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ABSTRACT

Incentives for Cooperation in Teams: Sociality Meets Decision Rights*

We investigate the effect of a donation incentive tied to contributions to a public good when group members can decide on the size of the donation to be made. An up to 20 % donation of the public good was implemented either exogenously or endogenously by group members. In the Vote treatment, groups could either decide in favor of or against a donation of 20 % of the public good; in the Vote Share treatment, subjects could decide on a donation share of between 0 % and 20 %. Results show that a large percentage of the participants vote in favor of implementing a donation share in both treatments. Voting in favor of a 20 % donation share or endogenously implementing a high donation share in the Vote Share treatment has positive effects on contributions to the public good compared to an exogenously implemented donation share.

JEL Classification: C72, C92, D64, D70, J33, M52

Keywords: donations, decision right, public good game, team incentives, laboratory experiment, charitable giving

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1 Introduction

Nowadays, corporate social initiatives seem to be of great relevance to a large proportion of the workforce. Survey results indicate that 79 % of job seekers consider the corporate social initiatives of a firm when choosing a workplace. A further 76 % of workers would accept a reduced salary when accepting a corporate position within a company that considers its social responsibilities. For employees aged 27-35, these statistics show even stronger results (CONE Communications, 2016). This may be one of the reasons why companies continue to develop social activities and programs within their workplaces in order to attract, motivate, and retain talented employees.

One common social strategy that is implemented in companies is that of engagement with charity organizations through giving donations. A case-specific example of such an implementation is evidenced in Whole Foods Market, which holds "5 % Days" where five percent of their net sales are donated to local nonprofits (Whole Foods Market, 2021). Peg Cancienne, the Customer Connection Specialist at Whole Foods Glendale states: "[…] I know that the 5 % Days are important to a number of our team members. [….] 5 % Days are seen as opportunities to spread some goodwill and this is appreciated by everyone – customers, organizations and our team members all benefit. It is a true win-win-win partnership!" (E-Mail from 17.10.2017).[1] Aside from obvious perceivable benefits, such as improved customer loyalty and desirability of job offers (e.g. Brønn & Vrioni, 2001; Kim & Park, 2011), corporate social presence may also have a positive impact on the performance of employees within the firm (e.g. Charness, Cobo-Reyes, & Sánchez, 2016; Crumpler & Grossman, 2008; Eckel & Grossman, 1996; Kajackaite & Sliwka, 2017; Tonin & Vlassopoulos, 2014b, 2014a). Recent research indicates the positive influence of social activities on cooperation in teamwork. For example, Butz and Harbring (2020) find that donation payments directly tied to contribution levels in a public good game lead to a significant rise in contributions. Nevertheless, there is further potential for improving donation payments and the question remains of how donations should be implemented as part of the incentive toolbox of organizations.

[1] A further example is "1 % for the planet", which provides a platform for businesses to donate 1 % of their sales to environmental causes (One percent for the planet, 2021).

Donations being tied to a measure of productivity, e.g. a work group's performance, could potentially enable companies to improve employees' cooperation behavior. Entitling individual workers to make a decision on the donation to be made may be an additional way of encouraging employees' contribution. Employees strive to be self-determined and they show a keenness to structure their own work environment autonomously (e.g. Bartling et al., 2013; Charness et al., 2012; Falk & Kosfeld, 2006; Fehr et al., 2013; Frey & Benz, 2008). Related literature indicates that endogenous decision-making may lead to higher work motivation and work performance (e.g. Deci et al., 2017; Foss et al., 2009; Kuvaas, 2008; Patall et al., 2008; Patall, 2012).

Self-determination also seems to be important with regard to corporate social initiatives. The "Employee Engagement Report 2016" indicates that 78 % of employees would like to take an active role in their business's CSR activities (CONE Communications, 2016). Furthermore, research indicates that the delegating of decision rights on corporate social actions seems to be a promising avenue for enhancing the performance of employees (Tonin & Vlassopoulos, 2014a).

Therefore, the following research was undertaken to provide insights on how sociality combined with endogenous decision making can be used to create value in firms by encouraging cooperation in teams. In this study, we investigate whether and, if so, to what extent the entitlement of individuals to decide about the amount of a donation tied to group performance might influence cooperation levels in teams.

We conducted a laboratory experiment in order to analyze this research question. Participants in our experiment played a repeated public good game which could include a donation share of up to 20 %. In the case of a donation, the sum of contributions to the public good was reduced by the donation amount. We varied whether the donation share was set exogenously by the experimenter or endogenously decided on by the group members.

2 Related Literature

In this section, we outline relevant literature on the effect on performance of delegating decision rights in the workplace. Regarding our setting, it seems to be especially important to highlight research into the delegation of decision rights: whether and how a social incentive, i.e. making a donation, should be included in a wage package. Theory predicts that delegation of decision rights leads to a higher willingness to cooperate and to more personal initiative of the controlling party (e.g. Aghion et al., 2004; Aghion & Tirole, 1997; Grossman & Hart, 1986), since people seem to strive towards autonomy (e.g. Deci & Ryan, 1985, 2000; Ryan & Deci, 2000). Several studies have experimentally examined these predictions.

Existing research indicates that the holding of decision rights seems to have a motivational value per se. For example, Fehr et al. study the motivation and incentive effects of authority in an authority-delegation game. Results indicate that controlling the decision right itself increases effort levels significantly, while not holding the decision right decreases effort levels and results in decreased payoffs for both parties. Additionally, an underdelegation of decision rights was observed compared to the equilibrium that would have made both parties better off (Fehr et al. 2013). Other research supports the finding that decision rights themselves hold intrinsic value for the controlling person (e.g. Bartling et al., 2014; Owens et al., 2014).

Charness et al. (2012) used a gift-exchange game to analyze how the delegation of decision rights influences employees' effort levels. In their setting, the firm (principal) could either keep the decision right on a worker's (agent) wage or could delegate that decision to the worker. After a wage had been set, either by the principal or the agent, the agent made a decision about the effort level. Results reveal that effort levels significantly improve when wages are set endogenously even if wages do not differ. Furthermore, payoffs are higher for the firm as well as for the employee, which yields a win-win situation when decision rights are transferred to the worker (Charness et al., 2012). These results are also robust in a setting with two workers (Charness, Cobo-Reyes, Lacomba et al., 2016). Further research supports the positive effect which being delegated a decision right has on productivity (e.g. Bartling et al., 2013), while other research demonstrates the negative effects of control on productivity levels (e.g. Falk & Kosfeld, 2006; Frey, 1993).

Gneezy and Fershtman included a delegation right for a proposer as well as for a responder in an ultimatum game, where they could pass on their decision rights in the game to another agent. Results show a significant increase of the proposer's payoff if her decision right is delegated to the agent. Possible reasons might be the weakening of negative reciprocal behavior of the responder towards the proposer when the agent holds the decision right instead of the proposer. Further, the proposer might anticipate this behavior and strategically decide to delegate her decision right to the agent (Fershtman and Gneezy 2001).

In our setting, participants are able to decide whether and to what extent to include a social incentive – charitable donations – in their group payment scheme. Therefore, it is especially relevant to outline research results on decision rights including sociality.

