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Motivational Crowding Out Effects in Charitable Giving: Experimental Evidence

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Abstract

This paper tests motivational crowding out in the domain of charitable giving. A novelty is that our experiment isolates alternative explanations for the decline of giving such as strategic considerations of decision makers. Moreover, preference elicitation allows us to focus on the reaction of donors characterized by different degrees of intrinsic motivation. In the charitable-giving setting subjects donate money to the German "Red Cross" in two consecutive stages. The first dictator game is modified, i.e., donors face with equal probability an ex post reimbursement or a subsequent pay. The second game is a standard dictator game where we control for the decline of giving. We find that subjects with a high degree of intrinsic motivation, who received a reimbursement, reduce their donations more than four times as much as equally motivated individuals who did not experience a payment.

JEL Classification numbers: D02, D03, C91.
PsycINFO codes: 2360, 2420

Keywords: Altruism, Dictator Game, Experiment, Motivational Crowd Out.

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1 Introduction

Behavioral economics and the psychological literature on financial incentives have repeatedly demonstrated that monetary rewards may often lead to undesired side effects. This is documented by broad empirical evidence of motivational crowding out phenomena (Gneezy et al., 2011; Bowles and Polania-Reyes, 2012). Field and laboratory experiments show that increased incentives may negatively affect work performance (Deci, 1971; Falkinger et al., 2000; Gneezy and Rustichini, 2000a) or decrease the propensity of cooperation (e.g., Gneezy and Rustichini, 2000b; Fehr and Gächter, 2002). Moreover, in principal-agent settings Falk and Kosfeld (2006) demonstrate that monitoring agents leads to crowding-out effects in work performance.[1] Another reason for crowding out effects of employees is reported by Carpenter and Dolifka (2017) who highlight that these effects may also occur because of an aversion of being exploited. Motivational crowding out effects are also of particular importance in the realm of donations, an area which particularly depends on intrinsic motivation. In public economics, politics introduced measures to encourage fundraising. Popular measures are tax deduction of donations (e.g., Duquette, 2016) or matching schemes, where a donor matches the donations of subjects (Huck and Rasul, 2011; Karlan et al., 2011; Gong and Grundy, 2014). From a theoretical and practical perspective, the effectiveness of theses measures is an important issue.

Empirical evidence documents motivational crowding-out effects in charitable giving, highlighting that policy measures can be detrimental. Mellström and Johannesson (2008) show in a field setting that financial rewards crowd out the supply of blood donors.[2] Meier (2007) reports that donation rates declined after matching donations in the field. Eckel and Grossman (2003) observe a similar pattern in the lab. These studies indicate that motivational crowding out effects may often lead to opposite outcomes of what was intended. Although these findings are intriguing, motivational crowding out effects face non-trivial problems of identification. When monetary incentives are altered, the total impact on behavior is a composition of numerous potentially opposing effects, e.g., substitution and income effects, strategic considerations (e.g., Bénabou and Tirole 2006; Schnedler and Vanberg, 2012; Johnsen and Kvaløy, 2016)[3] and motivational crowding out. There is

[1] Masella et al. (2014) extend these findings and highlight that hidden costs of control are independent of group identity.

[2] See Janssen and Mendys-Kamphorst (2004) for a theoretical model on Titmuss' (1970) idea.

[3] In the model by Bénabou and Tirole (2006) individuals engage in civic activities to signal al-

also evidence that subjects may react differently to specific types of rewards such as cash or vouchers (Lacetera and Macis, 201). Importantly, previous studies ignore individual heterogeneity (for a survey see Bowles and Polania-Reyes, 2012). More precisely, they do not control for the level of intrinsic motivation which underlies the donation decision. However, a high level of intrinsic motivation is a prerequisite for motivational crowding out effects to occur. Hence, it is likely that crowding out effects are more pronounced among subjects who are characterized by prosocial behavior.

In this paper we address the identification problems of motivational crowding out effects. We focus on a controlled laboratory setting of charitable giving. Before we focus on donation decisions we measure subjects general level of intrinsic motivation. Therefore, we apply the modified dictator game of Blanco et al. (2011) to elicit subjects' guilt parameter which we use as a proxy for prosocial behavior. Afterwards, we analyze donation decisions in a repeated dictator game where subjects can give to a charity ("German Red Cross"). In an intriguing paper Benz and Meier (2008) provide evidence for the external validity of laboratory experiments on charitable giving. In our variant we vary the price of giving to identify motivational crowding out effects. More precisely, subjects participate in two consecutive dictator games. That is, the price of giving in the first dictator game is ex ante uncertain. Between the two donation stages, subjects may either face a reimbursement or have to make a subsequent payment, which is proportional to their donation. Importantly, neither of these two payments changes the actual donated amount. The reimbursement case resembles a scenario where the price of giving is halved, whereas the price increases by 50% for the case of a subsequent payment. The second donation opportunity is a standard dictator game. Here, we intend to observe subjects' change in donation behavior to control for potential crowding out effects. Our contribution is threefold. First, the experiment enables us to tackle the potential effects of the aforementioned policy measures. Second, we use the advantage of the lab to elicit subjects' level of prosociality. This enables us to test how different types of prosociality are affected by motivational crowding out. Third, our stylized design rules out that strategic motives of decision makers may play a role after financial incentives are introduced.

truism to receive social esteem. The introduction of monetary incentives reduces the informational value of this signal. Schnedler and Vanberg (2012) theoretically show that workers in principal-agent settings reduce effort when the remuneration is increased, because they could be playing a "hard-to-get" strategy. Johnsen and Kvaløy (2016) find in repeated trust games that subjects may trust to induce strategic reciprocity.

The data demonstrate clear evidence for the occurrence of motivational crowding out effects. After a reimbursement prosocial subjects significantly lower their contribution to the charity. Interestingly, this does not hold for the case where these subjects were bound to make a subsequent payment. By contrast, we find no evidence for motivational crowding out among subjects with a low degree of intrinsic motivation. Our findings emphasize that policy measures trying to encourage donations with financial incentives are affected by motivational crowding out. These insights may help to better address policy measures for charitable giving.

