What Motivates Individuals to Participate in Economic Experiments? A Latent Class Analysis with Unobserved Heterogeneity

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Introduction

Experimental auctions have become an increasingly common method of value elicitation that provides direct estimates of consumers' valuations. A well-known advantage of non-hypothetical experimental auctions over hypothetical stated preference methods is that individuals are put in a simulated market environment where there are real monetary consequences to stating a valuation different than their true valuation (Lusk and Shogren 2007). In order to resemble real traders, individuals are usually provided with a participation fee that serves as an initial endowment to bid and compensates individuals for their participation time. The magnitude of this endowment has been shown to influence willingness-to-pay estimates (Loureiro, Umberger, and Hine 2003).

Although the provision of cash compensation enhances participation rates, it is also likely that other driving forces might serve as motivators to participate in an experimental auction and play a role in influencing bidding behavior. For instance, individuals might have a personal preference for the category of products being investigated, desire to support the entity conducting the research, availability of time and willingness to help, among other potential motivations that may be interrelated. All of these factors could result in unobserved individual heterogeneity that has not yet been accounted for in experimental auction design.

Previous studies have investigated bidding behavior from a behavioral and psychological stand-point (Adam et al. 2011; Ding et al. 2005). However, no information is available concerning the underlying motivation for individuals to participate in experimental auctions and

its influence on actual willingness-to-pay (WTP). This article extends the knowledge and understanding of experimental auctions by analyzing unobserved and observed heterogeneity among experimental auction participants and its effect on willingness-to-pay estimates. The objectives are as follows: First, identifying potential latent classes of participants in experimental auctions based on unobserved motivations and observed indicators of participants' heterogeneity. Second, investigating differences, if any, in consumers' valuation of specialty melons, government and industry-issued food safety standards, and tasting, amongst members of these classes. Using a non-hypothetical second-price Vickrey auction (Vickrey 1961) conducted to elicit willingness-to-pay for government and industry-issued food safety standards, we segment participants into latent classes based on observed indicators of motivations to participate. We contribute to the experimental auction literature by identifying and characterizing three distinct classes of experimental auction participants based on motivation, a latent construct that has been of little attention in the literature, and by quantifying the ways in which this latent construct influences bidding behavior. Understanding the motivational, behavioral and demographic composition of different unobserved latent classes of participants may help experimenters to understand discrepancies in their WTP estimates.

Literature Review

Consumer preferences for commodities, rights, and services are characterized by observed and unobserved heterogeneity. The increasing use in the literature of Random Parameters models to analyze experimental auction data (Yue et al. 2010, McAdams et al. 2013) suggests that individual unobserved heterogeneity is a significant feature of data collected in experimental

auctions that deserves attention prior to making inferences about consumers' valuations of products. Yet, while procedures that allow the parameters to vary randomly over individuals effectively account for unobserved heterogeneity, they are not well-suited to explaining the sources of heterogeneity. Alternatively, heterogeneity in preferences can be assumed to occur discretely using a latent class approach, which consists of sorting individuals into a number of latent classes, each composed of homogeneous individuals (Boxall and Adamowicz 2002).

Latent Class Analysis (LCA), also known as finite mixture modeling, serves to identify a set of mutually exclusive and exhaustive classes or subgroups that are unobserved. LCA assumes that there is an unobserved categorical variable, such as the number of distinct subgroups, types, or categories of individuals, which are measured by observed categorical indicators that are interrelated. This statistical tool has been used in the social (Coffman et al. 2007), psychological (Lubke and Muthen 2005), political (Breen 2000; Feick 1989; McCutcheon 1985), and health sciences (Laumann, Paik, and Rosen 1999) to investigate theoretical concepts that cannot be directly observed, such as ability, racial prejudice, religious commitment, or motivation. For instance, Coffman et al. (2007) made use of observed indicators of drinking motivations among high school seniors to identify four latent classes of drinking behavior and to suggest prevention programs targeted to each class. LCA has also been used in choice-based conjoint analysis to cluster respondents into distinct classes based on observable attributes of choice (Ortega et al. 2011; Boxall and Adamowicz 2002; Ouma, Abdulai, and Drucker 2007; Swait 1994). Boxall and Adamowicz (2002) used a branded choice experiment to identify four classes of recreationists based on attitudinal measures of motivation for taking a trip to a wilderness park, and to examine welfare measures.

The use of LCA in the context of auctions has not been widespread, but previous studies have looked into participants' behavior and motivations to win the auction. Adam et al. (2011) suggest that past auction outcomes which trigger emotions such as the joy of winning or loser regret, and the economic environment of perceived competition, may impact future bidding behavior. Ding et al. (2005) studied a formal representation of the impact of emotional bidders on bids across consumers and the way in which past bidding behavior influenced future bids. They found that there is a strong motivation effect associated with bidding, and such emotions change dynamically based on the outcome of the previous bids. They present a detailed theoretical framework of emotional bidding behavior and refer to auction fever as the interplay of past auction outcomes, the economic competition environment, and auction events. However, even if LCA has been applied to a wide range of issues in various fields, it has not yet been used to identify classes of participants in experimental auctions based on their motivation to attend the auction in the first place. This distinction allows the estimation of more accurate cost-benefit analyses and provides insights into the differential welfare impacts of a policy change, such as policies related to the implementation of industry and government-based food safety standards.

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