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Fairness: A Critique to the Utilitarian Approach

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Abstract

We address a basic difficulty with incorporating fairness into standard utilitarian choice theories. Standard utilitarian theories evaluate lotteries according to the (weighted) utility over final outcomes and assume in particular that a lottery is never preferred over getting the most preferred underlying outcome with certainty. While nearly universally adopted in economics (including behavioral economics) and appealing for choices among consumption goods, this approach is problematic when choices directly affect the payoffs of other individuals. A difficulty is that randomization may in itself be valued as a desirable procedure for allocating scarce resources. We highlight this in two simple choice settings. Individuals can choose between three options: to get more money; to get less money and some other good; to flip a coin between these two alternatives. When the good is a regular consumption good like a coffee mug, hardly any of our subjects randomize. When the good is a social good that yields payoffs directly to some other individual, nearly a third of our subjects choose to randomize. Our results indicate that fairness concerns are conducive to behavioral anomalies that the standard utilitarian model cannot accommodate.

JEL Classification: D81, C91, D63
Keywords: risky choice, betweenness axiom, social preferences, preference for randomness

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1 Introduction

The allocation of scarce resources is one of the most basic concerns in economics. In most economic analysis of resource allocation, agents derive utility from the resources they get, but not from the resources other agents receive.[1] However, behavior in laboratory experiments and in the field does not always support this assumption. In particular, subjects seem to care about the perceived fairness of social allocations. In fact, a decision maker, henceforth called Dee, may be willing to sacrifice some of her resources in order to improve the fairness of social outcomes.

One of the most successful approaches to the question of how to incorporate fairness into economic analysis was proposed, among several others, by Bolton and Ockenfels (2000) and Fehr and Schmidt (1999). The key to the success of this approach is the demonstration that fairness can be incorporated into Dee's utility in a parsimonious way and still lead to vast improvements in the ability to accommodate observed behavior. Others have followed with different ideas how agents incorporate a concern for others (e.g., Charness and Rabin, 2002, incorporate a concern for efficiency and Kirchsteiger, 1994, incorporates envy). A common feature of these approaches is that they rely on the idea that people's utility $u(x)$ is defined over an outcome x that not only includes Dee's own resources but also those of the other people. If Dee cares sufficiently about the consumption of the other people, she may give up some of her own resources to increase the consumption of the others. Hence, giving up money can be interpreted as "buying a social good" consisting of the resources that others get. These models then rely on expected utility theory to deal with the uncertainty that is typically associated with the payoff-relevant decisions.[2]

In contrast to these approaches, we argue that there is a basic difficulty in incorporating fairness directly into Dee's utility function. We argue that expected utility theory may not fully capture Dee's concerns for fairness and, in addition, the basic limitation of expected utility extends to any utilitarian theory of choice, no matter how the idea of fairness is built into Dee's utility function.

Before proceeding, it may be useful to define precisely what we mean by an utilitarian framework. The utilitarian approach assumes that risky prospects can be evaluated by the utilities arising from *final outcomes*. The most well-known utilitarian model is expected utility theory. After Allais's critique, alternative models, like non-expected utility theory, were produced (for a survey see e.g. Starmer, 2000, Machina, 1987, and Weber and Camerer, 1987). Non-expected utility theory is more flexible than expected utility theory. It can accommodate choices like in the Allais (1953) paradox, but usually satisfies, among other properties, a weak dominance property that we call *Property U*: a lottery l can never be preferred over getting the best of its deterministic outcomes $(x_1, x_2, .., x_n)$ for sure, i.e.

$$U(l) \leq \max_{i=1,...,n} u(x_i).^3 \qquad \text{(U)}$$

Property U is a minimalistic requirement for the utilitarian approach, because the right hand side

[1] We abstract from the usual exceptions made to relatives and closely related groups.

[2] For example, Fehr and Schmidt (1999) propose that 60% of the agents are much less fairness-motivated than the other 40%. In nearly all game-theoretic laboratory settings that they analyse this introduces uncertainty over the actions of the other players, and thus over the final allocation of resources.

