td>(100% donated)</td>
</tr>
<tr>
<td>No agent</td>
<td></td>
<td></td>
</tr>
<tr>
<td>With agent</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Selling price (C$)</td>
<td>16.92 (14.92)</td>
<td>21.94 (18.38)</td>
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<tr>
<td></td>
<td>21.12 (18.46)</td>
<td>31.30 (21.47)</td>
</tr>
<tr>
<td>No. of bidders</td>
<td>4.59 (2.27)</td>
<td>4.14 (1.88)</td>
</tr>
<tr>
<td></td>
<td>3.90 (1.46)</td>
<td>3.71 (1.16)</td>
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<tr>
<td>No. of bids</td>
<td>9.77 (6.13)</td>
<td>8.81 (5.04)</td>
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<tr>
<td></td>
<td>8.33 (4.33)</td>
<td>8.24 (3.82)</td>
</tr>
<tr>
<td>No. of visitors</td>
<td>31.54 (24.32)</td>
<td>31.14 (22.35)</td>
</tr>
<tr>
<td></td>
<td>29.99 (20.63)</td>
<td>26.63 (18.25)</td>
</tr>
</tbody>
</table>

Note: Mean selling prices and standard deviations are shown.

6 The first author made a private donation of C$4,751 to the charities involved.
7 An electronic companion to this paper is available as part of the online version that can be found at http://mansci.journal.informs.org/.
8 All auctions in Experiment 1 resulted in a sale (i.e., there was at least one bid); however, in three auctions, the winners claimed bidding errors. To maintain the balance of the design, we deleted all four of the auctions for each of these products, leaving 308 auctions.
9 The time of entry in noncharity auctions with an agent was after 23.1% of the duration of the auction had elapsed, and after 32.5% without an agent, whereas in charity auctions the entry times were after 15.1% and 21.4% of the duration had elapsed for auctions with and without an agent, respectively. The average time between bids in noncharity auctions with an agent was 428.4 minutes, and 491.2 minutes without an agent (the agent never placed the first bid). The times for charity auctions were 361.5 minutes with an agent and 445.2 minutes without an agent.
effect for donation ($\beta_1 = -0.114, p < 0.01$), suggesting that bidders are less likely to participate in charity auctions than in noncharity auctions. Therefore, we do not find support for H1, that higher selling prices are due to increased bidder entry.

The negative effects for donation and bidding agent indicate that, overall, fewer bidders participated in charity auctions and in auctions with a bidding agent. We find that bidders in both types of auctions enter the auction earlier and that the time between bids is shorter; this drives up prices at a faster rate, thereby excluding low-value bidders.

### 4.2.4. Deciding How Much to Bid.

To test H2, we estimated a fixed-effects model with auction outcome as the dependent variable (see Equation (2)). This model includes product-specific dummy variables to control for differences in values across different products (details on the product-specific dummies are provided in the online appendix).

$$P_{ij} = \alpha_i + \beta_1 \text{Donate}_i + \beta_2 \text{Agent}_i + \beta_3 \text{Day1}_i$$
$$+ \beta_4 \text{Day2}_i + \beta_5 \text{Agent}_i \times \text{Donate}_i + e_{ij}.$$  (2)

$P_{ij}$ is the logarithm of the highest bid in auction $i$ for product $j$, $\alpha_i$ is a product-specific intercept, $\text{Agent}_i$, $\text{Day1}_i$, $\text{Day2}_i$, and $\text{Donate}_i$ are defined as in Equation (1), and $e_{ij} \sim \text{Normal}(0, \sigma^2)$.

Table 3 provides the results of the fixed-effects model. The coefficient of \text{Donate} has a statistically significant positive impact, suggesting that bidders are willing to pay 45% more in charity auctions. This result supports H2, which proposed that items' selling prices in charity auctions are higher than those in noncharity auctions. The positive effect for Agent shows that the winning bidder would have been willing to pay 51% more than the second-highest nonagent bid. The positive interaction between \text{Donate} \times Agent shows that the difference in prices between charity and noncharity auctions is greater when an agent participates, indicating that the high bidder would be willing to pay a price 21% higher in charity than noncharity auctions.  

