Morals and Markets: the Case of Ultimatum Bargaining

by Sandro Casal*
Francesco Fallucchi**
Simone Quercia***

* University of Milan
** CBESS and School of Economics, University of East Anglia
*** University of Bonn

Abstract
We conduct an experiment to investigate the acceptable boundaries of immoral behavior in bargaining situations. We find that subjects are willing to punish at their own cost only an extremely immoral action of their counterpart that affects a third party. However, the possibility to nullify the negative effects of the immoral action and to restore the ex-ante situation for the third party increases the willingness to punish.

JEL classification codes
C72, C91, D6

Keywords
mini ultimatum game, morals.
Morals and Markets: the Case of Ultimatum Bargaining
Sandro Casal\textsuperscript{1}, Francesco Fallucchi\textsuperscript{2} and Simone Quercia\textsuperscript{3}

Abstract
We conduct an experiment to investigate the acceptable boundaries of immoral behavior in bargaining situations. We find that subjects are willing to punish at their own cost only an extremely immoral action of their counterpart that affects a third party. However, the possibility to nullify the negative effects of the immoral action and to restore the ex-ante situation for the third party increases the willingness to punish.

Keywords: mini ultimatum game, morals.

JEL code: C72, C91, D6

\textsuperscript{1} University of Milan, Department of Economics, Management, and Quantitative Methods (DEMM), via Conservatorio 7, 20122 Milan, Italy. E-mail: sandro.casal@unimi.it
\textsuperscript{2} Corresponding author. University of East Anglia, School of Economics, Norwich Research Park, Norwich, Norfolk, NR4 7TJ, UK. E-mail: f.fallucchi@uea.ac.uk
\textsuperscript{3} University of Bonn, Institute for Applied Microeconomics (IAME), Adenauerallee 24 – 42, 53113, Bonn, Germany. E-mail: simone.quercia@uni-bonn.de
1. Introduction

Under what conditions are people willing to sacrifice possible gains to punish immoral behavior in markets? Recent laboratory experiments find that subjects have a strong consideration for the negative consequences that their choices have on third parties (Bartling et al., 2015 and Kirchler et al., 2015), although markets seem to reduce moral behavior (Falk and Szech, 2013).

An enduring question is whether subjects who refuse to engage in “immoral” market transactions are motivated by the fact that their choice prevents the immoral action, or if their behavior is simply driven by the willingness to punish who carries out the immoral action.

We use the ultimatum bargaining game (see Güth and Kocher, 2014) to analyze how Responders perceive and react to Proposers’ morality. In our experiment Proposers, before making an offer to Responders, can increase their wealth at the expenses of an initial donation provided by the experimenter to an NGO. Our treatments analyze how the Responders’ willingness to punish Proposers depends on the awareness of the immoral action as well as the possibility to remedy to its negative consequences.

2. Experimental Design and Procedures

Our design is a modified three-player ultimatum bargaining game (Güth and Van Damme, 1998). The Proposer (P) is initially endowed with €9 (EP), the Responder (R) with €0 (ER) and there is an initial donation to the NGO of €5 (ENG0). The experiment consists of three phases:

PHASE 1 - P can take a discrete sum τ, where €0 ≤ τ ≤ €5 from the initial donation of the NGO.

PHASE 2 - P makes an offer (t), of either €5 or €1, to R.5

PHASE 3 - R chooses to accept or reject the offer. In case of acceptance the amounts are distributed as proposed; in case of rejection both P and R receive €0.

We employ a 2x2 between subjects design that varies (i) the payoff consequences for the NGO (UG or RESTORE) and (ii) the type of information available to R in PHASE 3 (OWN or FULL), resulting in four experimental treatments: UG-FULL, UG-OWN, RESTORE-FULL, RESTORE-OWN. In the UG-treatments, a rejection of an offer sets the final payoff of P and R to zero, while the final payoff for the NGO is the residual amount after P’s taking choice. In the RESTORE-treatments,

---

4 We consider immoral the act of taking since the NGO relies, for its activity, on donations and, in our setting, participants do not need to take any sum from the initial donation to earn positive amount of money.
5 We reduce PHASE 2 to a mini-ultimatum game to have a clear distinction between a generous and an ungenerous offer that is usually rejected in previous literature (Güth and Kocher, 2014). In the data analysis we concentrate on the generous offers, which are likely to create a moral conflict for Responders.
in case of rejection the NGO receives the original donation of €5. Table 1 shows the final payoffs based on this treatment dimension.

