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Determinants of Buy-It-Now Auction Choice on eBay

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Abstract

New rules that are not found in traditional auctions have surfaced in Internet auctions. One such rule is the buyout option, which allows a bidder to end the auction immediately by purchasing the item at a buyout price specified by the seller. Very little research has been carried out to examine the buyout option. This study conducted an exploratory analysis of the various factors affecting bidders' choice of this new alternative. 1087 auction data of the Ty Beanie Baby Bears category at the eBay auction site were collected and analysed. The major findings from the empirical study are that the likelihood of bidders choosing the buyout option could be increased if sellers set (a) a lower buyout price with reference to other online prices, (b) a buyout price that is close to the starting minimum bid and (c) a longer duration for their auctions.

Keywords

Internet auction, buyout option, eBay, "Buy It Now" option, "Buy It Now" price

1. Introduction

Internet auction has gained tremendous popularity since its inception in 1995. As a new type of economic exchange mechanism in the electronic commerce, it has caught immense attention from both mass media and academy. An online survey conducted by Nielsen//NetRatings and Harris Interactive eCommercePulse shows that by May of 2001, Internet auction revenue claimed a 10 percent stake of overall Internet spending, over 6.2 million Internet users bought at Internet auctions with a total spending of US\$556 million in May 2001¹. The popular press has estimated consumer-to-consumer (C2C) online auction revenue at more than US\$15 billion in 2004 (Lake 2000).

Internet auctions operate in different formats and manners from traditional auctions. Sellers and bidders enjoy high autonomy and flexibility geographically and temporarily under these new rules and formats (Lucking-Reiley 2000). In recent years a striking phenomenon in

¹ Source: "eBay.com Generates 64 Percent of Total Auction Revenues for May 2001", *BUSINESS WIRE*, New York, Jun 28, 2001, http://www.corporateir.net/ireye/ir_site.zhtml?ticker=NTRT&script=411&layout=-6&item_id=186

online C2C auction markets is the rise of a new selling mechanism – auction with a “buyout” option. It has been adopted by major Internet auction sites, such as eBay, Yahoo!Auction, Amazon, Bid-or-Buy. The buyout option of an auction allows sellers to specify a threshold fixed price at which they are willing to sell an item, so that bidders could end the auction immediately by purchasing the item at the designated fixed buyout price. Internet auction sites intend to provide an opportunity to bidders who are unwilling to wait until the end of an auction, to obtain the auctioned items instantly at fair prices, and to enable sellers to sell their listed goods faster for the prices they want.

Buyout option has become an important feature that continues to drive seller success and increase the trade volume in some Internet auction sites. For example, at eBay - the world's leading Internet auction site, the “Buy It Now” – a temporary buyout option, was the primary source of the fixed price offering which contributed, in aggregate, approximately US\$1.1 billion or 24% of total Gross Merchandise Sales during the fourth quarter of 2002².

In light of the growing importance of Internet auction and the fact that Internet auction differs from traditional auction in many aspects, a large amount of research has studied the exchange mechanism in Internet auction. However, up to date there are very few papers examining the buyout option. This paper seeks to fill this gap by conducting an exploratory analysis to unravel the factors affecting bidders' decision-making to exercise the buyout option. A research model encompassing bidders' choice of exercising buyout option and the potential determinants was developed. Auction data from eBay were collected and analyzed.

Findings from this study have both academic and practical implications. They represent initial steps toward building a generalized theory of Internet auction. Understanding the bidding behavior of auction participants with respect to buyout option would help sellers to not only increase the possibility to sell off their items, but also get reasonably good prices from buyers. Similarly, our findings would help online auction houses to provide better advice and more useful tools to their clients, to improve their revenues from the increased “inventory turnover”, and to achieve a better reputation as an efficient Internet auction site.

2. Conceptualization and Hypotheses

Despite the increasing interest in studying Internet auction since the early 1990s, there is very limited work on the buyout option, which was not until recently adopted by major Internet auction sites. The few previous papers on buyout option mainly focus on modeling the impact of varying attitudes toward risk of the participants in auctions with buyout options, especially the impact on sellers' revenue. Budish and Takeyama (2001) examined a model of an English auction with a permanent buyout price. It found that sellers' expected profits tend to increase with a buyout price when they faced with risk-averse bidders. Moreover, it shows that when bidders are risk-averse, the expected revenue of the seller in an English auction with a buyout price is higher than that in either a standard first-price sealed-bid or Dutch auction. This finding is contrary to the conclusion made from a benchmark model in offline auction in McAfee and McMillan (1987).