2 Experimental Design

The experiment is a within-subjects design with four separate parts. Part one and two focus on the elicitation of subjects' preferences, i.e., in the first part we measure subjects aversion to favorable inequality, whereas subjects' risk preferences are elicited in the second part.In parts three and four subjects have the opportunity to donate to the the German "Red Cross".

Part one – Elicitation of subjects' guilt parameters: A main feature of our experimental design is that we analyze motivational crowding out conditioned on subjects' degree of intrinsic motivation. For this purpose we measure subjects' guilt parameter (β) of the Fehr and Schmidt (1999) model. This allows us to classify subjects according to their degree of intrinsic motivation.

Therefore, we use the modified dictator game (MDG) introduced by Blanco et al. (2011) to derive point estimates of individuals' β parameters. In this elicitation task, subjects are presented a list with 22 pairs of payoff vectors (for details, see Table 7 in the Appendix.). The participants have to choose one of the two payoff vectors for all 22 cases. Both vectors represent a money split between the dictator and the recipient. The left vector is constant and always (20, 0). If the participants choose this vector they would receive 20 and the recipients earn nothing. All vectors on the right-hand side resemble increasing equal-money splits: from (0, 0) to (21, 21).[4] Subjects are informed on the outcome of this part only after the experiment was finished. In that case, the computer randomly pairs two players and determines a subject's role (dictator or recipient) and the payoff-relevant decision. In part one we used "Taler" as experimental currency. The exchange rate was 1 Taler = 0.15€.

[4]Extending the right vectors to (21, 21) allows to account for negative betas.

Part two – Elicitation of subjects' risk preferences: As part three corresponds to a donation setting which shares elements of decisions under uncertainty (for details see next subsection), we elicit individual risk preferences in stage two.

For this reason we apply the gamble-choice option as used in Eckel and Grossman (2002, 2008). In this task subjects are presented five gambles with two possible outcomes (A/B) which occur with equal probability. Table 1 displays the gambles, their expected payoffs, and the Constant Relative Risk Aversion (CRRA). The CRRA ranges are calculated as the range of r in the function $u(x) = \frac{x^{(1-r)}}{(1-r)}$.

Choice	Event	Probability (%)	Payoff (€)	Exp. payoff	CRRA ranges
1	A	50	0.80	0.80	$r > 2$
	B	50	0.80		
2	A	50	1.20	0.90	$0.67 < r < 2$
	B	50	0.60		
3	A	50	1.60	1.00	$0.38 < r < 0.67$
	B	50	0.40		
4	A	50	2.00	1.10	$0.20 < r < 0.38$
	B	50	0.20		
5	A	50	2.40	1.20	$r < 0.20$
	B	50	0.00		

Table 1: Subjects' gamble choices and the corresponding expected payoffs.

The gambles maintain a linear relationship between the expected payoff and the risk. In the gamble-choice task subjects have to select exactly one out of the five gambles. They know that a random draw will determine the outcome after the end of the experiment.

Part three – Donation decision one: This part aims to induce motivational crowding out effects in the domain of charitable giving. Therefore we use a dictator game with a charity as a recipient (e.g., Eckel and Grossman, 2003).

In this dictator game subjects have the opportunity to donate money to the German "Red Cross." Subjects are told that after the end of the experiment an online transaction will be made to the Red Cross. To increase subjects' trust in the donation opportunity, subjects can stay after the experiment and watch the transaction process. After the conduction of the experiment the online-transaction process is projected onto a wall of the laboratory. In the dictator-game stage, we apply an exchange rate of 1 Taler = 0.25€. Subjects are given an endowment of 20

Talers which can be donated in integers between zero and 20.

In the dictator game, subjects first have to decide on their giving to the charity. Before stage four starts one out of three states can occur, which may influence the effective price of giving. Subjects know that after their donation decision a random process will determine which state realizes. However, they did not know about the conditions in stage four. After subjects made their decisions, they are informed on the occurred state.

The first possible state ("neutral") serves as benchmark, i.e., the price of giving remains unaffected. By contrast, the second possible state ("reimbursement") resembles a situation characterized by a lower price of giving. If a subject is matched to the reimbursement state, the experimenter refunds 50% of her donation. Finally, the third possible state ("subsequent payment") corresponds to a case with a higher price of giving. If a subject is matched to the "subsequent-payment" state, it has to make an additional payment of 50% of the donated amount.[5]

Each state occurs with a probability of one third. Importantly, these ex post price effects are ex ante neutral. That is, the expected value of the price effect is zero. Thus, in expected terms this stage corresponds to a standard dictator game (e.g., Forsythe et al., 1994). In other words, the amount donated by the subjects equals the expected value received by the charity. However, one third of the subjects experiences a reimbursement proportional to their donated amount. Hence, these subjects experience the economic consequences of a non-anticipated rebate. At the same time, one third of the subjects had to make an additional payment proportional to their donated amount. Thus, these subjects experience the economic consequences of a non-anticipated markup on the price of giving.

These potential ex post price changes are introduced in an unanticipated manner to observe how donation decisions are made in the absence of monetary incentives. Although subjects do not make the donation decision under these incentives (as they are not present), they nevertheless experience the economic consequences of a rebate/subsequent payment. We use subjects' donation decisions in stage three as a benchmark which can be compared to stage four where the price of giving is constant. This comparison between donation decisions in stages three and four allows us to address whether monetary incentives induce motivational crowding out

[5]Subjects receive a further endowment of 10 Talers which cannot be donated. The purpose of this extra endowment is to ensure that subjects cannot run into losses in case of a subsequent payment.

in charitable giving.

Part four – Donation decision two: In part four, subjects again have the opportunity to donate money to the German "Red Cross". Similar as in part three, they can donate each integer between zero and 20 Talers.[6] By contrast, in this stage subjects know that no price effects can occur after they made their decisions.

We run a further treatment ("salience") to test whether crowding-out effects become smaller when the occurrence of price effects is more salient. Put differently, the treatment tests whether subjects are less prone to motivational crowding out when anticipating the occurrence of a price change more consciously.