Indications of the effects of decision rights on social incentives can be found in the mission-match literature. Research shows that for a worker it is, on the one hand, important that a job itself has a social mission, i.e. to give donations (e.g. Cassar, 2019; Fehrler & Kosfeld, 2014), and, on the other hand, that the worker's mission fits the company's mission (e.g. Carpenter & Gong, 2016; Koppel & Regner, 2014). For example, Koppel and Regner conducted a principal-agent experiment in which the performance of the agent not only defines the principal's output but also generates charitable donations. In their setting, both the principal and the agent could select one of five charities, while it was varied which chosen charity received the donation amounts at the end. Results reveal that it is not only important for the agent to work for her own chosen charity but also that the principal's selection matches hers (Regner & Koppel, 2019). Further, experimental field research by Jeworrek and Mertins supports the finding that the mission of a job has a positive effect on the performance level of a worker. However, it seems to be relevant that an employee self-selects into a job that includes a social aspect (Jeworrek & Mertins, 2019).

Kajackaite and Sliwka (2017) analyze possible mechanisms for the described research results. In a laboratory experiment, they let the principal decide whether to donate money to a charitable organization from her endowment. Afterwards, the agent was informed about the donation decision and could choose

how much money to transfer from his endowment to the principal. Their findings indicate that transferred amounts rise significantly when the principal donates. Distributional concerns and reciprocal altruism are indicated to be drivers of their results.

Besides altruistic preferences, people might also be driven by a *warm glow* feeling when endogenously deciding about whether to give a donation. Research indicates that the actual act of giving causes a positive feeling, and it might be important to actively participate, e.g. to give your own money, in the process (e.g. Andreoni, 1989, 1990; Crumpler & Grossman, 2008; Imas, 2014). Therefore, having the chance to actively decide in favor of a donation incentive might also increase *warm glow* feelings.

Most closely related to our study is the work of Tonin and Vlassopoulos (2014b). They implemented either financial incentives, social incentives, or a combination of both into a field real-effort task. The social incentive was either a variable or lump-sum charitable donation. Their results reveal that productivity increases by 13 % when including a social incentive for participants with initial low productivity. Additionally, they included a choice mechanism where participants could divide a variable incentive between themselves and the charity. Each share given to the charity was doubled by the experimenter. Results show that 52 % of participants gave a donation share to the charity. Furthermore, results indicate a significant positive effect on the performance when participants endogenously decide about the donation share (Tonin & Vlassopoulos, 2014a). Whereas they investigate the effect of incentives on the efforts of individuals who are working independently of others, we analyze whether the inclusion of decision rights on a social incentive leads to higher cooperation in teams.

Further, the following research adds to the results of Butz and Harbring (2020), as we extend their basic setup in order to analyze the effect of decision rights in a socially incentivized public good game. In their setting, a mandatory 20 % donation share of the public good contributions was either subsidized by the experimenter or paid from the group members' contributions to the public good game. Results show that cooperation rises significantly when donations to charitable organizations are financed by the experimenter and that charitable donations which are financed by the group members' contributions can compensate for a lower efficiency level. They outline reciprocal altruists (see also Kajackaite & Sliwka, 2017) as one important subgroup driving their results. As research indicates that decision rights

themselves might have a positive impact on employees' motivation and effort levels, the question arises of whether companies should exogenously decide to implement a donation incentive of this kind or whether employees should be involved in the decision making process.

The following research focuses on the internal setting of Butz and Harbring (2020) in which donations to charitable organizations are financed by the team members' contributions to a public good game. Within this setting, we let participants endogenously decide to implement the internally financed donation share in their payoff function. Consequently, our results might demonstrate whether it is advisable for a company to delegate the decision right on implementing the donation incentive to the employees or to set the decision exogenously by the company.

3 Experimental Design

3.1 Treatments

A laboratory experiment was conducted using a public good game to capture the degree of cooperation within a team (Ledyard). In total, four treatments using a between-subject design were conducted. Each group was formed of four group members. In the *Baseline* treatment, we used an (exogenously set) 20 % donation share to model a corporate social act of giving determined by an organization (Crumpler & Grossman, 2008). In the decision treatments, participants could either vote in favor of or against a 20 % donation or they could state a donation share of between 0 % and 20 %, the average of which was implemented. The donation amount was directly tied to the sum of contributions to the public good and was financed by deducting the amount from the doubled group's contributions. The design of the public good game followed standard procedure. We implemented a repeated public good game over ten rounds using a partner setting. The endowment was set to 20 tokens and the marginal per capita return (MPCR) was 0.5 (Andreoni, 1988, 1995).

Data were collected from 328 participants, of whom 56 % were male and 44 % female. Participants were mainly students (93 %), but also doctoral candidates, trainees, and employees (7 % in total). The average age was 24 years. Payoffs were on average 14.27 €. Charitable organizations received in total 606.21 € from the experiment.

Table 1 illustrates the different payoff functions. The *Baseline* treatment considers the defined characteristics of the public good game without any donation payment. In the *Baseline Donation* treatment, a group donation share d_j of 20 % of the doubled contributions of all group members is implemented. This amount is subtracted from the total sum of contributions, which means that only 80 % of the doubled contributions are distributed among the group members. In this setting, autonomy is lowest, as donation payments are exogenously set.

Table 1: Treatments

Treatment	Payoff Function $\pi_i(g_1 \dots g_4) =$	Group Donation		
		Decision Right	Share $d_j \in [0, 0.2]$	Donation Amount
Baseline	$20 - g_i + \frac{1}{4} * 2 * \sum_{i=1}^{4} g_i$	No Decision Right	0	0
Baseline Donation	$20 - g_i + 0.8 * \frac{1}{4} * 2 * \sum_{i=1}^{4} g_i$	No Decision Right	0.2	$0.2 * 2 * \sum_{i=1}^{4} g_i$
Vote	$20 - g_i + (1 - d_j) * \frac{1}{4} * 2 * \sum_{i=1}^{4} g_i$	Decision Yes/No	$dj \in \{0, 0.2\}$	$d_j * 2 * \sum_{i=1}^{4} g_i$
Vote Share	$20 - g_i + (1 - \frac{1}{4} * \sum_{j=1}^{4} d_i) * \frac{1}{4} * 2 * \sum_{i=1}^{4} g_i$	Decision on Share	$\frac{1}{4} * \sum_{i=1}^{4} d_i$	$\frac{1}{4} * \sum_{i=1}^{4} d_i * 2 * \sum_{i=1}^{4} g_i$

In the *Vote* treatment, participants are allowed to decide whether a donation payment of 20 % is implemented or not. This decision is made by the group. Participants are able to vote in favor of (d_j = 0.2) or against (d_j = 0) the 20 % donation payment. The decision is based on a majority vote. If a tie occurs, the decision will be made by a virtual coin toss. The donation amount $d_j * 2 * \sum_{i=1}^{4} g_i$ is subtracted from the team's payoff.

