Analyzing Winner's Curse in Gift Card Auctions

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Abstract

In a perfectly competitive market, the price obtained for a homogeneous good, when auctioned, should be consistent when measured as a percentage of the final bid (including shipping) to the total value of the good and not exceed it. Using gift cards auctioned on eBay as a proxy, however, this study found that that was not the case and prices varied significantly during the time period studied with winner's curse – paying more for an item that it is actually worth – occurring at an alarming rate. This study looked at overlapping time periods in the summer of 2016 and auctions involving gift cards for Home Depot, Walmart, and Amazon. Winner's curse existed in only 2% of the Home Depot card auctions, but over 70% of the auctions for gift cards from Walmart and Amazon. Linear regression was used to look for a correlation between winner's curse and three variables: a separate shipping charge, the number of bids received, and the feedback score associated with the seller.

Keywords: winner's curse, homogeneous good, eBay, Internet auction, e-commerce

Introduction

Auction literature in the consumer behavior field exists with a large majority focusing on social factors occurring at the time of the bidding on a particular item - trying to outbid a rival, being caught up in the moment, and under/overvaluing the item being sold. As technology has enabled us to move from auctions that require a physical presence in order to participate, to auctions that take place over the Internet, the vast majority of social factors previously studied should become muted. While there are many auction web sites in existence, eBay is the largest carrying out consumer-to-consumer (C2C) auctions. Following the format of an ascending-bid English-style auction, bidders enter a maximum amount they are willing to pay for an item, and eBay software automatically increases the bid to one increment above the next highest bidder until that maximum amount is reached (Lucking-Reiley, Bryan, Prasad, & Reeves, 1999). Said maximum amount may be entered at any time the item is available – from the time it is listed to the second the auction ends. Using the Internet to conduct the English auction, the number of potential participants is greatly increased, while the costs of conducting it are decreased (Pinker, Seidmann, & Vakrat, 2003).

No longer is a bidder trying to win an item that is only available for a matter of seconds by outbidding the person sitting two rows behind them; they are now bidding on items which are available ("posted" or "listed") for extended periods of time. Bidders can have anywhere from a day to a week, or more, to decide how much they are willing to pay and then make their bid. Additionally, situations where there is only one item in the auction ("I have to have it because it is the only one and I drove all night to get here") have now been replaced in the electronic realm with listings of many homogeneous items listed at the same time ("If I don't win the bidding on this one, I can buy the next"). In this environment, winner's curse – situations in which a buyer pays more for an item than it is worth – should cease to exist. Once the bidding reaches the value of the gift card, bidders logically should stop bidding on that item and bid on another identical item. The existence of winner's curse, however, was found in auctions of all three gift card types studied to greatly varying degrees: Home Depot, Walmart, and Amazon.

Literature Review

While literature exists that focuses on auctions (traditional and electronic), little exists incorporating retail gift cards or other items of truly objective value (Dulaney & Wiese, 2011). Studies have been done that focused on transactions involving Magic trading cards (Lucking-Reiley, 1999), collectible stamps (Dewan & Hsu, 2001), guitars (Eaton, 2005), and Morgan Dollars (Melnik & Alm, 2005), as well as mint and proof sets of U.S. coins prepared directly by the Treasury and uncirculated (Bajari & Hortacsu, 2003). Even though Bajari and Hortacsu used mint and proof sets of coins as their area of focus, there is still a subjectivity involved in their value. Less than 10% of the listings discussed blemishes, and comparisons were done to book value – something which dealers may not use as often as collectors (and which can change substantially). Variables in that study included the number of bidders, the feedback on the buyer and seller (overall and negative), book value, highest bid, and timing of bids. Winner's curse was the focus of their study and they defined it not as an amount greater than value, but as the percentage decline in bids in response to one additional bidder in the auction. Published in 2003, the authors used a dataset of coin auctions collected during a very brief (four day) period: from September 28 to October 2, 1998. This is a time when electronic auctions were still in their infancy (1998), and eBay did not have the same large number of listings and members it does today.

Research Hypotheses

The purpose of this study is to identify factors that contribute to winner's curse associated with the final selling price of a homogeneous good with only a purely objective value on eBay. These gift cards have no subjective element and should not sell above their market value. From an objective standpoint, the value of a $100 gift card is worth nothing more than $100. The gift card can be used to purchase $100 worth of merchandise (it cannot, by company policy, be exchanged for cash), does not decline in value until used, and has no expiration date. Since the cards cannot be returned to the retailer by those who prefer cash, a thriving business is disposing of them in online auctions.