### 4.2.5. Discussion of Experiment 1.

As predicted, we find empirical evidence that donating revenue to charity significantly increases selling price in auctions. The higher revenue is not due to increased participation, because fewer bidders entered charity auctions. Purely self-interested bidders may well have anticipated or observed higher prices in charity auctions and avoided them. Because charity and noncharity auctions for the same product were simultaneous adjacent listings, bidders could easily compare the current high bids in these auctions. Those who bid in charity auctions were more interested in helping the charities than in finding the lowest price. Thus, the increased revenue is due to bidders with charitable motives. These results have important fundraising implications for charities because they suggest that charities do not necessarily need to invest substantial funds in attracting a large number of bidders to charity auctions. Rather, it is far more important to attract the right bidders.

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**Table 3: Results of Experiment 1: Effect of Charity Auction on Auction Outcome**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Number of bidders</th>
<th>T-values</th>
<th>Log price</th>
<th>T-values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Donation</td>
<td>-0.114</td>
<td>-3.36</td>
<td>0.451</td>
<td>6.12</td>
</tr>
<tr>
<td>Agent</td>
<td>-0.079</td>
<td>-2.34</td>
<td>0.509</td>
<td>6.91</td>
</tr>
<tr>
<td>Day1</td>
<td>0.142</td>
<td>2.95</td>
<td>-0.015</td>
<td>-0.20</td>
</tr>
<tr>
<td>Day2</td>
<td>0.191</td>
<td>3.99</td>
<td>0.026</td>
<td>0.35</td>
</tr>
<tr>
<td>Agent \times Donation</td>
<td>-0.030</td>
<td>0.211</td>
<td>2.02</td>
<td></td>
</tr>
<tr>
<td>Retail value</td>
<td>-0.300</td>
<td>0.99</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes. $N = 308$ (total number of auctions). The dependent variables are number of bidders and log of selling price. The product dummies for the fixed-effects model are provided in the online appendix.

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10 We also included a measure of bidder expertise based on the length of time that a bidder has been a registered member. We do find a small negative main effect due to bidder expertise, suggesting that less experienced bidders, on average, bid higher in auctions. However, we did not observe an interaction effect with charity auction.
The bidding agents always outbid all other bidders, allowing us to observe an estimate of the highest bidder’s willingness to pay. Theoretically, the bidding agent should be extracting all of the bidder surplus, taking the price up to the level of the top bidder’s willingness to pay. The bidding agents provide a price premium of 26.5% in noncharity auctions and 45.9% in charity auctions (across all auctions it increased selling prices from C$19.38 to C$26.65). This result provided additional insights into the substantial magnitude of bidders’ charitable motives.

The premium observed in regular auctions is close to the 25% bidder surplus in eBay auctions reported by Bapna et al. (2008) and that for non-eBay auctions reported by Popkowski Leszczyc et al. (2009). However, the 45.9% premium for charity auctions is significantly higher than the bidder surplus in charity auctions (observed over time on the current website), suggesting that preferences in charity auctions are particularly malleable and influenced by the dynamics of the bidding process. This result also provides support for the positive effect of volunteer shill bidding in charity auctions.

These results do suggest that the right auction format may significantly influence revenue formation for charity auctions. In particular, we found that second-price charity auctions were not able to capture a significant amount of revenue that the winning bidder would have been willing to pay. This uncaptured amount is significantly higher in charity auctions than in noncharity auctions. Future research should focus on designing auctions that can best extract this additional surplus.

By acting as a volunteer shill, we were able to significantly increase the selling prices in charity auctions. Losing bidders may have been driven by volunteer shill motives trying to increase prices themselves, or they may have increased their bids to obtain a warm glow from giving. We did find, however, additional support that bidders were acting as volunteer shills. First of all, bidders enter charity auctions sooner, and their initial proxy bid is significantly higher. The higher use of proxy bids early in the auction is not an optimum strategy in an online auction with a fixed ending time, where it is best for a bidder to wait and try not to reveal her strategy (Roth and Ockenfels 2002). Finally, additional analyses showed that bidders are more likely to continue bidding in future charity auctions even after losing, a finding consistent with the use of volunteer shills who are motivated to raise prices in charity auctions.

