Good news for experimenters: subjects do not care about your welfare

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Abstract

Do subjects care about the experimenter's welfare? Then it should make a difference when payoffs not realized by the subjects are burnt instead of kept by the experimenter. However, in an ultimatum bargaining experiment, this effect was not observed. © 1998 Elsevier Science S.A. All rights reserved.

1. Introduction

In some types of experiments, such as coordination games, prisoners' dilemmas and ultimatum games, it is often observed that the subjects fail to obtain possible rents from cooperation or from successful bargaining. However, technically the interpretation of these results as Pareto inferior (e.g., Roth et al., 1991, p. 1070) is not quite correct, as whenever the individuals fail to maximize their collective payoff, there is still someone who is better off: the experimenter (at least if he has no funding for the experiment; otherwise his sponsor would be better off.)

At first sight, the idea that the subjects bear the experimenter's welfare in mind is interesting for two reasons.

First, the subjects' concern for the experimenter's wealth or welfare (CEW for short) would be well in line with psychologists' findings about other aspects of the relationship between subject and experimenter. Particularly, many subjects are motivated by the desire to provide the experimenter with ''good'' data (Orne, 1969). Saving the experimenter's money is a more obvious and straightforward way to please him.

Second, if empirical support for the CEW hypotheses is found, this would undermine established interpretations of experimental observations. Consider the ultimatum game. A proposer (P) makes an offer of how to split a certain amount of money (the stake). The receiver (R) either accepts the offer, and both subjects are paid as proposed, or rejects it, in which case both receive nothing. From the

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observed rejection of small positive offers, conventional wisdom since Güth et al. (1982) concludes that there is something like a disutility from being offered an ''unfair'' share of the stake, or a utility from rejecting it. The R's utility function might, for example, be $u_R = p_R - c \cdot \Delta$, with p_R denoting his payoff, Δ being some measure of perceived unfairness[1] (with $\Delta = 0$ in the case of rejection) and $c \geq 0$. Rejections can be conveniently explained by offers being so small that $0 > p_R - c \cdot \Delta$. However, the CEW hypothesis provides a competing sufficient reason for rejecting: Let $u_R = p_R + c \cdot p_{exp}$, p_{exp} denoting the experimenter's ''payoff''. The receiver, by rejecting a small amount, saves the experimenter the whole stake. Thus, he rejects if the offer is so small that $c \cdot \text{stake} > p_R$. There would simply be no need for the fairness explanation.

The next section presents a variant of the ultimatum game which should induce different behavior, compared to the standard ultimatum game, if the CEW hypothesis were true. Section 3 provides the results.

2. Experimental design

In the control group, the standard one-shot ultimatum game was played as follows: The stake was a number of stamps worth 5 German marks.[2] At the beginning, the participants did not know whether they would ultimately be proposer or receiver. On one form they had to indicate their offer as if they were proposer, on another form they had to indicate the minimum acceptable amount for them as receivers.[3] After the forms were completed, it was determined who was proposer and who was receiver.[4] The proposers put their offers in an envelope bearing only an identification number. Each receiver was randomly assigned one of these envelopes containing an offer and the stake, which had been enclosed by the experimenter. If the offer was below the minimum acceptance, the receivers had to give the stake (and the forms) back to the experimenter in the closed envelope. If the offer was higher than the minimum acceptance, they gave everything back to the experimenter after taking out their share of the stake. According to the proposers, no receiver made an attempt to cheat. The payoffs to proposers whose offers had been accepted were made by laying out their envelopes containing the remaining stamps. Hence it was a double blind procedure: the subjects did not know their trading partners, and the experimenter could not observe their behavior and payoffs.

In the other treatment, referred to as the experimental group, the same instructions (read aloud and shown on transparencies) and forms were used, the only difference being that to the sentence ''If the receiver rejects, both receive nothing'' it was added: ''and the stamps are burnt''. Care was taken to make this announcement credible: I brought and distributed a written obligation which entitled each participant to claim 500 German marks from me in case I should violate the rules by not burning

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[1]For example, Bethwaite and Tompkinson (1996) suggest $\Delta = |p_R - p_P|$, with p_P denoting the proposer's payoff. A more sophisticated measure of perceived unfairness should predict that the percentage of the stake which receiver's demand decreases when the stake becomes larger (Telser, 1995). See Bolton (1991) for a more general model.

