The Effect of Risk Presentation on Product Valuation: An Experimental Analysis

April 2006

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Selected Paper prepared for presentation at the American Agricultural Economics Association Annual Meeting, Long Beach, California, July 23 – 26, 2006.

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Abstract

We examine how people might evaluate a product with novel attribute, given various kinds of risk information. Using a product with healthful benefits, we assess subjects' willingness to pay given various kinds of health risk information conveying reduced health risks, life tradeoffs, and ambiguity. Four treatments in separate non-hypothetical experimental auctions are used to elicit willingness to pay values. Results suggest that willingness to pay vary across the groups that receive differing risk information. Specifically, willingness to pay was higher for the group that was given clear risk information and questions related to life tradeoffs than for the group given ambiguous risk information. Willingness to pay was lowest for the group that was given no risk information at all.

KEY WORDS: experimental auctions, health benefits, novel attribute, product evaluation, risk reduction, and willingness to pay.

Introduction

Firms often try to differentiate their products by introducing additional product features or attributes. While one stream of general marketing research (e.g., Carpenter, Glazer, and Nakamoto 1994; Meyers-Levy and Tybout 1989; Nowlis and Simonson 1996; Mukherjee and Hoyer 2001) has shown that adding familiar attributes to a product generally improves product evaluation and performance, another set of research indicates that adding familiar attributes may not always improve product evaluation (e.g., Broniarczyk and Gershoff 1997; Nowlis and Simonson 1996; Simonson, Carmon, and O'Curry 1994; Brown and Carpenter 2000). Although these studies provide considerable information on the effects of familiar attributes, little is known about the effects of novel attributes. For food and other products, these attributes may include health risk reduction information. To fill this void, we examine how individuals evaluate a product with a novel attribute when given differing risk information. In particular, we assess what people might be willing to pay in an auction for a healthful product. The auction is conducted in an experimental setting and the product is a cookie made with a healthful syrup. Subjects are given various kinds of health risk information conveying reduced risks of diabetes and colon cancer, risk tradeoffs, and ambiguity. These types of health risks may be difficult to quantify, may largely depend on individual behavior, and are more difficult to communicate to people than other measures of risk (Kolata 2005; Ellsberg 1961).

We elicit subjects' willingness to pay (WTP) using four treatments in separate experimental groups. We use a variety of approaches to provide risk information, including a treatment involving a combination of life-duration tradeoffs and probability

weighting functions (PWFs). PWFs, especially nonlinear ones, relax some of the traditional axioms of the conventional expected utility (EU) framework (see Tversky and Khanemann, 1992; Quiggin, 1982). PWFs for financial gambles have been examined before (see for example, Wakker and Deneffe, 1996), and in one study, mortality risks have been the sole focus (Bleichrodt and Pinto, 2000) but little effort has been made to tie PWFs to consumers' WTP for products with health-related benefits. This paper is a first step in this line of research.

In one of our four treatments, we also introduced the concept of risk ambiguity. Many economists have acknowledged shortcomings of the EU framework, and several alternatives relax key restrictive assumptions that the EU framework imposes (see Starmer, 2000). Explanations of ambiguity include conflicting information (Fox and Tversky, 1991): if experts themselves are not clear about the risk magnitudes, then it is difficult to imagine that the public will be. Most theorists assume that individuals will be averse to ambiguity, but the degree of aversion remains an open empirical question. In one study Eisenberger and Weber (1995) explore the relationship between ambiguity and values and find evidence that ambiguity aversion exists for a pool of experimental subjects. They also find that ambiguity reduces a subject's maximum willingness to pay for an ambiguous financial gamble. Fox et al. (2002) also examines the effect of information on food choices and very recently, Kivi and Shogren (2005) look at ambiguity's connection to food choice in a fashion similar to one of our treatments. Finally, other details about this experiment can be found in Shaw, Nayga and Silva (2006).

1. Objective and Hypotheses

The specific objective of our study is to assess subjects' willingness to pay for a new healthful product when presented with differing health risk information using non-hypothetical experimental auctions. The healthful product used in this study is a cookie made of syrup from a Yacon tuber grown in Peru. Yacon has been found to have prebiotic properties and high fructooligosacarids content which helps in digestion, thereby reducing the risk of colon cancer and diabetes. Exact health risk reductions have not been scientifically determined at this time, so this presents an important opportunity to examine choices with ambiguity present, and to explore whether subjects' provision of life-tradeoffs or PWFs influence valuation. Therefore, we hypothesize that:

H1: Provision of risk information increases product valuation or WTP.