[3] Gneezy et al. (2006) refer to a similar property as the 'internality axiom'.

captures the revealed choice over final outcomes without uncertainty. This property is weaker than the monotonicity axiom in Dekel (1986) which is itself a weaker version of first order stochastic dominance, and it is weaker than the betweenness axioms in Chew (1983) and Dekel (1986).[4] Hence, we define the utilitarian approach as models of decisions such that risky prospects can be evaluated by the utilities arising from *final outcomes* with the additional minimal requirement that *Property U* holds.

When the decision involves whether or not to buy a regular good like a coffee mug, *Property U* seems so intuitive that it is difficult to see how it could not apply to most consumers. If Dee likes the mug, she buys it. If she does not like it, she does not. This seems to be consistent with our intuition about private goods. It might not, however, be consistent with our intuition about social goods. Our argument is based on the idea that, when decisions affect other people as well, Dee may care not only about final outcomes, but also about the means by which the outcomes were produced. This argument is far from original and can be traced back at least to the following thought experiment proposed by Machina (1989).[5]

Assume that Dee has two children and one indivisible toy. Dee can decide which of her children gets the toy or she can flip a fair coin to make this determination. It is plausible that Dee strictly prefers the coin flip if it seems (to her) that this is a less partial procedure than giving the toy to either child deterministically. So, a coin flip may be desirable if it is seen as fair. Yet, this directly violates *Property U*, no matter how the utility of each outcome is defined. Hence, one cannot accommodate the behavior described by Machina by incorporating fairness concerns in the utility $u(x_i)$ of each outcome. Whether this behavior is present in real life is a question of empirical investigation: It could be that the mother thinks that the decision is too important to leave it to the whim of a coin-flip, or she could indeed find the coin-flip particularly attractive.

Even though Machina's thought experiment is so well-known, empirical research on this idea is rather sparse.[6] This may be due to the unusual feature that Dee makes the decision over the outcome of two *other* people and that there are no direct monetary consequences for her. This may raise the concern that violations of dominance occur in the rather special circumstances in which Dee is indifferent over the lottery's outcomes. But consider a related environment in which Dee is one of the two recipients and, therefore, *Dee is directly involved in the lottery's outcomes.* This makes the possibility of indifference, though theoretically possible, rather implausible because it would entail an accidental choice of the exact values that produce subjects' indifference.[7] The basic idea is that concerns for fairness might

[4]It is weaker than the monotonicity axiom as it only refers to outcomes in the support of the lottery (i.e. elementary lotteries are considered) and not any other outcome. It is weaker than the betweenness axiom because it does not involve compound lotteries.

To compare with first order stochastic dominance, the underlying space x first needs an order, which naturally arises by ordering outcomes by the utility $u(x)$ of their certain outcome. Such a notion is present for example in the ordinal first order stochastic dominance approach in Spector, Leshno and Ben Horin (1996) and in the approach to dominance in probabilities in Karni and Zafra (2002).

[5]The basis of Machina's thought experiment is Diamond's (1967) critique of the EU model for social choice (in particular the independence axiom) due to interpersonal fairness.

[6]We included hypothetical versions of Machina's parental example in our experiments.
We asked 56 participants to imagine they are a mother with 2 kids and to have only 1 candy. They had to decide whether to give kid 1 or kid 2 the candy or let a coin toss decide. About 95% chose the coin toss. 101 participants faced a modified version, in which we try to break indifference: the mother has a green candy and kid 1 likes green candies, while kid 2 likes red candies. Here, still 67% choose the coin toss and the remainder to give the candy to kid 1.

[7]This also corresponds to many experimental settings in which the decision-maker himself bears some of the material

induce Dee to randomize rather than to allocate deterministically to any party. As we argued above, randomization as a fair procedure (or, more generally, any form of strict preference for randomization) cannot be captured by an utilitarian framework.

