

Platform Pricing at an Online Two-sided Market

- Evidence from eBay

(Preliminary)

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Abstract

Motivated by the observation that a (monopoly) platform like eBay employs an “upgrading fee” schedule that intensifies the same-side rivalry instead of minimizing it, this project is aimed to empirically examine how a monopoly platform’s pricing and promotion strategies affect its profitability through endogenous choices by end-users on the two sides of the market. To this end, we collected and constructed a distinctive dataset of eBay monitor listings with different fee promotions for Insertion fee, Final Value fee and various “upgrading fees”, such as Border, Item Subtitle and Featured Plus. The main findings include: (1) Sellers and buyers respond to insertion fee promotions and various upgrade fee promotions differently. Insertion fee promotion increases sellers’ participation; while certain upgrading fee promotions deter it. Buyers respond positively to upgrades such as Highlight and Gallery. (2) We show that studies ignoring same-side rivalry effects from upgrading options may suffer from the omitted variable problem and have biased results. (3) Overall, for this specific monitor alone, the loss from reduction in fees from various promotions cannot be recouped from resulting increase in final value fee, except for promotions on Insertion fee and Border.

Key words: Two-sided Market, Platform Pricing, Network Externality

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1 Introduction

There has recently been growing interest in two-sided markets in both the literature and business practice. A two-sided market is composed of three parts: two distinct groups of end-users and a platform. The former two derive utility from interacting with each other, and the latter is the one who enables and facilitates such interaction. Much of the increasing attention to this market structure has been on platform strategies, including pricing strategies. While price promotion is widely used by product managers in the traditional markets and has a huge literature, the study of price promotion under the context of two-sided market is scarce. In this paper, we empirically examine how the marketing tools used by the platform, i.e. price structure and price promotion for various types of fees, affect its profitability, through endogenous choices by end-users on the two sides of the market.

As the largest online marketplace, every year eBay brings more than 90 million sellers and buyers together in cyberspace to trade with each other. eBay subsidizes buyer side of the market by making buying free, and charges three types of fees to sellers. First, an insertion fee is charged when a seller lists an item on the platform for sale. Second, there are various listing upgrade fees if a seller adds optional features to the listing. Third, if the listing closes with a sale, the seller needs to pay for a final value fee based on the selling price.

It is a common practice for two-sided platforms to charge a small amount of access fees and a transaction based service charge, which are similar to insertion fee and the final value fee charged by eBay, respectively. What we find interesting and unique to eBay is its optional listing upgrade fees. eBay offers sellers different upgrading features, such as Featured Plus, Item Subtitle, Bold, Border, Gallery, and Highlight, which allow sellers to differentiate their listings from regular listings. Based on our data, on average various listing upgrades contribute \$1.31 per sold listing, as compared to \$1.65 from insertion fee and \$11.26 from final value fee. For an average unsold listings, however, eBay collects \$2.64 in insertion fees and \$0.95 as upgrades fees.

From platform's perspective, upgrading services creates a new source of revenues, as the marginal cost for providing such service is minimal. However, the above fee figures also suggest that for un-

sold listings, a big chunk of final value fee is forfeited, which is an even more significant source of revenue than upgrade fees. For sellers, upgrade options make listings more visible to the potential buyers and put them in a better position in interaction with the buyers and in probability of sealing a deal, which may also reflect in a higher selling price. These paid sellers endogenously counteract same-side rivalry by purchasing the upgrade options; while the unpaid sellers with regular listings are now second-tier citizens in the world of listings, which may face a dim outcome of selling price. The introduction of such upgrade options further intensify the same-side rivalry among upgraded listings and regular listings.

While eBay offers additional listing upgrade options to allow sellers make listings more accessible to buyers, some websites find it is to their best interests to limit the options available to the one-side of the market. For example, the leading dating site in U.S., eHarmony restricts the number of new dating candidates to maximum of seven at a time. As a matter of the two-sided market, we observe the coexistence of platforms offering restricted choices with those offering wider if not unlimited choices. It is interesting to empirically examine whether sellers and the platform itself are better off with the upgrade options available at eBay or not.

We believe the fundamental questions to the platform when decide more or less options to offer is to see whether such options do contribute to their bottom line, which indirectly reflect through the probability of interaction. When a (monopoly) platform determines its fee structure and level, it has to consider effects from both cross-side and same-side network externalities. The existing empirical literature on two-sided market pricing, however, mostly focuses on the cross-side network externality due to data constraint. In this study, we collected and constructed a distinctive dataset of eBay monitor listings with upgrade options. Our analysis add to the existing literature by examining how endogenous choices by end-users on different sides of the eBay market affect the monopoly platform's pricing strategies on its profitability in the presence of both types of network externalities.

The second unique feature in our data is eBay's offering periodic price promotion on various fees. On eBay, the fee structure has stayed the same over the years, however, the actual fee levels have changed frequently due to temporary fee cuts and long-term fee schedule adjustments.

The temporary cuts have almost always been in the insertion and upgrade fees, but never offered together during our data period.

While price promotion is widely used by product managers in the traditional markets and has a huge literature, its effect under the context of two-sided market has not been fully examined. To our best knowledge, our paper will be the first to explore the effect of price promotion under two-sided market. The question is more intriguing under two-sided market as these temporary price promotions may affect both sellers' and buyers' participation decision directly and the platform's profitability indirectly through externality.

Theoretical research on two-sided market suggest that price cuts offered to price sensitive users will encourage participation, and such participation effects amplify through positive externality. Under the context of two-sided market, fee promotions may have multiple effects. For example, a reduction in insertion fee lowers sellers' entry cost and thus encourages sellers to post more listings. This is a positive direct price effect. The increase in the number of listings may attract an increased number of buyers, which then may further stimulate listing activity. This gives a positive cross-side network effect. On the other hand, however, there is severe same-side rivalry on eBay. Increased participation by both sellers and buyers congest the market and may lead to lower sale-thru rates for sellers and higher purchase prices for buyers. As a result, some of the end-users may endogenously choose NOT to participate, representing a negative same-side network effect. The overall effect of an insertion fee promotion depends on the relative magnitudes of these constituting effects.

Unlike insertion fee, the price promotion on listing upgrading fees does not affect seller's entry cost and only intensified same-side rivalry. However, if sellers anticipate an intensified competition from competing upgraded listing, they may endogenously choose not to list items with eBay during such price promotion period.

It is then important to first empirically evaluate how effective these different price promotions are in attracting sellers/buyers' participation. Meanwhile, it is also interesting to ask whether it pays for seller to upgrade listings and for eBay to offer price promotions.

To summarize, in this paper we examine how the same-side and cross-side network effects jointly affect eBay's profitability through endogenous participation choices of both buyers and

sellers. Specifically, our research question is three folds: (1) How would the upgrading options affect the magnitude of the same-side externality? How effective are these different upgrade options in attracting buyers? (2) How would different fee promotions change the usage of the eBay platform by sellers (in terms of the number of listings) and by buyers (in terms of the number of bids and bid amount)? How would the effect of upgrade fee promotion differ from that of the insertion fee promotion? (3) What is the effect from a one time fee schedule adjustments? How would offering of upgrading options and fee price promotions affect the overall profitability of the auction platform?

To answer these questions, we downloaded listing and transaction data on Dell 1905FP LCD monitor auctions from eBay for the period from March 22, 2005 to December 30, 2006. After rearranging the data to reflect sellers' listing and buyers' bidding decisions for each day, we merged it with the publicly available eBay fee promotion information and calculated the corresponding fees paid by the sellers. Multiple response functions are then estimated simultaneously using the data. The first one is sellers' demand for eBay listing services per day as a function of eBay insertion fee promotions, upgrade fee promotions, expected competition intensity, and expected bidder participation. The second one is the bidding responses per day from potential buyers as a function of insertion fee promotions, upgrade features used, and number of active listings. The last one is the sellers' responses for upgrading.

Our data and analysis approach have several advantages over the existing studies in the literature. The chosen product was a popular consumer product that enjoyed a thick market, and the chosen platform offered many fee promotions during the data period. These features ensure necessary variations and a rich structure in the data. They allow us to test both buyers' and sellers' endogenous participation choices and to estimate the substitution effect resulted from the presence of fee promotions, generating insights that are otherwise hard to obtain from a typical dataset analyzed in the existing empirical two-sided market literature. Furthermore, we consider end-users' endogenous choices under both same-side and cross-side externalities. This not only helps avoid the omitted variable problem, but also makes the results more readily applicable to similar two-sided markets where end-users on one side compete against each other for the attention of those on the other side of the market.

