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Author(s): John A. List and Jason F. Shogren
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The Deadweight Loss of Christmas: Comment

By JOHN A. LIST AND JASON F. SHOGREN*

Is there a deadweight loss from gift-giving at Christmas? Joel Waldfogel (1993, 1996) and Sara Solnick and David Hemenway (1996) provide conflicting answers. Waldfogel finds a welfare loss as his average recipient valued her gifts at 87 percent of the cost to the giver. Solnick and Hemenway find a welfare gain; their average recipient valued her gifts at 214 percent of the cost.[1] But both estimates can be challenged on two fronts. First, their loss/gain estimates are hypothetical, and ample evidence exists to suggest that hypothetical values are sensitive to systematic bias.[2] Second, the surveys were not framed as demand-revealing auctions; thus the signals to induce subjects to reveal their preferences sincerely are weak.[3]

This paper reestimates the deadweight loss of gift-giving in a real random *n*th price auction. We find a welfare gain: the average subject valued her gifts at 121 to 135 percent of the cost to the giver. Simply framing the auction as demand revealing did not change behavior; rather the actual auction elicited the welfare gain from receiving the gifts. The average subject understated her actual *material* value by about 21 to 28 percent in the hypothetical scenarios, with or without a demand-revealing decision framework. Our results provide some positive evidence that in-kind transfers do not always destroy value, but these welfare gains are lower than those reported by Solnick and Hemenway.

I. Experimental Design

Table 1 illustrates the general experimental design. The rows reflect the value of a gift: *material value* + *sentimental value* = *total value.* The columns reflect the three auction designs: the hypothetical open-ended survey, the hypothetical demand-revealing auction, and the actual demand-revealing auction. Cell A represents the hypothetical material value elicited in the Waldfogel (1993, 1996) and Solnick and Hemenway (1996) surveys.[4] Cell D reflects the real material value we use to estimate the welfare loss/gain from gift-giving.

Moving to cell D from cell A is complicated by the fact that the real auction occurs in cell C. In cell C, we elicit total value because the credibility of the auction would be stretched beyond reasonable limits to force a subject to relinquish his or her sentimental value in a real sale. Since sentimental values are embedded in the real offers, we use a three-stage experimental design to move from cell A to cell D via cells B and C.

In Stage 1 (February 4), a monitor administered Waldfogel's original survey (cell A) to a group of 46 undergraduate students in a

* List: College of Business Administration, Department of Economics, University of Central Florida, Orlando, FL 32816 (email: John.List@bus.ucf.edu); Shogren: Department of Economics and Finance, University of Wyoming, Laramie, WY 82071 (email: jramses@uwyo.edu). We thank Joel Waldfogel for providing us his original survey, and Sara Solnick and three reviewers for their insightful comments. Also, thanks to Apinya Thumaphipol for able research assistance. Finally, we thank the University of Central Florida and the National Science Foundation for supporting our work.

[1] Waldfogel elicited both willingness to pay (WTP) and willingness to accept (WTA) compensation; Solnick and Hemenway focused on WTA. If gains from gift exchange exist, WTA might be viewed as an upper-bound estimate (but, see for example, Shogren et al., 1994b). Our experiments elicit WTA.

[2] See for example Peter Bohm (1972), Helen R. Neill et al. (1994), List and Shogren (1998), and the cites therein. Not all experiments observe a significant difference in behavior, e.g., David Grether and Charles Plott's (1979) real and hypothetical preference reversal experiments, or J. A. Sinden's (1988) lab valuation work on donations to a soil conservation fund.

[3] See for example Shogren et al. (1994b) and Ronald G. Cummings et al. (1995).

[4] Waldfogel (1996 p. 1307) contends that Solnick and Hemenway (1996) are in cell *x* because they fail to account for sentimental value accurately. Regardless, our point remains valid.

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TABLE 1—EXPERIMENTAL DESIGN

	Hypothetical survey	Hypothetical random n^{th} price auction	Actual random n^{th} price auction
Material value	A		D
Sentimental value			
Total value	x	B	C

quantitative tools course at the University of Central Florida.[5] After reading the experimental instructions and answering all relevant questions, the monitor asked each subject to complete the holiday gift-giving survey. Information gathered from the survey included a description of all the gifts the subject received at Christmas, the relationship the subject had with each gift giver, and the estimated price the giver paid for each gift. Each subject also stated the hypothetical material values to sell his or her gifts.[6] For instance, a subject who received ten gifts submitted ten values. Finally, each subject revealed the additional sentimental value for each gift.

