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Skills in the marketplace: Market efficiency, social orientation, and ability in a field-based experiment

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ABSTRACT

Neoclassical economic theory predicts that markets will clear, leaving little or no marginal gains from trade. Laboratory experiments have largely confirmed this prediction, though the results of recent field experiments have been mixed, especially in developing countries. I create a multiround trading market in Uganda to explore the efficiency of trading and test whether traders' personal traits are associated with market efficiency and individual bargaining success. To test the effects of individual traits, I utilize data on measures of the traders' human and physical capital, risk and time preferences, and social orientation, specifically pro- and antisocial behavior and aggression. I find that the buyers' and sellers' relative levels of social orientation and human capital are associated with levels of market efficiency within rounds. Measures of social orientation, however, are less associated with individual success. I also find that rents obtained in the experiment are strongly associated with the wealth levels of participants two years later, but this association is limited to those who were randomly assigned to be buyers in the experiment. I present evidence that this association is driven by greater buyer bargaining ability.

1. Introduction

The prediction that markets in equilibrium will clear, leaving behind little or no marginal gains from trade, is a central tenet of neoclassical economic theory. Research on financial and trading markets in developed countries has largely confirmed this prediction (Fama, 1970), along with a number of laboratory experiments (Smith, 1962). More recently, in a field experiment with memorabilia traders, List (2004) found efficiency rates as high as 97% in some rounds of trading.

Evidence on market efficiency in developing countries is more mixed. Financial markets are often incomplete, but those that exist perform relatively well (Magnusson and Wydick, 2002). Among small-scale traders, the results are less promising. Bulte et al. (2013) find efficiency rates below 90% among inexperienced trading communities in Sierra Leone. Through a novel experimental design, they show that varying interaction mechanisms can increase this rate by a small amount, though there are still significant inefficiencies. Their results suggest that expanding market growth will help push out inefficiencies; however, there is still good reason to be worried about the reasons for low efficiency[1].

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[1] Interestingly, Gode and Sunder (1993) show that computer-programed zero-intelligence traders can achieve equilibrium in market trading. This makes the question of why there are low efficiency rates in developing countries an even bigger concern.

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While existing laboratory and field experiments have focused on the overall efficiency of markets, they have paid little attention to who is participating in the market. In any market, some individuals will likely obtain greater rents than others due to greater bargaining ability, which is likely based on a range of personal abilities and characteristics. If these characteristics affect not only individual success but also overall market efficiency, then the "wrong" mix of personal characteristics among participants in a market could lead to inefficient outcomes. The role of market participants' individual characteristics on market performance could thus be of interest to researchers and policymakers working to better understand market efficiencies in both developed and developing countries.

In order to explore what contributes to low-efficiency outcomes and how this may be associated with market participants' individual characteristics, I describe here the results of an experiment in Uganda that merges individual outcome data from a bargaining experiment with detailed individual preferences, social orientation, and skills-based information. I create a private auction, multiround trading market where individuals are randomly selected as buyers and sellers and given random values for an imaginary good. The design is intended to reflect the market conditions that people in Uganda and other developing countries regularly face. I use the results to explore the efficiency of trading, whether participants' individual traits could predict market efficiency and/or individual bargaining success, and how individuals' relative success in the experiment correlated with their future wealth levels.

In early rounds of trading, I find low efficiency rates similar to those found by Bulte et al. (2013), discussed above. By the final rounds, however, efficiency rates are higher and close to neoclassical theoretical predictions. I also find that a number of individual characteristics are correlated with success, both of the overall market and of individual participants in the experiment. Greater average age, wealth, and human capital of participants are positively associated with market efficiency, whereas indices of participants' patience, pro- and antisocial behavior, and aggression are negatively associated with market efficiency. Greater age, human capital, wealth, patience, and aggression are associated with individual success in the market, though inconsistently. The significance of individual success in the experimental market to wealth outcomes after the experiment varies by whether a person was selected to be a buyer or a seller.

Specifically, I look at how the rents obtained by participants correlate with their future wealth outcomes, collected two years after the experiment was run. I find that the total rent an individual obtains is positively associated with individual wealth two years after the experiment, but only for those who were assigned to play as buyers. I do not find an association with intermediate business outcomes for either buyers or sellers. While I am not able to test for all potential mechanisms directly, the evidence suggests that the correlation is based on buying ability particularly rather than overall entrepreneurial ability[2].

Overall, the results of the experiment described here suggest that market buyers and sellers in a developing country are not obtaining full rents, though this inefficiency occurs at a rate similar to that found in developed economies. Measures of individual social orientation and abilities are important for aggregate market performance, but the social orientation measures are not important for individual performance. This suggests that participants' individual characteristics play a complementary role within markets.

This paper contributes to the literatures looking at market efficiency and the role of individual ability and social orientation on individual and market outcomes. The results suggest that future work on market and social efficiency will need to include consideration of participants' individual social orientation. In the next section, I discuss current research on the role of individual social characteristics and abilities in economic outcomes.

2. Evidence of the role of individual characteristics

This study is part of a growing research field looking at how individual characteristics and skills correlate with economic outcomes. A major limitation of this literature is that, while individual characteristics have been found to correlate with economic outcomes, much of the work is a theoretical and does not present a strong case for which characteristics should matter. The current paper is limited in this way as well. Thus, much of the results in the literature show a correlation between characteristics and outcomes, but these correlations are not necessarily consistent across studies. Clearly, individual characteristics matter in some way, but it is still unclear how fully conceptualize the role they play.

For instance, DellaVigna (2009) summarizes research on how individuals deviate from standard economic models, including the role of social preferences, limited attention, and persuasion in market outcomes. Heckman et al. (2006) present evidence that cognitive and noncognitive skills predict a number of economic outcomes, including employment, wages, and occupational choice. Leibbrandt (2012) finds a strong correlation between prosocial outcomes in a laboratory experiment and outcomes from a trading market in Brazil. Iyer and Schoar (2010) conduct a market experiment by sending buyers to negotiate with sellers and look at final price agreements. They then test whether the outcomes of the negotiations correlate with whether a buyer is from a different community than a seller helps. They find this does matter. In an experiment using a double-auction design in Kenya, Haushofer and Zurlinden (2013) find that bids conform to neoclassical theory. They also find a correlation between cognitive skills and experimental outcomes. The results of these papers are similar to what I find

[2] It is still possible that the games are picking up seller/business expertise. However, given that the results for those assigned to be sellers are not correlated with future outcomes, it is likely that this is not the case.