Further, in the *Vote Share* treatment, participants are also able to decide about the share d_j of the donation payment. This share can range from zero to twenty percent. Each participant decides individually on an individual share $d_i \in [0, 0.2]$, with the average amount of the four group members $d_j = \frac{1}{4} * \sum_{i=1}^{4} d_i$ being taken as the amount to be donated and proportionally subtracted from the team's payoff.

In all cases, each participant individually decides which charitable organization should receive their share of the donation. They had to choose one out of five charities (Deutscher Kinderschutzbund, Tafel Deutschland, Unicef, UNO-Flüchtlingshilfe, WWF).

3.2 Procedure

All treatments were conducted in the AIXperiment laboratory at RWTH Aachen University, Germany. The *Baseline* treatments were conducted in May 2017, while the *Vote* treatments were conducted in December 2019. In total, we ran 12 sessions, which lasted on average 100 minutes each. Participants were recruited via ORSEE (Greiner, 20015) and the experiment was implemented with z-Tree (Fischbacher, 2007).

Figure 1 illustrates the procedure of the experiment. Participants received paper-based instructions at the beginning of the experiment. Instructions introduced the currency "token", where one token is worth 5 euro cents. Furthermore, participants were informed that the experiment might include donation payments (also included in *Baseline*). Donations were transferred directly after the session. For transparency reasons, two randomly picked volunteers observed the payment procedure (extra payment of 2 € for the volunteers), while everybody else was also welcome to join (for a similar procedure, see e.g. Koppel & Regner, 2014). Subsequently, the public good game was described depending on the treatment, which included the explanation of the decision procedure in the *Vote* and *Vote Share* treatments. Furthermore, participants were informed that all rounds were payoff-relevant. To make sure that instructions had been understood, participants had to answer control questions before the decisions were made (see online appendix exemplified instructions).

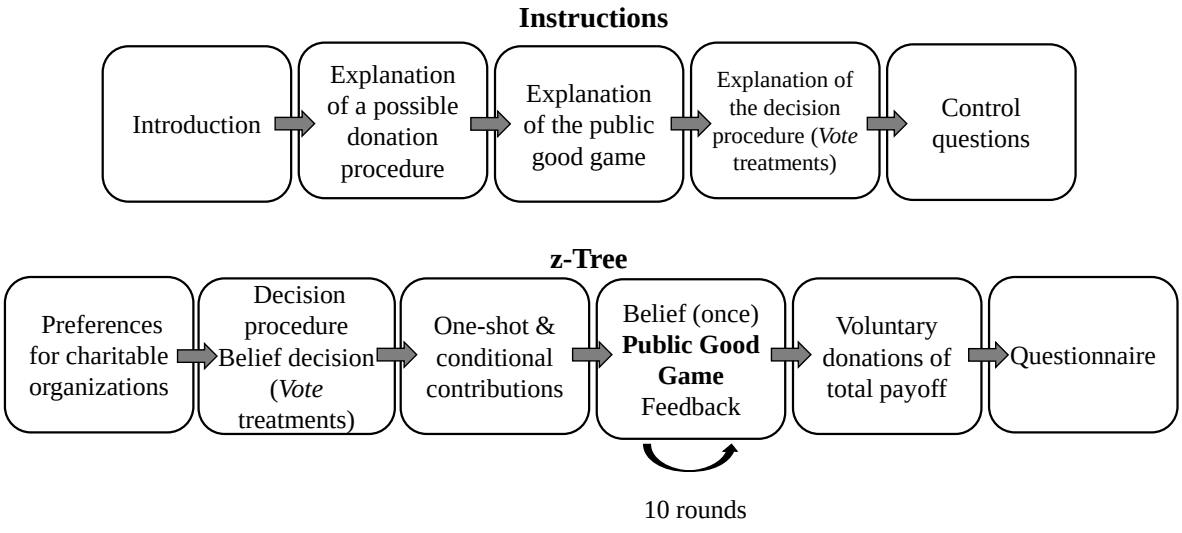

Figure 1 - Procedure of experiment

All treatments started with the selection of an individually preferred charity by each participant. Therefore, participants put the five charities[2] in order of personal preference. Brief information was given about each of the charities (for a similar procedure, see e.g. Regner & Koppel, 2019; Tonin & Vlassopoulos, 2014b). The charity ranked first received the individual donation amounts of the public good game. This means that at least one quarter of the donations were donated to the individually preferred charity. Participants had no information about the other group members' decisions.[3]

Subsequently, the different decision mechanisms in the *Vote* and *Vote Share* treatments were implemented. Before the decision results were displayed, participants had to state their belief about the other group members' donation decisions. In the *Vote* treatment, participants were asked for their beliefs about how many of the other group members had decided in favor of the twenty percent donation. In the *Vote Share* treatment, participants had to state their beliefs about the average donation share of the three other group members. After that, the decision results were shown which indicated under which conditions the public good game would be played for the whole experiment.

Then, the procedure of Fischbacher et al. (2001) was implemented, using a one-shot public good game and a contribution table, capturing the conditional contribution depending on the other group members' average contributions. Information about contribution levels and payoffs in this part were not revealed before the end of the experiment. Subsequently, participants were informed about the ten-round repeated public good game which would be played under the same conditions. For the first round of the main public good game, participants stated their beliefs about the other group members' contributions (see e.g. Gächter & Renner, 2010). Participants received a payoff depending on how close the stated belief was to the actual average contributions of the group members (20 tokens - |deviation*5|). Following that, the ten-round game started by revealing information about a participant's own individual contributions, the average group contribution, and the individual pay-off of that participant between each round. Additionally, groups were informed about how much their group had donated. After the last

[2] The following charities were used for our experiment: see references Deutscher Kinderschutzbund ; Tafel Deutschland ; Unicef ; UNO-Flüchtlingshilfe ; WWF .

[3] Research indicates that the matching or mismatching of the missions chosen by the participants might influence cooperation levels (e.g. Cassar, 2019). Therefore, we keep the influence of this parameter as constant as possible by not informing participants about the other group members' decisions on the charitable organization.

round of the public good game, participants received information about their aggregated payoff and the total donation amounts.

Before participants received their payoff, we gave them the opportunity to voluntarily donate from their earnings. Therefore, we displayed their total payoff in euro. On the same screen, participants could choose from the five charities[4] or could state that they did not want to make a voluntary donation. Additionally, participants could state a donation amount which did not exceed their total earnings.

In closing, participants filled out a questionnaire which included questions about demographics, altruism (Rushton et al., 1981), reciprocity (Cornelissen et al., 2010), risk attitude (Masclet et al., 2009), and trust (Gächter et al., 2004). Furthermore, we asked some feedback questions to gain more insight into how participants decide about their contributions, and whether the donation incentive and the decision right actually influence their decision making. Additionally, we asked whether the participants were satisfied with the donation share that was implemented in their group on a scale from very dissatisfied (1) to very satisfied (5).[5]

3.3 Predictions

In the described setting, contributions do not only relate to the efficiency of the group and individual payoffs, but also the degree of sociality involved in donation payment decision making. Within this framework, we vary the degree of endogenous decision making on whether a donation scheme is implemented and, if it is, to what extent. Two mechanisms stand out as being highly important in predicting cooperation levels in this setting.