**Table 1 - Payoffs**

<table>
<thead>
<tr>
<th></th>
<th>R accepts t (UG and RESTORE)</th>
<th>R rejects t (UG)</th>
<th>R rejects t (RESTORE)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>P</strong></td>
<td>$E_p + \tau - t$</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>R</strong></td>
<td>$E_R + t$</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>NGO</strong></td>
<td>$E_{NGO} - \tau$</td>
<td>$E_{NGO} - \tau$</td>
<td>$E_{NGO}$</td>
</tr>
</tbody>
</table>

The second treatment dimension regards the information available to R. In OWN treatments, R is informed only about the offer received ($t$), while in FULL treatments she is informed, before making her choice, of the amount taken from the NGO ($\tau$) and the offer received. The rationale behind the treatment manipulation is that if subjects are not informed about the immoral aspects of an offer, they might be willing to accept, while in the FULL treatments acceptance must come with full awareness of the consequences. Self-regarding behavior may, indeed, be triggered by unawareness about decision’s consequences (Dana et al., 2007). The subgame-perfect Nash equilibrium of the game in absence of social preferences or moral concerns is the same in all four treatments: P takes the maximum allowed amount from the NGO and offers the smallest possible amount to R; R accepts all offers.

In our experiment, in PHASE 1 and 2 Proposers played the taking game and chose the amount to offer to Responders. In PHASE 3 all Responders made a choice for each offer by the Proposers in the room, knowing that only one would have been relevant for the final payoff. After PHASE 3 the computer randomly paired all subjects in the session and calculated the outcome of the game.6

The Experiment was conducted at LabSi (University of Siena) using z-Tree (Fischbacher, 2007). As NGO, we chose “MSF - Doctors without Borders”. A total of 158 subjects were recruited for 10 sessions (2 for each of the OWN treatments, 3 for each of the FULL treatments). Average payment was €6.85, including a €3 show-up fee, for an average session duration of 40 minutes.7

---

6 A translation of the instructions is reported in Appendix A.

7 The total donation to “MSF - Doctors without borders” was €220 (out of a potential maximum amount of €395).
3. Results

**Result 1.** *The majority of Proposers offer €5 regardless of the amount taken from the NGO.*

On average 72% of the Proposers across treatments offer €5, while only 28% offer €1. We do not find differences across treatments in the share of €5 offers (χ² tests, all p > 0.102). As anticipated, for our main results we focus on offers of €5. These offers are likely to create a moral conflict as, on the one hand, responders might be tempted to accept the “kind” offer, but on the other hand they might want to value the moral consequences of their action on the NGO. Figure 1 shows the distribution of amounts taken (Panel A and B) and the corresponding acceptance rates (Panel C and D) when the Proposers offer €5. We do not find any difference in the distribution of amount taken among the two OWN treatments. However, in RESTORE-FULL the distribution of amounts taken is shifted towards the left compared to UG-FULL, although this difference is not significant (MWU-test, p = 0.300).

![Figure 1. Distributions of amounts taken (Panel A - B); acceptance rates (Panel C - D).](image-url)
**Result 2.** Responders are willing to forgo their payoff to punish extremely immoral behavior of Proposers.