In Stage 2 (February 6) the monitor introduced the hypothetical Vickrey-style uniform price, sealed-bid auction (William Vickrey, 1961). Since most subjects received several gifts, we used a variant of the uniform price auction—the random nth price auction—to provide incentive for a subject to take care in valuing each of his or her gifts (Shogren et al., 1994a). As in the second-price auction, the random nth price auction attempts to separate what a subject offers from what he or she could receive to reduce the incentive for strategic offers. We were concerned that a classic second-price auction might cause a subject to focus on selling only his or her lowest-valued gift. The goal was to increase the odds that gifts could actually be sold that would otherwise be off the margin, and thereby give a person more incentive to submit sincere offers for these gifts.[7]

The auction works as follows: (1) for each gift received, a subject states his or her total value to sell the gift; (2) all gifts, g_i, from each subject are then pooled together to create the set of total available gifts, $G = \Sigma_{i \in M} g_i$, where M is the total number of subjects; (3) all gifts, G, are then rank-ordered from lowest to highest total value; (4) the monitor selects a random number uniformly distributed between 2 and 21 (21 was the most gifts received by a subject),[8] and (5) the monitor then purchases

[5] The average age of auction participants was 24; 62 percent were male, and the average family income was $70,811.

[6] As per Waldfogel's original survey, to gather information on subjects' material values this part of the survey asks subjects to report "the amount of cash such that you are indifferent between the gift and the cash, not counting the sentimental value of the gift." Experimental instructions are available from the authors upon request. Also, it should be noted that estimated gift prices elicited in this stage of the experiment were not provided to subjects in subsequent experimental stages.

[7] We used the random nth price auction so that a subject would take care when assessing the value of each of his or her Christmas gifts. As such, the institutional design does not preclude a subject from selling more than one gift at the uniform price. And while truth-telling can be a (nonunique) Nash equilibrium in a multiple-unit, uniform price auction, in general this need not be the case (see Robert Forsythe and R. Mark Isaac, 1982). A multigood, uniform price auction does not necessarily inherit the same demand-revealing properties as a second-price or nth price auction in which subjects can only sell one gift (Vickrey, 1962). While subjects have an incentive to bid sincerely on the first gift sold, their incentive to inflate the value of subsequent gifts increases because winning sellers affect the market price with positive probability (see Lawrence M. Ausubel and Peter C. Cramton, 1996). Hence, the subject can increase the expected selling price on the first gift by inflating offers for additional gifts. Nevertheless, lab evidence suggests that nth price auctions do a reasonable job of empirical demand revelation on aggregate (see Gary Miller and Plott, 1985; Robert Franciosi et al., 1993). Yet, as suggested by theory, offers off the margin are less likely to be sincere than those around the margin. As suggested by Ausubel and Cramton (1996), alternative designs to remove this disincentive include a variation of the Vickrey auction in which a bidder who sells K gifts receives the amount of the kth lowest rejected offer other than his or her own offer for the kth object won, or a descending-offer design that replicates the Vickrey auction. John Kagel and Dan Levin (1997) find evidence that this multiple-unit Vickrey auction, in which winning bidders pay the kth price, can largely restore demand revelation.

[8] We set the bounds of the random nth price auction between 2 and the maximum number of gifts, g_i, received by any one person, 21, i.e., $n\text{th} \in (2, \max g_i)$. We then rank-ordered all the gifts. Thus, even if the random nth price equaled its maximum value of 21, subjects might have had less incentive to take care assessing the value of very expensive gifts that were unlikely to be sold, i.e., not

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the $(n-1)$ lowest total value gifts overall and pays the nth lowest total value for each gift. For example, suppose $G = 500$ gifts overall and #6 was chosen as the random nth price, then only the five lowest-valuation gifts overall would be purchased at the sixth lowest offer.

After the instructions were read, the monitor ran a candy bar preauction to give the subjects some experience with the random nth price auction (see, e.g., Bryan Melton et al., 1996). Next, we ran the hypothetical auction in which each subject offered a selling price, or her total value for each gift (cell B). Finally, the monitor asked the subject to split this hypothetical total value into its sentimental and material value components for each gift.

In Stage 3 (February 11), we ran the actual random nth price auction for the gifts. After the monitor read the instructions and clearly stated that this auction was real, each subject submitted her real total value for each gift (cell C). The subject again divided total value into its sentimental and material value (cell D) components for each gift. The random price was #4, and the monitor made arrangements with the sellers to purchase the three lowest-total-value gifts each priced at the fourth lowest-total value. Three distinct subjects sold one gift each at a uniform price of \$2.00.[9]

Although some attrition occurred over the eight days of the three-stage experiment, this is not a substantive issue since students were unaware that a real auction would occur after the first two stages. Also, gifts that were used before the experiment (e.g., candy, gift certificates, cash) were trimmed from the analysis for obvious reasons. Our final sample consists of 244 gifts across 36 recipients.