Referring to self-determination theory, particularly the human need for autonomy might be a relevant driver for the intrinsic motivation to cooperate in our setting (Deci et al., 2017; Deci & Ryan, 1985, 2000; Ryan & Deci, 2000). Allowing people to endogenously decide about their payment scheme gives them the ability to create an environment suited to their own needs and also gives them a feeling of

[4]See references Deutscher Kinderschutzbund ; Tafel Deutschland ; Unicef ; UNO-Flüchtlingshilfe ; WWF
[5] The questionnaire and a variables overview can be found in the online appendix.

autonomy. Empirical evidence shows that a higher degree of autonomy in the workplace leads to improved job satisfaction and performance (e.g. Bartling et al., 2013; Frey & Benz, 2008; Kuvaas, 2008) and that reduced autonomy may lead to decreased effort (e.g. Charness et al., 2012; Falk & Kosfeld, 2006; Fehr et al., 2013). Further, experimental evidence from Tonin and Vlassopoulos (2014) supports the idea that performance improves due to the decision right, i.e. giving participants the right to decide about the amount of the donation increases effort levels significantly.

Additionally, the endogenous decision scheme might enable participants to signal their social type, which is particularly relevant for our social dilemma setting. Both the act of giving donations and the act of contributing to a public good seem to correlate with preferences of altruism and the feeling of *warm glow* (Dawes & Thaler, 1988; Fehr & Schmidt, 2001). Therefore, participants might be able to derive assumptions from the voting results about the social type of other group members and other group members' willingness to cooperate. A vote in favor of a donation payment or a decision in favor of a high donation share might signal such willingness to cooperate.

Following the argumentation of Kajackaite and Sliwka: On the basis of the signal of altruistic preferences, participants might reciprocate with higher cooperation levels and act as reciprocal altruists (Butz & Harbring, 2020; Kajackaite & Sliwka, 2017). In our setting, participants might be able to signal their altruistic type by voting in favor of the 20 % donation share, which then might lead to higher cooperation levels especially of team members who value the altruistic preferences of others.

However, also negative effects might occur when the decision is made endogenously by the participants. Negative effects might especially be observed when participants are not satisfied with or are disappointed about the outcome of the group decision, e.g. a donation is set even though the participant dislikes giving donations or a low donation share is implemented even though the participant would prefer a high donation share. Both types of deviation might negatively influence participants' cooperation within a public good game.

Nevertheless, considering self-determination and the possibility to signal one's social type due to endogenous decision making, we expect that cooperation levels will rise in the *Vote* and *Vote Share* treatments compared to the *Baseline* treatments. The effect might be even stronger for the *Vote Share*

treatment as the feeling of autonomy might be stronger due to the possibility of influencing the donation share directly and not being forced to choose one of the extreme options.

4 Results

4.1 Descriptive and Nonparametric Statistics

In this section, we first give an overview of the main treatment results. Further, we look more deeply into the treatment variations *Vote* and *Vote Share* in comparison to the *Baseline* treatments.

Table 2 summarizes the main variables by treatment. It shows the mean contributions over the ten-round public good game, which are split into the first round, the first five rounds, the last five rounds, and the last round. The table also includes the averages of the one-shot public good game at the beginning of the experiment as well as the stated beliefs after the first round of the repeated public good game. We also provide averages dependent on the realized share in the endogenous settings *Vote* (i.e. *Vote0* or *Vote20*) and *Vote Share* (i.e. *Vote Share Low* or *Vote Share High* for decisions below and above the median of selected group shares the *Vote Share* treatment). Further, we indicate the average donation share that was implemented in the groups and the average donation amount per participant that was generated in each round of the repeated public good game. These variables might also be important success indicators for a company, especially in terms of its CSR strategies.

The first analysis is conducted independently of the size of the donation share. It can be seen that contributions in the *Baseline Donation* are always lower compared to all other treatments. Average contributions of round 10 reveal significantly lower contributions in *Baseline Donation* compared to *Vote* (p = 0.0555, Mann–Whitney U test (MWU[6]) and *Vote Share* (p = 0.0164, MWU). Further, we find significantly higher beliefs for the *Baseline* in comparison to the *Vote Share* treatment (p = 0.0316, MWU).

[6] All non-parametric tests are conducted two-tailed.

Table 2 - Overview of behavior in treatments

	Baseline	*Baseline Donation*	*Vote*	*Vote0*	*Vote20*	*Vote Share*	*Vote Share Low*	*Vote Share High*
contributions rounds 1-10	8.67 (0.309)	7.84 (0.310)	9.20 (0.231)	8.32 (0.329)	10.21 (0.314)	8.99 (0.221)	8.16 (0.317)	9.82 (0.304)
contributions rounds 1-5	10.41 (0.425)	9.88 (0.483)	10.27 (0.309)	9.64 (0.449)	11.00 (0.414)	9.83 (0.308)	8.77 (0.443)	10.88 (0.420)
contributions rounds 6-10	6.93 (0.424)	5.80 (0.412)	8.13 (0.337)	7.01 (0.470)	9.42 (0.469)	8.16 (0.312)	7.55 (0.451)	8.77 (0.430)
contributions round 10	4.18 (0.779)	2.82 (0.743)	5.11 (0.710)	3.70 (0.820)	6.73 (1.017)	5.95 (0.710)	5.12 (0.986)	6.79 (1.017)
one-shot contribution	10.98 (0.283)	10.48 (0.314)	9.78 (0.218)	9.23 (0.317)	10.404 (0.292)	10.63 (0.211)	9.17 (0.301)	12.10 (0.281)
Beliefs	11.45 (0.232)	11.07 (0.252)	9.87 (0.504)	9.35 (0.767)	10.46 (0.627)	9.58 (0.511)	8.34 (0.744)	10.81 (0.665)
donation share[7]	0	0.2 (0.000)	0.093 (0.100)	0	0.2 (0.000)	0.053 (0.024)	0.035 (0.013)	0.072 (0.016)
donation amount	0	3.13 (2.198)	1.36 (1.872)	0	2.92 (1.724)	0.79 (0.689)	0.41 (0.031)	1.17 (0.755)

All values given in the table are averages. Standard deviations are depicted in parentheses underneath the means.

The results also show that the average implemented donation share is 9.3 % in the *Vote* treatment, whereas it is 5.3 % in *Vote Share*. Highest donations per person and round could be generated in the *Baseline Donation* treatment with 3.13 tokens, followed by the *Vote* treatment with 1.36 tokens and 0.79 tokens in the *Vote Share* treatment (*Baseline Donation* vs. *Vote*: $p = 0.0029$, MWU and *Baseline Donation* vs. *Vote Share*: $p = 0.0000$, MWU).[8]

Vote treatment

In the *Vote* treatment, 42 % of the participants decided in favor of the implementation of the 20 % donation. Subsequently, the 20 % donation was implemented in 46 % of the groups. Results show that the belief about the others' voting decisions is dependent on a person's own decision-making. Figure 2 depicts the means of contributions over rounds for the *Baseline*, *Baseline Donation*, as well as the *Vote*

[7] Note that the donation share in the *Baseline Donation* treatment was exogenously set to 20 %.