Mathews (2001a, 2001b and 2001c) analyzed models of buyout option resembling the temporary buyout option at eBay. The major findings are as follows: 1. a risk neutral seller

² Source: “eBay Inc. Announces Fourth Quarter and Year End 2002 Financial Result” (<http://www.shareholder.com/eBay/news/20030116-99663.htm>)

facing risk neutral bidders will choose a buyout price such that the buyout option will not be “exercised” in equilibrium. However, if either the seller, bidders or both are risk averse, these can lead to the seller offering a buyout price such that the option will be exercised with positive probability in equilibrium. 2. When market participants are not “time sensitive”, the seller will not select a buyout price that will be exercised in equilibrium. When market participants are time impatient (i.e. they prefer the auction to end sooner, all other things being equal), the seller will select a buyout price that will result in the buyout option being exercised in equilibrium. 3. When sellers can select two buyout prices for an item, a risk neutral seller facing risk neutral bidders will select a series of buyout prices that will not be exercised in equilibrium. A risk-averse seller, however, will select a series of buyout prices that will allow each option to be exercised in equilibrium. Moreover, seller who is risk-averse will actually prefer to sell the item with two buyout options rather than a single buyout option, when faced with risk neutral bidders.

This paper focuses on examining the buyers’ decision making in auctions with temporary buyout option. There are basically two types of buyout option in Internet auction, namely the “permanent” buyout option and the “temporary” buyout option (Mathews 2001a). A buyout option is “permanent” when it is available throughout the duration of the auction. A bidder has the opportunity to choose the buyout option anytime during the course of bidding. Examples of auction sites offering the “permanent” buyout options include Yahoo! and Amazon³. On the other hand, the “temporary” buyout option may not be available for the whole duration of auction. A good example is the “Buy It Now” at eBay, which is only available when no traditional bids have been placed in the auction.

eBay launched the “Buy It Now” feature near the end of 2000, resulting from its extensive customer research which shows that many bidders and sellers wanted to have the ability of completing a transaction faster at the Internet auction site (Dennehy 2000). With this feature, the seller can set a “Buy It Now” price at which the bidder could instantly purchase the listed item without the bidding process. This option is temporary in that it is only available when no bids have been placed. This means that the first bidder has a choice between ending the auction with “Buy It Now” and placing her bid for the item. If the bidder chooses the “Buy It Now” option, the auction will end immediately with her getting the item and paying the “Buy It Now” price. If the first bidder chooses to place a bid for that item, the “Buy It Now” option will disappear and the auction will continue as a normal auction and close at the ending time specified by the seller.

Drawing on our understanding of eBay’s temporary buyout option and the few existing research work, we identified the following factors that might influence buyers’ decision to exercise the buyout option: the difference between the online price and the buyout price, the difference between the buyout price and the minimum bid, seller’s reputation and the auction duration.

2.1 Relative Prices

In a typical Internet auction, a bidder’s payoff equals to the difference between her valuation of the auctioned item and the amount she has to pay for it, if she wins the auction. A bidder’s payoff is zero if she does not obtain the goods. In an auction with buyout option, a bidder’s payoff is the difference between her valuation of the item and the buyout price if she

³ Please see <http://auctions.yahoo.com>, and <http://s1.amazon.com> for details.

exercises the buyout option instead of placing bids. Motivated by obtaining the optimal economic gain from the purchase, obviously a bidder's choice of buyout option is primarily determined by her valuation of the item with respect to the buyout price set by the seller.

When valuating the goods listed in auction sites, the bidders often turn to the online shopping price as a reference. In a study conducted by Ernst and Young, 75% of those surveyed cited lower prices as an important motivator to shopping online. The presence of shopping search engines allows consumers to search and compare online prices, among other features of the product, effortlessly. If the buyout price of an auctioned item is less than the online prices offered by other vendors, it is more likely a bidder will choose the buyout option. Hence, we hypothesize that:

Hypothesis 1: The likelihood of a bidder choosing the buyout option is positively related to the difference between the online price and the buyout price.

