# Experimental Auctions: New Theoretical Developments and Empirical Findings – Discussion

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## Introduction and Motivation

We are well aware that the food industry has moved from producing and selling generic commodities to providing consumers with attribute specific products. The consumer has become the focal point of attention in the food industry. The consequences of not recognizing the importance of the consumers were all too evident in the case of beef demand through the 1980's and 1990's. The beef industry seemingly ignored the need to provide a consistently palatable, convenient, and safe product. Agricultural economists are not completely exonerated from criticism here either (Purcell 1989). At the same time, our colleagues in meat science and others understood the importance of tenderness, packaging, and safety attributes. They and industry personnel were asking how much consumers might be willing to pay for these attributes. Do these and other characteristics add value to the product? All this talk about value added, and we have struggled with how to measure the value of product attributes.

The initial response is to put the "new" product on the shelf and let consumers vote by taking or leaving it. Retailers, in general, are not receptive to requests from researchers conducting such tests. They are fearful of losing valued customers or have other related concerns. Our experience with a branded, low fat, fresh beef product (Wyoming Lean Beef) was exactly this. Retailers did not welcome us with open arms to test this product. Their concerns may have been justified for reasons that do not need to be detailed here. Of course, even if the product can be put on the shelf, what price should be posted? We still cannot clearly ascertain the value of an attribute or product that contains a specific attribute. We therefore turn to laboratory methods and specifically non-market valuation approaches. One approach, the primary focus of this session, is laboratory experimental auctions and their use in marketing research. The topic addressed in this session therefore is important and timely.

As the food industry moves from a commodity business to one which includes differentiated and brand-identified products, the development of new products and product characteristics will increase. Participants in the food industry, as a result, will need to know both the consumer appeal of the new products and product characteristics, and the economic value consumers place on them. Value information is important not only with respect to the decisions regarding whether or not to produce the product for general sale and pricing decisions, but also to determine if new products and product characteristics enhance consumer's value perception of food products. Traditional marketing research techniques, for the most part, have focused primarily on the issue of consumer appeal and have not addressed the important topic of value.

## Laboratory Experimental Auctions and Marketing Research

It has been more that a decade since we conducted experiments to compare how consumers valued a vacuum skin package relative to the traditional overwrapped styrofoam tray for beef (Menkhaus et al. 1992). Many of the issues and problems we faced at that time appear to be relevant today, based on the topics addressed in this session. The data from laboratory auctions can pertain to actual purchasers, who

purchase a real product, and pay real money. As such, laboratory experiments provide a viable alternative/complement to standard elicitation methods.

The laboratory approach, on the other hand, has disadvantages or, at least, issues of concern. Some of these issues are addressed by the authors of papers in this session. Hoffman et al. (1993) identify the following.

- Laboratory experimental auctions have a structural disadvantage in that the bidding mechanism does not naturally mimic how consumers reveal preferences in grocery stores. Auctions are not used to determine prices paid in the grocery store. Prices, instead, are posted. More importantly, however, it is difficult to structure the experiment to include competing alternatives. It may be difficult for a consumer to readily assess a private value for a "test" product in the absence of relevant reference frames. Differences in values elicited in auctions of control and test products may be relevant in such cases. An appealing alternative would be to conduct an auction with multiple product choices, such as proposed by Lusk (2001).
- Repeated trials provide the bidder the opportunity to learn and update preferences and beliefs given the set of market prices, thereby creating an environment for strategic bidding. If agents engage in strategies to deal with uncertainty about their values, auction mechanisms may lose their incentive compatibility properties. This suggests that it is important to develop task instructions that convince consumers of the incentive compatibility of bidding their reservation values unencumbered by strategic considerations. Trials are also important in this regard, as is a random $n^{th}$ – price auction (Shogren et al. 1994). The random trial procedure also controls for wealth effects, a problem that might be encountered when successive auctions are binding.
- Controversy remains about the correspondence between the theoretical incentive compatibility of an auction mechanism and actual participant behavior. Primary attention has been given to variants of the second-price, sealed-bid or Vickrey auction. Research (Coursey and Smith 1984; Kagel et al. 1987) has shown that bids in such auctions should not necessarily be interpreted as representing true reservation values (Coursey and Smith 1984). Results, however, suggest that the order of bids may very well represent the order of true values. If the order of values is preserved in the bids, the researcher then should be able to compare bids across experimental treatments. An alternative to the Vickrey auction, as per Smith in Hoffman et al. (1993), is an English auction designed to reveal the reservation values of winning bidders. In such an auction the price ticks up until all bidders drop out, and then a number determining the number of units offered for sale ($n$) is randomly chosen. The n highest ranking – bidders receive the product and pay the bid price valued n+1. Work planned by Lusk (2001) will shed light on this controversy.

Where does this leave the researcher who is interested in eliciting the value of new products or product attributes? There is an increasing number of studies that have used experimental auctions. The papers presented in this session reference many of these. With the completion of each study, we learn more about how to refine and improve this methodology.

**Considerations for the Practitioner**

The process of collecting primary data is rarely easy and is often subject to criticism. Conducting laboratory auction experiments is not easy and requires

considerable planning and effort, particularly if a sample of actual shoppers is recruited. Nevertheless, the results obtained from such research can be useful in addressing important value related issues, making the future of valuation using experimental auctions promising.

