Explaining Overbidding in First Price Auctions Using Controlled Lotteries*

Robert Dorsey† and Laura Razzolini‡*
† FNC, Inc., Oxford, MS 38655
‡ University of Mississippi, University, MS 38677
∗ National Science Foundation, Arlington, VA 22230

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Abstract

In this paper, we study the behavior of individuals when facing two different, but incentive-wise identical, institutions. We pair the first price auction with an equivalent lottery. Once a subject is assigned a value for the auctioned object, the first price auction can be modeled as a lottery in which the individual faces a given probability of winning a certain payoff. This set up allows us to explore to what extent the misperception of the probability of winning in the auction is responsible for bidders in a first price auction to bidding above the risk neutral Nash equilibrium prediction. The first result we obtain is that individuals, even though facing the same choice over

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probability/payoff pairs, behave differently depending on the type of choice they are called to make. When facing an auction, subjects with high values tend to bid significantly above the bid they choose in the corresponding lottery environment. We further find that in both the lottery and the auction environments, subjects tend to bid in excess of the bid predicted by the risk neutral model, at least for intermediate range values. Finally, we find that the difference between the lottery behavior and the auction behavior is substantially, but not totally, eliminated by showing the subjects the probability of winning the auction.

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1 Introduction

In this paper, we study the behavior of individuals when facing two different, but incentive-wise identical, institutions.

We pair a first price auction with an equivalent lottery. Given the subject's valuation for the auctioned object, the first price auction can be modeled as a lottery in which the individual chooses a probability of winning a certain payoff. In fact, when in a first price auction the individual chooses a particular bid, he actually determines a probability/payoff pair. Associated with each bid, there is a certain probability of winning the auction and a corresponding payoff. The higher the bid, the higher is the probability of winning the auction, and the lower is the final payoff. Alternatively, the subject could be given the possibility of choosing among different lotteries; that is, among different pairs of probabilities/payoffs. In this environment, the individual chooses directly the probability/payoff pair, facing the same trade-off: the higher the probability of winning, the lower the final payoff.

We study the individuals' behavior depending on the type of choice they are called to make: that is, depending on whether they are facing a lottery or an auction environment. This set up allows us to explore to what extent the misperception of the probability of winning in the auction is responsible for bidders in a first price auction to bidding above the risk neutral Nash equilibrium prediction.

The first price auction has been extensively examined using experimental techniques. A consistent outcome found in the experiments involving independent private value first price auctions is that subjects consistently bid above the risk neutral Nash equilibrium (RNNE) bid. The most common explanation suggested to justify this behavior is risk aversion. Cox, Smith and Walker (1988) have proposed a model assuming heterogeneous bidders who each exhibit constant relative risk averse (CRRA) utility functions as an attempt to explain the observed bidding behavior. This theory has been challenged and defended in a number of recent papers[1].

In general, the constant relative risk averse model provides a reasonably good description of the observed data but, at the same time, suffers from a number of consistently observed violations of the model itself. These violations, along with results from other experiments, suggest that subjects may

[1]Kagel (1995) provides detailed summary of these arguments

not have risk averse utility functions, and have fueled ongoing critiques of the model itself. Kagel (1995) summarizes these studies as follows: *"Results of this dialogue suggest that with respect to the primary issue, the role of risk aversion in first price auctions, it is probably safe to say that risk aversion is one element, but far from the only element, generating bidding above the RNNE. This is not to say that there is no longer any debate regarding the relative importance of risk aversion versus other factors, or in terms of what these other factors are."* (p. 525)

If not solely risk aversion then what is inducing subjects to consistently bid above the risk neutral forecast? Harrison (1989) suggested that the problem might be one of saliency since the cost in expected monetary payoff incurred by deviating from the RNNE is small. A number of experimentalists have addressed this critique in the September 1992 issue of the *American Economic Review.* Another suggestion is that subjects exhibit systematic perceptual errors that are manifested in the first price auction as higher bids. Recently Fox and Tversky (1998) have suggested that the perception of probability can be influenced by the institutional framework in which the individuals make decisions, and thus, the institution can affect the corresponding behavior. Certainly one possible explanation of higher bidding would be for subjects to misperceive the probability of winning conditional on their value. In fact, one of the critiques of risk aversion as an explanation for higher bidding points to the individuals' behavior in the second price auction. In second price auctions individuals have a dominant strategy to bid their value independent of their risk preferences. However, even though bidding value is a dominant strategy, overbidding is commonly observed in the second price auctions as well. As a result, it has been suggested that such overbidding might be due to a misperception of probability.

