

Discussion Paper No. 14-060

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On the Dynamics of  
Voluntary Contributions**

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**ZEW**

Zentrum für Europäische  
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Economic Research

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## **Consistent or Balanced? On the Dynamics of Voluntary Contributions**

Carlo Gallier\*, Christiane Reif\*, Daniel Römer\*

### **Abstract**

We investigate the dynamic effects of a charitable lottery and an income tax on donations. The analysis is based on a two-round dictator game with the subject's charity of choice as recipient and additional incentives in the first round only. The immediate effect of a charitable lottery leads to higher contributions and we cannot find substantial crowding out of voluntary contributions in the presence of an income tax. These economic interventions weakly spill-over to the subsequent donation decisions without additional incentives. Our results suggest the presence of consistency seeking behaviour. This is especially true for a subgroup of participants with a rule-based mind-set and our research shows the importance of the subjects' moral framework in the context of dynamic pro-social behaviour.

**JEL Codes:** C91, D64

**Keywords:** charitable giving, laboratory experiment, lottery, tax, voluntary contribution mechanism

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## 1. Introduction

Voluntary contributions to public goods are an important driver of social welfare. This fact is echoed by economic research exploring ways to stimulate individual contributions, in particular in the context of charitable giving. While there is broad literature on the immediate impact of different informational or economic interventions, dynamic effects are often ignored. This paper analyses the effects of short term interventions on immediate and subsequent donation behaviour.

Evidence from social psychology suggests that moral behaviour is not static (Monin and Miller 2001, Sachdeva et al. 2009). In particular, there are two opposing theoretical concepts on dynamic effects: behavioural consistency and moral balancing. Behavioural consistency assumes that individuals avoid inconsistent behaviour as they dislike cognitive dissonance (Festinger 1957, Taylor 1975, Cialdini et al. 1995). This view is in line with the economic theory on stable social preferences, supported by different studies on repeated pro-social behaviour (e.g. Landry et al. 2010, de Oliveira et al. 2011 and Carlsson et al. 2012). However, there is also evidence for moral balancing, an alternative theory claiming that individuals may fluctuate in moral behaviour to achieve a certain moral self-image (e.g. Merritt et al 2010, Jordan et al. 2011). More specifically, this theory of moral regulation (e.g. Sachdeva et al. 2009) claims that past good (bad) deeds increase the likelihood of bad (good) deeds in the future. There is experimental evidence for this concept by Mazar and Zhong (2010). Given the mixed evidence, it is not clear how charitable donations evolve over time, especially when previously motivated by economic mechanisms stimulating contributions.

In this paper, we experimentally analyse the dynamics of two well-known drivers of charitable giving: a charitable lottery and an income tax. We create a setting of repeated donations using a two-round dictator game with the subject's charity of choice as recipient. In the charitable lottery treatment, first round contributions are linked to the chance of winning a fixed common value lottery prize. In the tax treatment, we levy an income tax of 25% on the participants' first round endowment, which is automatically transferred to the charity of choice. In a control condition, we ask subjects to donate twice without any additional incentive. Analysing behaviour in the second round, which is identical across treatments and does not contain any stimuli, allows us to capture the behavioural response to the removal of the additional incentives.

We show that a charitable lottery is effective in increasing voluntary contributions in the lab, confirming evidence from the field (e.g. Landry et al. 2006). In contrast to previous evidence,

the introduction of an income tax leaves the voluntary contribution level unchanged in our experiment. We find increased total transfers in the first rounds of the lottery and the tax treatment, followed by marginally higher second round donations compared to baseline. This result prevails on the aggregate level especially for subjects with a rule-based mind-set. Our results add new insights on both the immediate and the dynamic effects of charitable lotteries and taxation and also suggest a first step towards the consideration of different moral motivations and their effects on behaviour.

## **2. Related Literature**

With respect to charitable lotteries, the literature has yielded mixed experimental evidence on the immediate impact on contributions to a public good. Laboratory experiments tend to find a superiority of lotteries (with a common value prize) compared to a plain voluntary contribution mechanism (Morgan and Sefton 2000, Lange et al. 2007, Orzen 2008, Corazzini et al. 2010). All of these lotteries, however, use a common value prize in a public goods game framework. To the best of our knowledge, non-strategic charitable lotteries have only been tested in the field. In a door-to-door fundraising campaign, Landry et al. (2006) report donations to increase when linking contributions to a charitable lottery. In contrast, Onderstal et al. (2013) do not find a significant effect of a charitable lottery in a field experiment in the Netherlands. According to the authors, this distinct result may be due to the private value of the implemented charitable lottery or to cultural difference between the U.S. and Europe.

With respect to taxation, econometric and experimental studies tend to show incomplete crowding out of voluntary contributions. Econometric studies (e.g. Steinberg 1991, Kingma 1989, Manzoor and Straub 2005, Ribar and Wilhelm 2002, Payne 1998 and Andreoni and Payne 2011) find incomplete crowding out mostly ranging between 0 and 50 percent of the imposed tax. Compared to these studies, Andreoni and Payne (2011) find an exceptionally high crowding out of 73%, induced by cut backs in fundraising by the charity due to getting governmental grants. Experimental studies (e.g. Andreoni 1993, Bolton and Katok 1998, Chan et al. 2002 and Eckel et al. 2005) tend to estimate substantially higher levels of crowding out. Andreoni (1993) shows in one of the first laboratory experiment on this topic high but incomplete levels (71%) of crowding out in a public goods game. Bolton and Katok (1998) introduce a tax into a standard dictator game avoiding strategic effects inherent in public good games. They find also high but incomplete levels of crowding out (73.7%). The study most related to our experiment is Eckel et al. (2005), who use a dictator game with the

subject's charity of choice as a recipient in a two-factor, between-subjects design. Firstly, initial allocations are either US\$18 for the subject and US\$2 for her charity of choice or US\$15 and US\$5, respectively. The second factor is the frame. In one treatment, initial allocations are given in a neutral way without referring to the tax context. Using this no-tax frame, they find a level of crowding out close to zero. In the other treatment, the imposed initial allocations are framed as resulting from an income tax on subjects' own endowments. Using this tax frame, Eckel et al. (2005) find nearly full crowding out. They conclude that imposed transfers do not crowd out private giving when the source of its funding is not apparent to the subjects. Summarizing the previous research, experimental analyses tend to find higher levels of crowding out than econometric analyses outside the lab. Up to now, little is known about the drivers of these different results. One possible reason is the larger number of donors in empirical as opposed to experimental studies, which may lead to asymptotically zero crowding out (Ribar and Wilhelm 2002). Other explanations for the contrast in econometric and experimental studies are fiscal illusion (Eckel et al. 2005) or the crowding out of fundraising activities (Andreoni and Payne 2011).

Psychological literature documented two contrasting theories, namely behavioural consistency and moral regulation on the dynamic effects of these interventions. On the one hand, there is evidence for stable pro-social behaviour in repeated donations. De Oliveira et al. (2011) identify the existence of a “giving type” donating to different organisations. In their experiment, however, only one decision was paid at the end, which does not allow for a potential effect of moral licensing. Carlsson et al. (2012) confirm constant pro-social behaviour over a time period of several years in the context of donations and volunteer work. On the other hand, evidence for moral regulation suggesting that past good deeds decrease the likelihood of additional good deeds in the future is found in related (e.g. Monin and Miller 2001) as well as in unrelated domains (e.g. Khan and Dhar 2006, Mazar and Zhong 2010, Clot et al. 2011, Jordan et al. 2011), especially when individuals can well remember their previous behaviour (e.g. Merritt et al. 2010, Jordan et al. 2011).<sup>1</sup> The economic literature also provides support for moral balancing. In a cheating game, spillovers from previous experiments directly affect generosity (Ploner and Regner 2013). Based on various repeated dictator and prisoner's dilemma games, Brosig et al. (2007) find that other-regarding preferences wash out over time.

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<sup>1</sup> For a detailed overview on moral licensing in empirical analyses, please see Merritt et al. (2010).

With respect to the dynamic effects of experimental interventions on voluntary contributions, we are aware of three studies. In a door-to-door fundraising campaign, Landry et al. (2010) re-approach the participants of an earlier fundraising campaign (Landry et al. 2006, see above) and analyse whether the previous treatments still had behavioural effects. The authors find that people initially stimulated by a lottery continue to give more in the subsequent campaign while those attracted by a non-economic incentive scheme (attractiveness of the donation collector) did not. Shang and Croson (2009) vary social information in a local radio station's on-air fund drive. Participants calling the station to make a pledge received different information on previous contributions of others. The results show that providing the potential donors with higher numbers (information drawn from the 90<sup>th</sup> and 95<sup>th</sup> percentile) induced increased contributions. Participants provided with information from the high percentiles continued to give more and more often one year later. In contrast, Meier (2007), who analyses matching grants in the field, finds no positive treatment effects in the long run and a negative effect for donations in the first period after the removal of the matching scheme.

To sum it up, the experimental evidence on the static and dynamic effects of charitable lotteries and income tax is mixed. In particular, little is known about the dynamic effects of these mechanisms. Therefore, we conduct a laboratory experiment on the dynamics of donation behaviour, especially when donations are incentivised by the economic mechanisms of either a charitable lottery or an income tax.