This result is in sharp contrast to research in noncharity auctions that has observed bidder frustration and decreased propensity to bid after losing an auction (Ding et al. 2005). Finally, results from an Internet-based survey of 129 registered users of the website where the auctions were conducted indicated that 64.3% of users agreed with the statement “I tried to drive up bids, without winning the item, so that the charities could benefit from a higher selling price.” Participants’ average response was 7.0 (variance of 10.31) based on an 11-point scale, where strongly disagree equals 0 and strongly agree equals 10. Although this result is not conclusive evidence, it does suggest that at least some bidders were acting as volunteer shills.

In Experiment 2, we further examine bidders’ charitable motives.

4.3. Experiment 2: The Effect of Donation Type on Selling Prices

Experiment 2 further investigates bidders’ charitable motives, focusing on the nature of the charitable motives and in particular addressing the question raised in H3: Are charitable actions influenced by the type of donation (either a donation of a fixed amount or a percentage of the dynamically determined price)? That is, do bidders pay more when the donation is conditional on the auction’s outcome in contrast to contributing a similar fixed donation amount (e.g., based on the expected price) regardless of the auction’s outcome? Comparing the results of these conditions provides different insights.

4.3.1. Method. The unit of analysis is again the auction, and the dependent variables are selling price and number of bidders. The design is a simple one-factor design, where the type of donation has three different levels: (A) nothing is donated to charity, (B) a fixed amount is donated regardless of the price in the auction (e.g., C$10 of the ending price of this auction will be donated to charity); we selected the fixed

11 The premium on the current website is calculated by the difference between the proxy bid of the winning bidder minus the ending price in the auction (the willingness to pay minus the amount paid by the high bidder). Because we have complete control over the website, we can observe the proxy bid of the winning bidder.

12 The bidding behavior of the bidding agent possibly influenced the results. When the agent places a high proxy bid, other bidders are immediately outbid by the agent’s proxy bid, and the agent remains the high bidder. This response may signal a high valuation or an eagerness to get the item, or alternatively may create bidding momentum leading to increased bidding activity or even to a state of bidding frenzy (Heyman et al. 2004). However, it cannot explain the greater effect for charity auctions with an agent present.

13 The first bid is placed after 18.2% of time has elapsed in a charity auction versus 27.8% for noncharity auctions; this difference is highly significant ($t = 3.50$, $df = 306$, $p < 0.0001$). The initial proxy bid in charity auctions is C$18.92 versus C$8.69 in a noncharity auctions; this difference is highly significant ($t = 5.77$, $df = 306$, $p < 0.0001$).
amount to be equal to 40% of a preauction estimate of the ending price in the auction), and (C) 40% of the ending price is donated to charity. The donation type was manipulated within product.

In total, we ran 135 auctions, three identical replicates of each of 45 products. As with Experiment 1, this experiment was conducted over a three-day period that coincided with the Edmonton Sun’s charity auctions. All auctions began at 10 p.m. and ended at 8 p.m. the next day (starting at 8:00 p.m., auctions ended one at a time at 30-second intervals). Identical products were sold either in pairs on the same day and with the third replicate on a different day, or all separately on different days according to the following four scenarios: (1) AB, C; (2) AC, B; (3) BC, A; (4) A, B, C. This schedule is interpreted as follows. In Scenario 1, two auctions for the identical product, with A being 0% donated and B being a fixed amount donated, are run the same day (listed simultaneously and ending 30 seconds apart), whereas the third replicate, C begin 40% donated, is run on a different day. Analogous interpretations apply to Scenarios 2 and 3. In Scenario 4, each product is sold on a different day. We randomly assigned and counterbalanced products to one of the four scenarios (with Scenario 4 having three fewer products assigned). Each scenario was randomly assigned and counterbalanced to a specific day and order within the day. By running two identical product auctions on the same day, we again allowed bidders to self-select which auction to enter. However, as a comparison, we also ran auctions for the same product during different days. To avoid a reduction in prices owing to oversupply, we did not run three identical product auctions in a single day.