In the salience treatment we modified the likelihood of the price changes in part three. Before subjects make their donations, they know that the computer randomly selects one out of *two* states. With a probability of 1/2 it is possible that subjects will be matched to the "reimbursement-" or to the "subsequent-payment" state. Hence, the likelihood for a price change increased from 1/3 to 1/2. Similar as in part three of our main treatment, the experimenter reimbursed 50% of the donations in the "reimbursement" state. Accordingly, subjects who are matched to the "subsequent-payment" state have to make an additional payment of 50% of the donated amount. Everything else (part one, two, and four) was identical to the main treatment.

Procedures: In the beginning of the experiment, subjects were informed that it consists of four different parts. Before each part started, subjects only received the instructions of the subsequent part. They knew that they will get new instructions at the end of a part before the next one would start. After part four was finished, subjects completed a short version of the "Big Five" personality questionnaire.

The experiment was programmed in z-Tree (Fischbacher, 2007). In total we had 168 subjects (82 women; 86 men) from various subjects. We ran four sessions of our main treatment, whereas three sessions were conducted of the salience treatment. One session encompassed 24 subjects. We recruited the participants with ORSEE (Greiner, 2004). The experiment was conducted at the University of Göttingen. The sessions lasted approximately 45 minutes and participants earned 15.73€ on average. They did not receive a show-up fee.

[6]To ensure comparability with the donation decision in stage three, subjects receive an extra endowment of 10 Talers. This endowment could not be donated.

3 Hypotheses

In our design, price effects occur randomly after the donation decisions in stage one. The experience of a price effect may have motivational consequences on subjects' decisions to donate in stage two. These motivational crowding out effects only apply to the reimbursement- and subsequent-payment state, but not to the neutral state.

In the reimbursement scenario it holds that from a standard economic point of view, subjects who receive a payment should increase donations, since they additionally face positive wealth effects. However, if subjects' intrinsic motivation is high, it is likely that paying financial rewards substitutes their intrinsic motivation (Gneezy et al., 2011). Thus, we expect that these subjects decrease giving at the second stage after they experienced a reimbursement.

By contrast, charging donors for doing something good resembles our subsequent-payment scenario. From a standard economic point of view, donors who have to make a subsequent payment should decrease their donations as they additionally face negative wealth effects. For subjects with a high degree of intrinsic motivation, we expect that motivational crowding-out effects should occur. The reason is that subjects are punished for doing something good. Thus, they should lower their donations at the second stage, after they experienced a subsequent payment.

Hypothesis 1

In contrast to the neutral state, subjects with a high degree of intrinsic motivation

(a) donate less after the experience of a reimbursement.

(b) donate less after the experience of a subsequent payment.

Since motivational crowding out requires a sufficiently high degree of intrinsic motivation, we do not expect these effects for all subjects. Hence, subjects with a low degree of intrinsic motivation should be less prone to motivational crowding out.

Hypothesis 2

In contrast to the neutral state, subjects with a low degree of intrinsic motivation will not lower their donations after the experience of a reimbursement-/subsequent-payment state.

4 Results

In this section we present our main results. We start with non-parametric tests and finish with regression analyses. When reporting non-parametric tests, we always apply two-sided p-values. Since Hypotheses 1 and 2 are addressed to different types of subjects, we first classify donors conditioned on their level of prosociality.

4.1 Classification of donors

Table 2 presents the distribution of subjects' guilt parameters (β). We use β as a proxy for prosocial behavior. Note that the correlation between subjects' β's and their donation in stage one is highly significant (Spearman, $p < 0.001$; see also Table 6 in the Appendix). This is in line with the idea that subjects with higher β's behave more prosocial.

Table 2 classifies subjects according to three β-intervals, which equally divide the sample.[7] Our β-distribution exactly replicates the one obtained by Blanco, Engelmann, and Normann (2011). A Kolmogorov-Smirnov test reveals no significant difference between our and their data (D = 0.086, $p = 0.883$).[8]

β interval	# obs.	frequency
$\beta \leq 0.275$	46	0.32
$0.275 < \beta \leq 0.525$	47	0.33
$0.525 < \beta$	50	0.35

Table 2: Distribution of subjects' guilt parameters (β's).

Figure 1 illustrates subjects' donations conditioned on β. We again find that dictator giving in stage one is nicely predicted by the β-levels. That is, subjects in the low-β intervals (left and middle panels) give nothing, in about 50 percent of the cases. The distributions of these subjects do not significantly differ (Kolmogorov-Smirnov test, $p = 0.437$). Turning to subjects with high betas ($\beta > 0.525$), we find that zero donations occur significantly less frequently (in 26 percent of the cases) as compared to low-beta subjects (Mann-Whitney test, $p = 0.013$).

Importantly, the donation behavior of these subjects is significantly different from subjects with low betas (left and middle panels) (Kolmogorov-Smirnov test,

[7] 25 subjects have multiple switching points. We cannot determine a beta for these subjects.
[8] See Table 5 and Figure 5 in the Appendix for comparisons of our and their β-distributions.

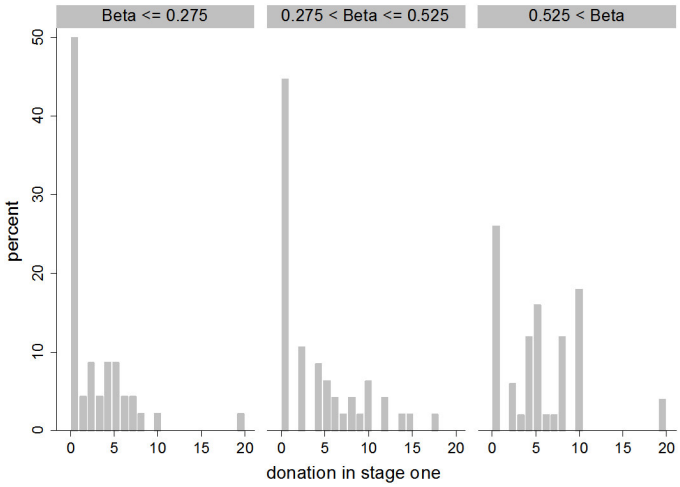

Figure 1: Donation behavior in stage one conditioned on beta.

$p = 0.010$). Hence, we classify subjects with $\beta \leq 0.525$ as "low types", whereas the term "high types" will be used for subjects with $\beta > 0.525$.