### **3. Experimental Design and Procedures**

#### **3.1 Experimental Design**

Modelling donations to charities as voluntary public good provision has a long tradition (e.g. Bergstrom et al. 1986, Andreoni 1989, Morgan 2000). Contrary to (repeated) public good games, however, real donation decisions typically do not involve strategic behaviour. In response, dictator games (DG) have started to be employed in analysing donation decisions (e.g. Bolton and Katok 1998, Eckel et al. 2005). We extend this literature and investigate the dynamic effects of a charitable lottery and an income tax on donation behaviour. For that purpose, we use a modified two-round dictator game. The subjects are endowed with €8 and choose a charity as the recipient in each round.

In the first round, we vary the incentives for giving by introducing a charitable lottery or an income tax in two different treatments. We choose these two well-known economic

mechanisms to reflect distinct incentives with potentially opposing effects on voluntary contributions. In baseline, subjects are asked to decide on their donations in the absence of any additional incentives. In the lottery treatment, subjects' contributions in the first round are linked to the chance of winning a fixed lottery prize of €100. For each €0.50 contributed to the charity, subjects get a raffle ticket. The probability of winning the prize depends on the ratio of the players' own contributions to overall contributions in the first round of the lottery treatment (see Morgan 2000).<sup>2</sup> In the tax treatment we use a similar design as in Eckel et al. (2005) and implement an income tax of 25% on the subject's first round endowment, while leaving €6 at their free disposal. Forced contributions are labelled as 'income tax', since this framing shows the highest crowding out effect in Eckel et al. (2005). Subjects are informed that the tax of €2 is automatically transferred to their charity of choice. In the second round, the additional incentives, the charitable lottery and the income tax, are removed. Hence, the second round is identical in all treatments.

[about here: Table 1: Summary of Experimental Design]

### 3.2 Procedures

The experiment was conducted in October 2013 at the mLab of the University of Mannheim. Subjects were recruited via Orsee (Greiner, 2004). In our experiment 148 students from different academic disciplines participated in nine sessions. In all treatments, subjects were seated in separate cubicles and instructed about the rules of the game by means of a manuscript (all instructions are provided in appendix A1). The subjects were told that there are two rounds in which they could earn money and were informed about the donation procedure in their manuscript before taking their decisions. In each round, subjects received an envelope with €8 as their endowment and a list of six charities.<sup>3</sup> The subjects were asked to tick their charity of choice and to note down the amount of their contributions anonymously.

After the decision making, subjects put both the decision sheet and the corresponding coins into an envelope, which they were also asked to seal. The envelopes were collected after each

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<sup>2</sup> Note that this design follows natural charitable lotteries, in which winning probabilities also depend on the (unknown) contributions of others.

<sup>3</sup> In the two rounds, subjects received two different lists of charities (see appendix A2). Both lists contain charities related to either environmental issues, energy poverty, poverty or medical issues. The lists contained the charities with the highest cumulative national donations to guarantee similar attractiveness of the lists. A pilot experiment confirmed the equality of attractiveness. Nevertheless, we randomized the two lists over subjects and did not identify a significant effect when controlling for the specific lists in the econometric analysis.



round and transferred to a notary after the experiment. Under supervision of the notary, the envelopes were opened, donations were recorded and the money was transferred to the respective charity organisations via the notary's escrow account. To further enhance credibility, participants received an email about the total amount of donations and could access this information on the project homepage alternatively.<sup>4</sup>

The notary additionally created lottery tickets with the (anonymous) subject code for each €0.50 donated in the first round of the lottery treatment. Then, all tickets were put in a box and one ticket was drawn under the supervision of the notary. The winner code was emailed to all participants of the lottery treatment. The winner picked up the €100 in cash upon providing his personal code.<sup>5</sup>

In the first round of the tax treatment, subjects were additionally informed about the income tax and were told that they had to place two out of the received €8 in the envelope independent of their donation. The participants were informed that their imposed contribution of €2 will be transferred to their charity of choice, also via the notary's escrow account. To avoid confusion in the second round, we explicitly pointed out that there was no longer a charitable lottery or an income tax, respectively.

#### **4. Hypotheses**

In the first round we implement a charitable lottery or an income tax to incentivise giving. Due to the additional monetary incentive of a charitable lottery, in which the probability of winning the prize is influenced by the subject's raffle tickets and the total number of raffle tickets sold (see Duncan 2002), we expect subjects to donate more than in the first round of the baseline treatment (see results in Morgan and Sefton 2002 in a public goods environment with a fixed-prize lottery).

**H1: A charitable lottery leads to higher voluntary contributions in the first round compared to baseline.**

The introduction of an income tax leads to crowding out if subjects care about the level of public goods provided (see e.g. Warr 1982, 1983, Roberts 1984, Bergstrom et al. 1986). Individual donors will treat their voluntary contributions to a public good as a perfect

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<sup>4</sup> [www.zew.de/soko2013](http://www.zew.de/soko2013)

<sup>5</sup> Note that the prize is part of the design and was not paid by the charities themselves. Therefore, also no administrative costs occur.

substitute for their imposed contributions through taxation and, as a consequence, reduce their voluntary contributions by the full amount of the governmental funding. Incomplete crowding out might occur due to warm glow, as in this case utility gains from giving should not be affected by an income tax (see e.g. Crumpler and Grossman 2008).

**H2: An income tax crowds out voluntary contributions in the first round compared to baseline.**

For the dynamic effects, as choice situations in the second round are identical for all subjects, economic standard theory would predict identical behaviour across treatments. However, according to alternative theories from social psychology, behaviour may be different.

Moral balancing theories claim that a deviation from a “normal state of being” is balanced with a subsequent action compensating the prior behaviour (Brañas-Garza et al. 2013). Moral licensing, for example, claims that past good deeds favour a positive self-reporting which creates licensing effects and decrease the likelihood of additional good deeds in the future (Merritt et al. 2010). Symmetrically, past bad actions trigger negative feelings and make people more likely to engage in future moral behaviour to offset those (Sachdeva et al. 2009). Based on moral regulation theory, treatment differences in the first round should be balanced in the following donation decision. In particular, we can formulate the following hypotheses based on moral balancing theory:

**H3a: In the absence of additional incentives, contributions in the first round are higher (lower) than in the second round.**

**H3b: If the economic mechanism leads to higher (lower) contributions in the first round, lower (higher) contributions are expected in the second round compared to baseline.**

Alternatively, preferences for consistency seeking behaviour (Festinger 1957, Taylor 1975, Cialdini et al. 1995) imply that higher (lower) contributions in round one should be followed by higher (lower) contributions in round two. The individual anchor point might shift due to the influence of the economic mechanism in the first round (Cialdini and Goldstein 2004) and thereby spill-over to the second round even though the scheme is removed. We formulate the following alternative hypotheses based on consistency theory:

**H4a: In the absence of additional incentives, contributions in the first and second round are at the same level.**

**H4b: If the economic mechanism leads to higher (lower) contributions in the first round, higher (lower) contributions are expected in the second round compared to baseline.**

There is an ongoing debate on the factors that determine which of the two theories prevails (e.g. Effron and Monin 2010, Merritt et al. 2010). Taking individual moral characteristics into account, the psychological theory of morality distinguishes deontologists and consequentialists (see, e.g. Singer 1991). Deontologists are goal-based persons, who are guided by moral norms and rules (Alexander and Moore 2008, Cornelissen et al. 2013). In contrast, consequentialists are morally oriented towards the outcome of their decisions, which means they justify their moral behaviour by the consequences (Sinnott-Armstrong 2008, Cornelissen et al. 2013). Cornelissen et al. (2013) provide experimental evidence suggesting that moral balancing is less prominent for people with a deontological (goal-based) framework as opposed to people with a consequentialist (outcome based) moral framework. Hence, we expect moral balancing to be present for the group of consequentialists only.

**H5: Subjects with a deontological framework are more likely to behave according to consistency theory, while subjects with a consequentialist framework are more likely to behave according to moral balancing theory.**

## 5. Results

Total contributions (TC), i.e. contributions including income tax, add up to €602.50, which are approximately 25% of the endowment. The detailed results of the static and the dynamic effects are discussed in the following sections.

[about here: Table 2: Summary Statistics]

### 5.1 Static Effects

At first, we analyse the static effects – the immediate impact of the economic interventions on the contributions in the first round. Average voluntary contributions (VC) are €1.40 in the baseline treatment, €2.78 in the lottery treatment and €1.34 in the tax treatment, i.e. donations excluding the income tax.