H2: Product valuation or WTP will be higher for those given clear and extensive risk information vis-à-vis those given ambiguous risk information as suggested by Sarin and Weber (1993).

2. Experimental Design

Marketing researchers, economists, and psychologists rely on measures of WTP in estimating demand for public and private goods, in valuation of product attributes, and in designing optimal price schedules (Wertenbrock and Skiera 2002). To elicit our subjects' WTP, we developed pencil and paper experiments after holding several focus groups and pretests. Subjects for the experiments were undergraduate students at Texas A&M University. Four studies or treatments were developed with varying presentations of the health risk information given to subjects.

2.1. Experimental Auctions

Although the use of experimental auctions has increased in recent years, applications related to product marketing, pricing, and adoption have generally been limited. Most applications of experimental auctions can be found in the economics literature but these mostly involve tests of economic theory rather than using valuations to make marketing or product adoption decisions (Lusk, Feldkamp, and Schroeder 2004). A few studies have used experimental auctions in the marketing literature (e.g., Hoffman et al. 1993; Wertenbrock and Skiera 2002), but applications are still rare.

To elicit the WTP values, we used a non-hypothetical 4th price Vickrey auction (see Starmer and Sugden, 1991). We consider our experimental method "non-hypothetical" because we use real products and real money to provide the participants an incentive to reveal their true value for a product rather than respond in a hypothetical survey or traditional market research setting (e.g., Cummings, Harrison, and Rutstrom, 1995; Fox et. al., 1998; List and Shogren, 1998). So unlike methods based on stated preference data, Vickrey auctions provide bidders with an incentive to reveal their WTP truthfully because they must buy the good in a real transaction if their bid wins the auction. Several studies (e.g., Wertenbrock and Skiera 2002) have questioned willingness to pay results obtained by traditional marketing surveys because what consumers say they will do and what they actually do given real world circumstances are often quite different. Traditional survey methods are particularly problematic if respondents have vague or undefined incentives to seriously evaluate the food. In contrast, experimental auctions provide participants with a well-defined incentive structure that enables the researchers to more accurately elicit the value of a "new

product". The following outlines the procedures for the 4th price auction used in our study.

Step 1: Each subject was endowed with the control product: a regular homemade sugar cookie. Subjects were informed of the representative price for this control product (reference price). The subjects were informed that he or she is free to walk out of the session with this product if he or she does not want to participate in the session. They were then asked to write down in a sheet of paper their WTP to exchange the control product with the homemade Yacon cookie after tasting both cookies. The participants simultaneously submitted sealed bids. Then each bid was ranked ordered from highest to lowest.

Step 2: The auctions involved six rounds of bids so that subjects could incorporate market feedback into their valuations. Subjects were told that only one round would be randomly selected to be binding, to control for demand reduction or wealth effects, and that the winners would be the individuals with bids greater than the 4^{th} highest bid. The three highest bidders would have to pay the price equal to the 4^{th} highest bid. The advantage of using the 4^{th} price auction instead of the 2^{nd} price auction is that there will be potentially more winners per session. The 2^{nd} price auction method will only produce one winner per session and this situation could disengage some of the participants, especially in sessions involving at least 30 subjects. Subjects were not told if they won until the winning round was randomly selected, but were told the 4^{th} highest bid on each round.

Step 3: The three winning bidders in the randomly selected round then exchanged their homemade sugar cookie with the homemade Yacon cookie and paid the 4th highest bid. All other subjects paid nothing and received no product, but kept their original endowment.

2.2. Treatments

Each subject participated in one of the four treatments during a regularly scheduled class meeting. One class received one treatment and each student was compensated with $20 at the end. All subjects were asked identical questions about demographics and were asked to taste the two homemade cookies: the yacon cookie and sugar cookie.