[2]Four stamps at 1 mark each and ten 10-pfennig stamps; without any value for collectors. Naturally the offers had to be stated in multiples of 10 pfennig.

[3]This procedure is borrowed from Carter and Irons (1991).

[4]One of the two forms which everyone had was light-green. After collecting all the completed green forms, for half of the subjects a white proposer form remained, for the other half a white receiver form remained.

(enough) stamps. A candle and matches were shown to the subjects, and it was announced that the stamps would be burned immediately after completion of the experiment.

Presuming that the CEW hypothesis was true, and (some) receivers in the control group set their minimum acceptance above 0.10 marks because otherwise $p_R < c \cdot$ stake, the stake being the experimenter's "payoff" in the case of rejection. Then in the experimental group, we should observe lower minimum acceptances (closer to the game-theoretic prediction) as $p_{exp} = 0$ in any case. However, as the next section will show, this is not what I found.

3. Results

Summary statistics for the control group (40 subjects recruited from second-year undergraduate economics classes) and the experimental group (44 subjects from the same classes) are shown in Table 1. Though the average minimum acceptance in the experimental group is lower, according to a Mann-Whitney U test the difference is not significant at a 10% level of significance (in fact, not even at a 20% level). The offer which maximizes the proposers' expected payoff is 2.00 in both treatments. The modal minimum acceptance is different, but not in a way one would expect according to the CEW hypothesis. In the control group, 30% of the subjects demand 0.00 or 0.10, compared to only 25% in the experimental group. Thus, the pairwise random combination of proposers and receivers led to five rejections in the experimental group, and stamps worth 25 German Marks had to be burnt. Probably most participants did not realize that this was a mere shift of resources from the experimenter to the German postal service; at least according to the post-experimental questionnaire, in which 74% agreed that the burning of stamps is a waste of resources. Note, however, that the predicted effect of a concern for the experimenter's welfare does not depend on this belief.

So far we have focused on the receivers. The reason being that the impact of a concern for the experimenter's wealth on the offers made by the proposers is not clear. On the one hand, if the CEW hypothesis were true, they might offer more in the experimental group, thereby increasing the likelihood of acceptance because rejections of low offers no longer save the experimenter's money. On the other hand, they might offer less in the experimental group because they anticipate that the receivers demand less if rejected stakes are burnt. Due to these opposite effects which the CEW would have, the rejection of this hypothesis cannot be based on the comparison of the offers under the two treatments, which on average turn out to be not significantly different.

Table 1
Summary statistics

	Control group (rejected stake returned)		Experimental group (rejected stake burnt)	
	Offer	Min. acceptance	Offer	Min. acceptance
Mean	2.06	1.32	1.96	1.12
Median	2.00	1.50	2.00	1.00
Mode	2.00	0.10	2.00	1.00
S.D.	0.76	1.06	0.93	0.79
C.V.	0.37	0.80	0.48	0.71

4. Final remarks

A novel and simple procedure to achieve anonymity was used in this double-blind ultimatum bargaining experiment. Anonymity allows a more definite interpretation of the findings. On the other hand, it might be argued that the CEW hypothesis could be true if and only if subjects are observed and paid directly by the experimenter. However, this objection is refuted by Bolton and Zwick (1995) double-blind ultimatum bargaining experiment, in which the typical out-of-equilibrium (i.e., ''fair'') behavior was also observed.

A more important qualification is that behavior in the ultimatum game, in some respects, is different from behavior in other experiments (Roth et al., 1991). Thus, our simple test is not enough to discard the CEW hypothesis completely. However, another piece of evidence is provided by Hennig-Schmidt (1997) experimental investigation of break-offs in (non-ultimatum) bargaining, in which either party consisted of three people whose discussion of the group decision was videotaped. In the course of these discussions, no subject showed a concern for the experimenter's wealth.[5] One of them even remarks: ''These guys save 16 Marks. 16 times 3. They save DM 48, if we break off.'' Another one agrees: ''Now it's against the employer [experimenter]''. (Hennig-Schmidt, 1997, p.43).

Others might regard it as bad news that subjects in the ultimatum game, as well as those in Hennig-Schmidt's experiment, do not seem to show any sign of altruism towards the experimenter. For experimenters, on the other hand, this is certainly good news, according to which a possible experimental artifact is negligible and the more usual interpretations of the observations remain intact.

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[5]The complete recordings are unpublished as yet; I am indebted to Heike Hennig-Schmidt for providing me with this information.