Our main findings are as follows. (1) It is demonstrated that sellers and buyers respond to insertion fee promotions and various upgrade fee promotions differently. In particular, insertion fee promotion is effective in attracting sellers' new listings; while upgrade fee promotions do not attract or deter sellers' participation. Among the various paid listing upgrades, Highlight and Gallery are effective in attracting buyers participation; while Featured Plus and Bold deter buyers' from bidding on the listings used these upgrades. (2) We show that studies ignoring same-side rivalry effects from upgrading options may suffer from the omitted variable problem and have biased results. (3) Overall, for this specific monitor alone, the loss from reduction in fees from various promotions cannot be recouped from resulting increase in final value fee, except for promotions on Insertion fee and Border.

Current study advances the understanding on price -setting and price promotion strategies in two-sided market. Our results offer managerial insights on questions like how to set the optimal price level on two-sided market; whether it is profit increasing by offering more options to one side of agents when it increases the probability of interaction for some group of agents while lower the probability for the rest; through which channels that price promotion affects platform's profitability and how such effects differ from those in traditional market.

2 Related Literature

Our analysis of platform pricing is related to the theoretical literature on two-sided markets and on information clearinghouse, and extends the empirical literature on two-sided markets.

The literature on two-sided markets is largely based on theories of network externalities. The idea of indirect network effects is first introduced by Katz and Shapiro (1985), under the term of hardware-software paradigm. Hardware becomes more valuable when more titles of compatible software are supplied, and the number of software titles available depends on the hardware penetration rate. In the case of eBay, these translate to the number of participating sellers and buyers. Survey papers by Katz and Shapiro (1994), Economides (1996), and Shy (2001) provide an excellent overview of the literature on network effects.

If we consider the platform as a monopoly gatekeeper, Baye and Morgan (2001) predicts that the competition among sellers and the minimum posted price decreases in listing fees. Platform pricing in monopoly settings is also examined by Rochet and Tirole (2003) and Armstrong (2006). Rochet and Tirole (2003) derive the optimal price for a monopolist and for competing platforms in the presence of usage externality and the membership externality. Armstrong (2006) studies the following impacts on platform pricing in a two-sided market: (1) Relative size of the cross-group externality. If a member of group 1 exerts a large positive externality on each member of group 2, then group 1 will be targeted aggressively by the platform through price cuts. It may also lead to the platform's fee subsidy to that side of the market. (2) Fixed fees or per-transaction charges. The cross-group externality is weaker with per-transaction charges, as part of the benefit of interacting with an extra agent on the other side is eroded by the extra payment incurred. Since the externality is lessened with per-transaction charges, it is plausible that platform profits are higher when this form of charges is used given positive externality.

Although there is a burgeoning theoretical literature on two-sided markets, empirical research remains nascent. Earlier empirical studies in the area, such as Gandal (1994) and Saloner and Shepard (1995), focus on network effects and evaluate the importance of installed base or network size. Rysman (2004) structurally estimates three simultaneous equations to demonstrate the positive network effects in the market for Yellow Pages.

Very few papers have examined platform pricing. Jin and Rysman (2009) present a theoretical model with competing platforms and empirically test the pricing theory with data from sports card conventions. They find that the consumer prices decrease in the number of conventions both near and afar. The dealer prices, however, do not respond to the competition between conventions. Yao and Mela (2008) estimate the price elasticity of Celtic coins using data collected from eBay, using a Markov Chain Monte Carlo (MCMC) model of buyer and seller behavior. They find that a decrease in final value and insertion fees improves seller profits, leading to more listings and more gross volume sold on the site. On the other hand, a decrease in final value fee increases the auctioneer's revenue, while the opposite is true for a decrease in listing fees. The upgrading options are not considered in their paper at all.

The main differences between this paper and Yao and Mela (2008)’s study are in the assumed auction paradigm, data variation and estimation approach. Yao and Mela (2008) use coin auction data to fit the independent private value model for the structural estimation. The choice of this particular product limits the size of the data set, which contains a total of 816 auctions over the period of half a year. Our computer monitor data, by comparison, exhibits common value features and was from a thicker market. In our dataset, we observe actual price cuts for various fees. Such variation in the data allows us, taking a reduced-form approach, to test whether the correlation in the data are consistent with the theoretical predictions in the existing literature. Our study also add to the literature by investigating the effects of upgrade fee promotions and how such competitive effects interact with the network externalities under the two-sided market setting.

3 Data and Variables

Empirical examination of two-sided markets is scarce, with availability of proprietary data and lacking of variations in platform pricing levels being two main reasons. The uniqueness of this project is to collect and construct a distinctive dataset of eBay monitor listings¹. The richness of the data allow us to analyze both types of network externalities, and to examine how endogenous choices by end-users on the two sides of the market affect the effects of the monopoly platform’s pricing strategies on its profitability. During the data period, there were repeated temporary reductions in eBay variable usage fees, such as insertion fee and upgrade fees, in different amounts. In addition, there was also a one-time permanent increase in the final value fee and a one-time permanent decrease in the insertion fee in the lowest tier. These variations allow us to explore the impacts of the fee changes and test whether correlation in the data are consistent with the theoretical predictions in the existing literature. More importantly, through upgrade fee promotions we can analyze how the same-side network externality interacts with the cross-side network externality. We calculate the actual amounts of the fees collected by the platform which enable us to study the revenue effect. Before presenting the details of our data, let us first introduce eBay’s auction

¹As we explain later that there are five diffent listing formats offered at eBay, including the aution style listing. In this study, we indlue all five listing format and the word listing is used to avoid confusion with the auction style listings.

mechanism and fee structure.

3.1 eBay Listings

When a seller lists an item for sale on eBay, he can choose from the following listing formats.²

1) Auction style listing - single unit. The bidder who bids the maximum amount wins the item. 2) Auction style listing with Buy It Now price - single unit. The first bidder has the option between placing a bid and buying the item at the Buy It Now price. If the item is purchased at the Buy It Now price, the auction ends. If the first bidder places a bid instead, then the Buy It Now option disappears. The auction proceeds as if it were of the first format. 3) Auction listing - multiple units. Bidders with the highest bids win the items, but all pay the same price, the lowest winning bid. 4) Fixed price listing - single unit. The first buyer accepting the posted Buy It Now price wins the item. and 5) Fixed price listing - multiple units. The first buyers accepting the posted Buy It Now price win the items, until the quantity is exhausted.

The first three types are variants of auction style listings. All eBay auctions are ascending-price auctions with a fixed end time. They are treated approximately as second price Vickrey auctions in theoretical research due to the use of the proxy bidding system that automatically bids on behalf of the bidder. For latter two types of listings, eBay functions as an information gatekeeper where different sellers post their prices to compete against each other.

Posting a listing involves creating a listing title and description of the item, providing pictures, specifying terms such as shipping, payment, and returns, and select the duration of the listing, among others. For an auction, the duration can be one, three, five, seven, or (at a small fee) ten days. By default a listing starts as soon as the seller posts it on eBay. A typical bidder arrives at a listing by searching with keywords or by browsing the category pages organized by eBay. In the case of search queries, eBay returns the search result as a list of items, sorted in ascending ending time by default. A bidder can then click on the title of a listing in the search results to view the detailed description of the item and listing specifics.

Because of the large size of the eBay marketplace, a search for a popular consumer product

²Due to the fact that eBay has been constantly changing its policies to adapt to the fast evolving online market, all the statements of eBay rules and fees in this study are true for the data period only.

would typically return dozens if not hundreds of results. To make a listing more visible to potential buyers in search result and on category pages, a seller can choose to pay for various listing upgrade options, including Featured Plus, Gallery, Item Subtitle, Bold, Highlight, and Border. The current paper will mainly focus on the above six options. Featured Plus listings are grouped and displayed at the top of the search results and category pages. Bold, Highlight, and Border will bold the listing fonts, highlight the listing entry, and add a colored border to the listing entry, respectively. These three options can make a listing stand out on a long list of competing listings without changing its relative position. Item Subtitle and Gallery options allow the seller to provide bidders with more information in text and graphic forms respectively. Figure 1 is a snapshot of a search result page on eBay that shows these upgrade features.

"Insert Figure1 About Here"

3.2 eBay Fee Schedule

Like what many platforms do, eBay only charges one side of the market for using the platform; the seller pays all the fees, while the buyer participates for free. Figure 2 gives an example of the eBay's fee schedule.