4.2 Main results

We find no significant differences between donations in stage one and two of our treatments (less and more salient uncertainty).[9] Thus, we merge this data for the subsequent analysis. Before we study the changes in donations conditional on the realized state, we take a look at the average donations across states. In stage two, we observe that high types reduce their donations by 1.48 (-28%). Whereas low types decrease their donations only by 0.47 (-14.6%). The absolute changes of low and high types are significantly different (Mann-Whitney test, $p = 0.038$). Note that, the result cannot be caused by income effects as positive (reimbursement) and negative (subsequent payment) transfers cancel out.[10]

Figure 2 presents our main results, it overviews the change in absolute giving between stage one and two. Following our previous classification, the diagram conditions subjects on *high types* (left panel) and *low types* (right panel). We start reporting the results of high types (right panel). After experiencing a reimburse-

[9]This is supported by Kolmogorov-Smirnov tests analyzing differences in donations in stage one ($p = 0.503$), in stage two (reimbursement: $p = 0.703$; subsequent payment: $p = 0.987$), and in the absolute change of giving between the two stages (reimbursement: $p = 0.995$; subsequent payment: $p = 0.818$). See Figure 2 in the Appendix for CDFs.

[10]The net transfer level resulting from reimbursements and subsequent payments is not different different form zero for both types (t-tests, low types: $p = 0.334$, high types: $p = 0.374$.

ment in stage two, we find that high types obviously show a motivational crowding out effect. That is, they significantly reduce their donations between part one and two by 2.6 (Wilcoxon matched-pairs test, $p = 0.029$). This is not the case, when no price effect occurred (neutral state). Here, high types moderately decrease their donations by -0.6. The difference is not significant (Wilcoxon matched-pairs test, $p = 0.418$). This supports Hypothesis 1a. Moreover, we find that subjects who had to make a subsequent payment do not significantly lower their donations (Wilcoxon matched-pairs test, $p = 0.103$). Thus, we find no support for Hypothesis 1b.

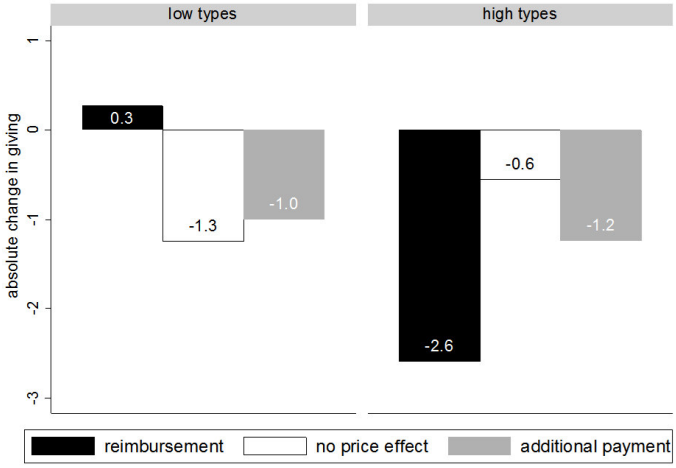

Figure 2: The change in absolute giving conditioned on the two fairness types.

Result 1

(a) High types show a motivational crowding-out effect after a reimbursement.
(b) No motivational crowding out can be observed after an additional payment.

Focusing on low types, we do not find a motivational crowding out effect after a reimbursement (Wilcoxon matched-pairs test, $p = 0.554$). At the same time, they neither significantly reduce their donations after the experience of a neutral state (Wilcoxon matched-pairs test, $p = 0.183$), and after the experience of a subsequent payment (Wilcoxon matched-pairs test, $p > 0.05$). Hence, we find support for Hypothesis 2.

Result 2

Low types never show a motivational crowding-out effect: neither after reimbursements, nor after subsequent payments.

To get a better idea on the magnitude of the reactions of low and high types, Figure 3 compares the change in giving between the two types. The diagram depicts the change in donation behavior between stage one and two. It conditions the changes on the three states (reimbursement, no price effect, subsequent payment).[11]

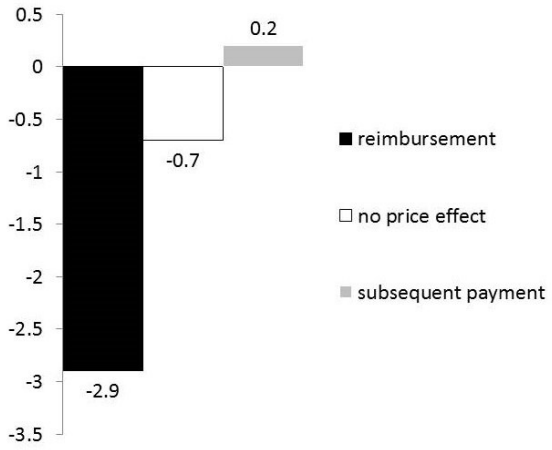

Figure 3: Change in absolute giving between high and low types conditioned on the three states.

Strikingly, we observe that the change of donations between high and low types differs the most (-2.9) in the reimbursement case. Whereas, the differences are close to zero for the case of no price effect (-0.7) and the subsequent payment. This once more emphasizes the strong potential for motivational crowding out effects if subjects receive monetary compensations for their social acts.

4.3 Regression analyses

To get a broader understanding of crowding out effects we will now conduct regression analyses. Given the ordinal structure of our dependent variable, we run ordered logit regressions (see Ben-Ner, 2004; Krupka and Weber, 2013).

