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Deciding for Others: Local Public Good Contributions with Intermediaries

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Abstract

Given the prevalence of local public goods, whose broader use is often limited by distance and borders, we propose a potential solution to the free-riding problem by having each participant/beneficiary delegate the public good contribution decision to a non-local intermediary who neither puts in own endowment into the public good nor benefits from it. Intermediaries make decisions under two compensation mechanisms where the incentives for the intermediary are either non-aligned (fixed) or aligned (variable) with those of the beneficiary. We find that the use of intermediaries, regardless of whether their compensation is aligned or not with that of the beneficiary, significantly increases contributions to the provision of the public good. We conclude that individuals behave differently when they (formally) make decisions for someone else even if their incentive structures are identical.

Keywords: Public goods, intermediaries, delegation.

JEL Classifications: H4, C91, D90

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Any departure from the availability of equal quantities of homogeneous-quality consumption units to all customers is an impure public good. James Buchanan (1968)

1. Introduction

Many decisions in our daily lives are delegated to intermediaries. Local councils, lawyers or accountants are widely used and make decisions on behalf of the principal. One also observes this in the case of local public goods where the final decision is made by an elected or non-elected intermediary. The decision for the provision of many local public goods such as parks, sports facilities and schools is made by elected or non-elected councils who may or may not be direct beneficiaries of the goods themselves.

While most economic experiments use the standard setup of pure public goods, local public goods have been little studied. In-fact, most public goods are local and exclusionary, i.e., they mostly benefit the local population or community (see discussion on local and impure public goods in Angelovski et al., 2019). Spatial and temporal distances, organizational structures, as well as congestion can diminish quantity and quality of consumption even for formally local beneficiaries of the good (take local parks or schools for example). Importantly, for many the final contribution decision (towards these local public goods) is often delegated and made through an intermediary.

Even though cooperation is the socially optimal outcome in both pure or impure public goods, rational choice theory of social dilemma problems predicts under-provision; individuals are expected to not cooperate due to individual free-riding incentives (Ledyard, 1995). An exhaustive number of experimental studies have shown that participants do fail to achieve cooperation levels anywhere near the socially optimum outcome upon repeated interaction (Chaudhuri, 2011). Due to this, researchers have looked for mechanisms that increase contribution levels. Over the years contests, sanctions, or threshold mechanisms have been looked at, all of which under the right conditions have led to increased contributions. Some of the most effective mechanisms have been contests which grant the winner a prize that is higher than the maximal total contribution, such as Tullock lotteries (see, for example Tullock, 1980; Morgan and Sefton, 2000), rank-order tournaments (see, for example, Bos, 2011; Faravelli and Stanca, 2012), or all-pay auctions (see, for example, Goeree et al., 2005).

We aimed to test the effectiveness of delegation to a non-contributing and non-beneficiary intermediary as an alternative mechanism for facilitating the provision to the public good. For this purpose, we devise a framework where the decision to contribute to the PG is delegated to a non-beneficiary of the local public good whose incentives may or may not be aligned with the (local) direct benefactors. It is known from the work on delegation in ultimatum games that the mere presence of intermediaries may affect how the game is perceived, ultimately affecting participants' decision-making (see, for example, Fershtman and Gneezy, 2001). By separating the PG decision from the benefits of the public good, the free-riding phenomenon may be ameliorated. This would more likely occur when the intermediary's incentives are *not aligned* with those of the beneficiary. If they are *perfectly aligned*, then in expectation contributions should not change. Nevertheless, we question whether having a different framing, i.e. not being a direct beneficiary, may still alter the manner in which individuals respond to the public good problem even in the case where incentives are aligned and freeriding incentives still exist. We study both cases.

Though different from what we propose, there is existing work on using intermediaries in public good contribution decisions and the results are mixed. A large portion of the literature has looked at delegating the PG decision to one of the participants, either endogenously elected (Hamman et al., 2011, use the plurality rule to select the allocator while, İriş et al., 2019, use majority voting) or exogenously appointed (see, for example, Bernard et al., 2013; Oxoby, 2013; Kocher, 2018; Hauge and Rogeberg, 2015; Corazzini et al., 2020). In the most common implementation, group members donate to an intermediary who then decides the PG contributions for both themselves and the group (individually or collectively). Corazzini et al. (2020) point out that these mechanisms inherently bring forth issues of trust in the intermediary. They also can allow for the opportunity for the intermediary being a non-contributing benefactor of the public good, which would lead to other participants not contributing, i.e. delegating to the intermediary.

The problems related with lack of trust or coordination can be addressed by eliminating the conflict of interest by decoupling the incentives of the direct contributor and beneficiary from those of the intermediary who makes the contribution decisions. We address this by conducting an online experiment with the standard one-shot public good game protocol where a separate non-beneficiary (non-local) intermediary makes the contributing decision for each beneficiary. In our two-player version of the public good game there are two beneficiaries and each participants' endowment can be divided between a private and a public account. The socially optimal (efficient) outcome being maximal contributions into the public account by both participants. Meanwhile, the individual

optimal outcome is for each participant is to contribute nothing to the public account. Note, this too holds in the presence of intermediaries.

Our *Baseline* treatment is the standard public good game where the decision to contribute is made by the direct beneficiary. In the other two treatments the PG contribution decisions are delegated to two intermediaries who decide for one direct beneficiary each. We study two cases, the first where the payment to the intermediary is *Fixed*, and hence is not a function of the beneficiary's PG payoff, and the second where the payment to the intermediary is *Variable* and is an increasing function of the beneficiary's PG payoff. Thus, intermediaries are paid from the earnings of the beneficiaries, either fixed or variable amounts. To abstract from strategic considerations and behavioral spillovers (see Angelovski et al., 2018), the beneficiaries have no choice of whether to delegate their decision or not; delegation happens automatically, and all participants are informed of it.

Our main finding is that the use of intermediaries significantly increases the public good contributions compared to the *Baseline* treatment. While this may not necessarily come as a surprise in the *Fixed* incentives framework, where the incentives are not aligned and freeriding incentives do not exist, it is surprising to observe a similar result under *Variable* incentives. When not being a direct benefactor of the PG game, intermediaries make better decisions from the social viewpoint and their contributions are significantly greater relative to the *Baseline*. The main message we present is that non-beneficiary intermediaries are more efficiency-oriented than the direct beneficiaries of the public good game, even when their incentives are aligned. Importantly, our results suggest that the standard approach to studying public good games may be overstating under-provision if its results were to be generalized for all classes of public goods. The avenue we study, which is widely used and understudied, softens the well-established social-dilemma problem and provides an avenue for further research.

2. Experimental Protocol and Predictions

We ran three online one-shot treatments (see Table 1) of the public good game with a total of 628 participants on Amazon Mechanical Turk. The *Baseline* and the other two treatments, *Fixed* and *Variable*, consisted of multiple groups each with four participants: denoted as A, B, X and Y. A and B are the contributors and direct beneficiaries of the public good, while X and Y are the

intermediaries. Each participant is paid a participation fee of 40 experimental currency units (ECUs)[1] and A and B are further endowed with 80 ECUs. In the *Baseline*, we have the classic two-person ($n = 2$) public good (voluntary contribution mechanism) game in which participants A and B individually make a decision of how much of their endowment ($e = 80$ *ECUs*) to contribute to the public good (c_i), thus keeping the rest for themselves ($e - c_i$). The marginal per capita return ($m_i = 0.75$) is the individual multiplier of the sum of the total contributions to the public good. Thus, the final payoff to individual i is determined by their own and the others' contributions via:

$$\pi_i(c_i, c_{-i}) = e - c_i + m_i \sum_{j=1}^{n} c_j$$

The intermediaries, participants X and Y, are passive in the *Baseline* treatment; all participants know of their existence but, they make no decisions, nor gain directly from the public good game. The only compensation they earn is the participation fee.