[8] As outlined above, reciprocal altruists might be one important subgroup influencing contribution levels in our setting. Reciprocal altruists reciprocate positively to the altruistic preferences of others (see Butz & Harbring, 2020; Kajackaite & Sliwka, 2017). In our setting, participants might be able to signal their altruistic type by voting in favor of the 20 % donation share, which might lead to positive reciprocity (high contributions) from those team members that value altruistic personality traits. Based on our questionnaire, we define a group as reciprocal altruists. Analyzing reciprocal altruists, we do not find evidence that they influence contribution levels more strongly when donations are implemented endogenously compared to exogenously set donation payments.

treatment, considering groups without an implemented donation (*Vote0*) and groups with an implemented donation (*Vote20*) separately. The figure illustrates that the *Vote20* contributions lie above all other groups especially in the second half of the game.

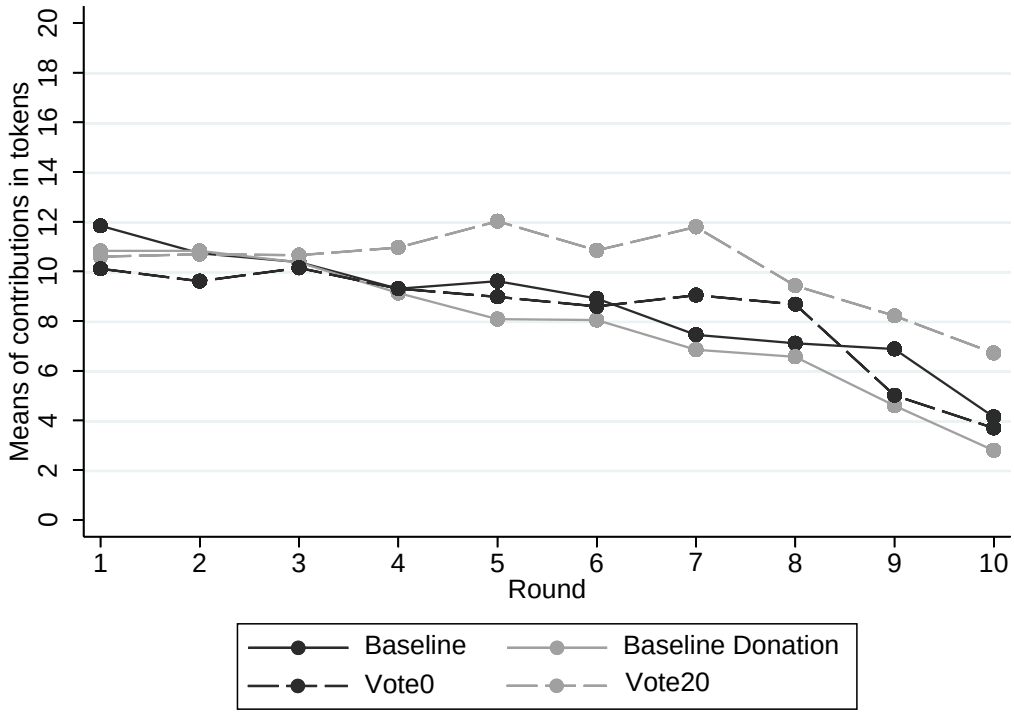

Figure 2 - Means of contributions over rounds

In the following, we concentrate on the comparison between the *Baseline* and *Vote0* as well as the *Baseline Donation* and *Vote20* groups, as between those groups only the decision right was added, while the donation's size was kept constant. Further, we compare the *Vote0* and *Vote20* in order to consider the effect of the endogenously selected donation incentive.

Mean contributions in the repeated public good game are higher in *Vote20* compared to *Baseline Donation.* Contributions rise by 30.23 % when the donation is endogenously implemented compared to an exogenous implementation of the donation. However, this difference is not significant. For the last round, we find significantly higher contributions for *Vote20* compared to *Baseline Donation* ($p = 0.0434$, MWU). Similar contribution levels are revealed when comparing the *Baseline* and *Vote 0* treatments.

Further, contributions are higher in *Vote20* compared to *Vote0*, while the difference is not significant. The stated belief is significantly higher in *Baseline* compared to *Vote0* group ($p = 0.0610$, MWU).[9]

To get a deeper understanding of the endgame effects, we designate participants as "endgamers" if they contribute nothing in the last round(s) and simultaneously contribute zero in fewer than half of the preceding rounds (Keser & van Winden, 2000). We find significantly more endgamers in *Baseline Donation* (53.57 %) compared to *Vote20* (32.69 %; $p = 0.0457$, MWU).[10]

Vote Share treatment

In the *Vote Share* treatment, each participant could decide on an individual donation share of between 0 and 20 %. The average donation share of the four group members was implemented in the public good game. Figure 3 summarizes the frequency of decisions regarding the donation share. Participants used the whole range of possible individual shares, while the majority decided in favor of a donation share of 0 %, 5 %, or 10 %. The implemented donation shares lie between 1.25 % and 11 %. Further, we give an overview of the individual donation share and the mean individual contributions as well as the implemented donation share and the means of group contributions. The scatter plots visualize the tendency that a higher individual share as well as a higher implemented donation share result in higher contributions. Further, we find a slight dependence between the individual vote and the belief about the other group members' votes which indicates that participants chose their individual vote depending on the belief about what the other group members might vote for.

[9] Further, we differentiate between groups that decided in favor of or against the donation by majority and groups where a tie occurred and the decision was made by a random draw. Note that participants were not informed whether the decision was made by majority or by a random mechanism due to a tie. In 18 groups, the decision was made by majority. In 13 of these majority groups the donation was not implemented (*Vote0 Majority*), while in 5 groups the donation share was implemented (*Vote20 Majority*). In 10 groups a tie occurred. In 2 tie groups the donation was not implemented by a random draw (*Vote0 Tie*), while in 5 groups the donation share was implemented (*Vote20 Majority*).Note that due to the small sample size, we are not able to test for significant differences concerning the *Vote0Tie* groups and that descriptive results show only tendencies that need to be interpreted tentatively. The *Vote0Tie* group reveals lower contributions for all main variables compared to all other groups. Moreover, 62.50 % of the participants can be classified as endgamers, which is higher compared to the other groups. Thus, should groups be undecided regarding the donation of 20 %, i.e. a tie results, and the random draw implements no donation, contributions are considerably lower compared to the other settings. The *Vote20Majority* group reveals highest contribution levels on average. Further, only 10 % of the participants in *Vote20Majority* can be classified as endgamers. This percentage is significantly lower compared to *Vote0Majority* (46.59 %), *Vote20Tie* (56.88 %). However, if participants yield a majority for donating a share of 20 % in their group, contributions are higher than in all other settings depicted above.

[10] The other groups reveal the following percentage of endgamers: *Baseline*: 42.86 %; *Vote*: 41.07 %; *Vote Share*: 36.54 %; *Vote0*: 48.33 %; *Vote Share High*: 40.38 %; *Vote Share Low*: 40.38 %.

