Auctions with a buy price

Received: 25 May 2005 / Revised: 26 July 2006 / Published online: 23 December 2006
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Abstract eBay and Yahoo allow sellers to list their auctions with a buy price at which a bidder may purchase the item immediately. On eBay, the buy-now option disappears once a bid is placed, while on Yahoo the buy-now option remains in effect throughout the auction. We show that when bidders are risk averse, both types of auctions raise seller revenue for a wide range of buy prices. The Yahoo format raises more revenue than the eBay format when bidders have either CARA or DARA. Bidders with DARA prefer the eBay auction, while bidders with CARA are indifferent between the two.

Keywords Auction · Buy price · Yahoo · eBay · Risk aversion

JEL Classification Numbers D44 · D82 · L86

1 Introduction

The expansion of commerce conducted over the Internet has sparked a surge of interest in auctions and the emergence of new auction forms.1 A new twist in online auction formats appears in Yahoo and eBay auctions. In 1999 Yahoo introduced the Buy-Now feature into its ascending bid auctions. The Buy-Now feature allows a

Part of this work was completed while Reynolds was a visitor at Instituto de Analisys Economico in Barcelona and while Wooders was a visitor at Hong Kong University of Science and Technology. We are grateful to these institutions for their hospitality.

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1 Lucking-Reiley (2000) describes the wide variety of online auction formats that were being used as of 1999.
seller to set a price, termed a buy price, at which any bidder may purchase the item at any time during the auction. Since the buy price remains in effect throughout the auction, this feature allows the seller to post a maximum price for the item. In 2000 eBay introduced its own version of a fixed price feature into its online auctions via the *Buy It Now* option. In contrast to the Yahoo format, eBay permits bidders to select the buy price only at the opening of the auction, before any bids are submitted, or in the case of an auction with a (secret) reserve, before bids reach the reserve price.

eBay.com is the dominant auction site in the United States and hosts millions of auctions each day, with around a billion listings over the course of last year. Yahoo! Auctions dominates in Japan. Both eBay’s and Yahoo’s buy-now auction formats have proven to be quite popular. About 40% of eBay auctions are of the “buy-now” auction format that we study in our paper. At first glance, the popularity of buy-now auctions is puzzling. After all, an ascending bid auction is intended to elicit high bids from potential buyers. Putting a cap on these bids (as in a Yahoo buy-now auction) or offering a fixed price at the auction open (as in an eBay buy-now auction) would seem to limit the seller’s expected revenue.

In this paper, focusing on the effects of bidder risk aversion, we analyze and then compare the Yahoo and eBay buy-now auctions. We characterize equilibrium bidding strategies for both auctions. We show that when bidders are risk averse, the introduction of a buy price raises seller revenue in both auctions for a wide range of buy prices. Intuitively, this is because a risk-averse bidder is willing to pay a buy price which includes a risk premium, rather than face uncertainty regarding whether he wins the auction and, if he wins, how much he pays. We also compare the eBay and Yahoo auction formats. When both auctions have the same reserve prices and buy prices, we demonstrate that the eBay and Yahoo buy-now auctions are payoff equivalent from the bidders’ perspective if bidders have constant absolute risk aversion (CARA), the eBay auction is preferred if bidders have decreasing absolute risk aversion (DARA), and the Yahoo auction is preferred if bidders have increasing absolute risk aversion (IARA). The seller, however, obtains more revenue in the Yahoo auction provided that bidders have either constant or decreasing absolute risk aversion.

We utilize a symmetric independent private values framework with a continuous distribution of values for the $n$ bidders. In both auction formats, at the auction open the bidders simultaneously choose whether to accept the buy price or wait. If a bidder accepts the buy price, then he pays the buy price and the auction ends. If all bidders wait then there is an ascending clock auction with the bid starting at the reserve. The eBay and Yahoo auctions differ in whether the buy-now option remains in effect during the ascending bid phase. On eBay the buy-now option is

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4 eBay’s fixed price trading contributed approximately $3.4 billion or 32% of total gross merchandise sales during Q3–05, primarily from eBay’s buy it now feature. Reynolds and Wooders (2003) find about 40% of eBay auctions and 66% of Yahoo auctions employ a buy price. Hof (2001) also cites a 40% figure for the fraction of eBay auctions that use the buy-now feature. Anderson et al. (2004) studied a sample of over 1,000 eBay auctions that resulted in a sale. They found that the seller offered a buy price in 49% of these auctions, and that the buy price was accepted 43% of the time when it was offered.