Treatment 1 subjects received no information about the health benefits of the Yacon cookie, other than it is a new product, being marketed. No specific risk information was given to the subjects about this product. All subjects in treatments 2-4 viewed a risk ladder, a common visual device for risk communication (see Riddel and Shaw, 2006). Treatment 2 subjects received "clear" risk information about the reductions in colon cancer and diabetes risks that a person could expect by adopting a diet that substituted Yacon for regular sugar syrup products. These subjects were told that the chance of getting colon cancer for a non-smoker, after the age of 65 was 0.1% and for diabetes, this chance was 0.15%. They were also told that smokers, those who ate many fatty foods, and those who did not exercise had a higher chance of getting colon cancer after age 65. They were then informed that a regular diet of products made with the

Yacon syrup in place of conventional sweeteners would lead to a 0.01% reduction in colon cancer risk and a 0.05% reduction in diabetes risk after age 65.

Treatment 3 subjects received the same information as subjects in treatment 2 but were additionally asked to provide information about life trade-offs, as well as, probability weights. The iterative trade-off procedure originally developed by Wakker and Deneffe (1996), and applied to medical decisions by Bleichrodt and Pinto (2000) was followed. In our procedure, however, each subject reveals the number of years of life that balance tradeoffs involving risks of diseases (colon cancer and diabetes). These questions were asked to get subjects to think more about life trade-offs.

Treatment 4 subjects received conflicting risk information in the form of a conflicting second "expert" opinion. They were told that scientists do not know with certainty what health risk reductions would be associated with adopting the Yacon syrup diet. They were presented with two assessments of risks by "two scientific experts", each with differing opinions as to the risks. The first group of scientists says the reduction in colon cancer and diabetes that people would receive is given as 0.1% after age 65. The second group says that the risk reduction would in fact be 0.01% after age 65.

3. Results

The mean bids per round of the four treatments are exhibited in Figure 1. It is clear that in five of the six rounds, the highest mean bid is for treatment 3. The highest bid in round 6 is for treatment 4. However, treatment 4's subjects bid an average of only about $0.07 for the Yacon cookie across all rounds (see Table 1). In the sixth round, one person in treatment 4 bid $3.00 for the cookie, driving up the mean bid in that round to

$0.20. However, we note that this highest bidder in round six for treatment 4 has indicated that he has a relative that has been diagnosed with diabetes and was seated next to the second highest bidder. We speculate that these two students shared information, as both of their previous five round action bids were very low, but we did not catch them talking to one another, so they were not dismissed and their bids must be considered valid without other evidence. Still, interestingly, if we drop this high bid, the average bid in round 6 for treatment 4 is only $0.016, far lower than average bids for treatment 2 ($0.05) and treatment 3 ($0.04). It is, therefore, reasonable to conclude in light of this information that treatment 4 subjects, on average, have a lower value for the yacon cookie than treatment 3 does. This result is consistent with our hypothesis related to the dampening effect of ambiguity on valuation of healthful products.

Treatment 3's mean WTP or bid is about $0.11 across all rounds, the highest among all the treatments as shown in Table 1. This is the treatment that was given extensive risk information and life trade-off questions. Treatment 2 subjects mean bid across all rounds is about $0.06. The only difference between treatment 2 and treatment 3 is the provision of life-trade off questions or elicitation of probability weights. This result implies that the mere elicitation of the probability weights can make a difference in how subjects get to think about valuation of health risk reduction. Hence, getting the subjects in treatment 3 to think about life-tradeoffs seem to have provided them incentive to value the healthful product more than subjects in treatment 2 who were given the same set of risk information but were not asked to think about life tradeoffs and probability weights.

Consistent with our hypothesis, the lowest bid in all rounds is for treatment 1. Treatment 1 received no specific health information. Treatment 1 subjects' bid for the yacon cookie then is solely dependent on whether they like it or not compared to the sugar cookie. The WTPs for these 34 subjects are almost all zero, which is the minimum bid since they were not allowed to bid negative amounts. In fact, only in round 6 did more than three subjects bid a non-zero amount. Clearly, the reason for these results is that subjects preferred the taste of the regular sugar cookie to the yacon cookie, as Table 1 shows. They simply do not wish to pay anything additional for a cookie they do not like the taste of.