Table 3 presents three regression models analyzing the change in absolute giving between stage one and two. Our regression models especially control for the reaction of fairness types to the different price effects. In the table we report 5% and 1% significance levels. In model (1) we include *high type* as dummy variable, which is positive for high types. We also incorporate indicator variables controlling whether

[11] We thank Stephan Meier for pointing out this aspect to us.

a fairness type experienced a certain price effect. The models make use of indicator variables (*high type reimbursement* and *low type reimbursement*), controlling whether subjects faced positive price effects.

	change in absolute giving					
	(1)		(2)		(3)	
high type	0.450	(0.720)	0.611	(0.734)	0.601	(0.741)
high type reimbursement	-1.348*	(0.664)	-1.431*	(0.681)	-1.965**	(0.751)
low type reimbursement	0.944	(0.626)	1.040	(0.624)	0.887	(0.637)
high type subsequent payment	-0.740	(0.659)	-1.042	(0.688)	-0.706	(0.709)
low type subsequent payment	0.186	(0.623)	0.173	(0.619)	0.455	(0.644)
female			-0.894*	(0.369)	-0.926*	(0.371)
risk			0.017	(0.129)	-0.011	(0.130)
transfer					0.152	(0.085)
big five	no		yes		yes	
obs.	143		143		143	
Pseudo R^2	0.037		0.043		0.049	

Standard errors in parentheses; ** p<0.01, * p<0.05

Table 3: Ordered Logit regressions on the change in absolute giving.

We add further indicator variables (*high type subsequent payment* and *low type subsequent payment*) to account for the impact of the subsequent payment. The indicator variables are positive if the fairness types have experienced the corresponding price effect. In model (2) we additionally include a set of control variables, such as a dummy for subjects' gender (*female*) and a regressor controlling for subjects' risk preference (*risk*). The model also includes the "big five" personality traits measures. Finally, in model (3) we control for individual transfer levels by including *transfer*, which is positive for a reimbursement and negative in case of a subsequent payment. All three regressions use the case of no price effects (neutral state) as omitted variable.

Model (1) confirms the pattern observed in Figure 2. We find that *high type reimbursement* is negative and significant, i.e., high types substantially reduce their donations after experiencing a positive price effect (Hypothesis 1a). Remarkably, all

other indicator variables are not significant. The result is robust when controlling for the possible impact of gender, age and the "big five" (model (2)). Thus, model (1) and (2) confirm the results of the non-parametric tests. Model (2) reveals that *female* is negative and significant. This supports the view that the reduction of donations is more pronounced for women. A possible interpretation is that motivational crowding out effects are more likely for women, since they may behave more prosocial.[12] Since income effects caused by reimbursements and subsequent payments may influence the donation decision at stage two, model (3) controls for the level of transfers. It turns out that *transfer* significantly affects the change in absolute giving. However, we find that the inclusion of *transfer* increases the statistical and economic significance of *high type reimbursement*.

4.4 Aggregate results on donation behavior

Table 4 overviews the aggregate donation behavior in the two stages. It conditions on the three states: *reimbursement*, *subsequent payment*, and *no price effect*.

	donations (in Taler)		
	stage 1	stage 2	average
reimbursement	4.46 (4.67)	4.16 (5.22)	4.31 (4.41)
subsequent payment	4.22 (4.94)	3.37 (5.06)	3.79 (4.73)
no price effect	3.94 (4.44)	3.00 (4.24)	3.46 (4.13)
average	4.26 (4.72)	3.62 (4.98)	3.94 (4.48)
# obs.	168	168	168

Table 4: Donations over time in the three states. Standard deviations in parentheses.

Ignoring price effects our data show in stage one that subjects on average donate 4.26. This corresponds to a giving rate of 21% and confirms the results of common dictator games (see Forsythe et al., 1994; Camerer, 2003). Table 4 shows that overall average donations significantly decrease between stage one (4.26) and two (3.62) (Wilcoxon matched-pairs test, $p = 0.009$). This pattern holds in all three conditions. Thus, subjects show a deterioration effect of donations over time.[13] Interestingly, the deterioration effect is attenuated after subjects received a reimbursement. Here,

[12] In line with this we find that females mean β (0.50) is higher than males mean β (0.40).

[13] In stage two donations significantly decrease from 4.22 to 3.37 (Wilcoxon matched-pairs test, $p = 0.020$) after subjects had to make a subsequent payment. Whereas average giving is 3.94 in stage one and 3.00 in stage two when no price effect occurred (Wilcoxon matched-pairs test, $p > 0.05$).

subjects lower their donations from 4.46 to 4.16 (Wilcoxon matched-pairs test, $p = 0.614$). Our main results on type-specific donations highlighted that this is caused by low types who slightly increase their donations due to positive wealth effects. This attenuates the strong decrease in giving among prosocial individuals.

5 Discussion

In this section we discuss the robustness of our findings. In the regressions of Table 3 we control for risk attitudes which may impact donations at stage one and thereby influence the change in giving across the two states. However, since this effect applies to all states it should have no predictive power for the change in giving. This is confirmed by the insignificance of *risk* in model (2) and (3). Furthermore, the average giving rate of 21.3% at stage one is in line with the literature on giving in dictator games. This suggests, that subjects' concerns regarding the uncertain nature of the first donation were rather of second order (see Table 6 in the Appendix).

Let us now consider two forces which may occur as a result of income effects and which may drive the change in donations. First, subjects may be characterized by a positive income elasticity below one. In this case, they would generally decrease their donations between stage one and two, although they receive the same endowment in the two stages. Indeed, there is empirical evidence for a positive income elasticity below one.[14] This is confirmed in our data by an overall decrease in giving between the two donation stages (Wilcoxon matched-pairs test, $p = 0.001$). Second, additional income effects depend on the realized state and subjects' donation decision. These income effects which result from the price effects at the end of the first stage may induce different levels of donations in the consecutive stage. Thus, these effects may only play a role in case of a reimbursement or a subsequent payment, but not if the neutral state realized. If individuals are reimbursed we should expect an increase in giving in the second stage because of the empirical support for positive income elasticities for charitable giving. Analogously, we should expect a decrease in giving in stage two for the case of a subsequent payment. As a consequence, this type of income effects increase the chances of a false rejection of Hypothesis 1a and false acceptance of Hypothesis 1b. This bias underlines the strength of our

[14] All estimates reported in Bakija and Heim (2011) for income elasticities of charitable giving with respect to persistent and transitory income changes using a 1979-2006 panel of tax returns are positive, but fall short of unity.

non-parametric results with respect to Hypothesis 1a. We control for this income effect in model (3) of our regression analysis. As expected, the inclusion of *transfer* increases the statistical and economic significance of *high type reimbursement*.