In this paper, we attempt to explore to what extent overbidding in the first price auction relative to the RNNE prediction is caused by a misperception of the probabilities of winning. To isolate and study this effect, we pair the first price auction with an equivalent lottery. This pairing is based on the realization that any first price auction can be framed as a lottery. The individual may choose directly the probability/payoff pair when facing the lottery institution, or may choose a particular bid when playing in an auction; the bid, in turn, determines the probability/payoff pair. If the individual participating in the two institutions faces the exact same incentives, the behavior in the two institutions should be exactly the same. If this is not true, then there is something fundamental about the institution that is not being captured by the theory. This missing aspect of the theory, in particular the misperception of the probability of winning by subjects facing the auction, could play a significant role in understanding why, in controlled experiments, theorists often find significant deviations from the theoretically predicted behavior.

Although the underlying theory of behavior in auctions can be represented as a choice among probability/payoff pairs (i.e. lotteries), the information available to the subjects is different. In the auction the subjects know with certainty their payoff (their value minus their bid, or nothing), while the probability is a difficult computation not easily performed by most subjects. When choosing among lotteries, on the other hand, both the payoff and the corresponding probability of winning are known with certainty. We examine the difference in behavior between these two environments and also explore the effect of providing the missing probability information to the subjects in the auction.

The next section provides an overview of the standard auction theory and outlines the basis for the auction lottery equivalence. In Section 3 we describe the design and implementation of the experiments. We present the results in Section 4 and the conclusions follow.

2 The Model

We want to compare the behavior of human subjects in a first price auction with the behavior of the same subjects in a lottery environment, when the lottery is constructed to have identical probability/payoff combinations as the first price auction. This comparison is based on the realization that any first price auction can be framed as a lottery. When the individual chooses a particular bid in a first price auction, he actually determines a probability/payoff pair: in fact, associated with each bid, there is a certain probability of winning the auction and a corresponding payoff. The higher is the submitted bid, the higher is the probability of winning the auction, and the lower is the final payoff.

Alternatively, the subject could be given the possibility of choosing among different lotteries. In this case, the individual chooses directly a probability/payoff pair among infinitely many, and again the same trade-off is faced:

the higher is the probability of winning, the lower the final payoff.

We will design both environments in such a way that the subjects face the same probability/payoff combination, although the decision in one case is presented as choosing one among many lotteries, and in the other case it is presented as choosing a bid in a first price auction.

2.1 The First Price Auction

For a first price auction, each participant, i, has a reservation value, v_i, for the item being sold. The reservation values are assumed to be distributed uniformly over the range $\{0, v_{max}\}$. Each participant knows his or her own reservation value, v_i, and the distribution of the other participants' values. The item is sold to the highest bidder at the highest bid. The profit obtained by the winning bidder is $(v_i - b_i)$ and zero for all other bidders, here b_i is the bid made by the winning bidder i. The trade-off facing each bidder is that the probability of winning increases as the bid is raised but at the cost of lowering the profit if the bid is successful.

Specifically, consider the behavior of a risk neutral bidder i, whose reservation value is v_i, when participating in a first price auction with N other bidders. Assume that each of the other bidders is bidding according to the linear bid function, $b_j = \beta\, v_j$, where the values v_j are drawn uniformly over the range $\{0, v_{max}\}$, with $i \neq j$.

For any bid b_i, the probability that bidder i wins the auction is: $Prob\,(b_j < b_i)\ \forall j$. Given the uniform distribution of values, and the assumed bid function for all the other subjects ($b_j = \beta\, v_j$), the probability of winning the auction for bidder i is[2]:

$$Prob\,(v_j < \frac{b_i}{\beta}) = \left(\frac{b_i}{\beta}\right)^{N-1}.$$

therefore, bidder i's expected utility, given his value v_i is:

$$EU = (v_i - b_i)\left(\frac{b_i}{\beta}\right)^{N-1} = b_i^{N-1}\, v_i \left(\frac{1}{\beta}\right)^{N-1} - b_i^N \left(\frac{1}{\beta}\right)^{N-1}.$$

The first order condition for expected utility maximization is then

[2]Without loss of generality, we are assuming $v_{max} = 1$.