The minimum bid is the opening price set by the seller. Previous studies on Internet auction have suggested that setting a low minimum bid tends to increase seller's profit (e.g., Lucking-Reiley, Bryan, Prasad & Reeves 2000). In an auction with buyout option, the bidder will have to pay either the buyout price if she exercises the buyout option or a final price if she wins the item by submitting the highest bids among competitors. Normally the buyout option price or the final price is higher than the minimum bid. When facing the buyout option choice, the bidder would compare the fixed buyout price and the expected final price upon winning the item through the bidding process. If she expects to win the auctioned goods at a lower price than the buyout price, she would not choose the buyout option. The bidder would assess the possibility of paying less through the normal auction process than through exercising the buyout option. The larger the difference between the buyout price and the minimum bid, the higher the probability of final winning price falling between buyout price and the minimum bid. Based on the above reasoning, we hypothesize that:

Hypothesis 2: The likelihood of a bidder choosing the buyout option is negatively related to the difference between the buyout price and the minimum bid.

2.2 Seller's Reputation

Participant's reputation has been recognized as a critical issue in Internet auction (Melnik & Alm 2000). Fraudulent behavior is possible because Internet auction permits virtually anonymous interactions. Online winning bidders cannot guarantee receiving the goods after they have made the payments. They must trust the "unknown" sellers to send them the items. In fact, online auction fraud is one of the leading types of complaints that the Federal Trade Commission received about Internet commerce (Keegan 1999).

Likewise, if the seller has a good reputation, the bidder might perceive that the buyout price for the listed item is reasonably set according to its value, thus she will feel more comfortable to purchase the goods at the buyout price. The feedback system at eBay is well publicized as functioning as the reputation mechanism for the participants, which is made up of a feedback rating number and detailed feedback comments. Under this rating system, the seller or buyer receives +1 point for each positive comment, 0 points for each neutral comment and -1 point for each negative comment. Anyone whose cumulative total rating goes below -4 will be penalized in the form of debarment. The cumulative total rating is presumably a sign of the participants' reputations, thus we hypothesize that:

Hypothesis 3: The likelihood of a bidder choosing the buyout option is positively related to the reputation of the seller.

2.3 Auction Duration

Generally the buyer is more inclined to choose the buyout option if the price she is willing to pay for the listed goods is higher than the fixed buyout price. From the consumer's perspective, price can be defined as what the consumer must give up to purchase a product or service. Researchers in marketing have identified the following components that make up the price the consumer is willing to pay: (a) Money, (b) Time, (c) Cognitive Activity, (d) Behavior Effort, and (e) Value (Peter & Olson 1990). When other conditions are the same, the increase of any of the above components will lead to an increased price the consumer is willing to pay, thus a higher possibility that this price exceeds the buyout price. Therefore, for the same auctioned goods, the higher the time cost in purchasing the item, the more likely that the buyer would exercise the buyout option.

The time cost of buying the products by auction is largely determined by the auction duration. Unlike the traditional auction in which the auction duration is usually pre-set by the auctioneer, the Internet auction allows the seller to specify the starting and ending time. In general, the auction length in eBay could be extended to as long as ten days. It enables online bidders to have higher flexibility in bidding for their desired items. However, an auction with a longer duration also impose higher delay and monitoring costs on bidders, because they have to wait a longer time for a transaction to end, and have to keep watching on the auction and revising their bids when eBay's "proxy bidding"⁴ system informs them that they are out-bid by other bidders (Vakrat & Siedmann 2000). All these impose a cost on the bidder's time. Base on the above reasoning, we hypothesize that:

Hypothesis 4: The likelihood of a bidder choosing the buyout option is positively related to the duration of the auction.

3. Research Method

We collected the auction data of "Ty Beanie Baby Bears" - plush toy bears under stuffed with PVC or PE pellets⁷, from eBay's website between August 18, 2001 and October 2, 2001. "Ty Beanie Baby Bears" was selected because this category contains very rich transactions. With the increasing popularity of Ty Beanie Babies since the later half of 1997, Internet auction sites have become an important secondary market for collectors to find the particular toys that cannot be found in retail stores anymore, as well as a market for newly released Beanie Babies⁵. Besides, the online price for each type of beanie baby bear was obtained from "Beanie Best Buy.com" (www.beaniebestbuy.com), an online store selling a large selection of Ty Beanie Babies Bears. It claims that the prices it offered are the lowest available⁶. Thus the prices from this store were used to represent the lowest prices (best

⁴ Please see Bajari and Hortacsu (2001) for details of "proxy bidding".