We test this idea in a controlled laboratory experiment. In the experiment Dee has the choice between two alternatives 1 and 2, and she can also choose a lottery by which either alternative is equally likely. In alternative 1 she obtains more money than in alternative 2, but some other subject obtains less money in alternative 1 than in alternative 2. Choosing 2 over 1 can thus be interpreted as buying a social good at private expense. Like in other experiments, we observe that some subjects (30% of the population) prefer to sacrifice resources and choose 2. In itself, this is not a violation of the utilitarian model and can simply be interpreted as Dee having greater utility from buying the social good. However, we also observe that a substantial fraction of the subjects (30% of the population) chooses to randomize between the two alternatives. A 30% fraction is arguably of economically significant magnitude. It is also statistically significantly larger than randomization for standard goods like a mug (which we discuss in detail below) for which randomization is negligible. The use of randomization devices may be appealing because it is perceived as a fair procedure to share resources. Yet, other explanations are possible. However, independently of its interpretation, strict preferences for randomization cannot be accommodated in an utilitarian framework.[8]

We explicitly do not intend a general challenge of either the utilitarian framework or expected utility theory in particular. Rather, our results cast doubt on the applicability of the utilitarian framework to social settings. While the suitability of expected utility theory can be questioned even for standard consumption choices, these difficulties often involve complex compound lotteries (as e.g. in Kahneman and Tversky, 1979, and the followup literature). Here we use a very simple lottery that assigns equal probabilities to two events. This specification is arguably familiar to most subjects. Thus, the social component of the outcomes seems to be the driving force of our experimental results. To check this, we also ran an alternative treatment with different subjects. Here, Dee again chooses between two alternatives, 1 and 2, or a randomization between them. But, in this treatment, the trade off is not money vs a social good. The trade off is between money and a consumption good (a coffee mug[9]). Alternative 1 yields more money but no mug, while alternative 2 yields a mug but less money. The proportion of subjects who buy the mug turned out to be similar to the proportion of subjects who buy the social good, but the proportion of subjects who decide at random (6% of the population) is very small and statistically significantly smaller then in the case of a social good purchase. These results support the claim that fairness concerns are particularly conducive to a particular type of behavioral anomaly (i.e., a preference for randomization) that the utilitarian model cannot accommodate. Hence, there is a tension between the idea of incorporating fairness into economics and the decision-theoretic models commonly used in economics.

consequences of his choice about the resource allocation. The canonical example is a dictator game.

[8]We acknowledge that the unlikely scenario of a large indifference band, in which many agents are absolutely indifferent between their own consumption and that of the other person, would allow an utilitarian framework to be consistent with these observations. We find this explanation not very persuasive, and note that we did *not* attempt to calibrate, i.e. we did not run any other experiments with a similar setup that are not reported here.

[9]In the tradition of Kahneman et al. (1990), who analyzed the endowment effect with coffee mugs, we use coffee mugs because there are no apparent norms in favor or against buying such mugs.

Related Literature

There is a large literature on individual choice under uncertainty discussing the appropriateness of the expected utility model and demonstrating empirical violations of the imposed linearity in probabilities of the individual preference function or equivalently the independence axiom (for a review see e.g. Machina, 1987). Empirical violations are widespread, in particular the common consequence effect (a special case of which is the Allais paradox) and the common ratio effect. The evidence of systematic violations led to generalizations in the form of non-expected utility models where the utility of final outcomes is weighted non-linearly in the probabilities (see Starmer, 2000, Machina, 1987, and Weber and Camerer, 1987, for overviews). These generalized models are typically based on betweenness[10], a weakened form of the independence axiom but still stronger than our *Property U*.[11] Empirical violations of betweenness so far can mainly be traced back to violations of the much more subtle axiom of reduction of compound lotteries, see Camerer and Ho (1994) for a survey and evidence. An exception is Gneezy et al. (2006), who provide empirical evidence that people may value a lottery less than its worst possible outcome (see, however, Keren and Willemsen, 2009, and Ortmann et al., 2009, for a critical debate of Gneezy et al.'s findings). This idea of randomization aversion challenges the utilitarian framework in a very different way from our study where people exhibit a preference for randomization.