"Insert Figure2 About Here"

The first fee a seller faces is an insertion fee for posting a listing on eBay. It is due at the time of listing and is generally non-refundable.³ The insertion fee ranges from \$0.25 (\$0.20 after February 22, 2006) to a maximum of \$4.80, depending on the starting price, reserve price (if any), and the number of units listed.

Then, if the listing concludes successfully, the seller has to pay a final value fee to eBay based on the purchase price. This commission equals 5.25% of the first \$25 of the purchase price, plus 2.75% (3.00% after February 22, 2006) of the remaining value up to \$1000, plus 1.50% of any amount over

³If the seller relists an unsold item for the first time, and if the second listing closes with a sale, then eBay will refund the insertion fee for the second listing.

\$1000. If the item does not receive any bids above the seller's reserve price, no final value fee is assessed.

As mentioned earlier, eBay offers several paid listing upgrades. Among them, Featured Plus, Border, and Item Subtitle fees are frequently reduced for promotion. Fee promotions are typically announced two or three days before the promotional period via emails sent to registered users, with a typical promotion period of one or two days. We retrieved for the data period all the fee promotion announcements from our personal email accounts and then cross-verified them with the archives at eBay Community.

In addition to the frequent insertion and upgrade fee cuts during the data period, eBay announced on February 19, 2006 that it would increase the final value fee rate for a closing price between \$25 and \$1000 from 2.75% to 3%, effective from February 22, 2006.

3.3 Data

Listing pages typically remain publicly available on eBay for 90 days after close. The listings that we focused on were for brand new Dell UltraSharp 1905FP 19 inch LCD monitors. We downloaded category, item, and bid history pages and extracted pertinent information from them for all such listings scheduled to close between March 22, 2005 and December 30, 2006. Figure 3 displays an example of a bid history page from an eBay auction listing.

"Insert Figure3 About Here"

We chose this particular product for the following reasons. First, it was one of the most popular LCD monitors on the market, and there was active reselling on eBay during the data period. The market for this monitor is thick enough to ensure a large enough data size. Furthermore, since it was on the current product line offered by Dell, buyers could always use Dell's price as reference or even purchase directly from Dell. This implies that the auctions in our dataset are close to common value auctions, for which we chose to use the reduced form regression approach. Moreover, resale margin for this then current model was limited, so sellers were more likely to respond to fee promotions

offered by the platform, which is beneficial to the analysis of the direct price effect. The direct availability from Dell also implies that the buyers in the data are price sensitive shoppers too. Note that we only included brand new items in the data, in an attempt to minimize the impact of quality differences on bidding behavior, which is important for the common value assumption and for limiting unobserved heterogeneity.

During our data period, there were a total of 5,218 (4,533 sold) relevant listings on eBay, among which 2,911 (2,714 sold), 1,253 (1,071 sold) and 69 (59 sold) were type 1, 2 and 3 auction style listings, respectively. 596 (410 sold) and 389 (279 sold) of the 5,218 listings were type 4 and 5 fixed price ones. Table 1 lists the descriptive statistics of the key variables of interest. From Table 1 we observe the following two interesting features.

"Insert Table1 About Here"

First, the mean winning bid and winning price (defined as winning bid plus shipping and insurance cost, if any) are similar across different listing types. In addition, the mean final value fees generated by single unit auctions and fixed price listings are almost the same as well. Thus different listing formats do not significantly affect either sellers' or the platform's revenue. We then include all five different types of listings in our empirical analysis.

Second, among all upgrade options, Gallery, Item Subtitle, and Bold were the top three ones in terms of usage frequency and were used in about 68.5%, 33%, and 14% of the listings, respectively. Across different listing formats, multiple-unit listings were the ones that most frequently upgraded. Intuitively, upgrading are most cost efficient for multiple-unit listings, as the upgrade fees are charged per listing regardless of how many units of items are included in the listing. For single-unit listings, auction style listings were more likely to use upgrades and pay more upgrading fees; while opposite is true for multiple-unit listings.

4 Empirical Analysis

Buyers participate (place bids and make purchases) eBay for free, so this side does not directly generate any profit. However, the number of potential buyers present at the platform and the number and amount of bids they place decide the level of competition for the listed items and the final selling price. Since the final selling prices translate to seller revenues and are the basis for final value fees, buyers' endogenous participation affects sellers' revenue directly and eBay's profitability indirectly.

Based on the information extracted from the bid history pages, we construct a dataset of sellers' listing and buyers' bidding decisions. The unit of analysis is per listing. In particular, we aggregate the micro listing data to calculate the following measures on participation for each calendar day: the number of newly started listings, number of existing listings from previous days, number of unique bidders who place bids during the day, and number of listings that had purchased particular upgrade features. We then merge the above daily listing data with the eBay fee promotion information.

Because of the interdependence of endogenous participation choices by both sellers and buyers as suggested by the network externality literature, we estimate different specifications of simultaneous equations. It is assumed that the error terms for structural equations are correlated as the calendar day is the same for those equations. The estimation method is three-stage least squares estimation to improve efficiency.

4.1 Insertion Fee Promotions

As mentioned above, that fee promotion emails are send to eBay users two or three days in advance. Figure 4 gives two examples of such announcements: one for Item Subtitle sale and one for Insertion fee promotion.

"Insert Figure4 About Here"

In this section, we analyze the effects of insertion fee promotions. The effects of price protion on upgrade options will be studied in next session. The simultaeous equation model we estimated

are as follows:

$$\begin{aligned}
\text{Seller Equation: NNEWLIST} &= \beta_{s0} + \beta_{s1} \text{NOPENLIST} + \beta_{s2} \text{NBDR} + \\
&\quad \beta'_{s3} \mathbf{X}_{fee_promo} + \beta'_{s4} \mathbf{X}_{other_controls} + \epsilon_s \\
\text{Buyer Equation: NBDR} &= \beta_{b0} + \beta_{b1} \text{NNEWLIST} + \beta_{b2} \text{NOPENLIST} + \\
&\quad \beta_{b3} \text{3DayNBDR} + \beta'_{b4} \mathbf{X}_{other_controls} + \epsilon_b
\end{aligned}$$

Where: NOPENLIST: Number of existing listings from previous days

NNEWLIST: Number of newly started listings

NBDR: Number of unique bidders who placed bids during the day

3DayNBDR: Average number of unique bidders who place bids during last 3 days

\mathbf{X}_{fee_promo} : Dummy variables for fee structural change and insertion fee promotions

We use these exogenous insertion fee promotions by eBay to satisfy the exclusion restrictions required for identification of the buyers' equation. To identify the sellers' equation, we use the pre-existing conditions to satisfy the exclusion condition. The measure we used is the average number of unique bidders that place bids during last three days. It is the measure that do not directly visible to sellers and can vary a lot from day to day depending on the factors like the number of listings created, the listing length chosen by sellers, the buyer traffic and market competitiveness over those days. Thus we consider it affect buyers' decision yet not directly affect that of sellers.

The control variables include: (1) A popularity index that indicates the number of months that have passed since the beginning of the data period. It is created to account for that fact that LCD monitors have relatively short life cycles and that demand may decay overtime quickly. (2) Weekend and holiday dummies. Since there is no federal public holiday in the US, we identify the big six holidays that are typically observed by both the private and public sectors. They are New Year's day, Memorial day, Independence day, Labor day, Thanksgiving day, and Christmas.

In Table 2, we report the estimation results when only the insertion fee promotion itself is considered. Model 1 and 2 use the dependent variables as described above, while Model 3 and 4

use the log values of these two variables on the left hand side. Model 2 and 4 also include one more control variable, i.e. Number of last day listings, as those are mostly likely to affect sellers' listing and buyers' bidding decisions. The estimation results for full specification models that include all weekday and holiday dummies as controls are reported in the lower half of the table.

"Insert Table2 About Here"

The estimated effects are as follows.

(1) Direct price effect. The coefficients for the insertion fee promotion in the sellers' equations are positively significant, which means that about 13 (or 90%) more listings are registered at eBay when there is an insertion fee promotion. This result suggests that sellers are price sensitive.

(2) Cross-side network effect. Our estimation results confirms the existence of positive loop of cross-side network effect in the two-sided market literature. The coefficients for the number of unique bidders per day are all positively significant, which confirms that sellers post more listings when they expect more participation by buyers. Furthermore, the coefficients for the number of open listings from previous days in the buyers' response are all positive and significant. The magnitude of the effect is roughly 1 more existing listing of 1905FP monitors leads to 1.4 more unique buyers to place bid; or equivalently 1% more listings attract 0.70% more unique buyers. This completes the positive network loop. The magnitude of the coefficients, however, suggest that the buyers' participation are more responsive to listings than participation from sellers in format of listing to the number of buyers. It contradicts eBay's practice of subsidizing buyers and using the sellers as the "money" side. It rationalizes the price promotion on insertion fees as it generates more listings and attract more buyers to participate. It is also worth noting that number of new listings on that day has no significant effect on buyer participation. A possible explanation is that new listings with an ending several days in the future will be listed at the bottom of the search results page or category page and becomes in-noticable to buyers.

