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# Hardnose the Dictator

By TODD L. CHERRY, PETER FRYKBLOM, AND JASON F. SHOGREN\*

Lab experiments have gone to extremes to isolate and repress other-regarding behavior in extensive-form bargaining games, with limited success. Consider, for example, Elizabeth Hoffman et al.'s (1996; hereafter HMS) Anonymous Dictator game. This game controls self-interested strategic behavior by giving a person complete control over the distribution of wealth, and complete anonymity from all others including the experimenter. While theory predicts people with complete control and complete anonymity will offer up nothing to others, in fact they still share the wealth in about 40 percent of the observed bargains. Such other-regarding choice is another example in which individual behavior differs from that predicted by subgame perfection, and supports the call for a new "behavioral game theory" (Colin F. Camerer, 1997).

Herein we extend the work of HMS to reveal a setting in which 95 percent of dictators follow game-theoretic predictions. In contrast to previous studies, our design has people bargain over *earned wealth* rather than unearned wealth granted by the experimenter. We argue that just as rewards must be salient (Kyung Hwan Baik et al., 1999), the assets in a bargain must be legitimate to produce rational behavior.<sup>1</sup> Our results support this conjecture. Dictators bargaining over earned wealth were more self-interested than observed in previous studies;

and when they had complete anonymity, selfless behavior is essentially eliminated.

## I. Experimental Design

*Preliminaries.*—Subjects were recruited from the undergraduate student body at the University of Central Florida. All subjects were unfamiliar with bargaining games. We conducted three sessions, each having 52 or 61 bargaining pairs. Participants were randomly assigned to two groups, split into rooms A and B. The two groups did not have any contact before, during, or after the session. Subjects were only allowed to talk to administrators.

*Stages.*—The experiment had two stages (*earnings* and *bargaining*), each with a written protocol to ensure consistency. The earnings stage had subjects in Room A participate in a money-earning session without knowledge of the second bargaining stage. Subjects earned money by taking a quiz containing 17 questions taken from the sample section of the Graduate Management Admission Test (GMAT).<sup>2</sup> The amount earned was determined by the following rule: if the subject answered at least ten questions correctly, he or she would earn \$40; otherwise, he or she received \$10. Subjects knew they had 45 minutes to complete the quiz. After the time elapsed, the monitors collected and graded the quizzes, and distributed cash earnings to each subject in confidence according to the specified earnings rule. After receiving their money, the subjects who earned \$40 were put in a separate room (Room A1) from those who earned \$10 (Room A2).

The bargaining stage randomly matched subjects in Room A1 and A2 with those in Room B to form bargaining pairs. The person in Room A was the first mover (i.e., dictator) and bargained over his or her earned wealth. Instructions for

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<sup>1</sup> While this proposition has not been explicitly examined in bargaining behavior, there is closely related work within the economics and psychology literature: for example, found-money effect and mental accounting (e.g., Milton Friedman, 1957; James P. Keeler et al., 1985; Richard Thaler, 1990; Hal Arkes et al., 1994; James Konow, 2000).

<sup>2</sup> The instructions are available upon request and the earnings quiz is provided in John A. List and Cherry (2000). Pilot sessions indicate the effect of the earnings session is robust across tasks other than a quiz.

the dictator game were read aloud to both groups.<sup>3</sup> All bargaining games were one-shot, and players had complete information. For each pair, the player in Room A1 or A2 dictated a split of his or her wealth with the person in Room B. Administrators carried the offers from Room A1 and A2 to Room B. Final earnings were paid according to the dictated split, and subjects departed one at a time with their cash payment. This concluded the bargaining stage, and ended the session.

*Treatments.*—Based on the two-stage design, we created three treatments: baseline, earnings, and double blind with earnings. Given the dichotomous outcome of earnings, each of the three treatments had a high- and low-stakes session. In the baseline treatment (B), subjects did not participate in an earnings stage prior to the bargaining stage. As in previous studies, dictators in Room A were provided their wealth by the experimenter. Specifically, subjects were told that “\$X has been provisionally allocated to each pair and the person in Room A can propose how much of this each person is to receive.” Dictators were allocated either \$40 or \$10 to provide a clean comparison to the two potential earnings outcomes.