Their focus is very different from ours, though: In none of these studies social concerns are incorporated or considered as a possible source of the violations. Hence, comparisons between results obtained with social goods and results obtained with private goods only (a focus of our analysis) are not considered in these studies.

The theoretical literature on social preferences typically assumes social preferences and postulates expected utility, e.g. Bolton and Ockenfels (2000) and Fehr and Schmidt (1999). There are some exceptions. Karni and Safra (2002) consider individuals that have two preference relations, one over the fairness of the lottery and one over the personal material well-being. Their axioms give a single utility representation over final choices that allows for a violation of *Property U*. Similarly, the axiomatization in Borah (2009) allows for a violation of *Property U* based on concerns for procedures. The theoretical work of Borah (2009) is directly relevant to our empirical findings and partially motivated by questions raised by our experiments (see also Ok and Kockesen, 2000; Neilson, 2006; Sandbu, 2008; Maccheroni et al., 2008; Trautmann, 2009; and Rohde, forthcoming; for related decision-theoretic work on other-regarding preferences).

Despite a huge number of empirical studies on social preferences, only very few deal with social preferences in the presence of uncertainty – although this is crucial for applying the existing theories (e.g. Bolton and Ockenfels, 2000, assume that individuals' social preferences differ and therefore the outcomes in the games that they analyze are stochastic). None of these studies compares social and private goods (the key to our experiment).

Among the few studies that assess social preferences under uncertainty, Bolton et al. (2005) investigate people's perceptions of fair procedures in an ultimatum game with proposers of procedures and

[10] See for example prospect theory (Kahneman and Tversky, 1979), weighted utility theory (Chew, 1983), implicit expected utility (Dekel, 1986), and disappointment theory (Gul, 1991).

[11] Generalizations which do not assume betweenness are those in the quadratic class (e.g. Machina, 1982) and those in the rank dependent or cumulative class (e.g. Quiggin, 1982).

responders. They focus on the responders' reactions to their treatment by the proposers, in particular the acceptance rates of offers that favour the proposer. These acceptance rates of these "unfair" offers are the same when the proposer had the option to choose a fair procedure than if he had the option to choose a fair deterministic allocation. Moreover, if the "unfair" proposal is made by a fair random draw and not by a human player, acceptance rates are higher. In a study by Krawcyk and Le Lec (2008), individuals face a sequence of deterministic and stochastic dictator games in which the dictator can choose any split of the surplus (in deterministic and stochastic terms, depending on the choice situation). They find mixed evidence. In the stochastic dictator game the fraction of individuals that choose some interior probability is non-trivial, but most of these individuals choose very low probabilities at "near selfish" levels. The strength of their study is that subjects play a series of deterministic and stochastic dictator games of which one is randomly chosen for payment, so that giving behavior can be compared within subject. The drawback is that subjects might take the intuition from deterministic dictator games over to stochastic dictator games,[12] subjects have to compound the lottery of the stochastic offer with the lottery over the game that is chosen for payment, and the choice among a large number of interior probabilities makes interior choices more prominent in the design. Karni et al. (2008) consider 3-person dictator games and focus on whether a subject cares about the inequality and (procedural) fairness between the two other players. They find that a substantial fraction of subjects is willing to give up own probability of getting a prize to reach a fairer overall allocation procedure. Their framework is complementary but substantially more complicated and without available alternatives that give sure outcomes.

Our setup was designed to be as simple as possible, without compounded lotteries, and with only a very limited number of easily understandable choices. Our setup is closely linked to the debates about the axiomatic foundations of decision theory under risk. Unlike previous empirical studies, we assess the magnitude of randomization relative to other (non-social) choice situations. This approach rules out that the idea that individuals have a general propensity to randomize, since for our standard good a revealed preference for randomization is nearly absent, identifying the social part of the experiment as a main driver behind randomization.