The variables this study focused on are:

- Whether there was a separate shipping charge on the gift card or not
- The number of bids the card received while it was listed in the auction
- The percent of positive feedback score associated with the seller

Figure 1 offers a graphical representation of these variables, as well as an introduction to the three hypotheses.

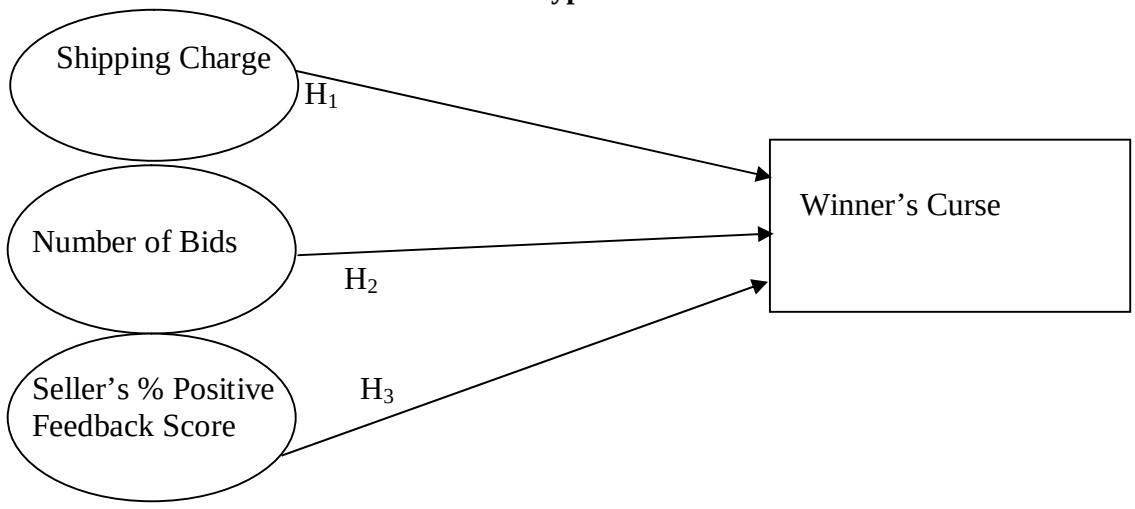

Figure 1: Graphical Representation of Hypotheses

The three variables shown in Figure 1, and related hypothesis/hypotheses for each, are discussed in the following sections. For the purpose of the study, winner's curse is defined as receiving anything more than the value of the gift card. If the selling price and the shipping price combined is one cent more than the value of the gift card, then winner's curse has occurred.

Hypothesis One – Shipping Charge

The seller can choose to include the cost of shipping with the price of the card ("free shipping"), or charge an extra fee for it. The following hypothesis relates to the description that appears when a potential buyer views or bids on an item: H1: An additional charge for shipping will be a significant factor in the occurrence of winner's curse associated with the auctioned card.

Hypothesis Two – Number of Bids

In traditional auctions (those requiring a physical presence of the buyers at the location where the auction is transpiring), bidders can interpret bidding activity by others as an assessment of value – "If everyone else thinks this item is that valuable, then it must be and I should think of it that way, as well." Using activity as a proxy for appraisal, a herding mentality can occur in which many bidders begin competing for one item, even though there may be many similar items being ignored or overlooked. The herding mentality that can take place at a physical location can transpire with eBay auctions as well. When a potential buyer is presented with a large number of listings of identical items, they may focus their attention on the one others have identified as most valuable, as noted by bidding activity, and choose to bid on that listing themselves. Since bids are taken in increments, with each having to be higher than all previous, the herding that takes place around a particular card could result in it selling for a higher percentage than other cards offered at the same time. Conversely, given the incremental nature of the bidding process a high number of bids could be a manifestation of a lower than normal starting price, but it has been suggested that the minimum bid (starting price) is not statistically significant (Lucking-Reiley et al., 1999).It should be noted that the eBay listing shows the number of bids, and this is the variable the potential bidder sees on the primary listing page. A limitation to this is that the number of bids may not be indicative of the number of the bidders (Lucking-Reiley et al., 1999). A bid history of 10 could indicate that ten unique individuals bid on the item, or that two people bid five times each to try to win the item from the other. Findings indicate that the minimum bid amount a seller chooses when listing an item has a "significant negative correlation with the number of bidders" (Bajari & Hortacsu, 2003); meaning that the starting price – as chosen by the seller - will affect the number of bids received. The second hypothesis is: H2: The number of bids a gift card receives will be a significant factor in the occurrence of winner's curse associated with the auctioned card.