In pairwise comparisons of first round donations, we find that the monetary incentive in form of tickets for a charitable lottery increases voluntary contributions significantly. In the lottery treatment, more money is raised than in the other two treatments ( $p=0.002$  compared to baseline and  $p=0.001$  compared to tax, Mann-Whitney U test). Compared to baseline, both the

number of donors ( $p=0.078$ , Mann-Whitney U test) and the average donations of donors are higher ( $p=0.012$ ).<sup>6</sup>

**Result 1: The presence of a charitable lottery increases both average donations of donors and the number of donors in the first round.**

In the first round of the tax treatment, we test whether the presence of an income tax crowds out voluntary contributions. Full crowding out would imply equal total contributions (including tax) as in baseline. This hypothesis is clearly rejected ( $p=0.000$ , Mann-Whitney U test). Moreover, it would imply that the share of non-donors in the tax treatment equals the share of subjects donating no more than the income tax (€) in baseline. This hypothesis is also clearly rejected ( $p=0.000$ , Mann-Whitney U test), as there are only 39.6% non-donors in tax, while 80.4% of subjects donate up to € in baseline. In a next step, we test whether there is any crowding out at all. We cannot reject equal voluntary contributions (excluding tax) as in baseline ( $p=0.678$ , Mann-Whitney U test) and only marginally reject identical shares of donors ( $p=0.087$ , Mann-Whitney U test). Hence, while there is marginal crowding out of donors, this effect is not prevalent on the level of voluntary donations. This result is confirmed by a test of equal distribution that cannot be rejected ( $p=0.481$ , KS exact test). Restricting the sample to only donors, the difference of tax and baseline becomes significant ( $p=0.079$ ). In summary, we clearly reject full crowding out and only find weak evidence for crowding out at all.

**Result 2: The presence of an income tax does only weakly affect voluntary donations in the first round.**

Regression analyses support the results of the first round. We apply a two-step estimation approach. Firstly, we estimate a Probit model including the whole sample to analyse the decision to voluntarily contribute or not.<sup>7</sup> Secondly, we estimate an OLS model only including the voluntarily contributing subjects to analyse the amount of voluntary contributions. In both estimation steps we include the same explanatory variables, which are the treatments and socio-demographic data (gender, ln-age, religion, and nationality).<sup>8</sup> The first step estimation supports the previous results that the lottery treatment attracts significantly more donors. Furthermore, the amount contributed by the donors is also

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<sup>6</sup> A Kolmogorov-Smirnov test (KS-test) on equality of distributions shows that the voluntary contributions in baseline are significantly smaller than in the lottery treatment (exact  $p=0.005$ ) with the largest difference of 0.34.

<sup>7</sup> The marginal effects are estimated with the average marginal effect.

<sup>8</sup> We decided only on these invariable regressors because other explanatory variables might be object to endogenous problems. Binary regressors are estimated with the finite-difference method.

significantly higher in the lottery treatment compared to baseline. For the tax treatment we find that an income tax leads to a smaller number of donors than in baseline, but it is only marginally significant ( $p=0.103$ ). Furthermore, our estimations on the amount of voluntary contributions show that there is no significant difference from baseline.

[about here: Table 3: Regression on voluntary contributions Round 1]

## 5.2 Dynamic Effects

To analyse the dynamic effects of how charitable giving evolves over time, we firstly examine differences between the first and the second round within the treatments. In Figure 1 we plot individuals' donations in the second round against their voluntary contributions in the first round.

[about here: Figure 1: Individual donations in Round 1 and Round 2]

In baseline, donations in the second round tend to be lower than in the first round (see Figure 1). On average, the voluntary contributions decrease from €1.40 in the first round of the experiment to €1.26 in the second round, but not significantly (Wilcoxon sign-rank test,  $p=0.396$ ).

**Result 3: In absence of additional incentives, we do not observe moral balancing in the aggregate.**

Individuals in the lottery treatment donate less in the second round of the game than in the first round. On average, voluntary contributions decrease significantly ( $p=0.000$ ) from €2.78 to €1.78 in the second round.

Donations in the second round of the tax treatment tend to exceed the voluntary contributions of the first round. On average the voluntary contributions increase significantly from €1.34 to €1.73 ( $p=0.005$ ). We observe not only consistent selfish behaviour (zero voluntary contributions) in both rounds of the game like Brosig et al. (2007), but also consistent pro-social behaviour (contributing exactly the same amount in both rounds). The result for the tax treatment is in line with Gneezy et al. (2012), who show stable behaviour even if the pro-social behaviour at first is costly.

In order to analyse the dynamic effects of the economic mechanisms, we compare the donations of the previously incentivised treatments (lottery and tax) to the baseline treatment

without any previous incentives. We find substantial differences in individual contributions over treatments.

[about here : Table 4: Percentage of Consistent Voluntary Contributors by Treatment]

Average donations in the second round are €1.26 in the baseline treatment, €1.78 in the lottery treatment and €1.73 in the tax treatment (see Figure 2).

[about here: Figure 2: Average Donations in Round 1 and Round 2]

In the second round, donations are highest in the lottery treatment. However, bilateral tests for median equality do not reveal significant differences, (lottery vs. baseline  $p=0.857$ , tax vs. baseline  $p=0.131$ , Mann-Whitney U tests). Also, the KS-test of equal distribution cannot be rejected neither for baseline and lottery (KS-exact-test  $p=0.520$ ) nor for baseline and tax (KS-exact-test  $p=0.307$ ). The share of donors in the second round is not significantly different when comparing it to baseline (lottery vs. baseline  $p=0.105$ , tax vs. baseline  $p=0.585$ ). When restricting the sample to donors, defined as subjects contributing positive amounts in the second round, differences get more significant (lottery vs. baseline  $p=0.005$ , tax vs. baseline  $p=0.098$ ) suggesting a (weak) influence of first round treatment on second round behaviour.

**Result 4.1: The presence of a charitable lottery in the first round weakly increases contributions in the second round, whereas the number of donors is not influenced compared to baseline.**

**Result 4.2: The presence of an income tax in the first round weakly increases contributions in the second round, whereas the number of donors is not influenced compared to baseline.**

Regarding the disposable endowment, which equals €6 in the first round of the tax treatment and €8 for all other treatments and rounds, subjects in the lottery and tax treatment continue to give a higher share in the second round compared to baseline.

[about here: Figure 3: Average Voluntary Contributions (VC) as shares of disposable endowment in Round 1 and Round 2]

As in the first round analysis, we also apply a two-step model to analyse contributions. The results support our previous analyses (see Table 4). In the lottery as well as in the tax treatment, the propensity to donate is not significantly different from baseline, with a slightly smaller number of donors in lottery. The amount of donations in the lottery treatment,

however, is higher than in baseline ( $p < 0.01$ ), which is in line with the previous bilateral tests restricted to donors. The results for the tax treatment support previous analyses, but are not significant.

[about here: Table 5: Regression on voluntary contributions Round 2]

Comparing the first round contributions between treatments enables us to analyse the immediate treatment effects of the economic interventions. We find that the charitable lottery significantly increases donations. The income tax only weakly crowds out voluntary contributions. By comparing donations in the second round across the treatments, we find weakly significant differences in average donations. Higher donations in the first round lead to higher donations in the second round compared to baseline. These results support consistency seeking behaviour.

### 5.3 The influence of the moral framework

So far, the average and individual results support the consistency theory, but the individuals' moral framework might foster consistency seeking or moral balancing behaviour (Cornelissen et al. 2013). We extend our analysis of dynamics to the moral framework of individuals. In a post-questionnaire we asked subjects to rate a list of statements either related to the deontological or the consequential moral framework with respect to their agreement. For the deontological moral framework with a rule-based mind-set we use the following statements: "Everybody should give a part of his/her income", "One has to help people in need", "Everybody should be socially engaged", and "We shall help strangers in the same way we help our relatives". On the other hand, we also stated phrases that support a consequentialist view: "One can also deny help if one has helped before", and "You should help where most needed". Based on this categorisation we created a dummy variable (*deontologist*) in the spirit of Mayo and Marks (1990)<sup>9</sup> by including the sum of all five items related to deontology.<sup>10</sup> The distinction into deontologist and consequentialist and their donations is provided in Table 6 for each treatment.

[about here: Table 6: Summary Statistics Moral Framework]

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<sup>9</sup> Alternatively, we create a dummy equal to one if a subject fully agreed to at least one of the deontologist statements and did not fully agree to at least one of the consequentialist statements. The results were qualitatively similar.

<sup>10</sup> Cronbach's Alpha is 0.560. As we do not use questionnaire items this value is still acceptable.

The decrease between rounds in the baseline treatment is significant when controlling for the moral framework. Subjects classified as deontologist give €0.13 more on average ( $p=0.365$ ), while consequentialists reduce donations by €0.31 in the second round ( $p=0.066$ ). The difference is significant ( $p=0.058$ ). These results confirm previous evidence suggesting that subjects with a deontological moral framework are less likely to behave in line with the theory of moral balancing (e.g. Cornelissen et al. 2013). Interestingly, deontologists do not donate more on average in the first round of baseline ( $p=0.738$ ). Only in the second round, the difference becomes apparent ( $p=0.138$ ).