⁵ Source: <http://www.worldcollectorsnet.com/beanie>

⁶ A check of some other online stores showed that on average, Ty Beanie Babies Bears are cheaper on Beanie Best Buy.com.

bargain) bidders can get from buying online.

A software written in the programming language *Perl*, running on the Windows platform, was used to automatically collect the data. The use of a computer program in data collection improves the recording accuracy and efficiency. Our software worked as follows. It visited the eBay home page, extracted the link “Doll and Bear” and it followed the web URL (universal resource locator) to the page that contained the first 50 of auctions in this category. It then followed the URL to each page of these 50 auctions, and extracted the details of the auction history and saved them into a database. The details included the ID of the auction, seller’s ID, seller’s feedback ratings, description of auctioned item, “Buy It Now” price, and starting minimum bid. The same procedures were then carried out for all auctions on subsequent pages. There could be 20 to 30 such pages daily.

After the collection process, we revisited the raw data and sorted out the auctions with “Buy It Now” option set by the seller. Then we filtered the records according to the following selection criteria. First, auctions of items other than Ty Beanie Baby Bears were removed. Second, only auctions selling a single Ty Beanie Baby Bear in “Mint condition with Mint tag” (MWMT) were included. Further, these sellers have to be registered users of eBay. Auctions with item listing revised by sellers (for example, description, first bids, or “Buy It Now” changed) were not included. Finally, to improve the analysis accuracy, we also excluded those auctions in which the online prices of “Beanie Baby Bears” cannot be found from “Beanie Best Buy.com”.

A sample of 1,904 transaction records of auctions with “Buy It Now” options were obtained, including 1,087 records ending with a sale and 817 records ending without sale. For each record ending with a sale, the following data were recorded (variable names used in the analysis model are displayed in brackets):

- The ID of the auction
- The description of the type of bear
- Whether the auction ends with “Buy It Now” (*BIN*); 1 if so else 0
- The final price of the auction (*fprice*)
- The online price of the bear (*oprice*)
- The “Buy It Now” price (*bprice*)
- The starting minimum bid (*mbid*)
- The ID of the winning bidder, if there is any
- The ID of the seller
- The seller’s overall feedback rating (*srating*)
- The length of the auction in days (*duration*)

A small scale follow-up survey was conducted to complement our data analyses. A questionnaire with eight questions concerning views on “Buy It Now” option was sent to 266 bidders who chose the “Buy It Now” option in the sample we collected. Bidders’ email addresses were obtained from eBay’s “Contact and eBay member form”. A total of 30 bidders (11.2%) responded to our questionnaire. Though the sample size is too small to represent the whole population of eBay bidders, the questionnaire could help us understand better the reasons for bidders’ choosing the buyout option.

4. Data Analyses and Results

The dependent variable measuring the bidder's choice of the "Buy It Now" option is *BIN*, which is equal to 1 if the auction ended with "Buy It Now" and 0 otherwise. Logistic regression model is used to estimate the factors that influence the bidder's choice of the "Buy It Now" option because a linear probability model may predict probability values beyond the (0, 1) range (Menard 1995). The statistical model is constructed as follows:

$$Y = \ln(\tilde{n} / 1 - \tilde{n}) = \hat{\alpha}_0 + \hat{\alpha}_1 \text{Difference1} + \hat{\alpha}_2 \text{Difference2} + \hat{\alpha}_3 \text{Rating} + \hat{\alpha}_4 \text{Duration} + \hat{\alpha}$$

where \tilde{n} is the probability of the bidder choosing the buyout option, and $(\tilde{n} / 1 - \tilde{n})$ is the odds of the bidder choosing the buyout option. *Difference1* is the ratio of the difference between online price and "Buy It Now" price, to the online price ($\text{Difference1} = (\text{oprice} - \text{bprice}) / \text{oprice}$). *Difference2* is the ratio of the difference between "Buy It Now" price and the minimum bid, to the "Buy It Now" price ($\text{Difference2} = (\text{bprice} - \text{mbid}) / \text{bprice}$). Ratios, instead of the absolute values of the price difference, are used so that the comparison of auctions with items of different values could be made. *Rating* is the natural logarithm of seller's overall feedback rating ($\text{Rating} = \ln(\text{srating} + 1)$). We add 1 to *srating* before taking logarithms to avoid taking the logarithm of zero for some observations. *Duration* is the length of the auction (*duration*).