Table 1: Experimental Structure				
Treatment	Contribution Decision	Passive Participants	Payment A & B	Payment X & Y
Baseline	A & B	X & Y	100% of PG earnings	0 ECU
Fixed	A → X B → Y	A & B	100% of PG earnings - 20 ECUs	20 ECUs
Variable	A → X B → Y	A & B	80% of PG earnings	20% of PG earnings

The direct beneficiaries, A and B, are passive in the *Fixed* and *Variable* pay treatments and delegate their decision to intermediaries X and Y, respectively. The only difference between the two treatments is in the payment structure, i.e. *Fixed* vs. *Variable*, for the intermediary participants. In the *Fixed* treatment, each participant X and Y receives a fixed payment of 20 ECUs from A and B, respectively.[2] The fixed amount is paid to them independently of the decisions they make. Not accounting for social preferences, X and Y should game-theoretically be indifferent between any

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[1] The exchange rate we use is: 1 ECU = 0.025$, i.e. 40 ECU's = 1$.
[2] The fixed payment of 20ECU is taken from the show-up fee of participants A and B, so as not to affect the endowment available for public good contributions.

level of contribution.[3] Finally, in the *Variable* treatment, participants A and B are again passive and keep 80% of the public good game *returns* each. The remaining 20% of A's and B's earnings are paid to X and Y, respectively (intermediary A gets 20% of beneficiary X's PG earnings and intermediary B gets 20% of beneficiary Y's PG earnings). Notice that, in contrast with the *Fixed* treatment, the incentives of the intermediaries (X and Y) in *Variable* are *fully aligned* with the incentives of the beneficiaries, and the theoretical predictions are that each X and Y should contribute nothing to the public good.

The payment parameters of intermediaries X and Y in *Fixed* and *Variable* treatments were chosen so as to be, in expectation terms, roughly equal. Contribution amounts in one shot public good games, as well in the first round of repeated public good games, have consistently been found to be around 50% of the net endowment (see, for example, Van den Berg et al., 2020, for a recent confirmation of this finding). Therefore, given the standard (PG) game-theoretic incentive structure of the *Variable* treatment, contributions can also be expected to be, on average, 50% of the endowments. With our parameters, an average PG contribution of 50% in *Variable* would give an average payout of 20 ECU ($=0.20 \times 40 + 0.2 \times 0.75 \times 80$) for participants X and Y, which is the same as in the *Fixed* treatment.

Our design gives us the following hypotheses:

> H1: Given identical incentives, contribution in the *Variable* treatment will not be significantly different than the *Baseline*.

> Coming to our second hypothesis we propose that due to the lack of free riding incentives contributions in the *Fixed* treatment will be greater than under *Variable*. Relative to *Variable*, efficiency concerns for intermediaries may thus be stronger under the *Fixed* treatment as they are not offset by the free-riding incentives present in *Variable*.

> H2: Contributions in the *Variable* treatment will be smaller than contributions in the *Fixed* one.

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[3] Due to possible social preferences and equality concerns, participants may not be indifferent between all PG contribution amounts. Behaviourally, one also cannot exclude that their preferences are aligned to the incentives of the participant that pays them for the decision, even in a one-shot game. The reasoning would go along the lines of: "they pay me to make a decision, therefore I should do my best to repay them by maximising their payoff (I work for them)". In order to minimise this effect, we opted for automatic delegation, but accept that this may still be present.

Given the payoff indifference between all contribution amounts in *Fixed* and contributions in standard PGGs (like our *Baseline*) having being found to be at the 50% mark, it is also reasonable to alternatively expect contributions in *Fixed* to not be significantly different than in *Baseline*.

Ethics approval was obtained from the Middlesex University ethics committee, and the experiment was run using the Qualtrics platform in late 2021. A total of 628 participants were recruited and paid directly through Amazon's MTurk. Each participant was randomly assigned a role and a treatment. After reading the preliminary instructions of a particular treatment (see Appendix B for the complete instructions and procedures for all treatments) and having been informed of their role, two of the participants were asked to make their contribution choices. Upon completion of the experimental section, they were asked to answer a short survey, after which the experiment ended. They were then paid the minimum possible amount that could be earned in the experiment. After which participants were randomly matched with three other individuals in their own treatment# such that each group had one of each type: A, B, X and Y. Their total earnings were then calculated based on the random matching and the treatment they were in. Participants were paid the rest of their total earnings within 48 hours of the completion of the experiment.

3. Results

Recall that our main question is whether the existence of intermediaries affects the level of public good contributions. Table 1 contains summary statistics across the three treatments and gives us a first glance at our results.

Table 1 - Summary Statistics of Public Good Contributions

Treatment	Mean	Std. Dev.	Min.	Max.	Freq.
Baseline	42.454	25.918	0	80	108
Fixed	52.471	23.207	0	80	104
Variable	56.108	21.854	0	80	102
All Treatments	50.207	24.388	0	80	314

One can see that the mean contributions in the *Baseline* treatment are lower than the contributions in the two treatments with intermediaries. Two-sample two-sided t-tests show that *Fixed* and *Variable* pay mean contributions are each statistically different from *Baseline* mean contributions below 1% significance level (*p-values* are *0.003* and *0.000,* respectively). Comparing *Fixed* and *Variable* pay mean contributions, we cannot reject the null hypothesis that the means are

equal (t-test, *p-value = 0.248*). Having an intermediary deciding on the contribution leads to higher levels of contributions both under the *Fixed* and *Variable* treatments.

By construction, the payoffs for the intermediaries in the *Fixed* treatment are not aligned with those of the direct beneficiaries. The incentive structure in *Fixed* is not the same as in the *Baseline* nor as in any other social dilemma decision either as, structurally, there is no social dilemma decision in *Fixed*. Due to this, the result of higher contributions may not be too surprising as no free riding incentives exist under *Fixed.* Hence, the negative effect on efficiency due to free-riding incentives is absent. Intermediaries in the *Fixed* treatment have nothing to lose from contributing higher amounts. However, what makes for an interesting result is that the *Variable* treatment has identical incentives as in the *Baseline*. The incentives of the intermediaries in the *Variable* case are completely aligned with those of the beneficiaries. There is, thus, no reason to expect that the variable pay intermediaries would offer a significantly different mean contribution than the *Baseline*. Nevertheless, we observe that the mean contribution is significantly larger in *Variable*, and on-par with *Fixed*. It thus seems that, even though incentives are aligned, the framing of the decision problem matters, i.e., for the participants, simply being intermediaries may detract from the free riding incentives. A second-order decision making process may thus result in significantly higher levels of contribution.

In the (post-experiment) questionnaire we asked participants for demographic information such as their household income levels and political preferences. In Figure A1, in Appendix A, we depict the results of the mean contributions by whether participants belong to households that are above or below the US median national household income of $70k. Individuals which come from higher income families seem to, on average, contribute more in all the treatments. The result is marginally significant at *5%* significance level using a two-tailed Wilcoxon rank-sum test. Similarly, Figure A2, in appendix A, shows the mean contributions across the treatments depending on the gender of the participant where males seem to contribute slightly more compared to females, a result which is similarly marginally significant at *5%* confidence level.

We further ran Tobit regressions for individual contributions by decision makers, i.e. including only those that made the contribution decision, censored on upper and lower limits (Table 2). The first two columns show the entire data pooled together, controlling for treatment and having the *Variable* treatment as our reference category. The other three columns show the regressions for each of the three treatments individually. The coefficients of *Baseline* and *Fixed* treatments in the first two columns confirm the findings of Table 1: the *Baseline* treatment dummy coefficient is

negative and significant at *1%* confidence level. This clearly indicates that the *Variable* treatment leads to significantly higher contributions to the public good compared to the *Baseline*. Though average contribution in *Variable* is greater than in *Fixed*, there are no significant treatment differences between the two. Age is never significant across all specifications. A dummy that represents a household income of greater than the national median (greater than $70k per year) is positive overall and in the *Variable* treatment echoing the results from Figure A1.