**Result 6.1: In the absence of economic stimuli, subjects with a consequentialist framework show behaviour of moral balancing while those with a deontologist framework do not.**

Extending our analysis of the moral framework to the lottery treatment shows that subjects classified as deontologists give €0.77 less in round two ( $p=0.014$ ), while consequentialists reduce donations by €0.13 in the second round ( $p=0.000$ ). The difference is significant ( $p=0.073$ ). Deontologists give €3.38 in round one, whereas consequentialists only give €2.09. This is confirmed when comparing both groups across treatments.<sup>11</sup> Deontologists give significantly more in lottery than in baseline ( $p=0.005$ ), while the difference is not significant for consequentialists ( $p=0.179$ ). In round two, the gap between groups widens as deontologists give €2.62 and consequentialists give €0.83 ( $p=0.001$ ). If the lottery destroys the moral image, consequentialists should give more in round two than in baseline, and if not, they should give less. Deontologists should be more stable across rounds to avoid cognitive dissonance. In round two, subjects classified as deontologists give similar, even slightly higher amounts than in baseline ( $p=0.191$ ), while subjects classified as consequentialists only give less than in baseline ( $p=0.130$ ). Despite being slightly off the conventional levels of significance, this signals the tendency to balance donations for consequentialists. Looking at the sum over both rounds, the effect of a lottery almost disappears for consequentialists ( $p=0.442$ ), while total contributions of deontologists are positively affected by the lottery ( $p=0.015$ ).

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<sup>11</sup> As we cannot observe the same subject under both conditions, we compare consequentialists and deontologists across treatments. The moral framework is not affected by treatment assignment ( $p>0.2$ ), hence the exogeneity assumption holds.



**Result 6.2: In the presence of a lottery, subjects with a consequentialist framework show behaviour of moral balancing, while those with a deontologist framework show consistency seeking behaviour.**

Controlling for individual attitudes in the tax treatment yields the following picture: Subjects classified as deontologists give €0.48 more in round two ( $p=0.038$ ), while consequentialists increase donations by €0.29 in the second round ( $p=0.058$ ). The difference, however, is not significant ( $p=0.507$ ). In round one of the tax treatment, deontologists donate €1.94, while consequentialists donate €0.75. The difference is significant ( $p=0.001$ ,  $n=48$ ). Thus, individual differences across rounds do not seem to depend on motivational aspects. However, this still could mean that they matter in comparison to baseline. We can also test for a crowding out related to the moral framework. Deontologists almost crowd in own contributions in the presence of a tax compared to baseline ( $p=0.271$ ), while consequentialists crowd out contributions ( $p=0.088$ ). In round two of tax, the differences in levels persist. Deontologists donate €2.42, which is significantly more than the consequentialists' average donations of €1.04 ( $p=0.009$ ). Deontologists give more after the tax ( $p=0.140$ ), while consequentialists even fall short of baseline contributions ( $p=0.562$ ). In terms of total contributions, this leads to increases for deontologists ( $p=0.176$ ) and decreases for consequentialists ( $p=0.570$ ) compared to baseline.

**Result 6.3: In the presence of a tax, subjects with a consequentialist framework crowd out contributions but do not show behaviour of moral balancing, while those with a deontologist framework do not crowd out contributions and show consistency seeking behaviour.**

Summarizing the results, subjects with a deontological moral framework increase their donations more strongly in the presence of a lottery and are at the same time less likely to lower their donations afterwards. On the other hand, consequentialists exhibit marginal levels of balancing also in the context of a lottery. Hence, there might be some backfiring after a lottery, but not for those who are confident that giving is a key goal. Deontologists crowd in contributions, while consequentialists crowd out contributions. Moreover, while consequentialists have been shown to be prone to moral balancing in baseline, they do not react with increased contributions after the tax.

## 6. Discussion and concluding remarks

In this paper we study two different drivers of charitable giving with a special focus on their dynamic effects. Immediate effects of economic interventions show higher contributions in the lottery treatment and no crowding out in the tax treatment. After the two interventions, charitable lottery and income tax, donations are higher than in a control setting without these mechanisms. Psychological literature stresses that stability of behaviour depends on the context and individual attributes (e.g. age see Brown et al. 2005). More evidence for consistency is found when subjects can recall their previous behaviour quite well (Merritt et al. 2010, Jordan et al. 2011). If two tasks are rather different, inconsistent behaviour may occur (Thøgersen 2004). Given the two round structure and the repeated donation decisions, our findings of consistency seeking on the aggregates seem to be plausible. Furthermore, subjects distinguish between key and negligible elements of their personal concept in valuing cognitive dissonance (e.g. Dickerson et al. 1992). In particular, the moral framework of the subject may be decisive. Especially subjects with a rule-based mind-set reveal consistent behaviour.

In particular, we add further evidence for the effectiveness of charitable lotteries, which are common in the absence of tax power (Morgan 2000). The long term effects of Landry et al. (2010), who found lotteries to raise higher donations also in subsequent donation decisions, can be supported. Subjects with a deontological moral mind-set are not only more motivated by a lottery, but the donors also keep contributing at a similar level afterwards. Of course, the type of the prize might drive the donation decision, depending on the nature of its value (private or common, see e.g. Onderstal et al. 2013), but attracting people with a charitable lottery might also pay-off for subsequent calls for donation without any lottery. Given the results from Landry et al. (2006, 2010), our results might suggest that door-to-door campaigns with charitable lotteries attract a pool of people with a deontological mind-set.

Moreover, our experiment provides support on the implications by Crumpler and Grossman (2008) that taxation can increase the total revenues of charities. Our finding of no crowding out strongly differs from Eckel et al. (2005), who cannot reject full crowding out in a similar setting. In Eckel et al. (2005), subjects got their money after the donation decision and donations were transferred via checks dropped in a mailbox by an observer. In our design, subjects receive the endowment of €8 in cash in each round and financial transfers are made through a local notary's office. We chose this form as it is a more natural way to proceed in Germany. Testing the credibility of our experimental procedure with the same control

question as in Eckel et al. (2005) shows similar levels of trust. Hence, we do not think that this feature drives our results. Contrary to Eckel et al. (2005) examining immediate effects of an income tax on donation behaviour in a one round experiment, our subjects play a two round design. The second round is announced in advance and its content is disclosed in the second round. Although this is a larger disparity from the original setup, we do not see how the announcement of the second round could reduce the level of crowding out in the first round. As a consequence, we suspect differences in the subject pool to drive our results even though the participants in both experiments were students. Besides the obvious explanation of different levels of warm glow (Andreoni 1989 and 1990), of course also other cross-cultural differences between the U.S. and Germany come into play. As the moral framework seems to play an important role in the context of a tax, differences in the levels of deontologists may serve as an alternative explanation for our results that contradict previous findings from the U.S.

Of course there are limitations when trying to formulate policy advice based on our results. The income tax was raised just once and transferred directly to the chosen charity. Income taxes in reality are raised repeatedly and are transferred to the government, not to a chosen charity. Further research would be needed to analyse the effect of different tax levels and longer periods of enforced taxes. Concerning the charitable lottery, we used a fixed prize with a common value of €100, so future research with different types of prizes and different levels of a common value prizes would lead to further insights. Moreover, as the predicted behaviour is orthogonal between consequentialists and deontologists, it seems to be important to extend this line of research in the economic literature.

## 7. References

- Alexander, L., & Moore, M. (2008), Deontological ethics, in: E. N. Zalta (Ed.), *The Stanford encyclopedia of philosophy*, Stanford, CA: Metaphysics Research Lab, Center for the Study of Language and Information, Stanford University, retrieved from <http://plato.stanford.edu/entries/ethics-deontological/>
- Andreoni, J. (1989), Giving with impure altruism: applications to charity and Ricardian equivalence, *Journal of Political Economy* 97(6), 1447-1458.
- Andreoni, J. (1990), Impure altruism and donations to public goods: a theory of warm-glow giving, *Economic Journal* 100(401), 464-477.
- Andreoni, J. (1993), An Experimental Test of the Public-Goods Crowding-Out Hypothesis, *American Economic Review* 83(5), 1317-1327.
- Andreoni, J. and J. Miller (2002), Giving According to GARP: An Experimental Test of the Consistency of Preferences for Altruism, *Econometrica* 70(2), 737-753.
- Andreoni, J. and A. Payne (2011), Is Crowding Out due entirely to Fundraising? Evidence from a Panel of Charities, *Journal of Public Economics* 95(5-6), 334-343.
- Bergstrom, T., L. Blume and H. Varian (1986), On the Private Provision of Public Goods, *Journal of Public Economics* 29, 25-49.
- Bolton, G. and E. Katok (1998), An Experimental Test of the Crowding Out Hypothesis: The Nature of Beneficent Behavior, *Journal of Economic Behavior & Organization* 37(3), 315-331.
- Brañas-Garza, P., M. Bucheli, M. Espinosa and T. García-Muños (2013), Moral Cleansing and Moral Licenses: Experimental Evidence, *Economics and Philosophy* 29(Special Issue 02), 199-212.
- Brosig, J., T. Riechmann and J. Weimann (2007), Selfish in the End?: An Investigation of Consistency and Stability of individual Behavior, *MPRA Working Paper* 2035, München.
- Brown, S.L., T. Asher and R.B. Cialdini (2005), Evidence of a positive relationship between age and preference for consistency, *Journal of Research Personality* 39, 517-533.
- Cabrales, A. and H. Lugo (2011), An impure public good model with lotteries in large groups, *CEPR Discussion Paper* 8319, London.
- Carlsson, F., O. Johansson-Stenman and P. Nam (2012), Social Preferences are Stable over Long Periods of Time, *Working Papers in Economics* No. 531, University of Gothenburg.
- Chan, K., R. Godby, S. Mestleman and R. Muller (2002), Crowding-Out Voluntary Contributions to Public Goods, *Journal of Economic Behavior & Organization* 48(3), 305-317.