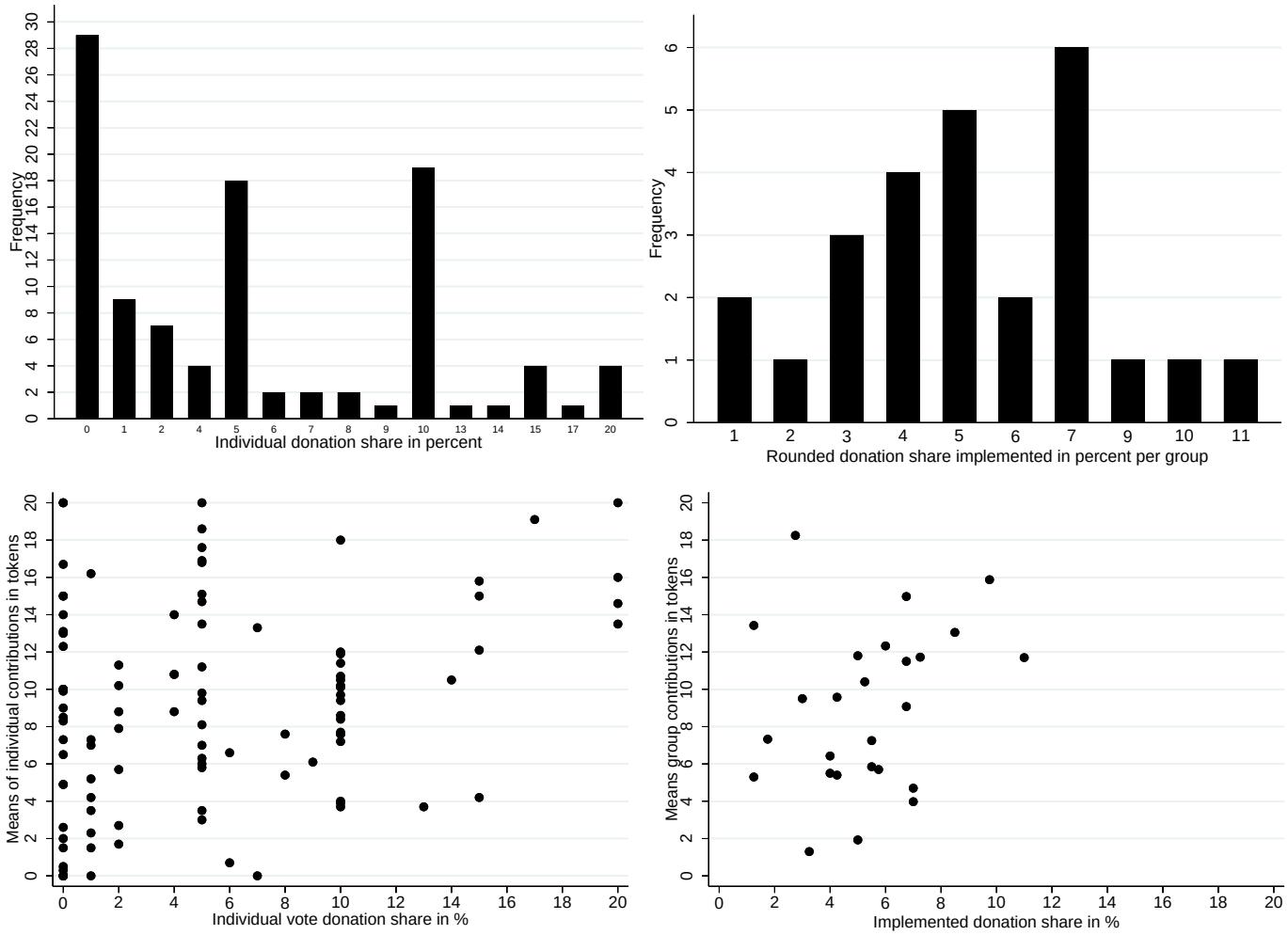

Figure 3 - Decisions Vote Share

Figure 4 shows the means of contributions over rounds and Table 2 gives an overview of the main variables for the *Vote Share* treatment in comparison to the *Baseline* treatments. Further, we did a median split for the implemented donation shares for decisions below and above the median of selected group shares in the *Vote Share* treatment. The *Vote Share Low* group includes all groups with a donation share smaller than or equal to the median (5.375 %), and the *Vote Share High* includes all groups with implemented donations above the median.

In this section, we compare the *Baseline* treatments with both the *Vote Share Low* and the *Vote Share High* group, as well as the *Vote Share Low* with the *Vote Share High* group. As indicated above, contributions in the last round are significantly higher in *Vote Share* compared to *Baseline Donation* ($p = 0.0164$, MWU). Comparing the contributions of the repeated public good game reveals highest contributions in the *Vote Share High* group compared to all other groups. In the first round, average

contributions to the public good are significantly lower in *Vote Share Low* compared to *Baseline* (p = 0.0964, MWU) and *Vote Share High* (p = 0.0507, MWU). Contributions in the last five rounds are significantly higher in *Vote Share High* compared to *Baseline Donation* (p = 0.0989). Also, contribution levels are significantly lower in *Baseline Donation* in the last round compared to *Vote Share Low* (p = 0.0981) and *Vote Share High* (p = 0.0140).