2 The Experiment

Our experimental sessions were run at the Munich Experimental Laboratory for Economic and Social Sciences (MELESSA) in Germany in 2008. 140 individuals (mainly students from the universities of Munich) participated in the experiment. They were randomly assigned to sessions and could take part in one session only. For the recruitment we used the software ORSEE by Greiner (2004). The experiment was programmed and conducted with the experimental software z-Tree by Fischbacher (2007). The sessions lasted about half an hour. Subjects were randomly assigned an individual computer terminal in the laboratory. They could not see other subjects' decisions. Individuals were handed out the instructions[13] for the experiment and had time to go through the instructions on their own and ask

[12] Although the order of play is varied, subjects are informed that they play both types of games.

[13] Original instructions are written in German and are available from the authors upon request. See the Appendix for translated instructions.

questions. After all individuals had finished the instructions and all remaining questions had been answered, we proceeded to the decision stage. Payoffs were expressed in the experimental currency Taler, which were converted at a known exchange rate (2 to 1) to Euros at the end of the experiment (at the time of the experiment 1 € ≈ 1.57 USD).

The "social good" treatment: To analyze whether concerns for fairness induce a preference for randomization, we conduct the following modified dictator game experiment with 92 participants. Participants are randomly matched into groups of two. In each group, one participant (Dee) has the choice between two alternatives 1 and 2, or she can choose a lottery by which either alternative is equally likely, while the other participant makes no payoff relevant decision.[14] Alternative 1 means that Dee receives 7.50 € and the participant matched to her receives 0 €. Alternative 2 means that both, Dee and her matched partner receive 5 €. Hence, Dee's decision is whether she wants to give up 2.50 € such that her matched participant receives 5 € (i.e. "to buy the social good") or not, or whether she wants to randomize.[15] The matched partner is informed about Dee's decision problem and learns her decision in the end of the experiment. In an outcome-based view, Dee has a preference for one of the two certain outcomes alternative 1 or 2. If preferences satisfy *Property U*, randomization leads to lower utility than one of the two certain outcomes. Thus, utilitarian models cannot accommodate choices of the lottery – except for case of indifference between alternative 1 and 2.

We observe that most decision makers (46%) choose to keep the money (alternative 1), while as many choose to randomize as to buy the social good (28%). Hence, we find evidence for systematic violations of *Property U* and thus the utilitarian framework.

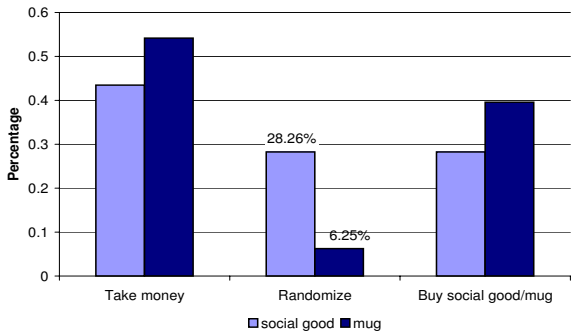
Further evidence for a preference for randomization stems from donation choices that we included in other experiments (before subjects knew their payoffs): We ask 60 Participants whether they either want to receive 1 additional Euro, or to donate the Euro to the German Red Cross, or whether they want to randomize between the two alternatives. In line with the observations above we observe that most decision makers (52%) choose to keep the money. Again, a significant fraction (25%) chooses to randomize. The remainder choose to buy the social good (23%).

