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journal homepage: [www.elsevier.com/locate/jebo](http://www.elsevier.com/locate/jebo)Does laboratory trading mirror behavior in real world markets? Fair bargaining and competitive bidding on eBay<sup>☆</sup>Gary E. Bolton<sup>a,\*</sup>, Axel Ockenfels<sup>b</sup><sup>a</sup> Jindal School of Management, University of Texas Dallas, Richardson, TX 75080, USA<sup>b</sup> University of Cologne, Department of Economics, Albertus Magnus Platz, D-50923 Cologne, Germany

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## ABSTRACT

Laboratory market experiments observe a sharp dichotomy between (selfish) competitive behavior and fair-minded social behavior depending on competitive conditions. While the dichotomy is consistent with social preference theory, the often advanced hypothesis that social behavior is an artifact of laboratory conditions has not heretofore been ruled out. We tested these competing hypotheses in a field experiment on eBay conducted with experienced traders. The buyer behavior we observe strongly confirms the social preference hypothesis. Also, the behavioral patterns in the field experiment mirror fully naturally occurring trading patterns in the market. For instance, some sellers do not use their commitment power as predicted by theories of both selfish and social behavior, with the pattern of deviation reflecting traders' market experience outside the experiment.

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## 1. Introduction

Traditionally, economists assumed that self-interest is the sole motive behind economic behavior. An important piece of evidence for this view is how well it accords with the pricing we observe in competitive markets. More recently, social preference theory asserts that social objectives, particularly fairness (relative payoffs), also play an important role, especially in games where equity, reciprocity or trust is an issue. This theory offers a different account of competitive pricing behavior, that competitive markets effectively align concerns for relative payoffs with self-interest roughly because failure to trade leads to a very poor relative and self-interested outcome. So even those who put a high weight on the fairness of an outcome compete to win in competitive markets (see [Fehr and Schmidt, 1999](#); [Bolton and Ockenfels, 2000](#) for derivations).

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An important implication, different than what we would expect if we assumed strict self-interest, is that social preferences may show themselves in the parts of the market where pricing is not competitive (bilateral bargaining) or where competition is not so much the driver; for example, after a buyer and seller strike a deal and must execute the actual transaction.

Most of the evidence for the social preference point of view comes from laboratory experiments (Cooper and Kagel, *forthcoming*, provide a comprehensive survey). A seminal experiment by Roth et al. (1991) speaks to the issue of social preferences and competitive markets. The experiment concerns a simple auction market game. A single seller has one indivisible unit of a good to offer nine buyers who simultaneously submit offers. The seller is then given the opportunity to accept or reject the best offer. Assuming selfish preferences, all subgame perfect equilibria have the seller receiving virtually the entire surplus. In fact, after a few rounds of play this is what is observed. A second treatment repeated the game save this time only a single buyer places bids, effectively replacing competition with bilateral ultimatum bargaining (e.g., Güth et al., 1982). The selfish subgame equilibrium does not change. In this treatment, bids prove generally higher than subgame perfection predicts, and there were a significant number of rejections, inconsistent with the selfish equilibrium, but precisely what social preference theory would predict.<sup>1</sup>

There are reasons to wonder whether the pattern of behavior Roth et al. report, especially the bilateral bargaining pattern, would continue to hold outside of the lab. The experiment we report here will focus on two reasons widely discussed in the literature. By design, laboratory experiments abstract away from both the context and the complexity of naturally evolved market institutions. The laboratory market may seem foreign to them and inadvertently trigger a concern for fairness that would not be triggered in a field market. Also, subjects in the laboratory do not have the mix of experience common in markets in the field. Experienced traders may be less sensitive to fairness considerations leading to different results in the bilateral trading case. (See Levitt and List, 2007; Bardsley et al., 2010; Camerer, 2011 for difference views on these issues and more generally on the relationship between lab and field.)

Our field experiment compares competitive auction and bilateral bargaining on eBay. All transactions took place on eBay's market platform according to eBay's naturally evolved rules. Subjects were experienced traders who self-selected themselves into the eBay environment for their own, independent purposes (including into their market roles as buyers or sellers). The stakes reflect those of the average transaction on eBay. Also, the actions in our experiment were official eBay transactions and became part of these feedback histories.

eBay's trading rules have the same first mover-second mover format, as do the simple market games in Roth et al. (1991). In both eBay and the lab games, first movers have a significant advantage in that they have considerable commitment power, able to specify key terms of the deal. At the same time, the eBay market exhibits differences in important respects with lab versions of auctions and bilateral bargaining, including the Roth et al. lab games. For instance, unlike in laboratory bargaining games, we do not explicitly point buyers to the option of 'rejecting' an offer-traders are simply told they are free to take any action as long as it is in line with eBay's trading rules. Not being given an explicit option of rejecting an offer may affect the likelihood of choosing it.<sup>2</sup> Also, auction sellers who set up the trade have more options than typically studied in a laboratory (e.g., auction, posted price), with subsidiary rules serving practical purposes that must be abided by. Other differences include that buyers are free to choose the timing of their bids. eBay is also a far noisier and complex trading environment than the lab. For instance, computer processing time and connection speed may prevent very late bids from being accepted, traders might employ shill bidding or other fraudulent strategies, or they may experience computer, server, health or other problems. We will see that some of these features have implications for the theoretical analysis as well as actual trading.

We intervene in this field environment for the sole purpose of creating public knowledge about what traders know regarding competition and payoffs (hence ours is a *controlled* field experiment). The controls enable us to determine whether observed selfish behavior arises due to a lack of information or to different preferences. Specifically, we recruited experienced eBay traders and randomly assign them to either the bilateral or competitive bargaining treatment. In each case, we completely inform the traders, under public knowledge conditions, how much competition they face and about all payoffs. We can then derive formal theoretical predictions for the experiment that parallel those behind Roth et al. (1991) experiment, enabling us to classify the behavior we observe as either in-selfish-equilibrium or in-social-equilibrium or as out-of-equilibrium. An additional advantage is that we can directly compare results back to the laboratory experiment performed under parallel conditions.

The results of our experiment imply that the laboratory findings concerning fair bilateral bargaining and competitive bidding are robust to a natural trading environment. We also establish a link between the extent of social preference subject traders exhibits in the market and their fully naturally occurring trading patterns in the market.

We discuss our experiment and hypotheses in Section 2, and the results in Section 3. Section 4 discusses how our experiment relates to other field experiments and online market research. Section 5 concludes.

<sup>1</sup> Roth et al. performed their experiment in four countries. While there were some quantitative differences in the outcomes across countries, the qualitative pattern we describe held in all cases.

<sup>2</sup> One also loses some control over why an offer is not accepted; we will come back to this when we analyze the data.

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