(3) Competitive effect. The coefficients of Number of open listings from previous days and of Number of Last day listings (listings close on that calendar day) indicate the same-side rivalry

in the absence of upgrading effect. It suggests that Number of closing listings may deter sellers' registering of new listings; while number of existing listings may encourage more new listings. In terms of the buyers, however, there is no sign of same-side rivalry. As a matter of fact, more unique bidders' presence in previous days lead to more bidders to place a bid today. Some of above results are not consistent with the negative same-side network effect, which suggests the need to considering the effect from upgrading options.

(4) Final value fee policy change. Since final value fee is paid by the seller, we assume the one time increase of the final value fee rates only affects sellers' revenues but not buyers' utility. As a result, we did not include it in buyer's equation. The coefficient for this dummy is not statistically significant, indicating that there is no significant change in sellers' listing behaviors during data periods before and after the policy change.

(5) Other controls: The product life cycle effect is controlled by the popularity index. The estimated coefficients in both equations are negatively. It suggests that as the product becomes obsolete, sellers are less likely to list it for sell; it also become less desirable to buyers.- the later the listing was registered, the smaller number of bidders it attracted. All specifications suggest that less listings were created and less bids are placed during weekends. For holidays, we only observe negative effect on sellers' listing, not on buyers' participation in bidding. The results for the full specification models with all days and holidays listed confirm the negative impact on participation by both buyers and sellers on weekends. The holiday effect, however, is generally not significant.

4.2 Listing Upgrade Promotion

As shown in Figure 1, sellers can pay for various upgrade options to possibly attract more potential buyers to view and bid on their listings. Thus we first examine how effective these upgrade options are in achieving such a goal. Also, the use of upgrade options intensify the competition among listings of this exact LCD monitor by different sellers. We empirically estimate the intensified same-side network effect. Besides, it is interesting to examine the magnitude of the substitution effect which redistributes bidders or bids across listings. Last, we are also interested to see whether the overall bidding traffic on the days with upgrade fee promotions are significantly

different from that on regular days.

A similar simultaneous equation system is employed for estimation, with upgrade fee promotion dummies added to the sellers' equation and each upgrade feature's daily usage counts added to the buyers' equation. The regression results are reported in Table 3.

$$\begin{aligned}
\text{Listing : NNEWLIST} &= \beta_{s0} + \beta_{s1} \text{NOPENLIST} + \beta_{s2} \text{NUPGRADES} + \\
&\quad \beta_{s3} \text{NBDR} + \beta'_{s4} \mathbf{X}_{fee_promo} + \beta'_{s5} \mathbf{X}_{other_controls} + \epsilon_s \\
\text{Upgrading: NUPGRADES} &= \beta_{u0} + \beta_{u1} \text{NNEWLIST} + \beta_{u2} \text{NOPENLIST} + \\
&\quad \beta_{u3} \text{NOPENUPGRADES} + \beta'_{u4} \mathbf{X}_{fee_promo} + \beta'_{u5} \mathbf{X}_{other_controls} + \epsilon_u \\
\text{Buyer Equation: NBDR} &= \beta_{b0} + \beta_{b1} \text{NNEWLIST} + \beta_{b2} \text{NOPENLIST} + \\
&\quad \beta_{b3} \text{3DayNBDR} + \beta'_{b4} \mathbf{X}_{upgrades} + \beta'_{b5} \mathbf{X}_{other_controls} + \epsilon_b
\end{aligned}$$

Where: NUPGRADES: Number of newly used upgrades

NOPENUPGRADES: Number of total upgrades used by listings from previous days

$\mathbf{X}_{upgrades}$: Breakdown of different types of upgrades used

"Insert Table3 About Here"

(1) Direct price effect. Firstly, the effects from the upgrading fee promotions on sellers' participation are mixed. Among the three upgrade fees, promotions on Item subtitle and Featured Plus seemed to have no significant effect on both the number of new listings and on the number of new upgrades. Promotion for Border, on the other hand, negatively affect the number of new listings but leads to more new upgrades being used on that day. Secondly, when comparing to results in Table 2, we can see that the positive direct price effect from insertion fee promotions on sellers' listing are now reduced by roughly 40%, from 13 (or 90%) more listings down to 7.5 (or 46%) more listings. This suggests that sellers respond to insertion fee promotion and different upgrading fee promotions differently. Thus previous studies ignoring effects from the other types of fee promotions may suffer from the omitted variable problem and have biased estimation results.

Moreover, insertion fee promotion leads to more new listings, yet at the same time significantly lower the number of upgrades purchased on that day. When sellers expect more fierce competition from competing listings, more of them choose NOT to upgrade.

Throughout the data period, insertion fee and upgrade fee promotions were always offered on different days. Based on our results, we estimate that, if all those different types of fee promotions are offered on the same day, it would lead to roughly five more listings per day, or a 40% increase in the number of new listings on such a monitor on eBay, which is a significant boost to eBay marketplaces. Such boost, however, comes at the expenses of reduced number of upgrades purchases.

(2) Effectiveness of different upgrade options. The six different upgrade options we analyzed affect buyers' participation in three distinctive ways. The use of Item Subtitle and Border has no impact on the number of unique bidders. Similar upgrade options, like Gallery and Highlight, however, are highly effective in attracting bidders to place a bid. A possible explanation is that Highlight will NOT pop up the listing as Border, thus buyers expect less competition and are more likely to click on those listings. Once they arrive at the listing, Gallery allow sellers to post more pictures for the listing and its informativeness invites more bidding.

The above explanation assumes that buyers shun away from those listings that perceived to be "popular" and "competitive". It is supported by the significant negative effect from Featured Plus on buyers' bidding behavior. Overall, "broadcasting" upgrade options, including Border, Featured Plus and Bold discourage some potential buyers to participate due to concerns of an increased level of competition in these listings. Moreover, buyers are more likely to substitute such "broadcasting" listings with those more colorful and graphical.

(3) Cross-side and same-side network effects. The estimation results show that both buyers and sellers respond positively to participation from the other side, but with a smaller magnitude. For a few cases, the positive effect becomes insignificant. Thus the positive cross-side network effect mostly still exists. However, the intensified sell-side competition through upgrading deter both sellers from register more listings and buyers from bidding on the item.

Another interesting result is that, when the usage of different upgrade options and upgrade

fee promotions are included in the regression, the popularity index remains negative with positive significant coefficients for number of upgrades. It suggests that when the monitor becomes more obsolete, sellers are less likely to list the monitor but will purchase more upgrades for the listing, hoping that with the use of upgrade options, additional buyer traffic can be attracted to the listing. The negative weekend and holiday effects on participation now become insignificant, suggesting choice of promotion date is less critical with upgrading options.

4.3 Revenue Effect

Above analysis suggest that sellers and buyers respond to different fee promotions differently. In this section, we study how changes in eBay's pricing level affects its profitability taking into account of the endogenous choices by end-users facing both types of network externalities. Traditional wisdom may suggest that offering fee sales is part of eBay's optimal pricing strategy that maximizes its expected profits, just like price promotions in the traditional retail industry. But given the complexity of the interactions in the market on multiple levels and the various network effects involved, eBay would have very limited influence over the actual outcomes of these fee promotions. So these sales are more like pricing experiments than a precalculated profit maximizing move. Thus in this paper we treat fee promotions as an exogenous shock for the following reasons:

(1) There are no specific patterns in the fee promotions, in terms of selection of fee types, choice of date and day of week or discounts depth. (2) In this study we only examine the platform's profitability in one particular product, and it constitutes only a tiny portion of all the fees collected by eBay. So even if eBay picks promotion days due to certain considerations, such consideration would be based on a basket of different products. As a result, its effect in our case is small at most. (3) The final value fee is calculated based on the final (winning) price, which depends on the bidding contests among buyers as well as concurrent listings by other sellers. The market environment is determined by endogenous participation choices by both sellers and buyers jointly, and the identities of those participants can vary substantially at different points of time. Thus eBay does not have much influence over the outcome of these interactions. As for the fixed fee listing, the price is set by sellers, so the impacts of insertion and upgrade fee promotion on listed

price are at most indirect. Thus we use OLS regressions to analyze the revenue effect. The implicit assumption we make here is that fee promotions affect eBay's revenue, yet the revenue outcome from one period does not directly affect next decision on fee promotion.