Table 1 and 2 display the descriptive statistics of the two groups of data: transactions ended with the "Buy It Now" option exercised and transactions ended with normal auction prices ("Buy It Now" option was not exercised).

Variable	N	Minimum	Maximum	Mean	Std. Deviation
<i>Difference1</i>	373	-1.0182	0.8319	0.1457	0.2617
<i>Difference2</i>	373	0.0000	0.9677	0.2800	0.2230
<i>Rating</i>	373	2.3979	9.4201	6.5992	1.4375
<i>Duration</i>	373	3.0000	10.0000	4.7989	1.9973

Table 1. Descriptive Statistics of "Ended With 'Buy It Now'" Sample

Variable	N	Minimum	Maximum	Mean	Std. Deviation
<i>Difference1</i>	714	-4.0251	0.6639	-0.0754	0.4120
<i>Difference2</i>	714	0.0017	0.9998	0.5634	0.2833
<i>Rating</i>	714	0.0000	9.4200	6.7283	1.4393
<i>Duration</i>	714	3.0000	10.0000	4.4692	1.7509

Table 2. Descriptive Statistics of "Not-Ended With 'Buy It Now'" Sample

The descriptive statistics show that the mean of the variable *Difference1* is positive (0.1457) in the "Ended With 'Buy It Now'" sample whereas it is negative (-0.0754) in the "Not-Ended With 'Buy It Now'" sample, suggesting that on average, the "Buy It Now" prices are lower than the online prices in auctions that ended with "Buy It Now", while the "Buy It Now" prices are higher than the online prices in auctions that ended with normal bidding process. Averagely the difference between minimum bid and buyout price is smaller in auctions that the bidder chose the "Buy It Now" option than in auctions that the bidder chose

to acquire the bear by normal eBay bidding procedure (*Difference2*: $0.28 < 0.56$). The *Rating* and *Duration* are fairly close in the two samples.

Binary Logistic Regression was performed on the 1,087 records ending with a sale. A five percent significance level was used for all statistical tests. Table 3 shows the estimation results.

Variables	B	S.E.	Wald	Sig.	Exp(B)	95% CI for Exp(B)	
						Lower	Higher
<i>Difference1</i>	1.610	0.287	31.375	0.000**	5.004	2.849	8.791
<i>Difference2</i>	-3.859	0.321	144.079	0.000**	0.021	0.011	0.040
<i>Rating</i>	0.028	0.053	0.282	0.596	1.029	0.927	1.142
<i>Duration</i>	0.088	0.041	4.665	0.031*	1.092	1.008	1.182
<i>Constant</i>	0.235	0.425	0.305	0.581	1.265		

B - unstandardized logistic regression coefficient;

Exp(B) – exponential raised to the power of B; CI – confidence interval.

* significant at 5 % level. ** significant at 1 % level.

Table 3. Estimation Results of the Binary Logistic Regression

The overall fitness of the model is established by the Hosmer and Lemeshow test (chi-square = 11.34, significant) (Hosmer & Lemeshow 1989). The Nagelkerke R-square1 value is 0.335, indicating that the predicted variables account for 33.5% of variance of the dependent variable. The overall percentage of cases classified correctly by the model is 74.3 %, which also shows that the model achieves a fair degree of adequacy for predicting the dependent variable.

Both *Difference1* and *Duration* have significant and positive effects on the log odds of choosing “Buy It Now”. The statistic results show that the odds of a bidder choosing “Buy It Now” increases by a factor of 5 when the ratio of the difference between the online price and “Buy It Now” price to the online price increases by 1 unit (when other variables are controlled). When the duration of an auction increases by 1 day, the odds of a bidder choosing “Buy It Now” increase by 1.092 times. *Difference2* has a negative significant effect on log odds of choosing “Buy It Now”. When the ratio of the difference between the “Buy It Now” price and the minimum bid to the “Buy It Now” price increases, the odds of a bidder choosing the “Buy It Now” option decrease. *Rating* exerts a positive effect on the log odds of choosing “Buy It Now”, but its effect is not statistically significant. Hence, H1, H2 and H4 were supported.