To further determine whether the treatments significantly influenced the WTPs, we estimated both a Tobit econometric model using only the 6^{th} round data and a random effects Tobit using data from all six rounds (see Table 2). We estimated the Tobit models because of the mass of the dependent variable (the bid) located at $0.00. Using all the rounds, the Tobit model was also adjusted to incorporate random effects to account for the panel nature of the data since each subject submitted bids in multiple rounds. We estimated a random effects Tobit model in addition to the Tobit model because this would use all the available information from all the rounds and this would provide us information on the statistical differences in the WTPs between rounds. Control variables included in the models are taste of Yacon cookie, round dummies, and demographics such as gender, age, education, and income.

As seen in Table 2, the treatment dummy variables are significantly different from zero (and positive) and from treatment 1 which is the base treatment group in the model. The dummy variables for the rounds are statistically significant as well, with the

exception of round 1. The negative sign of the coefficients of the dummy variables for the rounds suggest that the WTP in the 6th round is generally higher than in other rounds, as reflected as well in Figure 1. Taste of the yacon cookie is indeed positively related to WTP in the random effects Tobit model. Interestingly, female subjects tend to bid lower than male subjects.

4. Conclusions and Implications

People are becoming more and more interested in the health risk reduction benefits of the products they purchase and consume. As such, they are actively seeking out products that are able to effectively communicate this information. Our results suggest that subjects' willingness to pay for a product may vary depending on the type of health risk information they are given, which influences their risk perceptions. Using Tobit and random effects Tobit models, we reject the hypothesis that bids are equivalent across treatments. Therefore, uncertainty or risk-reducing benefits do play a role in valuation of products with novel health benefits that come much later in life. Our experiments with undergraduate students indicate that even young students may be willing to pay for these healthful products. Our results suggest that they may even be willing to pay for them even if the taste is not as good as the other regular products with less healthful benefits.

Our results have meaningful implications for marketing practice. Due to increasing concerns about diet and health, many companies are developing and marketing products with novel health benefits. Functional foods, for example, have become

increasingly popular in recent years. Defined as foods or food components that may provide a health benefit beyond basic nutrition, functional foods are widely believed to offer consumers an increased ability to reduce the risk of certain diseases or health problems (Schmidt, 2000). Research conducted by the International Food Information Council (IFIC) shows that consumer demand for functional foods has steadily increased since 1996. Hasler (1998a, b) also rated functional food second only to low fat foods as a key product development opportunity.

As mentioned previously, firms often try to differentiate their products by introducing additional product features or attributes. For example, food and pharmaceutical companies are spending millions of research dollars to develop new products with healthful attributes. To successfully launch and differentiate these new products, however, it is essential to know whether presentation of health-risk reduction information might influence willingness to pay for the new product. Our results signify the importance of provision of health risk reduction information to consumers.

5. Limitations and Future Directions

Although our study throws considerable light on the effects of risk reduction information about a novel attribute, little is still generally known about the effects of novel attributes on product evaluation (Mukherjee and Hoyer 2001). Future research should replicate our study using other products with novel attributes to assess the robustness of our findings. It is also possible that individuals would weigh options differently to different types of health risk information (e.g., information not tied to specific diseases) or to different ways of presenting the information (Chen and Jia 2005).

More research is also needed to assess the best way of eliciting probability weights and how they can be specifically used in marketing applications in a practical and pragmatic way.

In an era of rising product differentiation, experimental economics is playing an increasingly important role in assessing the importance of various factors such as health risk information on the valuation and targeting of novel and healthful products to specific consumer segments. We used the Vickrey auction to elicit our WTP. However, choice of auction institution could influence willingness to pay values (Lusk, Feldkamp, and Schroeder 2004). Replicating our study with the use of other auction institutions (e.g., English, Becker-DeGroot-Marschak, Random nth price auctions) and a more diverse sample might be another way of assessing the robustness of our findings. It would also be interesting to compare the use of different types of experimental elicitation methods (e.g., experimental auctions, choice experiments, contingent valuations). Despite the theoretical advantages of experimental auctions, they could exhibit some practical limitations. For example, as Wertenbrock and Skiera (2002) alluded to, in contrast to the practically unrestricted supply of goods in retail settings, bidders compete with one another for a limited stock. The decision on how much to bid may also reflect not just the bidder's true valuation of the good but also of ensuring that he or she places the winning bid.

References

Bleichrodt, Han and Jose Luis Pinto. (2000). "A Parameter-Free Elicitation of the Probability Weighting Function in Medical Decision Analysis," *Management Science*, **46**(November), 1485-96.