### 4.3.2. Results of Experiment 2

In total, 103 bidders participated in this experiment, and 56 different bidders won an auction. All auctions ended in a sale, and 92% of the items were picked up and paid for. Table 4 provides summary statistics for the different conditions for Experiment 2. The mean selling price was $35.87 in noncharity auctions, $35.52 when a fixed amount was donated to charity, and $39.96 when 40% of proceeds were donated to charity; these means are significantly different ($F_{(2, 129)} = 4.15, p = 0.018$). However, the mean selling price for a noncharity auction was not significantly different from that of the charity auctions with a fixed donation amount ($F_{(2, 129)} = 3.64, p = 0.023$). The mean number of bidders did not differ in a statistically significant way between the different types of donations ($F_{(2, 128)} = 2.03, p = 0.135$). Also, all pairwise differences between the number of bidders were insignificant across donation types.

Figure 2 shows a frequency distribution of selling prices for Experiment 2. The difference in selling price for the variable donations appears to be due to higher selling prices for low-value products.

As with Experiment 1, we estimated two fixed-effects models, a Poisson regression with the number of bidders as the dependent variable, and a model with selling price as the dependent variable (see results in Table 5). First, looking at the results for the number of bidders, we see that the different donation types did not influence bidder entry. Hence, again we do not find support for H1, that higher selling prices in charity auctions are due to increased bidder entry.

For the selling price equation, the coefficient for no donation (0% donated to charity) is insignificant ($\beta_1 = -0.029, p = 0.870$), indicating that the difference in price between 0% donated and a fixed donation (the base case) is not statistically significant. The coefficient for variable donation (40% donated to charity) is significant ($\beta_2 = 0.403, p = 0.021$), implying that a 40% donation leads to about 40% higher prices than

### Table 4 Summary Statistics for Experiment 2 Across Conditions

<table>
<thead>
<tr>
<th>Variables</th>
<th>0% donated</th>
<th>Fixed donation</th>
<th>40% donated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selling price (C$)</td>
<td>35.87 (61.28)</td>
<td>35.52 (62.74)</td>
<td>39.96 (66.30)</td>
</tr>
<tr>
<td>No. of bidders</td>
<td>4.04 (1.61)</td>
<td>4.38 (2.10)</td>
<td>4.80 (1.80)</td>
</tr>
<tr>
<td>No. of bids</td>
<td>8.73 (5.36)</td>
<td>10.70 (6.79)</td>
<td>8.82 (5.43)</td>
</tr>
<tr>
<td>No. of visitors</td>
<td>24.54 (19.31)</td>
<td>26.45 (21.58)</td>
<td>27.48 (22.06)</td>
</tr>
</tbody>
</table>

*Note. Mean selling prices and standard deviations are shown.*

---

### Table 5 Results of Experiment 2: Effect of Type of Donation on Auction Outcome

<table>
<thead>
<tr>
<th>Variables</th>
<th>Number of bidders</th>
<th>T-values</th>
<th>Log price</th>
<th>T-values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed donation</td>
<td>0.086</td>
<td>1.39</td>
<td>0.029</td>
<td>0.17</td>
</tr>
<tr>
<td>Variable donation</td>
<td>0.106</td>
<td>1.71</td>
<td>0.403</td>
<td>2.34</td>
</tr>
<tr>
<td>Day 1</td>
<td>−0.078</td>
<td>−1.09</td>
<td>−0.187</td>
<td>−0.93</td>
</tr>
<tr>
<td>Day 2</td>
<td>−0.043</td>
<td>−0.60</td>
<td>−0.410</td>
<td>−2.04</td>
</tr>
<tr>
<td>Same day</td>
<td>0.045</td>
<td>0.75</td>
<td>0.145</td>
<td>0.87</td>
</tr>
</tbody>
</table>

*Notes. N = 135 (total number of auctions). The dependent variables are number of bidders and log of selling price.*
a fixed donation. In addition, the price for a noncharity auction is statistically significantly different from an auction where 40% is donated to charity (t = 2.59, df = 129, p < 0.011). Hence, consistent with H3, we find that auctions with variable donations have the highest selling prices, whereas auctions with fixed donations and noncharity auctions have equal selling prices. Furthermore, selling prices are lower on day 2 (owing to a slightly lower retail value of the items sold during the second day) but are not influenced significantly by whether (two) identical items are sold on the same day.