Responders are very likely to accept a €5 offer in the OWN treatments (95% in UG and 86% in RESTORE, Panel C). Their behavior changes when the information about the amount taken is revealed: the acceptance rate is high in UG-FULL, close to 100%, if Proposers have taken €3 or less; it decreases to 80% when the Proposers have taken €4 and to less than 40% in case of €5 taken (Panel D). Thus, to some extent, subjects are willing to forgo their payoff to punish Proposers, although this appears evident only when Proposers take everything from the NGO.\(^8\) However, in the RESTORE-FULL the drop starts at €2 and decreases to 40% for an amount taken of €4, indicating that the possibility to restore the ex-ante situation has an effect on subjects’ willingness to punish.\(^9\)

**Result 3.** For any positive amount taken, when Responders are fully informed, they tend to reject a €5 offer more often when the rejection restores the initial donation to the NGO.

To estimate the determinants of acceptance of €5 offers in all treatments, we run mixed effects probit regressions reported in Table 2.\(^10\) In Model (1), we regress the dummy “offer acceptance” on the amount taken from the NGO, the treatment dummies for FULL and RESTORE treatments and two interaction terms. In the OWN treatments, as expected, the amount taken in PHASE 1 does not influence decisions. Moreover, the possibility of restoring the initial donation has no effect on acceptance decisions (see RESTORE coefficient).

When we look at the FULL treatments, we find that the likelihood of accepting any offer increases significantly compared to OWN treatments. However, the amount taken has now a significant negative impact on acceptance, indicating that acceptance is highly dependent on the amount taken. Finally, for any given amount taken subjects tend to accept significantly less when they can restore the ex-ante donation (see RESTORE × FULL coefficient). In Model (2), we add an additional interaction term to show that RESTORE produces a level shift in acceptance in the FULL treatments but this is independent of the amount taken.

---

\(^8\) It is also interesting to notice that Responders were significantly more optimistic in UG-OWN compared to UG-FULL regarding the amount taken from the NGO (non-incentivized beliefs about the modal amount taken were on average €2.31 and €3.33 in UG-OWN and UG-FULL, respectively; MWU-test, \(p = 0.006\)). This suggests that Responders reported deflated beliefs in UG-OWN to justify their high acceptance rate.

\(^9\) We did not observe any Proposer taking 5€ so we cannot know the acceptance rate at €5. However, the mere fact that Proposers do not take €5 is an indication that they fear rejection more in RESTORE-FULL than in UG-FULL.

\(^10\) We exclude from the regression observations when the Proposer does not take anything from the NGO, as the payoff consequences across the treatments are the same.
Table 2. Mixed effects probit regression. Dependent variable: offer acceptance.

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount taken from the NGO</td>
<td>0.126</td>
<td>0.126</td>
</tr>
<tr>
<td></td>
<td>(0.151)</td>
<td>(0.151)</td>
</tr>
<tr>
<td>RESTORE</td>
<td>-0.258</td>
<td>-0.265</td>
</tr>
<tr>
<td></td>
<td>(0.870)</td>
<td>(0.858)</td>
</tr>
<tr>
<td>FULL</td>
<td>10.054***</td>
<td>13.978**</td>
</tr>
<tr>
<td></td>
<td>(3.608)</td>
<td>(5.497)</td>
</tr>
<tr>
<td>Amount taken from the NGO × FULL</td>
<td>-2.746***</td>
<td>-3.658***</td>
</tr>
<tr>
<td></td>
<td>(0.788)</td>
<td>(1.245)</td>
</tr>
<tr>
<td>RESTORE × FULL</td>
<td>-3.322*</td>
<td>-9.257*</td>
</tr>
<tr>
<td></td>
<td>(1.828)</td>
<td>(5.197)</td>
</tr>
<tr>
<td>Amount taken from the NGO × RESTORE × FULL</td>
<td>1.607</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1.168)</td>
</tr>
<tr>
<td>Constant</td>
<td>3.289***</td>
<td>3.169***</td>
</tr>
<tr>
<td></td>
<td>(1.173)</td>
<td>(1.112)</td>
</tr>
<tr>
<td>N</td>
<td>404</td>
<td>404</td>
</tr>
</tbody>
</table>

Notes: standard errors in parenthesis. * significant at 10%, ** significant at 5%, *** significant at 1%. Clusters at the session and individual level.