$$
\begin{aligned}
\frac{\partial EU}{\partial b_i} &= (N-1) b_i^{N-2}\, v_i \left(\frac{1}{\beta}\right)^{N-1} - N\, b_i^{N-1} \left(\frac{1}{\beta}\right)^{N-1} = 0 \\
&= (N-1) b_i^{N-2}\, v_i - N\, b_i^{N-1} = 0 \\
&= v_i\,(N-1) - N\, b_i = 0,
\end{aligned}
$$

and solving we can derive the optimal bid function:

$$
b_i^* = \frac{N-1}{N} v_i. \tag{1}
$$

Equation (1) is the well-known Vickrey risk neutral bid function (See Vickrey (1961)).

In equilibrium, all the risk neutral bidders behave optimally according to the linear bid function specified in equation (1): $b_i^* = \beta^* v_i$, where $\beta^* = \frac{N-1}{N}$.

Given this optimal bid function, the probability of winning the auction, p_i^*, and the corresponding expected payoff, π_i^*, are:

$$
p_i^* = \left(\frac{b_i^*}{\beta^*}\right)^{N-1} = (v_i)^{N-1} \quad \text{and} \quad \pi_i^* = v_i - b_i^* = \frac{1}{N}\, v_i^N. \tag{2}
$$

2.2 The Auction-Equivalent Lottery

Alternatively, the choice facing the subject can be reconfigured as selecting a lottery of the form $\{\pi, p\}$, where π is the payoff and p is the probability of winning. It is easy to see that the same incentives exist in these two institutions if π and $p(\pi)$ are defined in the following way:

$$
\pi = (v_i - b_i) \tag{3}
$$

$$
p = \text{Prob}\,(b_i < \beta\, v_j)\ \ \forall j = 1, \cdots, N, \ \text{and} \qquad \beta = \frac{N-1}{N} \tag{4}
$$

Given the uniform distribution of values, the expected utility from the lottery for bidder i is

$$
EU = (v_i - b_i) \left(\frac{b_i}{\beta}\right)^{N-1}. \tag{5}
$$

If we assume a same v_i in the two problems, then maximization of expected utility in the lottery, by choosing the optimal $\{\pi, p(\pi)\}$ pair, leads to exactly the same solution as the maximization of expected utility in the auction, by choosing the optimal bid.

3 Experimental Design

The experiments were designed to present each subject with the same probability/payoff choices in the two environments: the first price auction and the lottery choice. To study the subjects' behavior in the two different institutions, it was necessary to control the outside environment in the auction, by simulating the other bidders' behavior with automated players. The auction was a typical four person first price independent private value sealed bid auction. Values for each of the four players were chosen uniformly over the range \$0 to \$10.00. The values were private information. The winning bid and the number of the winning bidder was announced after each auction. Subjects were told that each simulated bidder used the Vickrey bid function:

$$b_i = \frac{3}{4} v_i.$$

The screen presented to the subject is shown in Figure 1. A copy of the instructions is provided in the Appendix. Each subject is told what her value is for the current period. On the screen a slide is provided which can be moved with the mouse. As the slide is moved from left to right, the bid changes from \$0 through \$10 by 1 cent increments. For each potential bid, a box on the screen shows the profit which will be earned if the candidates bid is the successful bid. Once a bid is chosen, the subject presses the "Submit" button and the results are shown at the bottom of the screen.

The subject can see her bid, the winning bid, the number of the winning bidder and her winnings in the current period, if any. Total earnings for the auctions so far are shown in the last box. By pressing the "Next Period" button the subject moves to the next period.

In the lottery software, the environment is similar. A screen from the software is shown in Figure 2. Here, the subjects were told that they should select a number, or a target value, between 0 and 1000. The computer then randomly draws a number with uniform probability over the same range. If the number drawn by the computer is below that selected by the subject, the subject wins the money shown in the box. By moving the slide from left to right, as the target value changes, the probability of winning increases and the amount to be won decreases, just as with the auction. Once the subject chooses a number he clicks on the "Activate" button and the results are shown. The target number selected by the subject, the number drawn by the computer, the subjects winnings if any and the total winnings for the experiment are also shown. As before, when the subject has reviewed the results, clicking on the "Next Period" button moves her to the next period.