Hypothesis Three – Seller's Percent of Positive Feedback Score

There are two feedback numbers associated with a seller that a potential buyer can immediately see when looking at an auction. One of these is meant to represent the number of previous auctions the seller has been involved in – as either a buyer or seller – and the second is the percentage of feedback associated with those previous auctions that is positive. Both of these numbers are mathematically manipulated to remove older auctions, include only feedback that has been recorded (there could be dozens of auctions in which the other party did not leave feedback and thus it is not calculated in), and slant more toward positive than negative. Literature suggests that negative feedback is not common even when deserved due to the perceived potential for retaliation (Pinker et al., 2003); there is a fear that if I say you are a bad seller, you will say I is a bad buyer. While feedback is left on over half the transactions, it is only negative 0.3% of the time (Resnick & Zeckhauser, 2001).Lacking other data with which to judge the seller, a bidder may interpret a high positive feedback percentage as an indication that the seller is more likely to be trusted. A number of studies have focused on the reputation of the seller, and the prevailing sentiment can be summed up as follows: "the evidence strongly suggests that reputation matters when it comes to prices and the probability of a sale" (Brown & Morgan, 2006) as well as the probability that a bid will even be placed (Rafaeli & Noy, 2005). A perception that exists is that a higher seller reputation can be indicative of excellent service in all aspects of the transaction including "advertised service accuracy, product description accuracy, delivery efficiency, and post transaction communication" (McDonald & Slawson Jr, 2002). In a study of 460 auctions, it was found that "…despite the lack of motivation for participants to provide negative feedback, seller reputation significantly affects the price submitted by the highest bidder" (McDonald & Slawson Jr, 2002).
Even though one buyer may never buy from the same seller again, the feedback from them represents a reputation system "so important for fostering trust among strangers" (Resnick et al., 2000). It is implied that there is a tradeoff between anonymity and accountability (Friedman & Resnick, 2001) and by telling something about yourself – be it only that you have engaged in successful past transactions and have a 100% positive feedback percentage – you are appearing as more of a trustworthy person and less as an anonymous being. Buyers may want to purchase from sellers with a higher percentage of positive feedback and reward those sellers with higher returns.

The third hypothesis thus is: H3: The percent of positive feedback associated with a seller will be a significant factor in the occurrence of winner's curse associated with the auctioned card. All of these variables are included in the listing and appear each time the listing for a gift card is viewed.

Research Method

A quantitative study was done of all Home Depot, Walmart, and Amazon gift cards sold on eBay that utilized the standard auction format during the summer of 2016 in overlapping time periods. It is not believed that any external events occurred during this time period, which would make this time frame different from any other. The data collection was possible due to a feature eBay offers that allows completed listings to be available for viewing for several days after the completion of the auction. During the time period studied, the completed listings were accessed using the search criteria "home depot gift card", "Walmart gift card", and "amazon gift card". Only those transactions involving auctions were examined: on any given day, approximately half of all gift card listings are posted with the Buy It Now feature.

Some buyers and sellers choose to remain "private," and these masks the values that would otherwise appear in numeric fields, thus those entries were removed from consideration. A total of 1948 entries were entered into a spreadsheet and verified and then linear regression was used to analyze the data and assess the association between the dependent variable (winner's curse) and independent variables, and to test the effect of each independent variable as a predictor of the winner's curse. The expected equation was:
Winner's Curse = a - B1SC + B 2BIDS + B 3POS

Where a is equal to the intercept, while coefficient B is equal to the magnitude of each of the variables and may take on any value greater than zero. SC is the shipping charge for the card in dollars, BIDS is the number of bids the card received, and POS is the percentage of positive feedback associated with the seller. All the independent variables have continuous values thus B indicates the contribution to winner's curse (measured as the percentage of total card value obtained as a proxy) occurring with the change in each increment.

Results

A total of 1948 complete observations were collected and verified during the observation period from June 13, 2016 to September 7, 2016. Table 1 offers a snapshot of the descriptive statistics for each variable studied in each of the observation sets. The text that follows elaborates more on each.