The reason that the result is strongly significant only when combining all treatments is likely due to only about one third of our participants coming from households that earn above the median household income. We find that those supporting progressive taxation also increase contributions to the public good, but interestingly this result is significant only for the *Fixed* treatment (column Fixed, Table 2). Similarly, as can also be seen in Figure 2, although marginally significant, males give more than females *(p<0.05)* in *Fixed*. We find no significance in the dummy variable for being classified as conservative (Right-Leaning) as opposed to liberal (Left-Leaning), and only conscientiousness was significantly important to one's contributions; high conscientiousness, which has been linked to one's work and school performance, leads to lower contributions.

The dummy variable *Conservative* in the regressions in Table 2, was constructed by combining two questions the participants were asked: *"On a scale of 0 to 10, 0 being very liberal and 10 being very conservative, where would you place yourself in terms of social issues?"* and *"On a scale of 0 to 10, 0 being very liberal and 10 being very conservative, where would you place yourself in terms of economic issues?".* Respondents were classified as conservative if the sum of the two answers were greater than 11. Figures A2 and A3 in the appendix show quite interesting results. In *Baseline*, we see that participants who self-identify as either strongly liberal or strongly conservative contribute drastically less than participants who identify as more neutral. This, however, completely goes away in the *Fixed* and *Variable* treatments where beneficiaries do not make decisions on their own behalf. This further holds regardless of whether individual payoff is linked to the *Variable* or *Fixed* treatment. Its possible that the *framing* effect of the *Variable* treatment makes participants act as if they are not playing a PG game (they act similar to *Fixed*). Our results reject both H1 and H2, as *Variable* treatment results in higher contributions relative to *Baseline* and not statistically different contributions relative to *Fixed.*

Table 2 - Tobit regression on public good contributions censored on lower and upper limits

	All Treatments	All Treatments	Baseline Treatment	Fixed Pay Treatment	Variable Pay Treatment
Ref. Cat. - Variable Pay Treatment					
Baseline Treatment	-17.78***	-17.96***			
	(4.816)	(4.878)			
Fixed Pay Treatment	-2.257	-3.107			
	(4.863)	(4.898)			
Male	5.873	6.477	3.685	12.31*	3.628
	(4.119)	(4.024)	(7.556)	(6.498)	(6.992)
Age	-0.0146	-0.0531	0.0948	-0.209	-0.0602
	(0.175)	(0.172)	(0.334)	(0.253)	(0.330)
Higher Income	11.42***	8.883**	4.049	8.972	12.67*
	(4.222)	(4.187)	(7.502)	(6.931)	(7.382)
Conservative	-1.053	-1.896	-2.441	1.475	-6.563
	(4.290)	(4.229)	(8.060)	(6.799)	(7.285)
Progressive Taxation	5.656	5.345	2.390	12.23*	-0.255
	(4.518)	(4.442)	(8.087)	(7.073)	(7.996)
Extraversion	-0.919				
	(0.634)				
Agreeableness	0.0892				
	(0.879)				
Conscientiousness	-2.747***				
	(0.923)				
Neuroticism	-1.220				
	(0.800)				
Openness	0.349				
	(0.831)				
Constant	82.12***	54.26***	36.08**	48.31***	60.68***
	(15.68)	(9.147)	(15.96)	(12.55)	(16.87)
N	310	310	106	104	100

Notes: std. err. in parentheses; $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

In Table 3 we show the mean payments for participants A and B in each of the three treatments. We see that the mean payoffs in the *Fixed* and *Variable* treatments are virtually identical (126.24 and 126.44), however they are lower than the mean payoffs in the *Baseline* treatment. This is

to be expected as beneficiaries in these two treatments also pay the intermediary. An argument can be made that while bringing contributions closer to their social optimum, the existence of intermediaries lowers earnings for the beneficiaries. However, note that intermediaries are paid from the payoffs of the direct beneficiaries. Hence, this result is also obtained by construction and in real world situations the per capita contributions are much smaller in magnitude.

Table 3 - Payoffs by treatment and participant type

Treatment	Participant Type	Mean	Std. Dev.	Freq.
Baseline	A & B	141.23	19.85	108
	X & Y	40.00	0.00	108
	Total	90.61	52.67	216
Fixed	A & B	126.24	20.63	104
	X & Y	60.00	0.00	104
	Total	93.12	36.24	208
Variable	A & B	126.44	14.01	102
	X & Y	61.61	3.52	102
	Total	94.03	34.07	204

However, this may not be an important issue for several reasons. First, in the *Fixed* treatment contributions are significantly higher than in the *Baseline*. The fixed payoff of the intermediaries could therefore be lowered until the payoff of the beneficiaries in the *Fixed* treatment matches the one in the *Baseline* treatment. Second, we designed our experiment for the intermediaries to be paid directly by the beneficiaries to test the *weakest* version of the mechanism. This, likely, also creates a psychological and contractual link between the participants. For example, X is more inclined to act in A's interest (as opposed to the society's) even if their incentives are not aligned. Once the worst-case version of the mechanism has been proven, intermediaries do not have to be directly by beneficiaries, but rather by a social planner. Third, in a similar vein, alternative mechanisms to resolve social dilemmas (such as lotteries) are also (likely more) inefficient[4].

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[4] The British National Lottery is one such example which in fiscal year 2021-2022 awarded 57% of its gross ticket sales to prizes and 22.26% to fund "good causes" in the UK, which does not include the 12% of gross ticket sales that goes directly to the British Government through the lottery duty (Camelot, 2022). One major issue with contests as a solution to the public good problem is that contributions need to fund the large and enticing prize of the winners as well as fund the social planner, which can render them inefficient and not always feasible on a smaller or local scale.

4. Discussion and conclusions

The social dilemma inherent in public good games is well known; while many mechanisms have been proposed, some aspects of public goods are yet not well studied. Many public goods are impure and local in nature, and the decision for these provides the opportunities for them to be made by non-beneficiary intermediaries. In this paper we examine a mechanism to possibly mitigate social dilemma situations by having the decision to contribute to the PG individually (exogenously) delegated to intermediaries. Depending on the treatment, the incentives of the intermediaries may be aligned or not with those of the beneficiaries of the public good. Compared to the case where beneficiaries themselves make the contribution decision (i.e. *Baseline*), we find that decision making by intermediaries results in higher contributions towards the public good. We believe that our set-up is particularly applicable to local public goods, such as parks or local sports facilities: the intermediaries or delegates, for example a city council, who decide whether to build a particular park will not necessarily be the ones to enjoy it, while the ones who will enjoy it will be the ones who, through taxation, will end up paying for it.

Why exactly the intermediaries in *Fixed* and *Variable* treatments end up giving more than the beneficiaries in the *Baseline* treatment is not theoretically clear and is an interesting avenue for future research. Our findings are surprising and we have a number of explanations. The fact that in the *Fixed* and *Variable* treatments the intermediaries act on behalf of the beneficiaries may make them care more about the social optimum. This is especially true for the *Fixed* treatment where the intermediaries' payoffs do not depend on the beneficiaries' payoffs. The intermediaries may therefore internalize their roles as delegates and this particular framing may change the nature of decision making. That is, the intermediaries focus more on social, than selfish personal, gains thus rendering the social dilemma less prevalent. This could hint at the following interpretation: external decision-makers, having to decide for other people, put aside their own biases and simply behave differently compared to how they would behave had they decided for themselves.