II. Results

We generate a welfare loss using Waldfogel's hypothetical survey: average yields across subjects and gifts were 99 and 98 percent (see Table 2). Percentage yield across subjects is computed as the mean ratio of material values to the total costs for each subject averaged over all subjects; percentage yield across gifts is the same ratio for each gift averaged over all gifts. Although our results do not exactly replicate Waldfogel's in that they do not differ significantly from 100 percent at conventional levels, the point estimates do not refute his finding that a deadweight loss may exist from gift-giving at Christmas. These findings suggest that sample selection may not be the pivotal issue in this debate. Subjects from the University of Central Florida respond as those at Yale.[10]

At issue is the gap between hypothetical and actual behavior. In the actual random nth price auction, we estimate a welfare gain: average yields were 121 and 135 percent (Table 2).[11]

in the set of the perceived cheapest-21 gifts. The subject who received a new car as a gift, for instance, probably believed that the car had no chance to be ranked in the cheapest-21 gifts and, as such, his desire to make a sincere offer may have suffered. Alternatively, we could have set the nth price at the total number of gifts, G, in the set, $n\text{th} \in (2, G)$. The problem with using the entire set is that rational subjects may have questioned our ability to purchase 100 gifts or more if the random price was significantly large, say \$150. This reasoning may have cast doubt on the credibility of the auction and created even less of an incentive to make sincere offers. Although highly speculative, the lowest-21 constraint may have tempered the incentive to place insincere offers for the more expensive gifts in the multiple-unit auction. We explored some initial, suggestive evidence to investigate whether our inframarginal offers were misbehaved. We split the data set into six categories: gifts materially valued at \$1–\$10 ($m = 40$); \$11–\$20 ($m = 58$); \$21–\$34 ($m = 35$); \$35–\$50 ($m = 47$); \$51–\$100 ($m = 38$); and \$101+ ($m = 26$). We then averaged real yields from the actual random nth price auction over all gifts in each subsample. The six mean yields from the demand-revealing random nth price auction ranged from 111 percent–149 percent, with yields from the higher material value subsample (\$51–\$100 and \$101+) falling in both the lower and upper end of the distribution. Also, the 95-percent yield confidence intervals overlapped for all six subsamples, roughly suggesting inframarginal and marginal subjects were behaving similarly.

[9] We purchased hosiery, slippers, and a beer intake facilitator.

[10] Overall, our empirical results are consistent with Waldfogel in that gift yields are highest from parents, significant others, and spouses, while the most value is lost from distant relatives, such as cousins. Also, a simple linear regression using the log of material value as the regressand and the log of estimated cost as the regressor indicates a proportional relationship exists between the two variables. All empirical results are available upon request.

[11] Winning bidders had to bring the gift to the university to exchange it for cash. Thus transactions costs

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TABLE 2—EXPERIMENTAL RESULTS

	Hypothetical survey	Hypothetical random n^{th} price auction	Actual random n^{th} price auction	Waldfogel (1993) [1996][a]	Solnick and Hemenway (1996) [Partial sample][b]
Gift	Mean	Mean	Mean	Mean	Mean
Total cost (TC)	\$362.55	\$362.55	\$362.55	\$508.90 [NA]	\$167.00 [\$167.00]
Material value (MV)	\$365.50	\$368.13	\$464.86	\$462.10 [NA]	\$6,667.00 [\$202.00]
Ratio of mean value to mean cost (MV/TC)	100.8	101.5	128.2	90.8 [NA]	3,992 [121.0]
Percent yield					
Across subjects[d]	99.2 (2.0)[c]	100.6 (1.9)	121.0 (3.4)	87.1 (3.2) [NA]	10,100 (120,000) [214] [345]
Across gifts[e]	97.8 (2.5)	106.4 (6.7)	134.9 (7.6)	83.9 (2.8) [92.9] [1.0]	10,100 (120,000) [214] [345]
Subjects (N)	36	36	36	58 [455]	155 [150]
# gifts	244	244	244	278 [2,950]	155 [150]

[a] Waldfogel's (1996) results are in brackets under his (1993) estimates; NA denotes not available.
[b] Solnick and Hemenway's trimmed sample results are in brackets under full-sample estimates.
[c] Standard error of the mean in parentheses beneath the yield estimates.
[d] "Mean yield across subjects" is the mean MV/TC for each subject averaged over all subjects.
[e] "Mean yield across gifts" is the MV/TC for each gift averaged over all gifts.

