

Consistency of Willingness to Pay and Preferences in Auction Experiments

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Introduction

Experimental auctions are used to determine consumers' willingness to pay (WTP). The auction mechanism typically used is some variation of Vickrey's second price auction, where the weakly dominant strategy for subjects is to bid their true value for the goods offered. It is assumed that subjects will submit a higher bid for goods they prefer. One key underlying assumption for consistency between preference and WTP is procedure invariance (i.e., this says that ordering between two goods for a consumer should be the same whether determined by bidding in the auction or by asking them which they prefer).

Objective

This study was conducted to investigate whether preference violate procedure invariance in experimental auctions and, if so, under what conditions the violation occurs.

Methods

Measuring the consistency was done by asking experimental subjects their preference for the commodities being valued and then comparing these preferences with their WTP from the auctions.

Overview of Experimental Auctions

Scope: 6 sessions; 115 subjects;
6 items auctioned per session; one binding bid
Dates: June 2009
Locations: Beijing Normal University, Beijing, China
Payment: ¥25 (≈ \$3) for one hour and a half
Items: a can Pepsi and a Coca cola (12 oz)
a pen and a ball-pen
a kg conventional and a kg organic apples
Auction methods: Fifth price



Table1 Contingency Analysis

Count	Prefer Coca cola	Prefer Pepsi	Total
Total %			
Bid more for Coca cola	30	3	33
Bid more for Pepsi	48.39	4.84	53.23
Bid more for Coca cola	1	28	29
Bid more for Pepsi	1.61	45.16	46.77
Total	31	31	62
Fisher's Exact Test		<0.0001	
McNemar Test		0.3173	

b) Pen and Ball-pen

Count	Prefer pen	Prefer ball-pen	Total
Total %			
Bid more for pen	68	32	100
Bid more for ball-pen	64.15	30.19	94.34
Bid more for pen	3	3	6
Bid more for ball-pen	2.83	2.83	5.66
Total	71	35	106
Fisher's Exact Test		0.394	
McNemar Test		<0.0001	

c) Conventional and Organic Apples

Count	Prefer conventional apples	Prefer organic apples	Total
Total %			
Bid more for conventional apples	0	1	1
Bid more for organic apples	0	1	1
Bid more for conventional apples	20	79	99
Bid more for organic apples	20	79	99
Total	20	80	100
Fisher's Exact Test		1	
McNemar Test		<0.0001	

Fisher's Exact Test
McNemar test
Ho no relationship between responses to the preference and bids.
the probabilities in the two-by-two table satisfied symmetry.

Table 2 Mean WTP for Entire and Consistent Respondents

a) Coca cola and Pepsi	Entire group	Consistent respondent
<i>Prefer coca cola</i>	N=31	N=30
Mean WTP for Coca cola	2.9445	2.976
Mean WTP for Pepsi	2.4484	2.4467
Matched Pairs t-Statistic (P-value)	T=-6.23, P<0.0001	T=-7.07, P<0.0001
<i>Prefer Pepsi</i>	N=31	N=28
Mean WTP for Coca cola	2.5177	2.5339
Mean WTP for Pepsi	3.0484	3.1536
Matched Pairs t-Statistic (P-value)	T=3.69, P=0.0009	T=4.15, P=0.0003

b) Pen and Ball-pen

	Entire group	Consistent respondent
<i>Prefer pen</i>	N=71	N=68
Mean WTP for pen	8.0604	8.2101
Mean WTP for ball-pen	4.1858	3.994
Matched Pairs t-Statistic(P-value)	T=-11.73, P<0.0001	T=-15.29, P<0.0001
<i>Prefer ball-pen</i>	N=35	N=3
Mean WTP for pen	7.9714	3
Mean WTP for ball-pen	4.6771	5.0667
Matched Pairs t-Statistic(P-value)	T=-7.37, P<0.0001	T=1.62, P=0.2460

c). Conventional and Organic Apples

	Entire group	Consistent respondent
<i>Prefer conventional apples</i>	N=20	N=0
Mean WTP for conventional apples	3.195	0
Mean WTP for organic apples	5.32	0
Matched Pairs t-Statistic (P-value)	T=6.4039, P<0.0001	N/A
<i>Prefer organic apples</i>	N=80	N=79
Mean WTP for conventional apples	3.137	3.0501
Mean WTP for organic apples	5.3151	5.3191
Matched Pairs t-Statistic (P-value)	T=9.5426, P<0.0001	T=10.70, P<0.0001

Figure 1 The mean bids and the means of expected prices

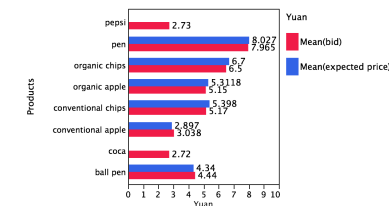


Table 3 Marginal effects of Tobit model

	Pepsi	Coca cola	Pen	Ball-pen	Conventional Apple	Organic apple
Familiarity	-0.2355	-0.2029	0.2079	0.0496	-0.2899	-0.0011
Desirability	0.3200	0.3265	0.1720	0.2154	0.2254	0.3507
Price	n/a	n/a	0.5919	0.6525	0.8471	0.586

Results

Inconsistencies were found in all trials. These occurred least often in the Pepsi and Coca-cola pair. For pairs with differences in familiarity and expected prices, the inconsistencies increased. The highest frequency of inconsistency appeared in the pen and pencils pair suggesting the impact of different prices is larger than the different familiarity level in creating the inconsistency phenomenon.

Conclusions

A consumer bidding more for organic apples over conventional does not necessary mean the person prefer organic apple. Therefore, the implications of a higher WTP must be viewed with care.