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APPENDIX A

Figure A1

Mean contribution by (national) median household income

Figure A2

Mean contribution by treatment and gender
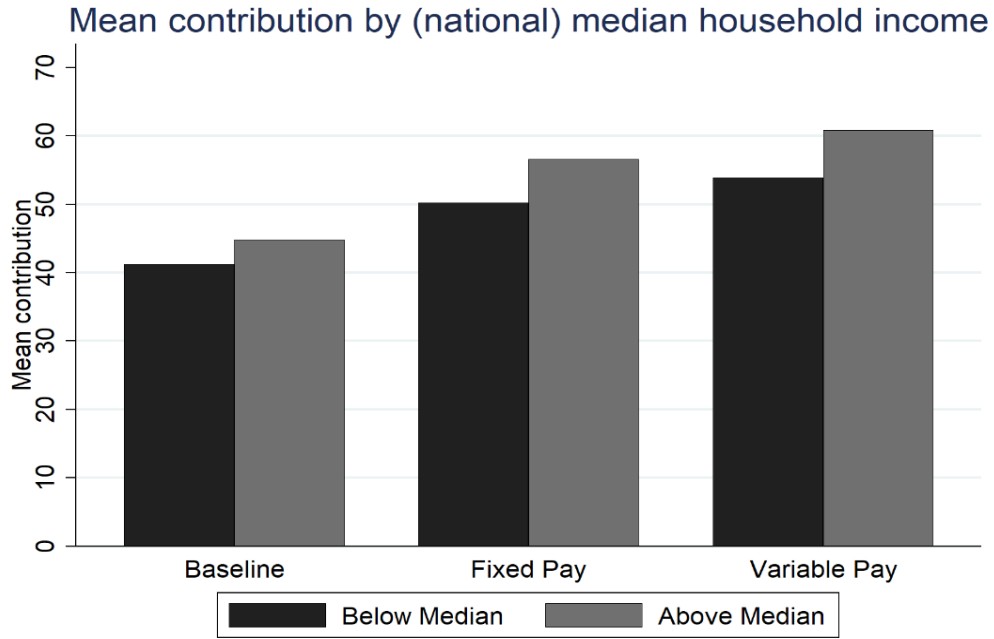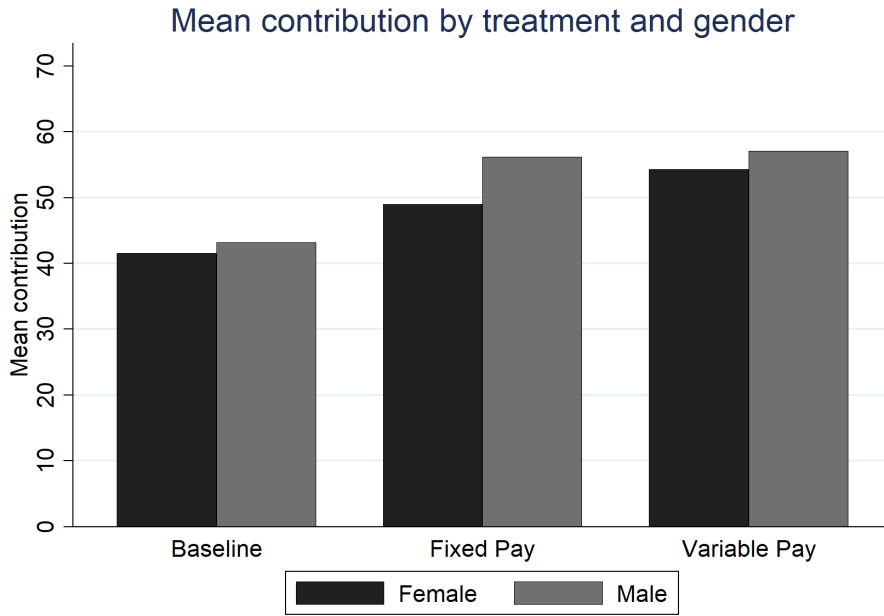
Table A1: Summary Statistics of Public Good Contributions Based on Economic Leaning

Treatment		Left-wing Leaning	Centrist	Right-wing Leaning	Total
Baseline	Mean	38.086	46.474	42.457	42.454
	Std. Dev.	25.695	25.547	26.567	25.918
	Freq.	35	38	35	108
Fixed	Mean	50.633	53.800	52.529	52.471
	Std. Dev.	25.195	23.641	21.387	23.207
	Freq.	30	40	34	104
Variable	Mean	55.914	58.590	52.893	56.108
	Std. Dev.	22.947	18.197	25.253	21.854
	Freq.	35	39	28	102
All Treatments	Mean	48.090	53.017	49.000	50.207
	Std. Dev.	25.545	23.005	24.718	24.388
	Freq.	100	117	97	314

Table A2: Summary Statistics of Public Good Contributions Based on Social Leaning

Treatment		Left-wing leaning	Centrist	Right-wing leaning	Total
Baseline	Mean	42.023	46.969	38.531	42.454
	Std. Dev.	25.318	26.260	26.507	25.918
	Freq.	44	32	32	108
Fixed	Mean	51.487	51.406	54.667	52.471
	Std. Dev.	25.236	23.321	21.050	23.207
	Freq.	39	32	33	104
Variable	Mean	59.674	53.769	53.000	56.108
	Std. Dev.	20.599	21.514	24.997	21.854
	Freq.	43	39	20	102
All Treatments	Mean	50.976	50.922	48.200	50.207
	Std. Dev.	24.718	23.567	25.039	24.388
	Freq.	126	103	85	314