Table 4 lists the summary statistics for the key variables that can affect eBay's revenue. These statistics suggest that sold and unsold listings differ in aspects such as the number of units listed, number of bids and bidders attracted, and upgrade features used in the listing. Generally, sold listings had a smaller number of units listed, attracted more bidders and bids, and used various upgrade options more often (with the Highlight option as the only exception).

"Insert Table4 About Here"

Although both sold and unsold listings are subjected to insertion fees and upgrade fees up-front, unsold listings are allowed one time free re-listing. So in this case the only accountable revenue sources for eBay are the insertion fee, upgrade fees, and final value fees collected from sold listings. As the final value fee is roughly 3 percent of the final price, ranging from \$155 to \$480 in our data set, it is a more important source of revenue to the auction site (at \$11.26 per listing) than the other two types of fees combined (at \$2.96).

So it is possible that eBay aims to recoup the loss from the insertion fee and upgrade fee promotions from the increased total commission of final value fee. To test this conjecture, we estimate the following model using OLS:

$$\begin{aligned} \text{dependent variables} = & \beta_0 + \beta_1 \text{final value fee adjust} + \beta_2 \text{Insertion fee promotions} \\ & + \beta_3 [\text{upgrade fee promotions}] + \beta_4 \text{other controls} + \epsilon \end{aligned}$$

The dependent variables for the regressions include fee measures, such as final value fees per listing or per item, total upgrading fees, insertion fee and total fees; as well as probability of sale for the day measures such as total number of sold units, probability of sales, probability of units sold and number of listings that used various types of upgrading features. So we examine the revenue

effect in terms of both monetary value and turnover rate. Estimation results are reported in Table 5.

"Insert Table5 About Here"

First, we see that after eBay increased its final value fee from 2.75% to 3% for the \$25 and \$1000 interval, all the monetary and turnover rate measures are affected negatively, except for the Item Subtitle and Subtitle fee. A careful reading of the table suggests that the final value fee collected over each sold unit remains constant over the data period. It is through decrease in probability of sales and less frequent use of upgrading features that make the total of daily final value fee decreased by about \$41 on average after the commission rate increase.

Secondly, Insertion fee promotion significantly increases the final value fee collected by eBay. The mechanism is as follows: the insertion fee promotion increase sellers' participation but deter differentiation, thus more listings but less upgrades. The increase in number of listings offset the loss in insertion fees due to promotions and in upgrade fees due to increased competition. As the market becomes more congested with more listings, the probability of sales (per unit and per listing) decrease but to a smaller magnitude as compared to the increase in the number of listings. Overall, we see an significant increase in total final value fee and total fees collected, but not in per unit final value fee.

The existing theoretical literature shows that cross-group externalities are weaker with per-transaction charges, as a fraction of the benefit of interacting with an extra agent on the other side is eroded by the extra payment incurred. Because externalities are lessened with per-transaction charges, it is plausible that platform profit is higher when this form of charging is used. Thus the above results cast insights on the following hypothesis: when cross-group externality is weaker, the platform's profit is higher. Or in other words, cross-group externality is lower for final value fee changes than for insertion fee changes, as the former is charged only when there is a sale. As a result, a platform shall increase the final value fee and decrease the insertion fee to boost its profits. The results in Table 5 only supports the second part of the above hypothesis, as the increase in

the final value fee rate lower eBay's revenue; while a reduction in insertion fee does increase the turnover rate and eBay's daily revenue.

Next, we examine the differential revenue effects by three most frequently promoted upgrades: Item Subtitle, Border and Featured Plus. Our result suggests that Item Subtitle promotion deters new listings and choice of other upgrade options, in the end less units are sold on that day and thus negatively affect eBay's daily profitability. To the opposite, sellers respond positively to the promotion on Border and are more likely to use Gallery jointly. As we mentioned above, Gallery is highly effective in attracting bidders to place a bid on the item. As a result, more units are sold and both daily final value fee and total fees increase significantly. Sellers respond positively to Featured Plus promotion as well, which leads to an increase in Featured Plus fees. However, buyers will choose to substitute away from such Featured listings, as a result we do not see significant change in eBay's daily revenue.

During the data period, insertion fee promotions were not offered together with upgrade fee promotions. Our estimation result suggest that eBay can further boost its bottom line by cutting the insertion fee and Border fee simultaneously.

Finally, both popularity index and weekend dummy affect eBay's daily profitability negatively. Furthermore, results suggest that when the monitor becomes more obsolete, less units are listed and sold. The competition among sellers, however, are reduced and probability of sales actually increase. As a result, sellers use less upgrades for easier to sell items.

5 Conclusion

In this paper we use a unique data set of eBay LCD monitor listings to examine how a monopoly platform's pricing and promotion strategies affect its profitability when both the cross-side and same-side network externalities are considered for end users on the two-sided market. Our main findings include: (1) It is demonstrated that sellers and buyers respond to insertion fee promotions and various upgrade fee promotions differently. In particular, insertion fee promotion is effective in attracting sellers' new listings; while upgrade fee promotions do not attract or deter sellers'

participation. Among the various paid listing upgrades, Highlight and Gallery are effective in attracting buyers participation; while Featured Plus and Bold deter buyers' from bidding on the listings used these upgrades. (2) We show that studies ignoring same-side rivalry effects from upgrading options may suffer from the omitted variable problem and have biased results. (3) Overall, for this specific monitor alone, the loss from reduction in fees from various promotions cannot be recouped from resulting increase in final value fee, except for promotions on Insertion fee and Border.



Home > All Categories > Computers & Networking > Monitors & Projectors > LCD/Flat Panel > 19-inch > Dell > Search Results for 'Dell 1905FP -E193...'

Completed Listings

Search title and description [] [] [] Advanced Search

Search Options

Location:

Items within [] miles of []

Show only:

- Items listed with PayPal
Buy It Now items
Gift items
Items listed as lots
Item condition
Completed listings
Listings
Items priced [] to []

Customize options displayed above.

More on eBay

Shop eBay Stores

- StartZero(18)
Cellmods.com(6)
Shelf 7(3)
Everything Electronic#1(2)

See all matching Stores

775 items found for Dell 1905FP -E193FP -193FP in Dell
Show only: Completed listings

- Add to Favorites
View active items for sale

List View | Picture Gallery

Sort by: []

Table with columns: Price, Shipping, Bids, End Date, Actions. Contains featured items like 'DELL UltraSharp 1905FP 19inch Flat Panel Monitor Sealed' and 'NEW Dell Ultrasharp 1905FP 19" LCD Flat Panel Monitor'.

Optimize your selling success! Find out how to promote your items

Main listing table with columns: Price, Shipping, Bids, End Date, Actions. Includes items like 'New Dell Ultrasharp 1905FP 19" LCD Monitor Flat Panel' and 'NEW Dell 1905 FP 19" LCD UltraSharp Sealed 1905FP'.

Figure 1: Listing Upgrades: Featured Plus, Border, Bold and Item Subtitle.

Basic Fees

When you list an item on eBay, you're charged an [Insertion Fee](#) according to the table below. If the item sells, you are also charged a [Final Value Fee](#). The total cost of selling an item is the Insertion Fee plus the Final Value Fee.

Insertion Fees		Final Value Fees	
Starting or Reserve Price	Insertion Fee	Closing Price	Final Value Fee
\$0.01 – \$0.99	\$0.25	Item not sold	No Fee
\$1.00 – \$9.99	\$0.35	\$0.01 – \$25.00	5.25% of the closing value
\$10.00 – \$24.99	\$0.60	\$25.01 – \$1,000.00	5.25% of the initial \$25.00 (\$1.31), plus 2.75% of the remaining closing value balance (\$25.01 to \$1,000.00)
\$25.00 – \$49.99	\$1.20	Equal to or Over \$1,000.01	5.25% of the initial \$25.00 (\$1.31), plus 2.75% of the initial \$25.00 - \$1,000.00 (\$26.81), plus 1.50% of the remaining closing value balance (\$1,000.01 - closing value)
\$50.00 – \$199.99	\$2.40		
\$200.00 – \$499.99	\$3.60		
\$500.00 or more	\$4.80		

Basic fees

When you list an item on eBay, you're charged an [Insertion Fee](#). If the item sells, you are also charged a [Final Value Fee](#). The total cost of selling an item is the Insertion Fee plus the Final Value Fee.