4. Discussion

Product boycotts are real examples of attempts to fight companies’ socially irresponsible behavior or immoral actions: here consumers bear, very often, the cost of avoiding the product consumption. Our results show that consumers might be more willing to engage in such behavior if they can see an immediate improvement in the situation of the third party that is exposed to the negative consequences of the immoral action (Result 3). In this respect, a crucial role may be played by the sense of responsibility that subjects feel. In our experiment, in case of immoral actions taken by the Proposers, Responders are either fully responsible for avoiding the negative consequences to the NGO (RESTORE) or not responsible at all (UG). An interesting direction for future research is to look at intermediate situations where the remedy to the immoral action depends on reaching critical mass of punishment among Responders.

Acknowledgements: We thank the ESRC (NIBS Grant ES/K002201/1) for financial support.
References
APPENDIX A – Experimental Instructions translated from Italian.

UG-OWN [RESTORE-OWN]

Instructions

Welcome!
Thank you for participating in this experiment.

For your participation you will receive €3. On top of this an additional sum may be paid to you depending on the decisions made – by you and the other participants – during the experiment.

During the experiment it is prohibited to talk with other participants: if you have any question at any time please raise your hand and wait for an experimenter to come to your desk and answer it in private. We kindly ask you to turn off the cell phone. In case you violate these rules, you will be asked to leave the experiment and you will lose the right to be paid.

After reading the instructions, to ensure the full comprehension of the experiment, we will ask you to complete a questionnaire through the computer that has been assigned to you. The experiment will begin after all participants answered correctly all questions.

During the experiment, all information and decisions made will be anonymous and confidential. At the end of the experiment each of you will be paid in private and in cash.

Experimental instructions

In this experiment there are two roles. Each participant will be identified either as Player A or Player B. Roles are assigned randomly and will remain the same for the whole experiment.

Each participant has an initial endowment in Euro that varies based on the role:

- **Player A** has an initial endowment of €9.
- **Player B** has an initial endowment of €0.

You will be informed if you are Player A or B at the beginning of the experiment.

For each pair of players (formed by one Player A and one Player B), an initial donation of €5 has been allocated to the organisation *Doctors without borders*. The final amount of the donation depends on the decisions made in the experiment. For those who don’t know it, *Doctors without borders* is described on Wikipedia as follows:

“*Doctors Without Borders is a private international organisation whose purpose is to bring emergency aid and health care assistance in areas of the world where the right to health care is not yet guaranteed.*“

*Doctors without borders* asks to support, through voluntary donations, the independent and effective intervention in over 70 countries around the world, to fight diseases such as malnutrition and malaria, to fulfil vaccination programs and to guarantee health care assistance saving every day human lives.

See below a screenshot of the webpage through which the organisation asks for donations.
Interaction rules between Player A and Player B

The experiment is divided in three phases.

**PHASE 1**

In this phase, each Player A has the opportunity to increase their own endowment by taking money from the donation to *Doctors without borders*. Each Player A can take between 0 and 5 Euros in intervals of 1 Euro. Thus, they can take 0, 1, 2, 3, 4 or 5 Euros. What is not taken by Player A (remaining donation) will be donated to *Doctors without borders*. 
At the end of PHASE 1 each Player A will have their initial endowment of €9 plus the amount taken from Doctors without borders (if any).

**PHASE 2**

In this phase, each Player A has to make an offer on how split the amount they have to the Player B they will be matched with. Player A can choose between two alternatives:

- Offer €5.
- Offer €1.

**PHASE 3**

In this phase, each Player B will have to make a sequence of decisions regarding the offers made by Players A in PHASE 2.

For every Player A, Player B will be informed of:

- The amount offered (€5 or €1) in PHASE 2.

**Note**: Player B will never know (even at the end of today’s experiment), how much each Player A has taken from Doctors without borders.

For every offer, Player B has to decide whether to accept or reject it:

- If Player B accepts, the offer proposed is implemented.
- If Player B rejects, both Player A and Player B receive €0, while Doctors without Borders receives the initial donation of €5.