Finally, we discuss potential effects induced by emotions which may be evoked by the realization of the random state. According to the theory of regret (Loomes and Sugden, 1982; Bell et al., 1982) individuals not only care about the actual outcome, but also about what they might have gotten if they would have decided differently. Moreover, people may also anticipate regret or rejoice (Zeelenberg, 1999). Hence, regret is not only an emotion which is felt *ex post*, but it may also impact decisions *ex ante*. Importantly, the anticipation of regret which would influence donations at stage one cannot explain our findings, since the induced effect would equally apply to all three states. An *ex post* effect of emotions like regret or rejoice would impact the second donation decision made after the realization of the random state. Individuals who experience a subsequent payment may consider this as bad luck or as an unfair outcome. Most likely a subsequent payment triggers negative emotions which induce a reduction of their second stage giving. This is confirmed by our data. Subjects after a subsequent payment reduce their donations more than subjects after the neutral state. However, this difference could be driven by negative income effects. On the other hand, if subjects get reimbursed this may evoke positive emotions and they may feel lucky, which would make them donate more but not less. If they feel regret that they donated too little in case of a reimbursement, this should rather motivate individuals to donate more. Instead, we observe the opposite.

In summary, neither risk preferences and income effects, nor psychological forces such as the feel of rejoice or regret can explain our findings regarding motivational crowding out. Moreover, our experimental design rules out other alternative explanations such as substitution effects or strategic considerations.

6 Conclusion

This paper aims to provide direct evidence for motivational crowding out in a lab setting. A particular interest was given to isolate alternative explanations for a decline in giving such as strategic motives. Another novel feature is the analysis of motivational crowding out for subjects characterized by different levels of prosociality. For this reason we analyze motivational crowding out in the domain of charitable

giving, which presumably highly depends on intrinsic motivation.

We test our hypotheses in a novel experimental framework where subjects face identical decision problems in terms of expectations in two consecutive stages. In both stages they can donate money in a dictator game with the German Red Cross as recipient. However, in stage one individuals do not know about the nature of the second stage. The first stage is modified by introducing "incentives" which are neutral in expectation and proportional to subjects' first stage giving. A random draw determines the nature of the shock between the two stages. More precisely, this realized state maybe either a reimbursement, a subsequent payment or a neutral state. At the second stage participants play a standard dictator game with the German Red Cross. In other words, at the first donation decision the effective price of giving is *ex ante* uncertain. After the experience of a "subsidy"/"tax" on the price of giving, subjects take a second donation decision. They therefore experience the material consequences of incentives which are neutral in expectation.

Our main finding is that prosocial types reduce their donations in the second giving decision more than low types. This reduction is indeed driven by the case where these donors experienced a reimbursement. Importantly, in this scenario they reduce their giving more than four times as much as similarly motivated individuals who did not experience any price effect. Given our novel experimental design, these findings cannot be driven by substitution effects or strategic reasoning. Furthermore, other forces like income effects or emotions evoked by the realization of the random state can be ruled out. Thus, we provide clear evidence for motivational crowding out among prosocial subjects in the important domain of charitable giving. These insights may be important to better understand subjects' motivations to give and may help to align policy measures.

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Appendix

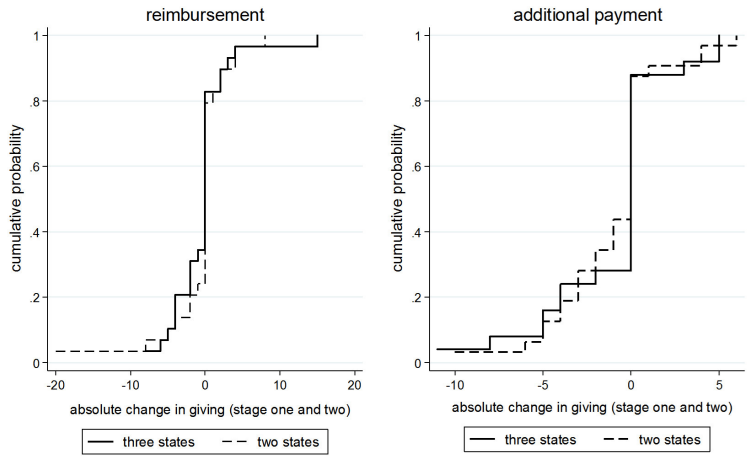

Figure 4: CDFs of the distributions of the absolute change in giving after a reimbursement (left panel) and an subsequent payment (right panel) in our two treatments.

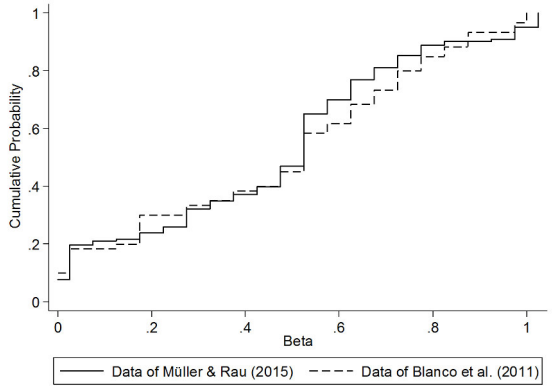

Figure 5: CDFs of the beta distributions of our data and Blanco et al. (2011).

β	Our data	Blanco et al. (2011)
$\beta < 0.235$	26%	29%
$0.235 \leq \beta < 0.5$	21%	15%
$0.5 \leq \beta$	53%	56%
obs.	143	61

Table 5: Distribution of β in our data and in Blanco et al. (2011).

	donation at stage one	
risk	-0.065	(0.286)
β	3.618**	(1.245)
female	2.161**	(0.756)
constant	1.516	(1.338)
N	143	
R^2	0.138	

Standard errors in parentheses
** p<0.01, * p<0.05

Table 6: OLS regression on first-stage donations.