In the auction the subjects observe their value, v_i, and the profit they would make with the candidate bid, $(v_i - b_i)$. In the lottery the subjects are assigned a value that they do not see; they observe the probability of winning, (their chosen target value t_i divided by 1000), and the profit they would make with the candidate target number. Such profit is determined in the program by first converting the subjects chosen target value, t_i, into an equivalent bid in the corresponding auction configuration, and then subtracting it from her value. That is, the probability of winning in the lottery with chosen target value t_i is equated to the probability of winning an auction with bid b_i and value v_i :

$$\frac{t_i}{1000} = \left(\frac{b_i}{\beta}\right)^{N-1},$$

where $\beta = \frac{3}{4} \times 10.00 = 7.50$.

Solving for b_i and subtracting from the value v_i we get the corresponding earnings:

$$\text{earnings } = v_i - \beta\left(\frac{t_i}{1000}\right)^{\frac{1}{N-1}}.$$

The auctions and lotteries were paired so that the subjects in each round were assigned the same value, v_i, and faced the same probability/payoff combinations in the same order (each subject faced the same combination in round 1 of the auction as in round 1 of the lottery, and so on). There were a total of 120 periods, divided into four groups of 30 periods each. Half of the subjects participated in the sequence lottery, auction, lottery, auction, while the other half started the sequence with the auction.

A total of 48 subjects participated in the complete experiments.[3] The

[3]Originally 23 subjects were used. We thank J. Kagel for pointing out that in our

subjects were upper division and graduate business students at the University of Mississippi. Each student was recruited to participate in two sessions approximately one week apart. In the first session they were paid $10 as show up fee, and asked to go through the 120 periods of the experiment. They were told that this was a training session and that in the second session they would be paid based on the actual amounts that they earned in the experiment. In the second session the students were informed that the experiment would be identical to the training session except that they would be assigned different random numbers. Students were paid a show-up fee of $5 in addition to their earnings from the experiment. Total earnings for the second session ranged from a low of $13.46 to a high of $39.83. The average earnings were $24.81.

While in the lottery treatments subjects choose a payoff/probability pair, in the auction environment subjects choose a bid and know for any bid the corresponding payoff, but the probability of winning is missing and hard to calculate. For this, we run a second treatment for the first price auction, with the following change in the information provided to the subjects: for any possible bid, the subjects observed also the corresponding probability of winning the auction. This can be seen in the experiment screen in Figure 3, where for any candidate bid, the corresponding probability of winning the auction based on the subjects value is also provided.[4] Training sessions and experiments were run exactly as with the previous experiments. A total of 30 subjects participated in this second series of experiments showing the probability. Earnings ranged from $11.38 to $37.24 and the average earnings were $25.28.

4 Experimental Results

In all the experiments, each subject participated in a total of 60 auctions and 60 lotteries. This generated 2880 lottery/auction pairs for comparison under the first treatment without the probability information available in

original instructions, the example provided suggested risk averse bidding. Since such example might have influenced the subjects behavior, we changed the instructions and provided a risk neutral example. 25 additional subjects were used with this new set of instructions. No difference in behavior, however, could be attributed to the instructions.

[4]We thank R. Harstad for suggesting this treatment.

the auction, and 1740[5] lottery/auction pairs for comparison under the second treatment, where the probability information was provided during the auction.

4.1 First Treatment: No Probability Information Provided in the Auction

Figure 4 offers an overview of the results from the first series of experiments showing the mean auction bid and the mean lottery-equivalent bid as a function of value. For lower values, the mean lottery-equivalent bid is consistently about 10 cents above the mean auction bid. However, as values increase above \$7.00, the auction bid rises relative to the lottery-equivalent bid. Above \$7.00 the difference increases to the point that, near the maximum possible values, the auction bid is approximately 75 cents greater than the corresponding lottery-equivalent bid.

Figure 5 shows the relative percentage of paired bids in which the auction bids are greater than, equal to, or less than the corresponding lottery-equivalent bid. The largest difference in paired bids realizes for values above seven dollars. A sign test rejects at the 99% level of confidence that the percentages have the same median for values above seven dollars; and rejects at the 95% level that they are the same for values in the range of two to three dollars. Lottery bids tend to be higher than the corresponding auction bids for values below seven dollars. However, above seven dollars this changes dramatically and above nine dollars approximately 85% of all auction bids are higher than the corresponding lottery-equivalent bids. This transition appears to occur at a value of seven dollars. If the region between six dollars and eight dollars is divided into twenty five cent ranges, we can see that auction bids are significantly higher than the corresponding lottery bids for the ranges \$7.00 to \$7.25 (99%), \$7.50 to \$7.75 (99%) and \$7.75 to \$8.00 (95%). There is no statistical difference in the other twenty-five cent ranges.