Broniarczyk, S.M. and A.D. Gershoff. (1997). "Meaningless Differentiation Revisited", *Advances in Consumer Research*, 24, 223-228.

Brown, C.L. and G.S. Carpenter. (2000). "Why is the Trivial Important? A Reason-Based Account for the Effects of Trivial Attributes on Choice", *Journal of Consumer Research*, 26, 372-385.

Carpenter, G.S., R. Glazer, and K. Nakamoto. (1994). "Meaningful Brands from Meaningless Differentiation", *Journal of Marketing Research*, 31, 339-350.

Chen, R. and J. Jia. (2005). "Consumer Choices under Small Probabilities: Overweighting or Underweighting?" *Marketing Letters* 16(1), 5-18.

Cummings, R.G., G.W. Harrison, and E.E. Rutstrom. (1995). "Homegrown Values and Hypothetical Surveys: Is the Dichotomous Choice Approach Incentive Compatible?" *American Economic Review* 85, 260-266.

Eisenberger, Roselies and Martin Weber. (1995). "Willingness to Pay and Willingness to Accept for Risky and Ambiguous Lotteries," *J. of Risk and Uncertainty* **10,** 223-233.

Ellsberg, Daniel. (1961). "Risk, Ambiguity, and the Savage Axioms," *Quarterly Journal of Economics, 75*(4), 643 – 669.

Fox, J. A., J. F. Shogren, D. J. Hayes, and J. B. Kliebenstein. (1998). "CVM-X: Calibrating Contingent Values with Experimental Auction Markets." *American Journal of Agricultural Economics* 80, 455-465.

Fox, C.R. and A. Tversky. (1991). "Preference and Belief: Ambiguity and Competence in Choice Under Uncertainty." *Quarterly Journal of Economics* 110, 585-603.

Fox, J.A., D. Hayes, and J. Shogren. (2002). "Consumer Preferences for Food Irradiation: How Favorable and Unfavorable Descriptions Affect Preferences for Irradiated Pork in Experimental Auctions," *J. of Risk and Uncertainty* **24 (**1), 75-95.

Hasler, C. M. (1998a). "A New Look at an Ancient Concept," *Chemistry and Industry*. February, 94-99.

_____. (1998b). "Functional Foods: Their Role in Disease Prevention and Health Promotion." *Food Technology* 52(11), 63-70.

Hoffman, E., D. Menkhaus, D.Chakravarit, R. Field, and G. Whipple. (1993). "Using Laboratory Experimental Auctions in Marketing Research: A Case Study of New Packaging for Fresh Beef", *Marketing Science* 12, 318-338.

International Food Information Council (IFIC). http:www.ific.org.

Kivi, Paul and Jason F. Shogren. (2005). "Ambiguity and Food Safety," Discussion paper, Department of Economics, University of Wyoming.

Kolata, Gina. (2005). "Environment and Cancer: the Links are Elusive." *New York Times*, Tuesday, December 13th , pp. D1 and D6.

List, J.A. and J.F Shogren. (1998). "Calibration of the Differences Between Actual and Hypothetical Valuations in a Field Experiment," *Journal of Economic Behavior and Organization* 37, 193-205.

Lusk, J., T. Feldkamp, and T. Schroeder. (2004). "Experimental Auction Procedure: Impact of Valuation of Quality Differentialed Goods" *American Journal of Agricultural Economics* 86(2), 389-405.

Meyers-Levy, J. and A.M. Tybout. (1989). "Schema Congruity as a Basis for Product Evaluations", *Journal of Consumer Research*, 16, 39-54.

Mukherjee, A. and W. Hoyer. (2001). "The Effect of Novel Attributes on Product Evaluation" *Journal of Consumer Research* 28(December), 462-472.

Nowlis, S.M. and I. Simonson. (1996). "The Effect of New Product Features on Brand Choice", *Journal of Marketing Research*, 32, 36-46.

Quiggin, J. (1982). "A Theory of Anticipated Utility," *J. of Econ. Behavior and Organization* **3,** 323-43.

Riddel, Mary and W.Douglass Shaw. (2006). "A Theoretically Consistent Empirical Non-Expected Utility Model of Ambiguity: Mortality Risks and Yucca Mountain." *Journal of Risk and Uncertainty* **32** (2/March): 131-150

Sarin, Rakesh K. and Martin Weber. (1993). "Effects of Ambiguity in Market Experiments." *Management Science* **39**(May), 602-615.