Our results support Solnick and Hemenway's intuition that gift-giving does not universally destroy value, but our results suggest their estimated gains of 214 to 10,100 percent (partial and full sample) are an upper bound.[12] Plausible value creation can occur with gift-giving.

The welfare gains are driven more by the actual auction than framing the offers as demand revealing. This finding is illustrated in columns 1–3 of Table 3, in which first moments of the revealed total cost and material value are shown for each of the auction designs. Although mean yields differ across the two hypothetical instruments, using a Wilcoxon signed-rank test for matched pairs we cannot reject the hypothesis that the revealed

may also be an impetus for actual bids to be higher than hypothetical bids. To mitigate these potential costs we started the experiment immediately after Christmas break (February 4). Nonetheless, the students who sold their Christmas gifts still had to exert some effort to find and return their gift to the university. We did not explicitly measure these costs for the subjects. Future work could ask subjects to reveal this cost as a control on value estimates.

[12] Solnick and Hemenway also calculate a median yield of 111 percent.

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TABLE 3—EXPERIMENTAL RESULTS, ACROSS GIFTS

	Hypothetical survey	Hypothetical random n^{th} price auction	Actual random n^{th} price auction	Hypothetical auction vs. hypothetical survey	Actual auction vs. hypothetical auction	Actual auction vs. hypothetical survey
	Mean	Mean	Mean	Wilcoxon test	Wilcoxon test	Wilcoxon test
Gift cost	\$53.90	\$53.90	\$53.90	—	—	—
	(58.96)[a]	(58.96)	(58.96)			
Material value	\$53.92	\$54.31	\$68.68	3,281[b]	9,404*	9,560*
	(71.07)	(71.30)	(95.38)	$z = -0.46$	$z = -3.84$	$z = -13.25$
Sentimental value	\$41.85	\$42.02	\$68.42	1,120	5,482*	5,272*
	(147.21)	(145.07)	(174.31)	$z = -1.09$	$z = -4.91$	$z = -5.10$
Total value	\$95.77	\$96.34	\$136.87	4,752	6,570*	7,376*
	(191.85)	(194.87)	(239.98)	$z = -0.66$	$z = -5.76$	$z = -5.62$
N	244	244	244	—	—	—

[a] Standard deviations in parentheses.

[b] Wilcoxon test is a signed-rank test for matched pairs across gifts. Since the number of paired observations is larger than 30, the large-sample z-test is used. The large-sample z-test's null and alternative hypotheses are given by:

H_o: Two sampled populations have identical probability distributions.

H_a: The probability distribution for population A is shifted to the right or to the left of that for population B.

Critical z-values are computed as follows: $z = (W - (n(n + 1)/4))/(n(n + 1)(2n + 1)24)^{1/2}$, where n is the number of nontied differences between the two samples.

* Significantly different values at the 1-percent level.

values (material value, sentimental value, or total value) in the hypothetical survey were derived from the same parental population as the values from the hypothetical auction [see Table 3, Wilcoxon test, $W = 3,281$ ($z = -0.46$); $W = 1,120$ ($z = -1.09$); $W = 4,752$ ($z = -0.66$)]. We can reject, however, the hypotheses that revealed values in the actual auction are derived from the same parental populations as the two hypothetical treatments (Table 3). The change to real economic commitments from a hypothetical scenario seems to be the catalyst for the welfare gain.[13] Furthermore, if we calibrated Waldfogel's results by increasing his material values with the estimated mean real-hypothetical gap of 26.5 to 27.4 percent (from Table 3), his deadweight loss becomes a surplus. Similar implications are drawn if the calibration factor is taken from Table 2.

III. Conclusion

In a way, our results support both sides: Waldfogel's original point estimates are replicable, and Solnick and Hemenway's basic intuition persists. The hypothetical survey generated a welfare loss; the actual auction produced a plausible welfare gain, as real selling prices were at least 27 percent higher than hypothetical prices. Our subjects reacted differently when the auction was real, a common phenomenon noted in much of the nonmarket valuation literature. The relationship between in-kind transfers and value is not immune to the slip twixt intentions and actions, again suggesting that lessons learned in the lab have implications for broader economic questions of general public interest.[14]

[13] Neill et al. (1994) also found that it was the hypothetical nature of their survey, rather than the lack of explicit incentive-compatible provision rules, that led to valuation changes (or biases). This result exemplifies the difficulties that hypothetical valuation methods have in practice, as intentions are typically costless to express, possibly leading to less-than-sincere expressions of value.