Figure A3

Contributions and Social Leaning

Figure A4

Contributions and Economic Leaning
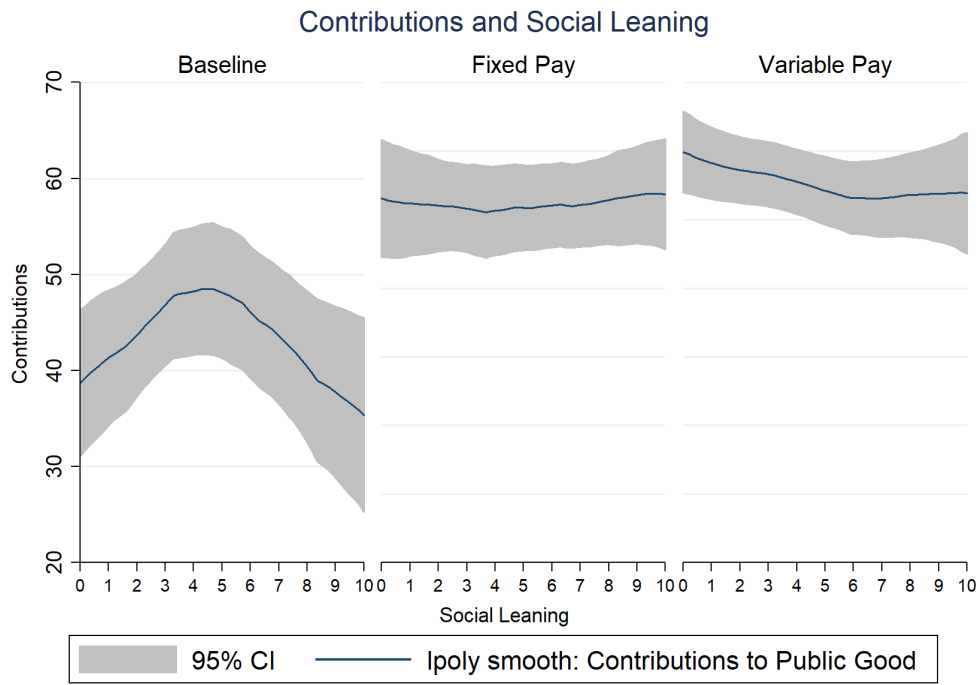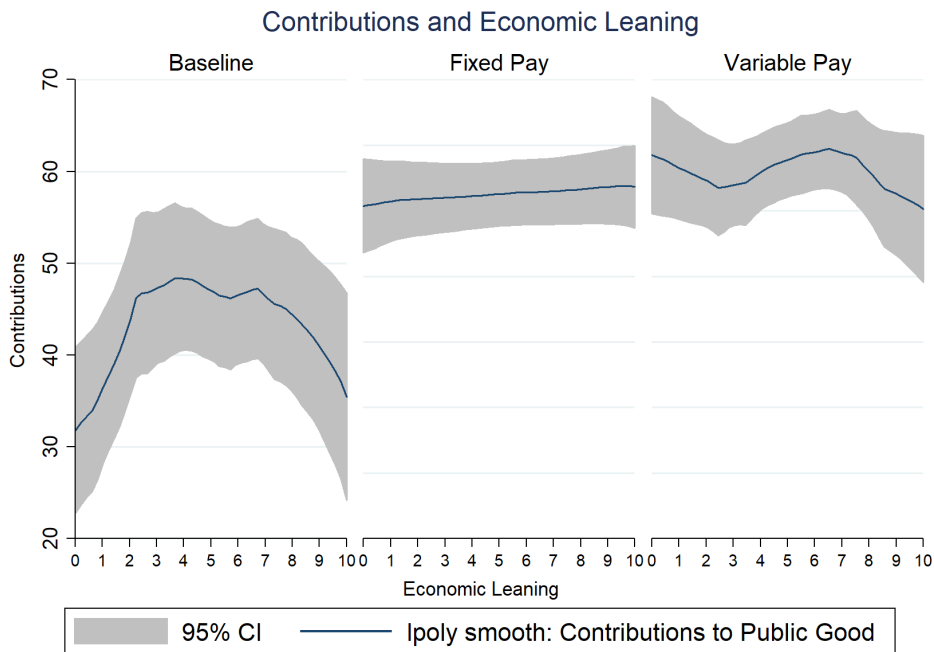
APPENDIX B

Q3

To begin, please enter your Amazon Mechanical Turk WorkerID here:

(Please see below for where you can find your WorkerID.)

Your WorkerID starts with the letter A and has 12-14 letters or numbers. It is NOT your email address. If we do not have your correct WorkerID we will not be able to pay you.

_____

Q5 Note that your WorkerID can be found on the top left of the mturk page:

End of Block: introduction

Start of Block: Welcome

Q66

Welcome and thank you for participating in this HIT.

During this HIT, you will earn real money. There is a task to be completed and your earnings may depend on your own decisions in the task and/or on the decisions of other participants you will randomly be assigned with. These instructions describe, in detail, the decisions you and other

participants will be asked to make and how your earnings are calculated. It is therefore very important to read them carefully.

During the length of the HIT please focus on the screen, even when you are asked to wait for the task to continue. Please refrain from doing any other task, including on your PC, until the it finishes.

Q67

Participant Information and Consent Form

How will my confidentiality be protected?
 Any responses you provide will be completely anonymous—you will be given a random participant code that cannot be linked to your personal identity in any way. If you give us your permission by completing and submitting the survey, we plan to discuss/publish the results in an academic forum. In any publication, information will be provided in such a way that you cannot be identified. Only members of the research team will have access to the original data set, which will be stored on a password-locked computer. Before the data is shared outside the research team, any potentially identifying information will be removed. Once identifying information has been removed, the data you provide may be used by the research team, or shared with other researchers, for both related and unrelated research purposes in the future. The (anonymous) data may also be made available in online data repositories such as the Open Science Framework, which allow other researchers and interested parties to access the data for further analysis.

You can contact the investigators through Amazon Mechanical Turk, by emailing the Requester associated to this HIT.

 Consent statement
I consent to participate in this project.

 I understand that my participation in this study is entirely voluntary.

I understand that after I click the button below this consent form will be retained by the researcher.

I acknowledge that:

(a) I have been informed that I am free to withdraw from the project at any time without explanation or prejudice and to withdraw any unprocessed data I have provided;

(b) the project is for the purpose of academic research only;

(c) I have been informed that the confidentiality of the information I provide will be safeguarded subject to any legal requirements;

(d) Any information I provide will be completely anonymous;

(e) Only members of the research team will have access to my raw data, which will be stored on a password-locked computer. Once the payment is made all identifiable information will be removed, after which the anonymous and agregated responses may be shared with other researchers.

I consent to participating in this research, and to the responses I provide being used as indicated above:

○ Agree (I consent) (4)

○ Do not agree (I do not consent) (5)

Q60

Please read carefully

Your earnings will be calculated in tokens during the task. At the end of the task the tokens will be converted to dollars at the following exchange rate:

**1 token = 0.025$**, i.e. 40 tokens = 1$

In the task, you will be randomly grouped with 3 other participants. Each participant, including you, will be assigned a different role amongst the following four: A, B, X or Y. The decisions you will be asked to make in the task will depend on which role you are randomly assigned to. You will be informed of the role you are assigned at the beginning of the task.

All participants receive a participation fee of 40 tokens. Moreover, participants A and B start the task with an extra 80 tokens each, whereas participants X and Y start with no additional tokens. The task consists of a decision on how the 80 extra tokens, that participants A and B start with, are to be invested. This decision, however, will not be made by participants A and B, as their decisions are delegated to participants X and Y. More specifically, participant A's decision is delegated to participant X (i.e. participant X will make the decision for participant A), and participant B's decision is delegated to participant Y (i.e. participant Y will make the decision for participant B).

Participants A and B will obtain the entirety of the returns of the investments that are made on their behalf. However, for making the decisions, participant A will pay participant X a delegation fee of 20 tokens. This comes from the participation fee of participant A. Participant B will pay participant Y a delegation fee of 20 tokens. This comes from the participation fee of participant B.

Q61

There are two investment options available, a **private** and a **public project**. Participant X will make an individual decision on how to allocate the 80 extra tokens of participant A between the two projects. Similarly, participant Y will have to make an individual decision on how to allocate the 80 extra tokens of participant B between the two projects.

The payoffs for participants A and B from each of the two projects are the following.

• The payoff of the **private** project always equals the number of tokens allocated to the private project. For example, if X decides to allocate 20 tokens to the private project, A's payoff from the private project is exactly 20. If Y decides to allocate 20 tokens to the private project, B's payoff from the private project is exactly 20.

• The payoff of the **public** project is 0.75 times the sum of allocations into the public project; where the sum of allocations consists of the allocation into the public project as decided by participant X plus the allocation into the public project as decided by participant Y.
 For example, if participant X allocates 60 tokens in the public project and participant Y allocates 60 tokens, then A and B get 0.75(60+60)=90 tokens each from the public project.

Participants X and Y will make this decision individually and simultaneously. No other participant will learn the decision of X and Y until the HIT is finished and profits are calculated.

Q62

The investment payoff

The investment payoff of participants A and B is the following:

Investment Payoff of Participant A = contribution to the private project by participant X + 0.75*(contribution to the public project by participant X + contribution to the public project by participant Y)   Investment Payoff of Participant B = contribution to the private project by participant Y + 0.75*(contribution to the public project by participant Y + contribution to the public project by participant X)

Remember that all participants will receive an extra participation fee of 40. Additionally, and for making their decisions, participants X and Y will be paid a fixed fee of 20 tokens which comes from the participation fee of players A and B.

Thus, **the final payoff of all four participants is the following**:   Final Payoff of Participant A = 40 – 20 + Investment Payoff of Participant A   Final Payoff of Participant B = 40 – 20 + Investment Payoff of Participant B   Final Payoff of Participant X = 40 + 20   Final Payoff of Participant Y = 40 + 20

The final payments will be distributed at the end of the HIT.