- Cialdini, R.B. and N.J. Goldstein (2004), Social Influence: Compliance and Conformity, *Annual Review of Psychology* 55, 591–621.
- Cialdini, R.B., M.R. Trost and J.T. Newsom (1995), Preference for Consistency: The Development of a Valid Measure and the Discovery of Surprising Behavioral Implications, *Journal of Personality and Social Psychology* 69(2), 318-328.
- Clot, S., G. Grolleau and L. Ibanez (2011), Do Good Deeds Make Bad People?, *LAMETA Working Paper* 21, Montpellier.
- Corazzini, L., M. Faravelli and L. Stanca (2010), A Prize to give for: An Experiment on Public Good funding Mechanisms, *The Economic Journal* 120(547), 944-967.
- Cornelissen, G., M.R. Bashshur, J. Rode and M. Le Menestrel (2013), Rules or Consequences? The Role of Ethical Mind-Sets in Moral Dynamics, *Psychological Science* XX(X) 1–7.
- Crumpler, H. and P.J. Grossman (2008), An experimental test of warm glow giving, *Journal of Public Economics* 92(5-6), 1011-1021.
- De Oliveira, A., R. Croson, and C. Eckel (2011), The Giving Type: Identifying Donors, *Journal of Public Economics* 95(5-6), 428-435.
- Dickerson, C.A., R. Thibodeau, E. Aronson and D. Miller (1992), Using Cognitive Dissonance to Encourage Water Conservation, *Journal of Applied Social Psychology* 22(11), 841- 854.
- Duncan, B. (2002), Pumpkin Pies and Public Goods: The Raffle Fundraising Strategy, *Public Choice* 111(1/2), 49-71.
- Eckel, C., P. Grossman and R. Johnston (2005), An Experimental Test of the Crowding Out Hypothesis, *Journal of Public Economics* 89(8), 1543-1560.
- Effron, D.A. and B. Monin (2010), Letting People Off the Hook: When Do Good Deeds Excuse Transgressions?, *Personality and Social Psychology Bulletin* 36(12), 1618–1634.
- Festinger, L. (1957), A theory of cognitive dissonance, Stanford, CA: Stanford University Press.
- Gneezy, A., A. Imas, A. Brown, L.D. Nelson and M.I. Norton (2012), Paying to Be Nice: Consistency and Costly Prosocial Behaviour, *Management Science* 58(1), 179-187.
- Greiner, B., (2004), An Online Recruitment System for Economic Experiments, in: Kremer, K., Macho, V. (Eds.). *Forschung und wissenschaftliches Rechnen, GWDG Bericht* 63, Gesellschaft für Wissenschaftliche Datenverarbeitung Göttingen, 79-93.

- Jordan, J., E. Mullen and J.K. Murnighan (2011), Striving for the Moral Self: The Effects of Recalling Past Moral Actions on Future Moral Behavior, *Personality and Social Psychology Bulletin* 37(5), 701–713.
- Khan, U. and R. Dhar (2006), Licensing Effect in Consumer Choice, *Journal of Marketing Research* 43(2), 357–365.
- Kingma, B. (1989), An accurate measurement of the crowd-out effect, income effect, and price effect of charitable contributions, *Journal of Political Economy* 97(5), 1197-1207.
- Landry, C., A. Lange, J. List, M. Price and N. Rupp (2010), Is a Donor in Hand Better Than Two in the Bush? Evidence from a Natural Field Experiment, *American Economic Review* 100(3), 958-983.
- Landry, C., A. Lange, J. List, M. Price and N. Rupp (2006), Towards an Understanding of the Economics of Charity: Evidence from a Field Experiment, *The Quarterly Journal of Economics* 121(2), 747-782.
- Lange, A., J. List and M. Price (2007), Using Lotteries to Finance Public Goods: Theory and Experimental Evidence, *International Economic Review* 48(3), 901–927.
- Manzoor, H. and J. Straub (2005), The Robustness of Kingma's Crowd-Out Estimate: Evidence from new Data on Contributions to Public Radio, *Public Choice* 123, 463–476.
- Mayo, M.A. and L.J. Marks (1990), An empirical investigation of a general theory of marketing ethics, *Journal of the Academy of Marketing Science* 18(2), 163-171.
- Mazar, N. and C. Zhong (2010), Do Green Products Make Us Better People?, *Psychological Science* 21, 494-498.
- Merritt, A., A. Effron and B. Monin (2010), Moral-Self Licensing: When Being Good Frees Us to Be Bad, *Social and Personality Psychology Compass* 4/5, 344-375.
- Meier, S. (2007), Do subsidies increase charitable giving in the long run? Matching donations in a field experiment, *Journal of the European Economic Association* 5(6), 1203-1222.
- Monin, B. and D.T. Miller (2001), Moral Credentials and the Expression of Prejudice, *Journal of Personality and Social Psychology* 81(1), 33-43.
- Morgan, J. (2000), Financing Public Goods by Means of Lotteries, *Review of Economic Studies* 67(4), 761-784.
- Morgan, J. and M. Sefton (2000), Funding Public Goods with Lotteries: Experimental Evidence, *Review of Economic Studies* 67(4), 785-810.
- Onderstal, S., A.J.H.C. Schram and A.R. Soetevent (2013), Bidding to give in the field, *Journal of Public Economics* 105(2013), 72–85.

- Orzen, H. (2008), Fundraising through competition: Evidence from the lab, *CeDEX discussion paper series* No. 2008-11, Nottingham.
- Payne, A. (1998), Does the Government Crowd-Out Private Donations? New Evidence from a Sample of Non-Profit Firms, *Journal of Public Economics* 69(3), 323-345.
- Ploner, M. and T. Regner (2013), Self-image and moral balancing: An experimental analysis, *Journal of Economic Behavior & Organization* 93, 374-383.
- Ribar, D. and M. Wilhelm (2002), Altruistic and Joy-of-Giving Motivations in Charitable Behavior, *Journal of Political Economy* 110(2), 425 – 457.
- Roberts, D. (1984), A Positive Model of Private Charity and Public Transfers, *Journal of Political Economy* 92(1), 136-148.
- Sachdeva, S., R. Iliev and D. Medin (2009), Sinning Saints and Sainly Sinners: The Paradox of Moral Self-Regulation, *Psychological Science* 20, 523-528.
- Shang, J. and R. Croson (2009), A Field Experiment in Charitable Contribution: The Impact of Social Information on the Voluntary Provision of Public Goods, *The Economic Journal* 119(October), 1422-1439.
- Singer, P. (1991), *A companion to ethics*, Oxford, England: Blackwell Reference.
- Sinnott-Armstrong, W. (2008), Consequentialism, in: E. N. Zalta (Ed.), *The Stanford encyclopedia of philosophy*, Stanford, CA: Metaphysics Research Lab, Center for the Study of Language and Information, Stanford University, retrieved from <http://plato.stanford.edu/entries/consequentialism/>
- Steinberg, R. (1991), Does Government Spending Crowd-Out Donations? Interpreting the Evidence, *Annals of Public and Cooperative Economics* 62(4), 591-617.
- Taylor, P.W. (1975), *Principles of Ethics: An Introduction*, Encino, CA: Dickenson.
- Thøgersen, J. and T. Crompton (2009), Simple and Painless? The Limitations of Spillover in Environmental Campaigning, *Journal of Consumer Policy* 32,141–163.
- Tangney, J.P., P.E. Wagner and R. Gramzow (1989), *The Test of Self-Conscious Affect*, Fairfax, VA: George Mason University.
- Warr, P. (1982), Pareto Optimal Redistribution and Private Charity, *Journal of Public Economics* 19(1), 131-138.
- Warr, P. (1983), The Private Provision of a Public Good is Independent of the Distribution of Income, *Economics Letters* 13(2-3), 207-211.

## 8. Appendix Tables

**Table 1: Summary of Experimental Design**

Treatment	Endowment 1 <sup>st</sup> round	Endowment 2 <sup>nd</sup> round	Intervention 1 <sup>st</sup> round
Baseline	8	8	No
Lottery	8	8	Lottery ticket for each €0.50 donated Lottery prize €100
Tax	8	8	€ income tax

**Table 2: Summary Statistics**

Treatment	No. of subjects	Share of donors 1 <sup>st</sup> round	Average donation 1 <sup>st</sup> round	Share of donors 2 <sup>nd</sup> round	Average donation 2 <sup>nd</sup> round	Sum of donations	Test for equal donations in both rounds
Baseline	51	76%	€1.40	75%	€1.26	€2.66	p=0.396
Lottery	49	90%	€2.78	59%	€1.78	€4.56	p=0.000
Tax	48	60% (100%)*	€1.34 (€3.34)*	79%	€1.73	€3.07 (€5.07)*	p=0.005 (p=0.000)*

Note: \*including income tax.