[14] See the recent articles in *Business Week* (1997) and *Free Market* (1997).

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REFERENCES

Ausubel, Lawrence M. and Cramton, Peter C. "Demand Reduction and Inefficiency in Multi-Unit Auctions." Working paper, University of Maryland, 1996.

Bohm, Peter. "Estimating Demand for Public Goods: An Experiment." *European Economic Review*, 1972, *3*(2), pp. 111–30.

Business Week. "How Economists View Christmas." December 22, 1997, p. 28.

Cummings, Ronald G.; Harrison, Glenn W. and Rutström, E. Elisabet. "Homegrown Values and Hypothetical Surveys: Is the Dichotomous Choice Approach Incentive-Compatible?" *American Economic Review*, March 1995, *85*(1), pp. 260–66.

Forsythe, Robert and Isaac, R. Mark. "Demand-Revealing Mechanisms for Private Good Auctions," in Vernon Smith, ed., *Research in experimental economics*, Vol. 2. Greenwich, CT: JAI Press, 1982, pp. 45–61.

Franciosi, Robert; Isaac, R. Mark; Pingry, David E. and Reynolds, Stanley S. "An Experimental Investigation of the Hahn-Noll Revenue Neutral Auction for Emissions Licenses." *Journal of Environmental Economics and Management*, January 1993, *24*(1), pp. 1–24.

Free Market. "Is Christmas Inefficient?" December 1997, *15*(12), pp. 1–3.

Grether, David and Plott, Charles. "Economic Theory of Choice and the Preference Reversal Phenomenon." *American Economic Review*, September 1979, *69*(1), pp. 623–38.

Kagel, John and Levine, Dan. "Independent Private Value Multi-Unit Demand Auctions: An Experiment Comparing Uniform Price and Dynamic Vickrey Auctions." Working paper, University of Pittsburgh, November 1997.

List, John A. and Shogren, Jason F. "Calibration of the Difference Between Actual and Hypothetical Valuations in a Field Experiment." *Journal of Economic Behavior and Organization*, December 1998, *37*(2), pp. 193–205.

Melton, Bryan; Huffman, Wallace; Shogren, Jason F. and Fox, John. "Consumer Preferences for Fresh Food Items with Multiple Quality Attributes: Evidence from an Experimental Auction of Pork Chops." *American Journal of Agricultural Economics*, November 1996, *78*(4), pp. 916–24.

Miller, Gary and Plott, Charles. "Revenue-Generating Properties of Sealed-Bid Auctions: An Experimental Analysis of One-Price and Discriminative Auctions," in Vernon Smith, ed., *Research in experimental economics*, Vol. 3. Greenwich, CT: JAI Press, 1985, pp. 159–82.

Neill, Helen R.; Cummings, Ronald G.; Ganderton, Philip; Harrison, Glenn W. and McGuckin, Thomas. "Hypothetical Surveys and Real Economic Commitments." *Land Economics*, May 1994, *70*(2), pp. 145–54.

Shogren, Jason F.; Fox, John; Hayes, Dermot J. and Kliebenstein, James. "Bid Sensitivity and the Structure of the Vickrey Auction." *American Journal of Agricultural Economics*, December 1994a, *76*(5), pp. 1089–95.

Shogren, Jason F.; Shin, Seung Y.; Hayes, Dermot J. and Kliebenstein, James. "Resolving Differences in Willingness to Pay and Willingness to Accept." *American Economic Review*, March 1994b, *84*(1), pp. 255–70.

Sinden, J. A. "Empirical Tests of Hypothetical Biases in Consumers' Surplus Surveys." *Australian Journal of Agricultural Economics*, August–December 1988, *32*(2–3), pp. 98–112.

Solnick, Sara and Hemenway, David. "The Deadweight Loss of Christmas: Comment." *American Economic Review*, December 1996, *86*(5), pp. 1299–1305.

Waldfogel, Joel. "The Deadweight Loss of Christmas." *American Economic Review*, December 1993, *83*(5), pp. 1328–36.

_____. "The Deadweight Loss of Christmas: Reply." *American Economic Review*, December 1996, *86*(5), pp. 1306–08.

Vickrey, William. "Counterspeculation, Auctions, and Competitive Sealed Tenders." *Journal of Finance*, March 1961, *16*(1), pp. 8–37.

_____. "Auctions and Bidding Games." *Recent advances in game theory: Papers delivered at a meeting of the Princeton University conference, October 4–6, 1961*, Princeton University Conference, 1962, pp. 15–29.

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