Before the HIT ends, you will be asked to complete a very short questionaire.

Make sure you reread the instructions if necessary.

○ I have read the instructions (45)

○ I have not read the instructions (46)

Page Break   ————————————————————————————————————

Q68

General instructions

Your earnings will be calculated in tokens during the task. At the end of the task the tokens will be converted to dollars at the following exchange rate:

**1 token = 0.025$**, i.e. 40 tokens = 1$

In the task, you will be randomly grouped with 3 other participants. Each participant, including you, will be assigned a different role amongst the following four: A, B, X, or Y. The decisions you will make will depend on which role you are randomly assigned to. You will be informed of the role you are assigned at the beginning of the task.

All participants receive a participation fee of 40 tokens. Moreover, participants A and B start the task with an extra 80 tokens each, whereas participants X and Y start with no additional tokens. The task consists of a decision on how the 80 extra tokens, that participants A and B start with, are to be invested. This decision, however, will not be made by participants A and B, as their decisions are delegated to participants X and Y. More specifically, participant A's decision is delegated to participant X (i.e. participant X will make the decision for participant A), and participant B's decision is delegated to participant Y (i.e. participant Y will make the decision for participant B).

Participant A will obtain 80% of the returns of the investments made by participant X. Participant X will obtain 20% of the returns of the investments made on behalf of A as a fee for making the investment decisions. Participant B will gain 80% of the returns of the investments made by participant Y. Participant Y will gain 20% of the returns of the investments made on behalf of B as a fee for making the investment decisions.

24

Q75

<u>The decision:</u>

There are two investment options, a private and a public project. Participant X will make an individual decision on how to allocate the 80 extra tokens of participant A between these two projects. Participant Y will have to make an individual decision on how to allocate the 80 extra tokens of participant B between these two projects.

The returns from each of the two projects are the following.

• The return of the **private** project is exactly equal to the number of tokens allocated to the private project. For example, if X decides to allocate 20 tokens to the private project, the return of the private project is exactly 20, 80% of which (16 tokens) will be earned by A, and 20% of which (4 tokens) will be earned by X. If Y decides to allocate 20 tokens to the private project, the return from the private project is exactly 20, 80% of which (16 tokens) will be earned by B, and 20% of which (4 tokens) will be earned by Y.

• The payoff from the **public** project equals 0.75 times the sum of allocations into the public project; where the sum of allocations consists of the allocation into the public project as decided by participant X, plus the allocation into the public project, as decided by participant Y. This is earned by each pair of participants.
For example, if participant X allocates 60 tokens in the public project and participant Y allocates 60 tokens, then the return of the public project is 0.75(60+60)=90 tokens. This means that A and B each earn 80% of 90 (72 tokens each) whereas X and Y each earn 20% of 90 (18 tokens each).

Participants X and Y will make this decision individually and simultaneously. No other participant will learn the decision of X and Y until the HIT is finished and profits are calculated.

Q83

The investment payoff

The investment payoffs of the four participants are: Investment Payoff of Participant A =
0.8*[contribution to the private project by participant X + 0.75*(contribution to the public project
by participant X + contribution to the public project by participant Y)]   Investment Payoff of
Participant B = 0.8*[contribution to the private project by participant Y + 0.75*(contribution to the
public project by participant Y + contribution to the public project by participant X)] Investment
Payoff of Participant X =0.2*[contribution to the private project by participant X +
0.75*(contribution to the public project by participant X + contribution to the public project
by participant Y)]   Investment Payoff of Participant Y = 0.2*[contribution to the private project
by participant Y + 0.75*(contribution to the public project by participant Y + contribution to the
public project by participant X)]

Remember that all participants receive an extra participation fee of 40. Thus, the final payoff of all
four participants will be the following:
        Final Payoff of Participant A = 40 + Investment Payoff of Participant A   Final Payoff of
Participant B = 40 + Investment Payoff of Participant B
        Final Payoff of Participant X = 40 + Investment Payoff of Participant X   Final Payoff of
Participant Y = 40 + Investment Payoff of Participant Y

  The final payments will be distributed at the end of the HIT.

Before the HIT ends, you will be asked to complete a very short questionaire.

Make sure you reread the instructions if necessary.

    ○ I have read the instructions (4)

    ○ I have not read the instructions (5)

Q69

General instructions

During the task, your earnings will be calculated in tokens. At the end of the task the tokens will be converted to dollars at the following exchange rate:

**1 token = 0.025$**, i.e. 40 tokens = 1$

In the task, you will be randomly grouped with 3 other participants. Each participant, including you, will be assigned a different role among the following four: A, B, X or Y. The decisions you will be asked to make in the task will depend on which role you are randomly assigned to. You will be informed of which role you are assigned at the beginning of the task.

All participants receive a participation fee of 40 tokens. Moreover, participants A and B start the task with an extra 80 tokens each, whereas participants X and Y start with no additional tokens. The task consists of a decision on how the 80 extra tokens that participants A and B start with are to be invested. Participants A and B are the ones making the investments decisions and will obtain the full returns from these investments.

Q85

The decision:

There are two investment options, a **private project,** and a **public project**. Participants A and B will have to make an individual decision on how to allocate their 80 extra tokens.

The payoffs for participants A and B, from each of the two projects, are the following.

• The payoff of the private project is always equal to the number of tokens allocated to the private project. For example, if A decides to allocate 20 tokens to the private project, A's payoff from the private project is exactly 20. If B decides to allocate 20 tokens to the private project, B's payoff from the private project is exactly 20.

• The payoff of the public project is equal to 0.75 times the sum of allocations into the public project; where the sum of allocations consists of the allocation into the public project as decided by participant A plus the allocation into the public project as decided by participant B.
 For example, if participant A allocates 60 tokens in the public project and participant B allocates 60 tokens, then both A and B get 0.75(60+60)=90 tokens each from the public project.
 Participants A and B will make this decision individually and simultaneously. No other participant will learn the decision of A and B until the HIT is finished and earnings are calculated.

Q86
The investment payoff

The investment payoff of participants A and B are the following:　　Investment Payoff of Participant A = contribution to the private project by participant A + 0.75*(contribution to the public project by participant A + contribution to the public project by participant B) Investment Payoff of Participant B = contribution to the private project by participant B + 0.75*(contribution to the public project by participant B + contribution to the public project by participant A)
 Remember that all participants will receive an additional 40 token participation fee.

 Thus, **the final payoff of all four participants is the following**:　　**Final Payoff of Participant A** = 40 + Investment Payoff of Participant A　　**Final Payoff of Participant B** = 40 + Investment Payoff of Participant B　　**Final Payoff of Participant X** = 40　　**Final Payoff of Participant Y** = 40

The final payments will be distributed at the end of the HIT.

Before the HIT ends, you will be asked to complete a very short questionaire.

Please make sure you re-read the instructions if necessary.

○ I have read the instructions (45)

○ I have not read the instructions (46)
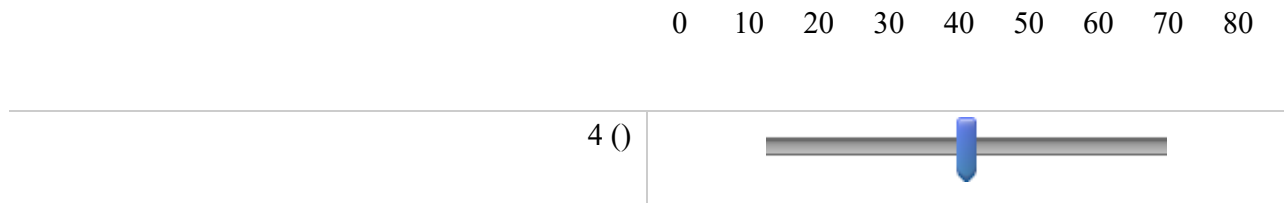
Q9 You have been randomly assigned to the role of participant type A in this HIT.