**Table 3: Regression on voluntary contributions Round 1**

Dependent variable	Donation decision (yes/no)		Donation level (ln_donation)	
	(Model 1)	(Model 2)	(Model 1)	(Model 2)
Lottery treatment	0.1509* (0.0781)	0.1784** (0.0749)	0.4954*** (0.1651)	0.4123** (0.1610)
Tax Treatment	-0.1425 (0.0873)	-0.1088 (0.0841)	0.2898 (0.1840)	0.1498 (0.1798)
Male		-0.1502** (0.0680)		-0.2398* (0.1379)
ln_Age		-0.0309 (0.1470)		0.6740* (0.3420)
German		0.0867 (0.1105)		0.7319*** (0.2094)
Religious		0.1373** (0.0670)		-0.3329** (0.1372)
Constant			0.3317*** (0.1202)	-2.0215* (1.0700)
N	148	148	112	112

Donation decision is estimated using a Probit specification, entries are average marginal effects. Donation level is estimated only for donors using OLS with the log of donations in round 1 as the dependent variable. Standard errors in brackets. \*p<0.1; \*\*p<0.05; \*\*\*p<0.01



**Table 4: Percentage of Consistent Voluntary Contributors by Treatment**

	Consistent VC Round 1 – Round 2		Inconsistent VC Round 1 – Round 2	
	VC = 0	VC>0	Increasing	Decreasing
Baseline	20%	39%	24%	18%
Lottery	10%	33%	53%	4%
Tax	17%	23%	15%	46%

Note: Percentages may not total to 100 due to rounding.

**Table 5: Regression on voluntary contributions Round 2**

Dependent variable	Donation decision (yes/no)		Donation level (ln_donation)	
	(Model 1)	(Model 2)	(Model 1)	(Model 2)
Lottery treatment	-0.1495 (0.0944)	-0.1544 (0.0950)	0.5594*** (0.1816)	0.5257*** (0.1878)
Tax Treatment	0.0504 (0.0908)	0.0529 (0.0897)	0.2654 (0.1690)	0.2413 (0.1731)
Male		-0.1452* (0.0745)		-0.0273 (0.1476)
ln_Age		0.2208 (0.1826)		0.3924 (0.3510)
German		0.1246 (0.1175)		0.5496** (0.2226)
Religious		0.0354 (0.0737)		0.0311 (0.1443)
Constant			0.2523** (0.1195)	-1.4272 (1.0905)
N	148	148	105	105

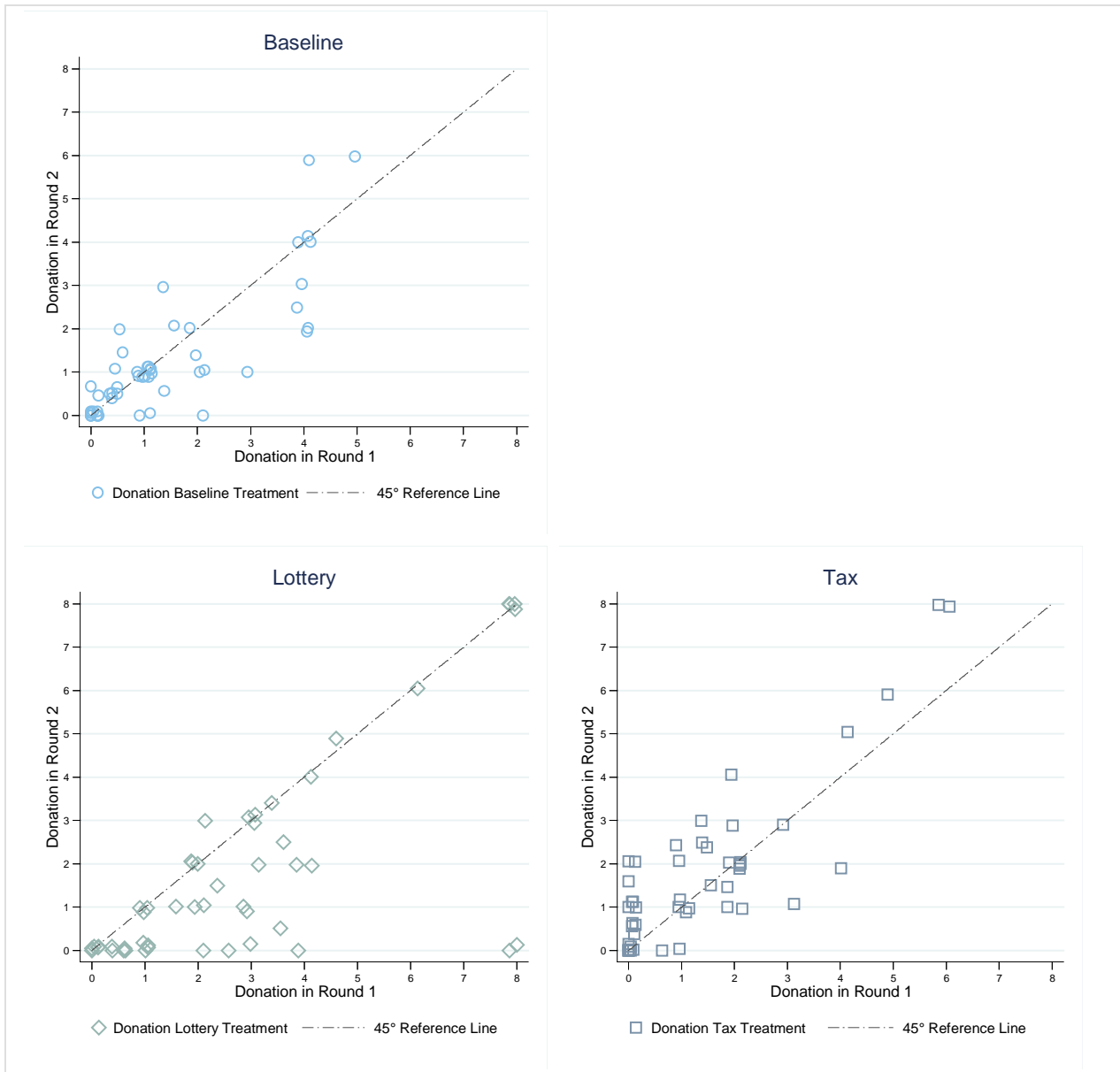
Donation decision is estimated using a Probit specification, entries are average marginal effects. Donation level is estimated only for donors using OLS with the log of donations in round 2 as the dependent variable. Standard errors in brackets. \*p<0.1; \*\*p<0.05; \*\*\*p<0.01

**Table 6: Summary Statistics Moral Framework**

Treatment	Moral framework	No. of subjects	Average donation 1 <sup>st</sup> round	Average donation 2 <sup>nd</sup> round	Sum of donations	Test for equal donations in both rounds
Baseline	Deontologist	20	€1.40	€1.53	€2.93	p=0.365
	Consequentialist	31	€1.40	€1.10	€2.50	p=0.066
Lottery	Deontologist	26	€3.38	€2.62	€6.00	p=0.014
	Consequentialist	23	€2.09	€0.83	€2.92	p=0.000
Tax	Deontologist	24	€1.94	€2.42	€4.36	p=0.038
	Consequentialist	24	€0.75	€1.04	€1.79	p=0.058