	Home Depot Gift Cards Auctioned	**Walmart Gift Cards Auctioned**	**Amazon Gift Cards Auctioned**
Observation Period	6/13/2016 – 8/13/2016	6/24/2016 – 7/30/2016	7/06/2016 – 9/07/2016
Number of cards auctioned	553	400	995
Unique sellers	283	170	425
# Cards selling below value	535	104	228
# Cards selling at value	6	9	62
# Cards selling above value	12	287	705
% Winner's curse	2.17%	71.75%	70.85%

Table 1: Descriptive Statistics on Each Observation SetOf the sellers, there were two that sold all three types of gift cards during the respective observation periods. There were fourteen that sold both Home Depot and Walmart gift cards, three that sold both Home Depot and Amazon gift cards, and six that sold both Walmart and Amazon gift cards. The total number of unique sellers for the entire observation period thus was 851.

Tables 2, 3, and 4 offer a snapshot of the descriptive statistics for each of the studied variables for Home Depot, Walmart, and Amazon, respectively.

Variable	Min. Value	Max. Value	Mean	Std. Deviation	Kurtosis	Skewness
Shipping Charge (SC)	$0.00	$11.15	$0.98	1.63	3.52	1.71
Number of Bids (BIDS)	1	83	9.69	9.58	10.61	2.64
Seller's % Positive Feedback (POS)	0%	100%	96.85%	14.51	38.08	-6.19

Table 2: Descriptive Statistics on Variables for Home Depot Gift Card Auctions

The Home Depot numbers are more difficult to analyze for winner's curse than the other auctions simply because only 12 sold for more than 100% of their value. Of those, there is a negligible difference between the mean shipping charge for those above 100% ($0.95) and those at or below ($0.98). There is a noteworthy difference, however, in the number of bids with those selling for more than 100% of their value having a mean of 15.58 bids compared to 9.56 for those selling at or below their value.

Variable	Min. Value	Max. Value	Mean	Std. Deviation	Kurtosis	Skewness
Shipping Charge (SC)	$0.00	$35.00	$0.75	2.19	151.79	10.28
Number of Bids (BIDS)	1	59	9.03	8.45	7.75	2.4
Seller's % Positive Feedback (POS)	0%	100%	96.9%	14.98	37.14	-6.16

Table 3: Descriptive Statistics on Variables for Walmart Gift Card Auctions

In the Walmart card auctions, there is also very little difference in the mean for shipping charges between cards that sold above 100% ($0.77) and those at or below ($0.71). There is a sizable difference, however, in the number of bids with those selling for more than 100% of their value having a mean of 9.9 bids compared to 6.8 for those selling at or below their value.

Variable	Min. Value	Max. Value	Mean	Std. Deviation	Kurtosis	Skewness
Shipping Charge (SC)	$0.00	$40.00	$0.98	2.29	91.92	6.88
Number of Bids (BIDS)	1	88	8.97	9.55	14.74	2.99
Seller's % Positive Feedback (POS)	0%	100%	94.08%	22.14	13.77	-3.94

Table 4: Descriptive Statistics on Variables for Amazon Gift Card Auctions

Continuing the trend, with the Amazon card auctions, there is a suggestive difference in the mean for BIDS based on whether the cards sold above 100% (9.7) or not (7.2). Unlike the other datasets, there is noticeable difference in the mean for shipping charges between cards that sold above 100% ($1.08) and those at or below ($0.72). The percent of total card values obtained through the auctions ranged from 3% to 260% while the mean was 108%. The objective value of the gift cards ranged from $1 to $1056.68. It should be noted that eBay specifically forbids the sale of gift cards in excess of $500, but many listings were for cards above this amount. The mean was $151.63 and both kurtosis and skew values are within the acceptable range. The seller's feedback score ranged from -3 to 79,287 while the mean was 939. IBM SPSS Statistics 19 was used for the regression analysis and a number of transactions were eliminated before the exploration was done. These included four outliers: one card that sold for 3.4% of its value whereas no other card sold for less than 74% could represent an error in the listing, and three cards that sold for more than seven times their value could be indicative of fraud.

Additionally, 113 listings that sold at 100% or more of their value but had only one bid were removed since the purpose of this study was to focus on auctions and a listing ending with only one bid above card value is not an auction but likely a buy-it-now transaction mislabeled. This reduced the total number of transactions analyzed to 1831.Adjusted R Square 0.02 and a significant relationship between winner's curse and the positive feedback on the seller (POS) was not identified at a 95% Confidence Interval level. The association between the percent of card value obtained in the auction (proxy for winner's curse) and both shipping charge (SC) and BIDS is significant. With the estimated coefficient (B) signifying the expected change associated with a change in the variable when all other independent variables remain the same, according to the regression model, the predicted final selling percentage would be: Winner's CurseB = (1.031*1) - (.0058*SC) + (.0028*BIDS)

Each of the three individual hypotheses are examined and evaluated based upon the results of the study. Shipping Charge with a t-stat of -2.37 and a p-value of .0176, there is a negative correlation between the percentage of gift card value obtained and the amount of shipping charged.