Your decision is, therefore, delegated to participant X who will decide how to allocate your 80 tokens between the private and public projects. Your earning from the HIT will depend on the allocation of participant X and possibly participant Y.

How many tokens do you think participant X will allocate to the public project?
[IMPORTANT: You need to move the slider in order to proceed. If the starting position of the slider happens to be the exact amount you would like to contribute to the public project, you still need to move the slider and then move it back to the starting position.]

	0	10	20	30	40	50	60	70	80

25 ()

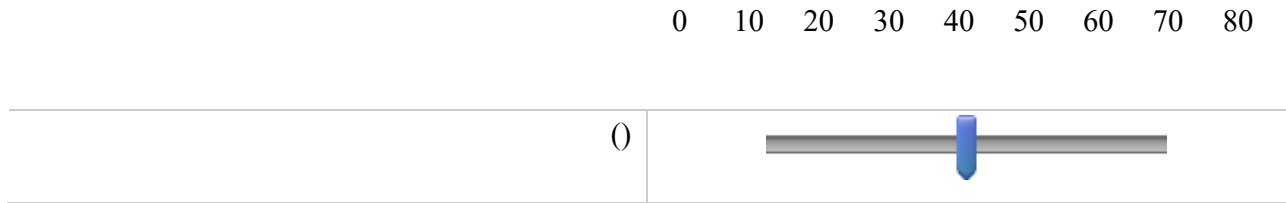Q74 You have been randomly assigned to the role of participant type X in this HIT.

Q71 You will now decide how many of participant A's 80 tokens you want to allocate to the public project. The remaining amount (80 - public project allocation) would be allocated to the private project.

Remember, participant A's payoff from this decision is:

Investment payoff of Participant A = contribution to the private project + 0.75*(contribution to the public project + contribution to the public project by participant Y)

 How many of the 80 tokens will you allocate to the public project?
[IMPORTANT: You need to move the slider in order to proceed. If the starting position of the slider happens to be the exact amount you would like to contribute to the public project, you still need to move the slider and then move it back to the starting position.]

	0	10	20	30	40	50	60	70	80
()									

Q73 You have been randomly assigned to the role of participant B in this HIT.

Your decision is, therefore, delegated to participant Y who will decide how to allocate your 80 tokens between the private and public projects. Your profit from the HIT will depend on the allocation of participant Y and possibly participant X.

How many tokens do you think participant Y will allocate to the public project?
[IMPORTANT: You need to move the slider in order to proceed. If the starting position of the slider happens to be the exact amount you would like to contribute to the public project, you still need to move the slider and then move it back to the starting position.]

	0 10 20 30 40 50 60 70 80
4 ()	

Q75 You have been randomly assigned to the role of participant Y in this HIT.

Q72 You will now decide how many of participant B's 80 tokens you want to allocate to the public project. The remaining amount (80 - public project allocation) would be allocated to the private project.

Remember participant B's payoff from this decision is:

Investment payoff of Participant B = contribution to the private project + 0.75*(contribution to the public project + contribution to the public project by participant X)

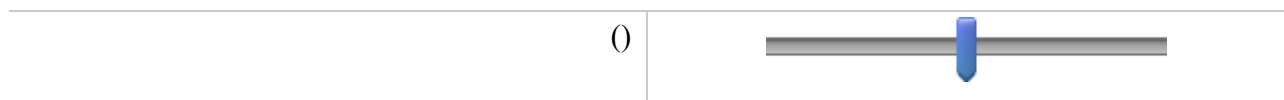How many of the 80 tokens will you allocate to the public project?

[IMPORTANT: You need to move the slider in order to proceed. If the starting position of the slider happens to be the exact amount you would like to contribute to the public project, you still need to move the slider and then move it back to the starting position.]

	0 10 20 30 40 50 60 70 80
()	

Q97 You have been randomly assigned to the role of participant X in this HIT.

Q98 You will decide how many of participant A's 80 tokens you want to allocate to the public project. The remaining amount (80 - public project allocation) would be allocated to the private project.

Remember, participant A's payoff from this decision is:

Investment payoff of Participant A = 0.8*(contribution to the private project + 0.75*(contribution to

*the public project + contribution to the public project by participant Y))*

Your payoff from this decision is:

Investment payoff of Participant X = 0.2*(contribution to the private project + 0.75*(contribution to the public project + contribution to the public project by participant Y))

How many of the 80 tokens will you allocate to the public project?

[IMPORTANT: You need to move the slider in order to proceed. If the starting position of the slider happens to be the exact amount you would like to contribute to the public project, you still need to move the slider and then move it back to the starting position.]

0   10   20   30   40   50   60   70   80

()

Q99 You have been randomly assigned to the role of participant type Y role in this HIT.

Q100 You will decide how many of participant B's 80 tokens you want to allocate to the public project. The remaining amount (80 - public project allocation) would be allocated to the private project.

Remember, participant B's payoff from this decision is:

Investment payoff of Participant B = 0.8(contribution to the private project + 0.75*(contribution to the public project + contribution to the public project by participant X))*

Your payoff from this decision is:

Investment payoff of Participant Y = 0.2(contribution to the private project + 0.75*(contribution to the public project + contribution to the public project by participant X))*

How many of the 80 tokens will you allocate to the public project?

[IMPORTANT: You need to move the slider in order to proceed. If the starting position of the slider happens to be the exact amount you would like to contribute to the public project, you still need to move the slider and then move it back to the starting position.]

	0 10 20 30 40 50 60 70 80
()	
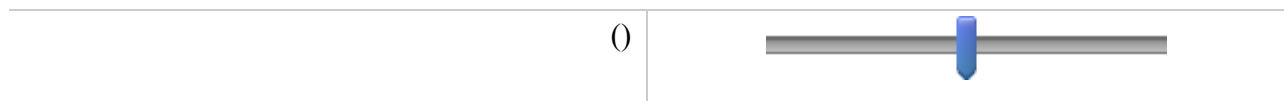
Q101 You have been randomly assigned the role of participant X in this HIT.

Participants A and B will now decide how much of their 80 tokens to allocate to the public project and how much to the private project.

How many of their 80 tokens do you think participants A and B will, on average, allocate to the public project?

[IMPORTANT: You need to move the slider in order to proceed. If the starting position of the slider happens to be the exact amount you would like to contribute to the public project, you still need to move the slider and then move it back to the starting position.]

0   10   20   30   40   50   60   70   80

4 ()
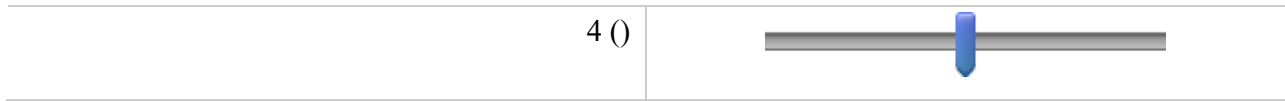
Q102 You have been randomly assigned the role of participant Y in this HIT.

How many of their 80 tokens do you think participants A and B will, on average, allocate to the public project?

[IMPORTANT: You need to move the slider in order to proceed. If the starting position of the slider happens to be the exact amount you would like to contribute to the public project, you still need to move the slider and then move it back to the starting position.]