In the earnings treatment (E), subjects in Room A participated in the earnings stage prior to the bargaining stage. Instructions informed all subjects that “the person in Room A has earned an amount of money by participating in a previous session” and “the person in Room B has not had the opportunity to earn any money.” Further, they were informed “the person in Room A decides how much of his or her earnings they are to receive and how much of his or her earnings the person in Room B is to receive.” For time management, subjects in Room B arrived one hour after those in Room A.

The double blind with earnings (DBE) treatment was identical to the earnings treatment, except that the bargaining stage was identical to the Double Blind 1 (DB1) protocol in HMS.<sup>4</sup>

<sup>3</sup> As in HMS, we used the experimental instructions from Robert Forsythe et al. (1994) as the baseline with the adjustment to incorporate whether the wealth was earned or allocated. We note that it was common knowledge whether the stakes were earned or allocated but only dictators knew of the two stake levels (\$10 vs. \$40).

<sup>4</sup> In the DB1 experiment, (a) the administrator chooses a subject from Room A to oversee the bargaining stage; (b)

The only adjustments we make to incorporate the earning session with HMS’s isolation design is to separate those that earned \$40 versus \$10, and adjust the number of blank slips of paper in the envelopes; 40 slips and bills, or 10 slips and bills.

## II. Results and Conclusion

Figures 1 and 2 provide the cumulative distributions from our low- and high-stakes experiments. Results indicate that other-regarding behavior is greatly diminished when bargaining involves earned wealth, and this behavior is nearly eliminated when earned stakes are combined with anonymity.

In the baseline treatments, the theoretically predicted “zero offer” occurred in 19 percent of the low-stakes bargains and 15 percent of the high-stakes bargains. In contrast, legitimizing wealth with an earnings session prior to bargaining dramatically reduced off-equilibrium behavior, with zero offers arising in 79 and 70 percent of the bargains in the low- and high-stakes earnings treatments. As the diagrams illustrate, Fisher’s exact and Wilcoxon tests reveal that the proportions of nonzero offers and the distribution of offers in the earnings treatments are significantly lower than those found in the baseline treatments ( $p < 0.0000$  in all cases).<sup>5</sup>

Now consider the double-blind earnings treatment. When isolated dictators acted over earned wealth, self-interested game-theoretic behavior was the norm. Bargainers made zero offers 95

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the administrator reads the instructions aloud; (c) each person in Room A individually and randomly selects one of  $N + 2$  opaque envelopes, in which  $N$  envelopes contain 10 (or 40) one-dollar bills and 10 (or 40) slips of paper, and the two additional envelopes contain 20 (or 80) slips of blank paper; (d) subjects open the envelope behind a large cardboard box and decide how many bills to leave for the person in Room B, where slips of paper replace bills to ensure consistency in envelope thickness; (e) subjects seal the envelope and drop it in a box as they exit; (f) the process is repeated for all people in Rooms A1 and A2; (g) the administrator takes the box of envelopes outside of the door of Room B; (h) people in Room B individually exit, in which they randomly select an envelope and the contents are recorded by the administrator; (i) this process is repeated for everyone in Room B; and (j) the experiment concludes with the payment of the overseer selected in step (a).

<sup>5</sup> The Wilcoxon test statistic was  $W = 4.57$  for high stakes and  $W = 4.32$  for low stakes.