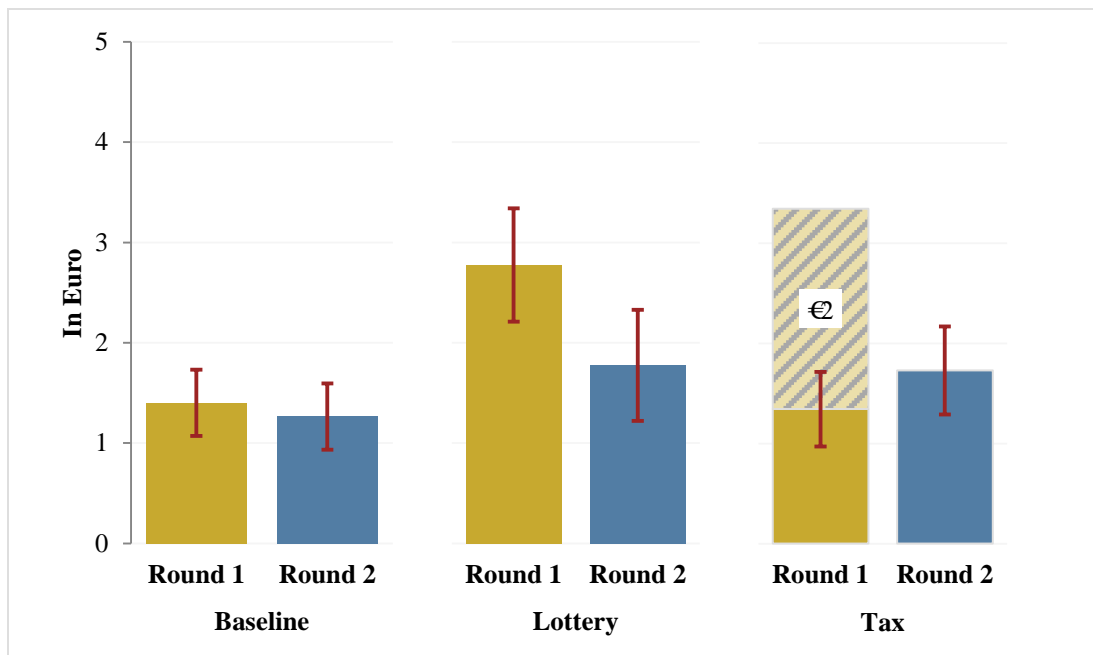
## Figures

**Figure 1: Individual donations in Round 1 and Round 2**



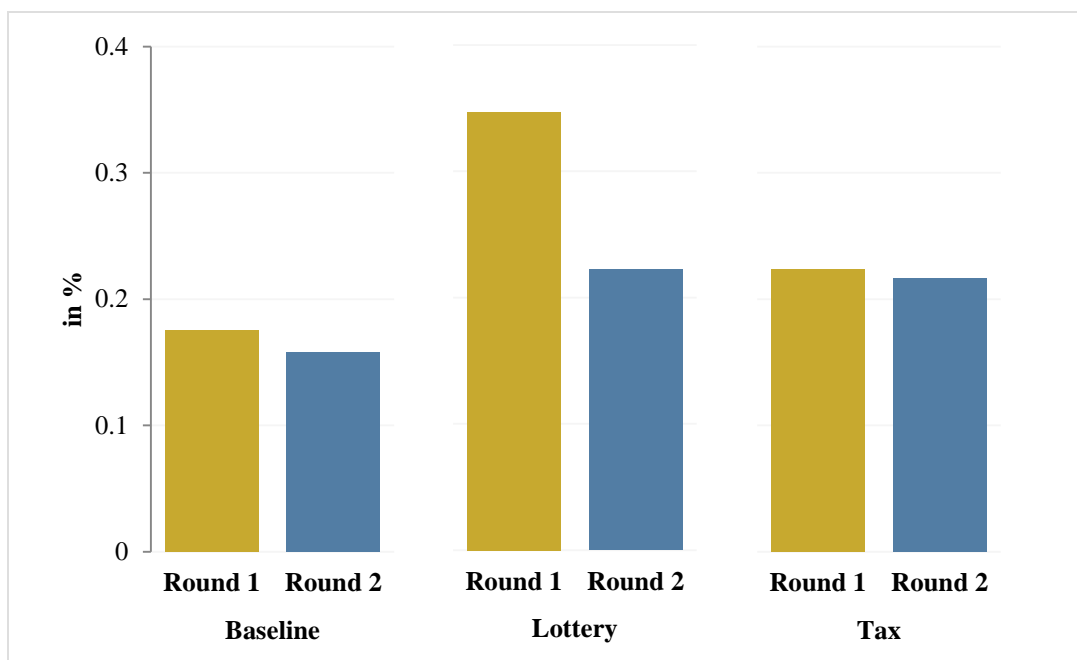
Note: To avoid overplotting in scatterplots the individual donations were jittered up or down by a random number. Individual voluntary contributions serve as observations. Observations on the 45° reference line mark identical contributions in both rounds of the game.

**Figure 2: Average Donations in Round 1 and Round 2**



Note: Reported are the average donations per treatment and round as well as the corresponding 90% confidence intervals for between subject comparisons. Donations in the 1<sup>st</sup> round of the tax treatment include the income tax of €2 which is marked in the shaded area.

**Figure 3: Average Voluntary Contributions (VC) as shares of disposable endowment in Round 1 and Round 2**



Note: Shares of endowment are calculated on base of disposable endowment, which means €6 in the 1<sup>st</sup> round of the tax treatment and €8 for all other treatments and rounds.

## Additional Material

### A1: Instructions (translated from German)

#### A1a: Baseline treatment

Welcome!

Thank you for participating. Please keep your mobile phones turned off during the whole event. Please do not talk to other participants. If you have any questions, please raise your hand. A staff member will answer your question.

Apart from the instructions, also other material will be handed out in the course of the event.

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This will be the first out of two rounds. In each round, you can earn money.

We will now hand out an envelope and a receipt form. Inside the envelope, you will find 8: two 2 euro coins, three 1 euro coins and two 50 cent coins. Please open the envelope and make sure that the amount is correct. Then, please confirm that you received the 8 euros on the enclosed receipt form. Afterwards, the form will be collected by a staff member. With this receipt you confirm that you received the amount of the first round.

Please remain seated after the collection until you receive further instructions.

---

We will now present you six different charities. You have the possibility to financially support **one** of these goals. Therefore, you will receive a sheet with a **personal code** and a **decision sheet**. Please keep your personal code to yourself during the whole event. It will ensure the anonymity of your decision. Neither other participants nor staff members can link the code to your name. Please note that we cannot issue any contribution receipts due to the anonymity of your decision.

1. Please enter your personal code in the space provided on the decision sheet and on the envelope.
2. After that, please read the descriptions of the charity carefully. Please mark the charity that is most worthy of receiving the donation in your opinion on the decision sheet with an "X". By choosing a charity, you do not automatically commit to a real donation. Please note that you can only choose one charity.
3. In the next step, please decide how you would like to divide the 8 euros between yourself and the chosen charity. The donation can range between 0 and 8 euros in steps of 0.50 euros. Please note that you can only financially support one charity. Indicate the amount you would like to donate to the charity as well as the amount you want to keep for yourself on the bottom of the decision sheet.
4. Put the donation and the decision sheet into the envelope. Make sure that you have written your code on the decision sheet and on the envelope. Please check that the coins in the envelope match the amount of your donation on the sheet. Please seal the envelope afterwards. A staff member will collect the envelopes. Please keep the money you do not wish to donate to yourself.

**Information:** The opening of your envelopes and the money transfer take place under the supervision of a notary. After the event, the total amount of donations will be published on our homepage. We will inform you about this via email. All the information on the charities is true.

**Example 1:** *If you do not wish to donate anything, please enter 0 euros for the charity and 8 euros for yourself. In this case, only put the completed decision sheet into the envelope.*

**Example 2:** *If you wish to donate the maximum amount, please enter 8 euros for the charity and 0 euros for yourself. In this case, put the completed decision sheet and the 8 euros into the envelope.*

Please remain seated after the collection until you receive further instructions.

---

This will be the second and therefore last round.

We will again hand out an envelope and a receipt form. Inside the envelope, you will find 8 euros: two 2 euro coins, three 1 euro coins and two 50 cent coins. Please open the envelope and make sure that the amount is correct. Then, please confirm that you received the 8 euros on the enclosed receipt form. Afterwards, the form will be collected by a staff member. With this receipt you confirm that you received the amount of the second round.

Please remain seated after the collection until you receive further instructions.

We will present you another six different charities. You have the possibility to financially support **one** of these goals. Therefore, you will again receive a **decision sheet**.

1. Please enter your personal code in the space provided on the decision sheet and on the envelope.
2. After that, please read the descriptions of the charity carefully. Please mark the charity that is most worthy of receiving the donation in your opinion on the decision sheet with an "X". By choosing a charity, you do not automatically commit to a real donation. Please note that you can only choose one charity.

3. In the next step, please decide how you would like to divide the 8 euros between yourself and the chosen charity. The donation can range between 0 and 8 euros in steps of 0.50 euros. Please note that you can only financially support one charity. Indicate the amount you would like to donate to the charity as well as the amount you want to keep for yourself on the bottom of the decision sheet.
4. Put the donation and the decision sheet into the envelope. Make sure that you have written your code on the decision sheet and on the envelope. Please check that the coins in the envelope match the amount of your donation on the sheet. Please seal the envelope afterwards. A staff member will collect the envelopes. Please keep the money you do not wish to donate to yourself.

**Information:** The opening of your envelopes and the money transfer take place under the supervision of a notary. After the event, the total amount of donations will be published on our homepage. We will inform you about this via email. All the information on the charities is true.

*Example 1: If you do not wish to donate anything, please enter 0 euros for the charity and 8 euros for yourself. In this case, only put the completed decision sheet into the envelope.*

*Example 2: If you wish to donate the maximum amount, please enter 8 euros for the charity and 0 euros for yourself. In this case, put the completed decision sheet and the 8 euros into the envelope.*

Please remain seated after the collection until you receive further instructions.

### **A1b: Lottery treatment (first round)**

Welcome!

Thank you for participating. Please keep your mobile phones turned off during the whole event. Please do not talk to other participants. If you have any questions, please raise your hand. A staff member will answer your question.

Apart from the instructions, also other material will be handed out in the course of the event.

-----  
 This will be the first out of two rounds. In each round, you can earn money.

We will now hand out an envelope and a receipt form. Inside the envelope, you will find 8 euros: two 2 euro coins, three 1 euro coins and two 50 cent coins. Please open the envelope and make sure that the amount is correct. Then, please confirm that you received the 8 euros on the enclosed receipt form. Afterwards, the form will be collected by a staff member. With this receipt you confirm that you received the amount of the first round.

Please remain seated after the collection until you receive further instructions.

-----  
 We will now present you six different charities. You have the possibility to financially support **one** of these goals. Therefore, you will receive a sheet with a **personal code** and a **decision sheet**. Please keep your personal code to yourself during the whole event. It will ensure the anonymity of your decision. Neither other participants nor staff members can link the code to your name. Please note that we cannot issue any contribution receipts due to the anonymity of your decision.