5. Discussion and Conclusion

This study provides strong empirical evidence that the buyout option facilitates the faster closing of auctions on eBay. About 49% of the auction in our raw data offered the “Buy It Now” option, and auctions with “Buy It Now” exercised were closed days before sellers’ scheduled ending time. Findings from this study help unravel the factors determining the bidder’s choice of temporal buyout option in Internet auction.

In line with our hypothesis, the online price plays the role of reference price that greatly influences bidder’s choice of the buyout option. When the buyout price is lower than the

online price, the bidder is more likely to purchase the item instantly at the buyout price without going through the normal Internet auction process. In our follow-up survey, 50% of the respondents replied that they would compare the “Buy It Now” prices with the prices offered by online stores.

As hypothesized, the gap between the buyout option and the starting minimum bid significantly affect a bidder’s decision in choosing buyout option or initiating the bidding competition. The larger the gap, the more likely that the bidder would choose to bid instead of buying at the buyout price. The survey results show that when asked about whether a large difference between the “Buy It Now” price and the starting minimum bid will deter them from choosing the “Buy It Now” option, about half of the respondents said “yes”.

Bidders’ choice of the buyout option is also greatly determined by the duration of the auction. The longer the auction length set by the seller, the higher the possibility that the bidder would chose the buyout option. As suggested by Vakrat and Siedmann (2000), the lengthy bidding process might impose heavy costs on the bidders. Thus, some bidders may want to choose the buyout option to avoid these costs and acquire their desired items faster. In the questionnaire we collected, 38.7% respondents agree that the duration of an auction is a consideration in choosing the buyout option. 25% of the respondents replied that an auction with a long duration (7 to 10 days) encourages them to use the “Buy It Now” option. In particular, one respondent brought out the fact that he was outbid at the last minute many times, thus auction duration was considered in his decision-making.

Our results also present an unexpected finding. While the reputation of the participant is arguably a critical factor in shopping online, the overall feedback rating of the seller does not significantly affect the bidder choosing the buyout option in our study. One possible reason is that the overall feedback rating is not perceived as a trustworthy sign of a seller’s reputation due to the weakness of the feedback rating system, which has been suggested by some Internet auction researches (e.g., Lucking-Reiley et al. 2000). We observed that the average overall feedback rating of the seller in our sample is very high (mean = 1812.28). Another plausible explanation is that bidders might see no difference between purchasing the item instantly at the buyout price and participating in the bidding process when they are facing sellers with good reputations. Our follow-up questionnaire results support the explanations as that majority of the respondents (67.7%) indicated that they looked at the overall feedback ratings of sellers when asked whether such a rating is a factor affecting their choices from whom to buy the item from, 7 out of the 21 respondents explicitly said that they would check the feedback ratings regardless of whether they choose to exercise buyout option or choose to bid, and 41.9% answered that they would compare the overall feedback ratings of sellers when deciding which auction to accept the “Buy It Now” auction from.

Our paper contributes to understanding the buyer’s decision making when faced with the buyout option in Internet auction. It helps sellers to adopt effective strategies to encourage bidders to make an immediate purchase at the buyout price, so that they could increase their chances of reaching a sale at the price they are willing to sell. For example, sellers should set a reasonable buyout price comparable to the price available online, specify a minimum bid close to the buyout price, or choose a long auction duration. Internet auction sites, such as eBay, could also benefit from the insights provided in this study. They could provide better service to their customers by providing sellers and buyers better advice in using the buyout options or by revising the existing exchange tools, so that they could increase the transaction volume and reap higher revenue. However, caution should be exercised when interpreting

these findings because the nature of this study may reduce the generalizability of its findings to other categories of goods and other Internet auction sites. For example, the impact of seller's feedback rating in auctions of "expensive" items might be different. Moreover, it is also desirable to examine participants' behavior in the permanent buyout option as it is distinct from the temporary buyout option.

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