4.3.3. Discussion of Experiment 2. As in Experiment 1, we find that charity auctions in which proceeds are a function of the dynamically determined ending price enjoy higher selling prices. We again find that this result derives from higher bidding by bidders with charitable motives than from increased bidder entry. However, merely donating a fixed amount to charity did not lead to higher selling prices than in noncharity auctions. This finding appears to be consistent with the notion that bidders who obtain additional utility from seeing the charity receive more money are behaving like volunteer shills. Furthermore, the insignificance of fixed donations suggests that the winning bidders received no additional utility from being seen by others as being associated with the donation. Hence, these results seem to favor a volunteer shill model over a see-and-be-seen or a warm glow model. However, it may be possible that bidders in auctions with variable donations perceive a stronger link between their bid and the donation to the charity, and therefore they may derive more warm glow, holding donation amount constant.

These results have important implications for auction design and suggest that ascending auctions, where bidders can drive up prices, are particularly suitable for charity auctions.

4.4. Experiment 3: The Amount of Proceeds Donated to Charity

The main objective of Experiment 3 was to study bidders’ response to different levels of donation promises, in particular, the case where only part of proceeds are donated to charity, as is commonly done in cause-related marketing. This experiment addresses H4, that higher donation promises will lead to higher ending prices.

4.4.1. Method. To determine the effect of the amount of the donation as a percentage of proceeds might actually lead to higher net revenue (selling price minus donation) than in noncharity auctions. Hence, the percentage needed to be high enough to attract attention from charitable bidders, but not too high. We auctioned off 90 different lots of movies (each lot consisting of eight VCR tapes) over the same three-day period as in Experiment 1. The duration of all auctions was one day. Our procedure was identical to that of Experiments 1 and 2 except that, because we did not have three identical copies of each movie, we created 30 different product lots, each with three similar replicates. To create similar replicates, we first sorted all movies on the basis of genre, after which we identified similar movies within genre and randomly selected these movies over the relevant lots. For example, when creating three lots consisting of eight action movies, we selected 24 similar action movies and then randomly divided them across the three lots (one exception is for multiple movies that are part of a series, e.g., The Godfather, Parts 1, 2, and 3, in which case we randomly distributed one of each across the three lots). After assigning all movies to lots, we randomly assigned the lots to the different treatment conditions while balancing movie genre by condition.

4.4.2. Results of Experiment 3. In total, 87 bidders participated in this experiment, and 26 different bidders won an auction. All auctions ended in a sale, and 95% of the items were picked up and paid for. Table 6 provides the summary statistics of Experiment 3, and a frequency distribution of selling prices appears in Figure 3. The difference in the selling prices is significantly different statistically (F = 3.64; df = 2, 87; p = 0.016). Comparing the noncharity auctions with the charity auctions shows increased bidder entry in charity auctions; however, this difference is not statistically significant (F = 2.35; df = 2, 87; p = 0.102). The difference in the average number of bids was also not statistically significant (F = 0.89; df = 2, 87; p = 0.415).

Table 7 gives the results of a random-effects model that tests the effect of the level of donation on auction outcome (in contrast to the previous two experiments, we use a random-effects model because none of the 30 product lots consisted of action, romance, comedy, thrillers, horror, or children’s movies, or some combination of these.

<table>
<thead>
<tr>
<th>Table 6 Summary Statistics for Experiment 3 Across Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>Selling price (C$)</td>
</tr>
<tr>
<td>No. of bidders</td>
</tr>
<tr>
<td>No. of bids</td>
</tr>
<tr>
<td>No. of visitors</td>
</tr>
</tbody>
</table>

Note. Mean selling prices and standard deviations are shown.
Table 7 Results of Experiment 3: Effects of Different Levels of Donations on Auction Ending Prices and Seller Revenue