1. Please enter your personal code in the space provided on the decision sheet and on the envelope.
2. After that, please read the descriptions of the charity carefully. Please mark the charity that is most worthy of receiving the donation in your opinion on the decision sheet with an "X". By choosing a charity, you do not automatically commit to a real donation. Please note that you can only choose one charity.
3. In the next step, please decide how you would like to divide the 8 euros between yourself and the charity of your choice. The donation can range between 0 and 8 euros in steps of 0.50 euros. Please note that you can only financially support one charity. Indicate the amount you would like to donate to the charity as well as the amount you want to keep for yourself at the bottom of the decision sheet. For each donation of 0.50 euro you receive a lottery ticket for the participation in a price draw in which you can win 100 euros in cash. Your personal code serves as the lottery ticket number to ensure the anonymity of your decision. For example, if you donate 2 euros, you will receive four lottery tickets. If you donate 2.50 euros, you will receive five lottery tickets, etc. After all the events of this week, the number of lottery tickets corresponding to your donation is marked with your code and enters the prize draw together with the lottery tickets of the other participants. Altogether, up to 60 participants get the possibility to take part in the prize draw. Afterwards, one lottery ticket is drawn by chance to select the winning of the 100 euros. The filling of the raffle box as well as the draw will be supervised by a notary. All participants of the event will be informed via e-mail about the code drawn. Neither the staff nor the other participants are able to assign the code to your name. To claim your prize, you have to identify yourself with the sheet that has your code on it, which was handed out at the beginning of the event, and you have to confirm the receipt of the 100 euros with your signature. Therefore, please keep the code in a safe place.

4. Put the donation and the decision sheet into the envelope. Make sure that you have written your code on the decision sheet and on the envelope. Please check that the coins in the envelope match the amount of your donation on the sheet. Please seal the envelope afterwards. A staff member will collect the envelopes. Please keep the money you do not wish to donate to yourself.

**Information:** The opening of your envelopes and the money transfer take place under the supervision of a notary. After the event, the total amount of donations will be published on our homepage. We will inform you about this via email. All the information on the charities is true.

**Example 1:** *If you do not wish to donate anything, please enter 0 euros for the charity and 8 euros for yourself. In this case, only put the completed decision sheet into the envelope. In this case no lottery ticket with your personal code is put into the raffle box.*

**Example 2:** *If you wish to donate the maximum amount, please enter 8 euros for the charity and 0 euros for yourself. In this case, put the completed decision sheet and the 8 euros into the envelope. In this case 16 lottery tickets with your personal code are put into the raffle box.*

Please remain seated after the collection until you receive further instructions.

### **A1c: Tax treatment (first round)**

Welcome!

Thank you for participating. Please keep your mobile phones turned off during the whole event. Please do not talk to other participants. If you have any questions, please raise your hand. A staff member will answer your question.

Apart from the instructions, also other material will be handed out in the course of the event.

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This will be the first out of two rounds. In each round, you can earn money.

We will now hand out an envelope and a receipt form. Inside the envelope, you will find 8 euros: two 2 euro coins, three 1 euro coins and two 50 cent coins. Please open the envelope and make sure that the amount is correct. Then, please confirm that you received the 8 euros on the enclosed receipt form. Afterwards, the form will be collected by a staff member. With this receipt you form that you received the amount of the first round.

Please remain seated after the collection until you receive further instructions.

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We will now present you six different charities. You have the possibility to financially support **one** of these goals. Therefore, you will receive a sheet with a **personal code** and a **decision sheet**. Please keep your personal code to yourself during the whole event. It will ensure the anonymity of your decision. Neither other participants nor staff members can link the code to your name. Please note that we cannot issue any contribution receipts due to the anonymity of your decision.

1. Please enter your personal code in the space provided on the decision sheet and on the envelope.
2. After that, please read the descriptions of the charity carefully. Please mark the charity that is most worthy of receiving the donation in your opinion on the decision sheet with an "X". By choosing a charity, you do not automatically commit to a real donation. Please note that you can only choose one charity.
3. The amount paid out to you is subject to income tax at a rate of 25%. This corresponds to an amount of 2 euros. The income tax of 2 euros is transferred to your chosen charity organisation automatically. Your income after taxes is now 6 euros. In the next step, please decide how you would like to divide the 6 euros between yourself and the chosen charity. The donation can range between 0 and 6 euros in steps of 0.50 euros. Please note that you can only financially support one charity. Indicate the amount you would like to donate to the charity as well as the amount you want to keep for yourself at the bottom of the decision sheet.
4. Put the donation and the income tax of 2 euros as well as the decision sheet into the envelope. Make sure that you have written your code on the decision sheet and on the envelope. Please check that the coins in the envelope match the amount of your donation on the sheet. Please seal the envelope afterwards. A staff member will collect the envelopes. Please keep the money you do not wish to donate to yourself.

**Information:** The opening of your envelopes and the money transfer take place under the supervision of a notary. After the event, the total amount of donations will be published on our homepage. We will inform you about this via email. All the information on the charities is true.

**Example 1:** *If you do not wish to donate anything, please enter 0 euros for the charity and 6 euros for yourself. In this case, put the completed decision sheet and the income tax of 2 euros into the envelope.*

**Example 2:** *If you wish to donate the maximum amount, please enter 6 euros for the charity and 0 euros for yourself. In this case, put the completed decision sheet and the 8 euros (2 euros income tax + 6 euros donation) into the envelope.*

Please remain seated after the collection until you receive further instructions.

A2: Decision sheets baseline treatment (translated form German)

A2a) Version 1

Code: \_\_\_\_\_ (please enter your code here)

**Charity**

Please mark the charity that is most worthy of receiving the donation in your opinion on the decision sheet with an "X". (Note: You can only select one charity.)

<input type="radio"/>	<p><b>Stromspar-Check</b> Stromspar-Check helps low-income households in Mannheim to save electricity. The electricity saved contributes to the financial relief of households and reduces CO<sub>2</sub> emissions.</p>
<input type="radio"/>	<p><b>Deutscher Caritasverband</b> Caritas is a German Catholic welfare organisation. Caritas supports people in need in Germany and the rest of the world.</p>
<input type="radio"/>	<p><b>SOS – Kinderdorf</b> SOS-Kinderdorf promotes the needs, concerns and rights of children worldwide. The main focus lies on abandoned and neglected girls and boys as well as disadvantaged families.</p>
<input type="radio"/>	<p><b>UNO-Flüchtlingshilfe</b> The UNO-Flüchtlingshilfe promotes aid projects for refugees both nationally and internationally. Their work comprises emergency relief actions in the event of an acute crisis, assistance in the return to the country of origin as well as the promotion of vocational training and continuing education.</p>
<input type="radio"/>	<p><b>World Wide Fund For Nature (WWF)</b> The WWF concentrates on the preservation of the biological diversity on earth, the sustainable use of natural resources as well as the containment of environmental pollution and damaging consumer behaviour.</p>
<input type="radio"/>	<p><b>Ärzte ohne Grenzen</b> Ärzte ohne Grenzen manages medical support in crisis areas and war zones. Their work comprises medical emergency assistance, the provision of clean water and latrines as well as medical education of the public.</p>

Please indicate now how you would like to divide the 8 euros between yourself and the selected charity:

1. I donate \_\_\_\_\_ euros to my selected **charity**.  
(The amount can range between 0 and 8 euros in steps of 0.50 euros.)

2. I keep \_\_\_\_\_ euros.  
(The amount you keep can range between 0 and 8 euros in steps of 0.50 euros. The amounts under 1. and 2. have to add up to 8 euros altogether.)

**A2b) Version 2**

**Code:** \_\_\_\_\_ (please enter your code here)

**Charity**

Please mark the charity that is most worthy of receiving the donation in your opinion on the decision sheet with an "X". (Note: You can only select one charity.)

<input type="radio"/>	<p><b>Caritas-Tafel</b> Caritas-Tafel in Mannheim contributes to the financial relief of low-income households. Households in need can buy discounted groceries there.</p>
<input type="radio"/>	<p><b>Deutsches Rotes Kreuz</b> Deutsches Rotes Kreuz saves lives, assists in acute emergencies, supports poor people and those in need, and monitors international law.</p>
<input type="radio"/>	<p><b>Kinderhilfswerk der Vereinten Nationen (UNICEF)</b> The Kinderhilfswerk der Vereinten Nationen works especially in developing countries and supports children and mothers in the areas of health, family planning, hygiene, nutrition as well as education and provides humanitarian aid in emergencies.</p>
<input type="radio"/>	<p><b>Amnesty International</b> Amnesty International promotes human rights worldwide. They research continuously the human rights situation all over the world and take action against specific human rights violations.</p>
<input type="radio"/>	<p><b>Greenpeace</b> Greenpeace is an environmental organisation. Greenpeace concentrates on international issues such as global warming, deforestation, overfishing, commercial whaling and campaigns against nuclear power</p>
<input type="radio"/>	<p><b>Brot für die Welt</b> Brot für die Welt is a relief organisation that operates worldwide. Their focus lies on the security of food supply, education and health, peace and human rights as well as Aids.</p>

Please indicate now how you would like to divide the 8 euros between yourself and the selected charity:

**1.** I donate \_\_\_\_\_ euros to my selected **charity**.  
(The amount can range between 0 and 8 euros in steps of 0.50 euros.)

**2.** I keep \_\_\_\_\_ euros.  
(The amount you keep can range between 0 and 8 euros in steps of 0.50 euros. The amounts under 1. and 2. have to add up to 8 euros altogether.)