Chapter VII
Nonlinear Pricing in E–Commerce

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ABSTRACT

Internet markets are usually under the command of a market intermediary that charges fees for its services. Differences in quality across items being sold allow the market intermediary to employ lucrative nonlinear pricing strategies and to offer different levels of service. For several years now, eBay has been using a nonlinear pricing policy that offers sellers the opportunity of having their items listed first when buyers search for specific products in return for an additional fee. A similar pricing strategy is also used in other online markets like Overstock.com and ArtByUs.com, and is also employed by search engines when sponsored links are displayed first. In this paper we analyze this topic from a theoretical and empirical perspective. Intuitively, potential buyers are more likely to examine items listed first and sellers of high quality items are more likely to pay an extra fee in order to have preferential access to buyers. In the theoretical section of the paper we analyze the optimal pricing policy of the market intermediary in a market with heterogeneous goods. In the empirical sections of the paper we analyze a unique panel of approximately 2,200 art auctions from artists who sell their own work through eBay. We use our data to quantify the overall impact of this pricing policy on the revenues of the sellers and the market intermediary. As expected, this pricing policy creates a selection effect by which sellers of the most valuable paintings are willing to pay an extra fee in order to gain access to a large pool of potential buyers. Our results also indicate that the pricing policy implemented by eBay increases revenues significantly for sellers and for the market intermediary when compared with a single-price policy and acts as a coordination mechanism that facilitates the match between buyers and sellers.
INTRODUCTION

Online markets are usually under the control of a market intermediary. The intermediary, by matching buyers with sellers, acts as a necessary catalyst for trade and can charge fees for its services. Faced with heterogeneous customers, the intermediary has an incentive to offer different levels of service to different customers subject to different fees. Intuitively, sellers of high quality items may be willing to pay an extra fee in order to gain access to a large pool of potential buyers because they benefit the most from having many buyers competing for their product in an auctions market.

In this paper, we analyze theoretically and empirically a specific pricing strategy employed by eBay. For several years now, eBay has been using a simple nonlinear pricing strategy, or as they call it “Featured Plus!” (FP). This pricing strategy works by giving sellers the option of having their item listed first when buyers look for a specific item, artwork in our data, at an extra fee. Items that are not featured will be listed after the featured items along with thousands of other pieces of artwork that are posted on eBay daily. The basic idea behind “Featured Plus!” is that items that are listed first will attract a larger number of potential buyers because buyers incur a lower search cost when looking at these items. The same kind of strategy is also used in other online markets, like overstock.com or artbyus.com. Search engines also employ a similar pricing strategy when sponsored links are displayed at the top of the results page.

Theoretically, we build a simple model of a two-side market controlled by a market intermediary and develop some insights on the optimum pricing policy of the market intermediary. We also present some comparative statics results. Empirically, we analyze a unique panel data of approximately 2,200 art auctions from artists who sell their own work through eBay without the help of an agent or a gallery, also known as “self-representing” artists. We use our data to quantify the effect of this pricing policy on the revenues of the sellers and the market intermediary. As expected, this pricing policy creates a selection effect by which sellers of the most valuable paintings are willing to pay an extra fee in order to gain access to a large pool of potential buyers. This kind of auction commands a higher price than standard auctions and a higher probability of sale. Our results also indicate that the pricing policy implemented by eBay increases revenues significantly for sellers and for the market intermediary when compared with a single-price policy and acts as a coordination mechanism that facilitates the match between buyers and sellers.

The paper proceeds as follows. In the theoretical background section, we develop a theoretical model that illustrates the properties of alternative price policies available to the market intermediary in a two-sided market. In the section on empirical application, we present a brief description of the eBay marketplace and the data to be used in the empirical analysis along with some descriptive statistics. In the section on empirical methodology, we develop the econometric methodology to be used in our analysis of the data. In the empirical results section, we present estimation results and analyze the outcome from a policy experiment.

THEORETICAL BACKGROUND

Consider a market controlled by an intermediary. The market intermediary matches sellers with potential buyers and in return charges a fee for this service. The market serves a large number of sellers and potential buyers. Without loss of generality, assume that the number of sellers in the market correspond to the unit interval and that there are K potential buyers per seller. For simplicity, we will treat K as if it was a positive real number, when in fact it has a more intuitive interpretation as a positive integer. As a result of the match between a seller and K potential buy-
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