<table>
<thead>
<tr>
<th>Variables</th>
<th>Ending price</th>
<th>Seller revenue (net of donation)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Estimates</td>
<td>T-values</td>
</tr>
<tr>
<td>Intercept</td>
<td>2.850</td>
<td>21.95</td>
</tr>
<tr>
<td>25% donation</td>
<td>0.416</td>
<td>5.54</td>
</tr>
<tr>
<td>100% donation</td>
<td>0.553</td>
<td>7.35</td>
</tr>
<tr>
<td>Day1</td>
<td>−0.016</td>
<td>0.21</td>
</tr>
<tr>
<td>Day2</td>
<td>0.466</td>
<td>6.41</td>
</tr>
<tr>
<td>Random effects</td>
<td>0.025</td>
<td>1.68</td>
</tr>
<tr>
<td>Number of cases</td>
<td>N = 90</td>
<td>N = 90</td>
</tr>
</tbody>
</table>

4.4.3. Discussion of Experiment 3. Consistent with results from Experiments 1 and 2, ending prices for auctions where 25% and 100% of ending prices are donated to charity are significantly higher than for noncharity auctions. Also, consistent with results from Experiments 1 and 2, we cannot consider increased competition to be an explanation for higher ending prices in charity auctions. Importantly, auctions in which 25% of the final price is donated to charity had a 40.9% higher ending price than non-charity auctions, indicating that donating a substantial part of auction proceeds to charity can increase profitability. Note that the result that net revenue may be higher when a portion of proceeds is donated to charity introduces a strictly behavioral aspect, because a rational bidder with charitable motives who anticipated the result could in principle drop out of the bidding before it ended, purchase the item in the non-charity auction, and make a contribution directly to the charity.

Our results have important implications for charities and managers who want to bundle products with charitable donations. Increasingly, companies and charities use charity auctions to raise funds for worthy causes (AuctionPublicity.com 2007). Companies may be able to use charity auctions without cost as part of a CSR strategy, increasing direct profitability by donating part of proceeds to charity. Our results suggest that charity auctions may be a more attractive way to donate than donating money directly. For charities, this finding provides an opportunity to recruit companies to collaborate in a cause-related marketing relationship.

5. Overall Discussion
Although charity auctions are an important fundraising tool, little research has investigated their effectiveness, and little is known about the charitable motives
of the people participating in them. This research is a first attempt to provide answers. This paper challenges the basic assumption in auction research of selfish utility maximization. We study the extent to which bidders are selfish or charitable—a basic question that has been an important topic of debate (Ledyard 1995). We also study the magnitude of the charity premium as it relates to incentives. This investigation provides insights into specific types of charitable motives. We used a novel design, simultaneously running charity and noncharity auctions.

Results from three field experiments offer significant evidence that bidders are willing to pay higher prices in charity auctions. Fewer bidders entered charity auctions, so higher prices are more likely due to bidders' higher willingness to pay than to increased bidder entry, thus distinguishing between two competing explanations for higher prices in charity auctions.

The significant premium in charity auctions we observed is in contrast to the results of some recent studies (e.g., Isaac and Schnier 2005, Isaac et al. 2009, Elfenbein and McManus 2010). Several potential explanations may account for the difference in these findings. First of all, the auction market may have an influence on charitable motives. Our auctions, similar to those of Ku et al. (2005), were conducted in a local auction market, with local charities and (potentially more highly involved) local bidders. The local nature may explain the greater premium in charity auctions compared to eBay's auction market (Elfenbein and McManus 2010), because consumers tend to provide greater support to local charities (Bar-Tal 1976).

Another important difference is our use of real-world auctions in contrast to the use of laboratory studies by Isaac et al. (2009) and Schram and Onderstal (2009). Measuring charitable motives may be difficult in laboratory studies where subjects bid on fictitious products (List and Reiley 2008). Perhaps more important is the difference in auction format. Isaac et al. (2009) used sealed-bid auctions, where bidders place only a single bid, whereas our results are based on ascending-bid auctions. The ascending nature of auctions is more consistent with our findings of volunteer shills trying to drive up prices, and may potentially lead to a state of bidding frenzy (Ku et al. 2005). We believe that the competitive interaction between bidders plays a particularly important role in charity auctions where bidders try to drive up prices to ensure that the charity collects more money.