Insertion Fees		Final Value Fees	
Starting or Reserve Price	Insertion Fee	Closing Price	Final Value Fee
\$0.01 – \$0.99	\$0.20	Item not sold	No Fee
\$1.00 – \$9.99	\$0.35	\$0.01 – \$25.00	5.25% of the closing value
\$10.00 – \$24.99	\$0.60	\$25.01 – \$1,000.00	5.25% of the initial \$25.00 (\$1.31), plus 3.00% of the remaining closing value balance (\$25.01 to \$1,000.00)
\$25.00 – \$49.99	\$1.20	Equal to or Over \$1,000.01	5.25% of the initial \$25.00 (\$1.31), plus 3.00% of the initial \$25.00 - \$1,000.00 (\$29.25), plus 1.50% of the remaining closing value balance (\$1,000.01 - closing value)
\$50.00 – \$199.99	\$2.40		
\$200.00 – \$499.99	\$3.60		
\$500.00 or more	\$4.80		

Basic Fees: Before February 22, 2006

Basic Fees: After February 22, 2006

Listing Upgrade Fees				Hide
Feature	Fee	Feature	Fee	
Gallery	\$0.35	Highlight	\$5.00	
Listing Designer*	\$0.10	Featured Plus!	\$19.95	
Item Subtitle	\$0.50	Gallery Featured	\$19.95	
Bold	\$1.00	Pro Pack**	\$25.95	
Scheduled Listings	\$0.10	Home Page Featured	\$39.95	
10-Day Duration	\$0.40	quantity of 2 or more	\$79.95	
Gift Services	\$0.25	List in Two Categories***	x2	
Border	\$3.00			

Listing Upgrade Fees

Figure 2: eBay Fee Schedules



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[Buy](#) | [Sell](#) | [My eBay](#) | [Community](#) | [Help](#)

[Adva](#)

Hello! [Sign in/out](#).



[← Back to item description](#)

Bid History

Item number: [5179998926](#)

[Email to a friend](#) | [Watch this item](#) in My eBay

Item title: BRAND NEW Dell 1905FP Flat Panel LCD Monitor DVI 20 ms

Time left: **Auction has ended.**

Only actual bids (not automatic bids generated up to a bidder's maximum) are shown. Automatic bids may be placed days or hours before a listing ends. Learn more about [bidding](#).

User ID	Bid Amount	Date of bid
iamcanadian001 (1)	US \$306.05	Apr-03-05 14:21:33 PDT
jett2 (16 ★)	US \$301.05	Apr-03-05 16:22:42 PDT
jett2 (16 ★)	US \$291.05	Apr-01-05 18:29:59 PST
rashayi (3)	US \$280.00	Apr-03-05 12:12:17 PDT
michaelm10209 (3)	US \$250.00	Apr-01-05 16:01:24 PST
shlepster (23 ★)	US \$220.00	Mar-31-05 19:09:37 PST
o4dkab (257 ★)	US \$200.00	Mar-31-05 18:09:40 PST
shlepster (23 ★)	US \$200.00	Mar-31-05 19:09:26 PST
shlepster (23 ★)	US \$180.00	Mar-31-05 19:09:16 PST
shlepster (23 ★)	US \$150.00	Mar-30-05 18:29:55 PST
thrudd (31 ★)	US \$102.50	Mar-29-05 13:14:07 PST
irlanouejr (22 ★)	US \$60.00	Mar-29-05 15:52:53 PST
irlanouejr (22 ★)	US \$45.00	Mar-29-05 15:52:43 PST
irlanouejr (22 ★)	US \$28.00	Mar-29-05 15:52:32 PST
saramaet (26 ★)	US \$25.00	Mar-28-05 01:55:47 PST
sgfootball2006 (3)	US \$15.00	Mar-28-05 20:04:11 PST
sgfootball2006 (3)	US \$11.00	Mar-28-05 20:03:55 PST
sgfootball2006 (3)	US \$10.00	Mar-28-05 20:03:24 PST
irlanouejr (22 ★)	US \$2.00	Mar-27-05 17:04:59 PST

If you and another bidder placed the same bid amount, the earlier bid takes priority.

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Figure 3: eBay Bidding History Page

	Listing Format					Total /Average
	Auction Style Listing			Fixed Price Listing		
	Auction (Single Unit)	Auction w BIN (single unit)	Auction (multiple units)	Buy-it-now (single unit)	Buy-it-now (multiple units)	
# of Listings	2911	1253	69	596	389	5218
# of Sold Listings	2714	1071	59	410	279	4533
Prob. Of Sales (Sold unit>=1)	93.23%	85.47%	85.51%	68.79%	71.72%	86.87%
Prob. Of Sales (Sold units/Listed Units)	93.23%	85.47%	82.90%	68.79%	54.18%	85.53%
# of (human) bids / sold listing	19.05	8.77	22.63	1	6.13	14.24
# of (human) bids / listings	17.94	7.88	19.35	0.688	4.39	12.56
Max. # of (human) bids/listing	72	91	60	1	44	91
# of bidders / sold listing	10.00	4.85	17.10	1.00	5.11	7.76
# of bidders / listing	9.33	4.15	14.62	0.69	3.67	6.74
Max. # of bidders/sold listing	25	21	52	1	41	52
Winning Bid (Mean)	284.66	288.81	276.98	286.66	275.58	285.16
Winning Bid (Maximum)	480.00	410.50	388.99	370.00	364.99	480
Winning Bid (Minimum)	160.00	155.00	172.01	170.00	199.99	155
Winning Bid (Std Dev)	30.57	32.02	37.95	29.53	24.39	30.75
Total Winning Price (Mean)	343.75	337.93	343.12	345.12	343.86	342.58
Total Winning Price (Maximum)*	539.95	484.40	458.97	414.00	394.97	539.95
Total Winning Price (Minimum)	197.50	181.00	207.01	219.00	259.95	181
Total Winning Price (Std Dev)	28.29	29.47	36.49	23.09	24.89	28.15
# (%) of Sold Listings Used "Border"	50 (1.8423)	31 (2.8945)	2 (3.3898)	9 (2.1951)	21 (7.5269)	113 (2.4928)
# (%) of Sold Listings Used "Featured"	16 (0.5894)	0	20 (33.8983)	1 (0.2439)	116 (41.5771)	153 (3.3752)
# (%) of Sold Listings Used "Subtitle"	909 (33.493)	306 (28.5714)	38 (64.4068)	116 (28.2927)	129 (46.2366)	1498 (33.0465)
# (%) of Sold Listings Used "Bold"	398 (14.6647)	137 (12.7918)	5 (8.4746)	36 (8.7805)	66 (23.6559)	642 (14.1628)
# (%) of Sold Listings Used "Highlight"	14 (0.5158)	9 (0.8403)	1 (1.6949)	0	11 (3.9427)	35 (0.7721)
# (%) of Sold Listings Used "Gallery"	1926 (70.96536)	652 (60.87768)	50 (84.74576)	227 (55.36585)	250 (89.60573)	3105 (68.49768)
Insertion Fee / sold listing	0.76	2.59	1.34	3.17	4.48	1.65
Max. (Min.) Insertion Fee / sold listing	3.60 (0.10)	3.85 (0.10)	4.80 (0.10)	3.60 (0.10)	4.80 (0.1)	4.80 (0.10)
Upgrade Fee / sold listing	0.74	0.59	7.58	0.52	9.42	1.31
Max. Upgrade Fee / sold listing	21.8	9.85	21	20.45	29.80	29.80
Final Value Fee / sold listing (/unit)	8.50 (8.50)	8.62 (8.62)	21.22 (8.3)	8.57 (8.57)	50.17 (8.32)	11.26 (8.52)
Max. (Min.) Final Value Fee / sold listing	13.82 (5.36)	11.91 (5.21)	51.93 (7.91)	11.21 (5.66)	335.93 (7.50)	335.93 (5.21)
Max. (Min.) Final Value Fee / sold listing/ unit	13.82 (5.36)	11.91 (5.21)	11.32 (5.72)	11.21 (5.66)	10.66 (6.56)	13.82 (5.21)

*: somelisting's shipping cost information is not available.

Table 1: Descriptive Statistics by Listing Type

*****eBay.com, eBay.ca and eBay Motors Parts & Accessories 1¢ Subtitle Sale*****

March 21, 2005 | 05:01PM PST/PT

As a special offer to our sellers, we will be holding a two-day [1¢ Subtitle promotion](#) on the following sites:

- U.S. (www.ebay.com)
- Canada (www.ebay.ca). For more information about this promotion on eBay Canada, [click here](#).
- eBay Motors (www.ebaymotors.com), for non-vehicle listings only.