This session focuses on selected issues that are of value to the practitioner. Additionally, Davis and Holt (1993, pp. 20-33) provide general procedural and design considerations for conducting experiments. Basic procedural standards that generally must be followed include:

- complete and unbiased instructions;
- salient financial rewards;
- baseline control treatment that calibrates results;
- focus on a few treatments of interest that do not change too many things at once;
- choose the degree of institutional complexity appropriate to the problem being investigated; and
- conduct test runs before actual experiment.

These issues must be addressed before the experiment is conducted.

Previous research using experimental auctions as a non-market valuation approach offer the following for the applied researcher.

- Shogren et al. (1994) have shown that it does not matter whether subjects are bidding to pay for a better outcome, or bidding on how much compensation they require to accept a less desired outcome, when the good has substitutes available. The divergence between willingness-to-pay and willingness-to-accept is large and persistent when the auction is for a non-market good with imperfect substitutes.
- Buhr et al. (1993) provide the following to refine the Vickrey auction procedure.
  - Inform subjects that zero bids are acceptable.
  - Pay subjects their monetary endowment before the auction starts.
- Avoid terms in the instructions that might be unfamiliar to subjects such as "auctions" and "bids" (Hoffman et al. 1993).

The papers presented in this session provide useful guides to the practitioner. Umberger and Feuz (2001) take the reader through a procedure for conducting an experimental auction. They begin with a practical problem, provide an overview of methodological issues and experimental procedures, and present the results from the experiment and related analyses. They conclude that consumers appeared to be expressing their true value for the product and that the auction provided a valuable measure of consumers' willingness-to-pay for flavor in beef. These authors recognized potential problems in the experimental auction approach, charged forward with the auction, and analyzed results in light of the potential concerns. The point is that even though we recognize there may be potential shortcomings in the methodology, it is better to do something rather than nothing. Each study that is completed contributes additional information not only to the specific problem being analyzed, but also toward improving the experimental auction methodology. In the Umberger and Feuz study a real process involving real people following real rules together make their results interesting and useful (Plott 1982, p. 1486). We should not forget this, at the expense of spending too much time fussing over the methodology. Journal reviewers, unfortunately, might have a different opinion.

The paper presented by Lusk (2001) addresses issues of concern raised by Umberger and Feuz and those I described earlier. Specifically, Lusk discusses research methods that could be used to determine the practical validity of experimental auctions to estimate product attribute values or new product values. Testing auction-theoretic models in general is seen as one of the brightest areas in applied economics (Klemperer 1999). The work by Lusk will contribute to this literature.

Lusk proposes, what seems to me, a very ambitious study (in fact, research program) to determine the validity of experimental auctions in predicting retail behavior. Completion of this research will provide an empirical base for choosing among alternative theoretically "demand revealing" auction institutions and auction procedures for eliciting values. Moreover, a laboratory test market is planned to compare purchasing behavior under varying posted prices for a variety of meats with auction results. Finally, results from a double auction in a "homegrown,' in lieu of an induced value, setting are compared with those from a Vickrey second-price auction. This research has the potential to produce a wealth of valuable information for valuation research. I anxiously await the opportunity to review the results of the proposed research.

Experimental auctions usually are not easy to conduct, as previously mentioned. Cherry and Shogren (2001) investigate an alternative that might make valuation research less difficult. The underlying premise is based on what is referred to as "rationality crossover." The results of their experiments suggest arbitrage (cheap talk) can crossover to impact the choices of unrelated tasks. This research shows promise and potentially provides the basis for future valuation research. If such an approach proves to be successful, we will see more valuation work conducted. Comparisons between field and laboratory results, of course, are needed to better understand the validity of these initial findings. This approach also could allow us to move from the laboratory to the marketplace to conduct valuation research, while still maintaining the control provided in a laboratory setting. This is a strength of recent research reported by Lusk et al. (2001).

**Final Comments**

Experimental auctions as a non-market valuation approach are becoming increasingly popular, as suggested by authors of papers in this session. Advances are being made toward improving the methodology and its application in contributing to solutions for real world problems. The papers presented here contribute, or will contribute, to those advances. I found these papers to be complementary, as they discuss issue of current concern, provide procedures for testing alternatives that address these concerns, and look for alternative approaches for valuation research.

Alternatives must be explored to improve the experimental auction methodology. We should not, however, do this at the expense of not conducting experiments using the existing methodology. Moreover, it is futile to try to replicate in the laboratory the complexities of the marketplace (Friedman and Sunder 1994, p. 11). We, therefore, should not be overly critical or concerned about not incorporating these complexities into laboratory studies. Simplicity enhances control. The laboratory experiment, in general, should be judged by its impact on our understanding, not by its exact correspondence to reality.

The concern about external validity of laboratory data – data not representative of the real world – is frequently raised. Here I am referring to experiments and experimental economics in general. Earlier I introduced a comment by Plott (1982, p. 1486), in which he addresses general concerns regarding external validity. This is worth stating in full:

> While laboratory processes are simple in comparison to naturally occurring processes, they are real processes in the sense that real people participate for real and substantial profits and follow real rules in doing so. It is precisely because they are real that they are interesting.

This session focused on one aspect of experimental economics – experimental auctions to elicit values for product attributes and/or new products. I would like to take this opportunity to suggest that experimental economics, in general, has real potential in addressing many of the questions currently being asked by industry groups and policy makers. The structure of agriculture is changing at a rapid pace. Econometric analyses that rely on data generated in the marketplace are of little value in addressing the impacts of these changes. Adequate data are lacking. Data from laboratory experiments can be valuable to complement results from our more traditional approaches.

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