0   10   20   30   40   50   60   70   80

4 ()
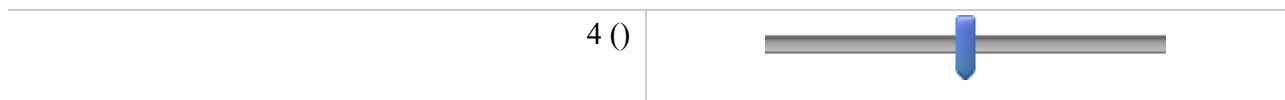
Q103 You have been randomly assigned the role of participant A role in this HIT.

Q104 You will now decide how many of your tokens you want to allocate to the public project. The remaining amount (80 - public project allocation) would be allocated to the private project.
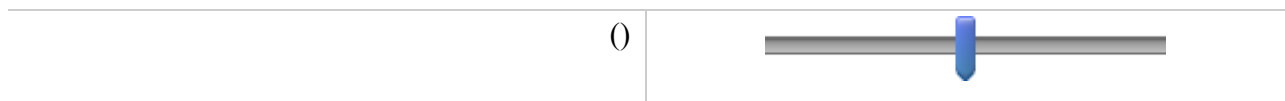
Remember, your payoff from this decision is:

Investment payoff of Participant A = contribution to the private project + 0.75*(contribution to the public project + contribution to the public project by participant B)

How many of the 80 tokens will you allocate to the public project?

[IMPORTANT: You need to move the slider in order to proceed. If the starting position of the slider happens to be the exact amount you would like to contribute to the public project, you still need to move the slider and then move it back to the starting position.]

	0	10	20	30	40	50	60	70	80
()									

Q105 You have been randomly assigned the role of participant B role in this HIT.

Q106 You will now decide how many of your tokens you want to allocate to the public project. The remaining amount (80 - public project allocation) would be allocated to the private project.

Remember, your payoff from this decision is:

Investment payoff of Participant B = *contribution to the private project + 0.75*(contribution to the public project + contribution to the public project by participant* A)

How many of the 80 tokens will you allocate to the public project?

[IMPORTANT: You need to move the slider in order to proceed. If the starting position of the slider happens to be the exact amount you would like to contribute to the public project, you still need to move the slider and then move it back to the starting position.]

| | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 |

| () | |
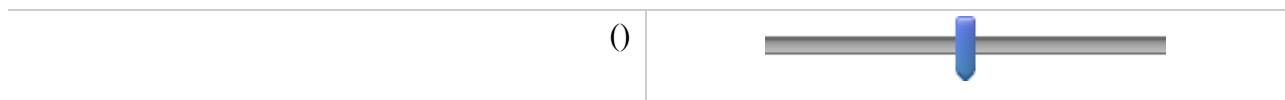
Q106 The first part of the HIT has ended.

A short questionnaire will now follow after which the HIT will end. Please answer the questions until informed that the HIT is complete.

gender Please answer the following questions to get the completion code.
Gender:

○ Male (1)

○ Female (2)

○ other (3)

○ I prefer to not say (4)

---

age Age:

_____

---

device used What have you used to complete this HIT?

◯ Computer (1)

◯ Phone (2)

◯ Tablet (3)

----

employment What is your employment status?

◯ employed (1)

◯ self-employed (2)

◯ unemployed (3)

◯ retired (4)

◯ other (5)

----

household income What is your annual household income?

○ equal to or less than $34,999 (1)

○ between $35,000 and $69,999 (2)

○ between $70,000 and $124,999 (3)

○ equal to or greater than $125,000 (4)

○ I don't want to answer (5)

Q101 Which of the following four best describes your social class?

○ lower class (1)

○ working class (2)

○ middle class (3)

○ upper class (4)

○ I don't know (6)

Q102 What is the highest level of education you have completed?

○ Elementary/primary school or less (1)

○ Middle School (2)

○ High School (3)

○ Associate's degree/Junior college (4)

○ College (Bachelor's degree) (5)

○ Graduate school (6)

Q50 Please answer the following questions:

----

crt1 If three elves can wrap three toys in hour, how many elves are needed to wrap six toys in 2 hours?

_____

----

crt2 In an athletics team, tall members are three times more likely to win a medal than short members. This year the team has won 60 medals so far. How many of these have been won by short athletes?

_____

crt3 Jerry received both the 15th highest and the 15th lowest mark in the class. How many students are in the class?

_____

TIPI

Please answer to each statement to indicate the extent to which you agree or disagree with that statement. You should rate the extent to which each statement (alone) applies to you, even if one statement applies even more strongly than the other.

	Disagree strongly (1)	Disagree moderately (2)	Disagree a little (3)	Neither agree or disagree (4)	Agree a little (5)	Agree moderately (6)	Agree strongly (7)
I see myself as extrovert, enthusiastic. (1)	○	○	○	○	○	○	○
I see myself as critical, quarrelsome. (2)	○	○	○	○	○	○	○
I see myself as dependable, self-disciplined. (3)	○	○	○	○	○	○	○
I see myself as anxious, easily upset. (4)	○	○	○	○	○	○	○
I see myself as open to new experiences, complex. (5)	○	○	○	○	○	○	○

I see myself as reserved, quiet. (6)	○	○	○	○	○	○	○
I see myself as sympathetic, warm. (7)	○	○	○	○	○	○	○
I see myself as disorganized, careless. (8)	○	○	○	○	○	○	○
I see myself as calm, emotionally stable. (9)	○	○	○	○	○	○	○
I see myself as conventional, uncreative. (10)	○	○	○	○	○	○	○

Q97 Have you ever donated any amount of money to charity?

○ Yes (1)

○ No (2)

Q98 If you were to donate money to charity, how would you like to donate?

○ I would prefer to give to my favourite charity of choice (1)

○ I would prefer to donate to a multi-charity that allocates the funds to other charities based on where the money would have the highest impact. (2)

Q99 What do you believe to be the highest acceptable share of donations which a charity can keep for itself (to pay wages, bills, etc.)?

○ 0% (1)

○ 10% (2)

○ 20% (3)

○ 30% (4)

○ 40% (5)

○ 50% (6)

○ 60% (7)

○ 70% (8)

○ 80% (9)

○ 90% (10)

○ 100% (11)

Q103 On a scale of 0 to 10, 0 being very liberal and 10 being very conservative, where would you place yourself in terms of the following?

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

| Economic issues () | |
| Social issues () | |

Q104 Do you consider the amount of income tax you pay to be too high, about right, or to low?

○ too high (1)

○ about right (2)

○ too low (3)

Q105 Do you think that people with high incomes should pay a larger share of their income in taxes than those with low incomes, the same share, or a smaller share?

○ much larger share (1)

○ larger share (2)

○ same share (3)

○ smaller share (4)

○ much smaller share (5)

End of Block: Additional Survey

Q107 Imagine that you encounter the following opportunities to help others.

Please indicate how willing you would be to perform each behavior from 1 (Definitely would not do this) to 7 (Definitely would do this).

If you are more likely to complete one task (e.g., help a stranger find a key) than another from the same question (e.g., help a stranger find a missing pet), please respond to the task that you would be more likely to perform.

	Would definitely not do this					Would definitely do this	
	1	2	3	4	5	6	7
Comfort someone I know after they experience a hardship ()							
Help a stranger find something they lost, like their key or a pet ()							
Help care for a sick friend or relative ()							
Assist a stranger with a small task (e.g., help carry groceries, watch their things while they use the restroom) ()							

End of Block: Pro-sociality

Start of Block: Completion

total_completion **Thank you** for completing this HIT!

 Your secret completion code will appear on the next page. Please note that you will automatically receive 50 cents, which is the minimum possible amount anyone can earn for completing the study. If you have earned more than this, based on and those of the other participants, we will send you the rest of the money soon.

 It may take us a bit of time to process the bonus payments, please bear with us!   For any questions about this HIT, including information about its Ethics Approval,

please use the contact requester link on Mturk.

End of Block: Completion