The promotion will start Tuesday, March 22, 2005 at 00:00:01 PT (12:00 AM plus one second) and end on Wednesday, March 23, 2005 at 23:59:59 PT (11:59 PM plus 59 seconds). Listings created prior to March 22, 2005 and scheduled to start during the promotional period (March 22–23, 2005) will be eligible for the promotional rate. Take advantage of this promotion to add Subtitle to all your listings so you can tell buyers more about your items!

During the [1¢ Subtitle Promotion](#):

For Auction-style, Fixed Price, Real Estate, Ad Format (for those that will run for less than or equal to 30 days), and Motors non-vehicles listings, the fee for Subtitle will be 1¢. This promotion will not apply to the following types of listings: eBay Motors vehicles, International, Live Auction, Professional Services, and Stores Inventory listings.

All other fees (including Insertion Fees, Final Value Fees and all other optional listing upgrade fees, such as Bold, Border, Buy It Now, Highlight, Gallery Featured, Featured Plus!, Listing Designer, Gift Services, Reserve, extended duration insertion fees, etc.) will still be charged. The promotional rate does not apply to listings which start prior to March 22, 2005 or those listings which are revised during the promotional period. The promotional rate also does not apply to listings created during the promotional period that are scheduled to start after the promotion ends on March 23, 2005.

*****10¢ Fixed Price Listing Day Tomorrow, May 12th*****

May 11, 2005 | 03:05PM PST/PT

As a special offer to our sellers, we are pleased to announce a one-day promotion for www.ebay.com and www.ebay.ca where the insertion fees for Fixed Price listings will be 10¢!

The promotion starts on Thursday, May 12, 2005 at 00:00:01 PT (12:00 AM plus one second) and ends that same day, Thursday, May 12, 2005 at 23:59:59 PT (11:59 PM plus 59 seconds). Listings which were created prior to May 12, 2005 and scheduled to start during the promotional period will also be eligible for the special promotional rate. For more information about this promotion on www.ebay.com, please [click here](#).

During the [10¢ Fixed Price Insertion Fee Sale](#):

For Fixed Price format listings, the insertion fee will be 10¢. For more information about this promotional pricing, please [click here](#).

The 10¢ Fixed Price Sale will not apply to eBay Motors vehicles and non-vehicles, International, Live Auction, Professional Services, Real Estate, Ad Format, and Store Inventory listings. Also, the following Business & Industrial categories are excluded from this promotion: tractors & farm machinery (category #91952), heavy equipment (25249), concession trailers, carts (67145), imaging and aesthetics equipment (92035), forklifts and other lifts (97185), manufacturing equipment (92080), metalworking equipment (92082), and commercial printing presses (26247). Please [click here](#) for more details.

All other fees (including Final Value Fees and optional listing upgrade fees such as Border, Bold, Highlight, Gallery, Gallery Featured, Featured Plus!, Listing Designer, Subtitle, Reserve, Extended Duration insertion fees, etc.) will still be charged. The promotional rate does not apply to listings with a start date prior to May 12, 2005, including those listings revised during the promotional period. The promotional rate also does not apply to listings created during the promotional period (May 12, 2005) that are scheduled to start after the promotion ends.

We hope you enjoy the one-day [10¢ Fixed Price Insertion Fee Sale](#)!

Figure 4: Sample Fee Promotion Announcements

	Model (1) Obs=642		Model (2) Obs=638		Model (3) Obs=642		Model (4) Obs=638	
	# Listings/day	# Bidders/day	# Listings/day	# Bidders/day	ln(Listing/day)	ln(Bidders/day)	ln(Listing/day)	ln(Bidders/day)
Intercept	6.753819***	14.07598***	4.234936***	16.42568**	1.052072***	0.559691**	0.986204***	0.651072**
# of New Listings		-0.35188		-0.35269				
ln(# of New Listings)						-0.05743		-0.04534
# of Unique Bidders/Day	0.039258***		0.113449***					
ln(# of Unique Bidders/Day)					0.353958***		0.357069***	
Final Value Fee Adjustment	0.714305		0.186318		-0.08603		-0.10086	
Insertion Fee Promotion	12.92592***		13.35591***		0.891452***		0.899649***	
Avg # of Unique Bidders 3 days / Ln()		0.354059***		0.234269***		0.375391***		0.332922***
# of Open Listings	0.15129***	1.5048***	0.047651	1.282338***				
ln(# of Open Listings)					0.08886	0.702171***	0.034238	0.674964***
Popularity Index	-0.39032***	-0.68779**	-0.22591***	-0.83578***	-0.05982***	-0.02567*	-0.05391***	-0.02758**
Weekend	-2.10644***	-11.1312***	-1.29102***	-9.84976***	-0.18510***	-0.16190***	-0.17229***	-0.14593**
Holiday	-3.16649**	-6.13451	-2.60982*	-5.17569	-0.23998	-0.25380	-0.22264	-0.25455
# of Last Day Listings* / Ln ()			-0.17042*	1.554675***			0.083347*	0.072532
Tuesday	1.04848	4.817397	0.875849	3.468743	0.064863	-0.05194	0.062506	-0.06110
Wednesday	0.14027	3.002399	0.313986	3.327985	0.034261	0.002716	0.049571	0.000619
Thursday	0.326239	-5.27381	1.315365*	-6.54732	0.025912	-0.17819**	0.039203	-0.17980**
Friday	-1.09759	-11.3501**	-0.00408	-10.1811**	-0.08703	-0.17863**	-0.06096	-0.16698**
Saturday	-2.26189***	-13.3127***	-1.20593	-10.5079**	-0.21167***	-0.22523**	-0.17806**	-0.20684**
Sunday	-1.89951**	-8.06062*	-0.82630	-9.35997*	-0.15754**	-0.25522***	-0.15733*	-0.24219***
New Year	-7.67410	-28.0177	-4.57896	-34.1651	-1.23492**	-0.14275	-1.25469**	-0.16697
Christmas	1.67742	-5.17017	2.211668	-5.93716	0.317136	-0.33443	0.312690	-0.36907
Independence Day	-3.5679	-12.2581	-2.11613	-11.4208	-0.48104	-0.22606	-0.43993	-0.23892
Memorial Day	-6.98476*	12.28861	-7.69616**	15.85616	-0.39218	0.152398	-0.32656	0.176169
Labor Day	-1.70486	-0.47006	-1.62641	2.064309	-0.00486	-0.05690	0.003526	-0.07423
Thanksgiving	-2.07950	-14.8087	-1.65257	-10.2258	-0.05771	-0.87282**	-0.02643	-0.82120**
Popularity index	-0.40076***	-0.73596**	-0.23610***	-0.87254***	-0.06043***	-0.02454*	-0.05434***	-0.02611**
# of Last Day Listings* / Ln ()			-0.18437**	1.590469***			0.085759*	0.075194

*: Last Day Listings exclude number of same day listings.