Choice set

Person A's Payoff	Person B's Payoff	Decision	Person A's Payoff	Person B's Payoff
20	0	Left Right	0	0
20	0	Left Right	1	1
20	0	Left Right	2	2
20	0	Left Right	3	3
20	0	Left Right	4	4
20	0	Left Right	5	5
20	0	Left Right	6	6
20	0	Left Right	7	7
20	0	Left Right	8	8
20	0	Left Right	9	9
20	0	Left Right	10	10
20	0	Left Right	11	11
20	0	Left Right	12	12
20	0	Left Right	13	13
20	0	Left Right	14	14
20	0	Left Right	15	15
20	0	Left Right	16	16
20	0	Left Right	17	17
20	0	Left Right	18	18
20	0	Left Right	19	19
20	0	Left Right	20	20
20	0	Left Right	21	21

Table 7: Subjects' 22 choices as person A in the Blanco et al. (2011) elicitation task.

Appendix: Experimental Instructions
(not intended for publication)

Information on the experiment Introductory Part

General Information:
Please carefully read these instructions. Please turn off your cell phone. It is particularly important that you do not talk to any of the other participants until the experiment is over. If you have questions, please raise your hand; we will come to your desk and answer it privately. By taking part in this experiment, you have the possibility to earn money. The amount you earn will depend on your decisions. After the experiment has finished you will be paid anonymously in cash.

Course of the Experiment:
The experiment consists of three main parts (introductory part, part one and part two) where you will have the opportunity to earn money. The introductory part encompasses two tasks. After you have completed these tasks you will receive new instructions explaining part one.
After the experiment has finished (after the completion of part one and two) you will be informed on your earnings of the introductory part.

Please bear in mind that the completion of the introductory part has no consequences for the sequel of the experiment. Part one will start after you have completed the two tasks of this part. In what follows, we describe the functioning of the two tasks comprising the introductory part.

Task 1:
All payments in task one are processed in Taler. The amount of Taler you earned will be converted into Euro and is paid at the end of the experiment, i.e. after part one and two.
The following exchange rate applies:

1 Taler = 15 Euro cent

Person A is asked to choose between two possible distributions of money between her and Person B in twenty two different decision problems. Person B knows that A has been called to make those decisions, and there is nothing he can do but accept them.

The roles of Person A and Person B will be randomly determined at the end of the experiment (after part two) and will remain anonymous.
Before making your decisions please read carefully the following paragraphs.
The decision problems will be presented in a chart. Each decision problem will look like the following:

Person A's Payoff	Person B's Payoff	Decision	Person A's Payoff	Person B's Payoff
20	0	Left Right	5	5

You will have to decide as Person A; hence if in this particular decision problem you choose left, you decide to keep the 20 Talers for you so Person B's payoff will be 0 Taler. Similarly, if you choose Right, you and the Person B will earn 5 Talers each.
You will need to choose one distribution (Left or Right) in each of the twenty two rows you will have in the screen.

If this is chosen as the payoff relevant section, the computer will randomly choose one of the twenty two decisions at the end of the experiment (after part one and two). The outcome in the chosen decision will then determine your earnings.
The computer will randomly pair you with another participant in the room and will assign the roles. The matching and roles assignment will remain anonymous.
Please note that you will make all decisions as Person A but the computer might assign you Person B's role.

If you are assigned the role of A, you will earn the amount that you have chosen for Person A in the relevant situation and the person paired with you will earn the amount that you have chosen for Person B.

In the case that you are assigned the role of Person B, you will earn the amount that Person A whom you are paired with has chosen for Person B in the relevant situation.

<u>Please note:</u>

The random draws will not be realized before the experiment has ended (i.e., after part one and two). Then, you will be informed on your payoff you earned in part one.

Task 2 will start after you have made your decisions in task one.

Task 2:

The payoffs in task 2 are given in Euros. The money you earn in task two will be paid out after the end of the experiment (i.e., after part one and two).

In task two you will find the following decision problem:

You will have to choose one out of five gambles. Each gamble may lead to two possible outcomes (A and B). Each of the outcomes A and B will realize with a probability of 50%. The gambles differ in the possible levels of profits yielded by the outcomes A and B.

The decision problems of task 2 are given by a table with 5 rows (each row corresponds to a gamble).

Please choose exactly one lottery in task 2. You can do this by check marking your desired gamble in the column called “my decision”.

Please note: The random draw will not be realized before the experiment has ended (i.e., after part one and two). Both outcomes will realize with a probability of 50%. Then, you will be informed on your payoff you earned in part one and two.

Part one will start after you have made your decision. Then you will be given the instructions for part one.

Information on the experiment PART 1

In part 1 of the experiment all decisions will be reached in ECU. At the end of the experiment your ECU payoff will be transformed to Euros. In part 1 and part 2 to you will be given the possibility to earn money.

In part 1 we will make use of the following exchange rate:

4 ECU = 1 Euro

Procedure of the experiment:

For the participation in part 1 of the experiment you will get:

1.) an endowment of: **20 ECU**
2.) an extra capital stock of: **10 ECU**

In part 1 of the experiment you will be given the possibility to donate **ECU** to the "German Red Cross." Therefore you have to decide on the allocation of the **20 ECU** between **you and the recipient** ("German Red Cross").

In this regard, the following question will be displayed on the computer screen:

"Decide between the allocation of the 20 ECU between you and the German Red Cross."

I allocate the following split to the German Red Cross: _____

I allocate the following split to me: _____

Afterwards, please fill your choices in the input fields.

Please not that:

- For the allocation decision you can only use your *endowment* (20 ECU).
- You have to split the complete *endowment* (20 ECU).
- You may only allocate integers (0-20 ECU).
- The donated amount will remain anonymous after the end of the experiment.

- The transfer of the total donated amount by all participants will be done online by the experimenters. This will happen after the end of the experiment. All participants are invited to stay and to watch us doing this.

After you made your decision, the computer will conduct a random draw. This leads to three possible states (A, B, C). Each of these states materializes with the same probability (1/3):

State A:

You willl get a reimbursement on the level of your donations. The level of the reimbursement corresponds to 50% of the donated amount. The reimbursement is determined as follows:

Reimbursement = donated amount x 0.5.

Example 1: Assume you donated 10 ECU, then the reimbursement will be 5 ECU.

In this case, your payoff in part 1 corresponds to:

Endowment - donation + extra capital stock + reimbursement

In numbers: Your payoff = 20 ECU – 10 ECU + 10 ECU + 5 ECU = 25 ECU

Example 2: Assume you donated 0 ECU, then the reimbursement will be: 0 ECU.