Schmidt, D. B. (2000). "Consumer Response to Functional Foods in the 21st Century," *AgBioForum.* 3(1), 14-19.

Shaw, W.Douglass; Rodolfo Nagya; Andres Silva. (2006). "Health Benefits and Uncertainty: an Experimental Analysis of the Effects of Risk Presentation on Auction Bids for a Healthful Product." *Economics Bulletin*, Vol. **4** (17/May).

Simonson, I., Z. Carmon, and S. O'Curry. (1994). "Experimental Evidence on the Negative Effect of Product Features and Sales Promotions on Brand Choice", *Marketing Science*, 13, 23-40.

Starmer, C. (2000). “Developments in Non-Expected Utility Theory: the Hunt for a Descriptive Theory of Choice Under Risk,” *J. of Economic Literature*, 38(June), 332-382.

Starmer, Chris and Robert Sugden. (1991). "Does the Random-Lottery Incentive System Elicit True Preferences? An Experimental Investigation,” *Amer. Econ. Review* **81,** 971-978.

Tversky, A. and D. Kahenman. (1992). “Advances in Prospect Theory: Cumulative Representation of Uncertainty,” *J. of Risk and Uncertainty* **5,** 297-323.

Wakker, Peter and Daniel Deneffe. (1996). “Eliciting von Neumann-Morgenstern Utilities when Probabilities are Distorted or Unknown,” *Management Science*, **42**(August), 1131-50.

Wertenbrock, K. and B. Skiera. (2002). “Measuring Consumers’ Willingness to Pay at the Point of Purchase”, *Journal of Marketing Research* 39, 228-241.

Table 1. Mean Taste Responses and Mean WTP by Treatment Group*

	Treatment 1 (n = 34)	Treatment 2 (n= 47)	Treatment 3 (n = 51)	Treatment 4 (n = 27)
Taste, sugar cookie (mean, 1 to 5 scale)	3.353	3.383	3.196	3.407
Taste, Yacon cookie (mean, 1 to 5 scale)	1.971	1.660	1.696	2.000
Mean WTP, 6^{th} round	\$0.024	\$0.086	\$0.139	\$0.200
Mean WTP across all auction rounds	\$0.014	\$0.063	\$0.114	\$0.071
Risk treatment	none	Given baseline risks and then risk reductions of 0.01 and 0.05% respectively	Extensive risk, elicitation of probability weights	Extensive risk, but with ambiguity introduced

* Treatment 1 was given no specific health information; 2 is presented with "expert/objective" risks; 3 receives risks and is asked probability weighting function; and Treatment 4 is presented with ambiguity (2 expert assessments that vary). Taste scale of 1 is "don't like it at all" up to a 5, which is "I really like it."

Table 2. Tobit and Random Effects Tobit Estimates

Variable	Tobit (6^{th} round)	Random Effects (All rounds)
Constant	1.53	0.53
	(2.14)	(0.65)
treatment2	0.65***	0.35***
	(0.25)	(0.07)
treatment3	0.46*	0.25***
	(0.24)	(0.06)
treatment4	0.46*	0.29***
	(0.27)	(0.07)
round1		0.06
		(0.04)
round2		-0.11***
		(0.04)
round3		-0.09**
		(0.04)
round4		-0.11**
		(0.04)
round5		-0.10**
		(0.04)
yacon taste	0.09	0.07***
	(0.07)	(0.02)
female	-0.28*	-0.08*
	(0.16)	(0.04)
age	-0.05	-0.01
	(0.06)	(0.01)
education	-0.09	-0.05
	(0.15)	(0.04)
family income	-1.9E-6	-6.3E-7
	(1.7E-6)	(4.9E-7)

Note: *, **, and *** represent 0.10, 0.05, and 0.01 levels of statistical significance, respectively. "Yacon taste" is taste of yacon cookie with scale of 1 to 5. "Treatment" variables are dummies for the treatments, "round" variables are dummies for the rounds, female is gender dummy, age and education variables are in years, and family income is in dollars. Numbers in parentheses are standard errors.

Figure 1. Mean Willingness to Pay or Bids