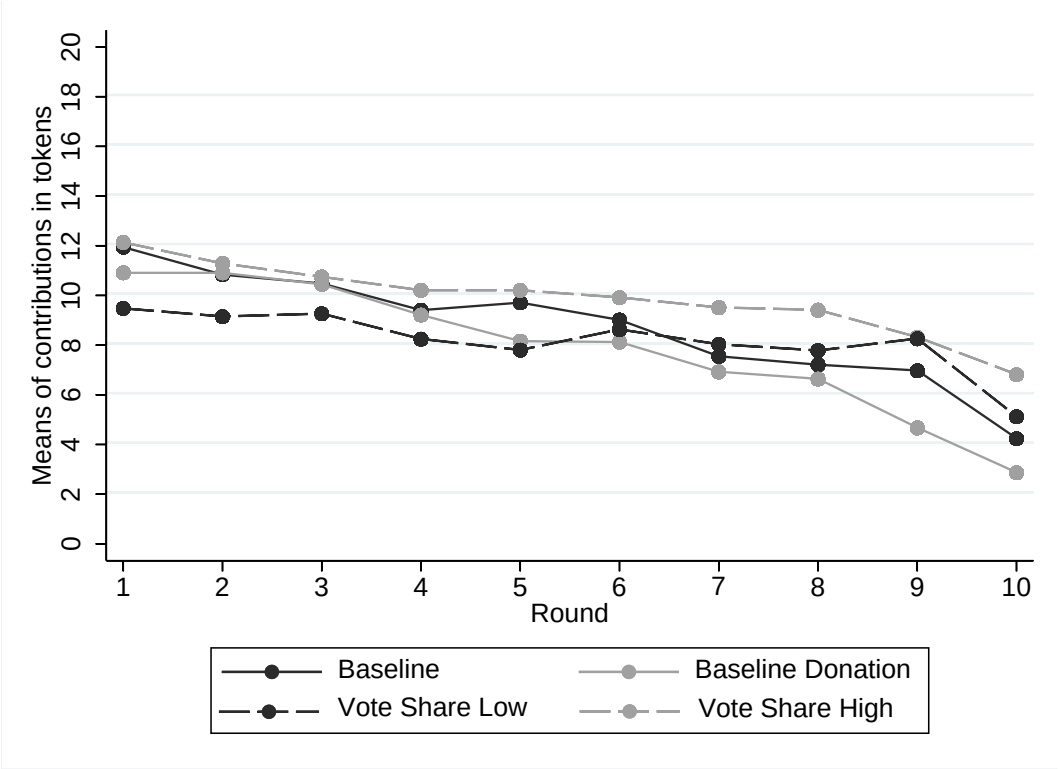

Figure 4 - Means of contributions over rounds Vote Share

In *Baseline Donation* (53.57 %), significantly more participants play as endgamers compared to *Vote Share* (36.54 %; p = 0.0564) and *Vote Share High* (32.69 %; p = 0.0457, MWU).[11] For the one-shot contribution, we find significantly higher contributions in the *Vote Share High* group compared to the *Vote Share Low* group (p = 0.0251, MWU). Further, the *Vote Share Low* group stated significantly lower beliefs compared to the *Baseline* (p =0.0028, MWU), *Baseline Donation* (p = 0.139, MWU), and *Vote Share High* groups (p= 0.0061, MWU).[12]

[11] The *Vote Share Low* group has 40.38 % endgamers.

[12] In order to gain insight into the effect of the respective decision mechanism we also compare *Vote0* with *Vote Share Low* and *Vote20* with *Vote Share High*. Note, that this comparison has some limitations, as the donation shares differ between the compared groups. Our results reveal no significant differences between those groups for the one-shot contribution, belief, contributions in the repeated public good game, and contributions in the last round.

Table 2 also shows the donation shares that were implemented and the amount of the donation that was generated on average per person and round. While in the *Vote Share* treatment a donation share of average 5.3 % was implemented, the average is 3.5 % within the *Vote Share Low* groups and 7.2 % within the *Vote Share High* groups. Donation amounts are significantly higher in *Vote Share High* compared to *Vote Share Low* ($p = 0.0016$, MWU) and both being significantly lower than in *Baseline Donation.*

Full and zero contributions

Additionally, we take a closer look at the cases where participants fully cooperate (a 20 tokens-contribution) and where participants completely freeride (a 0 tokens-contribution). Therefore, Figure 5 shows the percentage of participants who contribute zero or twenty tokens in each round of the public good game. The figure demonstrates nicely the difference between *Vote20* as well as *Vote Share High* in comparison to the other groups. In all groups, the number of full contributors exceeds the number of zero contributors in the first round. This relation reverses in the fourth round in the cases of the *Baseline, Baseline Donation, Vote0,* and *Vote Share Low* groups. In contrast, lines cross after the seventh round in the *Vote20* and *Vote Share High* groups. In the last round, 15.38 % are full contributors in the *Vote20* and *Vote Share High* groups, while in all other groups the percentage of full contributors lies between 7.14 % and 9.62 %. Further, the percentage of zero contributors lies above 51.79 % for all groups except *Vote20* and *Vote Share High* (both 36.54 %).

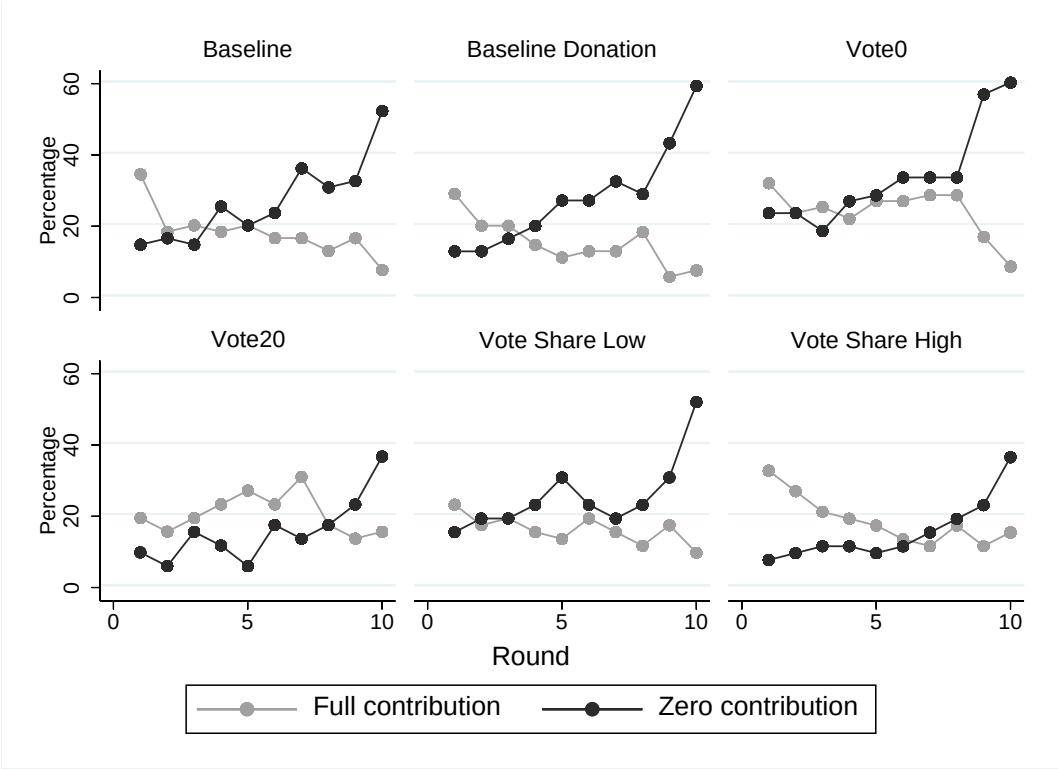

Figure 5 - Percentage full/zero contributors

4.2 Regression Analysis

We ran a regression analysis separately for both decision mechanisms *Vote* and *Vote Share* respectively, including both baseline treatments (*Baseline* and *Baseline Donation*). Further, we split regressions for rounds 1-5 and rounds 6-10, as it is particularly interesting to analyze whether effects on cooperation occur already at the beginning and how cooperation evolves over time. All regressions include a dummy for the *Baseline* treatment. Further, we include dummies for *Vote0* and *Vote20* in the *Vote* regressions as well as dummies for *Vote Share High* and *Vote Share Low* in the *Vote Share* regressions to indicate which donation share was implemented. As participants received feedback about the other group member' contributions after each round, we include the average contribution of the other group members in the previous round in Model II-IV. Model III adds the conditional willingness to cooperate, which was captured at the beginning of the experiment by letting participants state their contributions with regard to the average contribution of the other team members. Model IV includes the belief about the other group members' average contribution in the first round and all other control variables.[13]

[13] See online appendix for full regressions including controls.