Table 2: Sellers and Buyers' Responses to Insertion Fee Promotions

Obs=496	Model (5)			Model (6)			Model (7)		
	Listings /day	Upgrades /day	Bidders /day	Ln (Listings/day)	Ln (Upgrades/day)	Ln (Bidders/day)	Listings/day	Upgrades/day	Bidders/day
Intercept	0.916060	-0.95961	0.091916	-0.16727	0.9407***	0.286929	0.288761	-0.20122	3.710413
# of New Listings / LN ()		1.418348***	1.701536***		0.040232***	0.025322***		1.421433***	1.709570***
# of New Upgrades / LN ()	0.720630***			0.702517***			0.718811***		
# of Unique Bidders/Day / LN ()	0.004828			0.301805**			0.004816		
Final value fee adjustment	0.295957			0.079539			0.259545		
Insertion fee promotion	7.461818***	-13.9314***		0.459622***	-0.06967		7.10103***	-13.5808***	
Border promotion	-2.11173**	2.779127*		0.020048	0.416851**		-2.34407**	2.955597*	
Subtitle promotion	-0.97907	1.016218		0.049177	-0.09747		-1.13950	1.185261	
Feature promotion	0.765671	-1.27315		-0.11386	0.023484		0.928320	-1.44907	
Avg # of Unique Bidders 3 days / Ln()			0.111005***			0.448749***			0.107048***
% of Upgraded Listings	-0.12360			-0.01403			-0.13150*		
# of Existing Upgrades / LN ()		-0.02165**			0.250805***			-0.02167**	
# of Open Listing / Ln ()	0.033756**	-0.03945**	0.007282	-0.08152	0.114794	0.324683***	0.034345**	-0.03999**	-0.00384
# of Last Day Listings* / Ln ()	-0.00032		1.434264***	-0.06341*		-0.00829	-0.0009		1.486244***
Popularity index	-0.08895*	0.115995**	-0.19651	-0.00973	-0.04972***	0.002191	-0.08782*	0.118131**	-0.20173
Weekend	-0.30268	0.397966	-2.17546	-0.01944	-0.16334***	-0.02277			
Holiday	-1.30972	1.978176	7.419134	-0.08830	-0.26932	0.153697			
Border promotion (USED)			-0.45010			-0.04360			-0.42347
Subtitle promotion (USED)			0.155571			-0.12438**			0.168145
Feature (USED)			-2.44958***			-0.07163**			-2.45513***
Bold (USED)			-0.52284**			-0.13248***			-0.47337*
Highlight (USED)			4.667313***			0.050666			4.649658***
Gallery (USED)			1.502627***			0.360071***			1.486811***
Tuesday							1.322321*	-1.54077*	-3.10580
Wednesday							0.372433	-0.42863	-0.34337
Thursday							0.944781	-1.21074	-10.7993**
Friday							0.589589	-0.72548	-8.03563*
Saturday							0.169012	-0.10271	-4.20548
Sunday							0.260536	-0.34762	-3.88761
New Year							-1.59047	2.630825	-1.31359
Christmas							-2.13089	3.320437	-21.7223
Independence Day							0.943718	-1.13412	-7.31446
Memorial Day							0.313134	-0.41310	26.12772
Labor Day							-1.55382	2.274346	9.902238
Thanksgiving							-3.11696	4.861280	10.34830

Table 3: Sellers and Buyers' Responses to Listing Upgrade Promotions

	Sold Listings (n=4533)				Unsold Listings (n=685)			
	Mean	Std Deviation	Min.	Max.	Mean	Std Deviation	Min.	Max.
Listing Length (hours)	72.71	56.99	0.14	240.00	106.71	66.43	0.014	240
Featured	0.034	0.18	0.00	1.00	0.023	0.15	0	1
Bolded	0.142	0.35	0.00	1.00	0.093	0.29	0	1
Bordered	0.025	0.16	0.00	1.00	0.015	0.12	0	1
Highlighted	0.0077	0.088	0.00	1.00	0.0088	0.093	0	1
Subtitled	0.33	0.47	0.00	1.00	0.311	0.463	0	1
Galleryed	0.685	0.465	0.00	1.00	0.469	0.499	0	1
Number of Bids	14.24	11.11	1.00	91.00	1.46	5.11	0	42
Number of Unique Bidder	7.76	5.33	1	52				
Winning Price	285.16	30.75	155	480	0	0	0	0
Total Price Paid	342.58	28.15	181	539.95	0	0	0	0
Insertion Fee	1.65	1.712	0.10	4.80	2.64	1.8288	0.10	4.80
Bold Fee	0.14	0.345	0.00	1.00	0.09	0.2863	0.00	1.00
Border Fee	0.06	0.416	0.00	3.00	0.04	0.3419	0.00	3.00
Highlight Fee	0.04	0.433	0.00	5.00	0.04	0.4662	0.00	5.00
Gallery Fees	0.24	0.162	0.00	0.35	0.16	0.1732	0.00	0.35
Subtitle Fee	0.16	0.2322	0.00	0.50	0.15	0.2299	0.00	0.50
Featured Fee	0.67	3.604	0.00	19.95	0.468	3.022	0.00	19.95
Final Value Fee	11.26	16.45	5.21	335.93	0	0	0	0
Final Value Fee / UNIT	8.51	0.8	5.21	13.82	0	0	0	0
Number of Unit Sold	1.34	2.02	1	44	0	0	0	0
Number of Unit Listed	1.58	3.59	1.00	50.00	2.33	5.63	1	100
Probability of Sales	0.98	0.099	0.04	1	0	0	0	0

Table 4: Descriptive Statistics for Sold/Unsold Listings

Obs=464	Intercept	Final Value Fee Adjust	Insertion Fee Promo	Subtitle Promo	Border Promo	Feature Promo	Popularity Index	Weekend	Holiday
Insertion Fee	40.16482***	-0.25643	-2.99006	-11.05739***	8.29907	9.59461	-1.98852***	-4.78557***	-7.84589*
Total Upgrading Fee	24.02031***	-6.12566***	2.71746	-5.59719	7.80311	14.35961**	-0.79651***	-4.31334***	2.96133
Subtitle Fee	4.06535***	0.48164**	0.31320	-1.96152***	1.29975**	-0.19968	-0.23440***	-0.47270***	-0.69093
Border Fee	1.21636***	-0.13130	0.26608	-0.65406*	0.21377	1.39967**	-0.05203***	-0.18043	-0.19369
Feature Fee	9.85719***	-6.32423***	0.52902	-0.41028	4.28991	14.13053**	-0.06953	-2.87126***	5.29996
Bold Fee	2.95100***	-0.22593	0.58242	-0.67172	0.41625	-0.22697	-0.13785***	-0.29571*	-0.87077*
Highlight Fee	0.56156***	-0.03352	0.08644	-0.04008	0.27042	-0.32988	-0.02139	0.03130	0.17279
Gallery Fee	5.36884***	0.10768	0.94030*	-1.85953***	1.3130**	-0.41406	-0.28331***	-0.52454***	-0.75602
Final Value Fee	196.96967***	-41.16052***	45.78378**	-70.59547***	62.62058**	22.30098	-7.38778***	-26.26774***	-37.32249
LN (Final Value Fee)	5.84689***	-1.14312***	0.86101***	-0.79244**	0.73193*	0.49224	-0.17121***	-0.35430***	-0.75021**
Final Value Fee (units)	9.12612***	-0.05859	-0.01361	-0.18915	-0.11457	0.20434	-0.07758***	-0.02862	-0.36118
Total Fees	261.15479***	-47.54264***	45.51118*	-87.25005***	78.72276**	46.25520	-10.17481***	-35.36665***	-42.20705
Number of Units Sold	22.89144***	-5.08759***	5.66317**	-8.17183***	6.95351**	3.19848	-0.82855***	-3.12069***	-4.35982
Prob. of Sales	0.83239***	-0.08143***	-0.26151***	-0.02934	-0.00166	0.01776	0.01233***	0.00475	0.02777
Prob. of Sales (Units)	0.82953***	-0.08213***	-0.24107***	-0.05257	0.00152	-0.02458	0.01044***	0.00655	0.03214
New Listings	24.33715***	2.06102	12.33581***	-8.57603***	4.34678	6.04838	-1.39255***	-2.29748***	-3.71402
Subtitle Listings	8.19451***	0.92377*	0.53092	-2.18198**	1.99826	0.52916	-0.47132***	-0.96048***	-1.39305
Border Listings	0.45570***	-0.06186	0.14198	-0.67525***	2.24430***	-0.92322***	-0.01970**	-0.07385	-0.07426
Feature Listings	0.49409***	-0.317***	0.02652	-0.02057	0.21503	0.70830**	-0.00349	-0.14392***	0.26566
Bold Listings	2.96371***	-0.21878	0.58478	-0.67304	0.41784	0.87187	-0.13923***	-0.29560**	-0.86932*
Highlight Listings	0.11015***	-0.01132	0.01720	-0.00769	0.05327	-0.01599	-0.0039	0.00622	0.03409
Gallery Listings	15.37494***	0.28366	2.69723*	-5.31538***	3.74882**	3.42526	-0.81150***	1.49863***	-2.15885
Total Upgrade Listings	27.59311***	0.59847	3.99863	-8.87391***	8.67752**	4.59538	-1.44914***	-2.96626***	-4.19572
Perct of Upgrade Listing	1.14121***	-0.21653**	-0.37128**	-0.0322	0.24432	0.03382	0.01864*	-0.02342	-0.01893
Upgrading Fee Minus Insertion Fee	-16.14452***	-5.86923***	5.70752	5.46020	-0.49596	4.76500	1.19001***	0.47224	10.80723**
Final Value Fee - Nonfinal Value Fees	132.78454***	-34.77843***	46.05638***	-53.94089***	46.51840**	-1.65325	-4.60074***	-17.16883***	-32.43793*

Table 5: Daily Revenue Effect

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