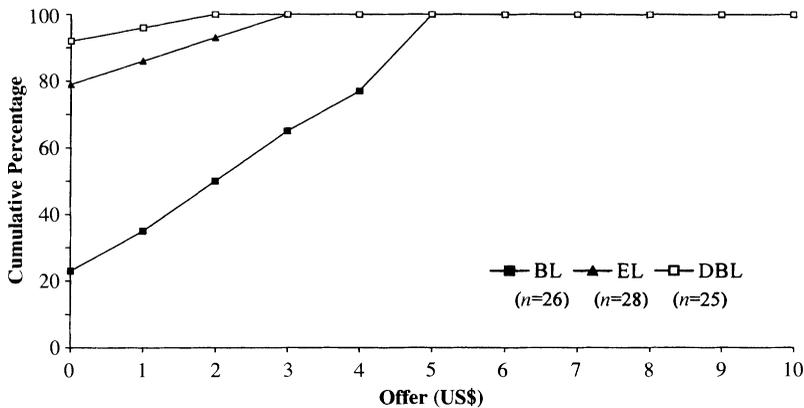


FIGURE 1. CUMULATIVE DISTRIBUTIONS OF OFFERS IN THE \$10 DICTATOR GAMES

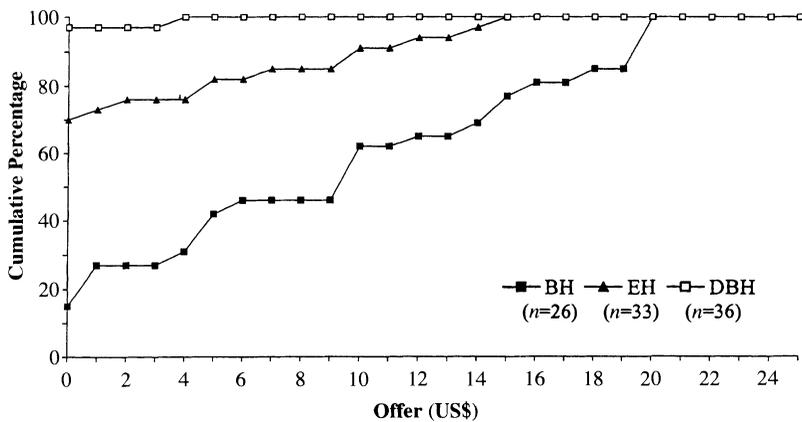


FIGURE 2. CUMULATIVE DISTRIBUTIONS OF OFFERS IN THE \$40 DICTATOR GAMES

percent of the time in the double-blind earnings treatments and 97 percent of the time in the high-stakes treatment. Such hardnose behavior by dictators stands in stark contrast to previous work that reports only 20–60 percent of observed behavior adhere to subgame perfection. The frequency of nonzero offers and the distribution of offers observed in the double-blind earnings sessions is significantly lower than those in the baseline ( $p < 0.0000$ ). Comparing the double-blind earnings and the straight earnings treatments, tests indicate that the increased anonymity from the double-blind protocol significantly lowered the frequency and distribution of off-equilibrium behavior in the high-stakes sessions (Fisher's exact,  $p < 0.007$ ;  $W = 3.14$ ,  $p = 0.002$ ). Tests were less con-

vincing for the low-stakes sessions (Fisher's exact,  $p = 0.256$  and  $W = 1.40$ ,  $p = 0.16$ ).<sup>6</sup>

We conclude with two observations that have broader implications. First, legitimizing wealth with effort is no less important than controlling reciprocity in explaining other-regarding behavior in simple bargaining games. It follows that asset origin could affect the degree of anomalous behavior witnessed in other experimental settings. Windfall wealth, for instance, might explain the lack of free-riding in the provision of public goods in the laboratory. Second, asset

<sup>6</sup> Note that behavior was statistically equivalent across high and low stakes. The result of no wealth effects with earned money corresponds to previous findings with allocated wealth (e.g., Forsythe et al., 1994).

origin combined with isolation closed a long-standing gap between standard game theory and observation. When assets are legitimized with effort and strategic concerns are controlled with isolation, altruism was the exception and self-interest was the rule. Strategic concerns—not fairness—appear to be the motivation for other-regarding behavior when people bargain over earned wealth. This raises the question of when the efforts to explain the gap generated by windfall assets are necessary.

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