Vote treatment

Regression results in the last five rounds reveal a significantly positive effect on contribution levels for groups which included the 20 % donation by vote compared to an exogenously set donation (see Table 3). Model IV indicates that participants in *Vote20* contribute 3.611 tokens more to the public good compared to participants in *Baseline Donation*. Further, the regression reveals a significantly positive effect on contributions for the group members' average contributions, for conditional cooperation, as well as for the stated beliefs. Additionally, results show a significant negative effect on contributions over rounds.[14]

Table 3 - Vote: Tobit regression on individual contribution rounds 6-10

VARIABLES	Model I	Model II	Model III	Model IV
Baseline	1.556	1.590	1.718	0.0777
	(2.292)	(2.160)	(2.093)	(1.641)
Vote0	0.946	0.891	1.350	0.509
	(2.776)	(2.607)	(2.504)	(2.180)
Vote20	5.132**	5.133**	5.384**	3.611*
	(2.483)	(2.369)	(2.320)	(1.857)
Average group members'		0.0810***	0.0800***	0.0658**
contributions (previous round)		(0.0299)	(0.0291)	(0.0255)
Conditional Cooperator			4.209***	2.793**
			(1.233)	(1.100)
Belief				0.591***
				(0.0889)
Control variables				ALL
Round	-1.849***	-1.810***	-1.808***	-1.814***
	(0.172)	(0.179)	(0.180)	(0.190)
Constant	17.78***	15.08***	12.07***	10.29
	(2.194)	(2.177)	(2.314)	(6.916)
Observations	1,120	1,120	1,120	985
R-squared	0.0157	0.0185	0.0243	0.0671

*** p<0.01, ** p<0.05, * p<0.1
Included treatments: *Baseline, Baseline Donation, Vote*
Robust and clustered standard errors of 56 groups in parentheses
Controls in Model IV: age, gender, studying business and economics, number of experiments participated in, income, number of acquaintances in session, number of friends in session, positive reciprocity, negative reciprocity, altruism, GSS, trust, risk
Models II-IV: First-round observations are omitted, as the averages of the group members' contributions in the previous round are not available
Model IV: Some observations are missing due to participants who did not state their monthly income

[14] Tobit regression on contribution levels over all rounds and for rounds 1-5 does not indicate significant effects of the treatment variables.

Vote Share treatment

The regression analysis on individual contributions for the *Vote Share* treatment indicates a significantly positive effect on contributions for groups voting in favor of a high donation share in Models I-III (see Table 4). Additionally, average contributions of group members, the degree of conditional cooperation, as well as the stated beliefs show significantly positive effects on contribution levels while contributions decrease significantly over rounds[15]

Table 4 - *Vote Share*: Tobit regression on individual contribution rounds 6-10

VARIABLES	Model I	Model II	Model III	Model IV
Baseline	1.512	1.535	1.693	0.416
	(2.221)	(2.124)	(2.049)	(1.682)
Vote Share Low	2.500	2.432	2.307	2.215
	(2.445)	(2.365)	(2.238)	(1.999)
Vote Share High	4.300**	4.313**	4.524**	2.770
	(2.097)	(2.014)	(1.983)	(1.757)
Average group members' contributions (previous round)		0.0585**	0.0585**	0.0361*
		(0.0258)	(0.0242)	(0.0203)
Conditional Cooperator			5.095***	4.058***
			(1.178)	(1.166)
Belief				0.437***
				(0.0842)
Control variables				ALL
Round	-1.442***	-1.394***	-1.393***	-1.337***
	(0.188)	(0.185)	(0.185)	(0.191)
Constant	14.85***	12.73***	9.069***	18.42***
	(2.276)	(2.125)	(2.227)	(5.858)
Observations	1,080	1,080	1,080	945
R-squared	0.0119	0.0135	0.0227	0.0502

*** p<0.01, ** p<0.05, * p<0.1
Included treatments: *Baseline, Baseline Donation, Vote Share*
Robust and clustered standard errors of 54 groups in parentheses
Controls in Model IV: age, gender, studying business and economics, number of experiments participated in, income, number of acquaintances in session, number of friends in session, positive reciprocity, negative reciprocity, altruism, GSS, trust, risk
Models II-IV: First-round observations are omitted, as the averages of the group members' contributions in the previous round are not available
Model IV: Some observations are missing due to participants who did not state their monthly income

5 Discussion and Summary

To conclude, results indicate that allowing participants to decide on a donation share in a public good setting increases contribution levels significantly in the second half of the repeated game for those groups preferring (high) donation shares compared to a situation with an exogenously set donation share. Independently of the voting results, treatment comparisons indicate that being entitled to decide may lead to significantly higher contributions in the last round of the repeated public good game.

[15] Tobit regression on contribution levels over all rounds and for rounds 1-5 does not indicate significant effects of the treatment variables.

Vote treatment

In the *Vote* treatment, almost half of the participants voted in favor of implementing a 20 % donation share in the public good game, which indicates a positive attitude of many participants towards deliberately including a social incentive in their respective groups' payoff scheme. Further, results for the *Vote* treatment indicate a positive effect on stabilizing contribution levels when letting participants endogenously decide on implementing a 20 % donation share in comparison to exogenously implementing this donation by the experimenter in the public good game. Particularly, groups contribute more to the public good when they endogenously decide in favor of the donation compared to groups who decide against it. Note that contributions rise, even though the personal outcome of the public good game is reduced by the donation payment.

Results indicate that implementing the decision right particularly supports keeping cooperation levels high over rounds, as seen in the proportion of endgamers, which is significantly lower in the *Vote20* group compared to the other groups. Regression results support that positive effects on contribution levels occur in the second part of the repeated public good game.

Vote Share treatment

In total, 72 % selected a donation share higher than 0 % in the *Vote Share* treatment, which indicates the interest of deliberately integrating a donation share in the groups' payoff package. Implemented donation shares ranged from 1.25 % to 11 %.

In the *Vote Share* treatment, our results show that contributions are significantly higher in the second half of the game for groups which implemented a high donation share compared to groups where the 20 % donation was implemented exogenously. As shown in the regression analysis, these effects are robust for the second half of the repeated public good game. Results also reveal significantly fewer participants behaving as endgamers in the *Vote Share High* groups compared to *Baseline Donation* groups.

Implications

It seems that companies could benefit when shifting from not having a donation payment included in their wage package at all (*Baseline*) to letting teams endogenously decide whether a donation payment should be implemented (*Vote* treatments). Cooperation levels do not significantly differ between the *Baseline* treatment and *Vote* treatments, while the *Vote* treatments include the generation of a costless donation payment of 20 % in almost half of the groups.

Further, results reveal that contributions tend to be higher on average in the *Vote* and *Vote Share* treatments compared to the *Donation Baseline*. Particularly in the last round, contributions are significantly higher in *Vote*, *Vote20*, *Vote Share*, *Vote Share Low* and *Vote Share High* compared to *Baseline Donation*. Therefore, it may be advisable to let employees endogenously decide about implementing a donation incentive instead of exogenously implementing a donation share.

Interestingly, cooperation levels do not significantly differ between the *Baseline* treatment without donations and *Vote* treatments, while the *Vote* treatments include the generation of a costless donation payment of 20 % in almost half of the groups. This donation payment could be an integral part of a company's CSR strategy which may lead to further positive effects for the company, such as higher customer loyalty and employer attractiveness.

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