Figure 6 shows the mean auction and lottery-equivalent bids expressed as deviations from the RNNE bid. Both the lottery and the auction exhibit substantially identical patterns below seven dollars. Below two dollars they are at or below the RNNE bid. Between two dollars and six dollars there is a

[5] The first set of lottery/auction results was lost for one subjects due to a software failure.

continuous almost linear rise, increasing to approximately 90 cents over the RNNE bid. It stays at this level over the range of six to seven dollars and then declines back to and below the RNNE bid. The lottery-equivalent bid decreases much faster than the auction bid reaching the RNNE bid at nine dollars.

Finally, the behavior of subjects with respect to bidding zero or in excess of their value was similar in the auction and the lottery. In the auction, 1.4% of the bids were equal to zero, while in the lottery subjects chose the equivalent of a zero bid 1.2% of the time. Only 0.5% of the auction bids were above value compared to 1.1% of the lottery-equivalent bids.

4.2 Second Treatment: Probability of Winning Shown in the Auction

Figure 7 shows the behavior of the mean auction and the mean lottery-equivalent bids for the case in which the probability of winning was shown during the auction. If we compare this graph to the corresponding one in Figure 4, the obvious difference is the absence of the bifurcation of the two bid functions for values above seven dollars. For values below seven dollars the two graphs are very similar, but above seven dollars the distance between the bid function lines disappears. In particular, the auction bid function becomes more like the lottery-equivalent bid function. The difference does not totally disappear, however. Above values of seven dollars there is a movement away from approximately equal bids toward a point, at the highest values, where the auction bids are approximately 30 cents above the corresponding lottery-equivalent bids. This compares to a nearly 80 cent difference when the probability was not shown. Another way to see this difference is to compare the percentage of paired auction/lottery bids where one of the pairs is larger than the other. These results are shown in Figure 8. Using a sign test we can reject that the median difference is zero for the ranges of \$5 to \$6 (95%), \$6 to \$7 (95%), \$8 to \$9 (99%), and \$9 to \$10 (99%). For the range of \$7 to \$8 we have $\alpha = 11\%$. Although the magnitude of the differences has substantially decreased, the pattern of auction bids being above lottery-equivalent bids exists over a larger range of values even when the probability is shown. However, despite this, the percentage difference for high values is much greater when the probability is not shown.

The difference of the mean bids relative to the RNNE bid is shown in Figure 9. The same pattern shown earlier in Figure 6 is evident with mean bids starting at or below the RNNE bid for low values, rising to a peak of almost one dollar above the RNNE bid for values in the seven dollar range, and then collapsing back to the RNNE bid for high values. In both cases the mean bids are below the RNNE bid for very low values and for very high values. As with the first series of experiments, the behavior of subjects with respect to bidding zero or in excess of their value is similar in the auction and the lottery. In the auction, 2.8% of the bids were equal to zero, while in the lottery subjects chose the equivalent of a zero bid 1.7% of the time. Only 0.2% of the auction bids were above value compared to 1.3% of the lottery bids.

To compare the auction bid functions and the lottery-equivalent bid functions which are implied by the observed bids, we run fixed/random effects regressions for different ranges of the values. The regressions regress bid on value (with and without non-zero intercepts). We chose the subject as the stratification variable. These results are shown in Table 1 for the lottery and in Table 2 for the auction. Separate estimates are shown for the experiments which showed the probability in the auction and for those not showing the probability. Separate regressions are also shown for *i)* all values, *ii)* values in the range \$0 to \$5, *iii)* values in the range \$5 to \$7, and *iv)* values in the range \$7 to \$10.

Our *a priori* expectation was that the regression results for the lottery-equivalent bid functions would not be affected by the treatment of showing the probability in the auction. This is indeed the case and the regression results are consistent over all value ranges. The difference in slope coefficients equals approximately the magnitude of the standard error of the estimates for all cases except the regression without constant over the highest value range. In this case the intercept is both large and significant.