We studied the magnitude and type of charitable motives of bidders. We observed bidders with charitable motives who were willing to pay a premium in charity auctions, which averaged from 11% to 45% across three experiments. Results of Experiments 1 and 2 provided support for the notion that bidders acted as volunteer shills, trying to drive up prices in charity auctions. Furthermore, results of Experiment 2 provided evidence against the see-and-be-seen model, suggesting that winning bidders did not receive additional utility from others observing them being charitable. This result may be due to our use of online auctions, because the anonymity of the winning bidder makes signaling more difficult (e.g., signaling their wealth). Furthermore, the lack of a premium in auctions with fixed donations to charity (Experiment 2) also suggests the absence of warm glow preferences. Overall, these results were more consistent with volunteer shills' motives. However, volunteer shills may also be more likely to pay higher prices in charity auctions themselves, and nonwinning shill bidders may receive a warm glow from raising the ending price and donations to charity.

Interestingly, a model of volunteer shilling may be consistent with a rational pursuit of charitable preferences, providing a model of rational overbidding in charity auctions, which assumes rationality without pure greed. However, higher bidding and ending prices in charity auctions may also be due to irrational motives, like escalation of commitment or bidder rivalry, which may result in a bidding frenzy rather than in a rational pursuit of charitable goals. Future research should study the extent to which volunteer shill bidders hope merely to drive up prices without having to buy the item themselves, as opposed to willingly buying the item as a consequence of having driven up the price.

Clearly, more research is needed to study bidder motives in greater depth. Future research should also study the true underlying psychological motives of bidders. Bidders may have different motives for giving, such as self-reward (e.g., they feel proud or happy that they have supported a worthy cause; Arnett et al. 2003), negative-state relief (e.g., alleviation of sadness and distress from seeing people suffer; Cialdini et al. 1987), or guilt reduction (Bierhoff 2002). These motives may also provide donors with a warm glow. Alternatively, consumers may give for purely unselfish reasons. Research will provide more insights into the extent to which bidders with charitable motives give for purely selfless or selfish reasons. Future research should also study under what conditions a warm glow or see-and-be-seen model may be more applicable, for example, in cases where social

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16 Laboratory experiments conducted by Isaac et al. (2009) reported that 10%–15% of bidders bid higher in charity auctions, but their effect on charity revenue was not significant. Elfenbein and McManus (2010) concluded that eBay giving auctions, where a certain percentage of proceeds is donated to charity, have a premium in selling price of about 6% relative to regular eBay auctions for comparable items.
influences play a greater role, as in real-life auctions, or in conditions where bidders feel a greater need to conform to others’ level of giving (Shang et al. 2008).

Our findings have important implications for auction format and design features. Our finding that bidders act as volunteer shills trying to drive up prices suggests that open ascending-bid auctions are particularly suited to charity auctions. However, more research is needed to determine the optimum mechanism for extracting additional revenue from winning bidders in charity auctions, including design features like reserve price, buy-it-now options, and auction duration.

Finally, charity auctions may be an important tool for companies as part of a CSR strategy. Our results suggest that companies trying to improve their corporate image by associating themselves with a charity can do so cost effectively through charity auctions. In addition, by integrating charity auctions with their online business they can increase traffic to their website and can build or add to an online customer database, as bidders register online. Charities themselves may also use these results as a marketing tool, selling these benefits to corporate donors. Results also indicate the need for charities to develop a strong online database for targeting the right bidders to participate in charity auctions.

Finally, results indicate that in certain cases companies may even profit by donating part of the auction proceeds to charity (e.g., 25% of auction revenue). More research is needed to replicate these findings for different products and conditions. We need to answer a number of questions, such as, what is the optimum percentage to donate to charity? What types of products should be offered (Strahilevitz and Meyers 1998), and what is the optimal way to sell these products as a bundled package (e.g., Popkowski Leszczyc et al. 2008)? What is the congruity between the charity and the specific product sold (e.g., Ellen et al. 2000)?

The results of this investigation provide an important step toward obtaining a better understanding of bidders’ motives in charity auctions and the impact on revenue in charity auction.

6. Electronic Companion

An electronic companion to this paper is available as part of the online version that can be found at http://mansci.journal.informs.org/.

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