**Matching process**

Each Player B is actually matched with only one Player A.

However, Player B will not know, until the end of the experiment, which Player A they are assigned to. Thus, they will not know which of the decisions described above will be relevant for their earnings.

Therefore the best strategy is to treat all the decisions as relevant as any of them could be relevant.

If you have any question about the experiment please raise your hand and wait for an experimenter to come to your desk and answer it in private. If there are no questions we now proceed with the questionnaire and, later, with the experiment.
Instructions

Welcome!
Thank you for participating in this experiment.

For your participation you will receive €3. On top of this an additional sum may be paid to you depending on the decisions made – by you and the other participants – during the experiment.

During the experiment it is prohibited to talk with other participants: if you have any question at any time please raise your hand and wait for an experimenter to come to your desk and answer it in private. We kindly ask you to turn off the cell phone. In case you violate these rules, you will be asked to leave the experiment and you will lose the right to be paid.

After reading the instructions, to ensure the full comprehension of the experiment, we will ask you to complete a questionnaire through the computer that has been assigned to you. The experiment will begin after all participants answered correctly all questions.

During the experiment, all information and decisions made will be anonymous and confidential. At the end of the experiment each of you will be paid in private and in cash.

Experimental instructions

In this experiment there are two roles. Each participant will be identified either as Player A or Player B. Roles are assigned randomly and will remain the same for the whole experiment.

Each participant has an initial endowment in Euro that varies based on the role:

- **Player A** has an initial endowment of €9.
- **Player B** has an initial endowment of €0.

You will be informed if you are Player A or B at the beginning of the experiment.

For each pair of players (formed by one Player A and one Player B), an initial donation of €5 has been allocated to the organisation *Doctors without borders*. The final amount of the donation depends on the decisions made in the experiment. For those who don’t know it, *Doctors without borders* is described on Wikipedia as follows:

"*Doctors Without Borders is a private international organisation whose purpose is to bring emergency aid and health care assistance in areas of the world where the right to health care is not yet guaranteed. “*

*Doctors without borders* asks to support, through voluntary donations, the independent and effective intervention in over 70 countries around the world, to fight diseases such as malnutrition and malaria, to fulfil vaccination programs and to guarantee health care assistance saving every day human lives.

See below a screenshot of the webpage through which the organisation asks for donations.
Interaction rules between Player A and Player B

The experiment is divided in three phases.

PHASE 1

In this phase, each Player A has the opportunity to increase their own endowment by taking money from the donation to *Doctors without borders*. Each Player A can take between 0 and 5 Euros in intervals of 1 Euro. Thus, they can take 0, 1, 2, 3, 4 or 5 Euros. What is not taken by Player A (remaining donation) will be donated to *Doctors without borders*.

At the end of PHASE 1 each Player A will have their initial endowment of €9 plus the amount taken from *Doctors without borders* (if any).
PHASE 2

In this phase, each Player A has to make an offer on how to split the amount they have to the Player B they will be matched with. Player A can choose between two alternatives:

- Offer €5.
- Offer €1.

PHASE 3

In this phase, each Player B will have to make a sequence of decisions regarding the offers made by Players A in PHASE 2.

For every Player A, Player B will be informed of:

- The amount taken from Doctors without borders in PHASE 1.
- The amount offered (€5 or €1) in PHASE 2.

For every offer, Player B has to decide whether to accept or reject it:

- If Player B accepts, the offer proposed is implemented.
- If Player B rejects, both Player A and Player B receive €0, while Doctors without Borders receives the initial donation of €5.

Matching process

Each Player B is actually matched with only one Player A.

However, Player B will not know, until the end of the experiment, which Player A they are assigned to. Thus, they will not know which of the decisions described above will be relevant for their earnings.

Therefore the best strategy is to treat all the decisions as relevant as any of them could be relevant.

If you have any question about the experiment please raise your hand and wait for an experimenter to come to your desk and answer it in private. If there are no questions we now proceed with the questionnaire and, later, with the experiment.