In numbers: Your payoff = 20 ECU – 0 ECU + 10 ECU + 0 ECU = 30 ECU

State B:

You have to do a subsequent payment on your donations. The level of the subsequent payment is determined as follows:

Subsequent payment = donated amount x 0.5.

The subsequent payment will be offset with the extra capital stock (see example 1, on the next page).

Example 1: Assume you donated 10 ECU, then the subsequent payment corresponds to: 5 ECU.

In this case, your payoff in part 1 corresponds to:

Endowment – donation + extra capital – subsequent payment

In numbers: 20 ECU – 10 ECU + 10 ECU - 5 ECU = 15 ECU

Example 2: Assume you donated 0 ECU, then the subsequent payment is: 0 ECU.

In numbers: 20 ECU – 0 ECU + 10 ECU + 0 ECU = 30 ECU

State C:

In this state there will be no reimbursement and no subsequent payment.

Example 1: Assume you donated 10 ECU.

In this case, your payoff in part 1 corresponds to:

Endowment – donation + extra capital stock

In numbers: 20 ECU – 10 ECU + 10 ECU = 20 ECU

After you made your decision you will be informend on the state which materialized. Afterwards, part 2 will start. In this regard you will be given new instructions.

Please raise your hand if you have questions to part 1. In this case we will come to you and answer your questions individually.

Information on the experiment PART 1 (salience treatment)

In part 1 of the experiment all decisions will be reached in ECU. At the end of the experiment your ECU payoff will be transformed to Euros. In part 1 and part 2 to you will be given the possibility to earn money.

In part 1 we will make use of the following exchange rate:

4 ECU = 1 Euro

Procedure of the experiment:

For the participation in part 1 of the experiment you will get:

1.) an endowment of: **20 ECU**
2.) an extra capital stock of: **10 ECU**

In part 1 of the experiment you will be given the possibility to donate **ECU** to the "German Red Cross." Therefore you have to decide on the allocation of the **20 ECU** between **you and the recipient** ("German Red Cross").

In this regard, the following question will be displayed on the computer screen:

"Decide between the allocation of the 20 ECU between you and the German Red Cross."

I allocate the following split to the German Red Cross: _____

I allocate the following split to me: _____

Afterwards, please fill your choices in the input fields.

Please not that:

- For the allocation decision you can only use your *endowment* (20 ECU).
- You have to split the complete *endowment* (20 ECU).
- You may only allocate integers (0-20 ECU).
- The donated amount will remain anonymous after the end of the experiment.

- The transfer of the total donated amount by all participants will be done online by the experimenters. This will happen after the end of the experiment. All participants are invited to stay and to watch us doing this.

After you made your decision, the computer will conduct a random draw. This leads to two possible states (A, B). Each of these states materializes with the same probability (1/2):

State A:

You willl get a reimbursement on the level of your donations. The level of the reimbursement corresponds to 50% of the donated amount. The reimbursement is determined as follows:

Reimbursement = donated amount x 0.5.

Example 1: Assume you donated 10 ECU, then the reimbursement will be 5 ECU.

In this case, your payoff in part 1 corresponds to:

Endowment - donation + extra capital stock + reimbursement

In numbers: Your payoff = 20 ECU – 10 ECU + 10 ECU + 5 ECU = 25 ECU

Example 2: Assume you donated 0 ECU, then the reimbursement will be: 0 ECU.

In numbers: Your payoff = 20 ECU – 0 ECU + 10 ECU + 0 ECU = 30 ECU

State B:

You have to do a subsequent payment on your donations. The level of the subsequent payment is determined as follows:

Subsequent payment = donated amount x 0.5.

The subsequent payment will be offset with the extra capital stock (see example 1, on the next page).

Example 1: Assume you donated 10 ECU, then the subsequent payment corresponds to: 5 ECU.

In this case, your payoff in part 1 corresponds to:

Endowment – donation + extra capital – subsequent payment

In numbers: 20 ECU – 10 ECU + 10 ECU - 5 ECU = 15 ECU

Example 2: Assume you donated 0 ECU, then the subsequent payment is: 0 ECU.

In numbers: 20 ECU – 0 ECU + 10 ECU + 0 ECU = 30 ECU

After you made your decision you will be informend on the state which materialized. Afterwards, part 2 will start. In this regard you will be given new instructions.

Please raise your hand if you have questions to part 1. In this case we will come to you and answer your questions individually.

Information on the experiment PART 2

In the following part 2 of the experiment all decisions will be made in ECU. At the end of the experiment you will get your payoff which will be transferred to Euro. Additionally you will get the payoffs you earned in the introductory part and part 1.

We will make use of the following exchange rate:

4 ECU = 1 Euro

Procedure of the experiment:

For the participation in part 2 you will get :

1.) an endowment of: **20 ECU**
2.) an extra capital stock of: **10 ECU**

In part 2 of the experiment you will be given the possibility to donate **ECU** to the "German Red Cross." Therefore you have to decide on the allocation of the **20 ECU** between **you and the recipient** ("German Red Cross").

In this regard, the following question will be displayed on the computer screen:

"Decide between the allocation of the 20 ECU between you and the German Red Cross."

I allocate the following split to the German Red Cross: _____

I allocate the following split to me: _____

Afterwards, please fill your choices in the input fields.

Please not that:

- For the allocation decision you can only use your *endowment* (20 ECU).
- You have to split the complete *endowment* (20 ECU).
- You may only allocate integers (0-20 ECU).
- The donated amount will remain anonymous after the end of the experiment.
- The transfer of the total donated amount by all participants will be done online by the experimenters. This will happen after the end of the experiment. All participants are invited to stay and to watch us doing this.

After you made your decision in part 2, the experiment will be finished. The computer will conduct **no** random draw in part 2. That is, no reimbursement and no subsequment payment may follow.

In what follows, the computer will determine your payoffs of the introductory part. Afterwards you will be informed on your payoffs in part 1 and part 2.

Then you will be paid out in cash. Afterwards, we will do the online transfer of the total donated amount.

Please raise your hand if you have questions to part 1. In this case we will come to you and answer your questions individually.