One may wonder whether subjects who violate expected utility theory (EUT) in other situations are particularly prone to violate *Property U*. In the "social good" treatment, we therefore let subjects make the standard, hypothetical Allais-Paradox-lottery choices. The first choice is between the lotteries L_1 and L_2, where L_1: 500.000 Euros with 100%; L_2: 2.5 million Euros with 10%, 500.000 Euros with 89% and 0 Euros with 1%. The second choice is between L_1: 500.000 Euros with 11%, 0 Euros with 89% and L_2: 2.5 million Euros with 10%, and 0 Euros with 90%. A violation of expected utility theory involves choosing L_1 in one situation but L_2 in the other. While 35% of the subjects violate EUT, this seems to be unrelated to the preference for randomization that we observe, since only one subject (8%) out of those subjects who choose to randomize violates EUT in the lottery choice. Hence, there seems to be no relation between the two phenomena, which is not surprising because the Allais Paradox relies on compounding of lotteries, which is not present in our setting.

[14] The random allocation to a cubicle also determined an individual's role in the experiment.

[15] The magnitude of the payments is well within the range used in other experiments to get insights into social preferences. On average, participants earned 9.4 € including a 5 € show-up fee.

Figure 1: Social good vs mug decisions



The "standard good" (mug) treatment: Two important questions arise in the context of the previous findings. Do people have a general propensity to randomize, for example simply due to "mistakes" or "trembles"? Or might they generally prefer to randomize even in non-social settings where normative aspects are less pronounced? To get a first insight, we conduct an experiment in which no social concerns are present but which is otherwise as similar to the social good experiment as possible. 48 other individuals were asked to decide whether to buy a regular good (a coffee mug).[16] From a 7.50 € show up fee, participants had to decide whether to give up 2.50 € to get the mug (including 3 tea bags), or to keep the entire show-up fee and forgo the mug, or to randomize between both options. In the beginning of the experiment, we show subjects the mug and tell them that it is only available at the online shop of the Ludwigs-Maximilians university of Munich at a price of about 6 €. In the Appendix we show a picture of the coffee mug.

We observe that 54% do not buy the mug, 6% randomize and 40% buy the mug. The fraction of people randomizing is very small. Figure 2 shows the results of both experiments. A Fisher exact test indicates that the fractions of subjects that choose to randomize or not (i.e. bundling those who do not randomize) differ significantly across experiments ($p = 0.006$, two-sided).[17] The observation that people do not randomize is robust across additional sessions that we run with different prices for the mug.[18] We take this as initial indication that neither a propensity to "tremble" nor a general preference

[16]Since the mug choice is so trivial, individuals made in addition a decision in an unrelated voting experiment in which they could earn 0,7, or 10 Euro. They made the mug choice before they knew their earnings. We kept the personal cost of the mug at 2.50 €, which corresponds to the 2.50 € personal cost of the social good before. The complete (translated) instructions are in the Appendix.

[17]Given the small number of subjects that randomize in the mug experiment, a Fisher exact test seems more appropriate than a Pearson chi-square test. The latter however yields a similar result ($p = 0.005$). Instead of bundling those who take the money or buy the good, we can test for a relation between treatments using all three choice options (randomization, take the money, or buy the good). Again, both tests indicate a significant treatment difference (Fisher exact test: $p = 0.016$; Pearson chi-square test $p = 0.017$).

[18]We conducted sessions without the tea and at prices of 1.50€ and 2.50€ for the mug. In no treatment did more than 10% of the individuals randomize. Without the tea and at price of 2.50, very few people bought the mug (83% did not buy, 8% randomize), at 1.50 without the tea the fractions of people buying or not buying the mug is comparable to the

for randomization can explain the choices in the social goods treatment.[19]

3 Conclusion

Fairness concerns have attracted increasing interest in the economics literature in recent years. Among other areas, they are important in family economics, in charitable giving, and in political economy models about transfers. An important part of this agenda is to find preference specifications that allow a parsimonious representation for social concerns that captures main social concerns. In this study we challenge the view that utilitarian choice-theoretic models provide the right framework to accommodate social concerns. When a social good is present, we find a violation of a very basic dominance property and thus also the independence axiom and first order stochastic dominance. These violations may have gone relatively unnoticed for long perhaps because they are much harder to find for standard consumption goods, which was the focus of most economic analysis until recently. Several factors may underlie preferences for randomization in social situations. They include procedural fairness and a desire to avoid responsibility. Whatever the psychological underpinnings, this study highlights that observed choice behavior does display a revealed preference for randomization in social settings. This result challenges the basic utilitarian approach and motivates additional empirical research on the economic relevance of this phenomenon.