The original hypothesis was that there would be a positive correlation – the more that was charged, the higher the return would be – and the opposite was found to be the case. Number of bids with a t-stat of 5.94 and a p-value near 0, there is a correlation between the number of bids and the percentage of gift card value obtained. Both the hypothesis and the positive correlation are statistically supported with each additional bid adding 0.2% more return. Seller's percent positive feedback score. The linear regression did not find a supportable association between the seller's percent positive feedback score and the final percentage of gift card value obtained. This hypothesis is not supported.

Discussion and Implications

The linear regression results indicate that shipping charges and the number of bids obtained in a gift card auction on eBay do influence the percentage of total value obtained for the card within the full dataset at the .05 level of significance. Table 5 relays the variables and estimated coefficients identified as statistically significant by the regression analysis for both the full data set:

	All Auctions
Intercept	1.031
Shipping	-.0058
Bids	.0028

Table 5: Variables affecting Total Value Obtained and their Coefficient Values

The relevance of these findings is meaningful for the practitioner selling cards on eBay due in part to the number of options available to them. Some of the discoveries include:

- The percent of positive feedback the seller has is not shown to statistically factor into the occurrence of winner's curse as measured by the percentage of gift card value obtained. Implication: While it is always important to maintain a good reputation, a few bad rankings will not negatively affect the return for an auctioned card.
- Charging a separate amount for shipping, rather than including it for free with the auction, reduces the overall amount of return in the auction, but eBay does not charge a commission on the shipping portion of the auction: the commission-based fee is based on the selling price of the item only and not assessed on shipping fees. A seller who charges a $200 shipping fee on a $400 card, for example, could conceivably save $7 in final value fees. Implication: Sellers should weigh returns obtainable through the assessment of a separate fee for shipping against any reductions in return they might incur in the final bid price.
- The more bids there are on a listing, the more return is possible. A lower starting price can attract more bidders and more bidders can generate more bids. Some literature suggests that bidders are more likely to bid if a seller has even a few positive reports (Livingston, 2005) but once a few positives have been gained, the additional reports have "little or no impact on seller welfare" (Livingston, 2005). Beyond a base amount, returns to reputation in auctions do not increase greatly (Easton, 2005) (Houser & Wooders, 2006) (Lucking-Reiley et al., 1999).

A longer auction time (three days instead of one for the listing, for example) could conceivably allow more bidders to see the auction however the vast majority of bidding is done in the final period of most listings as opposed to any other time. Implication: Sellers should encourage more bids on their listings by using lower starting prices and ending the auctions during time periods of heavy bidding.

Conclusions

This study contributes to the literature by identifying two factors that influence winner's curse, as measured by the percentage of total value obtained in auctions of a homogeneous good, within a perfectly competitive market. The linear regression results indicate that shipping charges and number of bids influence the percentage of total value obtained for the card within the full dataset at the .05 level of significance.

Future Research

There are a number of areas where further/future research is warranted. Many possibilities were uncovered during the course of this project; however, due to design they could not be analyzed further. Among the most prominent and promising of possible areas for future research are the following:

- The percentage of winner's curse auctions involving fraud. While anecdotal evidence suggests the presence of fraud, the format of eBay listings – in particular the anonymity of buyer and seller – make it difficult to identify.
- Identifying why some buyers routinely bid higher than others bid and win auctions even if it means the transaction ends in winner's curse.

Limitations of the Study

There were a number of limitations to the study. The first noteworthy is that the study only focused on eBay gift card auctions of three varieties and looked at a limited number of factors. As such, the results may not be generalizable to products not so easily described or homogeneous to shoppers. Many additional factors affect the market for gifts cards within the auction such as the economy, and the number of locations (physical and virtual) selling gift cards. Other factors within eBay include the number of cards listed that are not being auctioned ("Buy it now" format), the fees eBay assesses for postings (including specials they may offer), and cards listed but not sold. Other sites, such as GiftCardRescue.com, plasticjungle.com, and MonsterGiftCard.com have been started, and provide another venue for individuals with unwanted gift cards. Their existence could cause the listing's starting price of cards to be set comparable to what could be found on. Lastly, results can be stated only as they apply to the product and time frame studied.

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