Although not as consistent as the lottery results, the auction regressions are similar for all ranges except for the highest value range. Here the intercept for the case when the probability is shown is much larger and the slope much smaller than when the probability is not shown. This is consistent with the other results showing that the magnitude of the auction bids drops substantially when the probability is provided. Indeed, the regressions for the auction (showing the probability) and the lottery are quite similar.

5 Conclusions

In this paper, we study the behavior of individuals when facing two different, but incentive-wise identical, institutions. We study the individuals' behavior depending on the type of choice they are called to make: that is, depending on whether they are facing a lottery or an auction environment. This set up allows us to explore to what extent the misperception of the probability of winning in the auction is responsible for bidders in a first price auction to bidding above the risk neutral Nash equilibrium prediction. The first result we obtain from our experiments is that individuals, even though facing the same probability/payoff pairs, behave differently depending on the type of choice they are called to make; that is, depending on whether they are facing an auction or choosing among different lotteries. We show that, when facing an auction, subjects with high values tend to bid significantly above the bid they would choose in the corresponding lottery environment. We further find that in both the lottery and the auction subjects tend to bid in excess of the bid predicted by the risk neutral model, at least for intermediate range values. This finding supports a well-known result in the literature regarding the "misbehavior" of first price auctions (see among others, Harrison 1989; Cox, Smith and Walker 1988; Cox, Bruce and Smith 1982). Finally, we find that the difference between the lottery behavior and the auction behavior is substantially, but not totally, eliminated by showing to the subjects the probability of winning the auction.

These findings seem to imply that subjects possessing high values systematically underestimate their probability of winning in first price auctions. However, subjects appear to correctly assess such a probability when they have low and intermediate values. Furthermore, the fact that subjects consistently overbid relative to the RNNE for intermediate values is likely not due to an inability on the part of subjects to accurately assess the probability of winning the auction. These observations recall to mind Kahneman and Tversky's "certainty effect" (1979), according to which individuals tend to show risk aversion in choices involving sure gains. An open question therefore remains. There appears to be some unknown aspect of the first price auction which causes subjects to misinterpret probabilities of winning for high values and, when that misinterpretation is corrected, still causes them to bid higher than in a corresponding lottery framework.

Table 1. Regression results for the lottery-equivalent bids over different value ranges.

Value Range	Estimated with constant	Auction probability NOT shown Intercept	Auction probability NOT shown Slope	Auction probability shown Intercept	Auction probability shown Slope
$0 to $10	Yes	26.63	0.768	20.03	0.773
		(5.19)	(0.00397)	(6.24)	(0.00609)
	No	–	0.776	–	0.783
		–	(0.00366)	–	(0.00525)
$0 to $5	Yes	-17.15	0.898	-24.43	0.906
		(5.53)	(0.00936)	(7.64)	(0.01437)
	No	–	0.884	–	0.883
		–	(0.00833)	–	(0.01238)
$5 to $7	Yes	28.06	0.832	-6.01	0.878
		(18.39)	(0.0292)	(32.57)	(0.05288)
	No	–	0.875	–	0.869
		–	(0.0093)	–	(0.01167)
$7 to $10	Yes	442.55	0.254	457.94	0.242
		(15.37)	(0.0165)	(27.47)	(0.03085)
	No	–	0.685	–	0.735
		–	(0.00691)	–	(0.00886)

Standard errors are shown in parenthesis.

Table 2. Regression results for the auction bids over different value ranges.

Value Range	Estimated with constant	Auction probability NOT shown Intercept	Slope	Auction probability shown Intercept	Slope
$0 to $10	Yes	-3.54	0.844	6.26	0.815
		(4.43)	(0.00334)	(7.37)	(0.00587)
	No	–	0.843	–	0.817
		–	(0.00309)	–	(0.00534)
$0 to $5	Yes	-31.03	0.928	-20.64	0.884
		(4.97)	(0.00851)	(9.00)	(0.01227)
	No	–	0.903	–	0.874
		–	(0.00755)	–	(0.01141)
$5 to $7	Yes	27.17	0.829	-28.56	0.923
		(16.48)	(0.0263)	(45.88)	(0.07410)
	No	–	0.871	–	0.879
		–	(0.0078)	–	(0.01791)
$7 to $10	Yes	280.54	0.497	448.51	0.284
		(16.74)	(0.0187)	(18.65)	(0.02031)
	No	–	0.794	–	0.738
		–	(0.00604)	–	(0.00754)

Standard errors are shown in parenthesis.

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