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setting reported (35% buy, 10% randomize).

[19] Subjects again make the aforementioned Allais-Paradox-lottery choice. None of the few subjects who choose to randomize violates EUT in the lottery choice.

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Appendix - Instructions for the experiment

Welcome to this experiment. You can earn money in this experiment. At the end of the experiment you will be paid in cash according to your decisions and the decisions of the other participants. Each participant receives a payment of 5 Euro. Your additional payments are explained in these instructions. During the whole experiment you are not allowed to speak to other participants, to use cell phones, or to start any other program on the computer. If you have questions, please raise your hand. An instructor of the experiment will then come to your seat to answer your questions.

During the experiment we do not speak of Euros but of the ficticious currency "Taler". At the end of the experiment your actual amount of Taler will be converted into Euro according to the following exchange rate:

1 Taler = 0,50 Euro.

The payment at the end of the experiment is anonymous. This means, no participant is informed about the payment of the other participants.
In this experiment half of the participants are in **role A** the other half in **role B**. The roles have been assigned randomly.

Course of the experiment:
In the beginning of the experiment, each participant in role A (participant A) is randomly matched with another participant B.
No participant learns during or after the experiment which other participant was matched with him.
Participant A decides, which payment he himself and his matched participant B receive in this experiment. There are the following options:

- Participant A receives 15 Taler and participant B receives 0 Taler.
- Participant A receives 10 Taler and participant B receives 10 Taler.
- The computer chooses randomly one of the two aforementioned options. Both options are equally likely.

Participant B does not make a decision which affects his own or participant A's payment. He answers several hypothetical questions. His answers are irrelavant for the payment and are not told other participants.

Participant A also answers several hypothetical questions after his decision. His answers are irrelavant for the payment and are not told other participants.

End:
Finally, each participant B is informed which of the three aforementioned options participant A has chosen. In addition, all participants are informed about their payment in the experiment. This ends the experiment.

Appendix - Instructions for the mug treatment

The introductory part of the instructions is exactly as in the social good treatment besides two changes: The show up fee is not mentioned and instead of "half of the participants are in **role A** the other half in **role B**", we say "some of the participants are in **role A** and some in **role B**". Below we give the remaining part of the instructions. Those parts that are related to the voting experiment, which is not in our interest here, are in small italic fonts.

Course of the experiment:
In the beginning of the experiment, groups consisting of six participants are formed. Each group consists of five randomly chosen participants A and one participant B. No participant learns during or after the experiment which other participant was matched with him.

Each participant A has an endowment of 20 *Taler; each participant B has an endowment of* 0 *Taler. In each group, the participants A vote on the following two alternatives. The alternative that gets the majority of votes in a group, determines the payoffs of all participants in this group.*

Alternative 1:
Each participant A gives up 6 Taler. For each participant A the payoff reduces to 14 Taler, but the payoff of participant B increases to 14 Taler.
Alternative 2:
Each participant A gives up 0 Taler. For each participant A the payoff remains 20 Taler, and the payoff of participant B remains 0 Taler.

Each participant A has one vote. The alternative which receives most of the votes is implemented for the group. Participant B makes a hypothetical decision which is not payoff relevant. All participants answers several hypothetical questions[...].

In addition, each participant receives a fixed payment. He can choose between the following three options:
He can choose to receive 15 Taler or to receive 10 Taler and a mug (including tea), or that the computer randomly chooses one of the two aforementioned options. Both options are equally likely.

End:
Finally, each participant is informed which alternative is implemented for his group and his payment in the experiment. This ends the experiment.

Appendix - The coffee mug in the mug treatment